United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
3500 Delwood Beach Rd
Panama City, FL 32408

Southeast Fisheries Observer Programs: Gillnet, Shark Bottom Longline & South Atlantic Reef Fish

NOAA Fisheries Panama City Laboratory

United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
4700 Avenue U Bldg. 306
Galveston, TX 77550

Name: XXX

Certification date: mm/dd/yy

To Whom It May Concern:

This letter serves as a formal document that recognizes the person, **XXXXXX**, as a certified observer. This observer is employed by A.I.S., Inc.

Through a contractual agreement, this individual is responsible for the collection of scientific and biological data for the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), while deployed aboard any U.S. flagged vessel. If the vessel has been selected by the Southeast Fisheries Science Center (SEFSC) to carry an observer for the mandatory collection of data, the data collected must be turned over to an authorized enforcement officer upon request, and is accessible to authorized enforcement personnel for the investigation of violations. If the vessel is carrying an observer collecting data on a voluntary basis, the data collected must be turned over to an authorized enforcement officer upon request, but cannot be used for the investigation of any violation without the concurrence of the National Marine Fisheries Service, Southeast Fisheries Science Center Director. Captains or owners wishing to have copies of the observer's trip data sheets may request them from the observer or from the Southeast Fisheries Science Center.

Sincerely,

Scott Leach

Scott Leach
Supervisory Fishery
Biologist

Observer Manual Table of Contents

Observer Certification Letter
Table of Contents:

Observer Manual Table of Contents

Observer Manual Table of Contents

Observer Manual Table of Contents

Observer Manual Table of Contents

Observer Manual Table of Contents

Observer Manual Table of Contents

Observer Manual Table of Contents

Observer Manual Table of Contents

INTRODUCTION AND FIELD INSTRUCTIONS

1.1. Introduction

1.1.1. Gillnet Fishery Background

Previously, the Atlantic Large Whale Take Reduction Plan and the Biological Opinion issued under Section 7 of the Endangered Species Act mandated 100% observer coverage of the southeast shark drift gillnet fishery during the right whale, *Eubalaena glacialis*, calving season (15 Nov-31 Mar). Outside the right whale calving season (1 Apr-14 Nov), an interim final rule (March 30, 2001; 66 FR 17370) to the Fishery Management Plan for Highly Migratory Species (NMFS, 1999) established a level of observer coverage for these vessels equal to that which would attain a sample size needed to provide estimates of sea turtle or marine mammal interactions with an expected coefficient of variation of 0.3.

In 2005, the shark gillnet observer program was expanded to include all vessels that have an active directed shark permit and fish with any gillnet gear. These vessels were not previously subject to observer coverage because they either were targeting non-highly migratory species or were not fishing gillnets in a drift or strike fashion. These vessels were selected for observer coverage in an effort to determine their impact on finetooth shark, *Carcharhinus isodon*, landings and their overall fishing impact on shark resources when the gear is not targeting sharks. In 2006, the National Marine Fisheries Service (NMFS) Southeast Regional Office requested further expansion of the scope of the shark gillnet observer program to include all vessels fishing gillnets regardless of target, and for coverage to be extended to cover the full geographic range of gillnet fishing effort in the southeast United States. This was requested because of the need to monitor (at statistically adequate levels) all gillnet fishing effort to assess risks to right whales and other protected species. Further, in 2007 the regulations implementing the Atlantic Large Whale Take Reduction Plan were amended to include the removal of the mandatory 100% observer coverage for drift gillnet vessels during the right whale calving season and to prohibit all gillnetting in an expanded southeast U.S. restricted area from Cape Canaveral, Florida to the North Carolina/South Carolina border during November 15 - April 15. The rule does possess limited exemptions: only in waters south of 29 degrees N latitude; for shark strikenet fishing during this same period and for Spanish mackerel, *Scomberomorus maculatus*; gillnet fishing in the months of December and March. Based on these regulations and on current funding levels, the shark gillnet observer program now covers all anchored (sink, stab, set), strike, or drift gillnet fishing by vessels that fish from Florida to North Carolina and Gulf of Mexico year-round.

Hence, the originally titled Shark Drift Gillnet Observer Program is now known as the Southeast Gillnet Observer Program (SGOP). This program will be directed by the SE Fisheries Science Center, and will place NMFS /contract observers aboard U.S. gillnet vessels in the southeast US regardless of permit type. These boats will be notified as to their selection in writing by the Panama City Lab staff and are required to respond by phone 2 working days prior to all departures during the selection period or until a trip is observed.

1.1.2. Shark Bottom Longline Fishery Background (SBLOP)

The Atlantic bottom longline fleet is managed under the Atlantic Highly Migratory Species Fishery Management Plan (HMS-FMP) and under the authority of the Magnuson Fishery Conservation and Management Act (Magnuson Act). The HMS-FPM was prepared by the National Marine Fisheries Service (NMFS) with jurisdiction over the U.S. coastal waters of the Northeast Atlantic, the Gulf of Mexico, and the Caribbean Sea out to the Exclusive Economic Zone (EEZ). The Fishery Conservation Amendments of 1990 (FCA) Public Law 101-627 transferred management authority over the Atlantic swordfish fishery to the Secretary of Commerce. The Secretary issued emergency regulations on June 12, 1991, that were consistent with the November 1990 recommendation of the International Commission for the Conservation of Atlantic Tunas (ICCAT) and were made effective through December 9, 1991.

These regulations were published as a proposed rule on October 23, 1991 (56 FR 54819). Public hearings were held on the proposed rule, and written comments were accepted during a 45-day public comment period ending December 2, 1991. Modifications over the years were made to the various Fishery Management Plans regulating Atlantic swordfish, sharks, billfish, and tunas which finally culminated into the comprehensive HMS-FMP published in May 28, 1999 with those regulations becoming effective on July 1, 1999. Rules relevant to the shark fishery are summarized below:

1) Divide the annual shark directed-fishery quota into three trimesters, January 1 through April 15, July 1 through August 31, and September 1 through December 31.

2) Require vessel operators to carry NMFS-approved observers on permitted vessels upon the request of NMFS.

3) Establish the categories of small coastal, large coastal and pelagic shark species with landing prohibitions on selected shark species.

This new FMP resulted in the creation of the current Shark Bottom Longline Observer Program (SBLOP). This program is directed by the Southeast Fisheries Science Center, and will place NMFS contract observers aboard U.S. longline vessels that currently hold shark permits.

The commercial shark fishery 2015 regulations:
- Shark-directed permit holders can catch 45 head non-sandbar LCS per day
- Once 80% quota is reached, the fishery will shut down

In 2019, additional funding became available to cover vessels targeting reef fish in the Gulf of Mexico; the project continued until funding ended. Vessel owners and operators that have a current limited access permit for sharks and reef fish and use a longline gear type are required to carry an observer when requested. These boats will be notified as to their selection in writing by the Panama City Lab staff and are required to respond by phone 2 working days prior to all departures during the selection period or until a trip is observed.

In 2008, the **Sandbar Research Fishery (SRF)** was established. NMFS has recently amended regulations for Atlantic shark fisheries based on recent stock assessments. The final measures implement a shark research fishery which allows NMFS to select a limited number of commercial shark vessels on an annual basis to collect life history data and data for future stock assessments. Furthermore, the revised measures affect quotas, retention limits, and authorized species in commercial shark fisheries; affect authorized species in recreational shark fisheries; modify time/area closures for commercial shark vessels deploying bottom longline gear; require that all sharks be landed with all fins naturally attached; and modify regions, seasons, and shark dealer reporting frequency in the commercial shark fishery.

The Shark Research Fishery 2022 regulations:
- Required 100% observer coverage.
- Allowed 2 sets: 1 150 hook feeler set with a soak time of 2 hrs.
  1 300 hook main set with no soak time limitation.
- All dead non-prohibited shark species may be retained (unless the small coastal shark quota is closed) if there is or is not any damage.
- Regional dusky shark bycatch cap (A set amount of dusky sharks to be taken dead before a region goes under a 3 hour soak limit and closes after a set number of dusky shark interactions).
- Only allowed 500 hooks on board at a given time.
- Limit on number of trips per month.
- Observers given unrestricted sampling access.
- Trip weigh-outs must be provided to the Panama City Lab before the next fishing trip to satisfy the quota monitoring requirements.
- Allowed 2nd 150 hook feeler set if Electric Monitoring system operational.

1.1.3. South Atlantic Reef Fish Fishery Background:

Observer coverage of the South Atlantic Vertical Line fishery was founded in 2014 under the MARFIN (Marine Fisheries Initiative) Grant. This program was adopted from the Galveston Vertical Line program that covered the Gulf of Mexico. In 2018, funding of this program was continued by the ACCSP. In an effort to cover the entire vertical line fleet with Snapper/Grouper permits in the Southeast, the Panama City observer program continues to receive funding to cover the Vertical line fleet in the South Atlantic. The South Atlantic Vertical Line Fishery (VL) covered vessels holding snapper-grouper permits, using handline or bandit reels, and fishing in the South Atlantic from North Carolina to the Atlantic Side of the Florida Keys. In 2022, this target group was expanded to cover all vessels that land catch using their Snapper- Grouper Permit regardless of gear used.

In 2020 the program received a request from South Carolina Department of Resources (SCDNR) to contract observers on selected fishing vessels to collect data and samples on lesser known Snapper and Grouper species that live in deep waters in the South Atlantic. This project was named South Atlantic Deepwater Longline Project (SADL) and focused on collecting age and growth data from species in the deep Atlantic from North Carolina to Florida.

These programs are directed by the Southeast Fisheries Science Center, and will place NMFS contract observers aboard U.S. South Atlantic vessels that currently hold Snapper/Grouper permits regardless of type of gear being used. Vessel owners and operators are required to carry an observer when requested. These boats will be notified as to their selection in writing by the Panama

City Lab staff and are required to respond by phone 2 working days prior to all departures during the selection period or until a trip is observed.

1.1.4. Observer Program Objectives:

A. Provide trained observer personnel to meet coverage of U.S. commercial gillnet fleet, the U.S. commercial shark longline fleet, the Shark Research Fleet, and U.S. commercial South Atlantic Reef Fish Fleet.

B. Obtain gear characteristics, catch and bycatch information and document protected species interactions within each fishery.

C. Provide biological samples for stock assessment and other research objectives.

D. Publish reports of fishery observations.

1.2. Field Instructions

A fishery observer joins a commercial fishing vessel and its crew for the duration of a fishing trip. The observer's primary responsibility is to: identify and record all animals caught during fishing operations, take required measurements, apply tags, and collect biological samples. Work begins when the gear is set out. Then there is usually a rest period while the gear soaks. During this time the observer should work on: haul data, prepare sampling equipment and the sampling area and/or take the opportunity to rest, eat, and sleep. Work continues when the gear is hauled back and terminates when work-up of animals is completed and gear is stowed (generally 8-12 hrs. a day). Some vessels will make multiple sets and hauls during a 24 hour period.

The vessel will return to dock and the catch will either be offloaded at the fish house or onto a truck. The observer remains in port until all allocated sea day/deployments are completed. Then the observer is to complete and proof the trip data, arrange shipment of biological samples, and obtain a copy of the weigh-out from the fish house to include with the trip data; if the weigh-out is easily obtained, unless the trip was for the SRF. SRF weigh-outs are required. Data should be photocopied before shipment. All data shipments will be sent **UPS Next Day Air** to the Panama City lab staff. Shark biological samples will be sent in accordance to the Cooler guidelines, section 10.1.1., via **UPS Next Day Air** to the Panama City lab staff. Teleost biological samples will be sent in accordance to the Instructions for Teleost Buckets, section 10.2.3., via **UPS Ground** to the Panama City lab staff.

DATA AND SAMPLES ARE SHIPPED SEPARATELY.

Trip data is proofed for errors, and then coordinators will contact the observer by phone to arrange a time for a debriefing. During debriefing, observers are provided feedback on their data collection, data questions are resolved, and information is shared. The observer is responsible for requesting that field supplies are replenished via Observer Supplies Request form (section 1.6).

YOUR TRIP IS NOT OVER UNTIL YOU COMPLETE A DEBRIEFING WITH YOUR COORDINATOR.

1.2.1. Observer Duties:

1. Complete a pre-trip safety check.

2. Observe all fishing gear set out and haul back, and record detailed gear characteristics.

3. Obtain identity, status, and disposition, length, weight, and gender (if applicable) on all species that interact with the fishing gears.

4. Collect detailed accounts of interactions with protected species.

5. Collect biological samples from the catch.

6. Tag and release sharks, fish and protected resources.

7. Take at least 5 photographs per trip.

8. Obtain a copy of the trip weigh-out when required or if possible.

Due to liability and safety considerations, **observers will not participate as deckhands during the fishing operations or stand watch.** Observers are encouraged to assist in cleanup duties and lend a hand once operations are secured. Observers will abide by routines aboard the vessel and adopt the habits of crew in use of living space, preparation and consumption of meals, storage of personal gear, personal hygiene and chores.

1.2.2. Data Sheets and Data Collection

All data collection is completed on plain paper or water-proof paper data sheets in **pencil**. Someobservers prefer to use a waterproof deck book and transcribe the data on land or the vessel cabin. As technology progresses data may be collected in electronic form. Data sheets and deckbooks are provided. The paperwork is broken down as follows:

1. *SGOP Data Forms*: Details can be found in the SGOP Manual and Datasheets sections, Sections 4 and 5.

2. *SBLOP Data Forms*: Details can be found in the SBLOP Manual and Datasheets sections, Sections 6 and 7.

3. *SARF Data Forms*: Details can be found in the SARF Manual and Datasheets sections, Sections 8 and 9.

4. *Other Forms*: There is a Pre-Trip Safety form (section 3.5.2.), Sampling form (Section 9.4.) as well as several other forms that an observer is required to complete. Further details can be found later in this manual.

5. *Incidental Take Forms:* When a marine mammal, turtle, sawfish, sturgeon or seabird is involved with the fishing gear it is referred to as an **Incidental Take** or a **Protected Species/Resources Interaction** (Section 10). All incidental takes are recorded on both the animal log and appropriate incidental take forms.

There are three types of forms used to document Incidental Take:

i. Marine Mammal Incidental Take Log (Section 10.3. and 10.7.)
ii. Sea Turtle Life History Form (Section 10.8.35. and 10.8.36.)
iii. Protected Resources Form (10.9.)

6. *Waterproof Notebook:* The field/notebook should be used to document events or actions that occur during a single deployment and backup data information. The field/notebook is an important data element. Copies of the field/notebook should be included with that trip's data. After that, once the field/notebook is full and all trips have been debriefed, the trips contained in the field/notebook will be written on the cover and the field/notebook will be sent into the coordinators. The field/notebook can be used for multiple trips. Types of observations include: daily weather and position entries recorded at the same time each day, changes in the gear configuration, travel records, and/or any comments/questions about procedures that may improve data collection. Include set and haulback times and positions and a daily catch summary. Maintain a photo log, radio/cellphone communications and boat or marine mammal sightings.

1.2.3. Field Identification

Identification of species in the field is a skill that can be grounded in the laboratory and study, but it is refined in the field. An observer cannot be faulted for being unable to identify a species, so long as the unknown species is well documented with photographs and descriptions. Reference materials provided to the observer to assist in making accurate identifications of species include:

Guide to Sharks, Tunas & Billfishes of the U.S. Atlantic & Gulf of Mexico
Whales, Dolphins, and Porpoises
A Field Guide to Coastal Fishes from Maine to Texas
Beached Birds

Photos are used for species identification but photos of the boat, gear and fishing operations are necessary as well. It is good courtesy to request permission from the Captain first. However, an observer is required to photograph interactions with protected resources and may need to photograph other species also. If the Captain is unhappy with photography, only take photographs when it is absolutely necessary. Photos are to be turned over to the observer coordinator after a trip by uploading to the appropriate google drive folder.

All photographs, video and other forms of data that is collected during a deployment are property of NMFS.

During your debriefing, your coordinator can confirm reception of the photographs from the trip and all photos should be deleted from the observer's camera and personal computer. **Under no circumstances, should an observer post digital data from deployments online (on social networks, email, or etc.) without prior authorization from a coordinator.**

All observers **MUST** take clear, full-profile pictures of **every new species** that is caught,minimum of **3 different specimens per species**, to the best of their ability. Observers are required to take at least **5 photographs** per trip.

INEXPERIENCED OBSERVERS MUST PHOTOGRAPH EVERY SPECIES ENCOUNTERED UNTIL INSTRUCTED OTHERWISE.

Species identification abilities are evaluated through photograph review and quarterly species ID tests for both teleost and elasmobranch. **Panama City Observer Program's Policy for Species Identification Proficiency** is as follows:

Correct species identification is imperative to an observer's data collection efforts and the scientific analysis which flows from the data. An essential qualification of the observer position is: "Proficient in the use of fish, invertebrate and protected species identification books and keys". It is also expected that an observer will submit high-quality data, which includes accurate species identification. Inaccurate species recording can have negative effects on fisheries management processes that rely on observer data. In certain instances when a specimen cannot be identified to species level, recording at the next highest taxonomic level is acceptable, and observers should prioritize taking multiple photographs and/or fin clips for genetics verification (Elasmobranchs).

This policy is written for observers who have scored less than an 85% on any species identification test, and for those who have scored a 3 or lower on the "Data - Species ID, Measurements and Photographs" section of the observer debrief form on two or more deployments within a 90 day period. Once either of these situations has occurred, the observer will be put into a "Probationary Status" with the coordinators.

After an observer enters Probationary Status, a coordinator will schedule a one-on-one ID review session, either in person or using Google Hangouts, prior to the next deployment. The session will consist of reviewing the ID test(s) and/or misidentified animals, proper use of dichotomous keys, and other ID references available, as needed. As always, the observer may request additional assistance at any time outside of the required review session.

In cases where the observer is deployed to a vessel that is planning on doing back-to-back trips (i.e. shark research fishery, vertical line or gillnet day trips), an observer in Probationary Status is required to do the following:

1) Take clear, full-profile pictures of every species that is caught, minimum of 3 different specimens per species (if encountered), to the best of their ability.
    a. Additional close-up photographs of identifying characteristics, such as dorsal spines, gill rakers, fin placement, etc. are strongly preferred.
2) Take fin clips of all elasmobranchs as required on the Samples Requested sheet.
3) Submit labeled ID pictures to coordinators via Google Drive upon return to the hotel.
4) Wait for approval from a coordinator to leave on the next trip.
    a. Coordinators will be on call and will review photos outside normal office hours.
    b. The coordinators will review the pictures for obvious misidentifications upon receipt and contact the observer with feedback.
    c. A complete review will be conducted at debrief.

For all other deployments, an observer in Probationary Status will be required to:

1) Take clear, full-profile pictures with issued cameras of every species that is caught, minimum of 3 different specimens per species (if encountered), to the best of their ability.
    a. Additional close-up photographs of identifying characteristics, such as dorsal spines, gill rakers, fin placement, etc., are strongly preferred.
2) Take fin clips of all elasmobranchs as required on the Samples Requested sheet.
3) Submit labeled ID pictures to coordinators via Google Drive upon completion of deployment.
4) Complete the debrief process before being assigned to the next trip.

In both cases, samples will still be required as outlined in the relevant sampling protocol, unless directed otherwise by a coordinator.

If an observer in Probationary Status does not follow these steps, it could result in the observer returning home before vessel coverage is complete, with the vessel assigned to the next available observer.

An observer will not come out of Probationary Status until they have correctly identified 85% of species on 3 consecutive deployments. The coordinators will notify the observer when their Probationary Status is complete, at which time the observer can reduce the amount of pictures taken. Pictures are still required as outlined in the samples requested document.

1.2.4. Measurements

Observers should obtain lengths for as much of the catch as possible. Actual **straight line fork length** are required from **10 individuals per species** caught PER PANEL in each set in **ALL gillnet trips**; and a **straight line fork length** measurement in centimeters (cm) are required from **ALL CATCH** in each haul in **ALL Bottom Longline and Reef Fish trips**. Length measurements from most species will be taken as a **straight line fork length** measurement in centimeters (cm) (Figures 1 & 2). There are some exceptions: Skates and rays should be measured at their widest point, wing tip to wing tip (disc width; Figure 3); record the **curved lower jaw** fork length of all billfish and swordfish (Figure 4). If unable to get a straight line measurement, a curved measurement can be used, this includes the contour of the body, and is the measuring tape stretched over the body. For those species of fish that do not have a forked tail, a **centerline** length should be measured (Figure 5 b-d, f-h). Centerline (straight line) lengths are taken without squeezing the tail but rather are measured along the midline of the fish from the tip of the snout to the center of the end of the tail regardless of tail shape (ACCSP 2012). Marine mammal, sawfish, sturgeon and seabird measurements should be straight line lengths. Turtles should be measured with a curved notch to tip carapace length (Figure 6). If samples are to be taken (vertebrae or otolith, and reproductive tract) then a straight line measurement from a whole, uncut specimen **MUST** be taken.

DO NOT TRY TO PIECE ANIMALS TOGETHER THAT HAVE BEEN CUT.

As a safety precaution, it is common practice for crew to cut through a live shark's back bone, just behind the head, as it is brought aboard. Once this "naping" or "kill cut" has occurred, the observer cannot obtain a whole straight line measurement and therefore cannot retain further samples for age and growth studies.

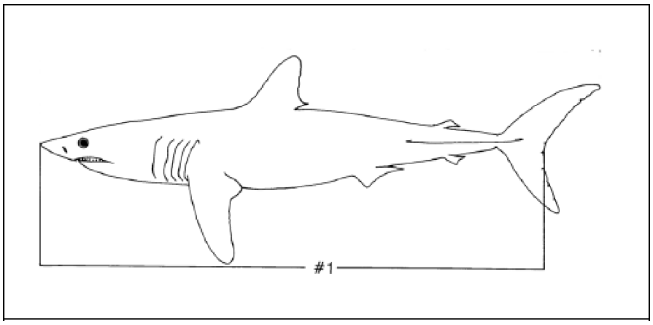

Figure 1. Shark measurement: Tip of snout to fork of tail (straight).

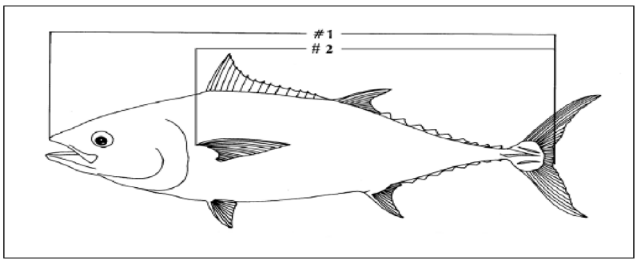

Figure 2. Tuna measurements: Tip of upper jaw to fork of tail (#1 straight).

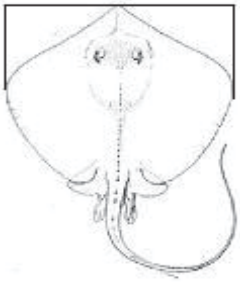

Figure 3. Skates and rays: Disc width. (Illustration modified from ACCSP, 2012.

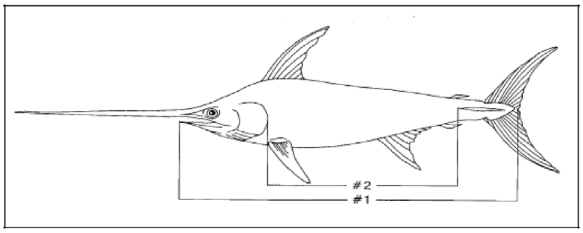

Figure 4. Swordfish measurements: Tip of lower jaw to fork of tail (#1 curved).

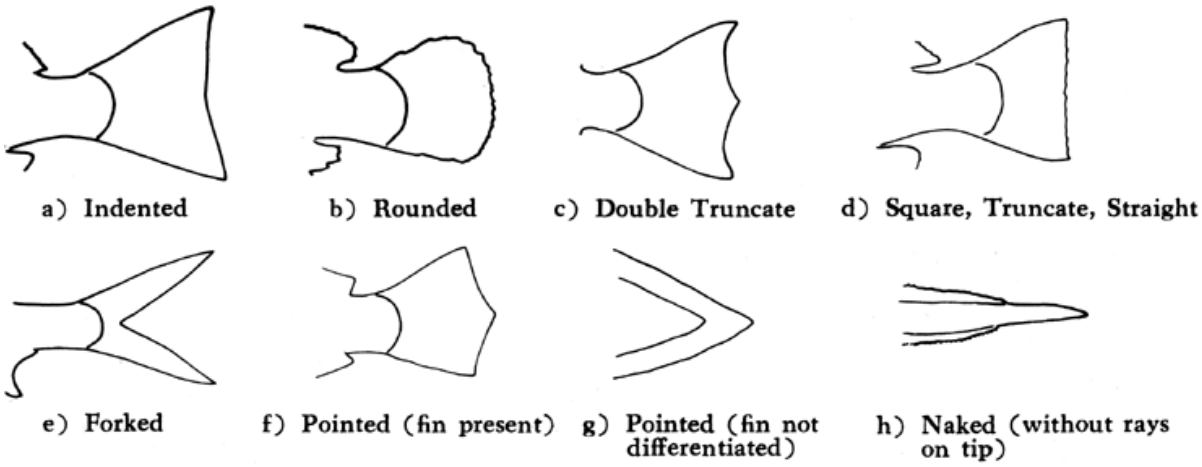

Figure 5. Different tail shapes. (Miller, 1976. Guide to the coastal marine fishes of California).

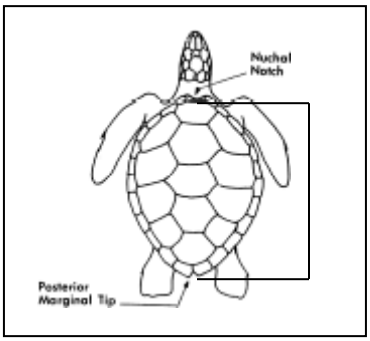

Figure 6. Turtle measurement: Notch to tip carapace length (curved).

Fork length should be estimated for all animals that are not brought on board (large dead discards, live releases etc.), damaged animals (estimate original size – not the size of the chunk), and those animals that are cut before a straight line measurement is taken. If bycatch species is dead and manageable, an observer should request that it be brought on board to get an actual measurement, biological sample and/or a better photo opportunity. Some observers find it easier to make estimates to the nearest foot and convert into centimeters. 1 foot = 30 cm.

1.2.5. Hazardous Marine Life

Due to the measurement requirements, observers will often have to make a safety decision when measuring live, potentially aggressive species. Inexperienced observers should avoid handling live sharks FL >100cm. With assistance from a vessel's crew, veteran observers should attempt to obtain straight line measurements on larger, live sharks. As with many situations at sea, the observer should use their best judgment. If the observer decides that an accurate measurement is not possible, then the fork length should be estimated.

Useful tips:

1. Small tiger sharks can bend around to bite their own tails. This is also true of small six and sevengill sharks.
2. Spiny dogfish have two spines and will easily put a spine in your hand if you do not secure head and tail at the same time.
3. Shark heads, once removed, will still have a bite reflex for some time.

1.2.6. Biological Sampling

All observers are required to collect biological samples; that may include shark vertebrae, gonads, DNA fin clips, and stomachs to maintain our shark life history study or other special sampling requests. Sampling should not be conducted unless proper equipment, training, protocols, and permits have been provided. Small specimens (>90cm FL) can be saved whole. On occasion, large whole specimens may be requested to be brought back to the dock. Once at the dock, the specimen can be broken down for shipping. The observer will have to plan ahead for disposal of the unused remains of the carcass (usually coordination with the vessel captain is necessary). Whole and large specimens should only be shipped with the coordinators' authorization. Refer to Section 10 for further information.

REVIEW BIOLOGICAL SAMPLING REQUIREMENTS EACH SEASON FOR CURRENT SAMPLING PROTOCOLS AND SAMPLE REQUESTS.

Whole specimens or parts should be placed in multiple Ziploc bags and stored on ice or kept frozen. **An inner waterproof sample label and barcode will be included with all biological samples collected.** Use a pencil to fill out the waterproof labels. Each sample should be labeled with the obs/trip ID, haul number, specimen number, species abbreviation, and tissue type (ex. vertebrae, gonad) for each specimen sampled. One unique barcode number is to be used for all samples taken from an individual animal. Barcodes are used to track samples and associated data across multiple forms and databases. Barcodes aid in reducing labelling and transcription errors, while increasing efficiency. Use barcodes on all samples taken, no matter the trip target, gear type, or location. Instructions for Barcode use are in Section 10.3. Combine the smaller bags and triple bag in larger plastic bags. Refer to Sections 10.1.1., and 10.2.3. for shipping protocol.

REVIEW SHIPPING PROTOCOL IN SAMPLING SECTION FOR PROPER SHIPPING METHODS

1.2.7. Tagging

1. *Tag Recaptures*

For a tag recapture animal, special biological sampling is required. All tag recapture fish are important. However, never sacrifice a live fish to recover a tag. If a tagged animal is brought on board and will be kept, record the tag number, species, length, sex, location of capture, and date. If it is a shark, a vertebrae, reproductive, stomach, and finclip sample is imperative since the animal may have been marked for age and growth studies. If the tagged animal will be released alive, place one of our tags alongside the previous tag and report both numbers.

2. *Tag Deployment (Amendment)*
If a healthy shark is captured and will be released, place a shark tag into the animal (as demonstrated in training) and record the species, estimated length, sex, location of release, and date on the data sheet. **BE SURE TO RECORD THE TAG NUMBER BEFORE RELEASE.**

Special instructions for tag deployment will be provided with satellite tags (Section 10.1.7.).

1.2.8. Incidental Take

Interactions with fishing gear by protected species (marine mammals, turtles, sawfish, sturgeon and seabirds) should not be confused with species sightings. Species Sightings may be seen near the fishing gear. Dolphins will often steal fish from gillnets or longlines. Sighting notes should be confined to the deck book or certain parts of the Haul logs.

Protected Species Interactions **MUST** be photographed to verify identification and gear involvement (e.g. how hooked and/or how entangled). Any live protected species is to be released from entrapment **by the crew** as quickly and with as little gear associated with the animal as possible. The observer should request the captain to bring any comatose or dead marine turtle encountered aboard, and follow procedures explained during the training sessions (resuscitation, measurements, tagging, etc.). See the **INCIDENTALS** section (Section 11) of themanual for datasheets, identification guides, and instructions. For any marine mammal and especially for large whales, contact your observer coordinator first and immediately. Your coordinator will then contact the Marine Mammal Emergency Stranding (ES) coordinator. The ES coordinator will instruct the captain and crew on what procedures to follow, if possible. The observer is to assist the crew in any way possible to accomplish the ES coordinator's request. Any live marine mammal is to be released from entrapment as quickly and with as little gear associated with the animal as possible, with the exception of large whale mammals (right whale, sperm whale, or humpback whale).

PHOTOS ARE A PRIORITY FOR ALL INCIDENTAL TAKE TO CONFIRM SPECIES IDENTIFICATION AND GEAR INVOLVEMENT.

1.2.9. Vessel Boarding

It is not uncommon for a fishing vessel to be boarded by NOAA Enforcement, US Coast Guard or State officials (in fact, it has happened more often in the Shark Research Fishery due to sandbar shark being prohibited). The observer should wait until approached by the boarding agent(s). This will likely happen after the vessel operator has spoken to the agent(s) and any firearms aboard have been surrendered/secured. The observer should then identify her/himself, using the letter provided from the program, if necessary. Observers will provide access to data collected when requested by any NMFS, Coast Guard, or state official. In the event data is provided to an official, the observer will contact the coordinator and document all materials turned over to the officer.

PROVIDE COPIES OF DATA RATHER THAN ORIGINALS TO OFFICIALS

1.2.10. Vessel Coverage

These are the **minimum** requirements for completing a trip with a vessel. Things can change based on fishermen's habits and needs by the observer coordinators. The research fishery is not listed here because of different requirements placed on vessels in this fishery.

Contact your coordinator before you leave from a vessel to make sure that coverage is complete.

Gillnet- Three (3-6) fishing days.
Shark BLL- Three (3) fishing days with complete set and haul backs.
Vertical line reef fish- Six (6) fishing days.

1.3. Safety

Observers will carry a PFD and an immersion suit with attached signals (strobe, whistle, signal mirror and EPIRB) during each deployment. In addition, observers are provided with an individual first aid kit, paraffin wax for zipper maintenance, and a Personnel Marker Light (PML) to attach to their rain jacket or Personal Flotation Device (PFD).

Observers will complete a Pre-Trip Safety Check form with the owner/operator or designated crew member.

IT IS THE POLICY OF THIS PROGRAM THAT THE OBSERVER HAS THE RIGHT TO REFUSE ANY TRIP FOR DOCUMENTED SAFETY OR HEALTH CONCERNS.

Documentation for trip-refusal **must** include a Pre-Trip Safety Check, and a written statement by the observer. Observers will obey safe working practices aboard the vessel and avoid actions that would expose themselves or the vessel crew to undue risk.

In an emergency situation at sea, the authority/responsibility remains with the captain. He should contact the Coast Guard and they will determine the course of action. However, in any shipboard emergency, the observer will contact the coordinator to report that you have an emergency and update your status.

In order to increase program risk awareness and provide better training to all observers we are asking observers to report all injuries as well as close calls to the coordinator during debriefing. This information will not be vessel based, rather summarized by hazard type and/or injury type. If medical treatment is required observers must also report to his/her employer for proper documentation of the incident and to receive medical coverage. This should also be documented in a field diary entry. Include the date, time, and details on type of injury, contributing factors and treatment (e.g. slipped on back deck, hydraulic leak, bruised knee, applied ice day 1, no further treatment required).

For further information, refer to the safety manual, Section 3.

1.4. Communications

Observers will fill out the appropriate forms that are provided by the contractor, and call or text their coordinator as they leave from home, when they arrive in port,when they leave on their trip, when they return from sea, when they leave port to return home, when they arrive home and when data, samples, or other supplies are shipped.

IF YOU CAN'T REMEMBER IF YOU CONTACTED YOUR COORDINATOR, CALL OR TEXT YOUR COORDINATOR

At sea, observers will make contact with their coordinator once a day by cell phone, InReach Satellite Device, or radio to report their work status and ships' position. The many trips covered are short(<3 days), so offshore communication on day trips may only be necessary should a problem arise. More information of Satellite Communication can be found in Section 1.9.

Communication **is necessary** for the following:

1) To provide a last known position for safety. This can be given in Lat/Lon or as a geographic location.
2) Report work status (see status codes)
3) Confirm collection and or sampling protocol
4) Alert the lab to an emergency or request assistance
5) Report work hours, when necessary
6) Report a marine mammal incidental take

Please limit your use of vessel equipment and always conduct yourself professionally. Be aware that anybody can be listening to your transmissions. References to catch should **always** be relayed in species codes. During all cell phone and radio contacts, the lab will ask about your working status. Please use one of the following codes to report your work status:

Code 1 = I'm OK, Work OK
Code 2 = I may not be OK, Work not OK
Code 3 = I'm not OK, Work not OK

In **Code 1**, no immediate action will be taken by the lab. Specific problems, if any will be addressed during the debriefing**.**

Daily check-ins required on multi day trips including location.

Code 2 denotes a serious situation aboard the vessel. All events will need to be documented and enforcement may be included in the debriefing process.

Twice a day check-ins required including updates on situation and location.

Code 3 denotes that an observer has suffered an assault or otherwise feels that they may be in jeopardy. In this instance, steps will be taken to involve NOAA Enforcement and the United States Coast Guard. An evacuation will be arranged or the vessel will be asked to return to port. Communication will be maintained until the observer is off the vessel.

Once an hour check-ins required with status updates, location, and information to relay to OLE and USCG.

Upon landing, observers will contact the office, discuss post trip details and determine if an observer should remain on site for a debriefing.

Staff contact:

OBS COORDINATOR – Alyssa Mathers Office: 850-270-6014
Cell: 850-890-3853
Email: Alyssa.Mathers@noaa.gov

OBS COORDINATOR- Bradley Smith Office: 850-270-7509
Cell: 850-381-1695
Email: Bradley.Smith@noaa.gov

ASST COORDINATOR – Samantha Faller Office: 850-312-8933
Cell: 850-348-3176
Email: Samantha.Faller@noaa.gov

ASST COORDINATOR- Dana Jordan Office: 850-270-8315
Cell: 850-866-5297
Email: Dana.Jordan@noaa.gov

OBS CHIEF – Scott Leach Cell: 786-822-0509
Email: Scott.leach@noaa.gov

AIS TASK ORDER MANAGER- Jade Heidt Cell: 774-392-3794
Email: Jadeh@aisobservers.com

1.5. Equipment Checklist

The observer will be provided with all field equipment necessary to meet the needs of the project, including foul weather gear and boots. An equipment checklist (following) will be signed by the observer upon checkout and then by the coordinator upon check in.

The following additional personal items are suggested:

Sunglasses
Sunscreen
Hat
Personal toiletries
Towel(s)
Deck shoes (close-toed, i.e. slippers, sneakers)
Candy, books, IPod etc.
Bedding (sleeping bag, pillow, bed sheet)
Clothing appropriate for weather conditions
Personal survival kit

Additionally, observers are responsible for quarterly gear checks, done via google forms (section 1.7.) to make sure all issued equipment is in proper working order. Observers are also responsible for requesting refills on gear and paperwork via the supplies requested form section (1.6.)

Observer

OBSERVER	

SAFETY SUPPLIES	**Check Out**	**Check In**
SURVIVAL SUIT	Number-	Number-
DUFFEL BAG		
SLEEPING MAT		
DYE MARKER		
EPIRB	Number-	Number-
PFD (HORSE COLLAR)	Number-	Number-
PFD (FANNY PACK) - optional	Number-	Number-
PFD REARMING KIT		
PML		
SAFETY KNIFE		
SIGNAL MIRROR		
STROBE (2)		
WAX		
WHISTLE (2)		
INREACH	Number-	Number-

TURTLE/MAMMAL SUPPLIES	**Check Out**	**Check In**
TURTLE BIOPSY KIT, DRY BAG:		
BAND TAGS (50)		
BAND APPLICATOR		
IODINE WIPES (10)		
PUNCHES (10)		
PIT TAG SCANNER	Number-	Number-
PIT TAG APPLICATOR	Number-	Number-
PIT TAGS (10)		
SPRAY PAINT (fluorescent)		
DIVE SLATE		
MAMMAL BIOPSY KIT, including:	--	--
LARGE ZIPLOCS (10)		
SMALL ZIPLOCS (10)		
SMALL SAMPLE ZIPLOCS (10)		
LARGE BODY BAG (1)		
LATEX/NON-LATEX GLOVES		
WORK SLATE		
ZIPTIES (10)		
SAMPLE TAGS (25)		
DIGITAL THERMOMETER		
TAPE MEASURE (10FT)		

GENERAL SUPPLIES	Check Out	Check In
PELICAN CASE	Number-	Number-
BATTERIES (AA, AAA) (8 EA)		
BASKETS (2)		
BOOTS	Size-	Size-
CARBON MONOXIDE ALARM		
CLIPBOARD		
COUNTER (2)		
DIGITAL CAMERA/MEMORY CARD	CD# -	CD#-
DIGITAL CAMERA CASE	KIT #	KIT #
FIELD GUIDE TO FISHING SAFETY		
FIELD GUIDE TO COASTAL FISHES		
FIELD GUIDE TO MARINE MAMMALS		
FIELD GUIDE TO SHARKS		
FIELD GUIDE TO BEACHED BIRDS		
FIELD LOG (2)		
FLASHLIGHT		
FOUL WEATHER GEAR - Jacket	Size-	Size-
FOUL WEATHER GEAR - Pants	Size-	Size-
GLOVES (Atlas brand and orange, 2 pair)	Size-	Size-
GPS HANDHELD	Number-	Number-
KNIFE (pocket)		
KNIFE (large serrated/small serrated/filet)		
KNIFE (slime)		
KNIFE SHARPENER		
METER STICK (folded)		
PENCILS - Mechanical (3)		
PENCILS - Grease (2)		
LITHIUM BATTERIES-STROBE (AA) (4)		
3 IN 1 MULTI-PURPOSE OIL		
RUBBER BANDS		
SAMPLE LABELS (50)		
SAFETY GLASSES		
SCALES (10KG AND 50KG)		
SCOTCH TAPE		
SCREW DRIVER KIT		
SHARPIE-FINE (2)		
SHARPIE-ULTRA FINE (2)		
TAGGER AND M-TAGS (25)		
THERMOMETER (Water)		
VIALS for fin clips (25)		
ZIP-TIES		
ZIPLOCS (gallon, 2 gallon, quart, XL)		

OTOLITH AND GONAD SAMPLING KIT	Check Out	Check In
5-GALLON BUCKET		
TACKLE BOX	Number-	Number-
OTOLITH ENVELOPES (50)		
QUART ZIPLOC BAGS (10)		
GONAD LABELS (50)		
GONAD HAUL LABELS (50)		
10% BUFFERED FORMALIN VIALS (50)		
CHISELS (MEDIUM, LARGE)		
KNIFE (bait)		
FORCEPS		
GONAD SCALE		
GAFF		

FIRST AID KIT	Check Out	Check In
ALCOHOL WIPES (10)		
ASPIRIN (10)		
ADVIL (10)		
BABY WIPES		
BANDAGES		
BENADRYL (10)		
CPR FACE SHIELD		
DRAMAMINE (10)		
EARPLUGS (6)		
FINGERNAIL BRUSH		
GAUZE		
HYDROCORTIZONE CREAM (10)		
IODINE WIPES (10)		
INSTANT COLD PACK		
MEDICAL TAPE		
PEPTO BISMAL (10)		
STING RELIEF (10)		
TRIPLE ANTIBIOTIC OINTMENT (10)		
TYLENOL (10)		
WARMING BLANKET		
HIBICLENS		
PURELL WIPES (10)		

PERSONAL PROTECTION EQUIPMENT KIT	Check Out	Check In
THERMOMETER (ELECTROIC)		
ANTIBACTERIAL SOAP (4)		
HAND SANATIZER (2)		
FACE MASK (6 CLOTH)		
LATEX/ NON-LATEX GLOVES		
ANTIBACTERIAL WET WIPES		
SURFACE WIPES		

Upon signing the gear check off form, the gear issued to you is your responsibility. You will be responsible for keeping this gear in a safe place and will be responsible for any lost items. Also any gear that is damaged by neglect or improper usage will be your responsibility. Any lost or damaged gear needs to be reported to the lab immediately. The staff will determine on a case-by-case basis whether the item was damaged due to negligence or misuse. Some tips on gear maintenance are as follows,

1. Attempt to keep all items in a dry place and if they do get wet make sure to dry everything thoroughly. Periodically inspect all containers for moisture.
2. Use extreme care with all electronic devices (satellite phone, camera, etc.) while deployed offshore, these items do not tolerate abuse.
3. Use common sense when around the docks and keep an eye on gear at all times.
4. Always double check a vessel after a trip before departing for any items left onboard.
5. After a deployment all gear should be inspected and cleaned immediately upon return after the trip.
6. When employment ends it is your responsibility to return all items to the lab in a clean and timely manner. If items are not clean when returned, you will be a charged a cleaning fee for those items.

Your signature below signifies that you have read and understand these standards and policies. Failure to comply with these policies could result in monetary penalties.

Check Out:

Observer:_____ Date: _____

Coordinator:_____ Date: _____

Check In:

Observer:_____ Date: _____

Coordinator:_____ Date: _____

Equipment Checklist

Observer:_____.

Electronics

	CHECK OUT	CHECK IN
Digital Camera	CD#	CD#
Digital Camera- Memory Card		
EPIRB	#	#
GPS Handheld	CD#	CD#
Inreaches	CD#	CD#
Pit Tag Scanner	CD#	CD#
Tablet	CD#	CD#

Expendable Supplies

3 in 1 Multi-Purpose Oil		
Alcohol Wipes		
Advil		
Anti-Bacterial Wet Wipes		
Aspirin		
Baby Wipes		
Bandages		
Barcodes		
Batteries AA		
Batteries AAA		
Batteries Lithium AA		
Benadryl		
CPR Face Shield		
Dramamine		
Earplugs		
Fin clip vials lids- Shark		
Fin clip vials- Shark		
Fingernail Brush		
Formalin Vials		
Gauze		
Gloves- Blue (SIZE)		
Gloves- Orange (SIZE)		
Hand Sanatizer		
Hibiclens		

Equipment Checklist

Hydrocortisone Cream		
Instant Cold Pack		
Iodine Wipes		
Large Body Bag (trash bags)		
Latex Gloves (SIZE)		
Medical Tape		
MM Kit- Sample Tags		
M-tags		
Otolith Envelopes		
Paper Clips		
Pencils- Eraser Refill		
Pencils- Grease		
Pencils- Lead Refill		
Pencils- Mechanical		
Pepto Bismol		
PFD- Rearming Kit		
Pigmat		
Puppy Pads		
Purell Wipes		
Rubber Bands		
Safety Kit- Wax		
Sample Tag- Shark		
Sample Tag- Teleost Gonad		
Sample Tag- Teleost Haul		
Scotch Tape -Double		
Scotch Tape -Reg		
Sharpie- Fine		
Sharpie- Ultra Fine		
Shipping Boxes for Buckets		
Sting Relief		
Teleost Kit- Bleach wipes		
Toe Tags		
Triple Antibiotic Ointment		
Turtle Kit- Band Tags		

Equipment Checklist

Turtle Kit- Biopsy Punches		
Turtle Kit- Flagging Tape		
Turtle Kit- NaCl Vials		
Turtle Kit- Pit Tags		
Turtle Kit- Spray Paint- Fluorescent		
Tylenol		
Warming Blanket		
Write-in-the-Rain Notebooks/Field Log		
Ziplocs- Dime		
Ziplocs- Gallon		
Ziplocs- Quart		
Ziplocs- Two Gallon		
Zipties- Large		

Non-expendable Supplies

Baskets		
Bucket (w/ Red Lids)		
Bucket Topper (Teleost Sample Supplies Case)		
Calipers		
Digital Camera- Case		
Duffel Bag		
Hand Gafts		
Knife (Filet)		
Knife (Large Serrated)		
Knife (Pocket)		
Knife (Safety)		
Knife (Slime)		
Knife (Small bait)		
Knife (Small Serrated)		
Knife Sharpener (Plastic)		
Knife Sharpener (Stone)		
MM Kit- Digital Thermometer		
MM Kit- Ruler Thing		
MM Kit- Work Slate		
M-Tag Hand Tagger		

Equipment Checklist

M-tags Pole Tagger		
Otolith Organizer		
Pelican Case		
PFD- Horse Collar		
Ruler Boards		
Safety Kit- Carbon Monoxide Alarm		
Safety Kit- Mirror		
Safety Kit- Strobe- Round Style		
Safety Kit- Strobe- Square Style		
Salter Scale- 10KG		
Salter Scale- 50KG		
Screwdriver Kit		
Sleeping Mat		
Survival Suit	#	#
Teleost Kit- Chisels		
Teleost Kit- Forceps		
Teleost Kit- Gonad Scales		
Teleost Kit- Shears for teleost finclips		
Turtle Kit- Band Applicator		
Turtle Kit- Dive Slate		
Turtle Kit- Pit Tag Applicator		
Turtle Kit- Tape Measure- 5ft		
Waterproof Bag- Pit Tag Scanner Bag		
Waterproof Roll Bags- First Aid		
Waterproof Roll Bags- Scales		
Waterproof Roll Bags- Turtle Biopsy Kit/ MM Kit		

Supplies

Clipboard		
Counters		
Field Guide To Beached Birds		
Field Guide To Coastal Fishes		
Field Guide To Fishing Safety		
Field Guide To Marine Mammals		
Field Guide To Sharks		

Equipment Checklist

Filling Folder		
Flashlight		
Flashlight- Headlamp		
Foul Weather Gear- Boots		
Foul Weather Gear- Jacket		
Foul Weather Gear- Pants		
Meter Stick (Folded)		
M-Tag Hand Tagger Tip		
M-tags Pole Tagger Sat Tag Tip		
M-tags Pole Tagger Tip		
Safety Glasses (Clear/UV Protection)		
Safety Kit- Dye Marker		
Safety Kit- PML Signal		
Safety Kit- Whistle		
Salter Scale Hooks/Carabiners		
Tape Measure- 10ft		
Thermometer (Water Temperature/Glass)		

Upon signing the gear check off form, the gear issued to you is your responsibility. You will be responsible for keeping this gear in a safe place and will be responsible for any lost items. Also any gear that is damaged by neglect or improper usage will be your responsibility. Any lost or damaged gear needs to be reported to the lab immediately. The staff will determine on a case-by-case basis whether the item was damaged due to negligence or misuse. Some tips on gear maintenance are as follows,

1. Attempt to keep all items in a dry place and if they do get wet make sure to dry everything thoroughly. Periodically inspect all containers for moisture.
2. Use extreme care with all electronic devices (satellite phone, camera, etc.) while deployed offshore, these items do not tolerate abuse.
3. Use common sense when around the docks and keep an eye on gear at all times.
4. Always double check a vessel after a trip before departing for any items left onboard.
5. After a deployment all gear should be inspected and cleaned immediately upon return after the trip.
6. When employment ends it is your responsibility to return all items to the lab in a clean and timely manner. If items are not clean when returned, you will be a charged a cleaning fee for those items.

Your signature below signifies that you have read and understand these standards and policies. Failure to comply with these policies could result in monetary penalties.

Check Out:

Observer:_____. Date:_____.

Coordinator:_____. Date:_____.

Check In:

Observer:_____. Date:_____.

Coordinator:_____. Date:_____.

Observer Supplies Request			
Name:		**Date:**	
Item	Need (Check mark/size)	Amount Have	Fulfilled
Barcodes			
Write-in-the-rain Notebook			
Gonad Vials (Formalin Vials)			
Otolith Envelopes			
Sample Tags-Gonad			
Sample Tags-Haul			
Toe Tags			
Zipties- Small			
Sample Tags-Shark			
Shark Fin Clips Vials			
Tags- M-tags			
Trash/Body Bag- Large			
Iodine Wipes for Turtle Kit			
Sample Tags-MM Kit			
Turtle Kit- Band Tags			
Turtle Kit- Biopsy Punches			
Turtle Kit- Flagging Tape			
Turtle Kit- NaCl Vials			
Turtle Kit- Pit Tags			
Turtle Kit- Spray Paint- Fluorescent			
PW-BLL and VL Trip Summary			
PW-BLL Gear Log			
PW-BLL Haul Log			
PW-Buoy Fishing Gear Log			
PW-Buoy Fishing Haul Log			
PW-Buoy Fishing Animal Log			
PW-Gillnet Catch Log			
PW-Gillnet Gear Log			
PW-Gillnet Haul Log			
PW-Gillnet Sample Log			
PW-Gillnet Trip Summary			
PW-Marine Mammal Bio Sample Log			
PW-Marine Mammal Inc Take Log			
PW-Marpol Violation Form			
PW-OLE Violation Form			
PW-Protected Resorces Capture Report			
PW-Safety Check (specify paper type)			
paper type)			
PW-Shark Animal Log			
PW-Spearfishing Gear Log			
PW-Spearfishing Haul Log			
PW-Spearfishing Animal Log			
PW-Teleost Animal Log			
PW-Turtle Life History Form			

PW-Vessel Reminbursment Form			
PW-VL Gear Log			
PW-VL Haul Log			
3 in 1 Multi-Purpose Oil			
Batteries AA			
Batteries AAA			
Lights)			
Gloves- Blue (Specify Size)			
Gloves- Disposible/Latex (Specify Size)			
Gloves- Orange (Specify Size)			
Paper Clips			
Pencils- Eraser Refill			
Pencils- Grease			
Pencils- Lead Refill			
Pencils- Mechanical			
Rubber Bands			
Sided)			
Sharpie- Fine			
Sharpie- Ultra Fine			
Ziplocs- 2 Gallon			
Ziplocs- Gallon			
Ziplocs- Quart			
Ziplocs-Dime Bags (Fin Clip Bags)			
Zipties- large			
Zipper Wax			
Advil			
Alcohol Wipes			
Antibacterial Hand Wipes (Wet Wipes)			
Aspirin			
Baby Wipes			
Bandages			
Benadryl			
Cpr Face Shield			
Dramamine			
Earplugs			
Fingernail Brush			
Gauze			
Hand Sanitizer			
Hibiclens			
Hydrocortizone Cream			
Instant Cold Pack			
Iodine Wipes			
Medical Tape			
Pepto Bismal			
Sting Relief			
Surface Wipes			
Triple Antibiotic Ointment			
Tylenol			

Warming Blanket			
Other			

Quarterly Observer Gear Inspection

SEFOP- Panama City

The respondent's email (**null**) was recorded on submission of this form.

* Required

1. Email *

2. Today's Date *

Example: January 7, 2019

3. Survival suit # (record number on inside of suit): *

4. Overall survival suit inspection (seams, tape, air bladder/hose, repacked with alternate folds)? *

1	2	3	4	5
Needs Replacement: • Possible rips, tears, punctures, or burns. Seams may not be intact and are worn. • Reflective tape is all yellow and has peeling or missing pieces. • Zipper is not in good working condition, does not zip easily, is discolored, and has wax build up. • The suit feels stiff and thin. Suit smells like fuel, oil, mold, or mildew. • Hose and air bladder are not in good condition and there may be a space between them. Air bladder does not hold firmness and air at least overnight.	Needs repair: • No rips, tears, punctures, or burns. All seams are intact but may be in worn condition. • Reflective tape is yellowing but intact and has some peeling or missing pieces. • Zipper is in good working condition; always zips, but maybe with some effort; may be discolored, may have some wax build up. • The suit feels mostly flexible and thick. Suit may smell like fuel, oil, mold, or mildew. • Hose and air bladder are in good condition. Air bladder holds firmness and air at least overnight.	In usable condition: • No rips, tears, punctures, or burns. All seams are intact and in good condition. • Reflective tape is mostly shiny and intact and has some peeling corners. • Zipper is in good working condition, zips easily, and is mostly not discolored; may have some wax build up. • The suit feels flexible and thick. Suit may smell like fuel, oil, mold, or mildew. • Hose and air bladder are in good condition. Air bladder holds firmness and air at least overnight.	In good condition: • No rips, tears, punctures, or burns. All seams are intact and in good condition. • Reflective tape is shiny and intact, but may have peeling corners. • Zipper is in good working condition, zips easily, and is not discolored; may have some wax build up. • The suit feels flexible and thick. Suit does not smell like fuel, oil, mold, or mildew. • Hose and air bladder are in good condition. Air bladder holds firmness and air at least overnight.	Like New: • No rips, tears, punctures, or burns. All seams are intact and in good condition. • Reflective tape is shiny and intact with no peeling. • Zipper is in good working condition, zips easily and is not discolored. • The suit feels flexible and thick. Suit does not smell like fuel, oil, mold, or mildew. • Hose and air bladder are in good condition. Air bladder holds firmness and air at least overnight.

Mark only one oval.

	1	2	3	4	5	
Needs Replacement	◯	◯	◯	◯	◯	Like New

5. If survival suit condition is scored as 3 or less, explain:

6. Zipper waxed? *

Mark only one oval.

- Yes
- No

7. Strobe/batteries checked? In working order? *

Mark only one oval.

- Yes
- No

8. PML expiration date: *

_____

Example: January 7, 2019

9. Mirror & whistle checked? *

Mark only one oval.

- Yes
- No

10. EPIRB registration #: *

_____

11. EPIRB tested monthly and in working order? *

Mark only one oval.

- Yes
- No

12. EPIRB decal expiration: *

Example: January 7, 2019

13. EPIRB battery expiration: *

Example: January 7, 2019

14. PFD Lot #: *

15. PFD hydro expiration date: *

Example: January 7, 2019

16. PFD rearming kit expiration date: *

Example: January 7, 2019

17. Overall PFD Inspection: *

1	2	3	4	5
Needs Replacement: • Obvious damage and wear or tears to fabric covering on the air bladder with possible punctures. • Stains and dampness that seems to not dry; may have a musty smell. • When manually inflated, there are bubbles when submerged in water, and does not hold firmness and/or air. • The CO_2 cylinder is not in the green or does have a puncture. Cylinder is pitted, corroded, or dented.	Needs Repair Soon: • Obvious damage and wear or tears to fabric covering and wear and tear on the air bladder but no punctures. • Stains and dampness that seems to not dry; may have a musty smell. • When manually inflated, there are no bubbles when submerged in water, and holds firmness and air at least overnight. • The CO_2 cylinder is in the green and does not have any punctures, but may have a dent. Cylinder with wear or tear.	In useable condition: • Damage and wear or tears to fabric covering but none on the air bladder. • Stains and dampness that dries within a few days. • When manually inflated, there are no bubbles when submerged in water, and holds firmness and air at least overnight. • The CO_2 cylinder is in the green and does not have any punctures, but may have a dent. Cylinder with wear or tear.	In Good Condition: • Little damage, some wear or tears to fabric covering but none on the air bladder. • Some stains and no dampness. • When manually inflated, there are no bubbles when submerged in water, and holds firmness and air at least overnight. • The CO_2 cylinder is in the green and does not have any punctures or dents. Cylinder may have some wear or tear.	Like New: • No damage, wear, or tears to fabric covering or air bladder. • No stains or dampness. • When manually inflated, there are no bubbles when submerged in water and holds firmness and air at least overnight. • The CO_2 cylinder is in the green and does not have any punctures or dents.

Mark only one oval.

	1	2	3	4	5	
Needs Replacement	◯	◯	◯	◯	◯	Like New

18. If PFD condition is scored as 3 or less, explain:

19. Pit tag scanner serial #: *

20. Pit tag scanner in working order? *

Mark only one oval.

- ◯ Yes
- ◯ No

21. First Aid items all in date? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Other: _____

22. Other first aid items fully stocked, clean, and dry? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Other: _____

23. Hibiclens/Hibistat/Purell in date and fully stocked? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Other: _____

24. Filled out a supplies request form this quarter? *

Mark only one oval.

- Yes
- No
- Other: _____

25. Submitted a photo of CD Number and Serial Number of both Camera and InReach?

Mark only one oval.

- Yes
- No
- Other: _____

26. Notes, other items needing attention, additional comments:

_____

_____

_____

_____

_____

27. Verify Electronic Signature *

_____

Fisherman Feedback Form

The information on this form will be used by the NOAA Fisheries Panama City Observer Programs to evaluate how well the observers are performing their duties and to serve as a line of communication between the fishermen and the Observer Program.

Observers are asked to leave a copy of this comment card with the vessel after the completion of a trip. Please fill out this form after each trip that you have been covered by an observer from the Panama City Observer Program. This form can be filled out by the captain or owner of the vessel.

Please provide us with some feedback or request more information about the observer program by calling, emailing, or sending this form back to:

Alyssa Mathers, Observer Coordinator
NOAA Fisheries
3500 Delwood Beach Rd
Panama City, FL 32408-7403
Phone: (850) 234-6541 ext. 226; Fax: (850) 235-3559
Alyssa.Mathers@noaa.gov

Help develop a program that will work better for you. We appreciate your feedback.

Thank you,
Alyssa Mathers, Observer Coordinator, Panama City Observer Programs

---

Vessel Name _____ **Captain or Owner Name** _____

Landing Date (mm/dd/yy) _____ **Port** (City, State) _____

Please check the Yes or No box for each question:	**Yes**	**No**
1) Where the logistics in setting up the trip acceptable?	☐	☐
2) Was the observer on time and prepared for the trip?	☐	☐
3) Did the observer review the safety checklist with you?	☐	☐
4) Was the observer courteous and polite and get along with the crew?	☐	☐
5) Did the observer record the positions (lat/lon) for all the hauls?	☐	☐
6) Did the observer explain their sampling requirements and protocols?	☐	☐
7) Did the observer take length measurements of fish caught?	☐	☐
8) Did the observer take catch information from the work deck?	☐	☐
9) Did the observer identify fish species correctly?	☐	☐

10) Did you have any other concerns regarding the observer or observing procedures, or safety issues during the trip? ☐ ☐

If yes, please explain in comments below:

_____
_____
_____
_____

_____

Would you like more information from the observer program?

☐ Copy of this trips logs
☐ Vessel Reimbursement Form with Instructions
☐ More information about observers and observer programs
☐ Copy of current fishing regulations
☐ List of Coast Guard vessel inspectors by area
☐ Copy of current selection letter

If you requested information above, please indicate your preferred method of delivery and leave the appropriate contact information:

☐ Phone _____
☐ Fax _____
☐ Email _____
☐ Mail _____

To verify that this form was filled out by the appropriate captain/owner, please sign the line below.

Captain or Owner Signature: _____

_____

INSTRUCTIONS FOR INREACH PHONE USE

Every observer will be issued an InReach Satellite phone. It is the responsibility of the observer to take care of and know how to use the InReach.

Enclosed in case:

InReach Satellite Phone
Wall Charger and Cord
Quick Start Guide
Mounting Bracket
Float Strap

Instructions:

How to turn on phone:

1) Press and hold the power button on the top.
2) Place/Hold device in open area with a clear view of the sky.
3) Wait for signal.

How to communicate/pair with mobile device:

1) Download App "Earthmate"
2) Turn on mobile devices Bluetooth
3) Turn on InReach Bluetooth; Setup>Bluetooth>pair device.
4) Follow in App instructions.

How to initiate SOS

1) Lift protective cover on right side of device.
2) Hold SOS button.
3) Wait for SOS count down.
4) Reply to the confirmation message that EmergencyService needed.
5) To Cancel, Hold SOS button.
6) Select Yes, when prompted.

Rules:

1) Use InReach sparingly, but text coordinators once a day with no exceptions.
2) Turn on and check messages once a day around mid-day or before 1700. Otherwise, keep the phone off.
3) Personal usage within reason is allowed (10 texts per 5 seadays). We will monitor minutes.*Be aware that coordinators can see all messages sent and received*
4) **DO NOT** lose, damage or drop in saltwater. The phones are expensive and you will be liable for replacement.
5) Abuse of the rules stated will result in loss of InReach personal phone privileges.

1.10. Beaufort Wind Force Scale

The Beaufort wind force scale was created by Rear-Admiral, Sir Francis Beaufort, around 1805 when he was a captain in the Royal Navy. The scale was designed to gauge wind speed using observations of the winds effects on a sailing ship and other objects when one was without the benefit of expensive equipment.

Force	Wind Speed			WMO	Wind Speed Indicators	
	MPH	Knots	Km/H	Descrip-tion	At Sea	On Land
0	<1	<1	<3	Calm	Ripples with appearance of scales; no foam crests	Smoke drift indicates wind direction; vanes do not move
1	1-3	1-3	1-5	Light Air	Small wavelets; crests of glassy appearance	Wind felt on face; leaves rustle; vanes begin to move
2	4-7	4-6	6-11	Light Breeze	Small wavelets; crests of glassy appearance	Wind felt on face; leaves rustle; vanes begin to move
3	8-12	7-10	12-29	Gentle Breeze	Large wavelets; crests begin to break, scattered whitecaps	Leaves & small twigs in motion; light flags extended
4	13-18	11-16	20-29	Moderate Breeze	1-4 ft. waves; numerous whitecaps	Leaves, & loose paper raised up; flags flap; small branches move.
5	19-24	17-21	30-38	Fresh Breeze	4-8 ft waves; many whitecaps; some spray	Small trees begin to sway; flags flap & ripple
6	25-31	22-27	39-50	Strong Breeze	8-13 ft waves forming white caps everywhere; more spray	Large branches in motion; whistling heard in wires
7	32-38	28-33	51-61	Near Gale	13-20 ft. waves; white foam blows in streaks	Whole trees in motion; resistance felt in walking against wind
8	39-46	34-40	62-74	Gale	13-20 ft. waves; edges of crests begin to break; foam in streaks	Whole trees in motion; resistance felt in walking against wind
9	47-54	41-47	75-86	Strong Gale	20 ft. waves; sea begins to roll; dense streaks of foam; spray may affect visibility	Slight structural damage occurs; shingles blow from roofs
10	55-63	48-55	87-101	Storm	20-30 ft. waves; white churning sea; rolling is heavy; reduced visibility	Trees broken or uprooted; considerable structural damage occurs
11	64-74	56-63	102-120	Violent Storm	30-45 ft. waves; white foam patches; visibility affected	Widespread damage to trees & buildings
12	75+	64+	120+	Hurricane	45 ft.+ waves; white sea; driving spray; visibility seriously affected	Severe & extensive damage

Reporting Protocol for NMFS Southeast Observer Programs to NOAA Office of Law Enforcement

June 2021

Table of Contents

The National Marine Fisheries Service (NMFS) Southeast Observer Programs and National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement (OLE) Southeast Enforcement Division (SED) established guidelines for referrals of potential violations observed during the course of their assignments. All potential violations are to be documented and the records maintained by the NMFS Southeast Observer Programs. The information provided may be used to initiate further investigations. The following protocol is a modification from *Guidance for Referral of Potential Observer Violations to NOAA OLE Southeast Division, 2013*.

All potential observed violations are to be documented utilizing a NMFS Southeast Observer Incident Report and forwarded to NOAA OLE SED for review. Potential violations are defined by severity and summarized into eight (8) overall categories and three (3) severity levels defined below.

Level of Severity

Potential violations are to be designated, dependent upon the circumstances, within the following three (3) levels of severity:

- High - An issue of significant importance requiring a NOAA OLE review to determine an appropriate enforcement response.
- Medium - An issue of moderate importance which NOAA OLE may review to determine an appropriate enforcement response.
- Low - An issue where an appropriate resolution may be achieved through outreach, and/or voluntary compliance. NOAA OLE may review low level violations which occur on a repeated basis to determine an appropriate enforcement response.

Categories

Examples are provided for each category for reference, however this should not be considered an exhaustive list.

1. **Observer Emergency/Personal Safety - Any and all incidents involving assault, harassment, intimidation, obstruction, or threats; REPORTED IMMEDIATELY**
2. Observer Environment Safety Conditions - Grounding of a vessel or unsafe vessel conditions;
3. Observer Coverage - Observer Program Staff will report compliance;
4. Gear Issues - Use of illegal hooks, or TED/BRD requirements;
5. Species Handling - Shark finning;
6. Species Retention - Prohibited species or possession during closed seasons;
7. Spatial Violations - Fishing in a closed area;
8. MARPOL - Oil discharge or trash dumping.

Reporting

Southeast Observers will be required to record any potential violations by completing the Southeast Fisheries Observer Incident Report. The information will be entered into a shared Google Drive violation spreadsheet viewable by Observer Program and NOAA OLE staff. **All related Observer Personal Safety Emergencies are to be reported to the designated NOAA OLE Special Agent immediately, per the following instructions in Appendix A.**

Non-emergency incidents are to be recorded in the shared violation spreadsheet. The Southeast Observer Incident Report will be reviewed by the designated Southeast Observer Program staff during the required debriefing and the assigned designee will assess the level of violation.

An incident report should be completed for each observed trip. Observer personnel are expected to document all potential violations at the time of the occurrence. If an observer is unsure if a violation has occurred, they should report the action and the Observer Program Staff will consult with NOAA OLE SED or the USCG as applicable to determine if a violation has occurred. Upon review of the report, if violations are determined to have occurred however were not identified as such, a supplemental report will be requested.

The Southeast Observer Incident Report will be reviewed by the designated Southeast Observer Program staff during the required debriefing and the assigned designee will assess the level of violation and follow the guidelines listed.

If the violation is determined to be within the framework for a **high and/or medium level non-emergency violations:**

- Observer program staff will enter the appropriate information into the shared reporting violation spreadsheet. For all sensitive information and PII, only the general category should be entered.
- Observer program staff will upload the incident reports into the secure shared drive and notify NOAA OLE SED that the file(s) have been placed under the appropriate folder within one (1) week after the debriefing has been completed.

The original incident report should be shipped via trackable mail (UPS/FedEX, USPS), to the designated NOAA OLE liaison, as the reports are processed within the observer offices.

Mailing Address:
NOAA Office of Law Enforcement
Southeast Enforcement Division
263 13th Ave South, Suite 109
St. Petersburg, FL 33701
ATTN: Matt Walia

If the violation is determined to be within the framework for a **low level violation**, the designated Southeast Observer Program staff will maintain the appropriate documentation within their offices. Upon reporting low level violations into the shared violation spreadsheet, NOAA OLE SED will evaluate multiple entries for the same vessel/individual on a case by case basis and elevate the violation level accordingly.

Documentation

The information contained in the Observer Incident Report should be clearly documented. At a minimum, the incident report should include the names of all individuals involved; the date, time and location the incident occurred; the potential violation; and all pertinent information as to the circumstances surrounding the events. The documentation of potential violations should be conducted in a manner to ensure the safety of the observer at all times.

For potential fisheries violations, additional supporting documentation should be maintained at the Southeast Observer Program. If an Incident Report is forwarded to NOAA OLE for review, additional supporting documents will be requested by NOAA OLE as needed.

When providing a written statement for potential violations, the reports will be:

- Completed in ink, signed and dated by the individual;
- Any changes made to the document must be initialed by the individual;
- A diagonal line should be drawn across any remaining blank lines and initialed by the individual;
- Incident Report must be filled out completely including the vessel and trip information.

Appendix A. NOAA Office of Law Enforcement Reporting Protocol for Observer Emergency Incidents

Upon notification of any situation involving the potential assault, harassment, and/or immediate safety issue to an observer, the observer and/or program staff must ***immediately*** contact NOAA OLE using the following protocol without delay.

Be prepared to provide the following information:

- Name and contact information for the Observer;
- Name, documentation number of the vessel assigned;
- Name and contact information of the captain and/or owner of the vessel;
- A brief description of the current situation;
- Current and last known vessel position if available;
- Observer's last contact with the program and the next expected contact details.

1) Contact **Special Agent (SA) Kelly Kalamas at (727) 423-5797** regardless of the time of day. If no response is received within 15 minutes contact Assistant Special Agent-in-Charge (ASAC).

2) Contact **ASAC John O'Malley at (305) 801-7992.** If no response is received within 15 minutes contact Deputy Special Agent-in-Charge (DSAC)

3) Contact **DSAC Logan Gregory at (978) 290-9424**. If no response is received within 15 minutes contact Compliance Liaison (CL).

4) Contact **CL Matt Walia at (321) 693-3157.**

Once the situation has been relayed to one of the above NOAA OLE contacts, a follow-up email should be completed by the reporting program **within 24 hours** of the incident to kelly.kalamas@noaa.gov; john.omalley@noaa.gov, logan.gregory@noaa.gov, matthew.walia@noaa.gov

Appendix B. Table Guides for Individual Observer Program Violations

Miami Observer Program

PELAGIC OBSERVER PROGRAM		
VIOLATION TYPE	VIOLATION	VIOLATION SEVERITY
GEAR	Deploy a mainline with a length greater than 20 nautical miles in the MAB	LOW
GEAR	Illegal hook use (size, offset, style, material)	MEDIUM
GEAR	Gangions less than 110% of dropline length	LOW
GEAR	Failure to possess Turtle Mitigation Gear	LOW
GEAR	Marking of all floats with vessel name and number	LOW
GEAR	Use of a secondary gear (e.g. harpoon) to capture a free- swimming species)	MEDIUM
GEAR	Cut finfish bait	MEDIUM
GEAR	Required handling placards (sea turtle, marine mammal, etc.) not posted as required	LOW
GEAR	Use of live bait in the Gulf of Mexico	MEDIUM
HANDLING	Remove a billfish from the water for dehooking	LOW
HANDLING	Harassing marine mammals, turtles, seabirds	HIGH
HANDLING	Attempting to purposefully injure marine mammals, and sea turtles	HIGH
HANDLING	Shark finning and shark fins not naturally attached	MEDIUM
HANDLING	Tails cut off tuna	LOW
HANDLING	Transferring HMS to another vessel at sea	HIGH
HANDLING	Release of non-retained sharks with greater than 3ft gangion remaining	LOW
MARPOL	Operational and/or accidental pollution from ships	LOW
OBSERVER COVERAGE	Failure to take an observer when selected	HIGH
OBSERVER EMERGENCY	Assault, Threaten or Intimidate an observer	HIGH
OBSERVER EMERGENCY	Harassment of an observer	HIGH
OBSERVER EMERGENCY	Interference with an observer	HIGH
OBSERVER SAFETY	Observer Environment - Safety Conditions	HIGH
RETENTION	Retain regulated catch under the size limit	LOW
RETENTION	Retain regulated catch in an amount greater than allowed	LOW
RETENTION	Non-retention of legal-sized bluefin tuna, dead at haul-back	MEDIUM
RETENTION	Retain regulated catch during a closed season	HIGH
RETENTION	Retain a prohibited species	HIGH
RETENTION	Retain fillets/consume HMS at sea	MEDIUM
SPATIAL	Fish in a closed area	HIGH

Galveston Observer Program

GALVESTON REEF FISH and SHRIMP PROGRAMS		
VIOLATION TYPE	VIOLATION	VIOLATION SEVERITY
GEAR	Required fishing gear (non-stainless steel circle hooks)	MEDIUM
GEAR	BRD requirements	HIGH
GEAR	TED violations (angles, openings, etc.)	HIGH
GEAR	The use of finfish or reef fish as bait	MEDIUM
GEAR	Use of illegal gear (reef fish longline, buoy gear, fish traps)	HIGH
GEAR	Failure to possess Turtle Mitigation Gear	LOW
GEAR	Marking of all floats with vessel name and number	LOW
HANDLING	Harassing marine mammals, turtles, seabirds	HIGH
HANDLING	Attempting to purposefully injure marine mammals, turtles, seabirds	HIGH
MARPOL	Operational and/or accidental pollution from ships	LOW
OBSERVER COVERAGE	Failure to take an observer when selected	HIGH
OBSERVER EMERGENCY	Assault, Threaten or Intimidate an observer	HIGH
OBSERVER EMERGENCY	Harassment of an observer	HIGH
OBSERVER EMERGENCY	Interference with an observer	HIGH
OBSERVER SAFETY	Observer Environment - Safety Conditions	HIGH
RETENTION	Retain regulated catch in an amount greater than allowed	LOW
RETENTION	Retain regulated catch in an amount greater than allowed	LOW
RETENTION	Retain regulated catch during a closed season	HIGH
RETENTION	Retain a prohibited species	HIGH
RETENTION	Retain fillets/consume at sea	MEDIUM
SPATIAL	Fish in a closed area	HIGH

Panama City Observer Program

PANAMA CITY SHARK BOTTOM LONGLINE, VERTICAL LINE and GILLNET PROGRAMS		
VIOLATION TYPE	VIOLATION	VIOLATION SEVERITY
GEAR	Required fishing gear (non-stainless steel circle hooks, too many hooks	MEDIUM
GEAR	Gillnet set requirements	LOW
GEAR	Gillnet measurement requirements	MEDIUM
GEAR	HMS species (shark) used as bait	MEDIUM
GEAR	Use of illegal gear (reef fish longline, buoy gear, fish traps)	HIGH
GEAR	Failure to possess Turtle Mitigation Gear	LOW
GEAR	Marking of all floats with vessel name and number	LOW
HANDLING	Harassing marine mammals, turtles, seabirds	HIGH
HANDLING	Attempting to purposefully injure marine mammals, turtles, seabirds	HIGH
HANDLING	Shark finning and shark fins not naturally attached	MEDIUM
HANDLING	Proper handling of bycatch and discarded animals	LOW; (ESA/MMPA - High Level)
MARPOL	Operational and/or accidental pollution from ships	LOW
OBSERVER COVERAGE	Failure to take an observer when selected	HIGH
OBSERVER EMERGENCY	Assault, Threaten or Intimidate an observer	HIGH
OBSERVER EMERGENCY	Harassment of an observer	HIGH
OBSERVER EMERGENCY	Interference with an observer	HIGH
OBSERVER SAFETY	Observer Environment - Safety Conditions	HIGH
RETENTION	Retain regulated catch under the size limit	LOW
RETENTION	Retain regulated catch in an amount greater than allowed	LOW
RETENTION	Retain regulated catch during a closed season	HIGH
RETENTION	Retain a prohibited species	HIGH
SPATIAL	Fish in a closed area	HIGH

Southeast Fisheries Observer Incident Report

Trip Number: GB040 Vessel Name: SCUTTLE BUTT

USCG Doc # or State #: 196711 Port of Departure (City, State): Tarpon Springs, FL

Observer: Aaron Rodgers

Did you witness any unsafe operations that you feel affected your safety or impeded your duties while offshore? **(Circle one) YES or NO.** If **YES**, explain below and use additional sheets if needed.

09/15/2021, Haul #2: My job duties were impeded by Deckhand Billy and Captain Jim. 09/15/2021 at 0608, Billy pulled a line in that seemed to have a turtle on. Captain Jim took the gangion from Billy and forcefully yanked the line to get the hook out. He then threw the line overboard. I asked why he didn't bring the turtle aboard - Captain Stated, "I didn't know you needed the turtle. We need to keep fishing." Both Jim and Billy claimed ignorance about boarding any caught turtles. I clearly stated my job duties before sailing on 09/12/2021, including how to handle marine mammal and turtle interactions. 2 pictures and interaction

Did you witness any fishery violations? **(Circle one) YES or NO.** If YES, explain below and use additional sheets if needed.

09/13/2021, Haul #1: 10 Sharpnose shark caught. Deckhand Billy proceeded to cut shark up and use as bait on next haul.

09/15/2021, Haul #2: previously cut shark from Haul #2 used today.

09/17/2021, Haul #4: 100 cm blacknose shark caught and retained). 3 pictures and relevant data recorded on animal logs.

I have read this statement consisting of 2 page(s) and have initialed all corrections. I fully understand its entire contents and declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Aaron Rodgers 09/20/2021

Signature Date

1265 Lombardi Ave Green Bay, WI 54304, 123-867-5309

Address and Phone

Statement Continuation: Aaron Rodgers

Observer Name

Noted on animal catch logs.

Initials: AR

NOAA Office of Law Enforcement

Reporting Protocol for Observer Emergency Incidents

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- Name and contact information for the Observer;
- Name, documentation number of the vessel assigned;
- Name and contact information of the captain and/or owner of the vessel;
- A brief description of the current situation;
- Current and last known vessel position if available;
- Observer's last contact with the program and the next expected contact details.

1) Contact **Special Agent (SA) Kelly Kalamas at (727) 423-5797** regardless of the time of day. If no response is received within 15 minutes contact Assistant Special Agent in Charge (ASAC).

2) Contact **ASAC John O'Malley at (305) 801-7992.** If no response is received within 15 minutes contact Assistant Director (AD)

3) Contact **AD Manny Antonaras at (727) 423-0119**. If no response is received within 15 minutes contact Compliance Liaison (CL).

4) Contact **CL Matt Walia at (321) 693-3157.**

Once the situation has been relayed to one of the above NOAA OLE contacts, a follow-up email should be completed by the reporting program **within 24 hours** of the incident to kelly.kalamas@noaa.gov; john.omalley@noaa.gov, manny.antonaras@noaa.gov, matthew.walia@noaa.gov.

OLE POINT OF CONTACTS

Don’t hesitate to contact us with questions/concerns

- Emergency: SA Kelly Kalamas
  (C) 727-423-5797
  (O) 727-824-5344
  kelly.kalamas@noaa.gov
- Non-Emergency: CL Matt Walia
  (C) 727-432-2009
  (O) 727-824-5334
  matthew.walia@noaa.gov
- OLE ENFORCEMENT HOTLINE (24/7, ANONYMOUS)
  800-853-1964

Understanding Sexual Assault and Harassment

Sexual assault and sexual harassment can have psychological, emotional, and physical effects on a person. These effects aren't always easy to deal with, but with the right help and support they can be managed.

For many people, the first step to recovery is reaching out for support.

Why reach out?

The NOAA Sexual Assault/Sexual Harassment Helpline is a safe, confidential service for the NOAA community to talk through experiences with sexual assault and/or harassment.

People come to work at NOAA from a variety of geographies, backgrounds, and experiences. The Sexual Assault/ Sexual Harassment Helpline was developed with NOAA's diversity and culture in mind. It is accessible through multiple platforms (phone, online, app, and text), to ensure that when the NOAA community needs support, they have a safe place to find it.

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Need to talk?

We're here to help.

Phone
866-288-6558

Online Chat
NOAASASHHelpline.org

Info by Text
202-335-0265 (US)

Mobile App
NOAA SASH Helpline
Available via iOS and Android App Stores

NOAA

Sexual Assault/Sexual Harassment Helpline

Provides support for the NOAA community who has experienced sexual assault and/or harassment

NOAASASHHelpline.org

866-288-6558

About the NOAA Sexual Assault/Sexual Harassment Helpline

The Sexual Assault/Sexual Harassment Helpline is a crisis support service specially designed for the NOAA community who has experienced sexual assault and/or harassment. Through this service, support specialists provide live, confidential, one-on-one support. All services are anonymous, secure, and available worldwide, providing the NOAA community with the help they need, anytime, anywhere.

The NOAA Sexual Assault/Sexual Harassment Helpline is operated through a contract with RAINN (Rape, Abuse & Incest National Network). RAINN, the nation's largest anti-sexual violence organization, also operates the National Sexual Assault Hotline (800.656.HOPE and online.rainn.org).

Need to talk? We're here to help.

There are four simple ways to connect to support.

Phone

Access live, confidential help over the phone—just call 866-288-6558.

Online Chat

Get confidential, one-on-one support through a secure instant-messaging platform at NOAASASHHelpline.org.

Info by Text

Need to find a local resource or referral for support? Text your question, and you will receive contact information for an accessible resource. Message and data rates may apply

Mobile App

Download the NOAA Sexual Assault/ Sexual Harassment Helpline app to connect directly with a trained support specialist over the phone using WiFi.

Free, Confidential, 24/7

The NOAA Sexual Assault/Sexual Harassment Helpline is a secure and confidential service. The service is operated by RAINN, the nation's largest anti-sexual violence organization. RAINN created and operates the National Sexual Assault Hotline, available via phone (800.656.HOPE) and online chat (online.rainn.org).

Professional support

Staff who answer calls, chats, and texts are part of RAINN's victim services team. All staff undergo extensive screening and training to provide accurate and compassionate care to those who have experienced sexual assault and/or sexual harassment. Staff have also been trained specifically on NOAA's mission, organizational culture, and unique environments.

Confidential and secure

RAINN will not store your IP (computer) address or a transcript of your session, and will not record your call. Support Specialists staff will never request personally identifying information, like your name or address, or share any personal information about you.

IUU Enforcement

Illegal, unreported, and unregulated (IUU) fishing is a global threat to ocean ecosystems and sustainable fisheries. IUU products often enter the global market from fisheries that lack the strong and effective fisheries management measures to which U.S. fishermen are subject.

This not only adversely impacts marine ecosystems, food security, and fisheries sustainability around the world but also poses a threat to the domestic fishermen and coastal communities who depend upon a fair market place for their seafood products.

NOAA is committed to combating IUU fishing activity and is actively engaged with international and domestic enforcement partners to prevent the trade of IUU fish products.

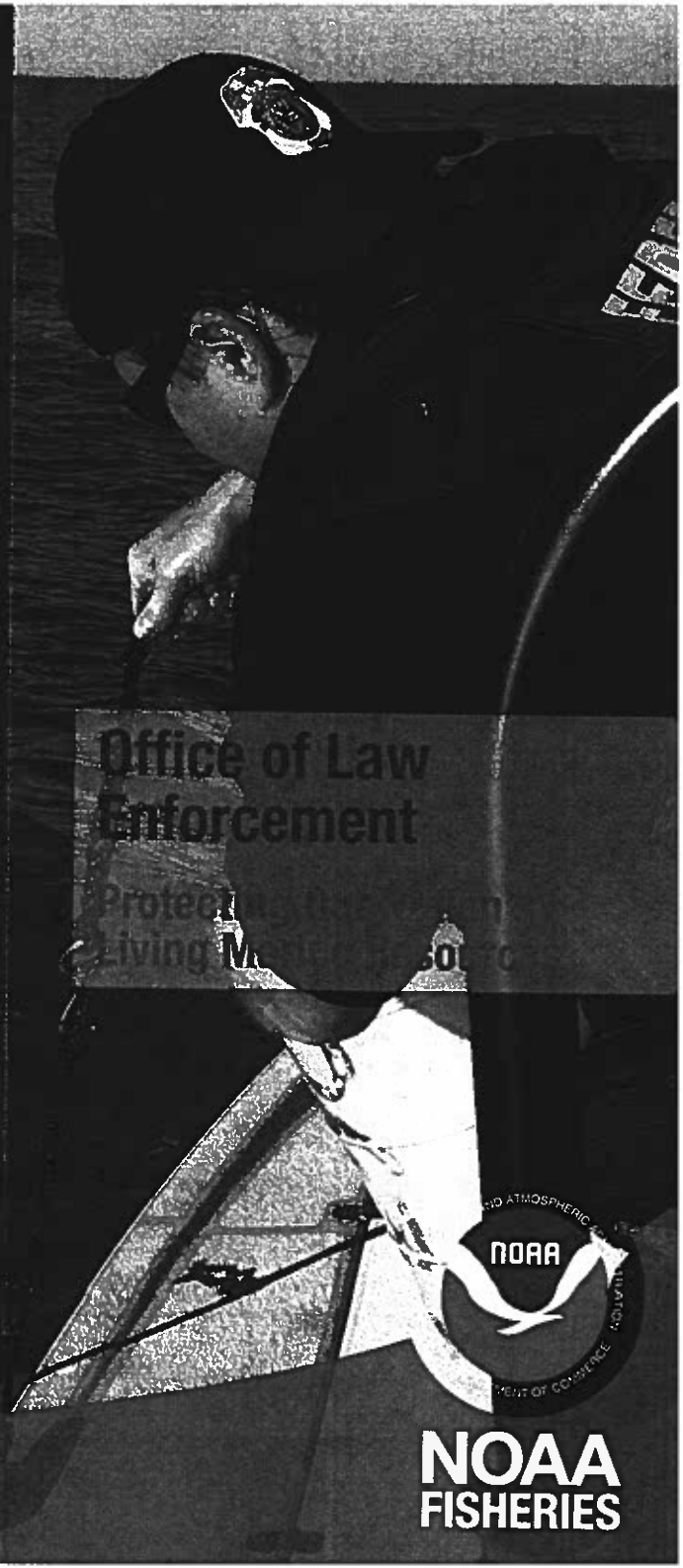
OLE special agents, enforcement officers, and enforcement support staff routinely engage in operations to combat IUU fishing and the trade of IUU fish products. OLE personnel also participate in international activities designed to provide foreign governments, organizations, and communities with training, tools, and information-sharing avenues that assist in addressing complex IUU fishing issues. This is often accomplished through technical assistance and training workshops to enhance fisheries law enforcement skills and capabilities.

TO REPORT A VIOLATION, CALL:

1-800-853-1964

NOAA FISHERIES

1315 East West Highway
SSMC 3, Suite 3300
Silver Spring, Maryland 20910
www.fisheries.noaa.gov/ole



NOAA's Office of Law Enforcement is dedicated to enforcing laws that conserve and protect our nation's marine resources and their natural habitat. We ensure a level playing field for honest fishermen, defend U.S. economic and public health interest from illegal international and domestic fishing activities, and protect vulnerable marine species in order to ensure these global resources are available for future generations.

OLE directly supports the core mission mandates of NOAA Fisheries through its efforts to enforce and promote compliance with the marine resource protection laws and implementing regulations under NOAA's purview.

Our jurisdiction spans more than 3 million square miles of open ocean and more than 95,000 miles of U.S. coastline; this area includes the country's national marine sanctuaries and national marine monuments. We are charged with the enforcement of more than 35 federal statutes. The majority of OLE cases fall under six major laws:

Magnuson-Stevens Fishery Conservation and Management Act establishes domestic, commercial, and recreational fishing regulations.

Marine Mammal Protection Act aims to protect all marine mammals, including sea lions, seals, and whales.

Endangered Species Act targets the protection of all endangered marine species including salmon, sea turtles, and corals.

Northern Pacific Halibut Act preserves the halibut fishery of the northern Pacific Ocean and Bering Sea.

Lacey Act focuses on the harvest, processing, and trafficking of marine resources both domestically and internationally.

National Marine Sanctuaries Act provides authority for the conservation and management of National Marine Sanctuaries.

Enforcement Activities

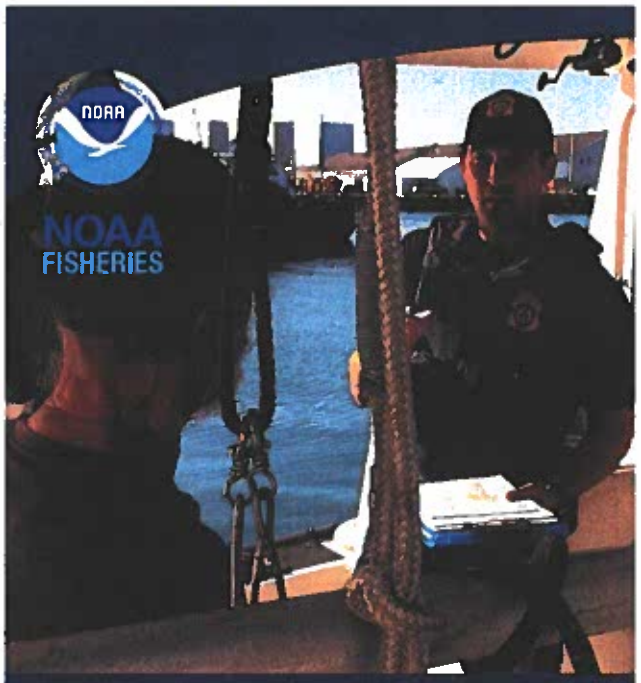
NOAA's special agents and enforcement officers conduct complex civil and criminal investigations, monitor and investigate vessels at-sea and at the docks, examine fish processing plants, review sales of wildlife and fish products, and conduct patrols on land, in the air, and at sea.

All sworn personnel have the authority to interview witnesses, gather intelligence and evidence, as well as execute search warrants and make arrests. These employees also write summary settlements, prepare case packages, and work with NOAA's General Counsel as well as staff from the Department of Justice.

Amplifying Compliance

To cover our extensive jurisdiction and maximize enforcement efficiency, we partner with state and territory law enforcement agencies as well as federal organizations. OLE leverages resources from joint enforcement agreements with 28 coastal states and territories, and maintains close working relationships with the U.S. Coast Guard, U.S. Customs and Border Protection, Department of State, and the Food and Drug Administration, among numerous other federal partners.

We also amplify our enforcement efforts by employing technology. For example the Vessel Monitoring System (VMS) is a critical tool used to assist with monitoring the location and movement of commercial fishing vessels. The program tracks more than 4,000 vessels and helps enforcement personnel focus patrol time on areas with the highest potential for significant violations. Additional at-sea, satellite-based communication and technological devices are also being used to work with the fishing industry to protect life, preserve our natural marine resources, and ensure effective enforcement of marine resource laws.



NOAA's Office of Law Enforcemer

Reporting Violation

Call: 1 (800) 853-1964

NOAA Fisheries' Enforcement Hotline provides live operator coverage 24 hours a day, 7 days a week for anyor the United States to report a federal marine resource violation. During regular business hours, you may also contact the closest NOAA Office of Law Enforcement fiel office to report a possible violation.

To report a violation in the regions, the main numbers ar

- Alaska: (907) 586-7225
- Northeast: (978) 281-9213
- Pacific Islands: (808) 725-6100
- Southeast: (727) 824-5344
- West Coast: (206) 526-6133

Information to include in your report:

- Location, time, and date of the activity.
- Description of the activity.
- Name(s) of the vessel, owner/operator, captain, crew, additional witnesses.

Examples of Violations

- Marine mammal harassment and takes.
- Exceed commercial possession, landing, or trip limit.
- Fishing in closed areas.
- Harvesting during closed season.
- Permit violations.
- Illegal activity within National Marine Sanctuaries.
- Observer program violations.
- Gear and equipment violations.
- Record-keeping and reporting violations.
- Recreational, charter, or party boat violations.
- Dealer violations.
- Turtle excluder device violations.
- Sport fishing violations.
- Subsistence fishing violations.
- Illegal imports.
- Seafood fraud or intentional mislabeling.
- Shark finning.

Rewards

Protecting our nation's marine life is a team effort, and information from the public plays a vital role. The Office of Law Enforcement may, on a case-by-case basis, issue rewards to individuals who provide information that leads to an arrest, conviction, civil penalty assessment, or forfeiture of property for violation(s) of the laws and regulations NOAA enforces. In determining whether a reward is appropriate, we will evaluate whether the information provided was sufficiently substantial such that the unlawful activity would likely have continued undetected and/or a successful prosecution would not have been able to have been obtained without the information provided.

For more information, visit:
www.fisheries.noaa.gov/enforcement

Business Card
or
Contact information label

Southeast Fisheries Observer Incident Report

Trip Number: _____ Vessel Name: _____

USCG Doc # or State #: _____ Port of Departure (City, State): _____

Observer: _____

Did you witness any unsafe operations that you feel affected your safety or impeded your duties while offshore? **(Circle one) YES or NO.** If **YES**, explain below and use additional sheets if needed.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Did you witness any fishery violations? **(Circle one) YES or NO.** If YES, explain below and use additional sheets if needed.

_____

_____

_____

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_____

_____

_____

_____

I have read this statement consisting of ____ page(s) and have initialed all corrections. I fully understand its entire contents and declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

_____ _____

Signature Date

_____

Address and Phone

Statement Continuation: _____

Observer Name

Initials: _____

Southeast Fisheries Observer Marine Pollution (MARPOL) Incident Report

Trip Number: _____ Vessel Name: _____

USCG Doc # or State #: _____ Port of Departure (City, State): _____

Observer: _____

Did you witness any MARPOL violations? **(Circle one) YES or NO.** If **YES**, explain below and use additional sheets if needed.

I have read this statement consisting of ____ page(s) and have initialed all corrections. I fully understand its entire contents and declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

_____ _____

Signature Date

_____

Address and Phone

Statement Continuation: _____

Observer Name

Initials: _____

I. QUICK REFERENCE: ATLANTIC SHARK REGULATIONS

AUTHORIZED SPECIES*[5,6]		
Large Coastal Sharks (LCS)	**Small Coastal Sharks (SCS)**	**Pelagic Sharks**
Blacktip Bull Hammerhead, great** Hammerhead, scalloped** Hammerhead, smooth** Lemon Nurse Sandbar*** Silky** Spinner Tiger	Atlantic sharpnose Blacknose Bonnethead Finetooth	Blue Common thresher Oceanic whitetip** Porbeagle Shortfinmako

* For management purposes, these species are divided into regional management groups (section XII).

** These sharks may not be retained, transshipped, landed, stored, or sold by vessels with pelagic longline gear onboard. Charter/headboat vessels cannot possess these sharks while in possession of tunas, swordfish, or billfish.

*** Sandbar sharks can only be retained by vessels selected to participate in the shark research fishery, subject to the retention limits established by NOAA Fisheries, and only when a NOAA Fisheries-approved observer is onboard.

PROHIBITED SPECIES[7,8]			
Atlantic angel	Bignose	Longfinmako	Sixgill
Basking	Caribbean reef	Narrowtooth	Smalltail
Bigeye sand tiger	Caribbean sharpnose	Night	Whale
Bigeyesixgill	Dusky	Sand tiger	White
Bigeye thresher	Galapagos	Sevengill	

PERMITS[9,10]

To harvest Atlantic sharks, vessel owners *must* obtain a valid Atlantic shark **Directed** or **Incidental** limited access permit. When the relevant retention limit allows, an open access **HMS Commercial Caribbean Small Boat permit** may be used to harvest Atlantic sharks. The shark retention limit for this permit is set at zero at this time.

NOAA Fisheries does not issue new commercial shark limited access permits. To enter the fishery, fishermen must obtain a permit from a permit holder who is leaving the fishery. Limited access permits may be transferred between vessels and are subject to upgrading restrictions. Prior to renewing or obtaining a shark limited access permit, both the vessel owner and operator must become certified at a Protected Species Safe Handling, Release and Identification Workshop if fishing with longline or gillnet gear.

The HMS Commercial Caribbean Small Boat is open access and only valid in the U.S. Caribbean Region[11] (shark retention limit set at zero at this time). Contact the Southeast Regional Office at (727) 824-5326 for information on commercial shark permits.

RETENTION LIMITS[12]	
Directed permit	36 LCS per vessel per trip. No retention limits for pelagic or SCS.
Incidental permit	3 LCS per vessel per trip. 16 pelagic or SCS (combined) per vessel per trip.
HMS Commercial Caribbean Small Boat permit	0 sharks per vessel per trip.

AUTHORIZED GEARS[13]	
Longline**	Bottom or pelagic***
Handgear	Rod and reel, handline, and bandit gear
Gillnet	A gillnet cannot be longer than 2.5 km, must be attached to the vessel at one end while fishing (except during net checks), and is subject to additional restrictions in place in the Southeast Restricted Areas (North and South) between November 15 and April 15 every year per the Atlantic Large Whale Take Reduction Plan (ALWTRP) regulations.[14] Gillnet checks *must* be conducted at least every 2 hours.
HMS Commercial Caribbean Small Boat permit	Rod and reel, handline, and bandit gear.

** All commercial longline vessels *must* have handling and release gear and corrodible hooks on board. Fishermen using pelagic longline gear also need to comply with other hook, bait, and gear requirements.[1516]
*** Vessels with pelagic longline gear onboard are not authorized to possess, retain, transship, store, or land hammerhead sharks (great, smooth, or scalloped), oceanic whitetip, or silky sharks.[17]
Other gear notes: **Vessel Monitoring System (VMS)** requirements apply for all pelagic longline, certain bottom longline, and shark gillnet vessels.[18] There are several closed areas, some of which apply to all gear types.[19] See the appropriate section of this guide, HMS webpage, or eCFR for more details and locations of area closures.

MINIMUM SIZES

At this time, there is no commercial minimum size for Atlantic sharks.

LANDING RESTRICTIONS

All sharks must have their fins naturally attached through offloading. Fins may be cut as long as they remain naturally attached to the carcass byat least a small flap of uncut skin. Sharks may be eviscerated and the heads may be removed, but they cannot be filleted or cut into pieces at sea.[20]

ADDITIONAL REMARKS

There are two regional quotas [Gulf of Mexico (including the U.S. Caribbean) and Atlantic] for aggregated LCS, hammerhead sharks, non-blacknose SCS, and blacknose sharks; there is one regional quota for Gulf of Mexico blacktip and pelagic sharks.[21]

The commercial fishing year is January 1 through December 31. Open fishing seasons vary depending on available quota and other factors.[22,23]Specified shark fishing seasons will close when 80% of quota is reached or projected to be reached, with 5 days' notice.[24]

XII. COMMERCIAL SHARK FISHING

AUTHORIZED SHARK SPECIES[240]

The shark species in **bold** are divided into regional management groups with separate quotas.[241] Call the HMS Management Division at (301) 427-8503 or visit http://www.nmfs.noaa.gov/sfa/hms/for the current status of the regional shark quotas.

GULF OF MEXICO REGION
Aggregated Large Coastal Sharks (LCS): Bull, Lemon, Nurse, Silky*, Spinner, Tiger, Sandbar**
Blacktip Sharks
Hammerhead Sharks: Great hammerhead*, Scalloped hammerhead*, Smooth hammerhead*
Non-Blacknose Small Coastal Sharks (SCS): Atlantic sharpnose, Bonnethead, Finetooth
Blacknose Sharks
ATLANTIC REGION
Aggregated Large Coastal Sharks (LCS): Blacktip, Bull, Lemon, Nurse, Silky*, Spinner, Tiger, Sandbar**
Hammerhead Sharks: Great hammerhead*, Scalloped hammerhead*, Smooth hammerhead*
Non-Blacknose Small Coastal Sharks (SCS): Atlantic sharpnose, Bonnethead, Finetooth
Blacknose Sharks
ATLANTIC AND GULF OF MEXICO (COMBINED QUOTA)
Blue Sharks
Porbeagle Sharks
Pelagic Sharks Other Than Porbeagle or Blue: Common thresher, Oceanic whitetip*, Shortfin mako

* Hammerhead sharks (great, smooth, and scalloped), oceanic whitetip, and silky sharks cannot be retained, transshipped, landed, stored, or sold by vessels with pelagic longline gear onboard or on vessels issued both an HMS Charter/Headboat permit and a commercial shark permit when tuna, swordfish, or billfish are on board the vessel or being offloaded from the vessel.[242]

**Sandbar sharks can only be harvested by vessels selected to participate in the shark research fishery and only when a NOAA Fisheries-approved observer is onboard. Possession of sandbar sharks and other shark species is subject to the modified retention limits for this research fishery.[243]

COMMERCIALLY PROHIBITED SHARK SPECIES

The following sharks cannot be possessed or retained in any form in the commercial shark fishery.[244] If one of these species is caught, it must be released immediately with minimal injury, without removing it from the water and in a manner that maximizes its chances of survival.[245]

Atlantic angel	Bignose	Longfin mako	Sixgill
Basking	Caribbean reef	Narrowtooth	Smalltail
Bigeye sand tiger	Caribbean sharpnose	Night	Whale
Bigeye sixgill	Dusky	Sand tiger	White
Bigeye thresher	Galapagos	Sevengill	

PERMITS

Any fishermen who fishes for, retains, possesses, sells, or intends to sell Atlantic sharks needs a Federal Atlantic **Directed** or **Incidental** shark limited access permit or an open access **HMS Commercial Caribbean Small Boat permit** (shark retention limit set at zero at this time).[246]

Generally, directed shark permits allow fishermen to target sharks while incidental permits allow fishermen who normally fish for other species to land a limited number of sharks.[247] The limited access

permits are administered under a limited access program and NOAA Fisheries is no longer issuing new shark limited access permits. To enter the directed or incidental shark fishery, fishermen must obtain a permit via transfer from an existing permit holder who is leaving the fishery, subject to the vessel upgrading restrictions.[248]For information on applying for an HMS Commercial Caribbean Small Boat permit or renewing or transferring a limited access shark permit, please contact the Southeast Region Permit Office at (727) 824-5326.

A **Directed shark permit** allows fishermen to retain 36 large coastal sharks (LCS) per vessel per trip. There is no directed numeric retention limit for pelagic sharks or small coastal sharks, subject to quota limitations. No prohibited species may be retained.

An **Incidental shark permit** allows fishermen to retain up to 3 LCS per vessel per trip. Fishermen may also keep up to a total of 16 pelagic or small coastal sharks (all species combined) per vessel per trip. No prohibited species may be retained.[249]

An **HMS Commercial Caribbean Small Boat permit** is valid only in the U.S. Caribbean and currently has a zero (0) shark retention limit (no retention).[250] The HMS Commercial Caribbean Small Boat permit may only be issued to vessels 45 feet or less in length overall.[251]

Fishermen who use longline or gillnet gear must attend a Protected Species Safe Handling, Release, and Identification Workshop and obtain a certificate prior to obtaining a commercial shark limited access permit (LAP). Both the owner and operator of the vessel permitted for this fishery must have a workshop certificate onboard the vessel.[252]NOAA Fisheries also encourages commercial fishermen to attend an Atlantic Shark Identification Workshop to enhance identification of shark species (see Section I).

VESSEL UPGRADING RESTRICTIONS

In general, an owner may upgrade a vessel with a directed limited access shark permit, or transfer the directed limited access shark permit to another vessel, only if the upgrade or transfer does not result in an increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the original qualifying vessel's specifications.[253] However, some limited access permits qualify for less restrictive vessel upgrading limitations as described in the next paragraph.

Vessel upgrading restrictions may differ, depending upon whether a vessel was concurrently issued, or was eligible to renew, each of the following three limited access permits on August 6, 2007: (1) incidental or directed swordfish permit; (2) incidental or directed shark permit; and (3) an Atlantic tunas Longline category permit. Vessels that were concurrently issued, or eligible to renew, these three permits on August 6, 2007, are eligible for vessel upgrades, or permit transfers to other vessels, only if the upgrade or permit transfer does not result in an increase of more than 35 percent in length overall, gross registered tonnage, or net tonnage, as measured relative to the original qualifying vessel's specifications. Horsepower is not restricted for these vessels.[254]

Incidental shark limited access permits are not subject to vessel upgrading restrictions.[255]

For more information on upgrading restrictions, call the Southeast Regional Permit Office at (727) 824-5326.

SHARK RESEARCH FISHERY[256]

Each year, NOAA Fisheries accepts applications to participate in a shark research fishery. From the applications received, NOAA Fisheries randomly selects a small number of commercial vessels based upon certain criteria to participate in the shark research fishery. Selected vessels are able to harvest sandbar sharks when a NOAA Fisheries-approved observer is onboard. Possession of sharks is subject to the modified retention limits for this research fishery. Commercial shark fishermen who are interested in participating in the shark research fishery need to submit a completed Shark Research Fishery Permit Application in order to be considered. For copies of the Shark Research Fishery Application during the application period announced each year, please visit http://www.nmfs.noaa.gov/sfa/hms/ or call the HMS Management Division at (301) 427-8503.

AUTHORIZED GEAR TYPES

Authorized gear types include: pelagic or bottom longline, gillnet, rod and reel, handline, or bandit gear.[257] Handlines and gillnets must remain attached to, or in contact with, the vessel at all times except that gillnets do not need to be attached during net checks.[258]

See Sections VII-IX for additional restrictions on pelagic and bottom longline and gillnet gear including permit restrictions, closed areas, hook specifications, and protected species interactions.

MINIMUM SIZE[259]

There is no commercial minimum size limit for large coastal sharks, pelagic sharks or small coastal sharks.

LANDING RESTRICTIONS

All sharks must have their fins, including the tail, naturally attached through offloading.[260] Fins may be cut as long as they remain naturally attached to the carcass with at least a small flap of uncut skin. The fins and tail may be removed from the carcass once the shark has been landed and offloaded.[261]

Sharks may be eviscerated and have the heads removed at sea, but cannot have the backbone removed, be filleted, or cut into pieces at sea.[262] Once landed and offloaded, sharks that have been halved, quartered, filleted, cut up, or reduced in any manner may not be brought back onboard a vessel that has been issued or should have been issued a federal Atlantic commercial shark permit.[263]

On January 2, 2011, President Obama signed the Shark Conservation Act. NOAA Fisheries is in the process of implementing the requirements of this Act.

FISHING SEASONS AND CLOSURE DATES

The fishing year for shark fisheries starts on January 1 and continues through December 31 of every year.[264] The fishing seasons for specified shark fisheries are contingent on the available quotas and do not open until the date that NOAA Fisheries publishes in the Federal Register. Once NOAA Fisheries estimates that 80 percent of the quota of any unlinked management group (e.g., Gulf of Mexico blacktip or pelagic sharks) has been caught, the fishing season for that species/management group closes no fewer than five days after publication of filing a closure notice in the Federal Register. When landings of either of linked management groups reach, or are expected to reach, 80 percent of the quota, fishing for both management groups will close no fewer than five days after publication of filing a closure notice in the Federal Register. The following management groups are linked:

- Atlantic hammerhead sharks and Atlantic aggregated LCS;
- Gulf of Mexico hammerhead sharks and Gulf of Mexico aggregated LCS;
- Atlantic blacknose and Atlantic non-blacknose SCS; and,

- Gulf of Mexico blacknose and Gulf of Mexico non-blacknose SCS.

Additionally, NOAA Fisheries may close the Gulf of Mexico blacktip shark management group before landings reach, or are expected to reach, 80 percent of the quota. NOAA Fisheries will send out a notice to the HMS listserv, and post the announcement on the website no fewer than five days ahead of the closure effective date. Regardless of the status of the available quota, all shark fisheries close on December 31 (the end of the fishing year) of every year until the opening date NOAA Fisheries publishes in the Federal Register. Call the HMS Management Division at (301) 427-8503 or visit http://www.nmfs.noaa.gov/sfa/hms/for the current status of shark fishery seasons and opening/closing dates.[265]

FISHING REGIONS

The commercial quotas for some shark management groups are split between two regions, the Gulf of Mexico and the Atlantic. The **boundary** between the Gulf of Mexico region and the Atlantic region is defined as a line beginning on the east coast of Florida at the mainland at 25º20.4' N. lat., proceeding due east.[266]

Gulf of Mexico: Any water and land to the south and west of 25º20.4' N. lat. This includes the U.S. Caribbean.

Atlantic: Any water and land to the north and east of 25º20.4' N. lat.

The commercial quotas for other management groups are not split between the two regions.[267] When a region is closed for a particular species/management group, fishermen in that region cannot possess or sell that species/management group and dealers in that region cannot buy species in that group from federally-permitted fishermen.[268]

TIME/AREA CLOSURES

For information on existing time and area closures, refer to Sections I through IX of this guide or call the HMS Management Division at (301) 427-8503.

SELLING SHARKS

Atlantic sharks and legally landed shark fins from vessels with a federal shark limited access permit maybe sold **only** to federally-permitted shark dealers and only when the fishery for that species/management group is open.[269] Dealers may obtain an Atlantic shark dealer permit by contacting the Southeast Regional Permit Office at (727) 824-5326.

PUBLIC DISPLAY OF SHARKS

Please see the HMS website http://www.nmfs.noaa.gov/sfa/hms/ for more information on Exempted Fishing, Scientific Research, and Display permits. Dusky sharks are not authorized to be collected for public display.[270]

REPORTING REQUIREMENTS

Logbooks

Selected fisherman with a commercial shark permit must report fishing activities in an approved logbook within 48 hours of completing that day's fishing activities, or before offloading, whichever is sooner. Logbooks must be species-specific and must be postmarked within seven days of offloading. Logbook reports must include weighout slips that have all fin and carcass weights recorded and that show the dealer to whom the fish were transferred, the date they were transferred, and the carcass weight of each fish for which individual weights are normally recorded. For fish that are not individually weighed, a weighout slip must record total weights by species and market category. A weighout slip for sharks prior to, or as part of, a commercial transaction involving shark carcasses or fins must record the

weights of carcasses and any detached fins. All fins must be weighed in conjunction with the weighing of the carcasses at the vessel's first point of landing and must adhere to established allowable fin-to-carcass weight ratios. NOAA Fisheries requires the submission of a "No Fishing" reporting form if no trips occurred during the preceding month.[271]

NOAA Fisheries may also send a letter requiring that fishermen complete the cost-earnings section of the logbook. Fishermen must then complete and submit that section of the logbook within 30 days of offloading. This section must be completed in addition to the other logbook reporting requirements. The "annual expenditures" report form must be submitted by the date specified on the form. The economic data section must be completed in addition to the other logbook requirements.[272]

All dealer reports must be species-specific and specify the total shark fin weight separately from the weight of the shark carcasses.[273] Dealer forms for Atlantic shark dealers were modified to include a check box that indicates whether fins were naturally attached to the carcass at landing and through offloading.

HMS Commercial Caribbean Small Boat Permit

Fishermen holding an HMS Commercial Caribbean Small Boat permit must abide by their respective territorial reporting requirements and other applicable territorial commercial fishing requirements. No retention of sharks is authorized under this permit at this time.

NOAA Fisheries Observer Program[274]

Vessels may be required to carry NOAA Fisheries observers. See Section XVI for observer requirements.

ANNUAL QUOTAS

Please call the HMS Management Division at (301) 427-8503 for details on shark quotas. Quotas are adjusted to account for yearly over- and/or under-harvests as specified in the regulations.[275] Any quota adjustments will be posted on the HMS website under "Breaking News," published in the Federal Register, and sent to the *Atlantic HMS News* listserv.

VMS REQUIREMENTS

Vessels with shark permits that use pelagic or bottom longline gear or gillnet gear may be required to install and use VMS. See Section X for details.

Southeast Fisheries Observer Programs

Safety Manual

NOAA Fisheries

Panama City Laboratory

3.1 Safety Training and Manual

The NOAA Fisheries observer programs consider safety the most important concern for an observer on a fishing vessel. While your job at sea is to collect data and samples, your first and foremost job is to stay alive and uninjured.

If you at any time feel unsafe on a vessel, either before boarding or after sailing, do not hesitate to refuse the trip and/or have yourself removed from the vessel.

You must take responsibility for your own safety and learn as much as you can before an emergency threatens your life. Safety-minded captains who realize the danger of their occupation and consider safety in all that they do operate most fishing vessels. Use the knowledge and experience of the vessel's crew for guidance on safety on your vessel. They are certainly concerned about the safety of an Observer, a guest on their vessel, and will make sure that the dangers for you are minimized. No matter how cautious the crew it is your responsibility to keep yourself safe and know how to react in an emergency situation.

Medical Fitness for Sea

Individuals selected for employment with the Southeast Fisheries Science Center (SEFSC) as fishery observers must be fully qualified to safely and efficiently perform the essential duties and responsibilities of their positions. You will be required to complete a Physical with your doctor to be held in a confidential file and reviewed only in the event of a medical emergency at sea. You must inform your employer, of any medical condition or situation, including medications being taken, prior to departing on a vessel.

Living Conditions

Cleanliness, upkeep, safety, comfort of quarters, quality of food, and general attitude of the vessel personnel may vary from vessel to vessel. Observers must be flexible and function professionally under a wide variety of living conditions.

Guidelines developed from experience are: show respect to others and it will be returned to you. Clean up after yourself and make a conscious effort to maintain a professional appearance. Adaptable observers with an easygoing attitude will likely receive more cooperation than those who criticize and make demands. Observers will inevitably encounter individuals who will take great pleasure in "ribbing" observers with talk of turtle soup recipes and government spies. Don't let it bother you. The more attention you give these individuals, the longer they will continue. Bringing books or music or other personal items give you an escape from the crew.

Accidents and Illness Aboard

All Accidents and Illness must be Reported within 24 Hours of Occurrence

In the event of an emergency such as an injury or serious illness requiring hospitalization, the captain and the USCG should be contacted via radio and they will attempt a rescue and/or advise you on how to proceed. If it is you or another observer that is involved, notify the Observer Coordinators, immediately via InReach or radio and keep them advised.

If you are injured, regardless of how minor you may perceive the injury to be you must document the incident in your log book and report it to your observer coordinator as soon as possible, even if no medical treatment was/is necessary. These measures are for your protection. Do not neglect your responsibilities to report injuries or illness.

Training

Prior to your first assignment, you will receive training in safety and survival at sea. At a minimum, the training curriculum will include the following subjects:

1. First Aid and CPR Certification (required for employment)
2. EPIRB/PLB (test, how to turn on, battery, hydro and registration expiration dates)
3. PFD (donning, water entry, inspection, and maintenance)
4. Immersion Suit (inspection, stowage, don in 60 seconds)
5. Life raft (proper installation, components, launch, flip, and entry, verify hydro dates)
6. Life raft deployment and STAY rules
7. Water practical (chain swim, star, HELP, Huddle)
8. Fire safety and prevention
9. Distress calls
10. Signals and Flares
11. Vessel Drills (fire, flooding, POB, abandon ship)
12. Vessel stability and flooding Damage Control/Water Pump Usage
13. USCG Evacuations and Requirements
14. Seven Steps of Survival and Personal Survival Kit
15. Cold water and hypothermia
16. Survival skills and kits
17. Use of marine VHF radio, SSB radio, and satellite phone
18. Conflict Resolution
19. Vessel safety requirements and Pre-trip vessel safety checklists (completion and review)
20. General safety on small boats
21. Workplace hazards (chemical/health hazards, MRSA, proper lifting, etc.)
22. At sea personal health and hygiene

3. Safety Manual
    - 3.1. Safety Training and Manual Introduction
    - 3.2. Table of Contents
    - 3.3. Emergency Contacts
    - 3.4. Basic Health and Hygiene at Sea
        - 3.4.1. Practice Good Hygiene
        - 3.4.2. Antibiotics
        - 3.4.3. Sleep Deprivation
        - 3.4.4. Seasickness
        - 3.4.5. First Aid Kits
        - 3.4.6. First Aid Kit Inventory
        - 3.4.7. MRSA Fact Sheet
        - 3.4.8. MRSA: Prevention and Hygiene Tips
        - 3.4.9. Seven Ways to be Injured
        - 3.4.10. Fish Handling Safety
            - 3.4.10.1. Table 1. Typical Injuries
            - 3.4.10.2. Table 2. Examples of Typical Injuries
        - 3.4.11. Pocket Guide to Ergonomics
    - 3.5.Safety on Vessels
        - 3.5.1. Before Deployment on Vessel
        - 3.5.2. SEFOP Panama City Pre-Trip Safety Check
        - 3.5.3. Coast Guard Vessel Decal
        - 3.5.4. USCG Decal Ratings Cheat Sheet
        - 3.5.5. Federal Requirements for Commercial Fishing Industry Vessels
        - 3.5.6. Hammer Hydrostatic Release Safety Alert
        - 3.5.7. Coast Guard Ready for Sea Checklist
        - 3.5.8. Fire Extinguisher Recall Information
        - 3.5.9. Ovatek Examination Guide
            - 3.5.9.1. Examination Criteria
            - 3.5.9.2. Examination checklist
            - 3.5.9.3. Solas Kit Inspection
            - 3.5.9.4. Step by Step inspection checklist
    - 3.6. Types of Emergencies
    - 3.7. Survival Skills- 7 skills
    - 3.8. Safety Equipment
        - 3.8.1. Donning Immersion Suits and Personal Flotation Device
            - 3.8.1.1. Appendix K- Jumping in PDF
            - 3.8.1.2. Appendix O- Jumping in an Immersion Suit
            - 3.8.1.3. Appendix L- Help, Huddle, and Chain Swim
            - 3.8.1.4. Appendix P- Care and Maintenance of Immersion Suits
        - 3.8.2. PFD Maintenance
        - 3.8.3. Immersion Suit How to
        - 3.8.4. Making Distress Calls and Using Visual Distress Signals
            - 3.8.4.1. Location Aids for Mariner

- 3.8.4.2. Emergency Calls
- 3.8.4.3. Emergency Position- Indicating Radio Beacons (EPIRBs)
- 3.8.4.4. Visual Distress Signals
  - 3.8.4.4.1. Parachute Flares
  - 3.8.4.4.2. Pistol Launch Flares
  - 3.8.4.4.3. Hand-held Flares
  - 3.8.4.4.4. Strobe Light
  - 3.8.4.4.5. Signaling Mirror
  - 3.8.4.4.6. Sea Dye Marker
  - 3.8.4.4.7. Floating Smoke Signal
  - 3.8.4.4.8. Hand-held Smoke Flares
  - 3.8.4.4.9. Stowage and Maintenance
- 3.8.5. Appendix N- Distress Flare Types
- 3.8.6. Appendix M- Use of Distress Signals
- 3.8.7. Distress Broadcast/MAYDAY call
- 3.8.8. Initial SAR Check Sheet
- 3.8.9. Supplement SAR Checksheet
- 3.8.10. VHF Marine Radio Channels
- 3.8.11. Emergency Instructions
- 3.8.12. Appendix R- Care and Maintenance of EPIRBs
- 3.8.13. Appendix S- Location Accuracy of EPIRBs/ Appendix Q- EPIRB Types
- 3.8.14. Personal Locator Beacons instructions
- 3.8.15. Monthly Test Log

3.9. Person Overboard and Abandon Ship Procedures

- 3.9.1. Person Overboard
- 3.9.2. Recovering an Individual from the Water
- 3.9.3. Abandon Ship
- 3.9.4. Abandoning the Vessel
- 3.9.5. Stay Rules
- 3.9.6. Survival Once on Board Liferaft
- 3.9.7. Actions Prior to Rescue

3.10. Hypothermia and Cold Water Survival

- 3.10.1. Appendix H- Heat Loss/Heat Gain
- 3.10.2. 3 stages of Hypothermia
- 3.10.3. Hypothermia Algorithm
- 3.10.4. Caring for Cold Patient
- 3.10.5. Appendix F- Recognizing the Signs of Hypothermia
- 3.10.6. Appendix I- Chart of Body Core Temperatures
- 3.10.7. Appendix J- Hypothermia Guidelines

3.11. Flooding, Dewatering, and Fire

- 3.11.1. Unintentional Flooding, Rough Weather at Sea, Crossing Hazardous Bars
- 3.11.2. Minimizing the Effects of Unintentional Flooding
- 3.11.3. Some Suggestions for Preserving Adequate Stability

EMERGENCY CONTACT INFORMATION

In the event of an emergency please contact emergency services, then your observer coordinator, then A.I.S. Inc.

OBS COORDINATOR – Alyssa Mathers	Office: 850-270-6014 Cell: 850-890-3853 Email: Alyssa.Mathers@noaa.gov
OBS COORDINATOR- Bradley Smith	Office: 850-270-7509 Cell: 850-381-1695 Email: Bradley.Smith@noaa.gov
ASST COORDINATOR – Samantha Faller	Office: 850-312-8933 Cell: 850-348-3176 Email: Samantha.Faller@noaa.gov
ASST COORDINATOR- Dana Jordan	Office: 850-270-8315 Cell: 850-866-5297 Email: Dana.Jordan@noaa.gov
OBS CHIEF– Scott Leach	Cell: 786-822-0509 Email: Scott.leach@noaa.gov
A.I.S. Inc. Staff **PROJECT MANAGER - Rebecca Hailey**	Cell: 774-392-3434 Email: rebeccaha@aisobservers.com
TASK MANAGER - Jade Heidt	Cell**:** 774-392-3794 Email: jadeh@aisobservers.com

3.4. Basic Health and Hygiene at Sea

3.4.1. Practice Good Hygiene

- Keep your hands clean by washing them frequently and thoroughly with soap and warm water or using an alcohol-based hand sanitizer. Hand-washing is the best way to avoid spreading germs.
- Keep cuts and scrapes clean and covered with a bandage and avoid contact with other people's wounds or bandages. Make sure cuts and scrapes stay as dry as possible.
- Do not share personal items such as washcloths, towels, or razors.
- Use provided gloves when handling fish, especially those with spines/sharp teeth.

3.4.2. Antibiotics

- Be smart about using antibiotics. Antibiotics **can** help treat bacterial infections but they **cannot** cure viral infections. Always ask your doctor if antibiotics are the best treatment and avoid pressuring your doctor into prescribing antibiotics when they won't help you get better.
- Always take all your antibiotic medicine as prescribed by your doctor. Using only part of the medicine can cause antibiotic-resistant bacteria to develop.
- Do not save any antibiotics and do not use antibiotics that were prescribed for someone else.

3.4.3. Sleep Deprivation

- Sleep deprivation is inevitable while working out at sea. Signs of sleep deprivation include:
    - Increased sleepiness and fatigue and weariness
    - Poor attention span and motivation, especially for boring tasks requiring sustained concentration (i.e.: tallying fish/hooks on a longline vessel)
    - Memory Lapses
    - Decreased initiative, judgment ability and decision making
    - Increased irritability
- Suggestions for Dealing with Sleep Deprivation:
    - Allow at least 4 hours of uninterrupted sleep each day to maintain minimal performance
    - Attempt frequent "power" naps - 20 or 90 minutes in length
    - Cover your eyes from natural light when attempting to rest
    - Avoid use of antihistamines, motion sickness medication, alcohol and all other drugs that will sedate (if possible)
    - Don't abuse caffeine – it will lead to an unavoidable "crash" later in the day
    - Eat small snacks of high carbohydrate foods (breads, rice, cereals, potatoes, some baked goods and apples). The carbohydrates will provide energy to fuel body function and prevent drowsiness.
    - Avoid large amounts of protein (meat, dairy items, eggs, fish, legumes). The body has to expend energy to break protein down.

3.4.4. Seasickness

- Seasickness often hampers observers at the beginning of a trip, but most effects of seasickness disappear after a few days.
- Vessel motion, indigestible stomach contents, unpleasant fumes or cooking smells, and anticipatory fear will trigger seasickness.
- The symptoms are nausea, headache, drowsiness, and depression. This is normal; it's just difficult to live with.
- Typically, serious cases can cause severe dehydration and weakness.
- To prevent this make yourself drink water or some non-acidic juice and try to eat some mild food (soda crackers are often recommended).
- Take some seasickness medication along even if you don't plan to use it.
- Scopolamine works very well for many people. Scopolamine is currently sold under two trade names, Transderm Scop (the "ear patches"), available only with a prescription, and Triptone, an oral, non-prescription form.
    - Some people cannot tolerate scopolamine's side effects, which include drowsiness, dry mouth, and headache.
- Dramamine (the trade name of Meclizine), Bonine and Cyclizine (trade name is Marezine) are the usual over-the-counter drugs which will inhibit vomiting.
- The USCG formerly used Meclizine with moderate success. USCG research "found that a combination of two drugs, promethazine hydrochloride (an antihistamine, trade name Phenergan), and ephedrine sulfate (a decongestant), was by far the most effective treatment available. Similar tests on Navy and Air Force personnel corroborated the Coast Guard's results.
- The recommended dosage is 25 mg of each drug one to two hours prior to motion stress and at six-hour intervals as needed thereafter.
- This combination of Promethazine hydrochloride and ephedrine sulfate is also known as the "Coast Guard Cocktail". Promethazine hydrochloride is a prescription drug, may cause drowsiness, and ephedrine sulfate may aggravate existing cases of hypertension.
- Neither drug can be taken within 12 hours after ingesting alcohol.
- None of the drugs mentioned here can be taken during pregnancy, and you should consult with your physician prior to taking any of these medications.
- It is recommended that you take one dose of a motion sickness medication as directed before you leave the dock since taking medication afterward will delay or nullify effectiveness.

3.4.5. First Aid Kits

- You are issued First Aid Kits that includes items to treat injuries and those for hygiene. First Aid Kits should ALWAYS be brought with you on the boat.
- Please add any personal items that you may need (prescriptions, extra seasickness medication, etc).
- Inform your coordinator if you run out of anything or have a request for something that is not in your kit

- First Aid Kit Inventory
    - Bandages
    - Gauze
    - Medical tape
    - Ear Plugs
    - Fingernail Brush
    - CPR face shields
        - To be used when giving mouth to mouth
    - Warming Blanket
        - For insolating a cold or hypothermic person
    - Instant cold pack
        - For heat stroke, sprained joints
    - Iodine wipes
        - Disinfectant, to clean wounds before bandaging
    - Alcohol wipes
        - Disinfectant, to clean wounds before bandaging
    - Triple antibiotic ointment
        - To minimize infection of wounds, treat before bandaging
    - Hibiclens
        - Antiseptic/Anti-microbial soap
    - Hydrocortizone cream
        - Anti-itch topical
    - Dramamine
        - Seasickness medication
    - Benadryl
        - For allergic reactions
    - Pepto Bismal
        - For relief of indigestion and upset stomach
    - Sting relief
        - Topical sting relief
    - Aspirin
        - Pain relief, slows the spread of MRSA
    - Advil
        - Pain relief, reduces swelling and fever
    - Tylenol
        - Pain relief, reduces swelling and fever
    - Purell wipes/sanitizer wipes
        - If fresh water isn't available
    - Baby wipes
        - If fresh water isn't available

MRSA FACT SHEET

What is MRSA?

MRSA is methicillin-resistant *Staphylococcus aureus*, a potentially dangerous type of staph bacteria that is resistant to certain antibiotics and may cause skin and other infections. In some cases, it causes pneumonia (lung infection) and other issues. If left untreated, MRSA infections can become severe and cause sepsis - a life-threatening reaction to severe infection in the body.
As with all regular staph infections, recognizing the signs and receiving treatment for MRSA skin infections in the early stages reduces the chances of the infection becoming severe. MRSA is spread by:

- Having direct contact with another person's infection
- Sharing personal items, such as towels or razors, that have touched infected skin
- Touching surfaces or items, such as used bandages, contaminated with MRSA

Who Is At Risk, and How Is MRSA Spread In The Community?

Anyone can get MRSA on their body from contact with an infected wound or by sharing personal items, such as towels or razors, which have touched infected skin. MRSA infection risk can be increased when a person is in activities or places that involve crowding, skin-to-skin contact, and shared equipment or supplies.

How Common Is MRSA?

Studies show that about one in three people carry staph in their nose, usually without any illness. Two in 100 people carry MRSA. There are not data showing the total number of people who get MRSA skin infections in the community.

What are the signs and symptoms?

Sometimes, people with MRSA skin infections first think they have a spider bite. However, unless a spider is actually seen, the irritation is likely not a spider bite. Most staph skin infections, including MRSA, appear as a bump or infected area on the skin that may be:

- Red
- Swollen
- Painful
- Warm to the touch
- Full of pus or other drainage
- Accompanied by a fever

What Should I Do If I See These Symptoms?

Cover the area with a bandage and contact your healthcare professional. It is especially important to contact your healthcare professional if signs and symptoms of an MRSA skin infection are accompanied by a fever.

What Should I do if I Think I Have a Skin Infection?

- You can't tell by looking at the skin if it is a staph infection (including MRSA).
- Contact your doctor if you think you have an infection. Finding infections early and getting care make it less likely that the infection will become severe.
- Do not try to treat the infection yourself by picking or popping the sore.
- Cover possible infections with clean, dry bandages until you can be seen by a doctor, nurse, or other health care provider.

How are MRSA skin infections treated?

Treatment for MRSA skin infections may include having a healthcare professional drain the infection and, in some cases, prescribe an antibiotic. Do not attempt to drain the infection yourself – doing so could worsen or spread it to others. If you are given an antibiotic, be sure to take all of the doses (even if the infection is getting better), unless your healthcare professional tells you to stop taking it.

How To Prevent Spreading MRSA

- Cover your wounds. Keep wounds covered with clean, dry bandages until healed. Follow your doctor's instructions about proper care of the wound. Pus from infected wounds can contain MRSA so keeping the infection covered will help prevent the spread to others. Bandages and tape can be thrown away with the regular trash. Do not try to treat the infection yourself by picking or popping the sore.
- Clean your hands often. You, your family, and others in close contact should wash their hands often with soap and water or use an alcohol-based hand rub, especially after changing the bandage or touching the infected wound.
- Do not share personal items. Personal items include towels, washcloths, razors and clothing, including uniforms.
- Wash used sheets, towels, and clothes with water and laundry detergent. Use a dryer to dry them completely.
- Wash clothes according to manufacturer's instructions on the label. Clean your hands after touching dirty clothes.

For more information, please call 1-800-CDC-INFO or visit www.cdc.gov/MRSA.

04-21
Modified from www.cdc.gov/MRSA

MRSA Staph Bacteria Superbugs: Prevention & Hygiene Tips

(Ron Jones, MS, ACSM Health/Fitness Instructor, Corporate Wellcoach)

Get Fit and Be Strong with "Proactive Wellness" to strengthen your immune system then follow the hygiene guidelines below!

Hand Washing: Thoroughly wash hands with anti-bacterial soap and small amount of water by *pressing and scrubbing soap into all areas of hands and fingers* for ≈20-30 seconds.

Hand Sanitizer & Wipes: Use "alcohol-based" hand rub like *Purell*® or equivalent. Thoroughly press sanitizer into *all areas* of hands and fingers. Antibacterial wipes can also be used when washing and sanitizer gels are not available. *Wet Ones*® make single-wipe packages for pocket or purse and pop-up canisters of wipes are also available, but do NOT kill MRSA. Make sure the wipes are approved for "human skin" and personal hygiene because some pop-up wipes are bleached based and intended for hard surfaces only which can be damaging to skin.

Cover Draining Wounds: An open and draining wound, or one covered with pus, is not only a portal of "exit" for transmitting MRSA to another person, but also a portal of "entry" for becoming infected with MRSA. Keep open and draining wounds covered and away from others!

Skin-to-Skin Contact: Avoid skin-to-skin contact with others that have open wounds. This is not always possible in sport settings such as football, wrestling, martial arts, and other combative activities which are even more reason to wash your body thoroughly as soon as possible after the skin-to-skin contact activities.

Cleaning & Irrigation of Skin: Beyond generous flushing with clean water and washing with antibacterial soap, topical antiseptics such as *Hibiclens*® *(chlorhexidine topical*) can be used to fight MRSA. *Chlorhexidine topicals* kill germs on skin and are used before surgeries with healthcare providers to reduce the risk of infections.

Sharing Personal Items: *Never share towels and razors!* MRSA infections have been caused in sport settings by sharing these personal items. Avoid sharing washcloths, clothing, or uniforms that have not been properly cleaned. Many athletes shave body parts like legs and chest even if they aren't body builders. Shaving can create small openings in the skin leaving the person at-risk for infections when sharing a towel with a MRSA-infected teammate.

Clothing & Laundry: Wash clothes in question with detergent and HOT water (>140 degrees) then dry on HOT to further kill bacteria. Bleach can also be added as an extra precaution. It is recommended after visiting a clinical setting such as a hospital or nursing home, to change clothes immediately. Doctors are also being encouraged to begin wearing lab coats again as a protective skin barrier to MRSA and other infections.

- **Gyms & Exercise Equipment:** In addition to not sharing personal items like towels, many gyms now have special antibacterial solutions available in the form of sprays or towelettes. *Clini-Tech Spray*® is an EPA-registered and hospital-grade disinfectant (www.medtrol.com) that kills MRSA, HIV-1, Hepatitis C, and many other forms of infection. *Gym Wipes*® (www.gymwipes.com) are EPA-registered antibacterial disinfectant towelettes that kill 99.9% of germs. These are the products I'm using for my corporate clients, and both will decrease the risk of infection and cross contamination in your exercise setting. ***Make sure your gym has a hygiene process in place for dealing with MRSA infections and blood-borne pathogens.*** Many commercial gyms today still do not know what MRSA is or how to deal with it! ***Make sure to do YOUR part! Wear a shirt and wipe sweat off equipment when finished with your set! Insist that others do the same!***

✱ ***Ron Jones (2.13.07)***

Emergency Drills Requirement

Documented fishing vessels of any crew size beyond the Boundary Line, or vessels with more than sixteen people on board within the Line, are required to conduct monthly emergency drills. Drills must be conducted by a trained Drill Instructor.

What to cover in monthly drills:

1. Abandoning vessel.
2. Fighting a fire.
3. Retrieving person overboard.
4. Minimizing flooding.
5. Launching/recovering lifeboats/ rescue craft.
6. Donning immersion suits/PFDs.
7. Donning SCBAs (if so equipped).
8. Giving a mayday and using visual distress signals.
9. Activating the general alarm.
10. Reporting inoperative alarms.

For Drill Instructor training in your port contact AMSEA at (907) 747-3287 or check out AMSEA's website at www.amsea.org.

Credits:
Alaska Marine Safety Education Association (AMSEA); National Institute of Occupational Safety & Health (NIOSH); U.S. Coast Guard.

Injury data is from the Alaska Trauma Registry 1991–1998. Data from the Alaska Fishermen's Fund is from 1994–1998.

Seven Ways to Get Hurt (or Killed) While Commercial Fishing in Alaska

Photo: Art French, M.D., USCG

... and ideas from fishermen on how to prevent them

- Commercial fishing can be rewarding and satisfying but it also has hazards. From 1994 to 1998, Fishermen's Fund reported 4,264 injuries and 70 lives lost in Alaska.
- Enclosed are some ways injuries and fatalities can be prevented.
- Review with your crew before and during the season.

1. Strains/Sprains

STATISTIC

Strains and sprains accounted for 47% of all Fishermen's Fund reported injuries.

PREVENTION TIPS

- Use tools to reach and rake in fish. (Petersburg seiner)
- Do stretching exercises in off season and while on watch or off duty.
- Work with fish as much as possible at a level where bending over is not necessary.
- Try to get in shape before the season.
- Use mats or grates to boost you to the right height at cleaning tables so your arms work in a neutral position. (F/V Capt. Cook)
- Get help with items too heavy to lift or move by yourself, especially when underway. Work together. (F/V Ocean Cape)

2. Machinery

STATISTIC

The largest single cause of injuries was machinery (43%).

PREVENTION TIPS

- Shut off engine/motors when working on them to prevent getting snagged.
- Run a line to a kill switch (Henderson line) where it is accessible but out of the way, so anyone on deck can reach it to shut off hydraulics. (F/V Commander)
- Limit hydraulics to safe working loads by installing relief valves. (F/V Commander)
- Don't impulsively grab at lines going out until you're aware of any hazards. (F/V Commander)
- Never use picking hooks in engine control box as they can jam boat in gear and cause collisions. (F/V Amber J)
- Wear no buckles or buttons to catch on gear. (Bristol Bay fisherman)
- Instead of wearing a net-mending knife on a piece of twine around your neck, tie it off to a belt loop. Better to tear your pants than get lynched by the seine block. (F/V Capt. Cook)

3. Falls

STATISTIC

The second leading cause of injuries was falls (34%).

PREVENTION TIPS

- Use abrasive cleanser on slick engine room surfaces. (F/V Capt. Cook)
- Good housekeeping! Keep kelp and slime off decks.
- Use rock grit or coarse sand for hydraulic leaks on deck. (Maine fisherman)
- Use absorbent pads under hydraulic leaks until fixed. (F/V Ocean Cape)
- Hang lines with monkey fists from overheads to hold onto in rough weather. (F/V Coral Lee)
- Renew worn nonskid paint on decks and in skiffs. (Bristol Bay fisherman)
- Put nonskid surface on ladder rungs and steep stairs. Use nonskid grates or mats in high risk areas.

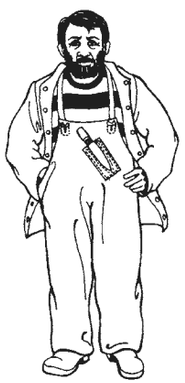
4. Cuts and Punctures

STATISTIC

Cuts and punctures accounted for 26% of all Fishermen's Fund reported injuries.

PREVENTION TIPS

- Wear protective gloves and gear.
- Tape those sharp little Victorinox® knives horizontally to belt, instead of vertically, to prevent leg punctures. (Kodiak fisherman)
- To minimize infections, do dishes and/or soak in hot soapy water several times a day to clean out puncture wounds from fish or shrimp. (F/V Capt. Cook)
- If wound looks infected, wash with Betadine™, soak half hour in hot soapy water as soon as possible, then dry and bandage. Monitor closely for spreading infection.
- Replace any wire rope that develops "fish hooks". (F/V Capt. Cook)
- If you keep getting poked by your net-mending knife, round off the tip. (F/V Capt. Cook)
- Always wear safety glasses when grinding and using power tools. (F/V Predator)



5. Falling Overboard

STATISTIC

About 25% of fatalities are due to falls overboard.

PREVENTION TIPS

- Wear inflatable suspenders or vest when working on deck. Some inflatables have automatic inflation devices.
- Do not go on deck alone at night or in rough weather. If need arises, have a spotter. Wear a PFD and Man Over-board alarm. (Petersburg fisherman)
- When fishing alone, drag a line behind the boat attached to a kill switch. (F/V Troubadour - S.E. Alaska troller)
- On seiners, leave purse line in net, not on deck where it will run across deck when the net is going out. (F/V Commander)
- Install rear-view mirrors on deck to see people in stern. (S.E. Alaska longliner/gillnetter)
- Rig up man overboard rescue devices ahead of time, using the boat's hydraulics to do heavy lifting. (F/V Amber J)
- Wear an accessible knife to cut yourself from lines/webbing and to cut bottom of waders to empty water when climbing back onboard. (F/V Laconnu)
- Always carry a serrated knife you can access and use with one hand. (F/V Capt. Cook)

6. Struck by Objects

STATISTIC

23% of injuries are due to being struck by objects.

PREVENTION TIPS

- Rig extra safety chains or stays on boom, side stays and power block as preventors.
- Keep a sharp knife on a pole to cut hung up lines that are under tension to keep you out of the line of tension. (F/V Trident)
- Avoid pinched toes by painting bright yellow stripes around pot launchers and rigging "preventors" so launchers don't go all the way to the deck. (F/V Ocean Cape)

7. Bruises/Contusions

STATISTIC

Bruises and contusions account for 13% of all Fishermen's Fund reported injuries.

PREVENTION TIPS

- When crabbing, traditional Type III USCG approved lifevests will provide some protection from pots. (Dutch Harbor fisherman)
- Wear hard hats when working with overhead gear.
- Paint hazard areas bright yellow.
- Use duct tape and foam rubber to soften tight quarters or places that cannot be avoided by tall people.

Other Good Practices

- Safety orientations covering emergency gear and procedures should be given to all new crew before leaving harbor.
- Seiners: develop ways to get fish out of net without having to lift entire net. Use wedges, straps, etc., to roll part of the net in to minimize stress on rigging and reduce center of gravity from block to increase stability. (F/V Commander)
- Use double hose clamps on all plumbing, including the deck hose outlet. (F/V Greta)
- Train crew in basic vessel operations such as navigation and anchoring. (F/V Greta)
- Have a sea anchor.
- In a rough anchorage use a fifty pound weight near anchor (a kellet or sentinel) and a surge buoy fifteen fathoms from bow. (Ketchikan fisherman)
- Keep all work areas well illuminated at night.
- Develop safety procedures and be open to ways to minimize risks.

Got deck safety ideas you'd like to share?
Submit them to AMSEA!

Alaska Marine Safety Education Association

www.amsea.org

AMSEA

Fish Handling Safety

Larry Olmsted

The potential for personal injury and disease from handling fish is one of the greatest, and most underestimated, hazards for fisheries biologists. Hazards include contacting numerous disease-causing organisms; punctures, cuts, or abrasion injuries from fish spines, gill rakers, teeth, or opercula; and secondary infections.

There is an increasing awareness of the diseases that can result from handling of fish, particularly those from polluted or organically enriched waters. The front page of the March 11, 2006 *Washington Post* reported on a myctobacteriosis epidemic in the Chesapeake Bay. The article reported that the disease (also known as fish handler's disease) can cause severe skin infections in humans and had spread to nearly three-quarters of the striped bass in the bay. Fish handler's disease is a skin infection that is not life threatening, but can lead to arthritis-like symptoms if left untreated. If untreated there is some evidence that fish handler's bacteria can lead to much more serious problems, including swollen lymph glands, gangrene, and lung problems.

Fish handler's disease is but one of a myriad of diseases potentially transmitted during the handling or culture of fishes. Roger Rulifson and his students at East Carolina University have prepared a table of examples of occupational diseases potentially hazardous to field biologists, culturists, and laboratory workers (Table 2). Of particular interest are the importance of avoiding polluted areas as much as possible, preventing contamination by wearing gloves and other protective equipment, avoiding punctures and open wounds, and thorough cleansing after exposure in the prevention of these diseases.

Puncture wounds and cuts are often accepted as a "cost of doing business" by biologists working with fish. These wounds can result from spines, gill rakers, opercula, and teeth. Aside from the initial pain from these wounds, the potential for secondary infections make this an unacceptable cost of doing business. Catfish present particular problems because they have glands at the base of their spines that may allow them to envenomate handlers when spines puncture the skin. These envenomations can cause intense pain out of proportion to the physical injury. Often, fish spines break off beneath the skin, and presence of the foreign object may not be obvious to the person. Even if no ray or spine persists in the body, secondary infections can require intense antibiotic treatment.

The potential for significant problems underscores the importance of prevention of fish spine punctures (spining) or other cuts resulting from handling fish. The most effective preventative measure is the use of appropriate gloves. Some field workers prefer nylon gloves, others opt for Kevlar. In both instances, it is imperative for dexterity that the

gloves fit snugly. Gloves offer considerable protection from spining, and essentially eliminate the possibility of nicks and cuts. Field workers who have used appropriate gloves for a period of time would not work without them. If a biologist has open wounds on their hands, they will often wear a pair of latex gloves beneath the outer gloves to provide an additional layer of protection against pathogens and infections.

Several other actions may reduce incidence of injuries. Catfish collected in gill nets present particular challenges. If spines are not being saved for aging, the biologist may use a pair of wire cutters to cut the spines off the catfish while they are still in the gill net. This facilitates removal of the fish from the net, and may ultimately lead to less stress on the fish. Use of appropriate tools such as a hooked picking tool allows the worker to remove netting more efficiently and minimize contact with spines.

Biologists should not take lightly wounds sustained from handling fish. As soon as possible the wound should be disinfected and bandaged. The wound can be disinfected with alcohol, bacitracin, Neosporin, or any other topical antibiotic ointment. Pain from wounds can be alleviated with acetaminophen or ibuprofen. In addition to first aid kits, sampling crews can prepare their own specialized fish handling kit including betadine, alcohol, towelettes, and a small scrub brush to wash and disinfect hands after handing fish. Similar kits should be standard equipment for all fish sampling crews.

Puncture wounds to joints should receive particular attention because they are especially susceptible to infection. At the first sign of infection, the individual should seek immediate medical attention. Signs of infection are ascending red marks, increased pain and soreness in joint areas or above the sting area. There may be a fragment of spine that needs to be surgically removed. Oral antibiotics are often prescribed to treat the infection and may help prevent progression to cellulitis. It is even more important to use sunscreen while taking antibiotics because certain antibiotics may cause sensitivity to the sun.

Table 1. Typical field and/or fisheries related injuries. Always seek medical attention when afflicted or caring for an afflicted person.

Type of Injury	Injury	Characteristics
Flesh Wounds	Scrapes and Abrasions	Usually does not penetrate skin, slow bleeding
	Cuts	Blood is dark red, flows at a steady pace, can be life-threatening
	Puncture Wounds	Blood is bright red, flows very rapidly. If major artery is punctured, treat immediately
Skeletal	Sprained Joints and Dislocations	Range from aching to severe pain. Dislocations show signs of deformity, swelling, discoloration, pain, inability to move injured area, and can emit a grating sound.
	Broken Bones	Deformity, swelling, discoloration, grating sound, pain, inability to move area, exposed bone in the case of compound fracture
	Head and Neck	Change in consciousness, breathing difficulty, impaired vision, inability to move body part, headache, vomiting, loss of balance, tingling in hands, fingers, feet and/or toes
Toxins, Bites, Stings	Spider Bite (Brown Recluse)	Swollen, painful, and itchy in area of bite. Wound blisters. Wound may develop in a large ulcerated area within hours or days. Severe symptoms include fever, chills, nausea/vomiting, and body rash.
	Spider Bite (Black Widow)	Minimal to sharp pain, followed by redness and swelling at site. Bite may not be painful initially. Severe symptoms include abdominal pain, dizziness, headache, fever, severe cramps, weakness and difficulty breathing.
	Scorpion Bite	Immediate pain, itching, swelling, skin changing color, anxiety, fainting, numbness of tongue, vision problems, diarrhea.
	Tick Bite	Possible rash, tick usually visible. Risk of Lyme's disease.
	Snake Bite	Swelling around bite usually
	Insect Sting	Never pull out stinger. Use edge of credit card or something similar to snag venom sack about skin level.
	Jellyfish Sting	Typically painful, red rashes limited to area of direct contact. Lesions can last days/weeks. Severe stings can cause weakness, headaches, vomiting, fever, chills, muscle spasm, difficulty breathing, possibly shock.
	Stingray Sting	Immediate, excruciating pain, bleeding, wounded area may turn red or blue, nausea, vomiting, fever, chills, muscle cramps, paralysis, fainting.
	Catfish Sting	Severe pain, inflammation at site of sting
Contact Allergies	Poison Ivy, Oak, & Sumac	Redness, itchy skin; red bumps or large oozing blisters; often in streaks or patches
Medical Emergencies	Allergic Reactions	Skin (redness, itching, blistering, hives), lungs (wheezing, tightness, cough, shortness of breath), head (swelling of face, eyelids, lips, tongue, throat), nose (stuffy, runny, sneezing), eyes (red, itchy, swollen, watery), stomach (pain, nausea, vomiting, diarrhea)
	Diabetes	Fatigue, excessive thirst, excessive urination, irritability, blurry vision
	Stroke	Weakness, numbness of face, arm, leg, blurred vision, severe headache/dizziness/confusion
	Cardiac Arrest	No heart beat, unresponsive, not breathing
	Seizures	Person makes a sound followed by abnormal stiffening and jerking of arms and legs.
Environmental Emergencies	Hypothermia	Shivering, numbness, apathy, weakness, loss of consciousness
	Hyperthermia	Heat Exhaustion: cool, moist skin, headache, nausea, weakness, heavy sweating Heat Stroke: red, hot, dry skin, vomiting, loss of consciousness
	Frostbite	Lack of feeling, waxy, cold discolored skin
	Sunburn	Red, dry skin; blisters form when more severe
	Drowning/ Near-Drowning	Coughing, choking, vomiting, shortness of breath/gasping, blue lips/tongue, clenched teeth, frothy sputum, weak pulse, slow absent breath, and coma

Table 2. Examples of occupational diseases potentially hazardous to field biologists, culturists, and lab workers.

Name	Other names	Pathogen	Carrier	How transmitted	Appearance on host	Human symptoms	Prevention
Vibriosis		*Vibrio parahaemolyticus; V. vulnificus; V. alginolyticus*	Shellfish; Crustaceans	cuts, open wounds, ingestion	not visible	acute diarrhea, abdominal cramps, fever, soft tissue destruction	protective foot and hand gear, avoid eating raw or undercooked shellfish and crustaceans
Diphyllobothriasis	tapeworm	*Diphyllobothriasis pacificum; D. latum*	intermediate hosts planktonic crustaceans, freshwater fish; final hosts dogs, cats, humans	ingestion of contaminated water, food, particles	intestinal, may be visible at anal opening	diarrhea, intestinal blocking, vitamin B-12 deficiency	drink only boiled water, fully cook all fish meat, dispose of pet feces hygienically
Human edwardsiellosis	edwardsiella	*Edwardsiella tarda*	fish especially ornamentals and catfishes, reptiles, other ectotherms	ingestion of fecal contaminated food	not visible	gastroenteritis, intestinal distress similar to that of Salmonella poisoning	wash with good antibacterial soap after cleaning ponds and tanks
Melioidosis		*Burkholderia pseudomallei*	contaminated aquarium water	water inhalation; ingestion; water contact with skin wounds	not visible	similar to typhoid fever or TB; pulmonary cavitation; chronic abscesses	avoid contact; dispose of aquarium wastewater appropriately
Erysipeloid or Erythema migrans	fish handler's disease, fish poisoning, fish hand, sealer's finger, whale finger, blubber finger, diamond skin disease	*Erysipelothrix rhusiopathiae*	fish, shellfish, marine mammals; also domestic pigs and nursing sows	handling infected organisms or fecal waste with open wounds		elevated lesions on skin (can be diamond-shaped), joint pain, fever, severe headaches; incubation 1-7 days	use gloves when handling
Crayfish Handlers Disease	Sealer's finger	*Erysipelothrix insidiosa, species of Vibrio*	fish and shellfish	handling infected organisms with open wounds or abrasions	not visible	painful itching or burning; joint swelling, stiffness; lasts up to 3 weeks	use gloves when handling, thick boots when wading
Fish TB	fish tank granuloma, swimming pool granuloma, tuberculosis, mycobacteriosis	*Mycobacterium marinum*	fish	handling fish or cleaning infected tank with open wounds		skin, soft tissue destruction; small purple lesions that gradually enlarge; incubation period 2 weeks-2 years; can mimic carpal tunnel syndrome	use gloves or other protective gear; avoid punctures or handling with open wounds
Salmonellosis	Salmonella	*Salmonella sandiego, S. java, S. pomona, S. miami*	turtles, newts, frogs, toads, other reptiles and amphibians	direct contact and indirect (unwashed clothes); exposure to contaminated aquarium water	not visible	diarrhea, abdominal cramping, fever	wash hands and clothes after handling
Avian cholera		*Pasteurella multocida*	ducks, geese, coots, gulls, crows	direct contact with feces, secretions of infected birds, water and aerosols (e.g., fountains, air- borne particles)	not visible	diarrhea, vomiting, dehydration	wear gloves when handling; avoid areas of huge die-offs or aerosols from carcass burning

Table 2 cont. Examples of occupational diseases potentially hazardous to field biologists, culturists, and lab workers.

Name	Other names	Pathogen	Carrier	How transmitted	Appearance on host	Human symptoms	Prevention
Swimmer's Itch		*Schistosome cercarial dermatitis* (12-15 species)	waterfowl and humans -- adult phase; aquatic snails - intermediate	swimming or contact with waters infested with the flatworm		skin rashes and bumps (papulae) within 30 min of exposure	avoid waters with known outbreaks, prevalent waterfowl, or aquatic snail populations
Giardiasis		*Giardia intestinalis*	infected soil and water; surfaces contaminated with animal or human feces	accidental ingestion	not visible	diarrhea and dehydration	avoid contaminated soil, water, food, fecal exposure
Cryptococcosis		*Cryptococcus neoformans*	wild birds	inhalation of airborne powdery bird droppings	not visible	serious brain and spinal cord disease, headaches, dizziness, sleepiness, confusion	avoid high risk areas with high concentrations of bird droppings
Tularemia		*Francisella tularensis*	handling muskrats, bull snakes, others; eating wild meat such as rabbit or rodents	handling infected animals, even with unbroken skin	not visible	fever, headache, nausea immediate; local lesions grow and ulcerate; ingestion causes enteritis, stupor, and delirium	wear impervious gloves when handling; cook meat thoroughly; avoid bites of flies, mosquitoes, and ticks in endemic areas; do not bathe or drink in untreated water
Newcastle Disease		viruses of family Paramyxoviridae	wild and domesticated birds	inhalation of infectious aerosols; also contact on inanimate objects and airborne between poultry houses	not visible	Painful conjunctivitis, fever, influenza-like symptoms for up to 3 weeks	wear gloves when handling birds; avoid endemic areas
Hemorrhagic Disease		*Aeromonas hydrophilia*	warm water fish in southern areas stressed, traumatized, overcrowded or in low dissolved oxygen	handling infected organisms	can be externally visible	diarrhea, infections on skin, eye, other organs	
Red Plague		*Aeromonas salmonicida*	wild and captive freshwater fish	handling infected fish		diarrhea, skin infections	

STRAINS, SPRAINS & PAINS:

Ergonomic Injury Prevention for Commercial Fishermen

POCKET GUIDE TO ERGONOMICS

This Pocket Guide is meant to be kept on your vessel for reference by you and other crew.

AMSEA
Alaska Marine Safety Education Association

AMSEA
Alaska Marine Safety Education Association

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907-747-3287 / www.amsea.org

WARNING: The stretching exercises in this booklet should not be attempted if you have a preexisting condition, injury or soreness in an affected area. Stretching should never be done to the point of causing pain. If you are under treatment for a musculoskeletal disorder, you should follow the advice of your medical advisor about practicing these exercises since they can cause further injury. You are encouraged to have your own musculoskeletal assessment conducted by a trained professional who can recommend specific exercises and develop a program for you and your particular work situation. This booklet provides general principles only, it is up to YOU to apply them safely and correctly to the work situation found in your specific fishery.

DISCLAIMER: This material was produced under grant number SH-26334-SH4 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U. S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U. S. Government. The U.S. Government does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed.

WORKER RIGHTS, DISCRIMINATION & WHISTLEBLOWER INFORMATION: Section 5(a)(1) of the OSH Act states: "Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

Employees have the right to:
1. Working conditions that do not pose a risk of serious harm.
2. Receive information and training (in a language workers can understand) about hazards, methods to prevent harm, and OSHA standards that apply to their workplace.
3. Review records of work-related injuries and illnesses.
4. Get copies of test results done to find and measure hazards in the workplace.
5. File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA rules. When requested, OSHA will keep all identities confidential.
6. Use their rights under the law without retaliation or discrimination. If an employee is fired, demoted, transferred or discriminated against in any way for using their rights under the law, they can file a complaint with OSHA. This complaint must be filed within 30 days of the alleged discrimination. Go to www.whistleblowers.gov for additional information.

Table of Contents

Overview of Ergonomics

Ergo (meaning work) and *Nomos* (meaning natural laws).

Ergonomics is the science of adapting workstations, tools, equipment and work methods for more efficient, comfortable and error-free use by humans.

Ergonomics has often been associated with working in an office, with keyboards, telephones and fancy ball chairs. The fact is, however, that correct ergonomics is important in nearly every activity we undertake; especially activities and jobs that are physically taxing - like commercial fishing. Anyone who has ever fished, known a fisherman or thought about fishing, knows there are inherent risks, but we usually associate those risks with things like weather, loading our vessels, handling gear, etc. It isn't often we *really* think about the risks to our bodies from repetitive motion, strain on the back, lifting, and other forces that cause injury over time. We know those risks are there, but it's just part of the job, right? Sort of.

Improving ergonomics in commercial fishing practices can help to reduce injury. There are tools, safer practices and simple deck alterations that can dramatically reduce your risk to injury caused by the physical demands of commercial fishing.

As you go through the guide, begin to think about what areas on your vessel could be improved through correct ergonomics. The benefit is not only self-wellness, but often, improved ergonomics creates more efficient practices - which is something every fisherman can appreciate.

This guide is intended to serve as a reference to be kept on board your vessel. It is not intended to treat, diagnose or cure any condition. Please remember to always consult your physician for any medical concerns you may have.

Forces on the Body

BACK & SPINE

Low-back stresses are due to force and posture and effort repetition/effort duration. In commercial fishing in particular, effort duration is much greater than that of a typical job because the shift is longer. Fishermen don't punch in and punch out, they work by the tides, fishing regs and other factors. Additionally, they work in often confined and cramped spaces, and on a surface that is moving with the water.

When thinking about injuries specific to the back, we must consider several factors:

1. The weight/size and direction of the load or force on the hands.
2. The posture assumed during the material handling activity (including the twisting of the body and the horizontal distance of the load out from the body).
3. The frequency of the force.
4. The duration of the activity.
5. Fixed or stationary postures.

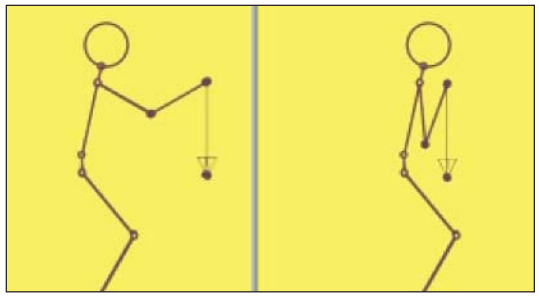
Potential stress from high force.

Potential stress from posture.

Potential stress from force AND posture.

Compressive force on the spine is something that should also be considered. Lifting and lowering loads put compression on the spine. While the National Institute for Occupational Safety and Health (NIOSH) tells us to avoid lifting more than 35 pounds at once, and especially if frequent and of long duration, we know this is often not possible in the fishing industry.

Reduce compressive force by keeping the load close to the body.



DO NOT LIFT LIKE THIS!
When lifting/lowering a given load, the torso weight can contribute a lot of stress. Try to keep the torso as upright as reasonable and comfortable.

When pushing or pulling, remember that low-back compressive force is minimized when the force direction is close to the waist.

Shoulder stress can be reduced by task design and/or work practices which orient the force direction through the shoulder.

In general, pushing is lower stress than pulling. In fishing, however, you often don't have the option.

Locate the hands about half way between the low back and the shoulder when pulling or pushing so that neither the back nor shoulder is highly stressed.

Recommendations for reducing stresses on the back and spine:

- Keep the body upright (as much as possible).
- Keep the load/force close to body.
- Push/pull at mid-torso height.
- Don't twist the body.
- Don't jerk the load you are lifting.
- Get help when moving.
- Tighten stomach, exhale when lifting.
- Make a "bridge."

When possible, support yourself with your free hand when lifting or lowering to form a "bridge." This reduces stress on your back.

SHOULDER, ELBOW, WRIST & HAND

Forces on the upper extremities of the shoulder, elbow, wrist and hand, can cause ergonomic injury just as in the back and spine.

Shoulder: Common shoulder problems are tendonitis (inflamed tendon) and bursitis (inflamed bursa - which is a fluid filled sac in the shoulder).

You can reduce your risk for ergonomic injury of the shoulder by taking a few precautions when possible:

- Avoid work at or above the shoulders.
- Get help when you have to do overhead work.
- Keep shoulders square and rolled back.
- Exercise shoulders and mid-back to maintain strength.

Elbow: Common elbow problems are generally related to tendonitis (or epicondylitis). You may have heard the term "Tennis Elbow," which is presented with pain or discomfort on the outside of the elbow, or "Golfer's Elbow," which is presented with pain or discomfort on the inside of the elbow. In commercial fishing this pain can develop (or increase) at the outside of the elbow due to tasks like lifting, gaffing, baiting and cleaning.

You can sometimes alleviate pain due to epicondylitis by:

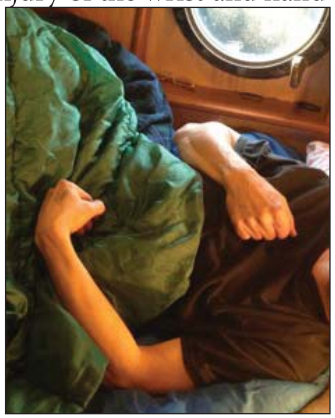
- Avoiding the activity that causes the pain.
- Use an ice pack 30 minutes, 2x/day on the affected elbow.
- Use of anti-inflammatory drugs (consult your physician).
- Using a forearm brace.
- Using gloves that grip.
- Physical therapy.

Wrist/Hand: Disorders of the hand and wrist are very common among commercial fishermen. Some common problems are tendonitis (including Carpal Tunnel Syndrome) and Vibration White Finger.

Many fishermen are quite aware of the symptoms of Carpal Tunnel Syndrome. Some of those symptoms are:

- Pain, tingling, cramping.
- Numbness in thumb, pointer, middle, inside of ring finger.
- Weak grip, clumsiness.
- Burning pain (worse at night).
- Tendency to find affected hand with bent wrist when at rest.

You can reduce your risk to ergonomic injury of the wrist and hand with these recommendations:



- Tool and task design to decrease hand force.
- Improve friction and grip characteristics.
- Optimize tool grip diameter (approximately 2 inches).
- Use power/full hand grip instead of pinch grip.
- Minimize wrist/shoulder deviation (bend the tool not the wrist).
- Reduce exertion time/increase muscle recovery time.
- Reduce repetition through job enlargement.
- Alternate hands.
- Use personal protective equipment (PPE).
- Reduce contact stress from hard surfaces with padding.

Risk Factors for Ergonomic Injuries

ABOUT ERGONOMIC INJURIES

Ergonomic injuries, also often referred to as musculoskeletal disorders (MSDs), are very common among commercial fishermen. An easy way to the think of the musculoskeletal system, is to think of it like a winch. Muscles are the motor which generate force, tendons are the cables which transfer that force, and the skeletal frame is like the metal frame of a winch. Damage in any of these areas in a winch creates a compromised system prone to weakness or failure; our musculoskeletal systems react much the same way when we have injury in any of these areas.

RISK FACTORS FOR MSDs OF THE UPPER EXTREMITIES

Just as in low back stress, stress to the upper extremities (shoulder, elbow, wrist and hand) is caused by force and posture and effort repetition/effort duration. More specifically affecting these extremities are grip force, posture, frequency/repetition, contact and cold temperature.

It helps to remember the "BIG 4" Risk Factors:

1. High force
2. Awkward Posture
3. Exertion Repetition & Duration
4. Shift Duration

Other Risk Factors are the Environment (meaning hot or cold temperatures) and of course, our own personal characteristics (age, body mass index, smoking, diet, fatigue, etc.).

GRIP FORCE RISK FACTORS

Reduce risk factors caused by grip force by:

- Using tools designed to decrease hand force.
- Using a power grip rather than a pinch grip.
- Improving mechanical advantage.
- Automation.

Power Grip

Pinch Grip

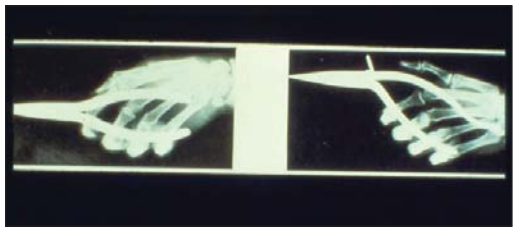
Left: This screwdriver reduces hand force because it has a handle that is easier to grip and turn. Center: Use a power grip as in the top photo rather than a pinch grip in the bottom photo. Right: This hammer improves grip with a high friction handle.

POSTURE RELATED RISK FACTORS

It is important to remember that high forces and/or awkward posture can cause tendonitis (inflammation of the tendons).
You can reduce posture related risks by:

- Workplace design/work orientation
- Minimizing wrist/shoulder deviation
- Keeping the hand in front, below mid-torso
- Altering work methods
- Automation

Awkward posture and wrist bend can be minimized by using tools with bends as seen in the x-ray image to the right.



Another example of putting the bend in the tool rather than the hand. Fish scrapers can have either a bend in the handle or the scraper to minimize posture related risk. Additionally, scrapers can also have hose fittings on the end to make work even more efficient.

FREQUENCY/REPETITION RISK FACTORS

Also remember that frequency/repetition increase risk to ergonomic injury as the stress on the body appears to accumulate with repeated exertions. You can reduce high frequency/repetition risk factors by:

- Increasing cycle time
- Worker rotation
- Alternating hands
- Taking more rest breaks
- Greater job variety
- Automation

Spending long hours at one station doing the same task is a greater risk for ergonomic injury than switching tasks throughout the day.

CONTACT TRAUMA RISK FACTORS

Contact risk factors may cause ergonomic injury due to direct contact with the work piece, tool or work surface. This is especially hazardous when the hand is used repeatedly to pound or push on parts. Contact trauma is also possible when the elbows are rested on a hard work surface or when the forearms come in contact with the with the sharp edges of a work surface. You can reduce contact trauma related risks by:

- Using padding
- Distributing force among fingers
- Alternating hands
- Workplace redesign
- Automation

COLD TEMPERATURE COMPOUNDS RISKS

Cold temperatures may present a direct hazard to the tissues, or desensitize the receptors in the hands, and cause the worker to grip the tool harder than necessary. This may increase the grip force risk noted earlier. Additionally, cold temperatures combined with vibration may lead to Vibration White Finger - a repetitive stress injury that causes the fingers to turn white due to spasms in the small blood vessels. When the vessels spasm they constrict and cut off blood flow to the fingers causing them to turn white.

A photo of Vibration White Finger - an example of the compounded risk of cold plus vibration.

Prevention

You can reduce your risk for, or even prevent, ergonomic injury - even as a commercial fisherman. The key is to be aware of what you can do to minimize your risk (when possible) and how to alleviate symptoms when they do occur. Remember some key points covered in this guide to make your work easier on your body:

- Distributing force among fingers.
- Move your feet, don't twist your body while using force.
- Try to limit effort repetition and task duration.
- Use two people to lift heavy objects when possible.
- Keep your body upright as much as possible during exertion.
- Keep the load/force close to your body.
- Push or pull at mid torso height.
- Tighten stomach and exhale when lifting.
- Remember to make a "bridge" when possible.
- Be mindful of extreme temperatures (hot or cold).
- Develop methods to limit movement of fish and gear.

Commercial fishing is hard work, but you can learn ways to reduce the physical toll it takes on your body.

Stretches & Exercises

Stretching can help avoid problems altogether. Why is stretching a good idea? Well, a number of reasons - including, increased blood and oxygen, increased flexibility and agility, it makes us more mentally alert and all of these things contribute to being more productive. You can stretch anytime - before work, during work or after work. Certain stretches will be easier to do during non-fishing times, but others can be done during breaks from work. Think about developing a 2-5 minute "warm-up" routine before you go out to work on deck.

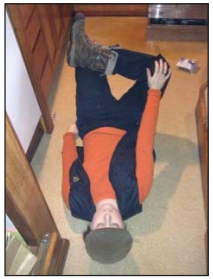
Take these into consideration when thinking about stretching:

1. The idea is to increase flexibility.
2. Stretch slowly but do not bounce or cause pain/worsen condition.
3. Should be part of a daily routine.
4. Have underlying conditions professionally assessed.
5. If serious musculoskeletal issues exist, get professional help.
6. Develop a habit of stretching every day.

BACK STRETCHES

Knee to Chest Stretch

1. Hand behind knee, pull knee to chest until comfortable stretch felt in lower back/buttock.
2. Relax back.
3. Hold 30 seconds - Repeat 3x, alternate legs.



Back Adductor Stretch

1. Place foot outside opposite knee.
2. With hand push away on bent knee.
3. Hold 30 seconds.
4. Alternate legs - Repeat 3x.

Lower Trunk Rotation

1. Keep back flat and feet together.
2. Rotate knees to left/right side.
3. Hold 30 seconds
4. Repeat 3x per side.

Knees to Chest

1. Lie on back with knees bent.
2. Bring knees to chest using arms.
3. Do 2 sets, 30 seconds each.

Cat/Cow Stretch

1. Arch back 30"- sag back 30"
2. Do 2 sets of 3 reps

Trunk Stretch

1. Reach arms out, elbows straight.
2. Gently sit back on heels.
3. Hold 30 seconds.
4. Do 2 sets of 3 reps.

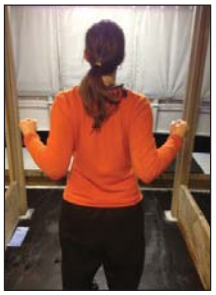
Backward Bend

1. Hands on hips.
2. Arch back.
3. Hold 10 seconds.
4. Repeat 5-10x per set.
5. Repeat every few hours.


Cobra Stretch
1. Rise up on elbows (only as high as comfortable).
2. Keep hips on floor.
3. Hold 10 seconds.
4. Repeat 10x.

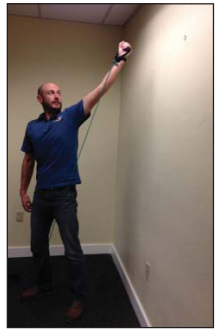
SHOULDER STRETCHES

Scapular Retraction
1. Elbows bend to 90°.
2. Pinch shoulder blades together.
3. Rotate arms out.
4. Keep elbows bent.
5. Do 10-30/set.
6. Repeat every few hours.



Shoulder Shrug
1. Shrug shoulders up & back.
2. Do 20-30x/day.
3. Repeat every few hours.

Corner Stretch
1. Stand in corner, hands about shoulder level.
2. Lean forward until comfortable stretch felt across chest.
3. Hold 30 seconds.
4. Repeat 3x and do 1 – 3x/day.

Foot/Outstretched Hand
(Bungees like this one can be bought at a pharmacy or physical therapist and used at home or boat.) Place one end under foot and lift across body extending arm up as pictured at left.

Lateral Stretch
Attach one end to door or bulkhead and pull across body by rotating out at shoulder, maintaining 90 degree bend arm.


Shoulder Lifts
(A suitable surface for hands can be found at home or vessel.) Lift and lower weight of body as shown at left.

Shoulder Stretches w/ Rope
(You can make this yourself with rope and hang it from an overhead on your vessel.) With Feet in place, bend elbows to raise body.


Cobra Stretch
1. Rise up on elbows (only as high as comfortable).
2. Keep hips on floor.
3. Hold 10 seconds.
4. Repeat 10x.

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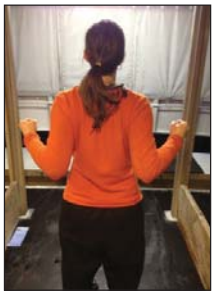

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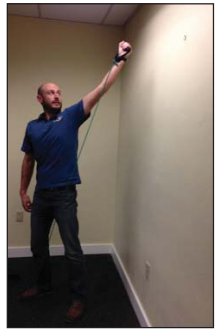

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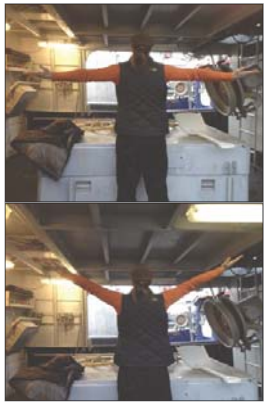
Shoulder Stretches w/ Rope
(You can make this yourself with rope and hang it from an overhead on your vessel.) With Feet in place, bend elbows to raise body.

Push-Ups
While on hands & toes, lower and raise body by bending at elbows. Keep knees/hips off floor. (If you have lower back problems, keep knees on floor.)

Wall Clock Stretch
1. Hands outstretched, palms up- hold 30 seconds.
2. Raise arms 45°. Hold 30 seconds.
3. Raise arms upright, thumbs facing back.



ELBOW, HAND & WRIST STRETCHES

Elbow-Hand Bend
1. Move hand against fixed resistance.
2. Hold 3 seconds, repeat10x.

Elbow -Hand Press
1. Move wrist back against fixed resistance.
2. Hold 3 seconds, repeat 10x.

Active Hook Fist (for Carpal Tunnel Syndrome)
1. With fingers & knuckles straight, bend middle & tip joints (do not bend large knuckles.)
3. Repeat 10x and do 1 or 2x/day.

Active Full Fist
1. Straighten all fingers.
2. Make a fist.
3. Bend all joints.
4. Repeat 10x; 1-2x/day.

Active Straight Fist
1. Fingers straight.
2. Bend knuckles & middle joint.
3. Touch fingertips to palm.
4. Repeat 10x, 1-2x/day.

Wrist Extensor Stretch
1. Keep elbow straight.
2. Grasp hand & slowly bend wrist forward until stretch is felt.
3. Hold 30 seconds.
4. Relax.
5. Repeat 3x/day or every few hours.

Wrist Flexor Stretch
1. Keep elbow straight, grasp hand
2. Slowly bend wrist back till stretch is felt.
3. Hold 30 seconds.
4. Relax
5. 3x/day or every few hours.

3.5.1. **Before Deployment on Vessel**

The Commercial Industry Vessel Safety Act of 1988 required the U.S. Coast Guard (USCG) to issue regulations that require certain equipment, instructions and drills aboard vessels that operate beyond the boundary line (COLREGS) or carry more than sixteen individuals. Equipment, instructions and drills all increase your safety. Your assigned vessel almost certainly operates beyond the COLREGS line (an imaginary line drawn from points of lands, or closes passes, bays and inlets). These regulations are published in the Code of Federal Regulations (CFR), with most contained in 46 CRR. These safety regulations are outlined in the publication Federal Requirements for Commercial Fishing Industry Vessels. Specific regulations vary, depending on the type and length of vessel, location of fishing operations, seasonal conditions and other factors.

When you board a vessel, safety regulations mandate the captain to make sure you receive a safety orientation. This may be as simple as showing you around, but may include watching videos, or conducting drills. There are some important items that you need to be familiar with while on board any vessel. Check these things before you leave the dock. Aboard fishing vessels, a life-threatening emergency is possible at any time.

By law, vessels selected for participation in fishery evaluations projects that carry observers must have a current USCG safety inspection decal. The policy regarding vessel selection or rejection for participation in the observer program, whether the program is mandatory or voluntary, is as follows:

1. **You will not sail aboard a vessel, unless a current USCG safety decal** is displayed in the starboard window of the wheelhouse of the vessel. This is the law.

2. **Before** the vessel leaves the dock, you need to fill out the safety check off list to determine whether the minimum safety equipment is onboard. Do this before the vessel gets underway because you could find yourself the fifth person on a vessel with a four-man life raft.

If you determine that the vessel does not comply with the minimum safety equipment requirements, or for any other reason consider the vessel unsafe in a pre-boarding survey, do not board, and immediately contact the Observer Coordinator.

3. Once you have completed your check off list, orient yourself with the vessel. Become familiar with other safety features of the vessel such as the station bill, and location of any other safety equipment (radio, first aid kit). Identify any potential hazards before the vessel departs. Memorize the exit route from your cabin, the galley, and other locations where you may spend a fair amount of time.

*** The following are examples of things that you should/could check while doing a vessel walk through. They are listed here to assist you when determining the relative safety of a particular vessel. It is not a comprehensive list but one that is intended to** help **you** start **thinking***

- Does the vessel seem well maintained? Is it neat, clean and being run by a crew that is careful and prepared?
- Any visible hydraulic leaks?
- Is the vessel being used for the purpose it was originally designed? Have significant changes been made?
- Do obvious hazards exist? Note potentially hazardous areas/conditions.
- Identify the watertight doors (interior and exterior). Can they be secured in case of heavy weather or emergencies?
- Are any hatches or passageways blocked or difficult to get to?
- Does deck gear appear to be in good working order and are there safety concerns with the setup? Are there wires that run overhead? Are shackles and blocks worn excessively?
- Is vessel overdue for a haul-out (excessive growth at waterline or hull paint in poor condition)?
- How often is the bilge pump going on?
- How high off of the deck is the fish hold hatch and is it in good condition? Are there any other openings on deck and are they covered with hatches?
- Would anything prevent you from abandoning ship from the living quarters?
- What are the escape routes from every part of the vessel you might find yourself? Visualize egress for all possible scenarios (fire, flooding, capsized, dark, etc.) and mentally note landmarks.
- What are the most combustible items on board and where are they stored?
- Are there any exposed exhaust pipes/manifolds that might pose burn hazards?
- While you are at sea note the roll period. Generally a boat with a quick, snappy roll is more stable than a boat that has a slow or sluggish roll period. A boat that seems to hesitate on its side before righting could be unstable.
- Does the vessel list excessively?
- Is there heavy equipment on deck that is not lashed down?
- Are there any exposed drive chains, pulleys or belts?
- Where is the life raft located? Would it be hard to get to if conditions were icy or the house was on fire?
- Are there rust stains between wood planks? Do any planks protrude or are there inconsistencies in the hull? Is wood rot present? Remember, if you can see wood rot it is likely worse in areas that you can't see.
- Are there safety issues involved with boarding?
- Is there a sufficient amount of scuppers and are they large enough to be effective? Do they become plugged during fishing operations?
- Is there a station bill posted and is your role clear during all shipboard emergencies? Did the captain give a safety orientation, explaining:
    - Survival craft embarkation stations and assignments
    - Fire/emergency/abandon ship signals
    - Procedures for rough weather/sea
    - Procedures for recovering person overboard
    - Procedures for fighting a fire
    - Essential actions required of each person in an emergency?

OMB Control No. 0648-0593 Expiration Date: 01/31/2024

Southeast Fisheries Observer Programs - Panama City

Pre-Trip Safety Check

OBS TRIP ID_____ DATE _____

VESSEL NAME_____ VESSEL #_____

Life Saving Equipment (circle **Y** for yes or **N** for no)

CGVSE

Safety Examination Decal? **Y / N**

Decal #_____

Date of Expiration:____/ _____

Vessel Distance Rating:_____NM

EPIRB

EPIRB present? **Y / N** EPIRB Category: **I / II**
Stowed in a float-free location? **Y / N**
EPIRB Registration Expiration Date:____/_____ Registered To: _____
Hydrostatic Release Exp. Date:____/_____/ **NA** Battery Expiration Date: / ____

FLARES

3 of any flare required for operations <3nm offshore
3 Parachute, 6 Hand & 3 Smoke required for operations >3nm offshore

Record flare expiration dates:

Hand: ____ / ____	Hand: ____ / ____	Smoke: ____ / ____	Parachute: ____ / ____
Hand: ____ / ____	Hand: ____ / ____	Smoke: ____ / ____	Parachute: ____ / ____
Hand: ____ / ____	Hand: ____/ ____	Smoke: ____ /____	Parachute: ____ /____

PFDs AND IMMERSION SUITS (not including observer equipment)

Personal Floatation Device for each **POB**? **Y / N** **# of PFDs ____**

Immersion suit for each **POB***? **Y / N** **# of Immersion Suits ____**
*required in federal waters above 32 N latitude

FIRE FIGHTING EQUIPMENT

Vessels <26 ft require 1 B-I unless equipped with an outboard in certain conditions
Vessels >26 ft but <40 ft require 2 B-I or 1 B-II
Vessels >40 ft but <65 ft require 3 B-I or 1 B-II & 1 B-I

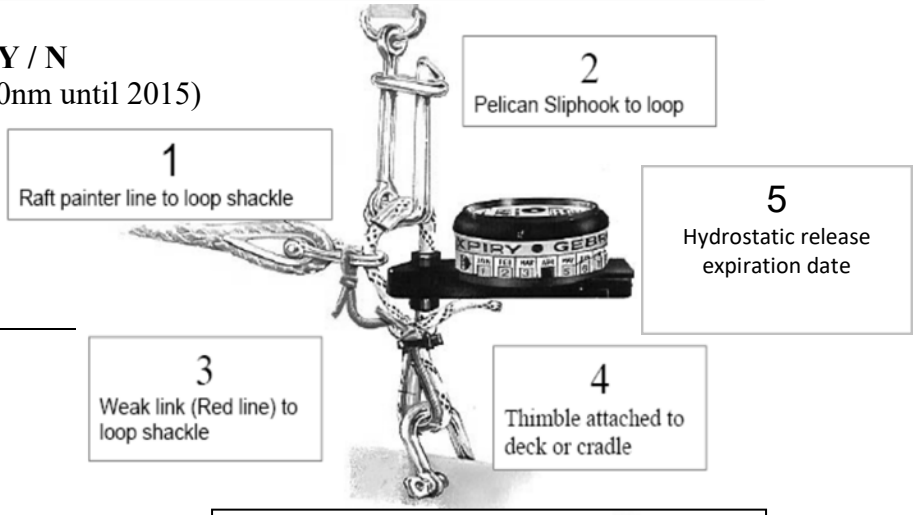
	Location	Type	Manufacture Date	Brand	First Model #	Green Y/N	Photo Y/N
1							
2							
3							

If cannot determine both brand AND model, a photo MUST be taken

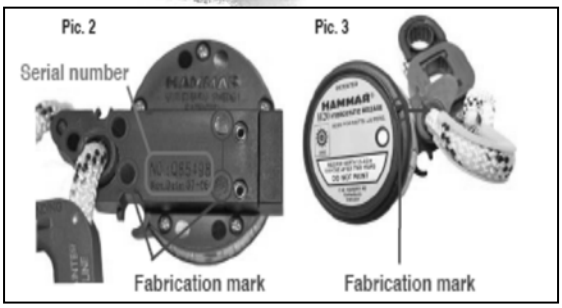
STATION BILLS posted? Y / N **ONBOARD DRILLS logged? Y / N**

LIFE RAFTS AND RINGS
Orange ring buoy with line attached? **Y / N**
Rigid life float? **Y / N** (>12nm but <20nm until 2015)

Inflatable life raft? **Y / N**
Capacity for all **POB**? **Y / N**
Life raft Capacity_____
Raft Repack Date___/ _____
Hydrostatic Release Exp. Date:___/ _____
Life raft configured correctly*? **Y / N**
*Please take picture of configuration



5 Fabrication Marks Present? **Y / N**
Upper Fabrication mark towards rope? **Y / N**



Please provide signatures to verify that a safety check was conducted and that the information above is accurate.

Observer:_____Date:_____/_____/_____

Owner/Operator:_____Date:_____/_____/_____

Commercial Fishing Vessel Safety

EXAMINATION

VESSEL

- ☐ Documented
- ☐ Undocumented

OPERATIONS

- ☐ Cold Waters
- ☐ Warm Waters

- ☐ Inside Boundary Line
- ☐ Beyond Boundary Line

FROM COASTLINE

- ☐ < 3 NM
- ☐ < 12 NM
- ☐ < 20 NM
- ☐ < 50 NM
- ☐ > 50 NM
- ☐ > 100 NM

THIS VESSEL MEETS ALL USCG COMMERCIAL FISHING INDUSTRY VESSEL REGULATIONS FOR OPERATING AREAS AS MARKED

NO.

EXPIRES

- 2021 ☐
- 2022 ☐
- 2023 ☐
- 2024 ☐

JAN	JUL
FEB	AUG
MAR	SEP
APR	OCT
MAY	NOV
JUN	DEC

CG-5587A
(Rev. 6/08)

U.S. Department of Homeland Security

3.5.4. USCG Decal Ratings Cheat Sheet

All Vessels:

PFDs on board for every POB, excluding the observer
Flares (Rating dependent)
Orange Ring Buoy
Fire Extinguishers

- Vessels less than 26 ft are not required 1 5-B **IF** propelled by outboard motor and the construction of the does not permit the entrapment of explosive or flammable gases or vapors.
- Vessel greater than 26 ft but less than 40 ft require 2 5-Bs or 1 20-B
- Vessels 40 ft and over but less than 65 ft require 3 5-Bs or 1 20-B and 1 5-.

Less than 3nm:

3 Flares total of any kind (smoke, hand, or parachute)
NO LIFE RAFT REQUIRED
NO EPIRB REQUIRED

Less than 12nm:

Flares (3 smoke, 6 hand, 3 parachute)
NO LIFE RAFT REQUIRED
EPIRB

- CAT I (>36 ft, hydrostatic release required)
- CAT II (<36 ft, no hydrostatic release)
    - If vessel is >36 ft and has a Builders Certificate that states it is inherently buoyant the vessel is allowed to have CAT II.

Less than 20nm:

Flares (3 smoke, 6 hand, 3 parachute)
Rigid Life Float Required
EPIRB

- CAT I (>36 ft, hydrostatic release required)
- CAT II (<36 ft, no hydrostatic release)
    - If vessel is >36 ft and has a Builders Certificate that states it is inherently buoyant the vessel is allowed to have CAT II.

More than 20nm:

Flares (3 smoke, 6 hand, 3 parachute)
EPIRB

- CAT I (>36 ft, hydrostatic release required)
- CAT II (<36 ft, no hydrostatic release)
    - If vessel is >36 ft and has a Builders Certificate that states it is inherently buoyant the vessel is allowed to have CAT II.

Undocumented Vessel - ex. FL2440HP

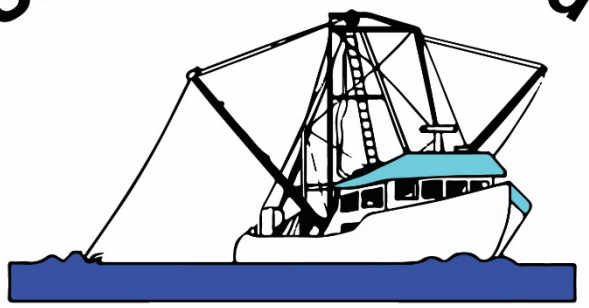
- Valise Life Raft or Canister Life Raft Required (Valise must be readily accessible)

Documented Vessel - ex. 604557

- 20- 50nm- *Valise Life Raft with Coastal pack minimum requirement
- > 50nm: Canister Life Raft Required (Raft must be in cradle and mounted in a float free location)

Exceptions or Changes may occur, see current regulations https://www.dco.uscg.mil/FishSafe

U.S. Coast Guard



Fishing Vessel Safety

Federal Requirements for Commercial Fishing Industry Vessels

This pamphlet is published by the U. S. Coast Guard:
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https://www.dco.uscg.mil/FishSafe

Regulatory information current through June 1, 2020

Federal Requirements for Commercial Fishing Industry Vessels

CONTENTS **PAGE**

This pamphlet contains information on Federal requirements for commercial fishing industry vessels. Owners/operators may be required to comply with additional regulations specific to the state in which the vessel is registered or operated. Contact your local authorities to ensure compliance with state laws.

Requirements in this pamphlet include cites from applicable laws and regulations. This pamphlet summarizes the regulations as applicable to most vessels. It is not intended to be all-inclusive. Additional details on specific requirements can be found in the Code of Federal Regulations (CFR), available at: www.eCFR.gov, your local library, bookstore or may be ordered from the Government Bookstore 1-866-512-1800, https://bookstore.gpo.gov/sales.

Dockside Safety Exams

Required Dockside Safety Examinations: 46 U.S.C. §4502(f) requires commercial fishing vessels operating beyond 3 nautical miles from the baseline from which the territorial sea of the United States is measured or beyond 3 nautical miles from the coastline of the Great Lakes, be examined dockside at least once every 5 years. The Coast Guard advises that a safety exam should be completed every 2 years to ensure safety equipment and procedures are current. The dockside exam compliance decals are valid for 2 years.

Fish Processing, Aleutian Trade Act Vessels or vessels that carry a NOAA Fisheries Observer must be examined dockside at least once every 2 years.

Voluntary Dockside Safety Examinations: Voluntary dockside safety examinations are encouraged for all other commercial fishing vessels. These free examinations include a thorough check of safety equipment required on that particular vessel. The examination will be conducted by qualified Coast Guard personnel or a third party organization accepted by the Coast Guard.

The dockside examination educates the fishing public. There is no penalty for not passing a voluntary exam, a work list will be provided to the owner/operator identifying items that need to be corrected. Upon successful completion a safety decal is issued to the vessel that indicates compliance with the regulations.

Contact your local Examiner to schedule a dockside examination. For a complete list of Examiners visit https://www.dco.uscg.mil/FishSafe. You may also request an examination by contacting your Coast Guard District Fishing Vessel Safety Coordinator listed at the back of this pamphlet.

Safety Exam Decal

At-Sea Boardings

At-sea boardings The Coast Guard is the primary law enforcement presence at sea. Coast Guard Boarding Teams conduct law enforcement boardings to verify compliance with various laws regarding fisheries, safety and environmental protection. Compliance with safety regulations reduces the chance of vessel casualties and helps avoid costly citations. Additionally, the presence of a valid examination decal may reduce time spent checking safety equipment during an at-sea boarding.

Voyage terminations for unsafe operations

If the boarding officer determines that an especially hazardous condition exists, the vessel's voyage could be terminated. The regulations identify eleven items that may be grounds for voyage termination (46 CFR Part 28.65):

1. Insufficient or unserviceable survival gear (such as PFDs, immersion suits, survival craft, etc.)
2. No operable EPIRB or radio (when required)
3. Inadequate fire fighting equipment
4. Excessive volatile fuel/vapors in bilges
5. Instability resulting from overloading, improper loading, or lack of freeboard
6. Inoperable bilge system (when required)
7. Intoxication of operator (.04% BAC)
8. Lack of adequate operable navigations lights during periods of reduced visibility
9. Watertight closures missing or inoperable (when required)
10. Flooding or uncontrolled leakage in any space
11. A missing or expired Certificate of Class for a Fish Processing Vessel (when required)

Requirements for all Commercial Fishing Industry Vessels

Personal Flotation Devices (PFDs) and Immersion Suits

46 CFR 28.105 – General Requirements
46 CFR 28.110 – Number and Stowage
46 CFR 28.135 – Markings
46 CFR 28.140 – Maintenance
46 CFR 25.25 – Life Preservers and Other Lifesaving Equipment

There must be at least one Coast Guard approved device of the proper size for each person on board the vessel (see table).

Type of PFD Required

Area of Operation	Vessel Type	Device
Seaward of the Boundary Line, north of 32ºN, or south of 32ºS, and Lake Superior	Documented	Immersion Suit
Coastal Waters on the West Coast of the U.S. north of Pt. Reyes, CA; Beyond coastal waters, cold waters; and Lake Superior	All	Immersion Suit
All other waters (includes Great Lakes except Lake Superior)	40 feet or more in length	Type I, Type V Hybrid, or Immersion Suit
All other waters (includes Great Lakes except Lake Superior)	Less than 40 feet in length	Type I, II, III, Type V Hybrid, or Immersion Suit

Requirements

Stowage and Condition	Readily accessible and in good (serviceable) condition
Markings	Must be marked with the name of: - the vessel **or** - the owner of the device **or** - the assigned individual
Retro-reflective material	62 square inches (31 sq. in. on front and 31 sq. in. on back)
Approved Personal Marker Light	Vessels on Coastwise, Ocean or voyages on the Great Lakes. Attached to front shoulder of PFD

EXAMPLES OF PFDs and IMMERSION SUITS

TYPE I	
TYPE II	
TYPE III	
TYPE V	
IMMERSION SUIT	**(aka Exposure Suit or Survival Suit)** 

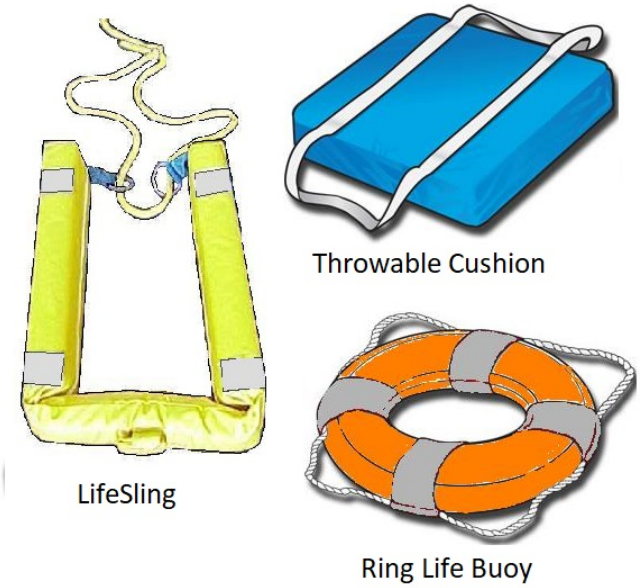
Throwable Flotation Devices

46 CFR 28.115 – General Requirements
46 CFR 28.135 – Markings

A Coast Guard approved throwable flotation device (ring life buoy or buoyant cushion) must be carried on board, as specified in the following:

Vessel Length	Device Required
Less than 16 feet	None
16 feet to less than 26 feet	1 USCG approved throwable cushion or ring life buoy
26 feet to less than 65 feet	1 orange 24-inch ring life buoy with 60 feet of line attached
65 feet or more	3 orange 24-inch ring life buoys, at least one device must have 90 feet of line attached

A commercial Lifesling3™ (CG Approval 160.050), may be substituted for a ring life buoy, if the vessel has a lifting point 10 ft. above the deck, device is stowed as per the instructions and the crew is trained in its proper use.



Survival Craft

46 CFR 28.120 – General Requirements
46 CFR 28.125 – Stowage
46 CFR 28.130 – Equipment
46 CFR 28.135 – Markings
46 CFR 28.140 – Maintenance

Commercial fishing industry vessels are required to carry Coast Guard approved survival craft of sufficient capacity to accommodate the total number of individuals on board as determined by the tables.

Warm Waters

State Numbered Vessels

Area	Vessel Length	Survival Craft
Inside Boundary Line; or lakes, bays, sounds, rivers	All	None
Beyond Boundary Line, within 20 miles of coastline	All	Life Float [1, 2]
Beyond 20 miles of the coastline	All	Inflatable buoyant apparatus

Documented Vessels

Inside Boundary Line; or lakes, bays, sounds, rivers	All	None
Beyond Boundary Line, within 20 miles of coastline	All	Life Float [1, 2]
20 – 50 miles of the coastline	All	Inflatable Liferaft with Coastal Pack
Beyond 50 miles from coastline	All	Inflatable liferaft with SOLAS A pack.

Cold Waters

State Numbered Vessels

Area	Vessel Length	Survival Craft
0-12 miles from coastline	Less than 36 feet	Buoyant apparatus[1]
0-12 miles from coastline	36 feet or more	Buoyant apparatus
Beyond 12 miles from coastline	All	Inflatable buoyant apparatus

Documented Vessels

0-12 miles from coastline	Less than 36 feet	Buoyant apparatus[1]
0-12 miles from coastline	36 feet or more	Inflatable buoyant apparatus[2]
12 - 20 miles from coastline	All	Liferaft
20-50 miles from coastline	All	Liferaft with SOLAS B pack.
Beyond 50 miles from coastline	All	Liferaft with SOLAS A pack.

Great Lakes

State Numbered Vessels

Area	Vessel Length	Survival Craft
Warm Waters, within 3 miles of coastline	All	None
Warm Waters, Beyond 3 miles of coastline	All	Buoyant Apparatus [1]
Cold Waters	36 feet or more	Buoyant Apparatus

Documented Vessels

Warm Waters within 3 miles of coastline	All	None
Warm Waters, beyond 3 miles of coastline	All	Buoyant Apparatus [1]
Cold Waters	Less than 36 feet	Buoyant Apparatus [1]
Cold Waters	36 feet or more	Inflatable Buoyant Apparatus [2]

[1] A vessel less than 36 feet which operates within 12 miles of the coastline with three or fewer people on board is not required to carry a survival craft.
[2] A Coast Guard approved Buoyant Apparatus may be substituted provided the vessel operates within 12 miles of the coastline with three or fewer people on board.

Hierarchy: A survival craft higher in the hierarchy may be substituted for any survival craft required. The hierarchy of survival craft in descending order is:

1. Lifeboat
2. Liferaft with SOLAS A Pack or Oceans pack
3. Liferaft with SOLAS B Pack or Limited pack
4. Liferaft with Coastal Service Pack
5. Inflatable Buoyant Apparatus (IBA)
6. Life Float
7. Buoyant Apparatus

Exceptions

An auxiliary craft, which is ***integral to and necessary for*** normal fishing operations, may be substituted for a survival craft (except for an inflatable liferaft) if it is readily accessible during an emergency and is capable of safely holding all persons on board. (Loading may not exceed the rated capacity of the craft.)

Vessels less than 36 ft. which meet flotation provisions of 33 CFR Part 183 and operate within 12 miles of the coastline are not required to carry a survival craft.

Undocumented vessels with more than 16 individuals on board refer to table 46 CFR 28.120(c)

Survival Craft Examples

Inflatable Liferaft

Inflatable Buoyant Apparatus

Life Float

Bouyant Apparatus

Stowage of Survival Craft

46 CFR 28.125

Inflatable Liferafts that are required to be equipped with a SOLAS A or B equipment pack must be stowed so as to float free and automatically inflate in the event the vessel sinks.

All Inflatable Liferafts, Inflatable Buoyant Apparatus, and any auxiliary craft used in their place must be readily accessible for launching or be stowed to float free if the vessel sinks.

A hydrostatic release unit used in a float free arrangement must have a Coast Guard approval number starting with 160.062. A float free link may be used with a Buoyant Apparatus or a Life Float and must be certified to meet 46 CFR, subpart 160.073.

Life Float & Buoyant Apparatus Equipment

46 CFR 28.130

Lifeline, Pendants, Painter, Floating electric water light (Coast Guard approval 161.010)

Lifesaving Equipment Marking

46 CFR 28.135
46 CFR 28.130

Marking of Lifesaving Equipment

Item	Marking
Life Float, Buoyant Apparatus or Auxiliary Craft	Vessel Name Type II retro-reflective material
Container for Inflatable Liferaft	Equipment pack; Coastal Service, SOLAS B, or SOLAS A. Manufacturer & service facility markings
Ring Life Buoy	Vessel Name Type II retro-reflective material
EPIRB	Vessel Name Type II retro-reflective material

Type II Retro-reflective material used on continuously exposed rigid surfaces. Must have a Coast Guard approval starting with 164.018.

Maintenance and Inspection of Lifesaving Equipment

46 CFR 28.140

The vessel's master must ensure that all lifesaving equipment is in good working order, ready for immediate use, and readily accessible before the vessel leaves port and when operating.

Inspection, Maintenance & Servicing

Item	Procedure and Interval
Inflatable wearable PFD (Type V hybrid)	Service annually according to manufacturer's guidelines
Immersion Suits	Inspect and clean as necessary Service in accordance with manufacturer's guidelines
Other PFDs	Master or knowledgeable individual; Inspect, clean, and repair as necessary
Buoyant Apparatus and Life Floats	Master or knowledgeable individual; Inspect, Clean, and Repair as Necessary
Inflatable Liferafts and Inflatable Buoyant Apparatus	Service Annually at a facility approved by the Coast Guard *A new device has two years from date of first packing before having to be serviced; annually thereafter.*
Hydrostatic Release (Disposable)	Replace on or before expiration date
Hydrostatic Release (Mechanical)	Service Annually at a facility approved by the Coast Guard
EPIRB	Master or knowledgeable individual; Test monthly
Other dated items	Replace on or before expiration
Batteries	**Dated:** Replace on or before expiration date **Undated:** Replace Annually **Water-activated:** Replace On or Before Expiration Date, Whenever Used, or Exposed to Water

Escape Routes

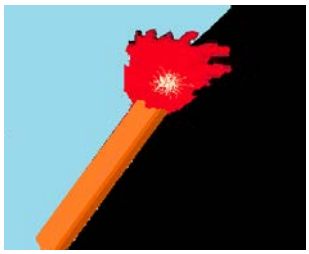
46 CFR 25.26-50

An escape route from a space where an individual may be employed or an accommodation space must not be obstructed.

Distress Signals

46 CFR 28.145

Area	Devices Required
Oceans, over 50 miles from the coastline	3 parachute flares (160.136) 6 hand flares (160.121) 3 smoke signals (160.122)
Oceans, 3-50 miles from the coastline; or more than 3 miles from the coastline on the Great Lakes	3 parachute flares (160.136 or 160.036) 6 hand flares (160.121 or 160.021) 3 smoke signals (160.122,160.022 or 160.037)
Coastal waters, excluding Great Lakes; or within 3 miles of the coastline on the Great Lakes	**Night**: one S.O.S. electric light (161.013) ***and*** **Day**: one flag (160.072) or 3 approved smoke signals, ***or*** 3 approved flares for both day and night



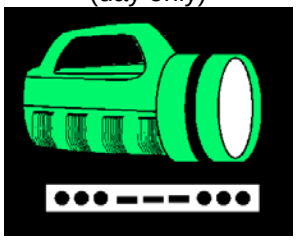
Red Hand Flare
(day & night)

Parachute Flare
(day & night)

Orange Smoke Signal
(hand-held/day only)

Floating Orange Smoke
(day only)

Orange Flag
(day only)



Electric Distress Signal
(night only)

Sound producing Devices

33 CFR 81

If less than 12 meters (39.3 ft.) in overall length must have an efficient sound signal. See the Inland and International Rules for the requirements to carry a bell and whistle.

Radiotelephones

33 CFR 26

All power-driven vessels 20 meters (65 feet) or more must comply with radiotelephone requirements.
Vessels of more than 300 gross tons have certain additional radiotelephone requirements.

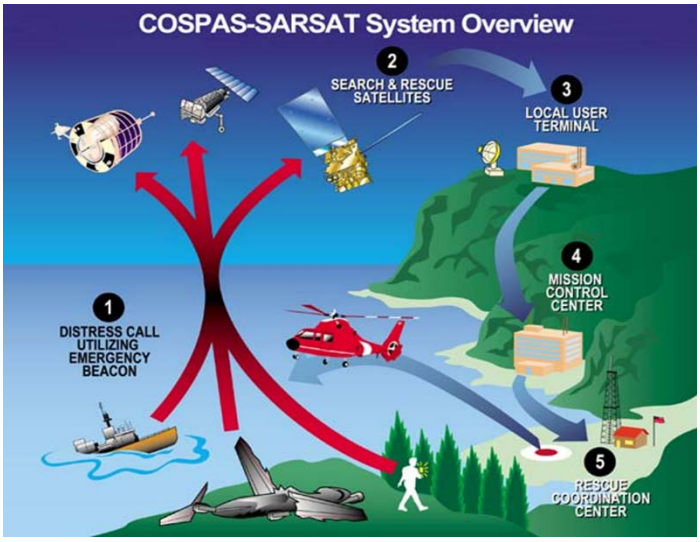
FCC Ship Radio Station License

47 CFR 80

A current license must be onboard any vessel: (1) required by any regulation to carry radio-communicating equipment (not including EPIRBs); (2) carrying single side band, ***or*** (3) which communicates with a foreign coast station.

Emergency Position Indicating Radio Beacon (EPIRB)

System Overview



EPIRB Requirement

46 CFR 28.150
46 CFR 25.26

Fishing vessels operating on the high seas (beyond the 3-mile territorial sea line) are required to carry a 406 MHz EPIRB, Category I (float-free, automatically activated) or Category II (manually activated), as follows:

Vessel Length	EPIRB Required
36 feet or more in length	406MHz Category I
36 feet or more in length with flotation *	406MHz Category I ***or*** 406MHz Category II
Less than 36 feet in length	406MHz Category II

***** To qualify, a Builder's Certification is required stating vessel is constructed with sufficient inherently buoyant material to keep the flooded vessel afloat.

The EPIRB must be tested when it is installed and at least once every month. The master is responsible for ensuring that the EPIRB is tested as required.

Note: Personal Locator Beacons do not satisfy the requirement to carry an EPIRB on board.

EPIRB Registration

47 CFR 80.1061(f)

EPIRB must be registered/updated in the COSPAS-SARSAT System. There is no fee for registration. Register on-line www.beaconregistration.noaa.gov

Fire Extinguishing Equipment

46 CFR 25.30 – Fire Extinguishing Equipment
46 CFR 28.155 – Excess Equipment
46 CFR 28.160 – Portable Fire Extinguishers
NFPA 10 – Standard for portable fire extinguishers

Fishing Vessels Under 65 Feet in Length

Vessel Length	Requirement	Notes
Less than 26 feet	1 UL Rated 5-B	1
26 ft. to less than 40 ft.	2 UL Rated 5-Bs	2, 3
40 ft. to less than 65 ft.	3 UL Rated 5-Bs	2, 3

Note 1: Outboard boats less than 26 feet in length are not required to carry fire extinguishers if their construction will not permit the entrapment of explosive gases or vapors.

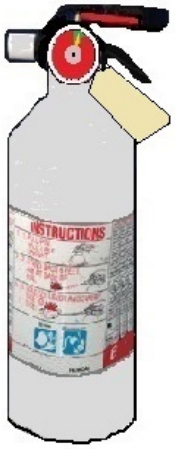
Note 2: One UL Rated 20-B (or larger) may be substituted for two UL Rated 5-Bs.

Note 3: Vessels with a CG Approved Fixed Fire Extinguishing System in their engine room may reduce their required number of portable fire extinguishers by one.

Fishing Vessels 65 ft. More in Length

Space	Class	Quantity/Location
Pilothouse	20-B:C	2 in the vicinity of the exit
Safety Areas, Communicating Corridors	2-A	1 in each main corridor not more than 150 ft. apart (May be located in stairways)
Service Spaces, Galleys	40-B:C	1 for each 2,500 sq. or fraction thereof. Suitable for hazards involved.
Paint Lockers	40-B	1 outside space in the vicinity of the exit
Accessible Baggage & Storage Rooms	2-A	1 for each 2,500 sq. or fraction thereof located in the vicinity of the exits, either inside or outside the spaces
Workshops & Similar Spaces	2-A	1 outside the space in the vicinity of the exit
Machinery Spaces; Internal Combustion Propelling Machinery	40-B:C	1 for each 1,000 brake horsepower or fraction thereof but not fewer than 2 or more than 6
Electric Propulsion Motors Or Generator Unit of Open Type	40-B:C	1 for each propulsion motor generator unit
Auxiliary Spaces	40-B:C	1 outside the space in the vicinity of the exit
Internal Combustion Machinery Spaces	40-B:C	1 outside the space in the vicinity of the exit
Electric Emergency Motors Or Generators	40-B:C	1 outside the space in the vicinity of the exit

Fire Extinguisher Maintenance

Disposable Extinguishers:	Rechargeable/Refillable Extinguishers:
	
Typically white aluminum canisters with plastic handles. Annual Maintenance may be performed by vessel owner, operator, person-in-charge or a designated member of the crew. Must be replaced when 12 years old. Date on tag must be within the last 12 months.	Red or yellow steel canisters with metal handles. Annual maintenance performed by a certified/licensed technician. Dry Chemical and Halogenated Agent extinguishers must undergo an internal visual examination and agent replacement every 6 years and a hydrostatic test every 12 years. Portable CO2 extinguishers must undergo a hydrostatic test every 5 years. Date on tag must be within the last 12 months.

Gasoline Engine Fire Prevention

46 CFR 25

Gasoline engines except outboard motors, are required to have backfire flame control. Certain spaces are required to have a means for removal of flammable gases.

Rules of the Road

33 CFR 83.01(g)
NVIC 1-16, CH-1

Vessels 12 meters (39.4 feet) or more in overall length that operate shoreward of the COLREGS Demarcation Lines must have a copy of the Inland Navigation Rules on board. In some areas, like Alaska, there are no waters shoreward of the Demarcation Line and this does not apply. A ready reference (hard copy) must be on board.

Navigation Lights

33 CFR 81

Vessels must comply with specific light, shape, and sound signal requirements. Refer to the Rules of the Road as requirements vary depending on vessel's size, service and the type of activity it is engaged in.

Officers' Competency Certificates Convention 1936

46 USC 8301
46 CFR 15

Masters, Mates, and Engineers on vessels of 200 gross tons or more that operate beyond the Boundary Line must have the appropriate Coast Guard license.

Vessel Instability

46 CFR 28.65(b)(5)

A vessel must not have instability from overloading, improper loading or lack of freeboard. A vessel's voyage may be terminated for instability.

Operation of a Vessel Under the Influence of Alcohol or Drugs is Prohibited

33 CFR Part 95

An individual is under the influence of alcohol or a dangerous drug when the individual operating a vessel has an alcohol concentration of .04 percent by weight or more in their blood; or,

The individual is operating any vessel and the effect of the intoxicant(s) consumed by the individual on the person's manner, disposition, speech, muscular movement, general appearance or behavior is apparent by observation.

Report violators to the Coast Guard Command Center 1-855-406-8724.

Casualties and Injuries

46 CFR 4.05-1 – Notice of Marine Casualty
46 CFR 4.05-10 – Written Report of Marine Casualty
46 CFR 28.80 – Report of Casualty
46 CFR 28.90 – Report of Injury

Marine Casualties

If any of the following incidents occur, immediately after the addressing safety concerns, the owner, agent, master, operator, or person in charge, shall notify the nearest Sector Office, Marine Inspection Office or Coast Guard Group Office:

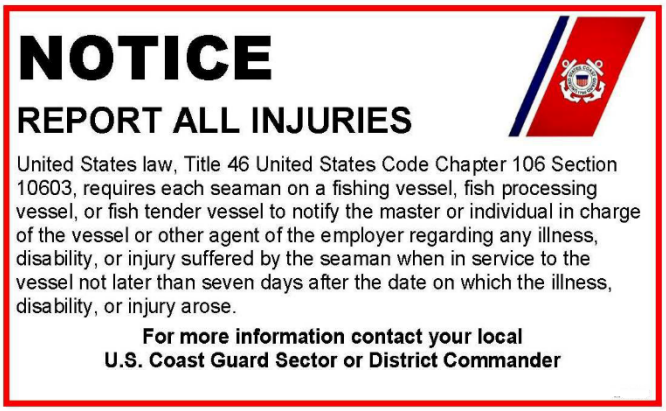
- grounding, or allison with a bridge;
- loss of main propulsion or primary steering;
- loss of life;
- injury that requires professional medical treatment, beyond first aid, and that renders the individual unfit to perform duties on board the vessel;
- any property damage over $75,000; or
- any occurrence which affects vessel seaworthiness (such as fire, flooding, or failure of fixed fire extinguishing systems, lifesaving equipment, auxiliary power, or bilge systems).
- any occurrence involving significant harm to the environment

Injury Placard

46 CFR 28.165 – Injury Placard

Applies to: All commercial vessels

Requirements:
• Must be at least 5” X 7” • Must be posted in a highly visible location, accessible to the crew.



Oil Pollution Placard

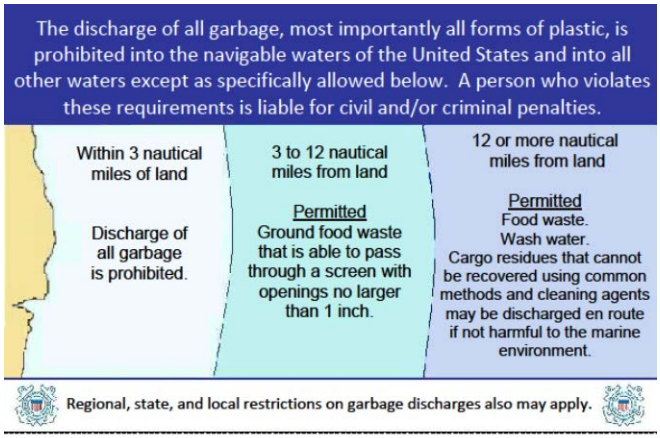
33 CFR 155.450

Vessels 26 feet or more in overall length must post an oil pollution placard

- Placard must be at least 5” X 8”
- In a language understood by the crew
- Permanently affixed in the machinery space or near the bilge pump operating switch

Garbage Placard

33 CFR 151.59



Vessels 26 feet or more in overall length must post a garbage placard

- Displayed in prominent locations
- At least 4” X 9” in size
- Letters must be at least 1/8 inch high
- Must be made of durable material

Waste Management Plan

33 CFR 151.57

Vessels 40 feet or more in overall length, which operate on an ocean voyage (beyond the territorial sea), must have a written solid waste management plan which describes procedures for collecting, processing, storing, and discharging garbage and designates a person in charge of carrying out the plan.

Vessels 400 gross tons and over must also maintain a garbage log.

Marine Sanitation Device

33 CFR Part 159.7

All vessels with installed toilet facilities must have an operable Coast Guard certified Marine Sanitation Device (MSD) or a holding tank. If a "y" valve is installed with a holding tank, it must be secured to direct the flow into the holding tank while the vessel operates on U.S. navigable waters.

Vessel Registration

State Numbering - 33 CFR 173

Except for certain exempted vessels, self-propelled vessels of less than 5 net tons must be registered/ numbered with the state where the vessel operates.

USCG Documentation - 46 CFR 67-69

Commercial fishing vessels measuring 5 net tons and greater must be documented with the Coast Guard, display name, hailing port and official number

Drug Testing Requirements

46 CFR Parts 4 & 16

Any vessel required to carry Coast Guard licensed or documented crew must comply with the random, pre-employment, and periodic marine employment testing requirements.

If a "serious marine incident" (see definition 46 CFR 4.03-2) occurs, every person directly involved must be tested for evidence of alcohol (within 2 hours) and dangerous drugs (within 32 hours) regardless of whether they are licensed or documented crew. An alcohol test kit for each person must be carried on board if more than 2 hours from accessible testing equipment. Most commercial fishing vessels will need to carry a DOT-approved alcohol testing device onboard.

Additional requirements for Documented Vessels that operate beyond the Boundary Line OR with more than 16 people on board

Navigation Information

46 CFR 28.225
NVIC 1-16

Vessels are required to carry navigational information that covers the area in which they will operate or the area to be transited as follows:

- Currently corrected charts of appropriate scale for safe navigation; and
- Currently corrected copy, or applicable extract, of:
  - _U.S. Coast Pilot
  - _Coast Guard Light List
  - _Tide Tables
  - _Tidal Current Tables
- *Carriage of electronic versions of navigation publications are allowed.*
- *Electronic charts are **not** allowed unless viewed on an Electronic Chart System (ECS) or a Class A Electronic Chart Display and Information System (ECDIS). The ECS system **must** have a Certificate of Conformity certifying compliance with the Radio Technical Commission for Maritime Services (RTMC).*

Electronic Position Fixing Devices

46 CFR 28.260

Vessels 79 feet or more in length must be equipped with an electronic position fixing device (such as a Global Positioning System) capable of providing accurate fixes for the area in which the vessel operates.

Compass

46 CFR 28.230

Vessels must be equipped with an operable magnetic steering compass with a compass deviation table at the operating station.

Communication Equipment

46 CFR 28.245, 28.375
33 CFR 26.03
47 CFR 80

U.S. Documented Vessels must be equipped as follows:

Operating Area	**Radio type**	
	VHF 156-162 MHz	SSB (HF) 2-27.5 MHz
All	X	
More than 20nm from coast	X	X
Waters next to Alaska	X	X

A vessel operating in waters contiguous to Alaska where no public coast station or U.S. Coast Guard station is within range of the 156-162 MHz, must be equipped with a radiotelephone transceiver operating within the 2-27.5 MHz band.

A single radio transceiver which meets the above requirements is acceptable to meet the above requirements

A **cellular telephone or satellite communication** system servicing the area in which the vessel operates may substitute for the SSB but is not acceptable to meet the VHF carriage requirement.

The principle operating position of communication equipment must be at the vessel's operating station. The equipment must be installed to ensure safe operation, to facilitate repair, and to protect it from physical damage and heavy weather.

All communication equipment must be provided with an emergency source of power, located separate from the machinery space, capable of powering the equipment continuously for at least 3 hours.

Note: Communication equipment must comply with the technical standards and operating requirements issued by the FCC. When using radio communication equipment, each vessel must have a Ship Radio Station License issued by the FCC, as set forth in 47 CFR part 80.

Digital Selective Calling (DSC)

www.navcen.uscg.gov

DSC Radio Distress Button

Modern Marine Radios are equipped with DSC. DSC allows mariners to instantly send a distress alert by pressing the “DISTRESS” button. DSC radios must have the Maritime Mobile Service Identity (MMSI) entered into the radio. This is a unique identifier assigned to the vessel and is located on the vessel’s FCC Ship/Station license. DSC radios also need to be interconnected with the GPS or have internal GPS to properly operate.

The Coast Guard urges, in the strongest terms possible, that you take the time to interconnect your GPS and DSC-equipped radio. Doing so may save your life in a distress situation! Before interconnecting your radio & GPS consult the owner's manual. DSC is required on vessels 300 gross tons and over (Alaska is excluded).

Automatic Identification System (AIS)

33 CFR 164.46

All Fishing Industry Vessels 65 feet and longer, must have a proper, Coast Guard Type-Approved, Class A or B AIS when operating upon the navigable waters of the U.S.

High Water Alarms

46 CFR 28.250

Vessel 36 feet or more in length must be equipped with high water level alarms—both visual and audible—at the operating station. The alarms must indicate high water levels in each of the following normally unmanned spaces:

- A space with a through-hull fitting below the deepest load waterline, such as the lazarette;
- Machinery space bilge, bilge well, shaft alley bilge, or other space subject to flooding from sea water piping within the space; and
- A space with a non-watertight closure, such as a non-watertight hatch on the main deck.

General Alarm System

46 CFR 28.240

A general alarm system is required when any accommodation space or work space is not adjacent to the operating station. The system must have a contact-maker at the operating station and must be capable of notifying an individual in any accommodation space or work space where they may normally be employed. In noisy work spaces, a flashing red light must also be installed.

Each general alarm bell and flashing red light must be identified with red lettering at least 1/2 inch high as follows:

ATTENTION
GENERAL ALARM – WHEN ALARM SOUNDS GO TO YOUR STATION.

The general alarm system must be tested prior to getting underway and at least once each week while underway.

A public address system may be used instead of a general alarm system if it complies with the above and can be activated from the operating station.

Emergency Instructions

46 CFR 28.265

Emergency instructions must be posted in conspicuous locations accessible to the crew.

On vessels operating with less than 4 individuals on board, the emergency instructions may be kept readily available as an alternative to posting.

The emergency instructions **must identify at least** the following information, as appropriate for the vessel:

- Survival craft embarkation stations and the survival craft to which each person is assigned.
- The fire and emergency signal and the abandon ship signal.
- If immersion suits are provided, the location of the suits and illustrated instructions on the method for donning the suits.
- Procedures for making a distress call.
- Essential action to be taken in an emergency by each individual (station bill)
- *Procedures for rough weather at sea, crossing hazardous bars, and flooding.*

Emergency Instructions Continued

- *Procedures for anchoring the vessel.*
- *Procedures to be used in the event an individual falls overboard.*
- *Procedures for fighting a fire.*

Items (*in italics)* may be kept readily available as an alternative to posting.

Drills and Instruction

46 CFR 28.270

The master or individual in charge of each vessel must ensure that drills are conducted and instructions given to each individual on board at least **once each month** so as to ensure that each individual is familiar with their duties and responses to at least the following contingencies:

- Abandoning the vessel.
- Fighting a fire in different locations on board the vessel.
- Recovering an individual from the water.
- Minimizing the effects of unintentional flooding.
- Launching survival craft and recovering lifeboats.
- Donning immersion suits and other wearable PFDs.
- Donning a fireman's outfit and a self-contained breathing apparatus, if vessel is so equipped.
- Making a voice radio distress call and using visual distress signals.
- Activating the general alarm.
- Reporting inoperative alarm and fire detection systems.

Drills must be conducted on board the vessel as if there were an actual emergency and must include participation by all persons on board.

Drill Instructor:
No individual may conduct drills or provide instructions unless that individual has been trained in the proper procedures for conducting the activity.

The individual conducting the drills and instruction need not be the master, individual in charge of the vessel, or a member of the crew.

Viewing videotapes, followed by a discussion led by a person familiar with the contingencies will satisfy the instruction requirement, but not the hands-on drills.

Safety Orientation

46 CFR 28.270

Prior to operating the vessel, the master must ensure a safety orientation is provided to anyone who has not received the required instruction or participated in the drills. This safety orientation must explain the emergency instructions required by 46 CFR 28.265 and cover the contingencies listed above.

First Aid Equipment and Training

46 CFR 28.210

Each vessel must carry a complete first aid manual and a medicine chest of a size suitable for the number of people on board. The items must be kept in a readily accessible location.

A vessel with more than two people on board must have at least one person certified in first aid and one person certified in CPR as outlined below (a person certified in both first aid and CPR may be counted for both requirements):

Training Required

Persons Aboard	Number of People Certified	
	First Aid	**CPR**
More than 2	1	1
More than 16	2	2
More than 49	4	4

Firemen's Outfits and Self-Contained Breathing Apparatus (SCBA)

46 CFR 28.205

Any vessel equipped with refrigeration units using ammonia must be equipped with at least two SCBAs.

SCBAs must:

- be approved by MSHA and NIOSH
- be maintained per manufacturer's instructions
- have a minimum 30-minute air supply
- have a full face piece
- have at least one spare air bottle

Vessels with more than 49 people on board must carry at least two fireman's outfits, stowed in widely separated locations.

Each fireman's outfit must consist of:

- an SCBA with lifeline attached
- one flashlight
- a rigid helmet
- boots, gloves, protective clothing
- one fire ax

Guards for Exposed Hazards

46 CFR 28.215

Suitable hand covers, guards, or railing must be installed in way of machinery which could cause injury to personnel, such as gearing, chain or belt drives, and rotating shafting. This is not meant to restrict necessary access to fishing equipment such as winches, drums, or gurdies. Internal combustion engine exhaust pipes within reach of personnel must be insulated or otherwise guarded to prevent burns.

Anchors and Radar Reflectors

46 CFR 28.235

Vessels must be equipped with anchor(s) and chain(s), cable, or rope, appropriate for the vessel and the waters of the intended voyage.

Nonmetallic hull vessels must be equipped with a radar reflector unless the vessel rigging provides a radar signature from a distance of 6 miles.

Bilge Systems

46 CFR 28.255

Vessels must be equipped with a bilge pump and bilge piping capable of draining any watertight compartment, other than tanks and small buoyancy compartments, under all service conditions. Engine rooms must be fitted with more than one suction line.

If a portable bilge pump is used to meet this requirement, a suitable suction hose and discharge hose must be provided. The suction hose must be able to reach the bilges of all watertight compartments it must serve, and the discharge hose must ensure overboard discharge. A portable pump must be capable of dewatering each space at a rate of at least 2-inches of water depth per minute.

Each bilge suction line and dewatering system suction must be fitted with a suitable strainer to prevent clogging of the line.

For larger vessels and those vessels that have fish sorting or processing spaces where water is used, refer to the specific requirements found in 46 CFR 28.255.

Safe Boarding Ladder

50 CFR 600.730

Vessels subject to enforcement of Federal fisheries or any other statute administered by NOAA with **more than 4 feet of freeboard** from the water's surface to the top rail of the gunwale or the threshold of the bulwark cut-out must provide for safe boarding of the boarding team with a Coast Guard approved pilot ladder (46 CFR 163.003). A spreader is required if more than 5 steps.

Other Applicable Federal Laws and Regulations

Design & Construction

46 USC 4502-4503
33 CFR 181
33 CFR 183

Standards for the design and construction of Commercial Fishing Vessels changed significantly between 2010 and 2018. In general all newly constructed commercial fishing vessels must meet applicable design and construction standards.

Construction of new vessels should be closely coordinated with the shipyard, Naval Architect and the Coast Guard Fishing Vessel Examiner to ensure the vessel being constructed meets requirements of applicable laws.

Vessels less than 50 feet in length shall be constructed in compliance with the recreational boating safety standards in 33 CFR Part 181 and 33 CFR Part 183 as applicable.

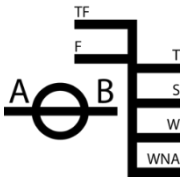
Contraction/build requirements for vessels 50 feet or greater in length are outlined in 46 US Code 4502. Application of statutory requirements are subject to vessel built date and length.

Load Line Requirement

46 USC 5102-5103
46 USC 4502-4503
46 CFR 28.895
46 CFR Subchapter E

Commercial Fishing Vessels 79 feet or greater in load line length are required to incorporate load line standards in the vessel's design and maintain load lines if they were built after July 1st, 2013.

Fish Processing and Fish Tender vessels 79 feet or greater required load lines at earlier dates. Contact the District Fishing Vessel Safety Coordinator in your area for further information.



Stability Requirements for Vessels 79 ft or More that are not required to be issued a Load Line

46 CFR Part 28 Subpart E

Each vessel 79 feet or more in length that is not required to be issued a load line, must meet certain stability requirements if:

- its keel was laid or was at a similar stage of construction or had a major conversion started on or after Sept. 15, 1991;
- its fishing or processing equipment was altered for the purpose of catching, landing, or processing fish in a manner different than previously accomplished on the vessel; or
- it was substantially altered on or after Sept. 15, 1991.

for specific requirements.

Vessels Built or Undergo a Major Conversion completed on or after September 15, 1991, AND operate with More Than 16 Individuals Onboard

These vessels must meet additional requirements for lifesaving and signaling equipment, fire extinguishing and detection systems, galley hoods, fuel systems, ventilation of enclosed spaces, electrical systems, structural fire protection, means of escape, radar and depth sounding devices, hydraulic equipment, and rails and lifelines. Applicability and specific requirements can be found in 46 CFR Part 28, Subpart D.

Fish Processing Vessels

46 CFR, Part 28, Subpart F

Uninspected fish processing vessels must be examined at least once every two years by the American Bureau of Shipping (ABS), a similarly qualified organization, or a surveyor of an accepted organization. Any fish processing vessel built or converted after July 27, 1990, must be classed by ABS, or a similarly qualified organization.

Aleutian Trade Act Vessels

46 CFR Part 28, Subparts C & G

A vessel engaged in Aleutian Trade may have to comply with additional requirements or undergo periodic inspection based on the vessel size, when it entered service, or if it undergoes a major conversion.

Oil Carriage

33 CFR 155

Certain vessels are prohibited from carrying oil in the forepeak tank or forward of the collision bulkhead.

Waste Oil Discharge Piping

33 CFR 155

Vessels 100 gross tons or more with main or auxiliary machinery spaces must have a fixed piping system for the removal of waste oil. See 33 CFR 155 for specific requirements.

Oil Transfer Procedures

33 CFR 156

There are requirements for oil transfer procedures and piping tests for vessel with a capacity of 250 or more barrels of oil (10,500 gallons).

Financial Responsibility

33 CFR 138

The Federal Water Pollution Control Act applies to all fishing vessels 300 gross tons or more using U.S. ports. A Certificate of Financial Responsibility must be on board.

Citizenship

46 USC 8103

The master, chief engineer, radio officer, or officer in charge of a deck watch or engineering watch on documented vessels must be a U.S. citizen (see USC for exceptions).

Fishing Agreement

46 USC 10601

A written fishing agreement is required with each seaman employed on vessels of 20 gross tons or more.

Seamen Rights

46 USC 10602

Seamen have rights to recover wages and shares of proceeds under 46 USC 10601 Fishing Agreement.

Sexual Abuse Act of 1986

46 USC 10104

If any member of the crew is a victim of a sexual offense, that person should immediately report the incident to the master. It is then the responsibility of the master to report to the Coast Guard any complaints of sexual offenses including aggravated sexual abuse, sexual abuse, sexual abuse of a minor or ward, and sexual contact.

Definitions

Boundary Lines – lines that in general follow the trend of the seaward high water shorelines and cross entrances to small bays, inlets and rivers. Refer to 46 CFR Part 7 for specific descriptions, particularly where they may deviate from above.

Coastal Waters –

- U.S. waters of the Great Lakes,
- Territorial Seas of the United States, or
- Waters directly connected to the Great Lakes and territorial seas where any entrance exceeds two nautical miles between opposite shorelines to the first point where the largest distance between shorelines narrows to two miles.

Cold Water – waters where the monthly mean low water temperature is normally 59°F/15°C or colder.

Fishing Vessel: A vessel that commercially engages in the catching, taking, or harvesting of fish or an activity that can reasonably be expected to result in the catching, taking, or harvesting of fish.

Fish Processing Vessel – a vessel that commercially prepares fish or fish products other than by gutting, decapitating, gilling, skinning, shucking, icing, freezing, or brine chilling.

Fish Tender Vessel – a vessel that commercially supplies, stores, refrigerates, or transports fish, fish products, or materials directly related to fishing or the preparation of fish to or from a fishing, fish processing, or fish tender vessel or a fish processing facility.

High Seas – waters beyond the Territorial Sea (generally beyond three miles of the coast).

Length – length listed on a vessel's Certificate of Documentation or Certificate of Number except where otherwise specifically noted.

Territorial Seas – Defined in 33 CFR 2.22 has two meanings.

* 12nm wide adjacent to territorial sea baseline for -

- 46 USC Subtitle II
- Ports and waterways safety act.
- Vessel bridge to bridge radiotelephone act
- Criminal jurisdiction pursuant to Title 18 USC
- Special maritime and territorial jurisdiction 18 USC 7
- Interpreting international law

* 3nm wide adjacent to the territorial sea baseline unless noted above

Territorial Sea Baseline: Defined in 33 CFR 2.20 is the mean low waterline along the coast of the United States.

Warm Water – waters where the monthly mean low water temperature is normally more than 59^{o}F/15^{o}C.

Refer to 46 CFR Part 28.50 for more definitions

Ready for Sea Checklist

- ☐ Weather: Evaluated weather forecast & bar conditions. Vessel & crew can handle safely! Can monitor weather reports at sea.

- ☐ Crew: Trained & drilled in operation of vessel & safety equipment. Work schedule minimizes fatigue.

- ☐ Stability: Scuppers & freeing ports clear. Gear, catch & hatches secured. Vessel not overloaded.

- ☐ EPIRB & Communications: Equipment tested. EPIRB armed & mounted properly. Back up communications ready to go.

- ☐ PFDs/Immersion Suits: Crew has donned to ensure proper fit & good condition. PFDs/Suits accessible & lights attached.

- ☐ Survival Craft: Capacity for entire crew. Serviced, properly installed, & crew trained to launch.

- ☐ PFDs Worn on Deck: Crew knows to wear PFDs or inflatable suspenders when working on deck.

- ☐ Damage Control: Bilge pumps work. Damage control equipment on board & crew trained in use.

- ☐ Fire Fighting: Adequate number of serviced fire extinguishers on board & crew trained in firefighting.

- ☐ Safety Exam: "Ready for Sea" deck walk/safety inspection & determined vessel safe to sail.

Luck favors the prepared

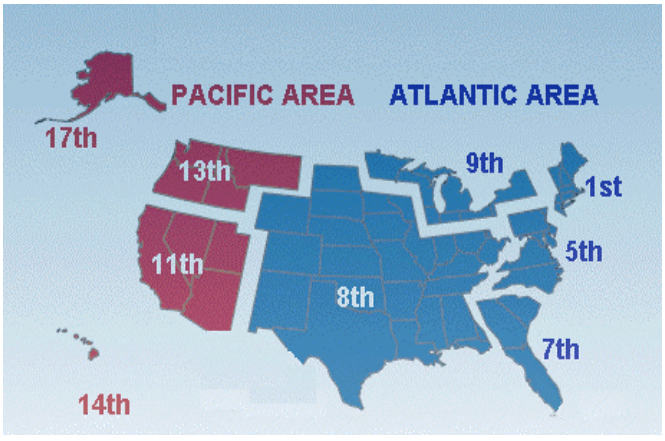
COAST GUARD

FishSafeWest.info Fishing Vessel Safety

USCG Fishing Vessel Safety Program
https://www.dco.uscg.mil/FishSafe

COAST GUARD DISTRICT COORDINATORS

District	Location	Phone number
First	Boston, MA	(617) 223-8440 or 8315
Fifth	Portsmouth, VA	(757) 398-7766
Seventh	Miami, FL	(305) 415-6868
Eighth	New Orleans, LA	(504) 671-2154
Ninth	Cleveland, OH	(216) 902-6051
Eleventh	Alameda, CA	(510) 437-5931
Thirteenth	Seattle, WA	(206) 220-7226
Fourteenth	Honolulu, HI	(808) 535-3417
Seventeenth	Juneau, AK	(907) 463-2810 or 2809



PRESS RELEASE 2008-12-16

CM HAMMAR, GÖTEBORG, SWEDEN

SAFETY ALERT – DANGEROUS H20 FAKE COPIES!

It has recently come to our attention that someone is producing fake copies of our Hydrostatic Release Unit, the Hammar H20. To an untrained eye, the copy is almost identical to the original product, with Hammar's logo and address on the labels. The fake might look almost like the original product, but there is one very important difference: **the copy does not work!**

We have tested several of the copies. Not a single one of them worked properly according to SOLAS' specification – **the fake H20 will definitely not release a life raft or an Epirb.** We see this as a very serious situation. There can be a number of ships at sea that are sailing with fake Hydrostatic Release Units. If any of these ships were to sink, there will definitely be no life rafts or Epirbs that will help to rescue the seafarers in danger!

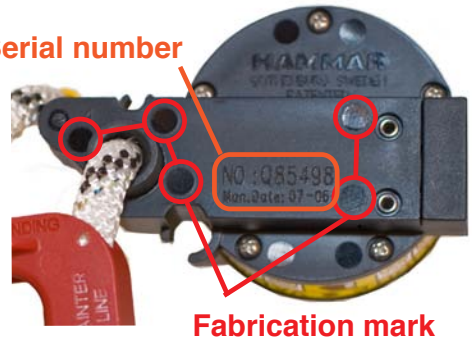
How can you quickly check that you have the original Hammar H20?

- Always purchase your products through approved distributors or authorised service points for life rafts and Epirbs
- Make sure that you receive the Hammar multilingual product manual and a raft label with each unit for life raft H20 or Hammar marking instruction for Epirb H20. *(Pic 1)*
- If you check on the underside of the Hammar H20 you should be able to find 5 (five) fabrication marks on all units produced since April 2006. Units produced before that date have only 2 (two) fabrication marks. *(Pic 2)*
- The serial number and production date can always be verified by contacting CM Hammar at info@cmhammar.com. *(Pic 2)*
- The fabrication mark on the upper side of the unit must always point directly towards the rope. *(Pic 3)*

Pic. 1

H20 unit with the multilingual product manual and raft label

Pic. 2



Pic. 3

If you have any questions regarding this matter please contact us.

HAMMAR®

Jan Calvert
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WHEN WAS THE LAST TIME YOU CHECKED YOUR PERSONAL SAFETY EQUIPMENT ??????

U.S. COAST GUARD

Thirteenth Coast Guard District
Commercial Fishing Vessel Safety
Ready for Sea Checklist

- ❑ **Weather: Evaluated weather forecast & bar conditions. Vessel & crew can handle safely! Can monitor weather reports at sea.**
- ❑ **Crew: Trained & drilled in operation of vessel & safety equipment. Work schedule minimizes fatigue.**
- ❑ **Stability: Scuppers & freeing ports clear. Gear, catch & hatches secured. Vessel not overloaded.**
- ❑ **EPIRB & Communications: Equipment tested. EPIRB armed & mounted properly. Back up communications ready to go.**
- ❑ **Immersion Suits: Crew has donned suits to ensure proper fit & good condition. Suits accessible & lights attached.**
- ❑ **Survival Craft: Capacity for entire crew. Serviced, properly installed, & crew trained to launch.**
- ❑ **PFDs Worn on Deck: Crew knows to wear PFDs or inflatable suspenders when working on deck.**
- ❑ **Damage Control: Bilge pumps work. Damage control equipment on board & crew trained in use.**
- ❑ **Fire Fighting: Adequate number of serviced fire extinguishers on board & crew trained in fire fighting.**
- ❑ **Safety Exam: I conducted "Ready for Sea" deck walk/safety inspection & determined vessel safe to sail.**

Amplifying Details on Reverse Side

Ready for Sea Safety Factors

WEATHER
- ❑ Weather checked and evaluated. Vessel and crew can handle conditions.
- ❑ Operable weather forecast comms equipment on board. Forecasts monitored.

CREW
- ❑ Drills conducted with every person on board (monthly).
- ❑ Work scheduled to minimize fatigue.
- ❑ Experienced crewmember checked & corrected deck/pot/fishing hazards.
- ❑ Crew knows where the safety gear is and how to use it.

STABILITY/OVERLOADING
- ❑ Hatches operable and secured to ensure the vessel is watertight.
- ❑ Freeing ports unblocked to allow free flow of water off deck.
- ❑ Deck loads & bait shacks properly secured so that they won't break loose.
- ❑ Bin boards in place to keep the load from shifting.
- ❑ Vessel tanked to reduce free surface effect (fuel, water and catch not freely moving in tank).
- ❑ Stability book up-to-date and vessel operated in accordance with guidelines.

EPIRBS & COMMUNICATIONS EQUIPMENT
- ❑ 406 MHz EPIRB tested within past 30 days, properly mounted and in the ARMED position.
- ❑ Communications equipment operable and adequate for voyage.
- ❑ Every person on board knows how to make a distress call and the frequencies to be used.
- ❑ Emergency power for communications equipment and/or back up handheld VHF radio on board.

IMMERSION SUITS
- ❑ One for every person on board. Stowed in readily accessible location.
- ❑ Each person donned to ensure proper fit and able to quickly don in an emergency.
- ❑ Suits serviceable--zippers waxed and operable, inflation bladder & lights attached.

SURVIVAL CRAFT
- ❑ Large enough to carry every person on board.
- ❑ If craft is a liferaft, serviced within the past 12 months.
- ❑ Every person on board knows how to launch the survival craft.
- ❑ Properly installed so it will deploy in an emergency.

PFD/WORK VEST
- ❑ Crewmembers wear flotation [suspenders, float coats, etc.] when on deck in hazardous condition.
- ❑ Personal marker lights [strobe, fixed bright, etc] attached to the flotation devices.

DAMAGE CONTROL
- ❑ Damage control kits with plugs, wedges, etc. on board and crew trained in use.
- ❑ High water alarms operable. Bilge pumps adequate and operable.
- ❑ Shaft and rudder post(s) checked to ensure no or only minimal leakage.

FIRE FIGHTING
- ❑ Adequate number of serviceable fire extinguishers on board.
- ❑ Crewmembers trained to extinguish a shipboard fire.

SAFETY EXAM
- ❑ Vessel examined by a Coast Guard dockside examiner or third party organization to ensure vessel is **READY FOR SEA!!!**
- ❑ Pre-sail **READY FOR SEA** exam conducted.
- ❑ Safety deficiencies corrected and vessel safe to sail.

RECALL

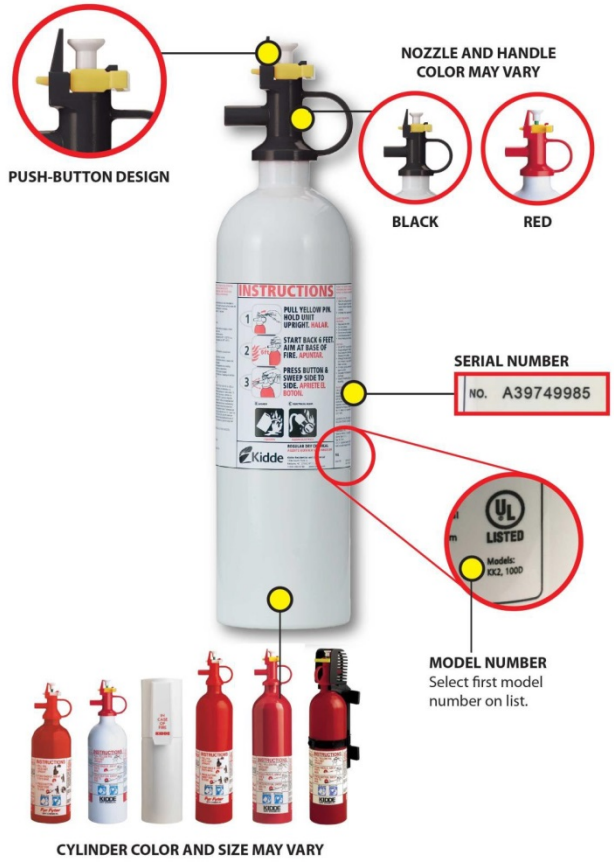
Plastic Handle Fire Extinguishers

The recall involves 134 models of Kidde fire extinguishers manufactured between January 1, 1973 and August 15, 2017, including some models that were previously recalled in March 2009 and in February 2015. The extinguishers were sold in red, white and silver, and are either ABC- or BC-rated. The model number is printed on the fire extinguisher label. For units produced in 2007 and beyond, the date of manufacture is a 10-digit date code printed on the side of the cylinder, near the bottom.
Digits five through nine represent the day and year of manufacture in DDDYY format. Date codes for recalled models manufactured from January 2, 2012 through August 15, 2017 are 00212 through 22717. For units produced before 2007, a date code is not printed on the fire extinguisher.

Push-Button Fire Extinguishers

Push-button fire extinguishers: The recall involves eight models of Kidde push-button fire extinguishers manufactured between August 11, 1995 and September 22, 2017. The no-gauge push-button extinguishers were sold in red and white, and with a red or black nozzle. These models were sold primarily for kitchen and personal watercraft applications.

Plastic Handle Extinguisher



Push Button Extinguisher

Plastic handle models produced between January 1, 1973 and October 25, 2015		
2A40BC	Gillette TPS-1 1A10BC	Sams SM 340
6 RAP	Home 10BC	Sanford 1A10BC
6 TAP	Home 1A10BC	Sanford 2A40BC
Ademco 720 1A10BC	Home 2A40BC	Sanford TPS-1 1A10BC
Ademco 722 2A40BC	Home H-10 10BC	Sanford TPS-1 2A40BC
ADT 3A40BC	Home H-110 1A10BC	Sears 2RPS 5BC
All Purpose 2A40BC	Home H-240 2A-40BC	Sears 58033 10BC
Bicentennial RPS-2 10BC	Honeywell 1A10BC	Sears 58043 1A10BC
Bicentennial TPS-2 1A-10BC	Honeywell TPS-1 1A10BC	Sears 5805 2A40BC
Costco 340	J.L. 2A40BC	Sears 958034
FA 340HD	J.L. TPS-1 2A40BC	Sears 958044
FA240HD	Kadet 2RPS-1 5BC	Sears 958054
FC 340Z	Kidde 10BC	Sears 958075
FC Super	Kidde 1A10BC	Sears RPS-1 10BC
FC210R-C8S	Kidde 2A40BC	Sears TPS-1 1A10BC
Fire Away 10BC Spanish	Kidde 40BC	Sears TPS-1 2A40BC
Fire Away 1A10BC Spanish	Kidde RPS-1 10BC	Traveler 10BC
Fire Away 2A40BC Spanish	Kidde RPS-1 40BC	Traveler 1A10BC
Fireaway 10 (F-10)	Kidde TPS-1 1A10BC	Traveler 2A40BC
Fireaway 10BC	Kidde TPS-1 2A40BC	Traveler T-10 10BC
Fireaway 110 (F-110)	KX 2-1/2 TCZ	Traveler T-110 1A10BC
Fireaway 1A10BC	Mariner 10BC	Traveler T-240 2A40BC
Fireaway 240 (F-240)	Mariner 1A10BC	Volunteer 1A10BC
Fireaway 2A40BC	Mariner 2A40BC	Volunteer TPS-V 1A10BC
Force 9 2A40BC	Mariner M-10 10BC	XL 2.5 TCZ
FS 340Z	Mariner M-110 1A10BC	XL 2.5 TCZ-3
Fuller 420 1A10BC	Mariner M-240 2A40BC	XL 2.5 TCZ-4
Fuller Brush 420 1A10BC	Master Protection 2A40BC	XL 2.75 RZ
FX210	Montgomery Ward 10BC	XL 2.75 RZ-3
FX210R	Montgomery Ward 1A-10BC	XL 2-3/4 RZ
FX210W	Montgomery Ward 8627 1A10BC	XL 340HD
FX340GW	Montgomery Ward 8637 10BC	XL 4 TXZ
FX340GW-2	Quell 10BC	XL 5 PK
FX340H	Quell 1A10BC	XL 5 TCZ
FX340SC	Quell RPS-1 10BC	XL 5 TCZ-1
FX340SC-2	Quell TPS-1 1A10BC	XL5 MR
Gillette 1A10BC	Quell ZRPS 5BC	XL 6 RZ

Plastic handle models with date codes between January 2, 2012 and August 15, 2017			
AUTO FX5 II-1	FA5-1	AUTO FX5 II-1	FX10K
FA10G	FA5G	FA10G	FX5 II
FA10T	FC10	FA10T	H110G
FA110G	FC110	FA110G	H5G
FA5-1	AUTO FX5 II-1	FA5-1	M10G
FA5G	FA10G	FA5G	M10GM
FC10	FA10T	FC10	M110G
FC110	FA110G	FC110	M110GM
AUTO FX5 II-1	FA5-1	FC5	M5G
FA10G	FA5G	FS10	M5GM
FA10T	FC10	FS110	RESSP
FA110G	FC110	FS5	

Push-Button Pindicator Models produced between August 11, 1995 and September 22, 2017							
KK2	100D	210D	M5P	M5PM	AUTO 5FX	AUTO 5FX-1	FF 210D-1

OVATEK EXAMINATION GUIDE

Pages 2-3 are an examination checklist for USCG Approved Ovatek Rigid Life Rafts (4 or 7 person) equipped with SOLAS A, B or Coastal equipment packs. The remainder pages include the Ovatek Step by Step inspection checklist for reference.

The Commercial Vessel Compliance Fishing Vessel Safety Division (CG-CVC-3) supports using the Ovatek Examination Guide (which includes Ovatek Manufacturer's Recommended Maintenance) as a tool to offer visibility of recommended servicing standards on USCG Approved Ovatek Rigid Liferafts. This guidance is intended to act as an instrument to familiarize Examiners, Boarding Team Members and vessel operators on best-practices. This guidance is not intended to take the place of manufacturer recommendations.

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OVATEK RIGID LIFE RAFT EXAMINATION CRITERIA

Examiners should familiarize themselves with the Step by Step inspection checklist for Ovatek 4 & 7 person rigid life rafts at the end of this guide, as well as the Operator's Manual.

The owner of the vessel is responsible for ensuring annual and periodic maintenance is being performed as recommended by the manufacturer. During CFVS dockside exams, examiners should verify that the piece of lifesaving equipment is in compliance, is serviceable and arranged as per the regulations and manufacturer's guidelines.

USCG Approval 160.018—Ovatek Rigid Liferaft (4 person)
USCG Approval 160.118—Ovatek Rigid Liferaft (7 person)

EXAMINATION CHECKLIST	
EXTERIOR	
Craft is located in a float-free location, clear of overhead obstructions	**O Yes O No**
Cradle is well secured to the deck or stand	**O Yes O No**
HRU is current and correctly installed (may use Hammar HRU)	**O Yes O No**
Quick-snap release and SS wire are correctly routed and installed	**O Yes O No**
Painter line is correctly attached to the HRU and front lug of survival craft	**O Yes O No**
Sea anchor is attached to the front lug	**O Yes O No**
Yellow tie-down belt is securely fastened	**O Yes O No**
Lock bolts on the adjustable turnbuckle are tight	**O Yes O No**
INTERIOR	
Hatch rubber seals are free from cracks and deterioration	**O Yes O No**
Hatches should close securely with good latch overlap (min 3/16")	**O Yes O No**
Pump is stowed correctly	**O Yes O No**
Paddles are stowed correctly	**O Yes O No**
Front and rear vents are in the closed position	**O Yes O No**
Batteries for interior and exterior lights not expired	**O Yes O No**
Safety knife, bailer & sponge, sea anchor, quoit, operations manual and SOLAS kit stowed correctly	**O Yes O No**
Release wire is routed properly and free from chafing	**O Yes O No**
Additional equipment not originally provided with the craft should NOT be stowed inside the craft	**O Yes O No**

SOLAS KIT INSPECTION				
*Recommend following procedures in Annex B (4 person) or C (7 person) of Ovatek Inspection Checklist for proper packing of SOLAS kit		QUANTITY		
ITEM	**YRS OF LIFE**	**A**	**B**	**C***
Parachute rockets	3.5	4	2	-
Hand flares	3.5	6	3	-
Smoke signals	3.5	2	1	-
Flashlight (1), spare batteries (2) & bulb (1)	4	1	1	1
Anti-seasickness pills (100 ea)	4	1	1	-
Food rations (2378 cal/502 g per person)	5	4/7	-	-
Drinking water (1500 ml per person)	5	4/7	-	-
First Aid Kit	4	1	1	-
Buoyant quoit and 30m of line	N/A	1	1	1
Buoyant bailer	N/A	1	1	1
Sponge	N/A	2	2	1
Radar reflector & attachment	N/A	1	1	1
Safety can openers	N/A	3	-	-
Whistle	N/A	1	1	1
Flashlight & spare bulb	N/A	1	1	1
Signaling mirror	N/A	1	1	1
Fishing tackle	N/A	1	-	-
Graduated drinking vessel	N/A	1	-	-
Thermal protective aids	N/A	2	2	-
Lifesaving signal card	N/A	1	1	-
Rain water plastic bags	N/A	1	1	1
Seasickness bags	N/A	4/7	4/7	-
Buoyant knife & line	N/A	1	1	1
Sea anchors & 100 ft of line	N/A	2	2	1
Buoyant paddles	N/A	2	2	2
Hand pump	N/A	1	1	1
Operations Manual	N/A	1	1	1
Instructions on how to survive	N/A	1	1	1

***C**=Coastal Service Pack

Step by step inspection checklist for Ovatek 4 & 7 persons rigid life rafts

1.0- Annual Inspection - Autumn

- Ø Remove all the accessories inside the life raft and wash the interior /exterior with fresh water and dry it with a soft cloth. Keep hatches temporarily open for drying the interior. A smelly environment will reduce drastically the spirit of your crew!
- Ø The exterior surface of the life raft should be waxed with a high quality car or yacht wax containing U. V. protection and polished with a soft cloth. This will extend considerably the shine of your gelcoat.
- Ø Close the air vents to prevent water accumulation inside the life raft.
- Ø The rubber seal around the hatches should be lubricated generously with a silicone based grease to prevent freezing damage and seizing due to ice. Lubricate the inside edge of the hatches too. DO NOT USE PETROLEUM JELLY!
- Ø Make sure both hatches are closed properly. You will hear the latches on each hatch "click".

2.0- Annual Inspection – Spring

- Ø Wipe the extra grease from the rubber seals around the hatches frame and on the inside hatch edge.
- Ø If required, wash the interior /exterior of the life raft with fresh water and dry it with a soft cloth. Keep hatches temporarily open for drying the interior. A smelly environment will reduce drastically the spirit of your crew!
- Ø The exterior surface of the life raft should be waxed with a high quality car or yacht wax containing U. V. protection and polished with a soft cloth. This will extend considerably the shine in your gelcoat.
- Ø Check the painter line to make sure it`s attach/secure to the hydrostatic and to the front lug of the life raft. Make sure the spool of loose rope is attach with a tie-wrap to the front lug of the life raft and that it`s ***not tangled***. DON`T USE ROPE OR TAPE TO TIE THE SPOOL. USE A TIE-WRAP!
- Ø Confirm that the end of the rope of one sea anchor is attach/secure to the front lug of the life raft and going through the front hatch and secured to the sea anchor.
- Ø Check the adjustment of the yellow tie-down strap. Make sure it`s tight.
- Ø Closed the air vents to prevent water accumulation inside the life raft.
- Ø Make sure both hatches are closed properly. You will hear the latches on each hatch "click".

3.0- Fourth year inspection

3.0.1 Front and rear hatch

- Check the condition of the rubber seal around the opening of the front and rear hatch. Replace if it's damaged.
- Check the water tightness of the rubber seal.
- Verification and lubrication of the hinges on both hatches with *«penetrating oil*". Wipe the extra oil. Make sure the hatches can open easily. A seize hinge could pull out the stainless steel rivets from the fiberglass and could result in a serious problem during an actual emergency situation.
- Lubrication of the latches on each hatch with *«penetrating oil"*. Wipe the extra oil.
- Verification for wear of the stainless steel wire that activates the latches on the front and rear hatch. Wear could be found near the latches.
- Always make sure both hatches are closed properly. You will hear the latches on each hatch "click" when secured. Confirm that the ladder retrieval rope don't get caught between the bottom of the rear hatch and the rubber seal.

  Note: It`s imperative to have the hatches properly closed *"at all time".* Throwing an Ovatek life raft overboard without properly closed hatches could damage the hatches or even flood the unit!

3.0.2 Front and rear Vents

- Verification if both vents open and close properly.
- Closed the vents after verification to prevent water accumulation inside the life raft.

3.0.3 Turnbuckle (Fig.1)

- Grease with *"anti-seize grease"* the turnbuckle located on the yellow tie-down strap. Wipe the extra grease.
- If it`s too stiff to turn it manually, dismantle the turnbuckle. Brush the threads with a manual wire brush to remove dried grease and possible oxidation. Clean and grease them thoroughly and re-assemble c/w the two lock nuts.
- After *firmly* tightening the yellow tie-down strap *manually*, insert the shaft of a screwdriver in the holes in the barrel of the turnbuckle and make *2 complete turns*. Double check the belt tension by pulling on it. Tight the nut on each side of the turnbuckle to lock it in position.

3.0.4 Shackles (Fig.1)

- Lubricate all the shackles on each side of the yellow tie-down strap with *"penetrating oil*".

3.0.5 Quick snap release (Fig.1)

- Lubricate the pivot points of the *spring loaded lever* with a "*penetrating oil*" and loose it up. *Note*: Make sure the spring loaded leaver can open with not too much restriction. This is a *"critical component"* of the release system. *Test it* by pulling the release wire and if it feels too stiff after lubrication, replace it with a new one!
- Make sure the quick snap release is orientated toward the back of the Ovatek so that the stainless steel wire is pulling on the end of the spring loaded lever.

3.0.6 Hydrostatic release (Fig.1)

- Replace the hydrostatic release with a new one. The round black puck is orientated toward the Ovatek. Confirm that the bolts on each shackle are tight.
- Re-attach the painter line to the stainless steel shackle located on the hydrostatic release

3.0.7 S/S Release wire (Fig.1 & 3)

- Verification for wear of the stainless steel release wire attach to the hydrostatic. Wear could be found in the area where the wire touches the edge of the mushroom vent.
- A ``Release wire instruction sticker`` or transparent tape (Fig.3) is required to keep the wire inside the life raft at all time! If a tape is required, simply put tape the release wire over the instruction sticker.
- Make sure the stainless steel release wire goes under the life line as per Fig.1. Otherwise, someone could trigger the manual launching system by just pulling on the lifeline.

3.0.8 Painter line (Fig.1 & 4)

- Check the painter line to make sure it`s attach/secure to the hydrostatic (Fig.1) and to the front lug of the life raft. Make sure the spool of loose rope is attach with a tie-wrap to the front lug of the life raft and that it`s *not tangled*.
- Don`t use rope or tape to tie the coil of rope. Use a tie wrap so that the coil of rope will break free when launching the life raft.

3.0.9 Interior/Exterior light (Fig.3)

- Replacement of the lithium batteries inside the life raft with a new tie-wrap.
- Verification of the outside and inside light bulbs.
- Verification of the base of the lights. Make sure it`s not damaged.

3.0.10 SOLAS bag (Fig.2)

- The SOLAS bag needs to be packed in sequence so that you don`t have to empty the bag to find the flares for example. See the Annex B & C for the *"Step by step instructions"* for the replacement of your perishables inside the SOLAS bag.

- Ø Confirm that the yellow SOLAS bag is "*permanently*" secured in position with a rope at the front of the life raft. If a life raft is thrown overboard at a significant height, the impact could damage the equipment inside the SOLAS bag (50lbs approx.) if it`s not secured.

3.0.11 Sea anchors (Fig.2 & 4)

- Ø Confirm that one of the two sea anchors is secured to the front lug of the life raft.
- Ø Tape the rope (Fig.2) inside the raft at a position where it doesn't interfere with the latch of the front hatch.
- Ø Make sure a stainless steel swivel is on the rope near the sea anchors.
- Ø A minimum of 100`of rope is required for each sea anchors (2)

3.0.12 Paddles

- Ø The telescopic aluminium paddles shaft needs to be lubricated with lithium grease.

3.0.13 Interior components (Fig.2 & 3 & 5)

- Ø Confirm that the plastic bailer with sponge (Fig.2) is secured to a rope and tied to the stainless steel pad eye. Make sure it can`t be damaged during boarding of the life raft.
- Ø Confirm that the red safety knife (Fig.2) is secured to a rope and attach to a stainless steel pad eye. It is on the interior wall of the life raft, near the front hatch. It`s required to cut the painter line to free the life raft from the ship in distress.
- Ø Confirm that the buoyant quoit (Fig.2) is secured to a line and the other end should be attached to a stainless steel pad eye in the raft.
- Ø Confirm that the pump and paddles (Fig.5) are secured in place.
- Ø Confirm that the Operation manual (Fig.2) is secured to a rope and attach to the stainless steel pad eye at the front of the life raft.
- Ø *Attention*: The Ovatek life raft is not a storage area!!!

Your Ovatek gelcoat is chalky or losing its shine? Call us for instruction on how you can shine it up!!

Step by step inspection checklist for Ovatek 4 & 7 persons rigid life rafts

ANNEX A

LIST OF MATERIAL INSIDE & OUTSIDE THE OVATEK 4 & 7 RIGID LIFERAFTS

#	Item description	Years of life	Expiration date marked	Size	Ovatek 4 (4 persons) SOLAS		Esperanto 6 (6 persons) SOLAS		Ovatek 7 (7 persons) SOLAS	
					A	B	A	B	A	B
1	Parachute rockets (*)	4	yes	Unit	4	2	4	2	4	2
2	Hand flares (*)	4	yes	Unit	6	3	6	3	6	3
3	Smokes signals (*)	4	yes	Unit	2	1	2	1	2	1
4	Flashlight batteries (*)	4	yes	Unit	4	4	4	4	4	4
5	Anti-seasickness pills (*)	4	yes	100 pills	1	1	1	1	1	1
6	Foods rations (*)	5	yes	Unit (502 gr)	4	0	6	0	7	0
7	Drinking water (*)	5	yes	1500 ml	4	0	6	0	7	0
8	Interior/exterior lights batteries	5	yes	Unit	2	2	2	2	2	2
9	Hydrostatic release (1)	4	yes	Unit	1	1	1	1	1	1
10	Buoyant quoit and 30 meters line	na	no	Unit	1	1	1	1	1	1
11	Buoyant bailer	na	no	Unit	1	1	1	1	1	1
12	Sponge (*)	na	no	Unit	2	2	2	2	2	2
13	Radar reflector & attachment (*)	na	no	Unit	1	1	1	1	1	1
14	Safety can openers (*)	na	no	Unit	3	0	3	0	3	0
15	Whistle (*)	na	no	Unit	1	1	1	1	1	1
16	Flashlight complete (*)	na	no	Unit	1	1	1	1	1	1
17	Spare bulb for flashlight (*)	na	no	Unit	1	1	1	1	1	1
18	Signaling heliograph mirror (*)	na	no	Unit	1	1	1	1	1	1
19	First aid kit (*)	4	yes	Unit	1	1	1	1	1	1
20	Set of fishing tackle (*)	na	no	Unit	1	0	1	0	1	0
21	Graduated drinking vessel (*)	na	no	Unit	1	0	1	0	1	0
22	Thermal protective aids (*)	na	no	Unit	2	2	2	2	2	2
23	Life saving signal card (*)	na	no	Unit	1	1	1	1	1	1
24	Rain water plastics bags (*)	na	no	Unit	2	2	2	2	2	2
25	Waterproof operation manual	na	no	Unit	1	1	1	1	1	1
26	Instructions on how to survive (*)	na	no	Unit	1	1	1	1	1	1
27	Seasickness bags (*)	na	no	Unit	4	4	6	6	7	7
28	Buoyant knife & line	na	no	Unit	1	1	1	1	1	1
29	Sea anchors & 100' line	na	no	Unit	2	2	2	2	2	2
30	Buoyant paddles	na	no	Unit	2	2	2	2	2	2
31	Hand pump	na	no	Unit	1	1	1	1	1	1
32	SOLAS yellow empty bag	na	no	Unit	1	1	1	1	1	1

(*) Items which are inside the yellow SOLAS bag
(1) Items outside the life rafts

ANNEX B

Instructions to replace past due items in or on an Ovatek 4 persons rigid liferafts:

1. Detach and bring out of the raft the yellow bag containing the SOLAS items.
2. Open the bag and take out all of the items.
3. Clean the interior of the yellow bag.
4. First, put the radar reflector on the center bottom of the yellow bag.
5. Next put the 4 new water packs (if supplied) one beside the other on the round back of the bag.
6. Next put over the water packs, one sponge followed by the 4 new food rations (if supplied) one beside the other.
7. Next put the 2 thermal protective aids on the bottom middle of the bag and put one new smoke canister (if supplied) on each side of the protective aids.
8. Next, put the 4 new parachute rockets (if supplied) and the 6 new hand flares (if supplied) on top of the protective aids.
9. Next replace the 2 batteries in the flashlight with new ones (if supplied), check that it is working and put the flashlight back in.
10. Open the larger baggie bag and replace the other 2 flashlight batteries in the small baggie bag with new ones (if supplied). Leave the spare flashlight bulb there.
11. Also in the larger baggie bag, replace the bottle of pills with new one (if supplied).
12. Close correctly, by expulsing the air, that larger baggie bag and put it in the yellow bag.
13. Next replace the first-aid kit bag (if supplied) and put it in the yellow bag.
14. Close (zip) the yellow bag, put it back to its place in the front top and attach it correctly to the raft with the rope. (The yellow bag *MUST* be *PERMANENTLY* attached)
15. The buoyant quoit and line should be outside of the yellow bag and one end of the line should be attached to a pad eye in the raft.
16. The buoyant bailer, with one sponge in, should also be outside of the yellow bag and attached to a pad eye in the raft.
17. Replace the 2 (or 1) lithium batteries (if supplied) located in the interior ceiling of the raft and attach them properly with the tie rap.
18. Replace the hydrostatic release mechanism (if supplied) on the exterior of the raft.

ANNEX C

Instructions to replace past due items in or on Ovatek 7 persons rigid liferafts:

1. Detach and bring out of the raft the yellow bag containing the SOLAS items.
2. Open the bag and take out all of the items.
3. Clean the interior of the yellow bag.
4. First, put the radar reflector on the center bottom of the yellow bag.
5. Next put the 7 new water packs (if supplied) one beside the other on the round back of the bag.
6. Next put over the water packs, one sponge followed by the 7 new food rations (if supplied) one beside the other.
7. Next put the 2 thermal protective aids on the bottom middle of the bag and put one new smoke canister (if supplied) on each side of the protective aids.
8. Next, put the 4 new parachute rockets (if supplied) and the 6 new hand flares (if supplied) on top of the protective aids.
9. Next replace the 2 batteries in the flashlight with new ones (if supplied), check that it is working and put the flashlight back in.
10. Open the larger baggie bag and replace the other 2 flashlight batteries in the small baggie bag with new ones (if supplied). Leave the spare flashlight bulb there.
11. Also in the larger baggie bag, replace the bottle of pills with new one (if supplied).
12. Close correctly, by expulsing the air, that larger baggie bag and put it in the yellow bag.
13. Next replace the first-aid kit bag (if supplied) and put it in the yellow bag.
14. Close (zip) the yellow bag, put it back to its place in the front top and attach it correctly to the raft with the rope. (The yellow bag *MUST* be *PERMANENTLY* attached)
15. The buoyant quoit and line should be outside of the yellow bag and one end of the line should be attached to a pad eye in the raft.
16. The buoyant bailer, with one sponge in, should also be outside of the yellow bag and attached to a pad eye in the raft.
17. Replace the 2 (or 1) lithium batteries (if supplied) located in the interior ceiling of the raft and attach them properly with the tie rap.
18. Replace the hydrostatic release mechanism (if supplied) on the exterior of the raft.

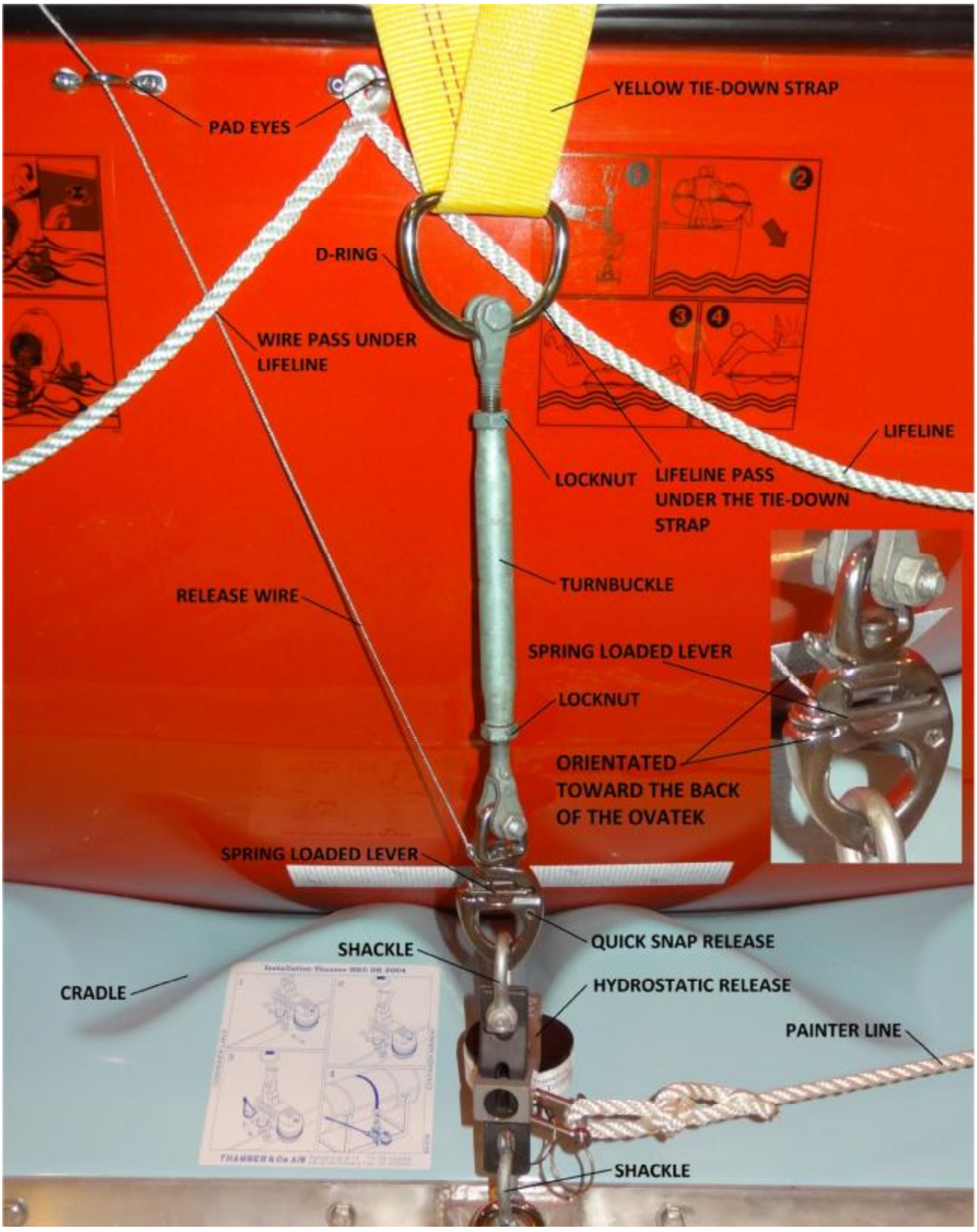

YELLOW TIE-DOWN STRAP
PAD EYES
D-RING
WIRE PASS UNDER LIFELINE
LIFELINE
LOCKNUT
LIFELINE PASS UNDER THE TIE-DOWN STRAP
TURNBUCKLE
RELEASE WIRE
SPRING LOADED LEVER
LOCKNUT
ORIENTATED TOWARD THE BACK OF THE OVATEK
SPRING LOADED LEVER
QUICK SNAP RELEASE
SHACKLE
CRADLE
HYDROSTATIC RELEASE
PAINTER LINE
SHACKLE

Fig. 1

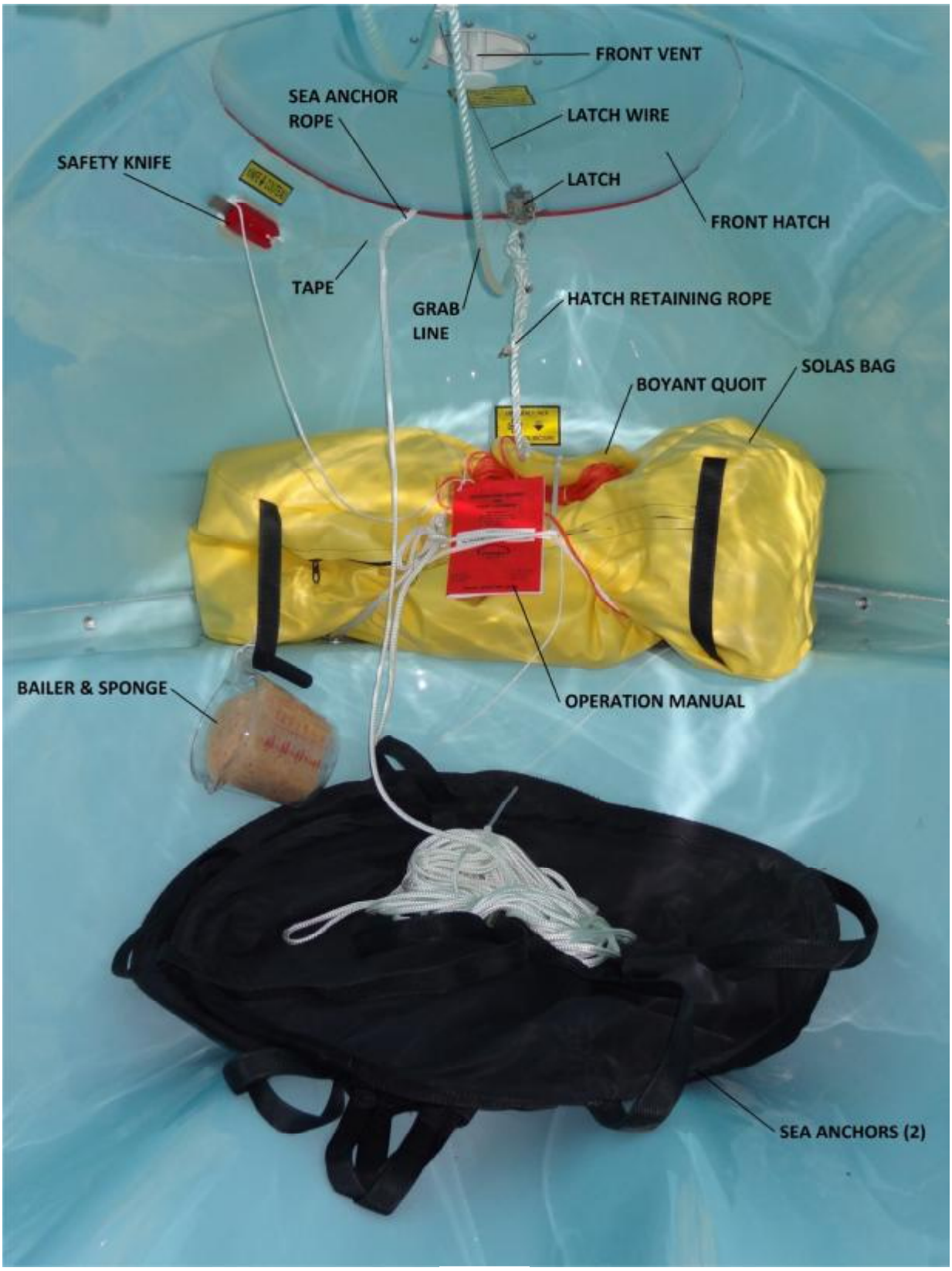

FRONT VENT
SEA ANCHOR ROPE
LATCH WIRE
SAFETY KNIFE
LATCH
FRONT HATCH
TAPE
GRAB LINE
HATCH RETAINING ROPE
BOYANT QUOIT
SOLAS BAG
BAILER & SPONGE
OPERATION MANUAL
SEA ANCHORS (2)

Fig.2

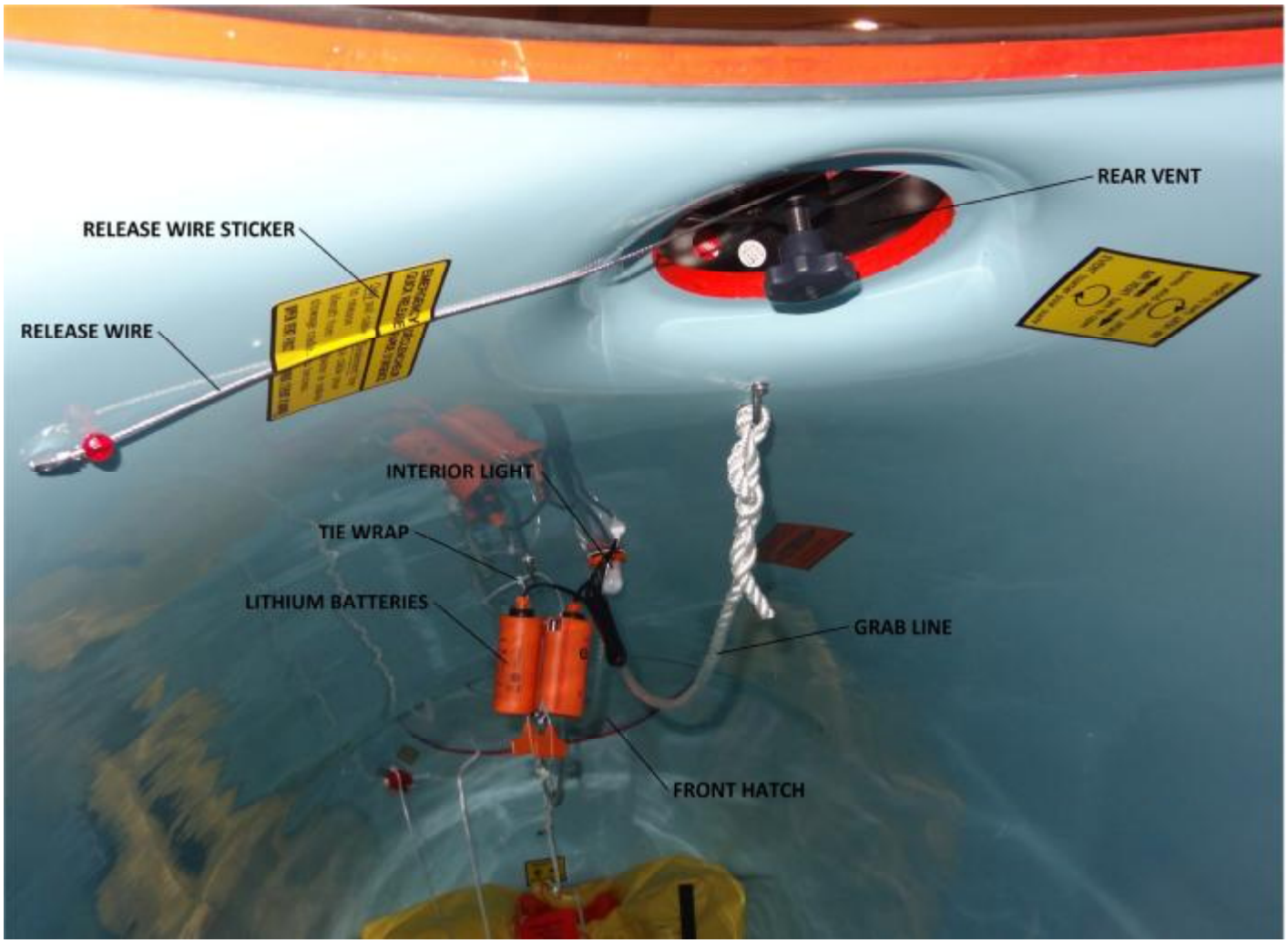

REAR VENT
RELEASE WIRE STICKER
RELEASE WIRE
INTERIOR LIGHT
TIE WRAP
LITHIUM BATTERIES
GRAB LINE
FRONT HATCH

Fig.3

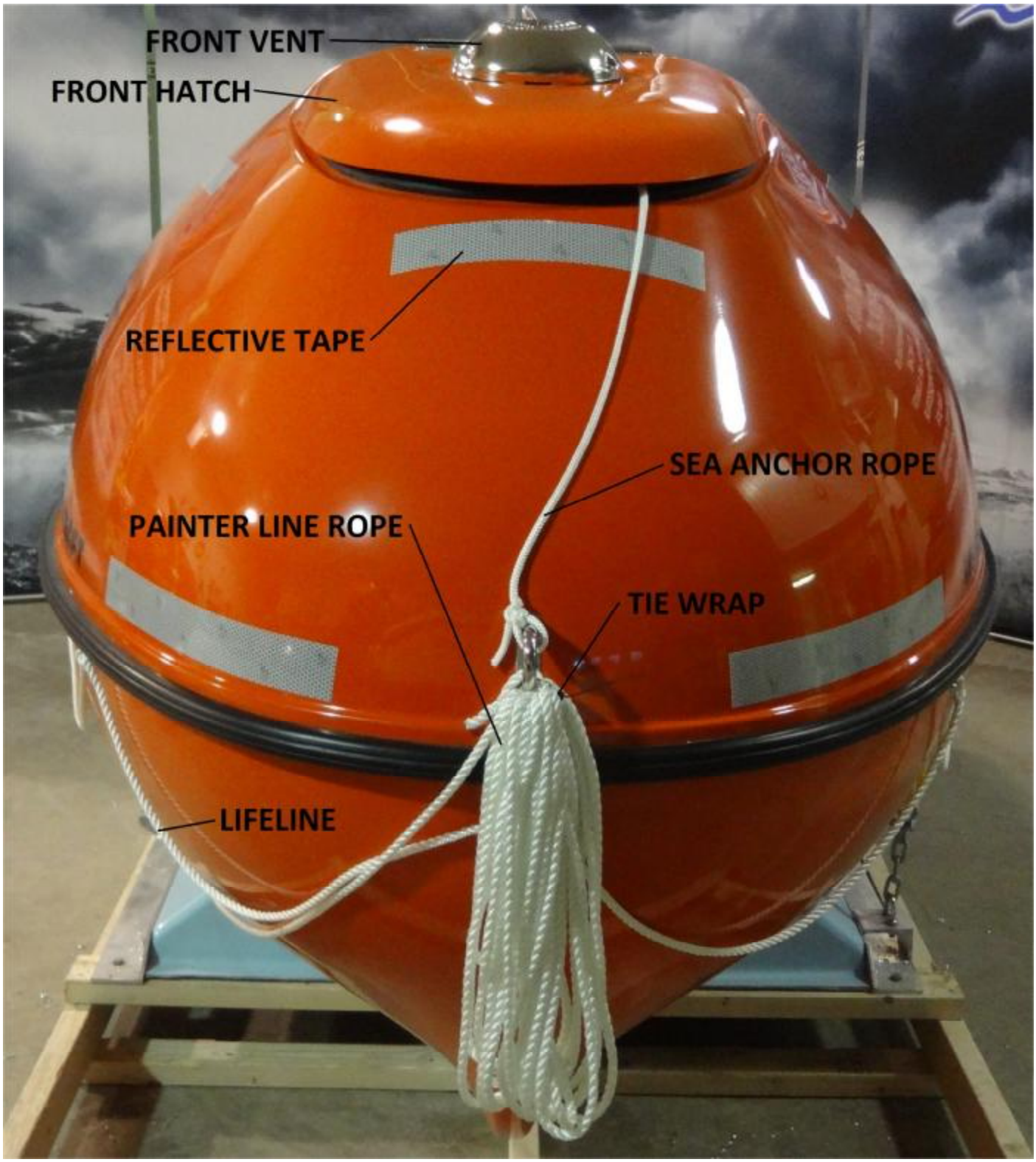

FRONT VENT
FRONT HATCH
REFLECTIVE TAPE
SEA ANCHOR ROPE
PAINTER LINE ROPE
TIE WRAP
LIFELINE

Fig.4

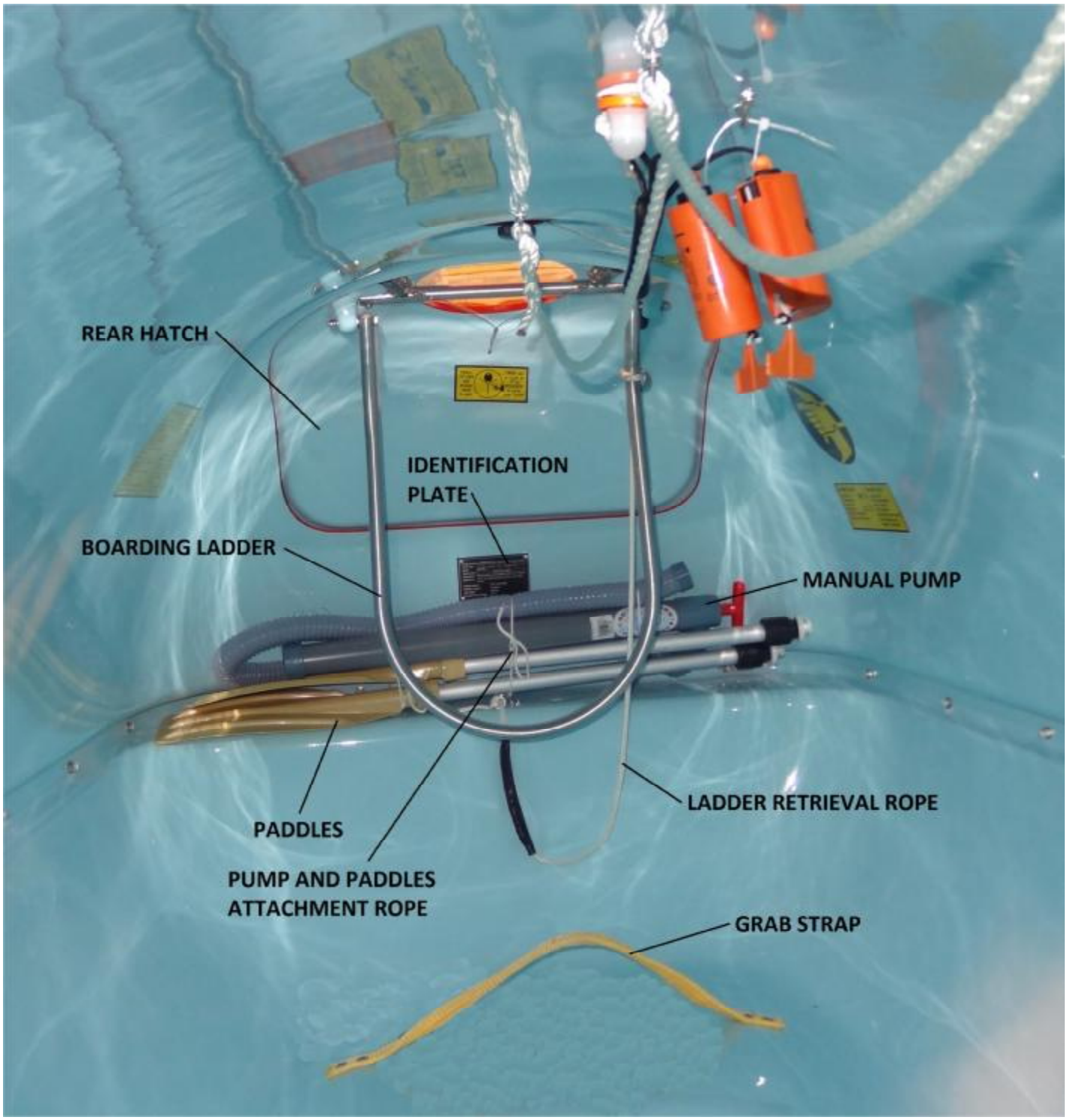

REAR HATCH
IDENTIFICATION PLATE
BOARDING LADDER
MANUAL PUMP
LADDER RETRIEVAL ROPE
PADDLES
PUMP AND PADDLES ATTACHMENT ROPE
GRAB STRAP

Fig.5

Types of Emergencies

Drowning

Injuries

Man Overboard

Explosions

Capsizing & Sinking

Collisions

Groundings

Attitude

Abandonment

Survival

Rescue

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.7. Survival Skills

The Seven Steps to Survival were assembled by the USCG from personal experiences of those who survived emergency situations. Committing the seven steps to survival to memory should be one of your goals in learning how to survive at sea.

(Modified From: AMSEA, Marine Safety Instructors Manual, 2001)

1. Recognition: You must quickly recognize the seriousness of the situation and that your life is in danger. Hesitation or denial may cost you your life, especially in harsh environments.

2. Inventory: Stop and assess the situation. Decide what you have that will help you survive (Inventory equipment, weather, your skills, injuries, and your mental condition). Doing so will help you make good decisions that will help you survive.

> **Survival Kits:** A personal survival kit can take up very little space in an immersion suit, yet greatly enhance you ability to survive. Think of these seven steps and choose items that can help you with them. Items such as a knife, dental floss (a strong multi-purpose line), plastic garbage bags, matches, signal mirrors, a compass, hard candy, or boullion cubes are small items that can save you life and fit in a zip-lock bag. Vessels may have an emergency bag stored and a person named in the station bill to bring it in case of an emergency.

3. Shelter: Your biggest enemy in winter months is the cold. Shelter can be clothing, an immersion suit, a raft, or an overturned vessel anything that protects you against the loss of your body heat. Because water can take heat away from your body much quicker than air, shelter helps you keep as dry as possible. The high heat loss areas, including the head and neck, need to be protected most. The added buoyancy of a PFD helps to keep the head and neck out of the water, therefore conserving heat. Once you are on shore, shelter is your first priority after you inventory the situation. It takes hours to construct adequate shelter on shore and you should do so as soon as possible

4. Signals: A signal is anything that attracts attention and conveys a message. Radios, EBIRBS, and flares are signals carried by vessels:

Radios: The emergency frequencies are Channel 16 VHF and 2182 KHz or 4125 KHz on single side band radios (SSB). VHF radios are short range and SSB radios are for long-range communications. Near the radios, there will be a placard posted that describes MADAY calls. Be familiar with what constitutes a proper MAYDAY call. Vessels are required to monitor the emergency frequencies at all times. If you hear a MAYDAY call on the radio, listen carefully and take notes. Inform the person on watch and be ready to respond to the call if the Coast Guard does not.

Flares: The vessel will have flares and/or smoke signals stored in the life raft and other locations on the vessel (most likely the wheelhouse). Each type, handheld, rocket, smoke flares, etc, will have instructions for use printed on its canister. If you see a flare launched at sea, inform the person on watch immediately.

EPIRB (Emergency Position Indicating Radio Beacon): The vessel will have at least one EPIRB mounted in a float-free bracket that will be automatically activated in the event of sinking. The signal is received by satellite and, in new styles, will identify the sender. In the event of an abandon ship emergency it is an item you want to take with you. Someone will be assigned that duty on the station bill. If not shown by a crewmember, be sure to locate the EPIRB(s) on the vessel and read the directions on how to activate them

Other Signals: Anything that makes you bigger and brighter is a signal. Immersion suits have lights attached. You may have a signal mirror in your personal survival kit. If abandoning ship, anything that can be tossed overboard may help in aircraft spot your position. In a shore survival situation, three of anything (fires, buoys, immersion suits on the beach) is an internationally recognized distress signal.

5. Water: It is recommended that humans drink two liters of water per day to stay healthy. You can live without water for days, but will suffer dehydration from the onset of any abandon ship emergency. Life rafts have limited rations of water, but it is advised to gather as much as possible before abandoning ship, if time permits. Have a strategy for gathering extra water in an emergency. Never drink seawater or urine.

6. Food: A person can go without food much longer than without water. Never eat food without water your body requires water to digest food. Life rafts are supplied with limited food rations. In a shore survival situation, many types of edibles can be found near shore. Almost any animals or green plants in the inter-tidal zones are edible, but avoid mussels or clams they may cause paralytic shellfish poisoning.

7. Play: Studies have shown that mental attitude makes a difference in a survival situation. Play can be anything that keeps you occupied and prevents your mind from dwelling on the difficulties you are facing. Play can be reading, telling jokes or stories, completing a task, or improving your shelter anything that keeps you mind active and focused.

3.8.1. Donning Immersion Suits and Personal Flotation Devices

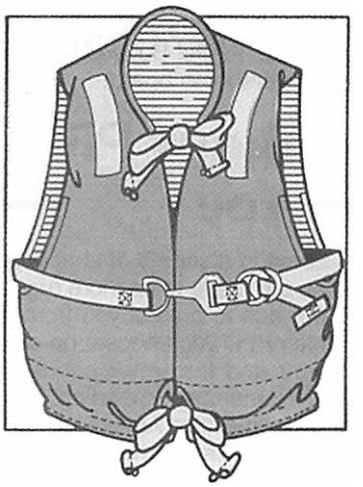
Personal Flotation Devices (PFDs)

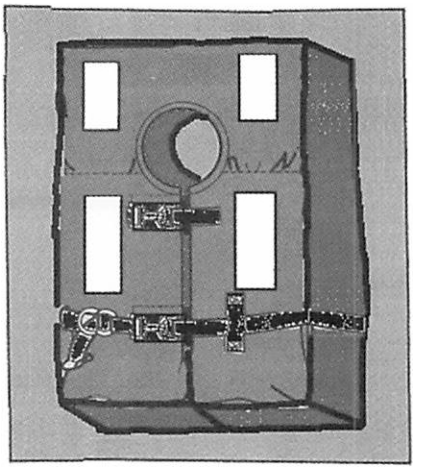
No other piece of lifesaving equipment has saved more lives at sea than the personal flotation device, your lifejacket. They are designed to keep you floating face up and should do two things for the survivor: KEEPYOUR MOUTH AND NOSE ABOVE THE SURFACE AND MAKE YOU CLEARLY VISIBLE TO RESCUERS. Without flotation in extremely cold water, your ability to tread water or swim is measured in minutes. If you are unconscious or injured, survival time is even less.

There are five types of PFDs that are approved by the U.S. Coast Guard. Selecting a PFD for certain waters has been made easier by classifying them into five different types.

Type I (Offshore life Jackets)

A Type I has the greatest required buoyancy, 22 lbs, and is designed to turn most w1conscious persons in the water from a face down position to a vertical and slightly backwards position. This is known as a POSITIVE RIGHTING MOMENT.





This type of PFD is suitable for all waters, especially in waters where rescue may be delayed.

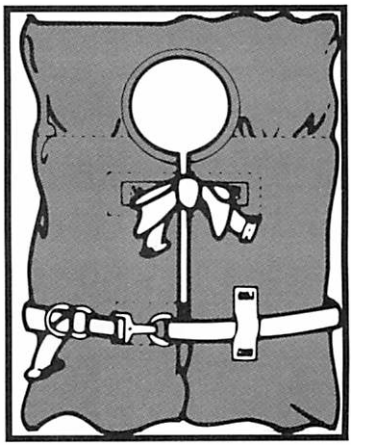
Reflective tape is distributed on the front and back for added visibility. A whist le is required. It is reversible for ease of donning and available in two sizes - Adult (90 lbs or more) and Child (less than 90 lbs).

Anything less than Type I in open water is inadequate.

Type II

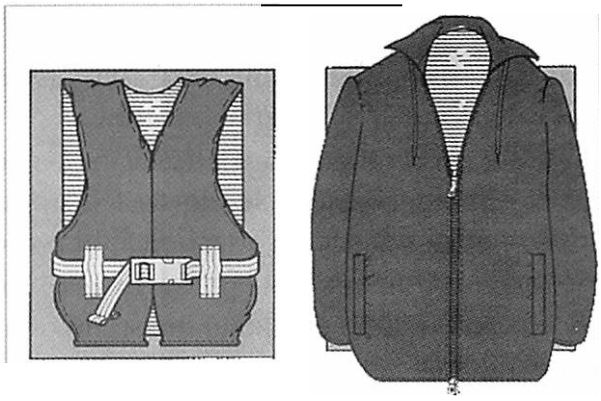
This PFD is designed for the recreational boater when rescue can be expected in a short period of time and water conditions are relatively calm. It has no less than 15.5 lbs of buoyancy.

It is also designed to turn the wearer from a face down to a vertical or slightly backward position but not as pronounced as the TYPE I.



Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

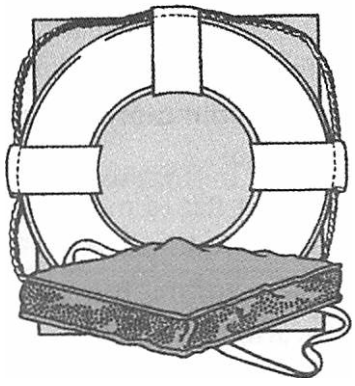
Type Ill



This PFD is designed for the active outdoorsman, with comfort in mind. The TYPE III will maintain the wearer in the position that they assume in the water. Common users are hunters, recreational fishermen, water skiers and canoeist. They are NOT DESIGNED to turn the wearer from a face down position.

Type III includes float coats and vests, which provide flotation and small amounts of hypothermia protection. They have no less than 15.5 lbs of buoyancy.

Type IV



This type of PFD is designed to be THROWN to and grasped by a person in the water. It is designed NOT TO BE WORN! Ring buoys and boat cushions are the most common in the marine industry. They have a minimum of 16.5 lbs of buoyancy.

Type V

This type of PFD is designed to meet a specific need or activity on or over the water. These can be work vests, float suits and immersion suits. They are not designed to turn the wearer from a face down position. They have no less than 15.5 lbs of buoyancy.

Helpful PFD Suggestions

- Try on your PFD and adjust it until it fits comfortably in and out of the water.
- Mark your PFD with your name if you are the only wearer or need a specific size. Always mark it with the name of your boat.
- Do not alter it. If it doesn't fit properly, get one that does. An altered PFD is no longer Coast Guard app roved.
- Dry a wet PFD thoroughly before stowage. Store it in a well-ventilated area.
- Do no dry your PFD in front of a radiator or other source of direct heat.
- Make sure there are at least 31 square inches of retro-reflective tape on the PFD to increase your visibility.
- Accessories such as strobes and whistles can be attached to your PFD in a location that will not interfere with your work on deck.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

Immersion Suits

Coast Guard approved immersion suits are required for each crew on vessels operating on all U.S. coastal waters above 32 degrees N latitude.

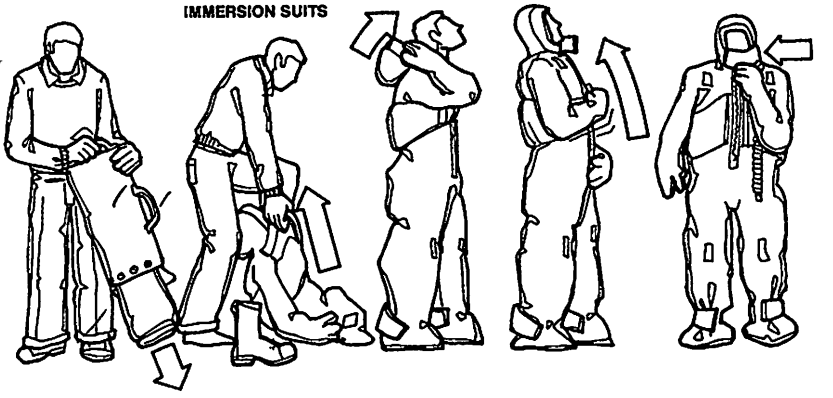
There are many different varieties of immersion suits on the market. Some suits are just big overalls; others have boots, detachable gloves, leg zippers and other features. An immersion suit should be equipped with a whistle; an attached light is required on oceangoing vessels of any size.

It should have an inflatable pillow to keep your head and neck out of the water for better thermal protection and to help eliminate the strain of holding your head up.

Make sure the suit fits you properly; there have been cases of people drowning in suits that were too large for them. The suit should form a tight seal around your face. Mark the suit with your name and the vessel's name with a waterproof marker.

Quick and Safe Donning Procedures

- A sharp jerk on the carrying case will eject the suit.
- Lay the suit out flat to make sure no parts are folded.
- Remove your boots, but leave plenty of warm clothes on.
- Step into legs of suit while in a stable position; if need be, do this in a sitting position or leaning against support. Put one foot in at a time. With both feet in, pull the suit up to the waist and adjust feet securely.
- Put one arm in at a time and pull the suit up over the shoulders. Squat down a bit to assist yourself in getting the head gear on.
- To avoid problems in zipping the suit, arch your back to remove wrinkles in the fabric. If you have a beard, turn your head to one side, so that facial hair is not caught.
- Secure face flap to reduce incoming water.

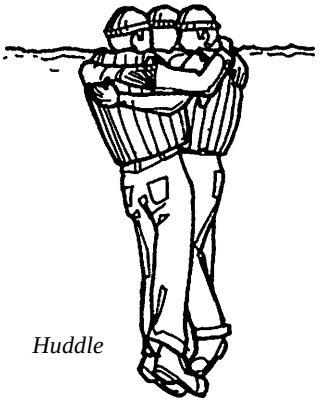


Once the suit is completely on, squat down and release some of the air trapped in the suit by lifting a piece of the suit off the face with one hand. Secure the Velcro straps around the feet to make the suit a bit more tailored. Once this is complete, the suit is ready for water entry.

Entering the Water

- Enter the water, protecting your head with one arm and step out to the side.
- Avoid facing the water and jumping forward. A slip is more likely to cause a head injury.
- If possible, avoid submerging your head by gently entering the water to prevent seawater from entering the suit through the face opening.

Help position



Huddle

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

- Be sure the suit is fully zipped and that all closures are snug. Leave the external bladder deflated until you are in the water.
- Protect your head with one arm, check the area below and jump with feet together.

Stowage and Maintenance

Immersion suits should be stowed in a very accessible, dry place. Aboard fishing vessels, there is a debate whether that means in each crewman's bunk or in the wheelhouse. If you put it in your bunk, you know where it is, but you may not be able to reach it in an emergency. Wheelhouse storage would normally be best, but there may not be adequate space. It is a decision you must make based on the configuration of your boat.

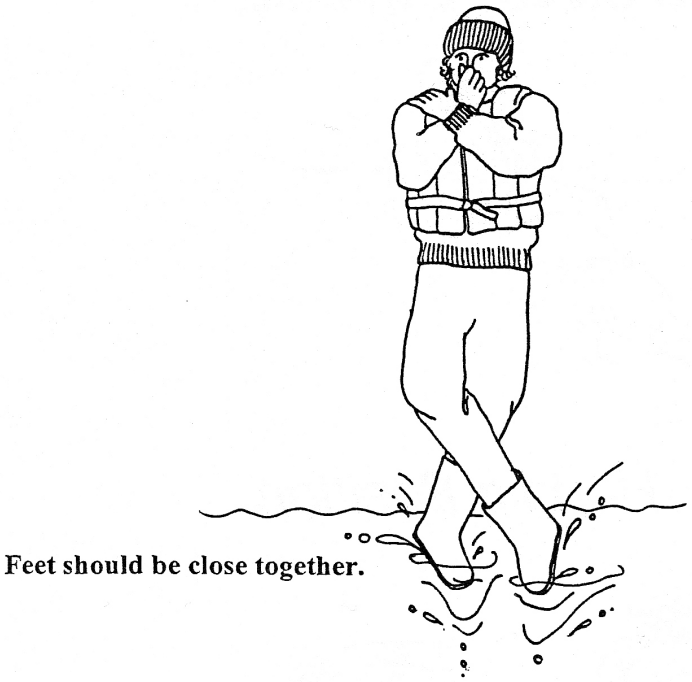
Whatever you decide as a location for all survival gear, especially the immersion suits, know the location and make sure you can reach your suit in a hurry, allowing free access from the working platform.

Immersion suit bags should have sizes marked allowing crew to select the proper suit for them. Zippers and the general condition of materials should be inspected during scheduled monthly emergency drills. PFD's, which are not encased, should be stowed out of direct sunlight to prevent against fabric deterioration and should also be checked during emergency drills.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

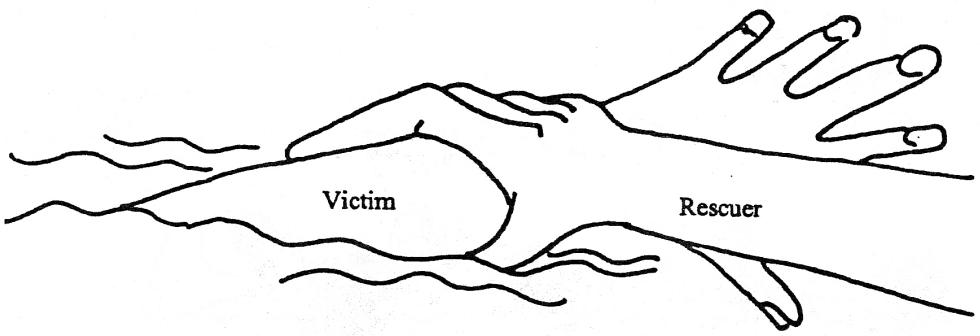
3.8.1.1. Appendix K – Jumping in PFD/Correct Hand Position for Rescue

JUMPING WITH PFD



Feet should be close together.

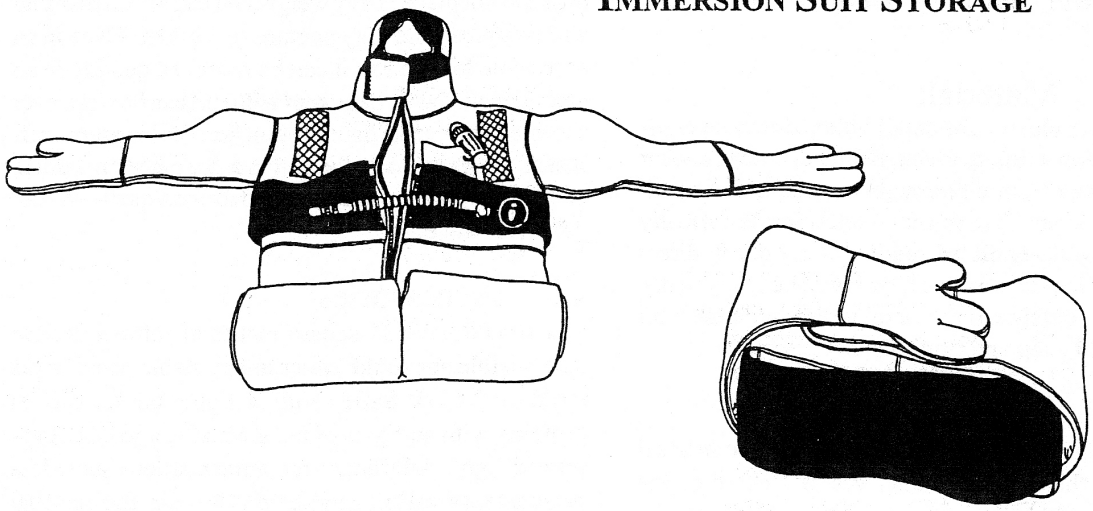
CORRECT HAND POSITION FOR RESCUE



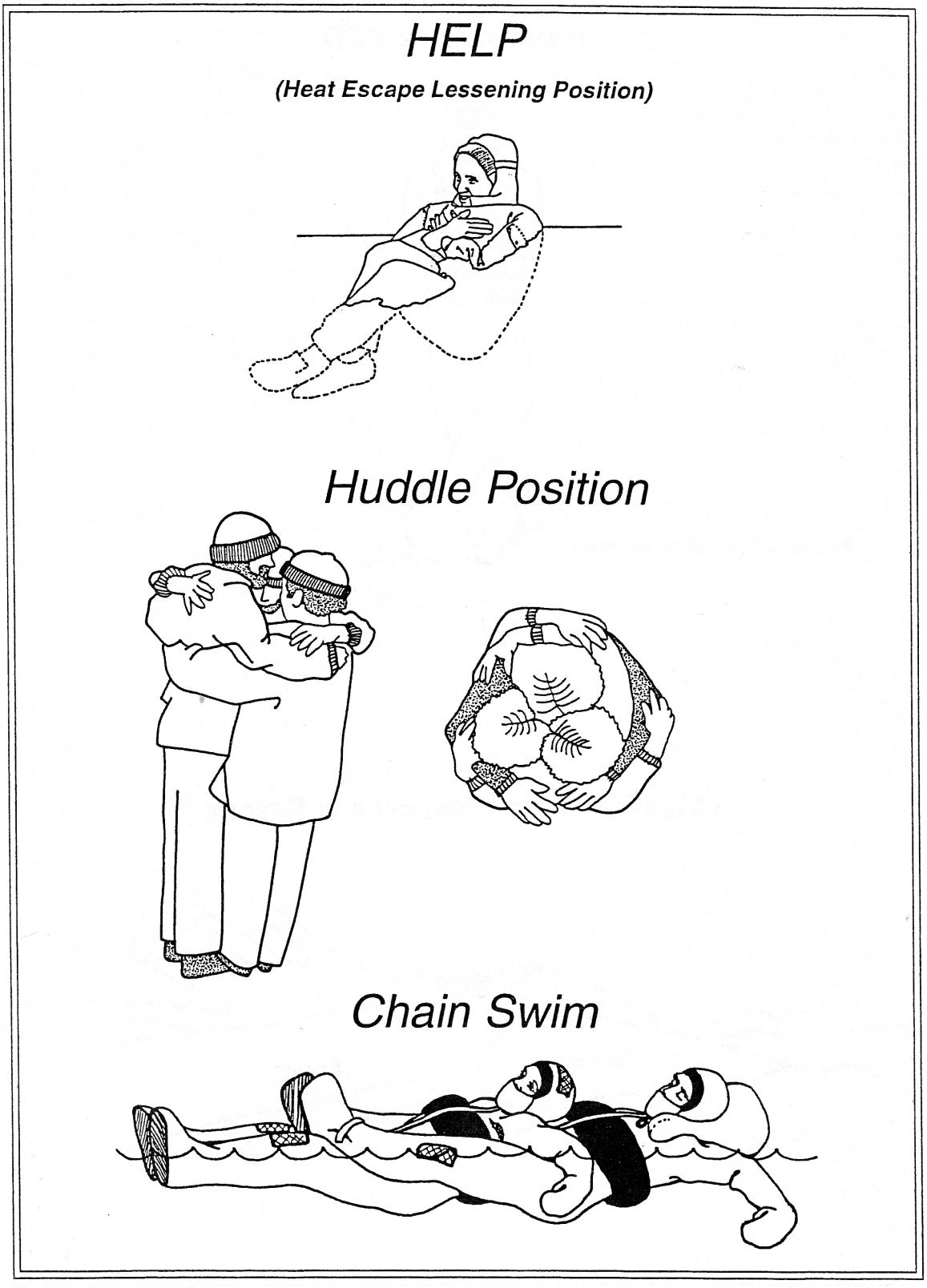
3.8.1.2. Appendix O – Jumping in an Immersion Suit/Suit

JUMPING IN AN IMMERSION SUIT

IMMERSION SUIT STORAGE



3.8.1.3. Appendix L – HELP, Huddle and Chain Swim



3.8.1.4. Appendix P – Care and Maintenance of Immersion Suits

CARE & MAINTENANCE OF IMMERSION SUITS

Your immersion suit's life span-or your own, if you should find yourself in the water-depends greatly on how you care for and maintain your immersion suit. Your immersion suit is only as good as your care of it. Here are some points that should be checked whenever you inspect your suit (at least once a month).

☐ Zipper

Inspect closely for missing teeth and signs of corrosion. Lubricate teeth on the **outside** and **inside** of zipper with the product recommended by the manufacturer. Do not use oil-based greases. Scrub zipper with a toothbrush to remove build up of residues. Run zipper up and down to check for smoothness.

☐ Inflation House & Bladder

Pull gently on the tube to make sure the tip of the tube or its attachment point on the bladder do not separate. Use plastic wire ties at these points if not present. Leave the silver knurled knob below mouthpiece in the down position, ready for use (see figure 1). Once a year remove bladder, inflate overnight or soak underwater to check for leaks. Make sure to reattach to suit when dry!

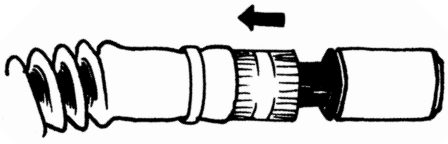


Figure 1.

☐ Material

Inspect closely for small holes, tears, and compression wrinkles in suit. If dirty or used in pool or salt water, rinse thoroughly inside and out with fresh water. Turn suit completely inside out to dry in a well-ventilated space. Do not dry in direct sunlight. One or two days later it will be read to dry on the outside. If dirt or oil is present, wash with mild soap and rinse. Do not dry clean.

☐ Markings

All immersion suits are required to be marked with the owner's name, vessel's name, or the name of the person to whom the suit is assigned. (BEWARE – Paints may damage the material.)

☐ Practice

Don your suit. How long does it take? How well does your suit fit you? With foul-weather gear on can it still be zipped up?

☐ Stowage

Leave the zipper open, but zipped up one-inch from the bottom. Roll the suit legs up first, followed by the hood and finally fold the arms over and place in bag (see figures 2 and 3). Make sure the neoprene flapper valve in foot is not creased.

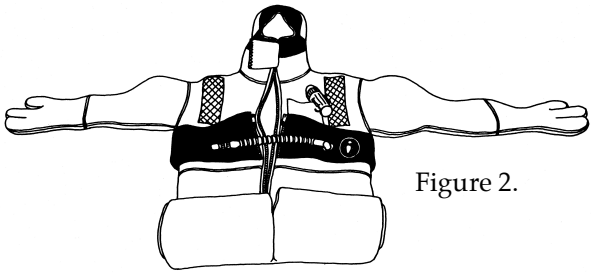


Figure 2.

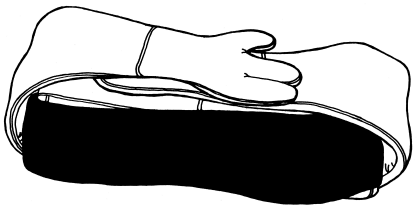


Figure 3.

Otherwise, follow the manufacturer's stowage recommendations. Lubricate snaps on bag. Store suits in their bags, not against each other without bags. Do not place heavy weights on bags as suit material will compress and may puncture or weaken. Plastic bags kept with the suit can be worn over shoes/boots to make donning quicker. For long term, off-season stowage, hang the suit in a dry place on a thick, padded hanger (like one designed for a dive suit- do not use wire hangers).

☐ Accessories

Suit should have 31 square inches of retro-reflective tape visible above the water in any stable position (as required by the F/V Safety Act), a zipper tab for ease in gripping with suit gloves on, a whistle, and USCG approved light. Additional recommendations include a personal survival kit, handheld VHF radio, and personal EPRIB.

3.8.2. PFD Maintenance

The following care instructions are provided to help you maintain the condition of your program issued personal flotation device (PFD). It is your responsibility to perform visual inspections of the buoyancy cells and inflation system at least once each quarter and report any maintenance issues to your program manager. Program staff will inspect all safety equipment prior to issuance and will use an authorized Mustang Service Station for all bladder or inflation system repairs.

Visually examine your PFD for damage or excessive abrasion, wear, tear or to bladder or fabric covering. If in doubt, return it to program for replacement.

Test battery on PFD strobe.

Check the oral inflation valve, fully inflate PFD and hold valve under water. If bubbles appear, deflate and inflate again. Should the leak persist, return to program for replacement.

Test for general leaks by orally inflating your PFD until firm and let stand overnight. A leaking PFD will not hold its firmness and should be replaced.

Inspect the CO_2 cylinder, if punctured, replace with a 33gram cylinder

Remove cylinder, auto cap and bobbin before washing. Apply a pre-wash stain remover to grease or blood and wash with regular detergent. Rinse with fresh water and hang dry. DO NOT USE BLEACH.

Reassemble inflation system parts and repack PFD as outlined in previous instructions and illustrations.

Store in warm, dry location

The following actions should be taken to reduce accidental inflation of your PFD.

Remove CO2 cylinder and auto cap during travel and between trips.

Store auto cap and bobbin in a ziplock bag, when not in use.

Frequently check the manual lever to ensure it is up in the ready position and the green indicator pin is present.

Check bobbin frequently. Replace bobbin every 6 months or when pitted in appearance.

*All PFD's will be marked with NMFS, the Program and a number. Any PFD that; no longer hold air; is unable to manually inflate; or reaches 5 years of age from the purchase date will be replaced.

LOOK at the suit's fabric, reflective tape, zipper and any attached accessories.

Examine **fabric** for tears, rips, punctures, or burns. Note areas for repair.

Replace **reflective tape** if it is yellowed, peeling, cracked or missing. There should be 16 square inches of reflective tape on the front and the back of every immersion suit.

Look for signs of corrosion (green color) on the **zipper**. If present, attempt to eliminate it by brushing several times with baking soda and water. Then lubricate with a non-petroleum product recommended by the manufacturer. If corrosion cannot be removed, the suit should be condemned.

Make sure each immersion suit has an attached **whistle**, a **toggle handle** for the zipper, and a **USCG-approved light** with batteries in-date.

FEEL the suit's fabric. It should feel flexible, not stiff. It should not feel thin or compressed; neoprene suit fabric should be 5mm to 6.5mm thick.

Test how easily the zipper goes up and down. Lubricate it regularly with a product recommended by the manufacturer.

This guide provides only an overview of neoprene immersion suit maintenance, leak-testing and repair.

FOR ADDITIONAL INFORMATION:

Immersion Suit Care & Inspection Booklet
U.S. Marine Safety Association.
5050 Industrial Road, Farmingdale, NJ 07727
(732) 751-0102
www.usmsa.org

Alaska Marine Safety Education Association
2924 Halibut Point Road, Sitka, AK 99835
(907)747-3287
www.amsea.org

Circular No. 01-08: Shipboard Inspection & Testing Of Immersion Suits
Commandant, U.S. Coast Guard
2100 Second St. SW, Washington, DC 20593
(202)372-1395
www.uscg.mil/hq/cg5/nvic/

Online ***Gear Repair & Care Guide***
McNett Corporation
1411 Meador Ave. Bellingham, WA 98229
(360)671-2227
www.mcnett-dive.com

This publication was created by the Alaska Marine Safety Education Association for the Commercial Fishing Vessel Industry Safety Advisory Committee © 2010

YOUR IMMERSION SUIT

HOW TO:

- Maintain it
- Leak-test it
- Repair it

This is a quick guide to maintaining, leak-testing and repairing neoprene immersion suits. Although this guide outlines processes similar to those performed in an authorized repair facility, it does not substitute for having suits inspected and repaired at an authorized facility.

A manufacturer's authorized facility may find defects undetectable with the do-it-yourself methods explained here. It will have the latest information on potential problems and their fixes, as well as the experience gained from testing and repairing hundreds of suits.

However, this guide can help keep your neoprene suit perfoming optimally between visits to an authorized facility.

REGULAR INSPECTION AND MAINTENANCE

Use your senses.

SMELL your suit inside and out. It should not smell of diesel fuel, gasoline, oil, mold or mildew.

If odors are present, soak the suit in a mild soap or shampoo safe for neoprene. Dive shops usually sell neoprene shampoo. Your suit's manufacturer can also recommend a cleaner. After washing, turn suit inside out and hang to dry using a padded, non-metal hanger. Dry in a warm, well-ventilated area out of direct heat or sunlight. When inside is dry, reverse suit to dry the outside.

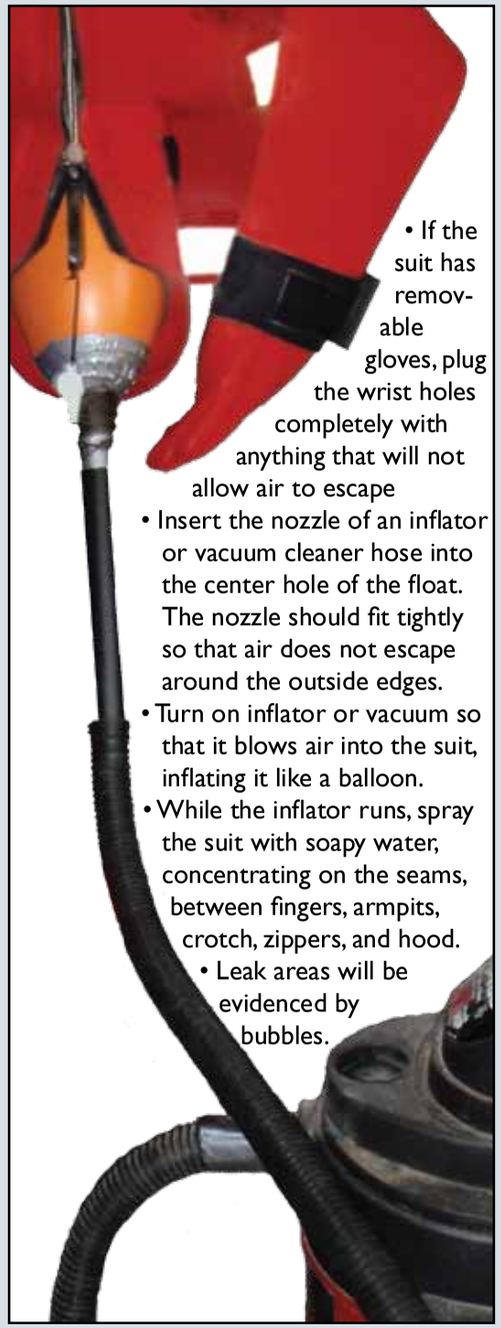
HOW TO LEAK-TEST AN IMMERSION SUIT

Items Needed:

- Conical buoy or float such as a pole float with a hole running completely through the center in the longest dimension, and made of a non-porous material so that air cannot pass through the float itself.
- Vacuum, with hose and wand attachments, that blows air out or an electric inflator with a stiff nozzle.
- Duct tape.
- Soapy water in a spray bottle.
- Sketch of rough shape of suit (front and back) on which to note leaks.

Procedure:

- Lay suit out on table or hang by the feet with a pair of large spring clamps.
- Tape over the air valve inside foot (if present) with duct tape.
- Place the widest end of buoy inside face opening of the hood.
- Pull zipper up to buoy to make a good seal. The float should fit tightly so that air does not escape around the outside edges.
- Tie the float to the immersion suit's zipper toggle, if necessary, to keep it in place during inflation.



- If the suit has removable gloves, plug the wrist holes completely with anything that will not allow air to escape
- Insert the nozzle of an inflator or vacuum cleaner hose into the center hole of the float. The nozzle should fit tightly so that air does not escape around the outside edges.
- Turn on inflator or vacuum so that it blows air into the suit, inflating it like a balloon.
- While the inflator runs, spray the suit with soapy water, concentrating on the seams, between fingers, armpits, crotch, zippers, and hood.
- Leak areas will be evidenced by bubbles.

- Areas in the material itself, as well seams, may leak.
- Make careful note of all leak locations. Once the suit is rinsed of soap and dried, most leak sites will be invisible.
- Rinse suit in fresh water. Hang to dry completely before attempting repairs.

NOTE: *If leaks are numerous or in large areas in the material itself, effective repair using the following method may not be possible. Also, repair in the field of the fabric may void the USCG approval of the suit. Consult the manufacturer's authorized repair facility.*

Don't forget to inspect your immersion suit's buoyancy ring or pillow. To leak-test it, inflate with the oral inflation hose. It should stay inflated overnight.

REPAIRING NEOPRENE IMMERSION SUITS

- Only attempt repairs on a clean and completely dry suit.
- Turn suit inside out.
- Clean and prepare areas to be repaired with a product such as Cotol-240™ Cure Accelerator & Pre-Cleaner.
- Repair using urethane-based repair adhesive/sealant designed for neoprene wet suits such as Aquaseal®, available from most dive shops. Mix three parts adhesive with one part thinner, such as Cotol-240™, if desired.
- If repairing more than one suit, mix enough Aquaseal® and Cotol™ to repair no more than four suits or the mix may cure before finished.
- Apply to leaking seams or fabric areas with a small, stiff brush.
- Allow repair to set for 24 hours.
- Turn suit right side out and repeat repair process on reverse side of problem areas.
- Inflate repaired suit to retest for leaks and do additional repairs as needed.
- If fabric field repair was done, have suit inspected by the mantufacturer's authorized service station as soon as is practical.

3.8.4. Making a Voice Radio Distress Call and Using Visual Distress Signals

3.8.4.1. Location Aids for the Mariner

The key to being rescued quickly is to let people know where you can be found. By using the four detection factors: light, color, sound and movement, you will gain attention.

Your most powerful distress tool is your radio. In the event of an emergency, it is extremely important to establish radio communication immediately with the Coast Guard or another vessel.

DO NOT WAIT UNTIL THE SITUATION IS OUT OF CONTROL. At that point, there may be no power to the radio or it may be too late for rescue units to respond.

Having and using marine radios is an integral part of fishing and a valuable aid in an emergency. It is also a privilege granted by the agency that issues the licenses - the Federal Communications Commission (FCC). Emergency marine radio calls are made on VHF channel 16 (156.8 mHz) or SSB 2182 kHz.

3.8.4.2. Emergency Calls

There are three internationally recognized radio signals used for marine emergencies. MAYDAY, PAN-PAN, and SECURITY. All three have priority over other radio traffic.

MAYDAY calls also have priority over all other emergency signals. They are to be used only when a vessel or life is threatened by grave and imminent danger and a request is made for immediate assistance.

If you hear a MAYDAY call and it is not answered, you must answer it and log the details of the call. When you can be reasonably sure you will not interfere with other distress-related communications, advise the vessel in distress what assistance you can offer.

MAYDAY RELAY: All vessels that are required to have radios are required to relay Maydays that are heard but go unanswered.

To relay an unanswered Mayday, make sure your radio is on and you transmit on channel 16 VHF. Then state:

1. Mayday relay, Mayday relay, Mayday relay.
2. YOUR vessel's name and call sign.
3. Name and call sign of vessel in distress.
4. Location of vessel in distress.
5. Nature of problem with vessel in distress.
6. Degree of assistance needed.
7. Listen for acknowledgement.
8. Transmit additional requested information.

PAN-PAN (pronounced pahn-pahn) calls are for very urgent messages concerning the safety of a boat or persons. Examples include urgent storm warnings by an authorized station and/or loss of steering or power in a shipping lane. To transmit a PAN-PAN message, make sure your radio is on and you transmit on channel 16VHF. Then state:

1. PAN-PAN, PAN-PAN, PAN-PAN all stations.
2. Your vessel name and call sign three times.
3. Nature of urgent message.
4. Position (latitude and longitude and LORAN are preferred).
5. Total number of people on board.
6. Vessel description (length, color, type, etc.).

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

SECURITY (pronounced say-cure-i-tay) calls are the lowest priority emergency calls and are used to alert vessel operators to turn to another station to receive a safety message. SECURITY warns nearby vessels of a possible hazard.

3.8.4.3. Emergency Position-indicating Radio Beacons (EPIRBs)

Vessels that are operating beyond the "three-mile line" and are greater than 36'in length are required to have an FCC type Coast Guard accepted Category 1 406 MHz EPIRB (float free).Vessels less than 36' in length beyond the "three mile line" are required to have a Category 2 406 MHz EPRIB.

Drills are to include demonstration of proper use including arming. If you have an EPIRB, turn it on as soon as possible and leave it on. A continuous transmission provides the best hope for rescue. The lanyard attached to the unit should be fastened to the raft or to an individual in the water. Most EPIRB's operate best when floating with the ANTENNA VERTICAL.

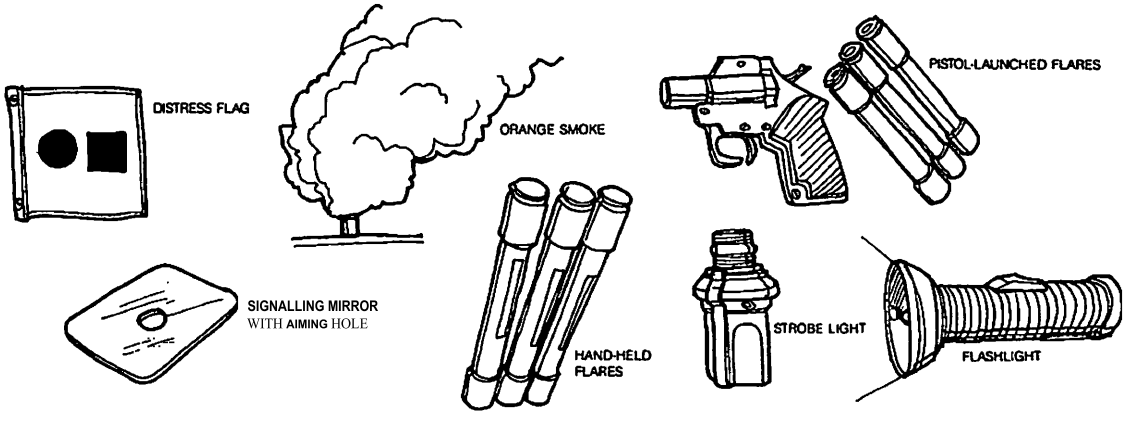
3.8.4.4. Visual Distress Signals

A visual distress signal is anything that makes you BIGGER, BRIGHTER OR DIFFERENT. By yourself, you are a small target; anything you do to make yourself more visible will help rescuers find you.

Visual distress signals are included in the emergency equipment pack aboard your life raft. They include both pyrotechnics and devices such as flashlights, portable strobe lights, mirrors and distress flags. All have advantages and disadvantages and all are of value only if they are used effectively.

READ THE INSTRUCTIONS - Whatever the signals, always carefully read and follow the affixed instructions. The signals are very powerful and can cause injury and even worse if not treated with respect.

Types of and Use of Visual Distress Signals



3.8.4.4.1. Parachute Flare

Contained in a plastic canister, the parachute flare produces a bright red flare suspended by a parachute. This flare is activated when you have reason to believe that a rescue craft is in your area. To activate:

- Hold flare vertically, rocket end up.
- Remove the top and bottom caps, holding flare firmly.
- Remove the safety pin from bottom. This allows the firing trigger to be lowered into the ready-to launch position.

- Aim slightly downwind and squeeze the trigger up into the canister. BE READY FORA KICK, AS THE ROCKET WILL GO TO 1000'.
- The flare will burn for 30-60 seconds. Under ideal conditions the flare is visible up to 30 miles.

3.8.4.4.2. Pistol launch Flares

To use this type of flare, load the cartridge into the barrel of the pistol. Aim downwind and pull the trigger. This will activate the signal. It will reach an altitude of 30-50 feet and burn for 8-12 seconds.

3.8.4.4.3. Hand-Held Flares

The hand-held flare is designed to produce a bright red distress signal when activated. There are two types.

One type has an arrow on the handle and an arrow on the metal flare. To activate:

- Pull the handle down and rotate until the two arrows line up.
- Apply upward force to the handle to activate.
- DO NOT hold onto the flare itself as it becomes very hot.
- If it does not activate after the initial striking, attempt another strike. If it still does not activate, throw it in the water.
- Activate downwind.

The other style of hand held flare requires:

- Lift up on the tape that goes the length of the flare. By doing this, the top side (striker) is exposed.
- To remove the cap, twist it. Hold it out and away from the raft.
- Strike the topside of the cap on the flare end.
- Be careful of the "slag" that will drip, it is extremely hot and dangerous to human skin contact.

3.8.4.4.4. Strobe light

The strobe light is a compact, high-intensity light that is capable of operating continuously for 12 hours. It is activated by a "push-on / push-off" button located at the base of the unit.

3.8.4.4.5. Signaling Mirror

The signal mirror is one of the best daytime signals available. Aim the mirror into the sun locating the beam on your hand or a nearby surface. Look through the aiming hole in the center of the mirror at the beam. A bright dot should appear. Place the dot toward the rescue craft. Survivors should practice with mirrors constantly since the reflected light signal could possibly be seen by rescue craft out of the victim's sight or hearing range.

3.8.4.4.6. Sea Dye Marker

Sea dye marker consists of a chemical which, when immersed in water, produces a bright greenish- yellow color that is highly visible. To use the dye marker, open the container and swirl it around in the water. Drift about 20 yards and lower the dye back into the water and create another slick. Continue to do this and you will create a trail for rescue craft to follow. The duration of the sea dye will vary from 20 minutes in rough seas to 2 hours in calm sea. Keep the container outside of your survival craft, as the dye will spill inside the raft creating a mess.

3.8.4.4.7. Floating Smoke Signal

Best seen during the day, the floating orange smoke signal is contained in a waterproof canister. To operate:

- Remove plastic cover.
- Locate activating cord and pull firmly.
- Throw it into the water immediately.
- Within 3-4 seconds, a popping sound will occur and the smoke will be visible. The activation time is 3 minutes.
- Activate downwind, as the smoke will be very pungent.

3.8.4.4.8. Hand-held Smoke Signal

Best seen during the day, the hand-held orange smoke signal is designed to produce a cloud of orange smoke when activated . To operate:

- To remove the cap, twist it. Hold it out and away from the raft.
- Strike the topside of the flare with the top of the cap.
- Activate downwind, as the smoke will be very pungent.

3.8.4.4.9. Stowage and Maintenance

Store pyrotechnics in a cool, dry, readily-accessible place. Each crewmember on board should know where visual distress signals are stowed. One crewmember should be assigned to bring the signals in an emergency. It is advisable to store a pair of gloves along with pyrotechnics.

Pyrotechnics have an expiration date and need replacement once expired to ensure proper functioning.

Never aim pyrotechnics directly at rescue craft. This does not encourage good relations with the rescue team members.

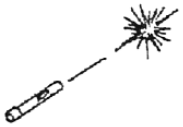
Points to Remember

- Hold flare downwind.
- Read instructions PRIOR to rescue arriving on scene.
- Use them wisely-They are limited in quantity.
- Many flares are packed in plastic bags for waterproofing.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.8.5. Appendix N – Distress Flare Types

Distress Flare Types

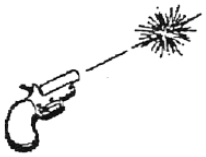


Hand-held Meteor Flare:

Candle power: 10,000 to 16,000.
Range: 200 to 700 feet.
Burn time: 5.5 seconds.
Optimum visibility: 19 miles.
Advantage: compact.
Disavantage: limited burn time.

Hand-held Flares:

Candle power: 500 to 10,000.
Range: +/- 350 feet
Burn time: 50 seconds to 2 minutes.
Optimum visibility: 3 miles.
Advantages: long burn time.
Disadvantages: hot slag can burn hand or life raft, low visibility.



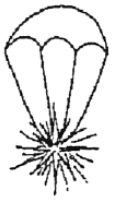
Flare Guns:

25mm—
Candle power: 10,000 to 30,000.
Range: 20 to 1,000 feet.
Burn time: 5.5 to 30 seconds.
Optimum visibility: 19 to 40 miles.

37mm—
Candle power: 40,000.
Range:
Burn time:
Optimum visibility: 20 miles.

12 guage—
Candle power: 10,000 to 30,000.
Range: 200 to 300 feet.
Burn time: 5.5 seconds.
Optimum visibility: 24 miles.

For all flare guns:
Advantages: ease of use.
Disadvantages: not useable if gun breaks.



Parachute Flares:

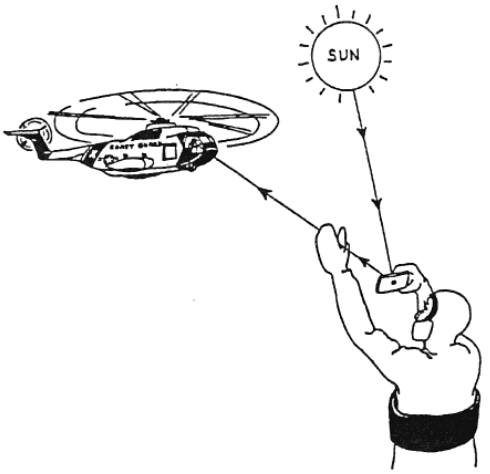
Candle power: 15,000 to 40,000.
Range: 300 to 900 feet.
Burn time: 30 to 60 seconds.
Optimum visibility: 40 miles
Advantage: highest visibility of any flare on market.
Disadvantage: may drift away from your area.

Flares and smoke signals can emit ash and slag which can cause injury and ignite fires. In calm winds, keep wind at your back, turn face away from flare, and fire with arm at a 60 degree angle. In stronger winds, increase angle of fire, but not more than 85 degrees. Never fire a flare straight up or in any direction that can cause it to land on a person, boat, or flammable area. Do not point flare at search and rescure boats or aircraft. If using in a raft, caution must be taken not to burn raft.

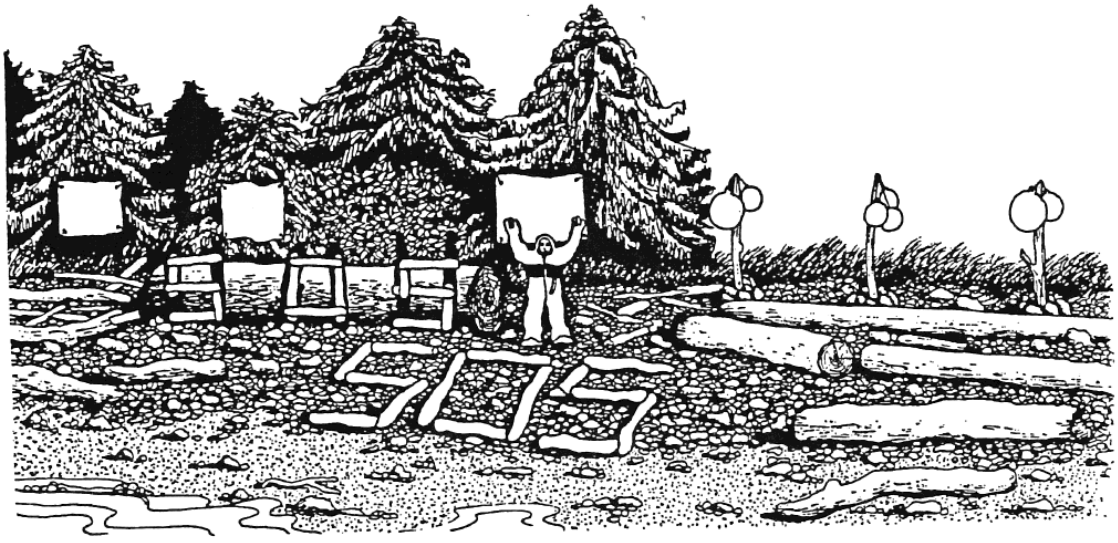
3.8.6. Appendix M – Use of Distress Signals

Use of Distress Signals

When firing a flare, hold the flare away from the raft and turn your head away.



Aiming a signal mirror.



Make sure signals attract attention and convey the need for help.

3.8.7. Distress Broadcast/MAYDAY Call

- Make sure communications equipment is on.
- Select 156.8 MHz (VHF channel 16), 4125 kHz or other distress frequency used in your area of operation. Note: VHF channel 16 and 4125 kHz are for emergency and calling purposes only.
- Press microphone button. Speak slowly, clearly and calmly. Say:

  MAYDAY, MAYDAY, MAYDAY

  This is the F/V_____, F/V_____, F/V_____. Over.

- Release microphone button briefly and listen for acknowledgement. If no one answers say:

  MAYDAY, MAYDAY, MAYDAY

  This is the F/V_____, F/V_____, F/V_____.

  My position is _____. (Use latitude/longitude, nearby landmarks, distance from known points, LORAN readings, etc.) Repeat three times.

  I am _____.(Sinking, on fire, listing, etc.)

  I estimate that I can stay afloat _____ hours/minutes.

  I have _____ persons on board.

  My vessel is a _____ type of vessel, _____ feet long, has a
  _____ color hull with _____ color trim, and
  masts.

  I will be listening on channel _____.

  This is the F/V_____. Over.

- Release microphone button. If situation permits, stand by the radio to await further communications with the Coast Guard or another vessel.
- If no answer and situation permits, try another channel and repeat.

Radio Call	Frequency:	High Site:	DF Bearing:
Type of Comms:		Original Relay	
Time:	Date:	UCN:	Initials:

-- Initial SAR Check Sheet --

1. Position How determined?		*Type of Position:*	[ ] Lat/Long [ ] Geographic Reference
2. Number of Persons On Board	Adults:	Children:	Total:
3. Nature of Distress (if PIW complete additional PIW box below)			
4. Description of Vessel	Name:	Length:	Type:
	Make:	Color:	
5. Have all persons on board the vessel put on Personal Flotation Devices / adequate number of PFD's available? Y / N			

***** ADVISE REPORTING SOURCE OF INTENDED ACTIONS AT THIS TIME *****

6. Determine Initial Severity / Emergency Phase	
[ ] Distress	**[ ] Uncertainty [ ] Alert**
[ ] Dispatch Resources / Activate SAR Alarm	*Additional information is needed*
[ ] ***Advise reporting source of Coast Guard's Actions***	*Complete one or more of the following:*
[ ] Issue Urgent Marine Information Broadcast (UMIB)	[ ] Supplemental Check-sheet
[ ] Brief Sector / District	[ ] Overdue Check-sheet
[ ] Provide emergency instructions to vessel in distress	[ ] Flare Sighting Check-sheet
[ ] Complete additional check-sheets as situation dictates	[ ] MEDEVAC/MEDICO Check-sheet
	[ ] Grounding Check-sheet
	[ ] Mass Rescue Operation Supplemental Check sheet

Persons in the Water		
Number:	Description:	[ ] PFD - type/color:
Time:		[ ] Exposure Suit
Confirmed? [ ]		[ ] Light

***** Complete all of the above before shifting frequency; Complete below before hanging up phone *****

Reporting Source
Name:
Vessel Name:
Call back number (with area code): [ ] cell phone [ ] radio / call sign: / MMSI:
Address:

On Scene Weather			
Wind	Seas	Swells	Visibility
Weather Type			

SUPPLEMENTAL SAR CHECKSHEET

VESSEL

[ ] Document/Official Number [ ] State Registration		Communications Equipment [ ] VHF-FM [ ] HF [ ] DSC [ ] Other _____ [ ] Cellular: # Frequencies:
Homeport	Flag	
Usage	Hull Material	Navigation Equipment [ ] GPS [ ] OMEGA [ ] RADAR [ ] Fathometer [ ] Other:
Prominent Features		Survival Equipment [ ] EPIRB Class/Type: _____ [ ] PFDs #s/Types: _____
Cause of Incident		[ ] VDS/Flares [ ] Flashlight [ ] Raft/Lifeboat [ ] Dinghy/Skiff [ ] Food/Water [ ] Foul Wx Gear

PEOPLE

[ ] Owner [ ] Operator [ ] POB Name Address Phone			[ ] Owner [ ] Operator [ ] POB Name Address Phone		
Age:	DOB:	Male/Female	Age:	DOB:	Male/Female
[ ] Owner [ ] Operator [ ] POB Name Address Phone			[ ] Owner [ ] Operator [ ] POB Name Address Phone		
Age:	DOB:	Male/Female	Age:	DOB:	Male/Female

Additional Comments

ACTION

Communications Schedule	
Start Time	Frequency
Time Interval [ ] 15 min [ ] 30 min [ ] 60 min [ ] Other	
Remarks	

Set and Drift [ ] Not a factor			
Set [ ] T [ ] M		Drift [ ] kts [ ] MPH	
[ ] DMB Type		Freq	
DMB	Inserted	Relocation	
Time			
Position	N	N	
	W	W	

3.8.10. VHF Marine Radio Channels

The chart below contains a partial listing of channels boaters should be familiar with:

Channel	Type of Message and Use
06	Intership Safety: Used for ship-to-ship safety messages and search messages and ships and aircraft of the Coast Guard.
09	Boater Calling: FCC has established this channel as a supplementary calling channel for commercial and recreational boaters in order to relieve congestion on VHF Channel 16.
13, 67	Navigation Safety (Also known as the Bridge-to-Bridge channel): Ships greater than 20 meters in length maintain a listening watch on this channel in US waters. This channel is available to all ships. Messages must be about ship navigation (i.e. passing or meeting other ships). You must keep your messages short. Your power output must not be more than one watt. This is also the main working channel at most locks and drawbridges. Channel 67 is for lower Mississippi River only.
16	International Distress, Safety and Calling: Use this channel to get the attention of another station (calling) or in emergencies. Ships required to carry a radio maintain a listening watch on this channel. USCG and most coast stations also maintain a listening watch on this channel.
1021, 1023, 1083	U.S. Coast Guard only
1022	Coast Guard Liaison and Maritime Safety Information Broadcasts: Announcements of urgent marine information broadcasts and storm warnings on Channel 16.
24, 25, 26, 27, 28, 84, 85, 86, 87	Public Correspondence (Marine Operator): Use these channels to call the marine operator at a public station. By contacting a public coast station, you can make and receive calls from telephones on shore. Except for dis-tress calls, public stations usually charge for this service.
70	Digital Selective Calling: Use this channel for distress and safety calling and for general purpose calling using only digital selective calling (DSC) techniques.

NOAA Weather Radio Frequencies

Channel	Frequency (MHz)
WX1	162.550
WX2	162.400
WX3	162.475
WX4	162.425
WX5	162.450
WX6	162.500
WX7	162.525

3.8.11. Emergency Instructions

F/V _____

General Instructions

1. All crew members and passengers are responsible for knowing their assigned emergency duties and stations.
2. All crew members are responsible for knowing the location of the ship's lifesaving and emergency equipment.
3. All crew members and passengers shall participate in all emergency drills and training sessions.
4. Newly reported personnel should report to _____ for safety, emergency or orientation.
5. If you are in doubt as to any of your responsibilities as specified in this bill, ASK THE CAPTAIN for clarification.

Emergency Signals

Fire and Emergency Signal (_____)

The Fire and Emergency Signal shall be a continuous blast on the ships whistle with the same signal sounded simultaneously on the General Alarm for a period of not less than 10 seconds.

Man Overboard Signal (_____ _____ _____)

The Man Overboard Signal shall be 3 Long Blasts of the ship's whistle with the same signal sounded simultaneously on the General Alarm, with the signal to be sounded a minimum of four times.

Abandon Ship Signal (* * * * * * * _____)

The Abandon Ship Signal shall be at least seven CT) short blasts followed by one (1) long blast on the ships whistle, with the same signal sounded simultaneously on the General Alarm.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.8.12. Appendix R – Care and Maintenance of 406 EPIRBs

Care and Maintenance of 406 EPIRBs

Since August 1991, commercial fishing vessels with galley and berthing spaces that operate beyond three miles from shore, have been required to have category 1, 406 MHz Emergency Position Indicating Radio Beacons (EPIRBs).

Category 1, 406 EPIRBs, though much more expensive than the old Class A EPIRBs, provide superior reliability, signal strength, location accuracy and provide much more detailed information to search and rescue agencies. There are several steps to take to ensure your EPIRB will work when you need it.

Registration

Send in the EPIRB registration and identification card! It asks questions about you and your vessel that will aid search and rescue agencies in finding you in an emergency. It will also allow them to contact you without sending out an expensive search should your call be a false alarm.

Instructions

Read the instructions for mounting and operation of your EPIRB carefully! EPIRBs do not come shipped in the ON position. It is important to learn the correct switch position for arming the EPIRB after it is installed.

Location

Mount your EPIRB in a location that will allow it to float free if the boat should sink and where icing will be minimal. Avoid locating it under an overhang or anywhere it could get hung up.

Test

Test your EPIRB once per month. 406 EPIRBs have an electronic self-check. Make sure that you follow the testing procedures in your manual. Test in the first five minutes of any hour. All EPIRB tests should be noted in your log book.

Check for Damage

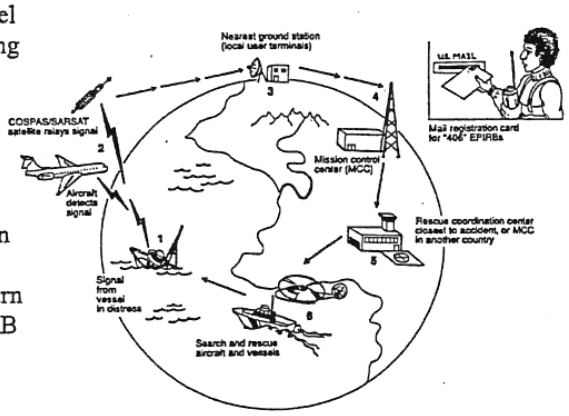
Check your EPIRB during rough sea conditions to make sure it has not been activated or damaged.

Show and Tell

Show all crewmembers and passengers on your vessel how the EPIRB operates before you get underway. This should be a part of your drills and instructions.

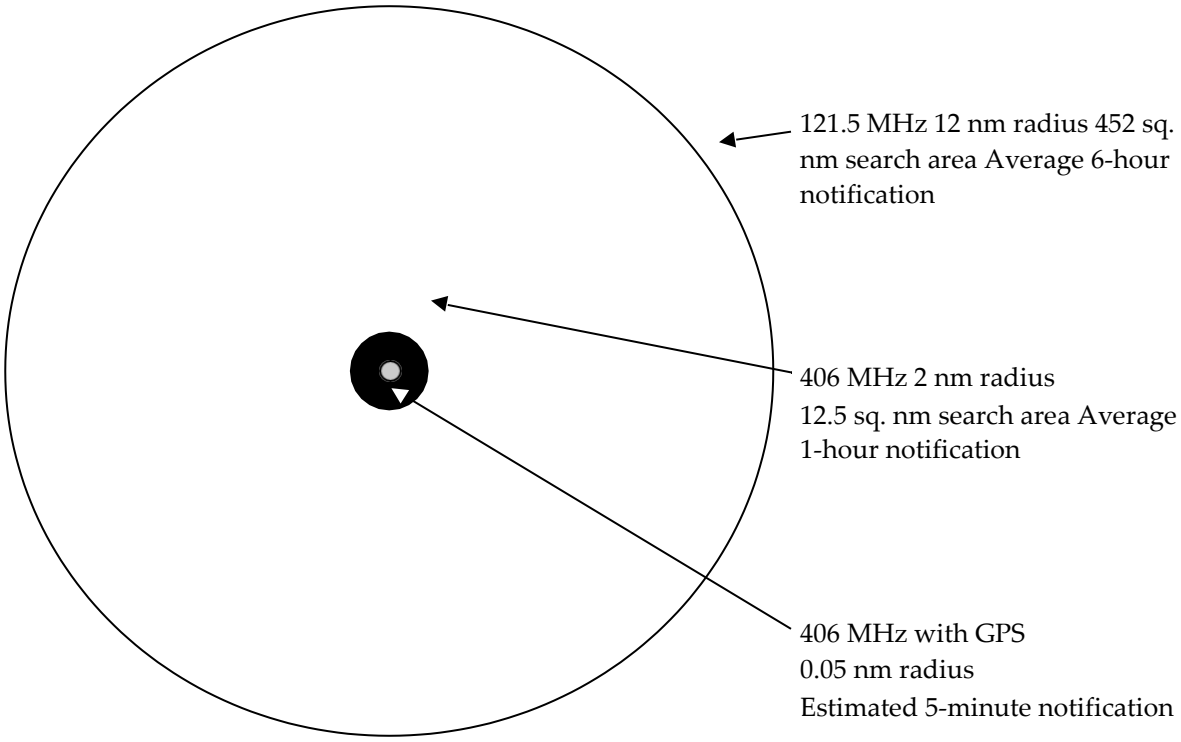
Maintenance Schedule

Although your EPIRB battery may be good for two to five years, many of the hydrostatic releases mechanisms need to be replaced every two years. Check the maintenance schedule on the release for your EPIRB.



3.8.13. Appendix S – Location Accuracy of 121.5 and 406 MHz EPIRBs

Search area can be reduced by a factor of 45 times



Appendix Q – EPIRB Types

Emergency Position Indicating Radio Beacon (EPIRB) Types

Type	MHz	Locating Accuracy	Minimal Signal Life	Self Activated ?	Float Free	Comments
Category 1	406-121.5/ 243	<1-3 miles	48 hrs at -20 C	Yes	Yes	Each unit digitally coded to its owner. Satellite can receive and hold 406 MHz signal. Global coverage. Most expensive and sophisticated.
Category 2	"	"	"	No (unless placed in water)	No	See Category 1 comments.
Personal Locator Beacon (PLB)	"	"	24 hrs at -20 C	No	No	Pocket sized. Each unit digitally coded to its owner. Satellite can receive and hold 406 MHz signal. Global coverage.
GPIRB	"	100 meters due to built in GPS	12-24 hrs	Some	Some	Gives GPS accuracy on first satellite hit.

The 121.5/243 MHz frequency is a low power frequency that only goes to Search and Rescue (SAR) Radio Direction Finder (RDF) equipment, not to the satellite.

3.8.14. Personal Locator Beacon Instructions

ResQLink

406 MHz Personal Locator Beacons

Anatomy of your beacon

- **A. Antenna Latch** – Latch unlocks antenna from beacon body. When unclipped, the antenna can be deployed to uncover On/Off and test buttons.
- **B. Strobe Light** – Activates when beacon is turned on and at the end of each self-test.
- **C. Green LED Light** – Visual indicator of beacon activity.
- **D. Red LED Light** – Visual indicator of beacon activity.
- **E. GPS Receiver** – Location of GPS Receiver, give clear view to sky and do not obstruct.
- **F. ON/OFF Button** – Activates the beacon when pressed for 1 second. Turns beacon off when pressed for 3 second. (button is embossed only, red color is for enhanced graphics presentation)
- **G. TEST Button** – Self-test Beacon to do full function test.
- **H. Antenna** – Wraps around product and protects On/Off and Test Buttons.
- **I. Lanyard** – Secures beacon to prevent loss.

Warning: This transmitter is authorized for use only during situations of grave and imminent danger. Deliberate misuse may incur a severe penalty.

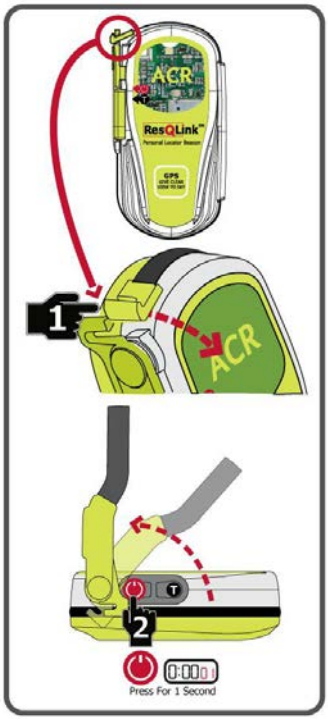
Overview

Personal Locator Beacons are designed to be manually activated. They are only to be activated when all other means of self-rescue have been exhausted. When properly registered as required, the activation of the beacon tells Search and Rescue who you are, where you are, and that you are facing a life threatening situation.

How To Activate Your Beacon

To activate your beacon in a distress situation, follow these steps:

1. Unclip the antenna latch from the case and move antenna into the upright position
2. Depress the ON/OFF button for 1 full second (button is embossed only; red color is for enhanced graphics presentation).



When Activated (**First Minute**):

To let you know the beacon has been activated, you will see the strobe light flash once every second while the RED light will flash once every 3 seconds.

After the First Minute:

While transmitting your distress signal, the RED light and Strobe light each will flash once every 3 seconds, alerting you that your beacon is active.

When the Red light is replaced by the GREEN light, this indicates that your beacon has successfully downloaded your GPS coordinates and is transmitting them along with your 406 MHz Distress Signal.

Modified from acrartex.com

Activation with GPS

When your unit is activated, the GPS receiver will turn on, search to find your LAT/LON and incorporate it into your 406 MHz signal. As soon as the GPS receiver acquires valid positioning data, the red flashing light will be replaced by a green flashing light once every 3 seconds.

The same GPS data will be sent with each 406 MHz signal for the next 30 minutes. At that time the internal GPS will start up again, search to find your LAT/LON and incorporate it into your next 406 MHz signal. If for any reason the internal GPS cannot update your LAT/LON, your last position will be used for the next four hours. At that time the green LED will stop blinking and the red LED will flash once every 3 seconds until new GPS data is obtained.

GPS receiver orientation

When activated, it is critical that you do not cover the beacon with any body part, water, clothing, etc. The GPS receiver is located under the bottom portion of the case where it is outline with the text “GPS, Give Clear View To Sky.”

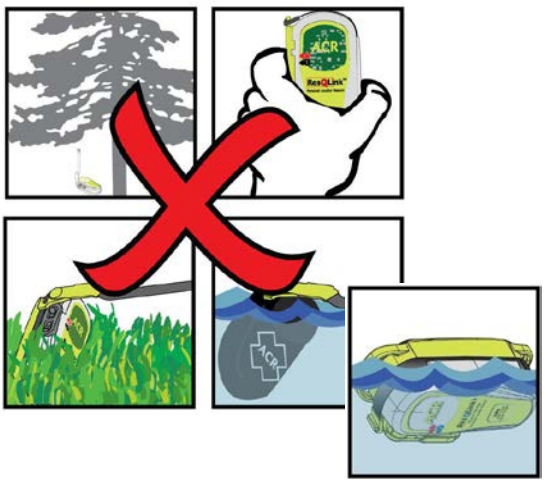
To ensure optimum performance of the GPS receiver, the beacon needs to have an unobstructed view of the sky. Avoid submerging the GPS receiver in water if possible. Water will shield and inhibit the GPS receiver and may cause difficulties obtaining your GPS coordinates. Avoid leaning over the beacon to view blinking LED as you may shield the GPS reception.

Red Flashing Light = Sending 406 MHz Signal Only
Green Flashing Light = Sending 406 MHz Signal with GPS Coordinates

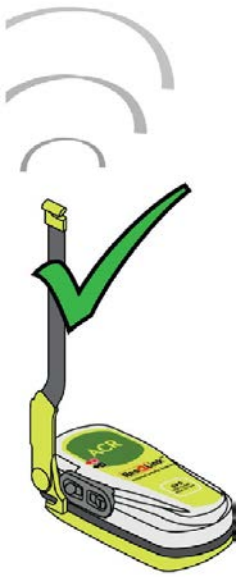
Proper Positioning and Handling during Activation

Do not cover the GPS receiver with your hand and make sure you have a clear view to the sky to ensure GPS is downloaded.

Make sure the antenna is pointing towards the sky, out of the water. Beacon is not intended to operate in water. While the unit is waterproof, it must be above the water’s surface to function properly.



ResQLink+ Floating Version: Not intended to operate in water.



Turning off the beacon

To deactivate your beacon, depress the ON/OFF button for more than 3 seconds. Once the beacon is deactivated, all blinking LED lights will stop, signifying that the beacon is no longer sending your distress message.

If deactivation should fail, try again before removing the 2 screws holding the unit together and unplugging the battery to disable the unit. Return the beacon to ACR Electronics for service.

NOTE: Leave beacon on until rescued. Turning beacon off will prolong or prevent rescue. Repeated activations could be viewed as a hoax.

Post Rescue Follow Up

Hopefully you are never put in the situation where you have to activate your beacon to be rescued, however, should you activate your beacon in an emergency that requires Search and Rescue assistance, please contact ACR Electronics in the days that follow.

It is important for us to learn the nature of your emergency, how the beacon performed so that we can continue to build the world's best life saving equipment.

Real life activations and how people use our beacons in these situations plays a major role in designing and manufacturing our products. We also like to share these rescues with others in an effort to promote proper use of Personal Locator Beacons.

You can learn more about our Post Rescue Follow Ups by visiting our Survivor Club at www.acrelectronics.com/survivors/

Testing You Beacon

Your beacon has the ability to perform 2 different tests to ensure the beacon is working perfectly. The first is a basic self-test which checks the beacons Data Integrity and Memory; 406 MHz Synthesizer; RF Power/Battery; GPS header and sends a satellite burst. The second test is a GPS self-test that actually turns the GPS Receiver on, downloads your position and then transmits this data in the self-test satellite burst.

Note: Self-test should only be performed in the first 5 minutes of any hour.

Basic Self-test (No GPS Data)

During a self-test your beacon will send a 406 MHz signal coded as Self-test to the satellite system and a 121.5 MHz homing signal.

This beacon has enough excess battery life to perform **60** self-tests over the 5 year life of the battery.

To perform a Basic Self-test:

1. Unclip the antenna latch from the case.
2. Move the antenna into the upright position
3. Depress the Test button for 1 full second

A Green Light will flash followed by a Second Long Green Light flash and the strobe light. This indicates a successful Basic Self-test.

If a red LED flashes at the completion of the self-test, your beacon has failed. Repeat the self-test. If the failure persists, contact ACR Electronics or an authorized Battery Replacement Center for servicing of your beacon.

ACR strongly recommends performing the **Self-Test once per month**, or at least two weeks prior to a trip allowing enough time for service should your beacon require it.

Battery Witness Seal Life

If your beacon flashes an initial Amber light at the beginning of the Self- test, this indicates that your electronic witness has been broken and you have used more than 1 hour of battery life. While the beacon will still operate normally in a distress situation, ACR strongly recommends you have your battery replaced and the electronic witness reset to ensure that you will have at least 24 hours of battery power.

Light Scheme	Light Meaning
	Self-test Passed
	Self-test Passed (Battery: <24 Hours)
	Self-test Fail
	Self-test Fail (Battery: <24 Hours)
	Battery Fail

False Alerts

A false alert is any activation of the beacon, intentional or otherwise, that does not result from a situation of grave and imminent danger.

Be sure to do the following to help minimize false alerts:

Register your beacon. This does not reduce false alert rates; however, when the beacon is properly registered, the situation can usually be resolved with a phone call.

Be careful with whom you leave your beacon. Make sure that they know how to use it, and that they understand the ramifications of causing a false alert. A lot of false alerts are generated by curious individuals. If you notice the beacon is flashing the red or green LED and strobing periodically on its own, this likely means it has accidentally been activated and needs to be shut off and reported.

The Cospas-Sarsat satellites detect distress beacon transmissions immediately and locate the transmission within a few minutes of beacon activation.

NOTE: If you report a false alert and the authorities have not received the signal, do not be concerned. This may mean that you were able to deactivate the beacon before transmitting the signal.

False alert

A false alert **must** be reported to the search and rescue authorities.

Reporting

Should there be a false alert for any reason, it **must** be reported to the nearest search and rescue authorities. The information that should be reported includes:

- The PLB 15-digit Unique Identifier Number (UIN)
- Time and date
- Duration and cause of activation
- Location of beacon at the time of activation

To report false alerts outside of the USA, contact the national authority where your beacon is registered.

To report false alert in the United States**,** contact:
United States Air Force Rescue Coordination Center (AFRCC)
Tel: 1-800-851-3051

Routine Maintenance

Carefully inspect the beacon case for any visible cracks. Cracks may admit moisture, which could falsely activate the beacon or otherwise cause a malfunction. Any cracks observed should be immediately referred to ACR for evaluation by calling +43-1-5 237 237 240. ACR Technical Support can also be reached by sending an email to: **Technical.Support@acr-euope.com**

After checking the beacon case for cracks, it may be wiped down with a clean, damp cloth. Do not use any type of cleaner on your beacon.

Battery Replacement

Replace the battery no later than 6 years from beacon date of manufacture, 5 years from in service date, or after emergency use. At each inspection, check the time remaining until replacement is required. The battery should be replaced if the beacon has been activated for any use other than the self-test. Always refer battery replacements and other beacon service to a factory authorized Battery Replacement Center. Battery replacement includes servicing the beacon by replacing all o-rings, testing the water seal and the electrical properties.

NOTE: There are no user serviceable items inside the beacon. DO NOT OPEN THE BEACON. Opening the beacon will void the warranty.

For the nearest location of a Battery Replacement Center, visit our website at www.acrelectronics.com/where-to- buy/find-a-battery-service-provider/

This beacon contains 1 lithium metal battery pack that is less than 0.8 grams. They are not classified as Hazmat for transportation. Prior to shipping beacon for service, alert your carrier about the batteries contained in this equipment to make sure they properly label your package. Call ACR's Technical Service department at +43-1-5 237 237 240 for proper shipping instructions or visit the ACR website for an MSDS at http://www.acrelectronics.com/media/products/1465/1942 01113556817/MSDS-57.pdf

Changing ownership or contact information

As the owner of the beacon, it is your responsibility to advise the national authority of any change in your registration information. If you are transferring the beacon to a new owner, you are required to inform the national authority. You can do this by using their online database or by letter, fax or telephone and informing the authority of the name and address of the new owner.

The new owner of the beacon is required to provide the national authority with all of the information requested on the registration form. This obligation transfers to all subsequent owners.

Lost or stolen PLBs

If your PLB is lost or stolen, do the following immediately:

- Report to your local authorities that the PLB has been lost or stolen
- Contact your National Authority with the following information:
- Police department name
- Police department phone number
- Police case number

If your PLB were to be activated, the information you provided will be forwarded to the appropriate search and rescue authorities who will ensure that your PLB gets back to you.

If someone attempts to register a PLB reported as stolen, your national authority will notify the appropriate police department.

MONTHLY TEST LOG
FOR
NOAA FISHERIES OBSERVER: _____

EPIRB Battery Expiration Date: _____

EPIRB Registration Number: _____

Date	Time	Comments	Date	Time	Comments

****Note: A 406 MHz EPIRB can be tested at any time****

3.9.1. Person Overboard

1. **Throw** a ring life buoy or flotation as close to the individual as possible.

2. Post a lookout to **keep the individual in the water in sight** and **communicate the distress and position to the pilothouse**.

3. Pilothouse watch to **sound alarm and maneuver as necessary**. Mark position electronically.

4. Launch a **rescue boat or platform** to recover the individual, **if appropriate**.

5. Have a **crew member put on a PFD or immersion suit**, attach a **safety line** to the crew member and have crew member stand by to enter the water to **assist** in recovery **if appropriate**.

6. **If** individual overboard is **not immediately located, notify the Coast Guard and other vessels** in the vicinity; and **continue searching** until released by the Coast Guard.

3.9.2. Recovering an Individual from the Water

Man in the Water

Rule #1 - Don't be the man in the water!!

No one ever plans on falling overboard. A person who unexpectedly finds himself in the water is a person with fear ... even if they are good swimmers. The fall itself is bound to invite a certain amount of shock and panic.

Upon initial entry into the water, the respiratory system (breathing) will experience a gasping response (short, shallow and irregular breath rate). Another life-threatening reaction that may occur within seconds of entering the water is heart attack. This is of particular importance for out-of-shape people who fear the water. More often than not, these victims are not wearing a PFD.

Injuries during the fall could render even good swimmers helpless. A successful man-overboard rescue is highly dependent on how well the potential rescuers respond and upon how well the victim can assist. The following are guidelines in the event you are a VICTIM or RESCUER.

Man Overboard

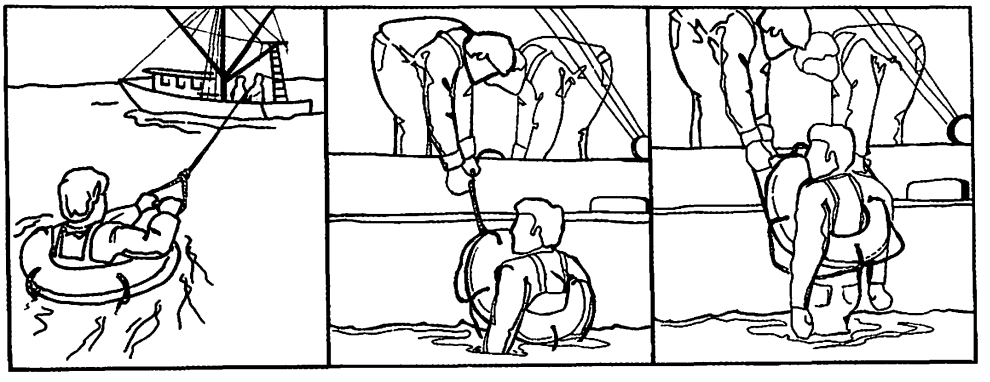
The success of recovering a person overboard depends on a few factors:

- Ability of victim to alert someone of the fall.
- Ability of rescuer to return to victim.
- Available rescue equipment.
- Drills and procedures practiced prior to incident.
- Temperature of water and time of incident (day vs. night).

If You Are the Victim

Things to Consider:

- Am I wearing a PFD?
- Can I swim back to where I fell?
- Did someone see me fall?
- How can I attract attention?
- Will I be able to assist during rescue?



Ring buoys provide flotation and permit the victim to be hauled aboard by band or with a hoisting tackle. A bowline or lifesling can be used if the person is too large to use a ring buoy effectively. Any debris or floatable trash thrown near the victim will help mark his position for pick up. Strobe lights, "day-glow" markers or smoke pots attached to a ring buoy will mark the victim's position.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

Actions to Take:

- While the fall is taking place, scream to alert others. (Choice of words left to your discretion.) "Help!", "Man overboard!" or a crew member's name is useful.
- Once in the water, surface and assess your situation (Where am I? Who saw or heard me fall? Am I wearing a PFD?)
- Get control of your breathing.
- Remain as calm as possible; realize the chances of survival are in your favor and remember your crew likes you....hopefully.
- Begin to draw attention to your location using sound or movement:
- Waving your arms.
- Blowing a whistle.
- Kicking your feet, creating a splash.
- Splashing water with your hands.
- Do not swim if nothing is in sight.
- Utilize your survival skills learned in training (warm water vs. cold water).
- Once spotted, notify rescuer of any injuries or other people in the water.

If You Are the Rescuer

- Sound alarm "MAN OVERBOARD" and give location, i.e. port side, 10 o'clock, NW
- Mark the location where the person fell in by throwing some type of flotation and mark/fix position on plotter.
- Maintain 100 percent visibility on the victim.
- Communicate with other crew members and captain.
- Once alongside, throw the victim a ring buoy, rope or line.
- Use available equipment to bring victim back on board.
- If water entry/rescue swimmer is required:
- Wear a PFD/Immersion suit and take one for the victim.
- Attach a safety line to the crewmember.
- Toss the PFD to the victim while swimmer stays out of arm's reach.
- Once victim has settled down, tow to safety. Talk to the victim to reassure them.

Recovery

In recent years a lot has been written about the problems of recovering fishermen who have either fallen or been washed overboard. There is a variety of man overboard systems that are adoptable for most vessels and circumstances.

For fishing vessels without a dedicated rescue system the following options should be considered:

- A technique of circling a person in the water while towing a lifebuoy on a line is an effective way of making contact, particularly in heavy weather.
- A conscious person in the water can be recovered using a rigid ladder, scrambling net or any device that can be climbed.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

- A lifting strap passed around the back and under the arms of a person in the water, attached to a suitable recovery rope, can prove valuable. Using a mechanical lifting device can assist recovery on board.
- An inflatable dingy or life raft provides another option for recovery. Your life raft can be inflated to get people out of oil/gas saturated water and heavy seas.
- A PARBUCKLE can be improvised using ropes or a net in order to recover a person from the water.
- REMEMBER - a rescuer should only enter the water as a last resort. Don't compromise your own safety.

Safety Tip

This safety tip concerns swimming fully clothed in cold water. Most people who accidentally find themselves in the water are fully clothed or without a lifejacket and suddenly recognize certain discomforts. Many good swimmers have not survived short distance swims due to improper techniques used when swimming fully clothed.

The key to swimming fully clothed is to use UNDERWATER MOVEMENTS with your hands and feet. Personal judgment is required concerning the removal of shoes or boots. Some boots will fill with water or become water soaked and restrict movement. Others may assist in your situation by providing environmental protection and floatation. Just remember swimming fully clothed requires strokes without lifting your arms out of the water.

The swimmer should use a BREAST STROKE, MODIFIED SIDESTROKE or an ELEMENTARY BACKSTROKE. You are not trying out for the Olympic team, just trying to get back to where you fell.

Man-overboard Recovery Methods

There are a number of man-overboard recovery methods. The most commonly used are:

1. *One-turn or Anderson:* fastest but requires the most skillful shiphandling.
2. *Williamson turn* for night or low visibility: turns you around and sends you down your previous track.
3. *Racetrack:* for the fastest recovery when you are proceeding at high speed in clear weather.
4. *Y-backing:* for ships with large turning circles and lots of backing power, proceeding at slow speeds.

Large ships often use a small boat to recover a man from the water. Smaller vessels will use the boat-recovery method as well when the sea is very rough or there is little chance of getting the man close alongside. Swimmers with PFDs or immersion suits and tending lines should be ready to go into the water.

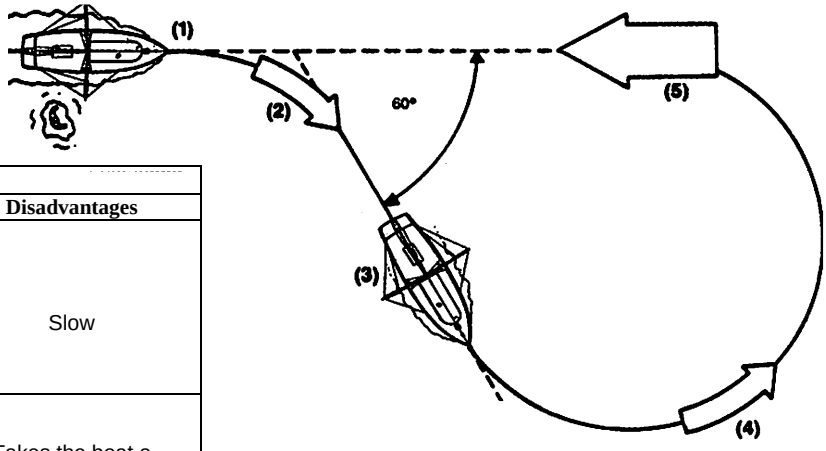
No matter which recovery method is used, the same basic principles and methods apply. Swing the stern away from the person with full rudder. If possible, stop the shaft before the person reaches the screw. Always assign someone to do nothing but keep the man in the water in sight.

The following are step-by-step explanations of the four most common recovery methods.

WILLIAMSON TURN

Explanation:

1) Put the rudder over full in the same direction as the man (this swings the stern away from him). For example, if a person fell over the star- board side, put the rudder over full to starboard. Stop the engine.
2) When clear of the man, go ahead with the engine. Continue using full rudder.
3) When the heading is 60 degrees beyond the original course, shift the rudder to full over in the opposite direction without having steadied on a course. 60 degrees is proper for many vessels, but the exact amount must be determined through trial and error.
4) Come to the reciprocal of the original course, using full rudder. For example, if your original course was 090 degrees, you should be steady on 270 degrees after turning.
5) Use the engines and rudder to get into proper final position: vessel upwind of the man and dead in the water with the man along- side, well forward of the propellers



PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used in reduced visibility because it makes good the original track.	Simplicity	Slow
Used when it is believed that a man fell overboard some time previously but he is not in sight.	Makes good the original track	Takes the boat a relatively great distance from the man, which may result in losing sight of him

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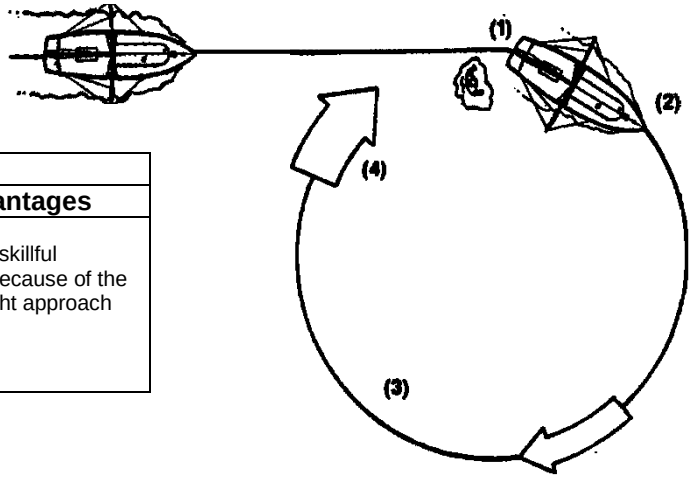
ANDERSON OR ONE TURN

Explanation:

1) Put the rudder over full in the same direction as the man (this swings the stern away from him). For example, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.
2) When clear of the man, go ahead full. Continue using full rudder.
3) When about two-thirds of the way around, back the engine two-thirds or full. Stop the engines when the man is within about 15 degrees of the bow, then ease the rudder and back the engines as required to attain the proper final position (same as that for the Williamson method).
4) Many variations of this method are used. They differ primarily in the use of one or both engines on twin screw vessels, and the moment at which they are stopped and backed to return to the man and tighten the turn. The variation used should reflect individual vessel characteristics, sea conditions, personal preferences. etc.

1)



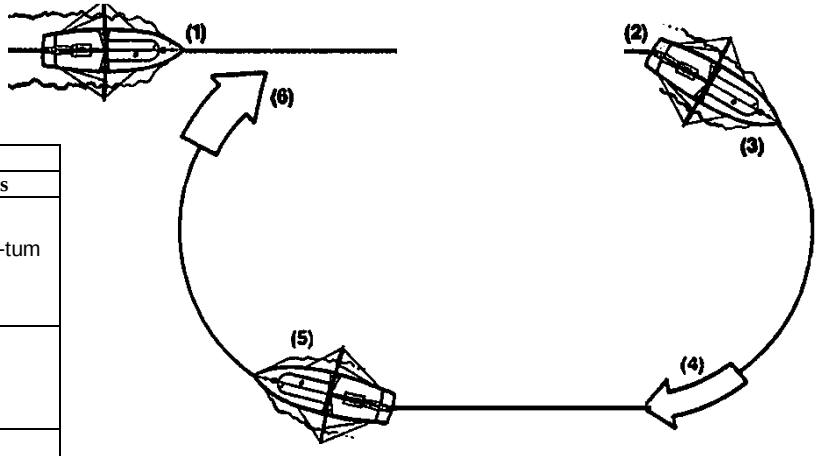
PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used by vessels which have considerable power available and a tight turning circle.	Fastest recovery method.	Requires very skillful shiphandling because of the lack of a straight approach to the man.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

RACETRACK TURN

Explanation:

1) A variation of the one-turn method which provides a desirable straight final approach to the man.
2) Put the rudder over full in the same direction as the man (this swings the stern away from him). For example, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.
3) When clear of the man, go ahead full and continue using full rudder until you come to the reciprocal of the original course. For example, if your original course was 090 degrees, steady up on 270 degrees after turning.
4) Hold the reciprocal course long enough so you can make a straight final approach to the man on the original course.
5) Use full rudder to turn to the man.
6) Use the engine and rudder to get in the proper final position (the same as for other recovery methods).

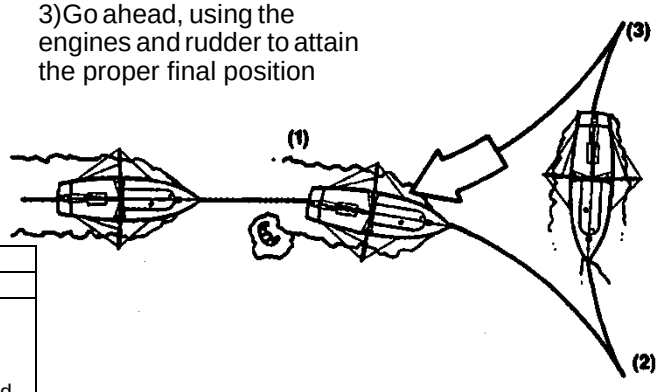


PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used in good visibility when a straight final approach leg is desired.	Straight final approach leg makes it easier to attain the proper final position.	Slower than one-tum method.
	Ship will return to the man if he is lost from sight.	
	Reasonably fast.	
	Effective when wind was from beam on original course.	

BACKING

Explanation:

1)Put the rudder over full in the same direction as the man (this swings the stern away from him). For example, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.
2)When clear ·or the man, back the engine with full power, using opposite rudder.
3)Go ahead, using the engines and rudder to attain the proper final position (same as for the other recovery methods).



PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used by vessels with low height of eye. The vessel remains comparatively close to the man, making it easier to keep him in sight.	The vessel remains comparatively close to the man.	Backing into the wind and sea may result in poor control of the vessel.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

Rescuer Responsibilities

- Sound Alarm "MAN OVERBOARD"
- Throw a Flotation Device in Water
- Post a Lookout
- Turn Vessel Around
- Position Vessel for Retrieval
- Use Available Rescue Equipment
- Provide Medical Attention
- Rescue Swimmer

Victim Responsibilities

- Yell for Help / Whistle
- Assess Your Situation
- Control Your Breathing / Remain Calm
- Draw Attention to Yourself
- Stay Still - Do Not Swim
- Utilize Survival Skills
- Notify Rescuers of Any Injuries or Other People in the Water

Cold Water Near-Drowning Survival Factors

- Water Temperature
- Cleanliness of Water
- Time Submerged
- Age of Victim
- Quality of Treatment
- Other Injuries

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.9.3. Abandon Ship

1. **Preparations** should include the following as time and circumstances permit:

    a. **General alarm and mayday**

    b. **All personnel don immersion suits/PFDs** and warm clothing

    c. **Prepare to launch liferaft**; attach sea painter to vessel above weak link

    d. **Get abandon ship kit** including signals (EPIRB, flare signal smoke, flashlights, hand-held radios, etc.), first aid kit, water and food

    e. Gather other useful items

2. **Meet** at abandon ship station

3. **When sinking is imminent** or when remaining onboard is inappropriate:

    a. **Close watertight openings**

    b. **Launch and board liferaft**

    c. **Keep sea painter attached to vessel but be prepared to cut it** immediately if there is risk to raft or if vessel begins to sink

    d. **Activate EPIRB** and **begin Seven Steps to Survival** (see last page)

3.9.4. Abandoning the Vessel

Decision to Abandon

Only the captain should give the command to abandon the ship, and only when the ship is in such distress that the lives of the people on board are endangered. Abandoning ship signifies the end of attempts to save the vessel. It means that the raft has become the best shelter, if you have one.

Establish radio contact as soon as you recognize that an emergency exists. Up- date the log frequently to ensure that the man on watch can quickly report the vessel's position.

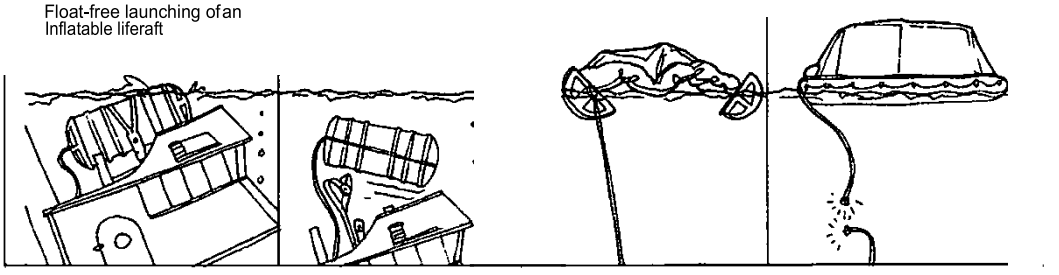
You must sound the alarm and alert the crew in plenty of time to enable them to get to their emergency stations and prepare the survival gear. It is much better to have to re-stow the survival gear after a close call than to wish you had assembled it sooner.

When the alarm sounds, each crewmember must report to his station immediately and begin his assigned survival duties.

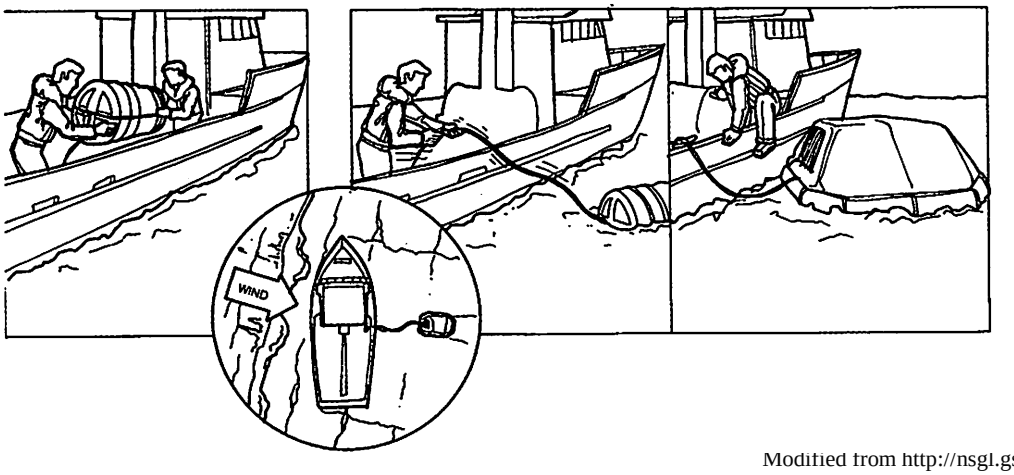
Where events do not allow for a well-organized abandonment, use whatever time is available to:

- Send a distress message.
- Muster all persons on board.
- Prepare the life raft for launching.
- Put a flotation device on.

While it is a fatal mistake to wait too long to give the order for abandonment, it is just as dangerous to abandon the ship too soon.

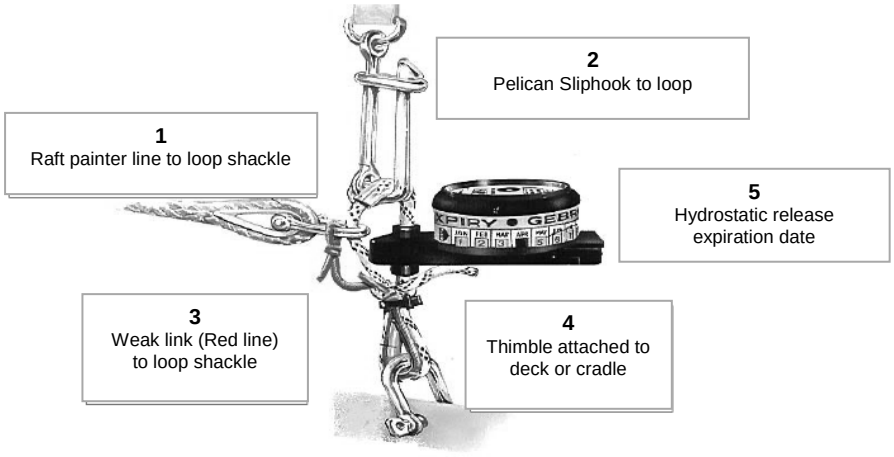


At a depth of approximately 3 meters, the hydrostatic release is activated and the liferaft starts to float to the surface. As the vessel sinks, the painter pays out to full length and activates the CO_2 cylinder to inflate the liferaft. The painter must be pulled out manually to its fall length to activate the inflation mechanism if the water depth is less than the length of the painter. Swim to the raft, place your feet on the canister and pull until the raft inflates. If the vessel continues to sink, the painter or a weak link parts and the liferaft floats free.



The raft should be launched from the lee side (left). There may be as much as 100 feet of painter in the canister and pulling the painter out to its full length (center) will inflate the raft. Be sure the painter is firmly secured to the vessel (right) before launching and inflating the raft.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf



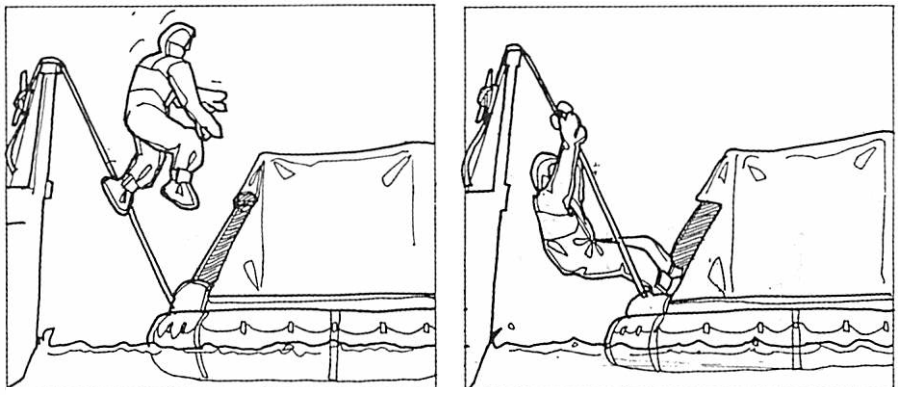
Disposable hydrostatic release installation

Actions Prior to Abandonment

- Alarm Recognition
- Muster Location
- Personal Shelter Management (Dress for Survival)
- Recognize Specific Emergency Duties
- Equipment Familiarization
- Specialized Team Development
- Communications

Boarding the liferaft

Wait for the raft to inflate before boarding. If you board too soon you may interfere with the raft's inflation. Your raft will probably over-inflate and you will hear the sound of air escaping through pressure relief valves. This does not mean that the raft is defective. The sound should stop in a few moments.



If possible, board the raft without getting wet. You can jump directly into the canopy opening (left) or lower yourself with a ladder, net or line (right)

The best way to board your liferaft is to jump directly into the canopy opening from your vessel, remaining DRY. You will not go through the floor.

Jump feet first into the canopy opening with your hands landing on the top of the canopy. Once in, move away from the opening so other crewmen can board.

If you must enter the water, choose a safe place to leave the vessel. Enter where you can use the painter line to guide you to the raft. If you are not in contact with the painter line, you may be swept beyond the raft.

Beware of hazards below you. Do not jump into people, objects or surface debris. Jump from the lowest suitable point to minimize impact with the water. Consider using a ladder, net or line to lower yourself to a safe point of entry.

If you must enter the water wearing a PFD, cross your arms securely over your chest and block off your nose and mouth. Always enter the water

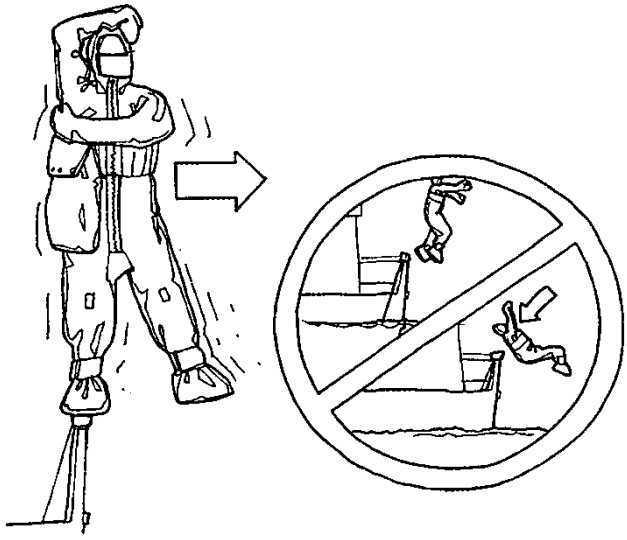
Entry from a Height

Once the decision is made to abandon the vessel, the following procedures should be utilized.

- Get down as close to the water as possible and secure your PFD / Immersion Suit.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

- Look down to see if your landing area is clear.
- Look straight ahead and stand tall.
- Latch on with one hand on face to protect mouth and nose from inrushing water. The free hand is placed across the chest and grabs onto the elbow or shoulder and squeeze down on the PFD.
- Step off as you were walking down a set of stairs. Cross your ankles or keep feet close together.
- Assist others and move to a safe area. Swim on your back.



If entering the water in an immersion suit, protect your head with one arm and jump to the side. If you jump facing forward (right), a slip is more likely to cause a head injury

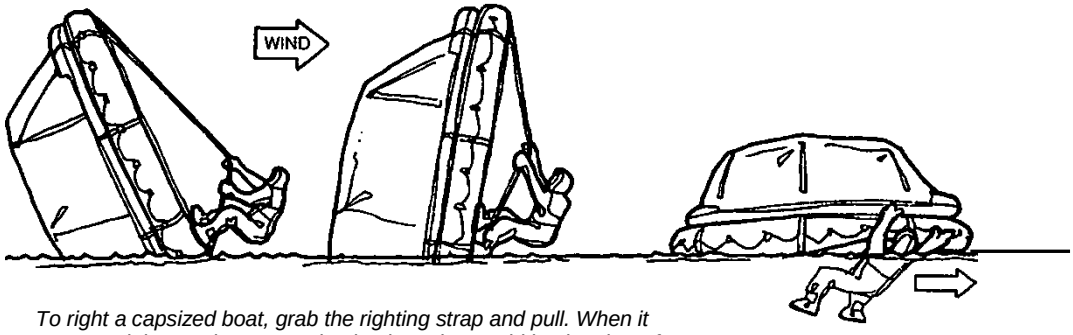
Righting a Capsized liferaft

If your liferaft inflates upside down or is blown over during inflation, DON'T PANIC. One person can easily right a capsized craft. Swim to the side marked "RIGHT HERE." If there is no marking, go to the side with the CO_2 cylinder. Maneuver the cylinder side of the raft so that it is downwind, then reach up and grab the righting strap. Start pulling yourself up onto the raft. It will help to kick your feet out as if you were swimming on top.

This will be difficult as you will have on a flotation device. GET AGGRESSIVE!

Once on top facing into the wind, stand on the very edge where the CO_2 cylinder is located. Holding onto the righting strap, lean back with all your weight and pull on the strap. Once the canopy is clear of the water, the raft will begin to follow. If the raft lands on top of you, relax. The bottom (floor) of the raft is soft and flexible and your head will form an air pocket.

Stay face up under the raft. Catch a breath of air and pull yourself out from underneath. If you try to swim out face down, your PFD or immersion suit could get hung up and make it difficult for you to get free



To right a capsized boat, grab the righting strap and pull. When it starts to right, you have to spring backward to avoid having the raft land on top of you (right).

Preventing Drowning on Initial Immersion

- Protective Clothing
- Flotation
- Slow Entry for Slow Response
- Climatize
- BodyType (Fat vs. Muscle)
- Survival Techniques (Wave spray Protection and Survival Swimming)
- Stay Out of Water

InitialHazards Once in the Water

- Injuries During the Fall
- Cold Water
- Oil & Fire
- Surface Debris
- Dangerous Marine Life
- Missing and Injured Crew
- Crew Separation
- Lack of Preparation

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.9.5.

STAY Rules-Seven Steps to Increase Your Odds of Survival

The following seven **"STAY" rules** will greatly improve your chances of surviving abandon ship emergency. They are from the AMSEA Marine Safety Instructor Training Manual, and have been "tested" during real marine emergencies.

- **1. STAY Afloat:** wear a PFD and stay on top of floating objects, like the boat.
- **2. STAY Still:** conserve heat and energy.
- **3. STAY Dry:** keeping your body out of the water will reduce heat loss through conduction.
- **4. STAY With the Boat:** the boat can be useful as something to hold on to and it will make you a bigger target.
- **5. STAY Warm:** get out of the water, if possible. Protect your high heat loss areas.
- **6. STAY Together:** it makes you an easier target, improves morale, and can reduce heat loss by using the HUDDLE position.
- **7. STAY Sober:** alcohol increases heat loss and decreases judgement and coordination.

3.9.6. Survival Once On Board Liferaft

- Activate your EPIRB and maintain its access to the sky.
- Deploy the sea anchor (drogue).Some may automatically deploy. Make sure it is out and functioning properly. When the raft is on the wave crest, the sea anchor should be in the trough.
- Bail out the raft using bailing bucket and sponge provided. Hands, shoes and caps are also useful.
- Close down the entrance to protect the crew from exposure.
- Maintain your raft. Inflate the floor and repair any leaks. It may be necessary to re-distribute your weight to better stabilize your new home.
- Tend to the injured with the first aid kit contained in the emergency pack. If you have not attended a first aid class before or lack confidence in your medical skills, it would be advisable to sign up for a course. Remember, ma-in-law may choke on your T-bone and the skills learned may be useful.
- Locate your survival manual and read instructions aloud for all to hear.
- Assess the scene and make a calm estimate of your situation and plan your course of action. Assign duties to all uninjured.
- Inventory your emergency pack contents and don't leave items lying around on the floor. Distribute seasick tablets to all even if they have never been seasick. They have never been in a life raft in the open sea.
- Post a look-out team. Review the proper use of visual distress signals.
- Check the condition of everyone. Use the buddy system to assist each other. Maintain morale and consistent leadership. Use your sense of humor; it is a powerful tool.
- Distribute food and water, but be careful not to waste it. Drink NO seawater even if diluted. Eat NO fish, turtles or birds that may come near the raft. The fishing kit is for morale, not to eat the fish even if you can cook them with your flare.
- PLAN TO STAY ALIVE AND RETURN HOME TOTHE FAMILY!!

Sample Briefing to Pass to Vessels Prior to Hoisting

"A Coast Guard helicopter is proceeding to your position and should arrive at approximately _____. Maintain a radio watch on _____MHz / kHz Channel _____VHF / FM; the helicopter will attempt to contact you. Provide a clear area for hoisting, preferably on the port stern. Lower all masts and booms that can be lowered. Secure all loose gear. Keep all unnecessary personnel clear of the hoist area. When the helicopter arrives, change course to place the wind 30 degrees on the port bow and maintain a steady course and steerageway. As the helicopter approaches, gale force winds may be produced by the rotors, making it difficult to steer. The helicopter will provide all of the equipment for the hoist. A line will probably be trailed from the helicopter for your crew to guide the rescue device as it is lowered to the deck. Before handling the rescue device, allow it to touch your vessel. This will discharge static electricity. If you have to move the rescue device from the hoist area to load the patient, unhook the cable from the rescue device and lay the loose hook on the deck so the helicopter can retrieve it. Do not attach the loose hook or the cable to your vessel. The helicopter may move to the side while the patient is being loaded. Have the patient wear a lifejacket and attach any important records, along with a record of medications that have been administered. If possible, brief the patient on the instruction pictured on the rescue device. When the patient is securely loaded, signal the helicopter to move into position and lower the hook. After allowing the hook to ground on the vessel, re-attach it to the rescue device. Signal the hoist operator with a "thumbs up" when you are ready for the hoist to begin. As the rescue device is being retrieved, tend the trail line to prevent the device from swinging. When you reach the end of the trail line, gently toss it over the side."

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.9.7. Actions Prior to Rescue

- Follow Instruction from Crew
- Tend to Injured /They Go First
- Transfer Organization
- Prepare Safety Line for Transfer
- Wear Flotation During Transfer
- Stay in Raft if Transfer is Unsafe
- Take your Time. You're Almost There.

Guidelines for Hoisting to CG Helos

Initial Communications

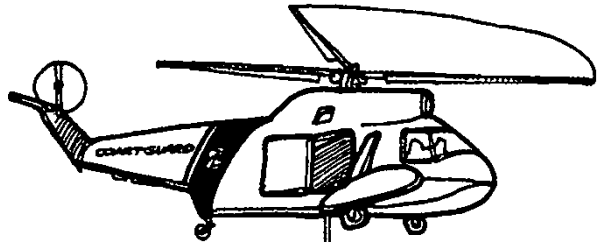
- Position (latitude / longitude)
- Any Injuries
- State of Vessel
- Signaling Devices Onboard
- Open Areas to Hoist to (usually port quarter)

Preparation for Hoisting

- If Underway: Bow Facing 30-45 right of wind line
- If DIW: Bow Facing 0-90 right of wind line
- Clear Hoisting Area: snag hazards, antennae, booms
- Life Jackets
- Somebody on Radio if Possible

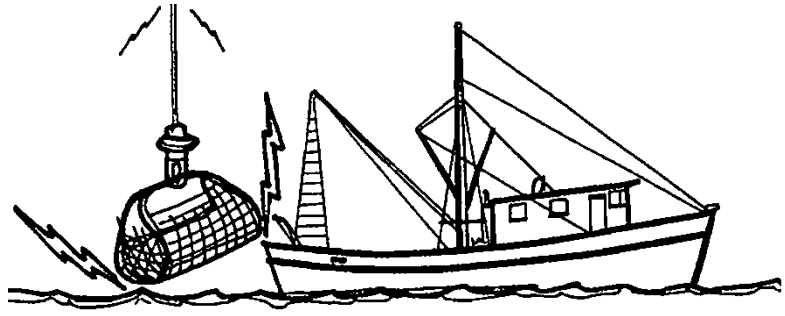
During Hoisting

- Ground the Device
- Tending Trail Line
- Disconnecting Device (Don't hook cable to boat)
- Any Problems: Advise immediately over radio



Helicopter static electricity

WARNING
A helicopter in flight builds up a static charge that must be removed prior to contact between any portion of the helicopter and an individual on the surface.
Allow the hoist equipment to ground itself on the boat or contact the water prior to touching.



Hazards Complicating Evacuation

- Night-Time Evacuation
- Injuries
- Missing Person
- Faulty or No Equipment
- Poor Weather Conditions
- Panic and Fear
- Lack of Leadership
- Inexperienced Crew

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.10. Hypothermia and Cold Water Survival

Hypothermia occurs when the body's CORE temperature drops. Submersion in cold water is a major cause of hypothermia because water conducts heat away from the body 25 times faster than air of the same temperature. Hypothermia can also result from a combination of wind and cool or cold temperatures, wet clothing or clothing that is not suitable for the weather.

Although hypothermia can easily occur when air temperatures are above freezing, it can be prevented by using good judgment, wearing layered clothing to stay warm but not sweaty, putting on rain gear before getting wet, and avoiding being immersed in cold water. It helps to remember that 50 percent of your body's heat is lost through your HEAD and NECK. Other high heat loss areas are your ARMPITS, CHEST and GROIN.

Signs and Symptoms

- Uncontrolled shivering
- Slurred / slow speech
- Confusion
- Poor judgment
- Poor coordination
- Drowsiness
- Weak or irregular pulse
- Slow / shallow breathing
- Dilated (big) pupils
- Unconsciousness

It is sometimes difficult to detect hypothermia because the affected person may not know or may deny that he is having a problem. In addition, signs and symptoms may be confused with or complicated by alcohol.

If you suspect that someone has hypothermia, check the person's pulse for 1 to 2 minutes when doing your primary survey. Treat the person GENTLY. If he is breathing and has a pulse, carefully remove his wet clothing and cover him with dry coverings.

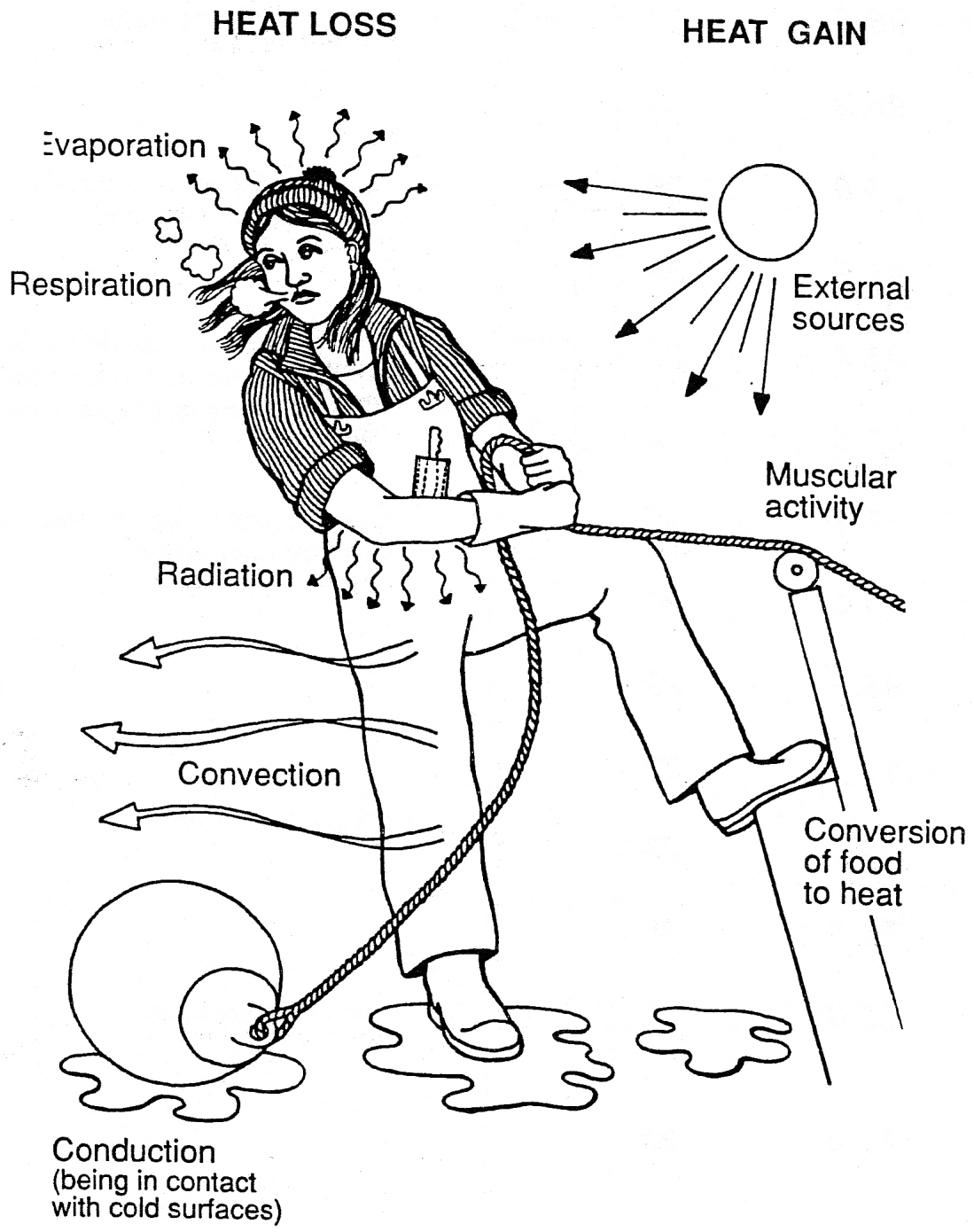
To treat for hypothermia, remove the person from the cold environment and remove any wet clothing. Encase the individual in a sleeping bag and provide skin-to-skin contact with a warm person.

Give warm fluids only after uncontrolled shivering stops, when the person is alert enough to get a cup of hot drink to his mouth by himself without spilling it and can swallow without choking.

Check for and treat other injuries.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.10.1. Appendix H: Heat Loss/Heat Gain (Fisher)

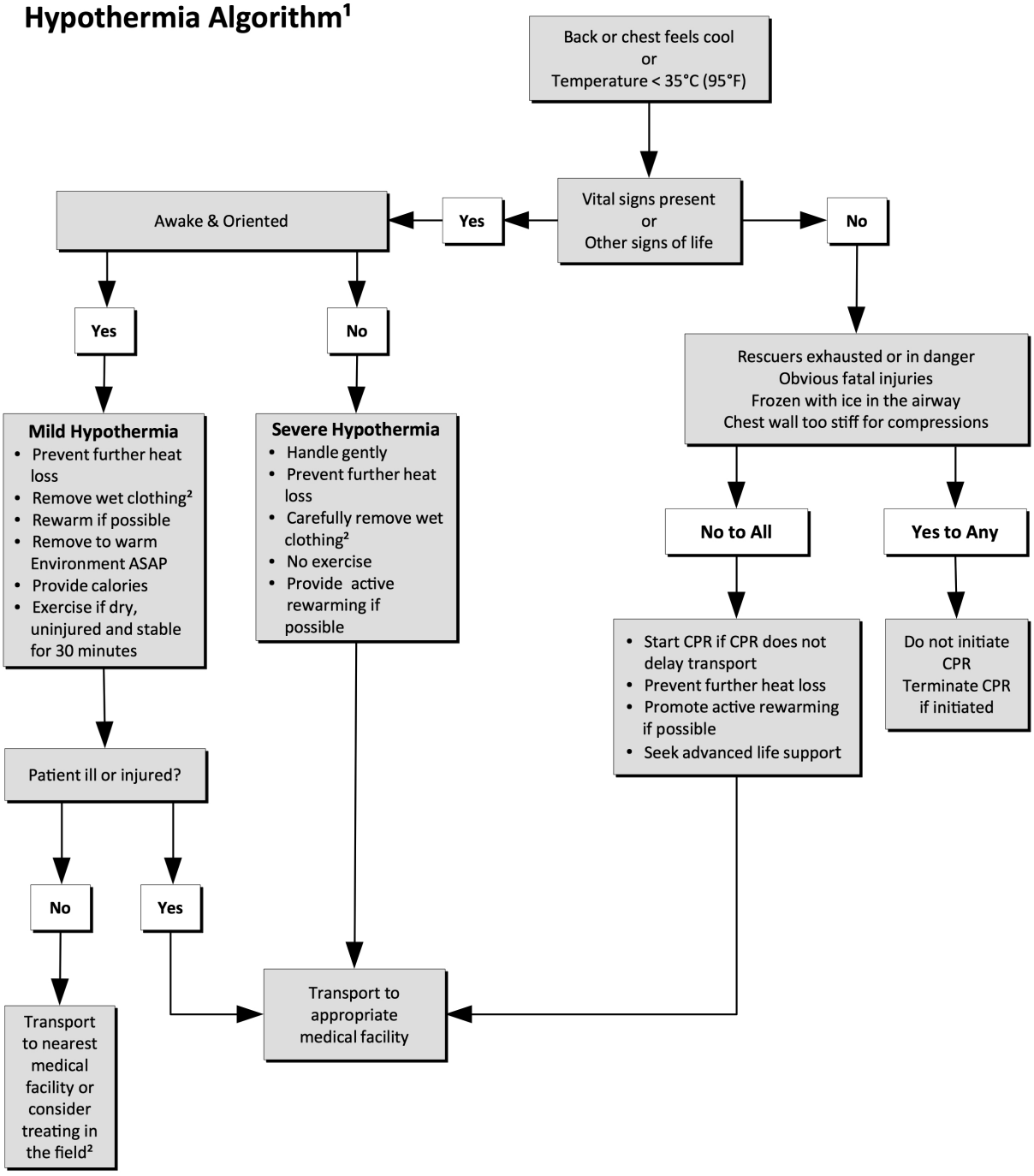


3.10.2. 3 Stages of Hypothermia

Stage	Core Temperature	Signs & Symptoms
Mild Hypothermia	99º - 97ºF Normal; Shivering can begin 97º - 95ºF	Cold sensation and goose bumps. Unable to perform complex tasks with hands. Shiver can be mild to severe. Hands numb.
Moderate Hypothermia	95º - 93ºF	Shivering intense. Muscle in-coordination becomes apparent. Movements slow and labored, stumbling pace, mild confusion, may appear. Use sobriety test, if unable to walk a 30 foot straight line, the person is hypothermic. At 93º - 90ºF, violent shivering persists, difficulty speaking, sluggish thinking, and amnesia starts to appear. Gross muscle movements sluggish. Unable to use hands, stumbles frequently, and difficulty speaking. Signs of depression, withdrawn.
Severe Hypothermia	90º - 86ºF	Shivering stops. Exposed skin blue of puffy. Muscle coordination very poor. Inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness At 86º - 82ºF, muscle rigidity, semiconscious, stupor, and loss of awareness of others. Pulse and respiration rate decrease, possible heart fibrillation At 82º - 78ºF, Unconscious. Heart beat and respiration erratic. Pulse may not be palpable At 78º - 75ºF, pulmonary edema, cardiac and respiratory failure. Death may occur before this temperature is reached.

3.10.3.

Hypothermia Algorithm[1]



[1]Cold Injuries Guidelines, State of Alaska, Department of Health and Social Services, Division of Public Health, Section of Emergency Programs, Emergency Medical Services (EMS) Program, P.O. Box 110616, Juneau, AK 99811-0616, 2014, page 14

[2]Wilderness and Rescue Medicine, Sixth Edition, Jeffrey E. Issacs, PA-C, David E Johnson, MD, Wilderness Medical Associates International, 2013, pages 158-159

ASSESS COLD PATIENT

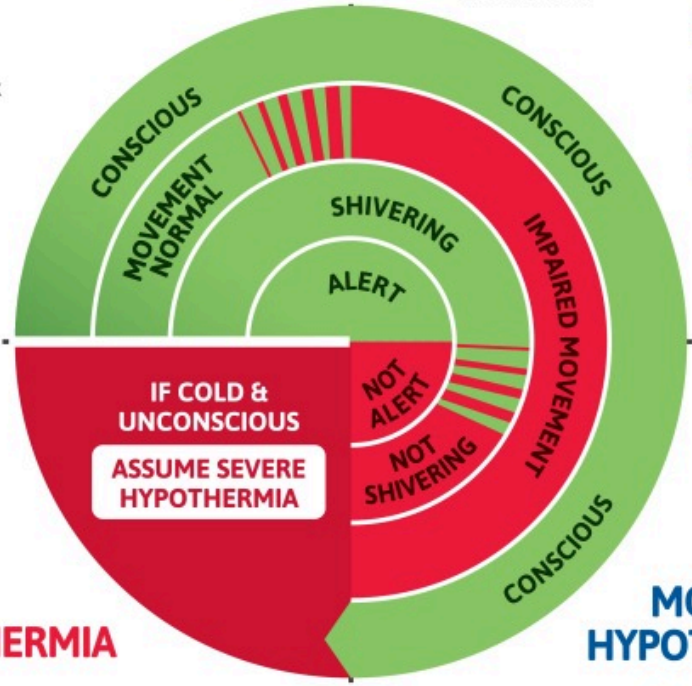
1. From outside ring to centre: assess Consciousness, Movement, Shivering, Alertness
2. Assess whether normal, impaired or no function
3. The colder the patient is, the slower you can go, once patient is secured
4. Treat all traumatized cold patients with active warming to upper trunk
5. Avoid burns: following product guidelines for heat sources; check for excessive skin redness

COLD STRESSED, NOT HYPOTHERMIC

1. Reduce heat loss *(e.g., add dry clothing)*
2. Provide high-calorie food or drink
3. Move around/ exercise to warm up

MILD HYPOTHERMIA

1. Handle gently
2. Have patient sit or lie down for at least 30 min.
3. Insulate/ vapour barrier
4. Give heat to upper trunk
5. Give high-calorie food/drink
6. Monitor for at least 30 min.
7. Evacuate if no improvement



SEVERE HYPOTHERMIA

1. Treat as Moderate Hypothermia, and
   - ***a) IF*** no obvious vital signs, ***THEN*** 60-second breathing / pulse check, or assess cardiac function with cardiac monitor
   - ***b) IF*** no breathing / pulse, ***THEN*** Start CPR
2. Evacuate carefully ASAP

MODERATE HYPOTHERMIA

1. Handle gently
2. Keep horizontal
3. No standing/walking
4. No drink or food
5. Insulate/ vapour barrier
6. Give heat to upper trunk
7. Volume replacement with warm intravenous fluid (40-42°C)
8. Evacuate carefully

Funded by the Government of Canada | Canada

BICOrescue.com

Baby it's COLD OUTSIDE

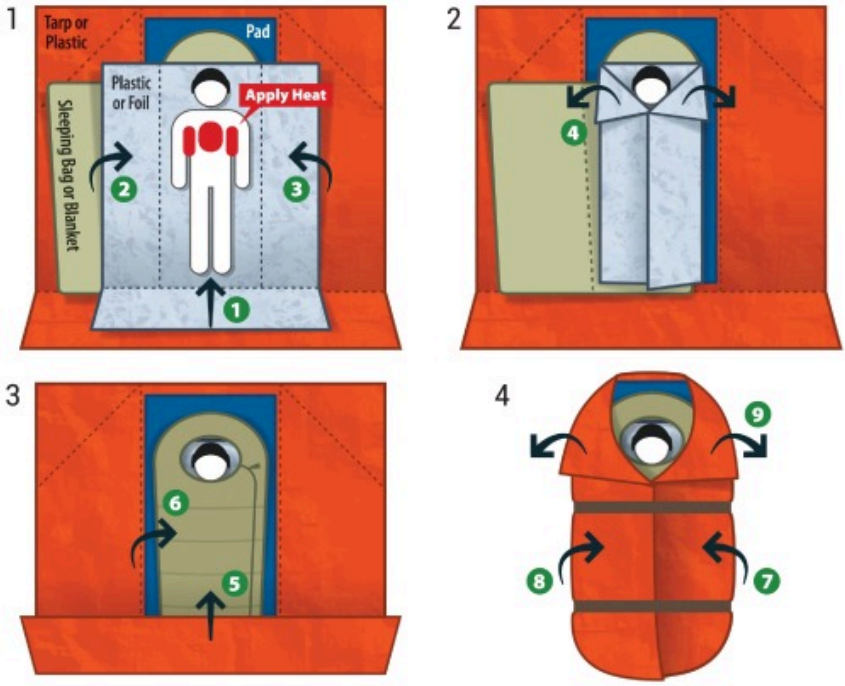
CARE FOR COLD PATIENT

SUGGESTED SUPPLIES FOR SEARCH/RESPONSE TEAMS IN COLD ENVIRONMENTS:

- **1** - Tarp or plastic sheet for vapour barrier outside sleeping bag
- **1** - Insulated ground pad
- **1** - Hooded sleeping bag (or equivalent)
- **1** - Plastic or foil sheet (2 x 3 m) for vapour barrier placed inside sleeping bag
- **1** - Source of heat ***for each team member*** *(e.g., chemical heating pads, or warm water in a bottle or hydration bladder)*, or ***each team*** *(e.g., charcoal heater, chemical / electrical heating blanket, or military style Hypothermia Prevention and Management Kit [HPMK])*

INSTRUCTIONS FOR HYPOTHERMIA WRAP "The Burrito"

1. *Dry or damp clothing:* *Leave clothing on*
2. *Very wet clothing:*
   - ***IF*** Shelter / Transport is ***less than*** 30 minutes away, ***THEN*** *Wrap immediately*
   - ***IF*** Shelter / Transport is ***more than*** 30 minutes away, ***THEN*** *Protect patient from environment, remove wet clothing and wrap*
3. *Avoid burns: follow product instructions; place thin material between heat and skin; check hourly for excess redness*



Sources: BICOrescue.com; Zafren, Giesbrecht, Danzl et al. Wilderness Environ Med. 2014, 25:S66-85.

3.10.5. Appendix F: Recognizing the Signs of Hypothermia

From: Marine Safety Update, Volume 11, Number 3, Summer 1995
By Jerry Dzugan

Hypothermia, the general cooling of a body's core temperature, is a leading cause of death during outdoor activities. Human beings are designed for warm, humid environments. Without proper shelter and clothing, humans get hypothermic in any air temperature less than 80 degrees F and in any water temperature less than 91 degrees F. Hypothermia is usually brought on by cold-water immersion or inadequate preparation for the weather.

The signs and symptoms of hypothermia can be difficult to recognize, especially by a victim. It is best recognized by a warm companion. Some signs to look for:

1. **Loss of Judgment.** The first of the mental functions to be lost due to hypothermia is judgment. The hypothermic person is thus in a poor position to decide their own status. Yet, judgment is needed to prevent the situation from getting worse. Look for apathy, trouble with decision-making, and poor judgment by the victim.

2. **Shivering.** Although a classic sign of hypothermia, there are many individual reactions to shivering that eliminate it as a foolproof indicator of hypothermia. The following groups have a poor shivering response and may not shiver even when hypothermic: infants, elderly, the very cold (generally a core temperature under 90 degrees F), people with metabolic disorders or taking certain medicines, and those under the influence of alcohol or other central nervous system depressants.

3. **Poor fine motor skill and coordination including slurred speech.** These are classic symptoms of hypothermia but may also be caused by alcohol use, fatigue, or other disorders.

4. **Warm flashes.** The body only can constrict blood vessels to prevent heat loss for limited periods. About every 40 minutes, the blood vessels of the hypothermic person relax and expand. This leads to a short period of warmth where the person may start removing layers of clothing (paradoxical undressing) or go back into the water. This behavior hastens death. Such victims are often found in the water or on the snow naked, despite the cold. Incidents have been reported since Scott's Antarctic expedition of 1912.

5. **Decrease in visual acuity.** The cold decreases acute vision by 25-30%, and by 50% when wind and spray are added. This has implications for persons working on deck as lookouts and search and rescue personnel.

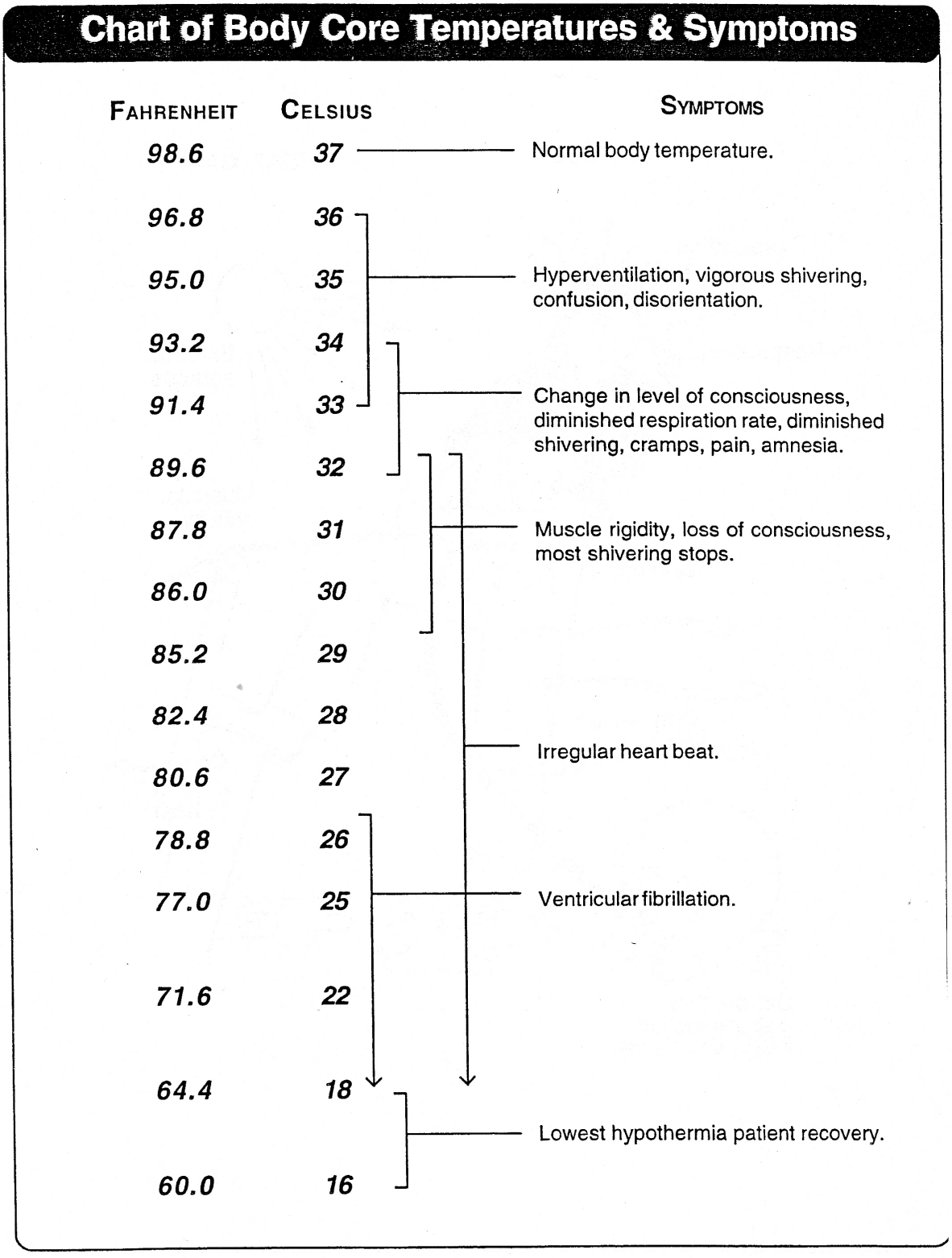
6. **Hallucinations.** A lessening of oxygen to the brain can cause neurochemical changes, resulting in hallucinations. Polar explorers have reported hallucinating, and Inuit people recognize this as "pibloctoq," a hysterical mental condition that occurs in winter. Such hallucinations may sometimes be responsible for paradoxical undressing. Storytellers have long recognized the relationship between cold and hallucinations as seen in Hans Christian Anderson's Little Match Girl and Scrooge's hallucination in Dickens' A Christmas Carol.

7. **Blood Pressure.** The initial effect of cold on the cardiovascular system is to raise blood pressure and heart rate by 25% and increase cardiac output by 64%. People will have higher blood pressure in the winter than in the summer, and in places with lots of rainfall as opposed to dry areas. Eventually, however, vital signs will be depressed and these effects can trigger a cardiac or cerebral attack, leading to death.

8. **Decreased limb function.** The cold's effect on the limbs (nerves, joints and muscles) can be felt before the cold affects the body core. Nerve function will be affected by the cold even without freezing of the skin. Joint stiffness is also a common complaint. Stiffness increases the risk of tearing of muscles and tendons. Cold decreases the power and contraction time in muscles even though blood flow may remain the same. These effects decrease manual skills that may be needed in an emergency, and increase opportunities for injury.

Jerry Dzugan is the director of AMSEA and an EMT instructor. He drew some of the information for this article from Hypothermia and Cold Stress, Evan Lloyd, editor, Aspen Publications, 1986.

3.10.6. Appendix I: Chart of Body Core Temperatures & Symptoms



3.10.7. Appendix J: Hypothermia Guidelines - General Public

Excerpted from:
State of Alaska Cold Injuries Guidelines
Department of Health and Social Services
Division of Public Health
Section of Emergency Programs
Emergency Medical Services (EMS) Program
PO Box 110616
Juneau, AK 99811-0616

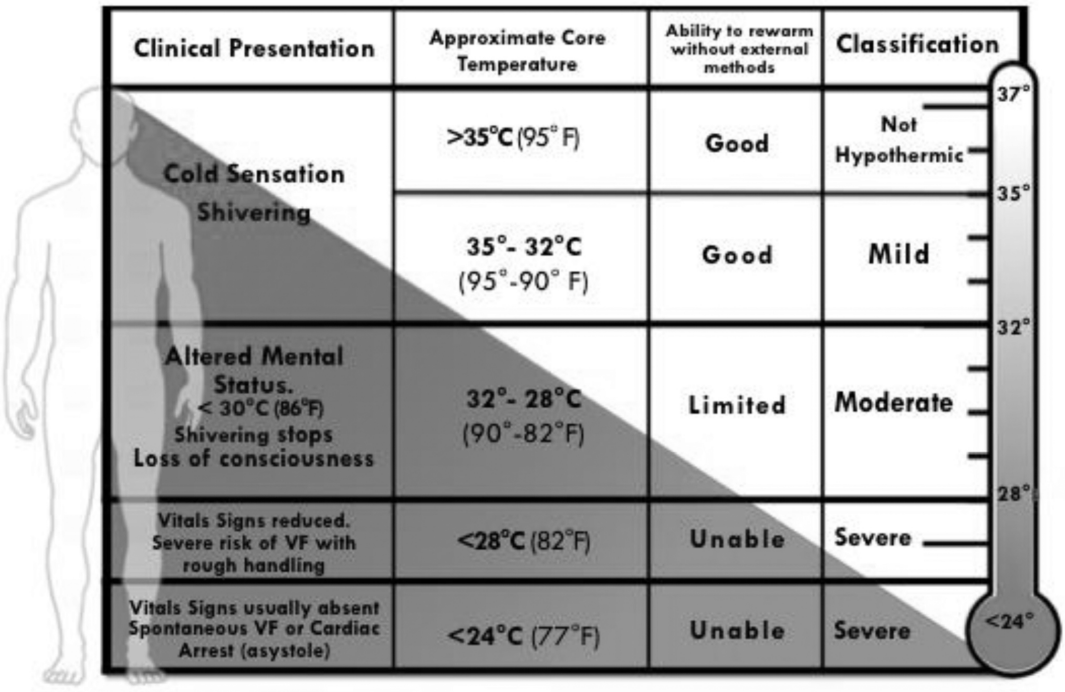
Accidental Hypothermia

Accidental hypothermia is defined as the unintentional drop of core temperature to 35°C (95°F) or below. Hypothermia can be classified:

- Mild 35-32°C (95-90°F);
- Moderate 32-28°C (90-82°F)
- Severe <28°C (<82°F)

These categories are useful in guiding treatment. While obtaining a core temperature is important for assessing and treating hypothermia, there is tremendous variability in individual physiologic responses at specific temperatures. Initial treatment of accidental hypothermia should be guided by the condition of the patient in conjunction with the core temperature, if available.

TABLE 1. LEVELS OF HYPOTHERMIA
Clinical staging system. Adapted from the "Swiss System."



Alaska Cold Injury Guidelines 2014

Core Temperature Measurement

Often, it is not practical to measure core temperature in the field. These guidelines are not based only on a patient's measured temperature. A rapid assessment to suggest a patient's core temperature may be performed by placing a warm ungloved hand against the skin of a patient's back, or chest. If the skin feels warm, hypothermia is unlikely.

Handling Of Hypothermic Patients

A patient with moderate to severe hypothermia should be handled very gently and kept horizontal if at all possible. When cold, the heart is very prone to ventricular fibrillation (VF) with any disturbance. Even cautious movement of a patient may induce VF. A patient who is moderately or severely hypothermic and not in cardiac arrest may experience severe cardiovascular stress if placed in a vertical position. A severely hypothermic patient may be in a state of "suspended animation" or in a "metabolic icebox". Severely hypothermic patients have been known to survive neurologically intact for long periods of time even if they are in asystole (weakened or non-existent heartbeat).

Since cold skin is easily injured, do not apply hot objects or excessive pressure (e.g. uninsulated hot water bottles, blood pressure cuffs, etc.). Small chemical heat packs have insufficient heat capacity for rewarming. If the patient does not have frostbitten hands or feet, chemical hand and foot warmers may be helpful in preventing cold injury during transportation in patients who are mildly hypothermic. Extremity rewarming is contraindicated in moderate or severely hypothermic patients. Chemical heat packs should never be applied directly to skin. Some heat packs achieve a surface temperature >50°C (122°F), which is sufficient to burn even undamaged skin. Injured extremities should be splinted in anatomically normal position with as little further manipulation as possible in order to protect cold-injured skin.

When moving hypothermic patients by helicopter, protect the patient from wind chill caused by rotor wash. Rotor wash can be eliminated if the helicopter shuts down while loading and unloading, but this is usually not practical in the field and is very time consuming. Package the patient carefully to avoid any additional loss of heat or skin exposure that can cause or worsen frostbite and hypothermia.

The interior of ground or air ambulances (fixed wing or rotorcraft) and resuscitation rooms should be warm enough to prevent further heat loss. The ideal temperature is 28°C (82°F), the thermoneutral temperature of humans in air, but this is usually too warm for the crew.

Severe cold injuries are encountered relatively infrequently. Responders should plan for the management of these conditions and be familiar with the equipment.

Assessment And Treatment Of Cold Patients

Members of the public should activate the emergency medical system. Call 9-1-1 if available.

- Mild. A patient with mild hypothermia should be alert, with normal or increased vital signs and shivering. A patient who is alert and shivering may just be cold and not hypothermic.

- Moderate. A patient with moderate hypothermia may have a slow heart rate a slow respiratory rate and a decreased level of consciousness. Speech may be slurred and gait may be unsteady. Shivering may be vigorous until it becomes weak or absent below a core temperature of about 30°C (86°F).
- Severe. A patient with severe hypothermia will have a markedly decreased level of consciousness, with decreased or absent response to verbal or noxious stimuli.

A hypothermic patient should be assessed for coexisting injuries or illnesses that may mimic or conceal the signs and symptoms of hypothermia. The use of vital signs, mental status and presence or absence of shivering may be unreliable if the patient has another condition that coexists with hypothermia. Many conditions such as hypoglycemia, alcohol intoxication and exhaustion can cause altered mental status and can decrease or abolish shivering. A heart rate higher than expected for given level of hypothermia may be due to another cause such as traumatic blood loss.

Initial Treatment

Prevent further heat loss:

- Insulate from the ground.
- Cover the patient with a vapor barrier (such as a tarp, a large piece of plastic, large garbage bags etc.). Do not remove wet clothing until the patient has adequate shelter.
- Insulate the patient, including the head and neck.
- Protect from the wind; eliminate evaporative heat loss by removing wet clothing once the patient has adequate shelter.
- Move the patient to a warm environment as soon as possible.

Treatment For A Patient Who Is Cold, But Not Hypothermic Or For A Patient With Mild Hypothermia

An uninjured cold or mildly hypothermic patient may be treated in the field.
If it will take more than 30 minutes for the patient to arrive at a medical facility, rewarm the patient with one or more of the following methods:

Vigorous shivering is the most effective method for increasing heat production. Shivering should be fueled by calorie replacement with food or with fluid containing sugars (calorie content is more important than the heat in a hot drink). Do not allow the patient to eat or to drink liquids unless the patient is capable of swallowing and protecting the airway.

Apply heat to areas close to the heart – the chest and upper back. This can be done in the field using chemical or electric heat pads or the Norwegian (charcoal) Heatpac. The Hypothermia Prevention and Management Kit (HPMK), developed by the United States military is an excellent method of preventing heat loss. These methods will not increase the core temperature of a shivering patient faster than shivering alone, but will decrease energy requirements by decreasing shivering and will increase thermal comfort.

Mild exercise, such as walking or stepping up and down on an object, will produce heat and may be helpful. This should only be allowed after the patient is dry, has had calorie replacement, and has been stable for at least 30 minutes. A patient with moderate hypothermia may collapse if allowed to exercise without adequate energy reserves.

Exercise increases afterdrop, which is a decrease in core temperature that occurs before rewarming measures are effective. Afterdrop and vasodilation caused by exercise could provoke cardiovascular collapse.

Placing a patient alone in a sleeping bag will decrease further heat loss. Placing a patient in a sleeping bag and providing close skin-to-skin contact with a warm body will not speed core warming in a shivering patient and will decrease shivering. The advantage of placing a shivering patient in a sleeping bag with another person is to decrease the work of shivering and increase thermal comfort, however, placing a patient with another person in a sleeping bag should only be done when it will not delay transport. Do not place a hypothermic patient in a sleeping bag with another individual who is hypothermic.

Do not put a cold patient in a shower or bath. A warm bath increases afterdrop. Vasodilation and increased afterdrop could provoke cardiovascular collapse or ventricular fibrillation. Do not permit the patient to use alcohol or tobacco.

Treatment For Moderate To Severe Hypothermia

- Handle a patient who is hypothermic very gently to avoid causing Ventricular Fibrillation (VF). Do not rub or manipulate extremities or attempt to remove wet clothes. Cut clothes off once the patient is in a sheltered environment.
- Keep the patient horizontal.
- Prevent further heat loss as described in initial treatment, above.
- Apply heat as described in initial treatment, above.
- Use forced air heating with a heating blanket or cover, if available. Forced air heating, which may be available in an air or ground ambulance, is effective at raising core temperature. Heat should be preferentially applied to the torso, especially the chest and upper back.
- Do not allow the patient to sit or stand until rewarmed.
- Do not put the patient in a shower or bath.
- Do not give the patient food or oral fluids.
- Do not attempt to increase heat production through exercise, including walking.
- Continuously reassess the patient.
- Transfer to a medical facility as soon as possible.

Treatment For Hypothermia Without Signs Of Life

Assume that a hypothermic patient can be resuscitated even if there is an absence of vital signs or any sign of life and the pupils are fixed and dilated. Hypothermic patients have been resuscitated without neurological damage even after asystolic cardiac arrest. Hypothermic patients without obvious signs of life may still have a pulse. The heart rate can be very slow. Since metabolic needs are so low in severely hypothermic patients, a rate of only a few beats per minute is enough to provide adequate perfusion to vital organs. In such cases, it is better to attempt to maintain effective cardiac activity than to start cardiopulmonary resuscitation (CPR) and cause VF. Even if the patient has no pulse, delaying CPR by one minute to check for a pulse is not harmful, because the metabolic demands are so low.

CPR should be started when there are no signs of life, no respiration, no pulse, if checked for up to 1 minute and CPR is not contraindicated. Compression depth and rate should be provided according to International Liaison Committee on Resuscitation (ILCOR) guidelines.

Continue CPR under the following conditions:

- If no cardiac monitor or Automated External Defibrillator (AED) is available, continue CPR.
- If a cardiac monitor/defibrillator is available and the patient is in ventricular tachycardia (VT) or VF, or if an AED is available and advises that a shock be given, attempt defibrillation (one shock) using the standard energy level and resume CPR for 2 minutes before checking for a pulse.
- If defibrillation is unsuccessful and the patient's core temperature is <30°C (86°F), do not make further attempts at defibrillation until the core temperature has increased to ≥30°C (86°F). Continue CPR and attempt to rewarm the patient (See Table 2. Rewarming Methods – Page 16).
- If the defibrillation is unsuccessful, and the patient's core temperature is >30°C (86°F), follow ILCOR guidelines for normothermic patients.
- If a cardiac monitor, including an AED with a monitor, shows asystole, continue CPR and do not shock.
- If the monitor shows signs of an organized, perfusing rhythm (any rhythm other than VT or VF), do not start or continue CPR, but continue to monitor.
- Although an organized rhythm may represent Pulseless Electrical Activity (PEA), this is an unstable rhythm that is most likely to deteriorate rapidly into asystole. If this happens, resume CPR.
- Ultrasound, if available, can be used to check for cardiac activity. If cardiac contractions are seen, do not start or continue CPR. Starting CPR is likely to provoke VT or VF. If no cardiac contractions are found, start CPR even if there is an organized cardiac rhythm on the monitor.
- As long as the patient does not have return of spontaneous circulation (ROSC) as evidenced by a pulse or other signs of life, continue CPR as feasible during transport and attempt to rewarm the patient or at least prevent further cooling. It is difficult to rewarm a patient in the field, even in a well-heated ground or air ambulance.
- Mechanical chest compressions in conjunction with ventilation using an advanced airway are likely to be effective with the patient in a moving litter or ambulance. Human delivered chest compressions, while the patient is in a moving litter or ambulance, are unlikely to be effective and should not be attempted.
- In patients with severe hypothermia who have no signs of life, delayed or intermittent CPR may be effective. Unavoidable interruptions should be as brief as possible. Severely hypothermic patients in cardiac arrest have survived neurologically intact when CPR was delayed for more than 30 minutes. This is possible because of low metabolic needs in severe hypothermia.
- If advanced life support has been provided in conjunction with rewarming techniques for more than 30 minutes without the return of spontaneous circulation or respiration, emergency medical technicians and paramedics may terminate the resuscitation in accordance with Alaska Statutes and local protocols. However, this should only be done in patients with a core temperature ≥32°C (90°F). Moderately or severely hypothermic patients should be rewarmed before terminating resuscitation.

Transport Of Hypothermic Patients

Mild Hypothermia

A patient with mild hypothermia can be treated in the field if there are no associated medical conditions or injuries that require hospital treatment. Otherwise, patients should be transported to a hospital with the capability to manage the associated conditions and injuries.

Moderate to Severe Hypothermia

A patient with moderate or severe hypothermia should be transported to the nearest hospital or, in some cases, regional clinic, capable of stabilizing the condition of the patient.

3.11.1. Unintentional Flooding, Rough Weather at Sea, and Crossing Hazardous Bars

Signal: 1 long continuous blast not less than 10 seconds.

1. a. **If unintentional flooding: notify pilothouse immediately** to **sound alarm & call Mayday.**

   b. If rough weather at sea or crossing a hazardous bar is anticipated, notify the entire crew.

2. Close all watertight and weather-tight doors, hatches, ports, and air vents to **prevent taking water aboard or further flooding** in vessel.

3. Keep bilges dry to **prevent loss of stability due to water** in bilges. Use power driven bilge pumps, hand pumps, fire pumps and buckets to **dewater**.

4. **Check all intake and discharge lines that penetrate the hull for leakage.** All crewmembers should know the location and operation of all through-hull lines.

5. On a small vessel, crew should keep their collective weight evenly distributed.

6. Personnel should **don immersion suits/PFDs** if the going becomes very rough, the vessel is about to cross a hazardous bar, or **when** otherwise **instructed by the master** or individual in charge of the vessel.

WARNING

If immersion suits/PFDs are worn inside the vessel, their buoyancy may hamper escape during a sudden capsizing.

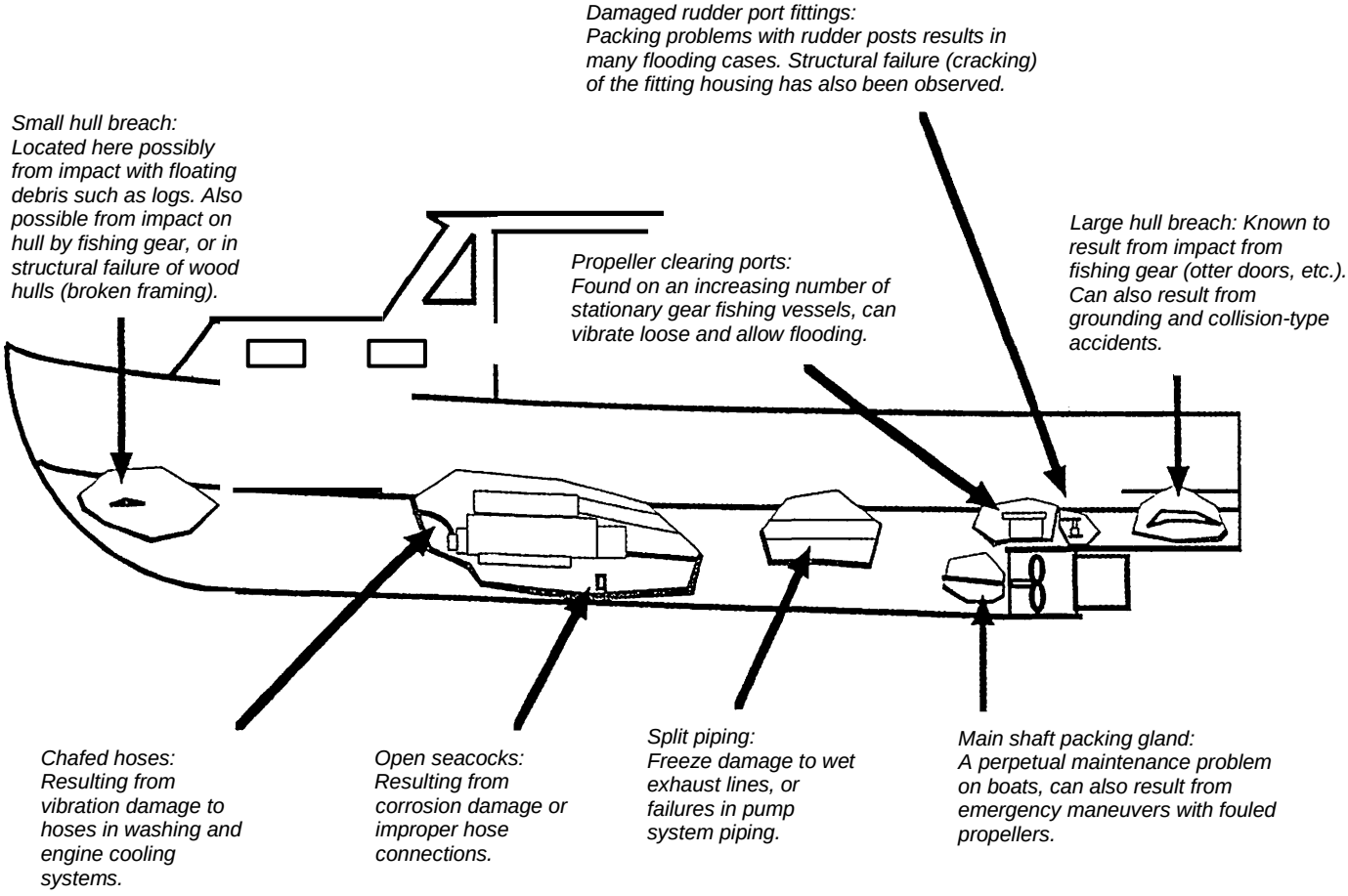
3.11.2. Minimizing the Effects of Unintentional Flooding

Approximately 70 percent of deaths involving commercial fishing industry vessels are related to stability. Maintaining proper stability on fishing vessels is one of the most difficult tasks for the fisherman. The more you learn about stability, especially the stability limit of your own boat, the safer you can be.

The most important concept for you to concern yourself with while fishing and stowing catch is to keep to a minimum the number of stability hazards present at the same time. For instance, while you are lifting the cod end aboard, be aware of the hazards posed by an open hatch. Be aware of the effects of shifting catch on deck, or of partially filled fish hold or ballast tank.

Stability changes with every gallon of fuel, ice and water that is used. It changes with every shift in ballast and with every load of fish; it makes a difference whether you put the cargo down below or on the deck. Finally, the stability of your boat changes with every wave that passes under the boat since the stability varies with the position of your vessel on the wave.

Common Small Vessel Flooding Sources



Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.11.3. Some Suggestions for Preserving Adequate Stability

The United States Coast Guard, in conjunction with the Commercial Fishing Industry Vessel Advisory Committee, recommends the following measures. You should consider this as preliminary guidance on matters influencing the safety of fishing vessels as specifically related to preserving vessel stability.

- All doorways and other openings through which water can enter the hull or deckhouses should be closed in adverse weather and when not in use.
- All closure devices should be maintained on board in good working condition.
- Hatch covers and flush deck scuttles should be kept securely closed when not in use during fishing.
- All deadlights should be maintained in good condition and securely closed in bad weather.
- All fishing gear and other large weights should be stowed, prevented from shifting and placed as low as possible.
- Care should be taken to maintain pull from fishing gear in line with the vessel's longitudinal centerline and to avoid maneuvering with trawls off the quarters or beams.(Trawls off the quarters or beam generate tremendous overturning forces that can easily capsize a vessel).
- The point of action of the weight is at the hoist block of the frame or point of suspension. (Haul back pull points should be shifted to lower points during trawl operations.) This lessens the magnitude of potential overturning forces generated when the trawl moves off the longitudinal centerline of the vessel.
- The gear to release the deck load on fishing vessels that carry catch such as herring on deck should be kept in good working order for immediate use when necessary.
- Freeing ports in bulwarks should always be open while underway
- When the weather deck is prepared for the carriage of deck loads by division with pound boards, there should be slots between them for adequate size to allow an easy flow of water to the freeing ports, *i.e., good* drainage.
- Never carry fish in bulk without first being sure that the portable divisions in the fish hold are properly installed. THE CARGO MUST NOT SHIFT!!
- Minimize the number of partially filled tanks. Free surface can severely impair your vessel's stability.
- Observe any instructions given regarding the filling of water ballast tanks. Remember that partially filled tanks can be dangerous. They generate free surface.
- Closing devices provided for vents to fuel tanks should be secured in bad weather.
- Be alert to the danger of following or quartering seas. These may cause heavy rolling and/or difficult steering. If excessive heeling or yawing occurs reduce speed, alter course or both.
- Do not overload. Overloading increases draft and decreases reserve buoyancy, which decreases stability.
- Avoid icing conditions. Standing wire rigging will ice up to a greater extent than struts or yards. If icing cannot be controlled, leave the area.
- Maintain at least 1 foot of freeboard at all times.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.11.4. Preserving Water Integrity

1. All watertight compartments should have a means of being pumped. In one-compartment type vessels, there should be at least two bilge suctions with one at the deepest part of the bilge and one at the stern.
2. All valves and pumping systems should be marked as to function.
3. Bilge water lever alarms should be installed in all watertight compartments. Alarms are to be audible and visible.

3.11.5. Damage Control / Emergency Repair

1. Prior to vessel departure, inspect condition and proper working order of all engines, auxiliary motors, impellers, hoses and valves, which make up the pumping system.
2. All bilge suction lines shall be provided with screens.
3. Bilge is to be kept free of debris to ensure proper discharge of bilge water.
4. Spare parts and engine repair kits should be stowed aboard in the event that a pump system needs repair.
5. Materials such as steel plate patches, repair clamps, wooden plugs or any material that can be used to stop water from entering the vessel and the tools needed to fasten or hold the material in place, shall be stowed aboard.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

U.S. Coast Guard Dewatering Pump Operation

The U.S. Coast Guard is frequently called upon to deliver dewatering pumps to vessels in distress. Time and time again experience has shown that people who are familiar with emergency equipment before the need to use it arises, not only act more efficiently but more effectively during emergencies. We have attempted to provide you with some useful information that can save time and frustration in a flooding situation.

Pump Types

There are two basic pumps used by the USCG. The P-1 pump is generally carried by fixed wing and helicopter aircraft. The P-1 has a pumping rate of 140 gallons per minute. The P-5 pump is typically carried by USCG Cutters and Buoy Tenders. It pumps at a much greater rate than the P-1 pump.

Both pumps are equipped with one gallon fuel tanks that are kept three quarters full. Estimated running time for both pumps is about two hours.

Common Errors

There are several common errors made during the operation of dewatering pumps in an emergency. Mistakes often result in the loss of precious time. More seriously, errors can disable a pump and render it useless during a struggle to save a sinking vessel.

Pump. Make sure that the fuel tank is connected to the engine with the quick connect fitting. The fuel tank does not come to you pre-connected. The pumps used by the Coast Guard are adjusted to start with only a minimum of choking needed. Pull choke on half to full for no more than two pulls. If it does not start in two pulls, turn the choke completely off and continue turning flywheel over with pull cord. These pumps are easily flooded. Continue to use manual "hand-billy" when pump starts sucking water for a bit to ensure that suction is not lost. Do not run engine without water in pump housing to avoid damage to impeller.

Intake Hose. The strainer that goes in the hold or bilge at the end of the intake hose needs to be completely submerged. The end of the intake hose has plastic threads that must be carefully screwed into the plastic threads on the pump. These are easily stripped if they are misaligned and forced. Finally, ensure that there is a rubber gasket in the end of the intake hose that gets threaded onto the pump. Without a gasket, the hose will suck air and the pump will lose suction. If you find no gasket, make one out of rubber or even out of the end of your wool sleeve.

Discharge Hose. One end of the discharge hose is permanently attached to the pump. The discharge end of the hose appears to have a red plug in it. DO NOT attempt to remove this plug. It is necessary that it be in place to allow back pressure to build up. When the pump starts sucking, water will be pushed out between the red plug and black rubber gasket at the end of the hose that encloses the plug. Make sure that someone is securely holding onto the discharge end of the hose since the water comes out with a great deal of pressure.

A Word About Personal Pumps

If you have the room for it, why not carry your own dewatering pump? It will be there when you need it, no matter what the weather. Remember that most vessels' bilge pumps are not designed to handle the capacity of dewatering pumps. If you do decide to carry your own, or have one already, take a couple of tips from the folks at the Coast Guard who are required to:

- ☒ Start and run the pump at least once per onth.
- ☒ Completely change out the fuel every three months.

3.11.7. Appendix GG – U.S. Coast Guard Salvage Pump Instructions

Instructions
Instrucciones
Les Instructions

CG - P1A Salvage Pump
U.S. Coast Guard

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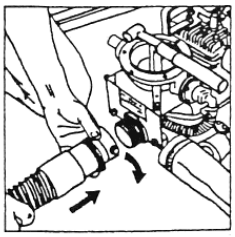

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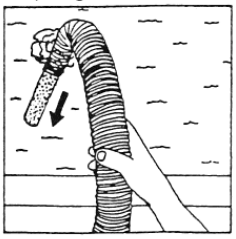

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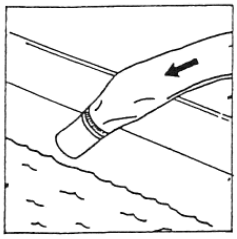

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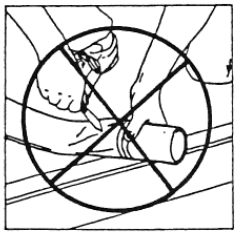

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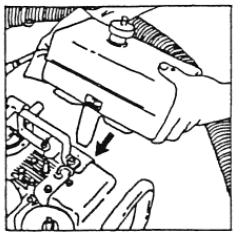

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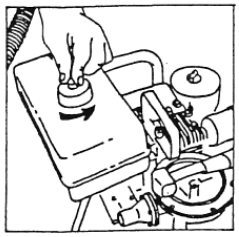

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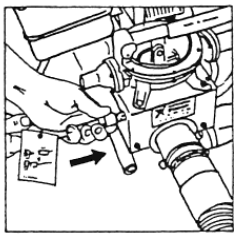

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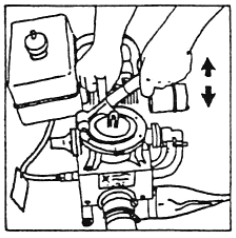

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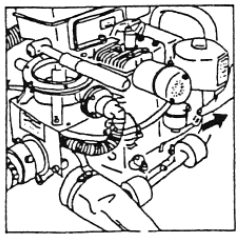

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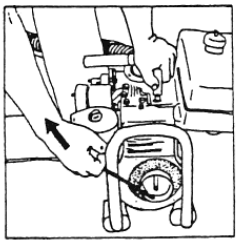

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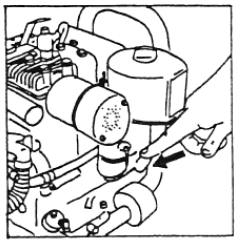

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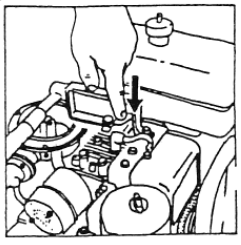


NSN 7690-01-GG0-1133

SCOT 61.000.261

Damage Control Kit

Every vessel should have tools and materials on board for damage control. The items should be assembled and stored in a damage control kit. This kit should be stored where it is easily accessible, and up out of potentially flooded areas. In addition, all crew members should be aware of the kit and familiar with the uses of its contents.

Suggested content items are listed here. Some of these items may be omitted, or others might be added based on vessel design.

PLUGS & PATCHES

- Wedges
  - – Various sizes
  - – Soft wood that swells when wet
- Tapered Plugs
  - – Two per sea cock: one in kit; one attached to sea cock
  - – Soft wood that swells when wet
- Rubberized Strips and Sheets
  - – Gasket material
  - – Rubberized cloth
  - – Inner tube strips
- Neoprene Fabric (such as pieces of old immersion suits)
- Rags
- Scrap Hose
- Nerf® Ball(s)
- Silicon or Graphite Impregnated Fiber
- Waterproof, Nonhardening Putty
- Plastic, Canvas or Nylon Tarp(s)

Produced by
Alaska Marine Safety Education Association – www.amsea.org
with assistance from
17th U. S. Coast Guard District Alaska – www.uscg.mil/d17/
&
Commercial Fishing Industry Vessel Safety Advisory Committee

Damage Control Kit

FASTENERS

- Grease Tape
- Duct Tape
- Bicycle Inner Tube Tape
- Hose Clamps in Various Sizes
- Wire Ties
- Twine
- Oakum
- Waterproof Epoxy & Backing Material

TOOLS

- Knife
- Shears
- Hacksaw
- Hammer
- Hatchet
- Screw Driver(s)
- Pipe Wrench
- Crescent Wrench
- Cordless Drill
- Nut Driver(s) including 5/16” for hose clamps
- Wooden or Rubber Mallet

DON’T FORGET . . .

- Storage Container With Light Attached to Handle
  - – Small plastic tote with handle & snap on lid
  - – Five-gallon plastic bucket with handle & lid
  - – Duffle bag
- Waterproof Flashlight(s)
- Battery-Powered Headlamp
- Hand-held VHF Radio

Vessel Damage Control

Quick Reference Guide & Suggested Damage Control Kit Contents

Quick Reference Damage Control

ASSESS THE DAMAGE

- Determine if it is leaking or flooding
- Determine whether or not available pumps can keep up
- Alert crew to situation and see that they are prepared to abandon ship if it becomes necessary
- Ensure that all crew are prepared to assist as needed
- Alert the Coast Guard of the situation
- Determine if it is safe to enter the flooded compartment and attempt damage control
- If so, trace the source of the flooding

TABLE OF FLOODING RATES (Gallons Per Minute)

Distance below waterline	Diameter of Opening in Hull (Inches)							
	1”	1.5”	2”	2.5”	3”	3.5”	4”	6”
1’	20	44	79	123	177	241	314	707
2’	28	62	111	174	250	340	444	1000
3’	34	77	136	213	306	417	544	1,224
4’	39	88	157	245	353	481	628	1,414
5’	44	99	176	274	395	538	702	1,581
6’	48	108	192	301	433	589	770	1,731
7’	52	117	208	325	468	636	831	1,870
8’	56	125	222	347	500	680	889	1,999
9’	59	133	236	368	530	722	942	2,121
10’	62	140	248	388	559	761	993	2,235

CONTROL THE DAMAGE

- If possible, isolate flooding by closing watertight doors and hatches
- Shut down generator and inverters to reduce electrocution risk
- Disengage machinery that may make working in flooding area hazardous
- Jam materials into the breach to slow the flow of water
- Wrap cloth or other material around wedges and plugs for a tight fit

- Bolster patches or plugs with shoring or nail-on patching
- Lay a tarp against outside hull and secure over the breech
- Use pumps to remove as much incoming water as possible
- Water may come from more than one source. Identify and stop all sources of flooding
- Remember to give the Coast Guard regular updates as the situation progresses
- Close off above-the-waterline holes, such as drains and discharges that can siphon water into the boat should it sink below their levels
- Ensure that patches are secure before attempting to get underway
- If grounded, ensure hull is watertight before refloating
- Maintain a watch at the source(s) of the flooding

3.11.9. Fire Prevention and Fire Fighting

Fire is even more dreaded at sea than it is ashore. Fishermen faced with a fire at sea can neither call for professional help nor run away from the danger. Short of abandoning ship in favor of a tiny life raft, they must stay onboard and fight the fire themselves whether or not they have any training.

I hope this training program encourages further fire-fighting training, as the time spent today is minimal. I would encourage all participants to contact your local fire department and ask to attend/ participate in their portable fire extinguisher training.

Coast Guard statistics reveal that most fires aboard fishing vessels occur in UNATTENDED MACHINERY SPACES. Typical causes include broken fuel or lube oil lines that spray fuel on hot engine parts, faulty electrical systems, uninsulated exhaust in contact with flammable materials, rags or other combustibles in the vicinity of hot engines, and spontaneous combustion of oil soaked rags. Other potentially high fire danger areas are accommodation spaces and galleys.

Prevention

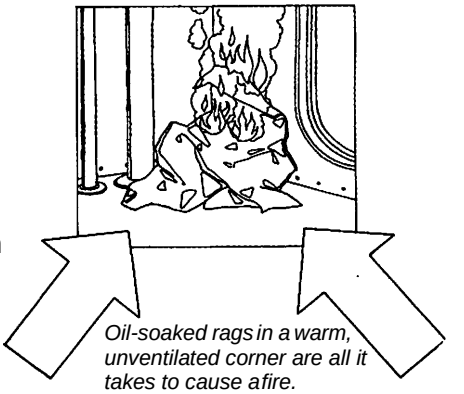
- Constant awareness of the danger of fire is the responsibility of each and every crewman. Carelessness is a chief cause of fire aboard vessels.
- Each crewman should be:
- Alerted to common fire hazards and taught how to eliminate them.
- Advised of his duties in the event of fire.
- Aware of all means of escape from interior spaces.
- Restrict the use of combustible materials when building, repairing and/or maintaining the vessel.
- Ensure the proper installation of fuel, lube and hydraulic oil lines.
- Exhaust systems are to be properly wrapped and engine rooms, cargo spaces and fuel tanks adequately vented.
- Unattended spaces should be equipped with fire and smoke detectors and alarm systems.
- Vessels must have adequate fixed fire extinguishing systems and/or portable fire extinguishers.

Causes

Spontaneous Ignition

Placing an oil-soaked rag in a storage area or engine room is an excellent candidate for spontaneous ignition. The oil rag begins to "oxidize"- to react chemically with the oxygen in the warm air around it - which in turn produces still more heat. The heat causes the oil to oxidize faster and produce still more heat. Since the heat is not drawn away by ventilation, it builds up around the rag.

Finally, the rag gets hot enough to burst into flames. All this can and does occur without any source of heat.



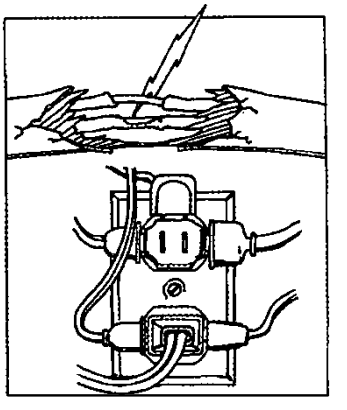
Oil-soaked rags in a warm, unventilated corner are all it takes to cause a fire.

Faulty Electrical Equipment

When electrical equipment wears out, is misused or is poorly wired, electrical energy can turn to heat and a fire may be the result. Standard home or industrial electrical equipment has no place on the ocean. The salt air causes corrosion and a steel hull can cause erratic operation or short-circuiting. The result may be overheating or arcing in equipment or wiring and the ignition of flammable materials nearby.

Approved marine electrical equipment is specially made for shipboard use.

You can avoid this type of fire by making frequent inspections, replacing wires that are obviously defective and by using only fuses and circuit breakers of the proper size for the circuit.



Damaged insulation, overloaded receptacles.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

Exposed light Bulbs

An exposed light bulb can ignite combustible material by direct contact. Numerous vessel fires have started when a crewmember left a lamp lit in unoccupied quarters. As the ship rolled, curtains or other combustible material came in direct contact with the hot bulb and ignited.

Engine Rooms

Engine rooms are full of fire hazards. Water dripping from ruptured sea water lines can cause severe short-circuiting and arcing in electric motors, switchboards, and other exposed electrical equipment. Hot engine exhausts can also cause vessel fires.

Drip trays should be emptied frequently and oil accumulation in the bilges should be kept to a minimum. A safety fuel shut-off should be installed outside the engine compartment to allow the operator to stop the flow of fuel without entering a fire area.

Foam Insulation

Many vessels use rigid polyurethane or other organic foam insulation because of their excellent insulation properties. Such foams should be covered with a suitable flame barrier.

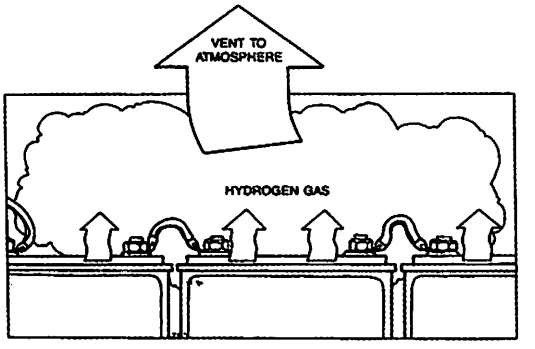
Should a fire occur in areas filled with foam, after the fire is extinguished, the foam must be completely removed to ensure that the fire is not smoldering in concealed spaces.
All foams can burn, and they give off toxic gases and black smoke.

Electric Motors

Faulty electric motors are prime causes of fire. Problems may result when a motor is overloaded, isn't properly maintained or is used beyond its safe working life. Motors require regular inspection, testing, lubrication, cleaning and ultimately replacement.

Charging Storage Batteries

When storage batteries are being charged, they emit hydrogen, a highly flammable gas. A mixture of air and hydrogen can be explosive. Hydrogen is lighter than air and will rise as it is produced. If ventilation is not provided at the highest point in the battery charging space, the hydrogen will collect. Then, any source of ignition can cause an explosion and fire.



Galley Operation

A ship's galley is a busy, potentially dangerous place. The intense activity, the many people, the long hours of operation and the basic hazards - open flames, fuel lines, rubbish, and grease or soot build up and general poor housekeeping - all add to the danger of a fire.

When liquid fuels are used for cooking, extreme care should be taken to avoid damage to fuel lines. You should be constantly alert to leaks in fuel lines and fittings. Everyone who uses the galley should know where the fuel line shut-off valves are and the valves must be easy to get at.
Good housekeeping and cleanliness is a must and it doesn't mean just cleaning the stovetop.

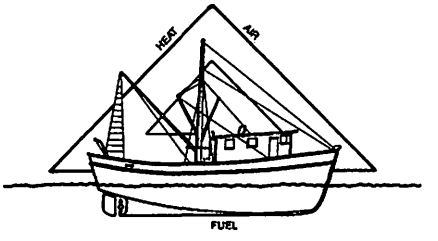
Smoking

Careless smoking is a key fire hazard. Cigarettes and matches must be properly disposed of in noncombustible receptacles. Ashtrays should be emptied into metal containers with lids, not cardboard boxes used as trash containers. In hazardous areas, no smoking warnings should be posted and observed. Smoking in bed should be prohibited.

The Fire Triangle

A fire must have HEAT, FUEL and OXYGEN in order to burn.
Remove any leg of this "triangle" and fire cannot occur.

The fuel for a fire can be in the form of flammable solids, liquids or gases. Liquid fuels burn more intensely than solids because they are more easily vaporized. The vapor from a liquid fuel is also heavier than



A boat is full of fuel sources for fire.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

air. It is extremely dangerous because it will seek low places, dissipate slowly and travel to distant sources of ignition.

Air contains the oxygen necessary for burning and ignition heat is present in many forms aboard vessels, including flames, spark, friction and spontaneous or internal combustion.

Removing the Fuel

Theoretically, you could put out a fire by physically dragging the fuel away from the source of heat, like someone pulling a log out of a campfire. While this may be rarely practical, it is often possible to move nearby sources of fuel so the fire cannot expand beyond what is already being consumed.

In fire fueled by liquids or gases, it may be possible to extinguish the fire by cutting off the fuel supply. When a fire is being fed by a leaky hydraulic or diesel line, for example, it can be put out by closing the proper valve. If a pump is supplying liquid fuel to a fire in the engine room, the pump can be shut down. Either way, the source of the fuel is removed and the fire is extinguished.

Removing the Oxygen

A fire can be put out by removing its oxygen, or by lowering the oxygen level in the air to less than 16 percent. In open areas, smothering a fire is difficult but not impossible. In smaller open areas, *i.e.,* fire in a galley trashcan, it may be snuffed out simply by placing a cover tightly over the can blocking the flow of air to the fire.

To put out a fire in an enclosed compartment, engine room or cargo hold, the space can be starved of oxygen by completely closing all air-tight hatches, doors, etc. The fire will consume all the available oxygen as long as no air can continue to enter.

Removing the Heat

The most common method of putting out fire is to remove the heat by attacking the fire base with water. An excellent heat absorber, water destroys the ability of a fire to sustain itself by cooling the fuel, by absorbing the fuel and by absorbing radiant heat from flames.

Stability Hazard

The use of large quantities of water to fight fires may jeopardize the stability of the vessel. Dewatering techniques must be commenced immediately when large quantities of water are used. **WARNING:** The use of water on electrical fires is not recommended. On electrical fires, water creates a shock hazard. On oil fires, a solid stream will splash the oil, possibly spreading the fire. Water fog may be used on oil fires.

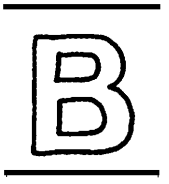
Spread of Fire

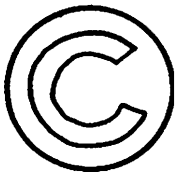
If a fire is attacked quickly and effectively, it can usually be contained and extinguished. If it is allowed to burn freely, however, it will generate great amounts of heat that can spread throughout the vessel and ignite new fires wherever fuel and oxygen are present.

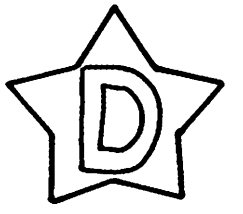
Additionally, the heat flame, smoke and gases associated with fire pose many health hazards. Crewmen fighting a fire should use all available protective clothing and respiratory equipment and should stay low and retreat to fresh air before they are overcome.

Classification of Fire

To put out a fire successfully, you need to use the most suitable type of extinguishing agent - one that will do the job in the least amount of time, cause the least amount of damage and result in the least danger to crew members. The job of picking the proper agent has been made easier by the classification of fires into four types, or classes, lettered A through D. Within each class are all fires involving materials with similar burning properties and requiring similar extinguishing agents. However, most fuels are found in combinations and electrical fires always involve some solid fuel.







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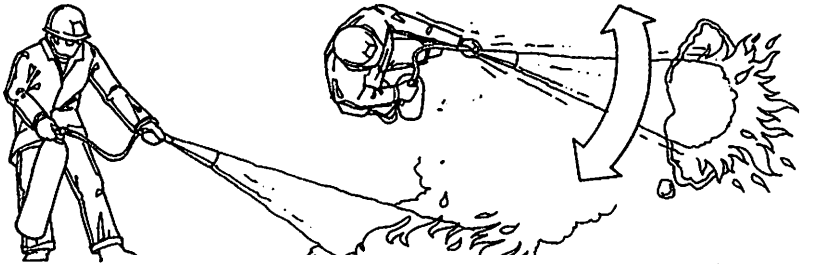
Class A Fires

Fires of common combustible solids such as wood, paper and plastics are best put out by WATER, a cooling agent. Foam and certain dry chemicals, which act mainly as smothering or chain-breaking agents, may also be used.



Aim at the base of the fire and sweep the flames away.

Class B Fires

For fires involving oil, grease, gas and other substances that give off large amounts of flammable vapors, a smothering agent is best for the job. Dry chemical, foam and carbon dioxide (CO) may be used. Water, although appropriate, in most cases with inexperienced personnel will only make the fire worse. If the fire is being supplied with fuel by an open valve or a broken pipe, a valve on the supply side must be shut down to stop the fuel supply. This may put the fire out itself or at least make it easier to put out and allow the use of much less extinguishing agent.

Class C Fires

For fires involving energized electrical equipment, conductors or appliances, non-conducting extinguishing agents (CO_2, Halon, dry chemical) must be used, although dry chemical will ruin electronic equipment. An external generator and main engine shutdown switch should be available to shut off electrical sources. Always try to de-energize the circuit to remove the chances of shock and the source of ignition.

Class D Fires

These fires may involve combustible metals such as potassium, sodium and their alloys, and magnesium, zinc, titanium and powdered aluminum. Water should not be used on Class D fires. It may add to the intensity or cause the molten metal to splatter.

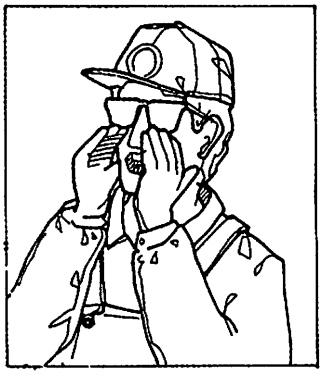
Hand-held Portable Fire Extinguishers

Portable extinguishers can be carried to the fire area for a fast attack, but they contain a limited supply of extinguishing agent. The agent is quickly used up and continuous application can exhaust the extinguisher in as little as 8 seconds. For this reason, it is important to back up the lead extinguisher with additional extinguishers or a hose line. If the first extinguisher fails or does not have enough agent to put out the fire completely, the additional extinguishers can be used to finish the job.

Firefighting Procedures

The first step in fighting a fire is to sound the alarm and alert the captain and crew so the fire can be fought as a team. Vessels have been lost because someone tried to fight a fire by himself without sounding the alarm. By the time the rest of the crew knew what was happening the fire was out of control.

The crewmember that discovers a fire or the indications of fire must sound the alarm immediately. When you sound the alarm, be sure to give the exact location of the fire, including the compartment and deck level. This is important as it confirms the location for the vessel's fire party and gives them information regarding the type of fire to expect. The exact location may indicate the need to shut down certain fuel, electrical and ventilation systems and it indicates what doors and hatches must be closed to isolate the fire.



Sound the alarm.

SIZE UP

Size-up is the evaluation of the fire situation. The fire team leader should determine:

- The class of fire (What combustible materials are burning?).
- The appropriate extinguishing agent.
- The appropriate method of attack.

Fire Size-Up

- Where is the Fire?
- Are There People in the Space?
- What is Burning? What Class?
- What is the Best Agent?
- What is the Required Manpower?
- Can We Stop It from Spreading?

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- How to keep the fire from spreading.
- The required manpower and firefighting assignments.

The first crew to arrive might extinguish a small fire. Larger fires require a coordinated attack and efficient use of manpower and equipment. During size-up, communication and a staging area should be set up.

Tactical Considerations

- Alarm
- Organize and Stage
- Restrict and Confine
- Attack and Extinguish
- Protect Survival Gear
- Overhaul and Restore

Communications

Communications with the captain should be established by intercom or a messenger. Communications with firefighting teams must be established and maintained.

Staging Area

The staging area should be established in a smoke-free area, as near as possible to the fire. An open-deck location, windward of the fire is ideal. If the fire is below deck deep within the vessel, the staging area should be a location below deck. A location near an intercom, if feasible, would be helpful in maintaining communications. However, the staging area should not be located where it will be endangered by fire. All supplies needed to support the firefighting effort should be brought to the staging area.

Attack the Fire

The attack should be started as soon as possible to gain immediate control of the fire and to prevent or minimize its spread. The attack will either be DIRECT or INDIRECT, depending on the fire situation, the equipment available and training level of the crewmen. Direct and indirect attacks differ widely in how they achieve extinguishments; both are effective when properly employed.

Direct Attack

In a direct attack, fire fighters advance to the immediate fire area and apply the extinguishing agent directly into the seat of the fire. An indirect attack should be considered if the heat and smoke make it impossible to locate or reach the seat of the fire.

Indirect Attack

An indirect attack is employed when it is impossible for fire fighters to reach the seat of the fire or they are not properly prepared as trained firefighters. Generally this is the case when the fire is in the lower portions of the vessel. The success of an indirect attack depends on the complete containment of the fire.

One technique involves making a small opening low into the fire space, inserting a fire hose nozzle and injecting a water spray. Heat converts the water to steam, which acts as a smothering agent.

Preventing Fire Spread

If a fire can be prevented from spreading beyond the space in which it originated, it can usually be controlled and extinguished without extensive damage. To do this, the fire must be virtually surrounded on all sides: fire fighters with the hose lines or portable extinguishers must be positioned to cover the flanks and the spaces above and below the fire. The possibility of the fire traveling through the venting system must also be considered. Many times in a fire at sea, the life rafts, life rings and PFD's are burned up before it occurs to anyone that the burning vessel might have to be abandoned.

Provisions should be made to safeguard and prepare lifesaving equipment during fire drills and actual fires.

Overhaul

Overhaul is begun after the main body of the fire is out. It is actually a combination of two procedures: EXAMINATION and CLEANUP. The purpose of the examination is to find and extinguish hidden fire and hot embers and to determine if the fire has spread to other parts of the vessel. At the same time, debris should be cleaned up and free water removed. Any unsafe conditions should be corrected.

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

When the Fire Is Out

Before a fire can be considered out, the crew must ensure that certain essential steps have been taken. These include:

- A thorough examination of the fire area to ensure that potential paths of fire spread have been examined.
- All smoke and combustion gases have been removed by ventilation.
- A reflash watch has been established. Crewmembers must be assigned to do nothing but check for re-ignition and to sound the alarm if it occurs.
- An examination has been made to see if the fire has damaged the vessel. High temperature can cause decks, bulkheads and other structural members to warp or become structurally unsound.
- Any necessary dewatering procedures have been started.
- A muster has been conducted to account for all personnel.

When the Fire Is Out

- Examine the Area Completely
- Ventilate Smoke and Gases
- Have Reflash Watch
- Damage Check to Vessel
- Dewatering Procedures
- Nose-Count of Personnel

Portable Extinguisher Operation

P ull The Pin

A im Low at Base of Fire

S queeze the Handle

S weep from Side to Side

Modified from http://nsgl.gso.uri.edu/tamu/tamuh06001.pdf

3.11.10. Fire Instruction

1. **Notify pilothouse immediately** to **sound alarm and call Mayday.**

2. **Shut off air supply to fire:** close hatches, ports, doors, vents, etc.

3. **De-energize electrical systems supplying the affected space**, if possible.

4. **Assemble portable fire fighting equipment.**

5. **Account for personnel** and **fight fire**. Do not use water on electrical fires.

6. If fire is in machinery space, **shut off fuel supply** and use fixed extinguishing system if appropriate.

7. Maneuver vessel to **minimize effect of wind** on the fire.

8. **Move survival gear that could be damaged by fire.**

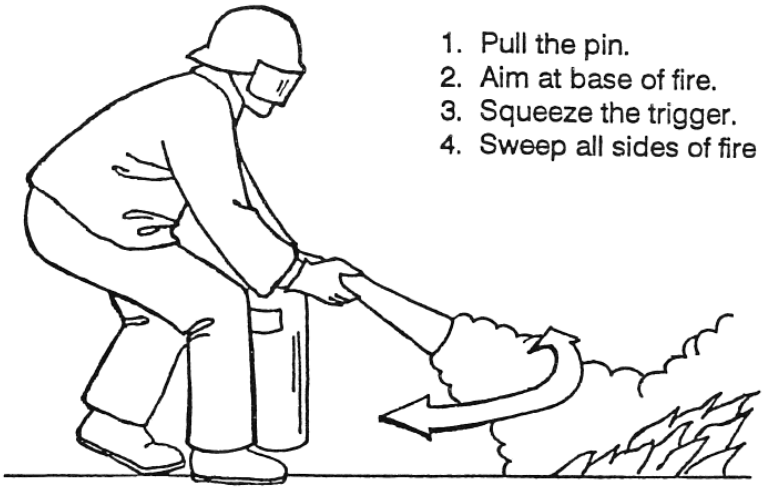
9. Check adjoining spaces to prevent spread of fire.

10. Once fire is extinguished, **begin dewatering to avoid stability problems.**

11. **If unable to control fire, notify Coast Guard and nearby vessels.** Prepare to abandon ship.

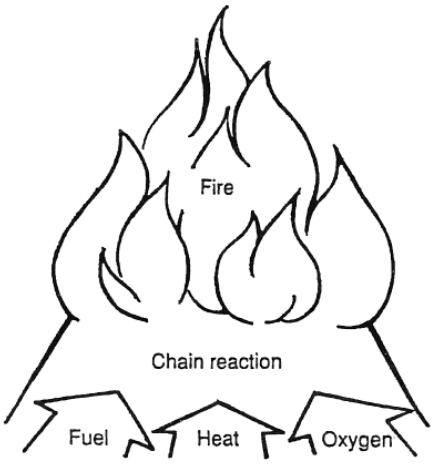
3.11.11. Appendix EE– Using Fire Extinguishers/ Four Steps Leading to a Fire

Using Fire Extinguishers



1. Pull the pin.
2. Aim at base of fire.
3. Squeeze the trigger.
4. Sweep all sides of fire quickly.

Four Steps Leading to a Fire



Crew aboard sinking vessel draw upon survival skills

By BECKY W. EVANS

Posted Oct 3, 2007 at 12:01 AM

NEW BEDFORD — Fishing vessel safety training helped save the lives of five fishermen and a fishing observer who skillfully donned survival suits and leapt into a life raft when their scalloper began sinking off Nantucket, safety trainers said Tuesday.

The entire crew survived the incident without injuries. A day before the sinking, they had practiced an abandon-ship drill.

“They did exactly what they were supposed to do,” said Ted Williams, a licensed drill instructor who teaches commercial fishermen safety skills during free workshops held in this city.

The 70-foot city fishing vessel Jacob Alan was about 40 miles southeast of Nantucket when it began taking on water around 6 p.m. Friday, according to the Coast Guard. Before abandoning ship, the crew made a triple mayday call and activated its Emergency Position-Indicating Radio Beacon, which sends a radio signal to a satellite to pinpoint the sender’s Global Positioning System location.

Coast Guard First District Command Center in Boston instantaneously received the emergency signal as well as a second signal sent from the observer’s personal EPIRB, according to the release. The command center then sent a radio broadcast alerting nearby vessels to assist the Jacob Alan’s crew.

The New Bedford fishing vessel Sancor interrupted its groundfishing trip to rescue the crew from the lifeboat. The dragger, which is owned by Carlos Rafael, returned the survivors to New Bedford at about 6 a.m. Saturday. A week ago, the Sancor broke off another fishing trip to assist the fishing vessel Santa Barbara, Mr. Rafael said.

The Jacob Alan’s crew included Capt. Antonio Vieira of New Bedford, Joao Simoes of New Bedford, Jose Bolarinho of East Providence, R.I., Justin Souza of New Bedford and Jose Medeiros of New Bedford. Meghan Miner of Cranston, R.I., was onboard the vessel to monitor its catch for the National Oceanic and Atmospheric Administration Fisheries Service. She is employed by AIS Inc., a New Bedford contractor that provides observer coverage from North Carolina to Maine.

Both Capt. Vieira and Mr. Medeiros had completed a city fishing safety training course in October 2005, said Ed Dennehy of New Directions, which helps organize the workshops.

The skills they learned during the course, which covers everything from firefighting to flare shooting to deploying life rafts, helped save their lives, said Mr. Williams, who works at IMP Fishing Gear and sold the Jacob Alan its life raft.

“The reason for this positive outcome was that both the fishermen and the observer were prepared,” said Mike Tork, a fisheries biologist with NOAA Fisheries’ Northeast Observer Program. Mr. Tork helps organize safety training for observers.

Ms. Miner, who joined the program in April, was required to take a three-week course that included two full days of fishing safety training, Mr. Tork said. The training included lessons in how to activate personal EPIRBs, which are attached to the observers’ survival suits, he said.

“She knew how to do that,” he said. “It worked exactly the way we hoped it would work. The signal was picked up in minutes.”

The day before the Jacob Alan sank, the crew had practiced an abandon-ship drill, Mr. Williams said. Such drills are required under Coast Guard regulations, he said.

Coast Guard officials believe the Jacob Alan is sunk off Nantucket in 180 feet of water, said Lt. Phil Wolf, a senior investigating officer with Coast Guard Sector Southeastern New England.

Vessel owner Mark Freedman of Plymouth has hired a salvage company to recover the vessel, said Lt. Wolf, who is investigating the cause of the sinking.

Mr. Freedman declined to comment on the incident.

The Massachusetts Fishermen’s Partnership will sponsor a fishing safety training workshop from 7:30 a.m. to 3 p.m. Friday, Oct. 19, at the UMass School for Marine Science and Technology.

Contact Becky W. Evans at revans@s-t.com

Meghan Miner's Narrative of The F/V Jacob Allen Sinking

Wednesday, October 03, 2007

I set off on the F/V Jacob Allen for an industry funded scallop trip in an open area, around 1:40pm on Friday the 21st of September, 2007. Sometime on Wednesday morning, when I woke for my shift, I was hearing reports on the radio that the Coast Guard had found a body floating in the water, with dark pants, face down. I asked the first mate, who was on the previous watch, as to what was going on, and he told me that from what he could tell, a boat had gone down the day before, and they were just finding the bodies now- none had worn survival suits. It sounded like there were four people involved, three dead, and one unconscious who was not expected to live much longer. The captain, also disturbed by these reports, ordered us the next day to do a safety drill. We went out on deck in fairly rough seas (5 ft waves), and put our survival suits on. Everyone on board did this drill except for the captain himself. The following night, Friday the 28th of September, around 4:45pm, after our 7th day of fishing and 8th day at sea, I was awoken by the Captain, Tony, saying that there was “a situation” on deck, and he needed me out there “now”. At first, I thought that this was a joke, and I sorely underestimated the severity of the situation, I groggily headed toward the bathroom to get ready for my shift.

I could hear the guys screaming my name so I came right out and into the chaos in the galley. I saw crewmembers bringing electronics down from the wheelhouse and into the galley where they were wrapping them in black garbage bags. I grabbed a few things from my bunk, including my deck notebook, my iPod and my glasses and went out on deck, as I was instructed. On the way to the deck area, you pass by the door to the wheelhouse and the area where the survival suits are kept in a door-less closet. I looked down into the engine room and saw water sloshing around on the engine room floor and coming up the steps. This is when I knew something was really wrong. Some of the crew were already struggling to put their survival suits on. I reminded them to grab layers and put them on under their survival suit in case this were to be a long ordeal.

The captain was up in the wheelhouse sending mayday calls. He also deployed the life raft. I am uncertain as to who deployed the boat’s EPIRB. Once we were instructed to abandon ship into the life raft, I set off my own PLB. Everyone jumped from the boat into the life raft without touching the water. The mood was very calm and collected. Everyone had a good sense of humor about the situation, and were making jokes as everything was happening. The captain was the last one into the raft. Some of the crew had brought along spare gallon jugs of water, and I suggested that everyone take some to treat shock, as we learned in the survival training class, but I was the only one who did. We remained floating in the raft, with the painter attached to the sinking vessel for what I think was probably about a half hour. The captain had an EPIRB with him on the life raft, whether this EPIRB was from the life raft or the boat, I am uncertain. He attached it to the plastic string from the life raft and had it floating in the water alongside the plastic boat. I had brought in my plastic bag with me, a VHF radio given to me by the captain for safekeeping. The radio worked occasionally and we could hear voices cutting in and out. By this time, the electricity on the boat had gone out, but since we were still attached to the boat by the painter, we could hear the Jacob Allen’s radio (which must have been operating on a backup battery) from the life raft. We searched around in the bags within the life raft and found some flares. The captain shot off two flares, before we saw a plane overhead. We could hear the pilot of the plane over the radio in the Jacob Allen saying that he had made a low pass, but did not see anything. At this point, the captain let the line free from the boat, as he was worried about how much longer the boat would stay afloat. We sent up another flare when we could hear a plane again. This time we heard radio confirmation of the sighting of our flare. What was approximately an hour to an hour and a half after we abandoned ship, the F/V Sancor came into view through the fog blaring its horn. We were hoisted onto the portside of the boat by crewmembers of the Sancor who also helped us to get the life raft aboard. We waited on the Sancor for several minutes, watching the Jacob Allen to see if it would sink. Although it was riding low in the water, very wobbly, and without electricity, we never saw the boat sink. The coast guard issued navigational warnings concerning the boat at least until we reached the dock sometime between 05:00 and 05:30 on Saturday morning the 29th . A member of the US coast guard boarded the Sancor and interviewed the crew, collected identification, and then released us all.

How my survival training helped me in an emergency situation:

Thanks to my previous survival training, I knew just what to do in this emergency situation. Although the events were happening quickly, and I was very nervous at first, I took a deep breath and just started following the steps that I had learned in my training class- it was like an out of body experience, like it wasn't happening to me. It's amazing the things that you remember when pressed. I remembered to wear layers, where the knife and flares were located once inside the raft, to remind everyone to drink water to treat shock and prevent overheating in our cramped steamy life raft, how to shoot a flare, and even to keep making jokes. Mostly, in this situation, the jokes revolved around me forgetting to bring my cell phone, and how mermaids will be my personal operators at least for a while. At least my calls would be screened. The captain also kept things light hearted and acted very quickly. If it were not for his cool-headedness, his drills, and HIS survival training, things may have gone much differently.

I also can't say enough how important it is to tum on your PLB once a serious situation has been assessed. I am a little bit upset that I did not set it off sooner. I kept thinking, oh, everything will be ok, we'll just see what happens next- until we were actually standing there, in our survival suits, ready to abandon ship. If I had not set off my PLB, and the signal had not been immediately picked up by the Coast Guard and the Airforce, I might not be here today!

We were fortunate enough to have conducted a survival drill on the boat the day before our boat actually went down, and this helped tremendously. Everyone practiced putting on their survival suits, the first mate had to even change sizes during this drill- an important thing to know, as he may not have had the time to do this in a real emergency situation. More captains should have drills- particularly every time they add or change crew members- you never know when this trip could be the one where you need to act on those drills!

This whole situation, if nothing else, made me very aware of how important it is to do the safety checklist before getting on the boat, and to check for other things as well. It is your safety out there, and you are responsible for looking out for it! Take everything to do with safety seriously. This boat met and exceeded all of the safety requirements (they had an 8 man raft for a 6 man crew), had recently had their liferaft re-packed. The captain had also gone through a similar safety course, and was able to conduct drills on his boat very efficiently. Had I gone on any other seemingly fine boat, and had neglected to check the liferaft, safety sticker, EPIRB, or anything else, and something had been wrong or out of date- things could have gone much less smoothly! Even if the boat looks fine- you never know. Be prepared, and fortunately, I WAS!

3.13. Communication for Observers

As an observer, it is important to always portray yourself in a professional, friendly manner. Commercial fishing vessels can be high-stress environments, with limited space to take a break from a conflict. This can easily lead to situations where your behavior, as well as those of the fishermen, can greatly affect the outcome in a positive or negative manner.

While aboard a vessel or on the docks, you are representing the entire observer program, so maintaining a respectful, pleasant attitude is imperative to our success. Every vessel is different, what works on one vessel may not work on another; and getting along with the crew generally takes time, which may be limited. Always avoid discussing "hot button" topics, including: politics, religion and government regulations. If a disagreement arises, always take the high-road and remove yourself from conflict instead of attempting to get the last word in.

The captain is in charge of the vessel; he is whom you should adhere to, especially when it comes to the workings of the vessel and your overall safety. Prior to the start of the trip, review with them any vessel-specific safety hazards, wheelhouse rules and observer instructions (such as where to put your gear on deck). Always ask before moving any vessel equipment to make room, go over sampling protocols before the first haul with the crew, and be sure clean up after yourself. Building these habits can keep everyone safe, as well as keep you out of the crew's way, reducing conflict.

Keep in mind at all times that you are an outsider on the vessel, and some dynamics on the vessel are out of your control, so do not get involved. You're also a guest on these boats, and therefore cannot attempt to dominate anyone on board, which can lead to negative tension and little assistance from the captain and crew. Your trips will be much more successful if the crew is aiding you in getting your data and samples than if they are working against you or not assisting. If you have any issues with a crewmember, immediately inform the captain so that he may handle the situation. If problems are serious, also inform your coordinators as soon as possible. If it is the captain that is the issue, make every attempt to de-escalate the situation, and inform the coordinators once able.

Situations that have potential to cause conflict are sometimes related to the fishing activities themselves. Your job as an observer is to record factual, unbiased data on the methods, catch and interactions that occur during the trip. Many fishermen have strong beliefs on what they should be able to do while at sea and how the government is infringing on their livelihood. You are not to "teach" the regulations to the crew, even if they ask what they are. It is their responsibility as fishermen to know the policies that they are operating under. You do not want to risk giving them incorrect information that can later be used to resent you or the program.

Use your best judgment for when it is time to stay out of the way of the crew during fishing operations, while still maintaining data quality. High-stress times include:

navigating in and out of harbors; gear setting and hauling; handling of large, active animals; vessel break-downs; or butchering and offloading on a deadline. Getting in the middle of these times can result in safety concerns for both you and the rest of the crew, and in turn cause aggression. Let them know you are available to assist, if permitted, but otherwise locate yourself at a safe point on the vessel.

If the crew is doing anything that you believe to be against government regulations, you can use a code system in your deck book so that the actions are documented for your report later, but you are not creating conflict if the captain requests your data. Respectfully, but firmly, request sampling, photography and documentation time on protected resource interactions, as the crew may wish to rush through releasing the animal in an attempt to quickly resume fishing or to portray the animal is alive and well, when it is in fact injured or dead.

Overall, **your safety** is the number one priority while at sea. Remaining professional and courteous in all situations will go a long way in maintaining your safety by minimizing conflict. Keep control over your tone of voice and body language so that you are not portrayed as an aggressor in heated situations. Be able to recognize the difference between irritation and bullying, complaining and refusal, as well as what is safe and unsafe. If at any time you feel that your safety is in danger, contact the program coordinators and/or the Coast Guard for assistance.

3.13.1. How Do You Express Yourself?

	Passive	**Assertive**	Aggressive
Actions	Loose handshake Poor eye contact Head down Inactive listening Fear of speaking up& asking questions Quiet voice Beats around the bush	**Firm handshake** **Maintain good eye contact** **Active listening** **Appropriate volume** **Direct & concise**	Crushing handshake 'Staring down' Interrupting Dominates conversations Loud voice Pointing
Language	*"That's okay, I really don't want to argue."* *"Um, something happened today and I'm not sure what to do."*	***"In order to collect good data, I need..."*** ***"I want to let you know what is happening on deck..."***	*"You have to do it my way."* *"The guys on deck are not doing what I tell them."*
Consequences	Needs do not get met. Others lose respect for you. Allows others to overlook your needs and opinions. You resent others.	**Needs get met by working cooperatively with others.** **Earn respect from others.** **Fosters good working relationships.**	Your needs get met, but at the expense of others. Others lose respect for you and resent you. Leads to less cooperation next time around.

Competition		**Collaboration**	
Advantages	Disadvantages	Advantages	Disadvantages
Useful when quick action is required	Stops exploration of new approaches	Mutual exploration of new approaches	Can be time consuming
Protects against those who take advantage of non-competitive behavior	Goals may be achieved at the expense of others	Mutual resolution	Requires participation from others
	Little commitment	Gains commitment	
	Temporary solution	Permanent solution	
	Win/Lose	Win-Win	

Non-Supportive → Supportive

Avoidance		**Compromise**		**Accommodation**	
Advantages	Disadvantages			Advantages	Disadvantages
Useful when risk outweighs gain	Restricts input			Useful to preserve harmony	Sacrifices your own point of view
Postpones tension	Temporary solution			Avoids disruption	Limits creative resolution
Useful when others can solve the problem more effectively				Postpones conflict when necessary	Win/Lose
Useful to postpone action until more information surfaces				Useful when issues are not important to you	

It's not your words..... It's what your body says!

- Avoid typing your personality with your voice
  - Lower your pitch to sound more authoritative and credible.
  - Speak at a slower rate to convey seriousness, authority and deliberation.
  - Speak at a faster rate to convey excitement enthusiasm and energy.
- Walk, stand and sit with good posture
- Adopt a handshake that matches your personality and intention.
- Use eye contact to establish rapport – keeping in mind cultural differences
- Pay attention to Matching Behavior
  - Body position
  - Facial expressions
  - Voice inflection
- Pay attention to Matching Energy
  - Parallel energy
  - Opposing energy

Conflict Styles

Avoidance: Refraining from engagement in a dispute.

Accommodation: Solving disputes by obliging to the other person'sneeds.

Compromise: A settlement of differences in which each side makes concessions.

Collaboration: Cooperation and mutual exploration of the options available to solve a dispute.

Competition: Solving disputes through rivalry and contention.

Conflict Flow Chart

3.13.3. Emergency Scenarios

Scenario	Action
Observer EPIRB activated	Air Force, US Mission Control Center, or US Coast Guard calls the emergency contact number with information on an activated EPIRB. EC's on observer issued PLBs are Alyssa and Beth(office and cell phone numbers)-cycle through until one is reached. Alyssa/Beth will call John to notify. Follow instructions from USCG. Notify provider.
Vessel emergency	Observer calls/texts with at sea emergency. Vessel name, permit number, position, phone number, nature of distress, is there an observer on board. If possible, keep the caller on the phone while you call the US Coast Guard 24-hour Rescue Coordination Center at 617-223-8555. After relaying the information to the Coast Guard and passing on any additional information to the caller, call John to notify. Follow instructions from USCG. Notify provider.
At sea incident/situation/harrassment	Office of Law Enforcement (OLE), US Coast Guard Liaison, Observer Provider, or Observer calls about an at sea incident/situation. Alyssa, Beth or Heatherwill gather all information. Depending on situation, call OLE hotline/OLE liason and USCG. Call John to notify. Follow
At sea injury	Dependent on severity. If severe, follow procedures for "at sea incident." If not severe, observer will call coordinator and provider upon return to dock to notify.

Relevant information to ask caller:

Caller's name

Contact information

Name of vessel

Vessel registration number

Position/location of vessel

If PLB activated, write down number

What happened

Who was on board

What is their condition

What will happen next

Where did it happen

When did it happen

When will rescue arrive

Where are they headed

When will they make port

3.3.13.4.

CRIME VICTIM SERVICES & INFORMATION

Crime Victim: a person that has suffered direct physical, emotional, or pecuniary (financial) harm as a result of the commission of a crime…" (42 U.S.C. § 10607 (e)(2)(A))

Under Federal statute, U.S.C. § 3771 (a), victims are entitled to the following rights:

PROTECTED

The right to be reasonably protected from the accused.

NOTICED

The right to reasonable, accurate, and timely notice of any public court proceeding, or any parole proceeding, involving the crime or of any release or escape of the accused.

ATTEND PROCEEDINGS

The right not to be excluded from any such public court proceeding, unless the court, after receiving clear and convincing evidence, determines that testimony by the victim would be materially altered if the victim heard other testimony at that proceeding.

TO BE HEARD

The right to be reasonably heard at any public proceeding in the district court involving release, plea, sentencing, or any parole proceeding.

SPEAK WITH PROSECUTOR

The reasonable right to confer with the attorney for the Government in the case.

RESTITUTION

The right to full and timely restitution as provided in law.

NO UNREASONABLE DELAYS

The right to proceedings free from unreasonable delay.

PRIVACY AND DIGNITY

The right to be treated with fairness and with respect for the victim's dignity and privacy.

The Southeast Fisheries Observer Program promotes a safe work environment for observers and wants to ensure strong support for observers who would benefit from these services. Your privacy will be respected to the best of our ability. If you have any questions, suggestions, or need additional information, please contact:

Alyssa Mathers, Observer Coordinator:
Alyssa.Mathers@noaa.gov O: 850-270-6014 C: 850-890-3853

Bradley Smith, Observer Coordinator:
Bradley.Smith@noaa.gov O: 850-270-7509 C: 850-381-1695

Samantha Faller, Asst Observer Coordinator:
Samantha.Faller@noaa.gov O: 850-312-8933 C: 850-348-3176

Dana Jordan, Asst Observer Coordinator:
Dana.Jordan@noaa.gov O: 850-270-8315 C:850-866-5297

Scott Leach, Chief:
Scott.Leach@noaa.gov C:786-822-0509

SERVICES & RESOURCES FOR VICTIMS

Most types of crime:

Jane Doe- www.janedoe.org

MOVA- www.mova.state.ma.us

Sexual assault victims:

Each county in the state has their own sexual assault crisis center, but you can refer them to the Jane Doe as well as:

Victims Rights Law Center http://www.victimrights.org/

Domestic violence victims:

SAFELINK- 1-877-785-2020 TTY: 1-877-521-2601

Additional Resources:

National Alliance to End Sexual Violence (NAESV) http://endsexualviolence.org/

National Clearinghouse on Abuse in Later Life (NCALL) http://www.ncall.us/resources

NCVC (National Center for Victims of Crime)
http://www.ncvc.org/ncvc/main.aspx?dbID=DB_ResourceLibrary167

National Network to End Domestic Violence (NNEDV)
https://nnedv.org/get-help/more-information/

National Resource Center on Domestic Violence (NRC) http://www.nrcdv.org/

National Sexual Violence Resource Center (NSVRC) http://www.nsvrc.org/

Rape, Abuse & Incest National Network (RAINN) http://www.rainn.org/statistics

The Date Safe Project http://www.datesafeproject.org/

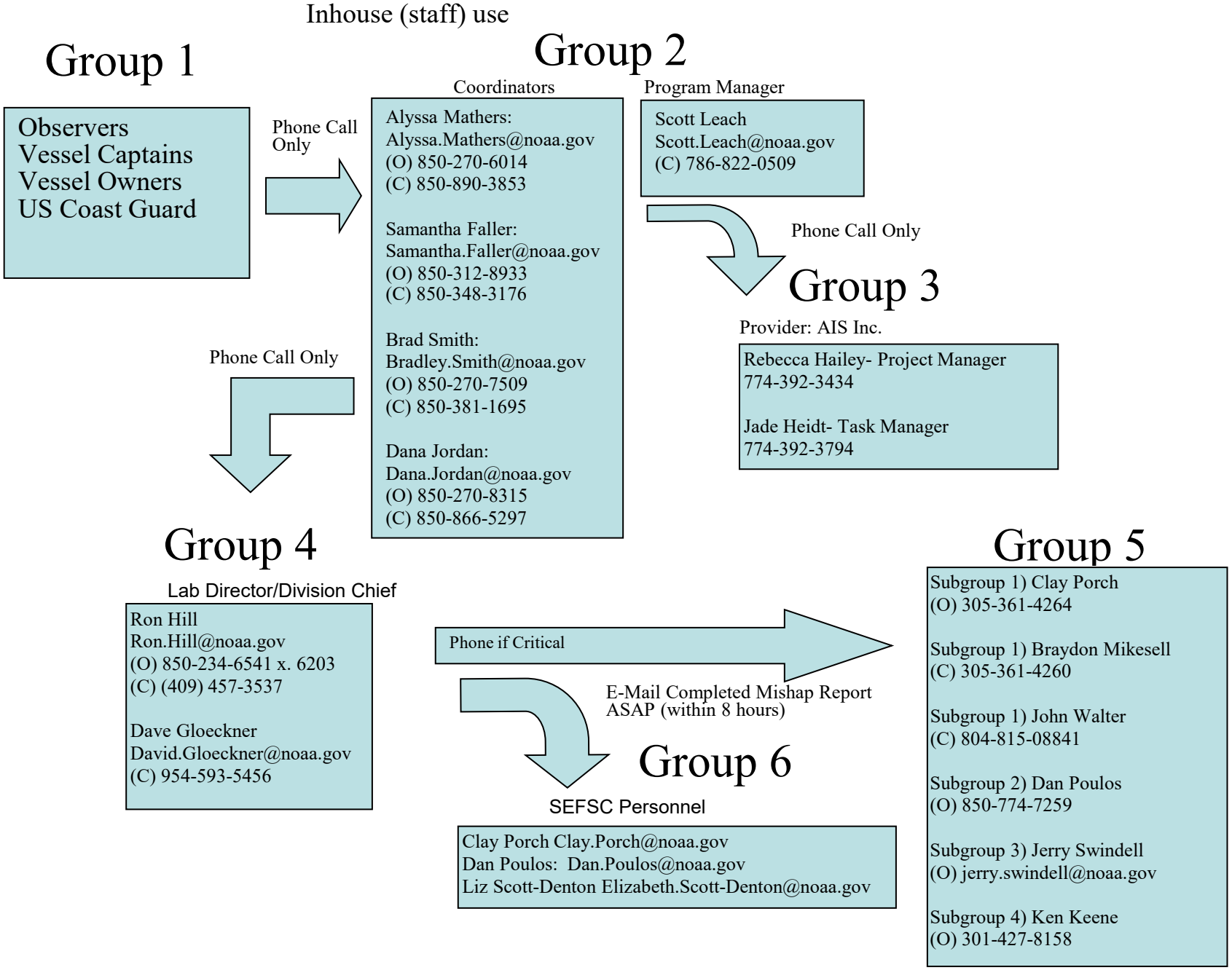
National Online Resource Center on Violence Against Women (VAWnet) http://vawnet.org/

Women Veterans Health Care: Military Sexual Trauma

http://www.publichealth.va.gov/womenshealth/trauma.asp

Victims of crime may be eligible to apply for the Crime Victims Compensationprogram.

http://www.mass.gov/ago/public-safety/resources-for-victims/victims-of-violent-crime/victim-compensation.html


Inhouse (staff) use
Group 1
Observers
Vessel Captains
Vessel Owners
US Coast Guard
Phone Call Only
Group 2
Coordinators
Alyssa Mathers:
Alyssa.Mathers@noaa.gov
(O) 850-270-6014
(C) 850-890-3853
Samantha Faller:
Samantha.Faller@noaa.gov
(O) 850-312-8933
(C) 850-348-3176
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(O) 850-270-7509
(C) 850-381-1695
Dana Jordan:
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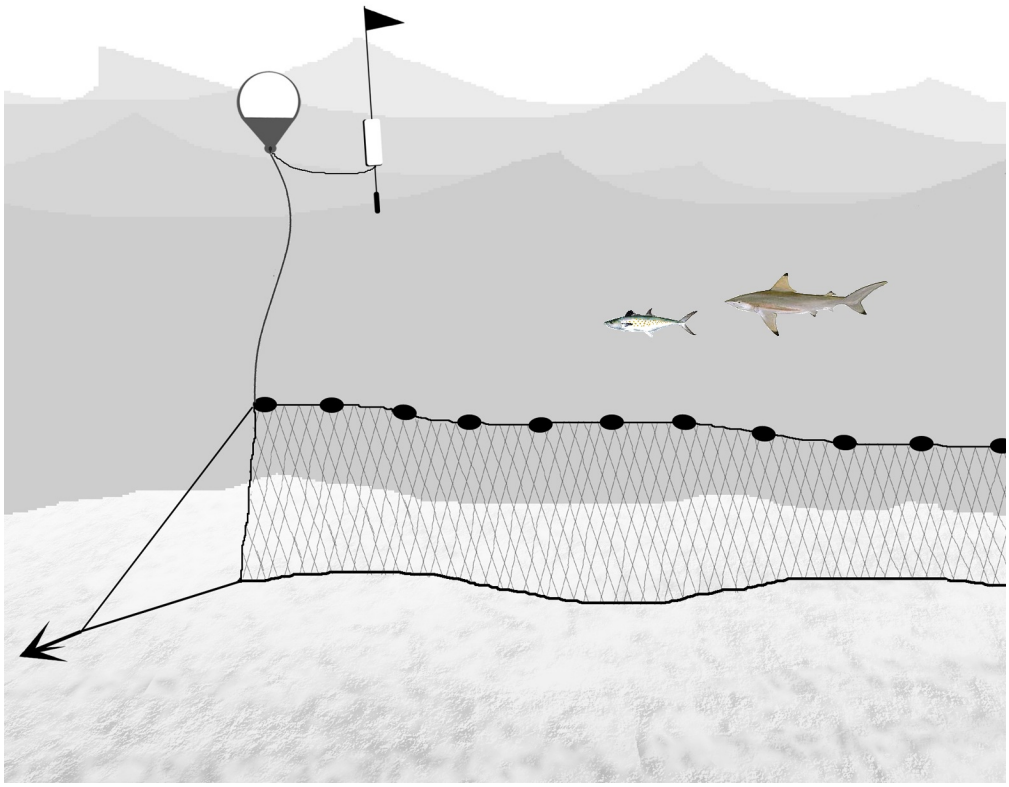
(O) 850-270-8315
(C) 850-866-5297
Program Manager
Scott Leach
Scott.Leach@noaa.gov
(C) 786-822-0509
Phone Call Only
Group 3
Provider: AIS Inc.
Rebecca Hailey- Project Manager
774-392-3434
Jade Heidt- Task Manager
774-392-3794
Phone Call Only
Group 4
Lab Director/Division Chief
Ron Hill
Ron.Hill@noaa.gov
(O) 850-234-6541 x. 6203
(C) (409) 457-3537
Dave Gloeckner
David.Gloeckner@noaa.gov
(C) 954-593-5456
Phone if Critical
E-Mail Completed Mishap Report
ASAP (within 8 hours)
Group 6
SEFSC Personnel
Clay Porch Clay.Porch@noaa.gov
Dan Poulos: Dan.Poulos@noaa.gov
Liz Scott-Denton Elizabeth.Scott-Denton@noaa.gov
Group 5
Subgroup 1) Clay Porch
(O) 305-361-4264
Subgroup 1) Braydon Mikesell
(C) 305-361-4260
Subgroup 1) John Walter
(C) 804-815-08841
Subgroup 2) Dan Poulos
(O) 850-774-7259
Subgroup 3) Jerry Swindell
(O) jerry.swindell@noaa.gov
Subgroup 4) Ken Keene
(O) 301-427-8158

Southeast Gillnet Observer Program Manual



Compiled by Michelle Passerotti & Simon Gulak

5th December 2011

Updated by Samantha Faller, Dana Jordan, Bradley Smith &
Alyssa Mathers

1st July 2022

NOAA Fisheries Panama City Laboratory
Southeast Fisheries Science Center

TRIP SUMMARY INSTRUCTIONS

The Trip Summary Log is to be the cover sheet to any gillnet trip data. It is to be filled out after the trip. If multiple trips are conducted on the same vessel, there must be a trip summary for each trip.

If information is not available or unknown for any field except a "NO/YES" question, record the appropriate dash (-) or unknown code (U or 0) in the field.

OBS TRIP #: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record "UNNAMED".
Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

OWNER/CAPTAIN NAME: Record the first and last name of the person responsible for daily vessel operations, and circle whether this is the owner, captain, or both of the vessel, if both are yes, a circle is not necessary.

 # OF CREW: Record number of persons onboard including the captain, not including observer

INCIDENTAL TAKE Y / N: Indicate whether incidental take was caught (marine mammal, sea bird, sea turtle, sawfish) by circling the appropriate letter.

IF YES, WHICH SET NUMBER(S): Record which set/haul numbers that an incidental take was caught.

BIOLOGICAL SAMPLES TAKEN Y / N: Indicate whether biological samples were taken during this trip by circling the appropriate letter.

CHECK IN SHEET INCLUDED Y / N: Indicate whether a sample check in form was used for this trip by circling the appropriate letter.

DEPARTURE DATE & TIME: Record the month, day, year and time that the vessel left the dock and the trip began (mm/dd/yyyy). Record time on a 24-hour clock.

DEPARTURE PORT: Record the city and the state (comment the specific dock location, if available) where the vessel left the dock and the trip began.

RETURN DATE & TIME: Record the month, day, year, and time that the vessel returned to the dock and the trip ended (mm/dd/yyyy). Record time on a 24-hour clock.

RETURN PORT: Record the city and the state (comment the specific dock location, if available) where the vessel returned to the dock and the trip ended.

SEA DAYS: Record the number of calendar days spent at sea, this includes any steaming and active fishing. One (1) sea day is tallied for any amount of time spent at sea, even if less than 24 hours. If the vessel leaves the dock, fishes, returns and then sails again on the same day; each trip would be recorded as one sea day but only one sea day will be counted towards sea day coverage. If a vessel leaves the dock and returns without setting and/or retrieving gear this would be a false strike.

NUMBER OF SETS: Record the total amount of sets/hauls done during the trip. Include all sets/hauls, whether they were observed or not.

FALSE STRIKE Y / N: A false strike is when a vessel leaves the dock and returns without setting and/or retrieving gear. Indicate whether a false strike occurred by circling the appropriate letter. If the trip is a false strike this would be 1 sea day and the next trip would be the next trip ID. On a false strike trip there will only be a TRIP Summary log, no other logs are used.

TARGET (GN): Record the primary category being targeted for the trip by circling the appropriate code. This information is obtained from the captain **prior** to fishing activity.
SHX = shark
TELEOST = finfish
MIX = multiple targets including both sharks and finfish

TARGET (Reef and Shark): For use on bottom longline and vertical line trips only.

TARGET SPECIFICATION: For use on bottom longline and vertical line trips only.

WEIGH OUT LOCATION: Record the location that the weigh out of the catch from the trip was done. Name of the fish house, dealer, and/or dock would be ideal. If this is a private sell, record “private sell” or the name of the buyer. If this is unknown, record N/A.

COPY INCLUDED Y / N: Indicate whether a copy of the weigh out is included with the trip data or not. Every effort to obtain a copy of the weigh out form should be made, if a paper copy cannot be obtained, a photograph is acceptable. If the weigh out occurs after the observer has left the area, the captain/owner/dealer/fish house can fax (850-235-3559), mail (3500 Delwood Beach Rd Panama City, FL 32408) or email a copy of the weigh out to the observer coordinator.

INVOICE: Indicate whether the reimbursement invoice is left with the captain or not applicable. If the trip is one sea day and/or there was no food available/offered to the observer, an invoice should not be issued and N/A should be recorded. Otherwise issue a invoice. **It is the observer’s responsibility to give the form to the owner/captain after the trip.** The observer should fill

out their Observer Trip ID, observer name, vessel name, dates of the trip, meal expenses, and total cost. **Be sure to get captain/owner SS# and signature!** The observer can turn in the reimbursement invoice with their data, or the owner/captain can mail or fax a copy to the observer coordinator. Multiple trips on the same vessel can be included in one invoice. Be sure to record which trip the invoice is included with.

VESSEL ACCOMMODATIONS: Record observations about the vessel and vessel accommodations including the presence or absence of a head, AC or heat, a bunk and bunk location, fresh water, shower, and infections and cleanliness of crew. These observations are for the observer and the observer program only, and will help with future coverage of the vessel. In the case of an either-or option, circle the option that fits the yes observation, if both are yes, a circle is not necessary.

COMMENTS: Record any comments about the trip, the vessel, the crew, or any observations about the catch. Information on drug/alcohol use by the captain or crew should be recorded here as well. Please use the comments section liberally. If more space is required, use the back of the sheet and include "see back" on the front.

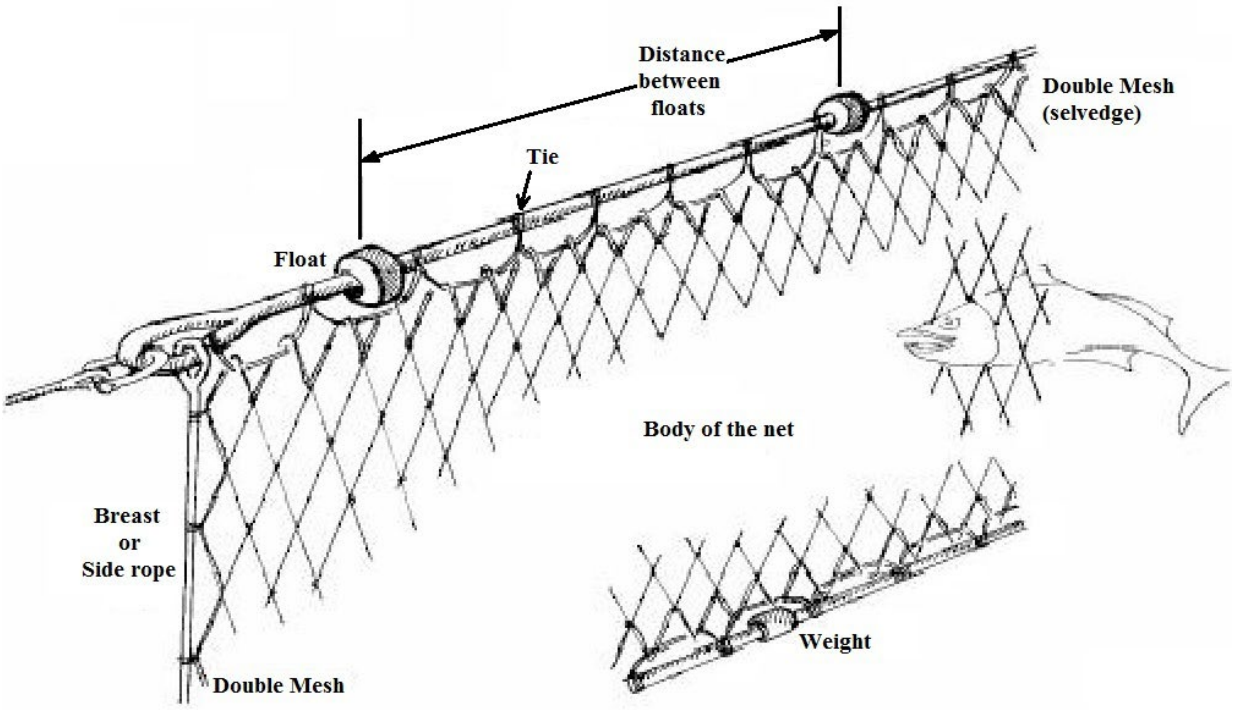
GILLNET GEAR CHARACTERISTICS LOG

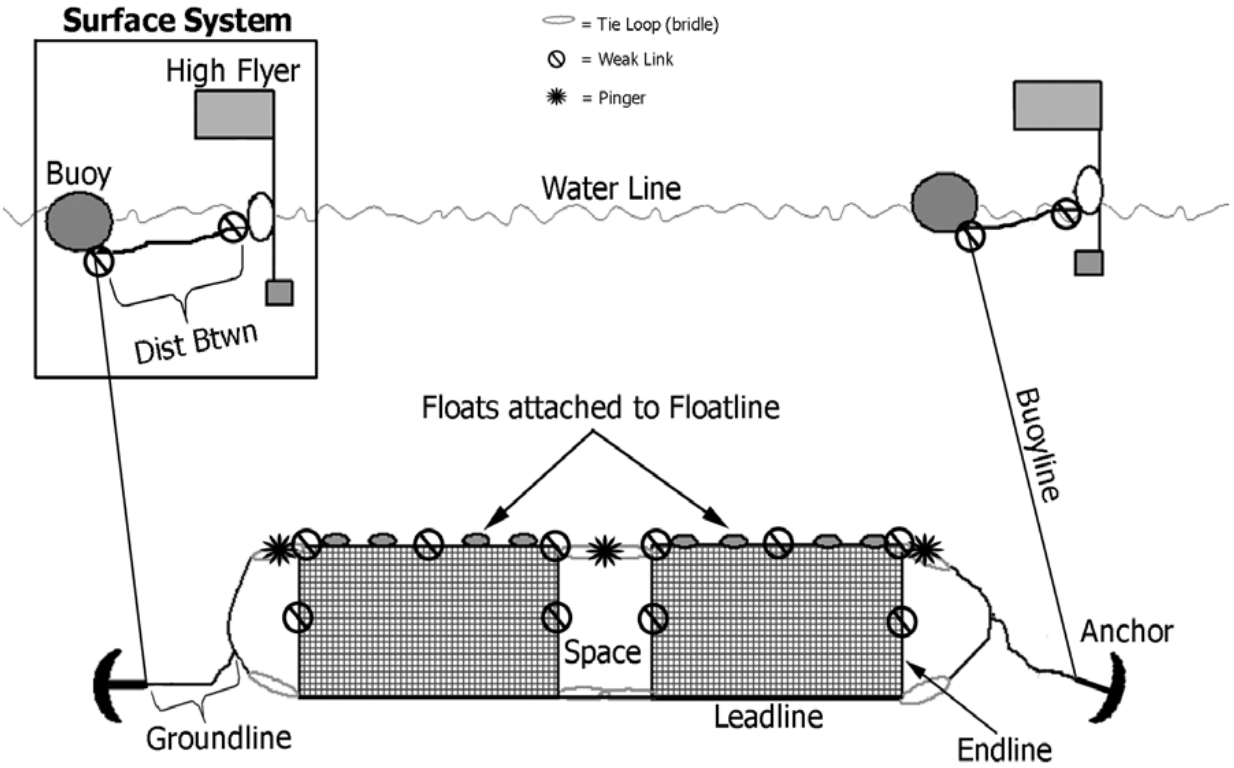
This log contains detailed descriptions about the gear fished during this trip. Complete a new log for each uniquely configured gear **hauled** during a trip. These unique configurations may be based on variables such as **length of net deployed, depth of net, mesh size, mesh type, number of panels per gear, depth of panel, mesh size of panel, mesh type of panel, and spaces between panels**. Any changes in these fields may require completion of a new Gillnet Gear Characteristics Log. Each gear log is numbered sequentially starting from gear number 1. If the gear is set out and hauled more than once during a trip, do not complete a new Gillnet Gear Characteristics Log for the multiple hauls. Rather, record on the Gillnet Haul Log which gear numbers are being hauled. In addition, record any other information necessary to understand the manner in which the gear was set/hauled in COMMENTS.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

DEFINITIONS

Bridles: The trailing ends of the floatline and leadline on an individual net.
Buoyline: A line that connects the buoy(s) or highflyer(s) at the surface to the gear (anchor or net) fishing in the water below. A line that connects the gear to the vessel is not considered a buoyline.
Dropline: A line that connects the floats on the water's surface to the mainline/floatline. Droplines are used along the entire string to suspend the gear in the water column.
Gear: A gillnet, or series of gillnets connected by bridles, with or without spaces in between, commonly referred to as "**the string**".
Gillnet: A vertical wall of netting, typically stretched between a weighted leadline on the bottom and a floatline, with or without floats, on the top to support it vertically in the water column.
Groundline: A line that connects a gillnet or gillnet bridle to an anchor. If no anchor is used, there is no groundline.
Meshes/Tie: The number of meshes between ties.
Space: A space greater than or equal to 50 feet between nets, continuous from the floatline to the leadline. This space may be caused by the way in which the net bridles are attached.
Tie: A knot that secures the body of the net to the floatline or leadline.
Tiedown: A line used between the floatline and the leadline as a way to create a pocket or bag of netting. It is the working height of the net.
Ties/Cork: The number of Ties between Corks (Floats).
Weak link: A breakable component of gear that will part when subjected to a certain tension load. These allow the buoyline and/or floatline to part off in the event a large marine mammal or turtle encounters the gear.


Distance between floats
Double Mesh (selvedge)
Tie
Float
Body of the net
Breast or Side rope
Weight
Double Mesh


Surface System
= Tie Loop (bridle)
= Weak Link
= Pinger
High Flyer
Buoy
Water Line
Dist Btwn
Floats attached to Floatline
Buoyline
Space
Anchor
Leadline
Groundline
Endline

INSTRUCTIONS

Top of Page:

OBS/TRIP #: 1 DATE LANDED: / / 2 TRIP ID: 3 (office only) GEAR ID: 4 (office only)

1 OBS/TRIP #: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 DATE LANDED: Record the month, day, year, that the vessel returned to the dock and the trip ended (mm/dd/yyyy).

3 TRIP ID: For lab use only. This number refers to the database. Please disregard.

4 GEAR ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

GEAR NUMBER: 1 NUMBER OF STRINGS (with this configuration): 2

1 GEAR NUMBER: Record the consecutive number assigned to each uniquely configured gear HAULED and for which characteristics are described. Additional gear logs would be used in the following cases:

- Change in Length of net hauled
- Change in Net Depth
- Change in Mesh Size
- Change in Mesh Type

2 NUMBER OF STRINGS: Record the quantity of strings with this unique configuration. If the vessel has two or more identical gears which are hauled separately, complete only one Gillnet Gear Characteristics Log and record the quantity of identical gears.

Example: The first uniquely configured gear is "1", and its characteristics will be recorded on one Gillnet Gear Characteristics Log. The next two **identical** gears are listed as gear number "2", "Number of Strings" is denoted as '2' and their identical characteristics will be recorded on a second Gillnet Gear Characteristics Log.

WHOLE STRING:

WHOLE STRING		
LENGTH: 1 ft	NUMBER OF PANELS: 2	TOTAL WEIGHT OF LEADLINE: 3 lbs
SECURING METHOD (circle one): 4 Sea bottom Vessel only None Combination	GROUNDLINE: Y / N 5 LENGTH: 6 ft DIAMETER: 7 in	ANCHOR(S): Y / N 8 NUMBER: 9 TOTAL WEIGHT: 10 lbs STYLE: 11 Danforth Combination Unknown (circle one) Dead Weight Other (Describe in Comments)

NOTE: The following fields characterize the entire gear, *i.e.* the string, and not just one panel.

1 LENGTH: Record the length, to the nearest foot, of the entire string of gear HAULED. This information may be obtained from the Captain.

2 NUMBER OF PANELS: Record the number of unique panels comprising the gear. A panel is considered unique if mesh size and/or net depth are different from the other panels in the string. If there are two panels of gear that are identical (except for length), but separated by a space between bridles less than 50 ft, consider these a single panel. Additional panels would be filled out in the following cases:

- Change in Net Depth
- Change in Mesh Size
- Change in Mesh Type
- Space between two panels is 50 feet or greater

3 TOTAL WEIGHT OF LEADLINE: Record the total weight of the leadline for the entire string of gear, to the nearest pound. This information may be obtained from the Captain.

4 SECURING METHOD: Indicate the manner in which this gear is secured by circling the appropriate code: Sea Bottom, Vessel Only, Combination, or None.
NOTE: "Combination" refers to gear secured to both the vessel and sea bottom.

5 GROUNDLINE Y / N: Indicate whether a groundline is used by circling the appropriate letter.

6 GROUNDLINE LENGTH: If present, record length, in feet, of groundline.

7 GROUNDLINE DIAMETER: If present, record diameter, in inches (3 decimal places), of groundline.

8 ANCHOR(S) Y / N: Indicate whether anchors were used on the gear by circling the appropriate letter.

9 NUMBER OF ANCHORS: Record the number of anchors used for the entire string.

10 TOTAL WEIGHT: Record the combined total weight, to the nearest pound, of the anchors utilized for the entire string. This information may be obtained from the Captain.

11 STYLE: Indicate the style of anchor(s) used on the string (see examples below). Anything used as an anchor that does not fit a category described here should be listed as "other", and a description should be written in the Comments section of the gear log.

SURFACE BUOYS:

BUOYS		NUMBER
HIGHFLIERS:	Y / N	1
POLYBALLS:	Y / N	2
OTHER:	Y / N	3

1 HIGHFLIERS Y / N: Indicate whether highfliers are used on the string by circling the appropriate letter. If Yes, record the total number used in the space.

2 POLYBALLS Y / N: Indicate whether polyballs are used on the string by circling the appropriate letter. If Yes, record the total number used in the space.

3 OTHER Y / N: Indicate whether types of buoys other than highfliers or polyballs are used on the string by circling the appropriate letter. If Yes, record the total number used in the space. A description should be written in the Comments section of the gear log.

BUOYLINE:

BUOYLINE		
NUMBER:	1	
LENGTH:	2	ft
DIAMETER:	3	in

1 NUMBER OF BUOYLINE(S): Record the number of buoyline(s) used on this gear.

2 LENGTH: Record, to the nearest foot, the average length of the buoyline(s) used on this gear. This measurement should not include groundlines if groundlines are used. This information may be obtained from the Captain.

3 DIAMETER: Record the average diameter, in inches (3 decimal places), of the buoyline used on this gear. This information may be obtained from the Captain. Example: 3/8 is 0.375 inches.

***WEAK LINKS*:**

WEAK LINKS		
USED ON SURFACE:	Y / N	1
NUMBER:	2	
TYPE:	3	
USED ON STRING:	Y / N	4
NUMBER:	5	
TYPE:	6	

1 USED ON SURFACE Y / N: Record whether any weak links are used on the surface system of this gear by circling the appropriate letter.

2 NUMBER: Record the **total** number of surface system weak links used on this gear. This information may be obtained from the Captain.

3 TYPE: Indicate the type of weak link(s) used on the surface system of this gear by recording the most appropriate term from the list below. This information SHOULD be obtained from the Captain.

TYPE CODES:

0 Unknown
1 Rope of Appropriate Breaking Strength
2 Off the Shelf
3 Overhand Knot
4 Hog Rings
8 Combination (record information in COMMENTS for Combination or Other)
9 Other (record information in COMMENTS for Combination or Other)

4 USED ON STRING Y / N: Record whether any weak links are used on the string (i.e. floatlines or endlines) of this gear by circling the appropriate letter.

5 NUMBER: Record the **total** number of string weak links used on this gear. This information may be obtained from the Captain.

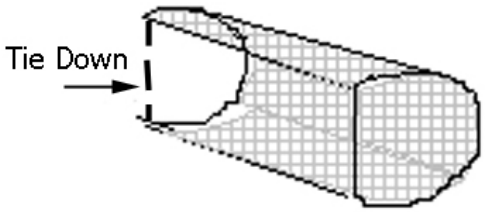
6 TYPE: Indicate the type of weak link(s) used on the string by recording, the most appropriate term from the list below. This information SHOULD be obtained from the Captain.

TYPE CODES:

0 Unknown
1 Rope of Appropriate Breaking Strength
2 Off the Shelf
3 Overhand Knot
4 Hog Rings
8 Combination (record information in COMMENTS for Combination or Other)
9 Other (record information in COMMENTS for Combination or Other)

TIEDOWNS:

TIE DOWNS
USED: Y / N 1
LENGTH: 2 ft



1 USED Y / N: Indicate whether tiedowns are used in this gear by circling the appropriate letter (See figure).

2 LENGTH: Record, to the nearest tenth of a foot, the average length of the tiedowns used in this gear. This information may be obtained from the Captain.

MM DETERRENT DEVICES:

MM DETERRENT DEVICES

ACTIVE USED: Y / N 1
NUMBER: 2
FREQUENCY: 3 kHz

BRAND: 4

PASSIVE USED: Y / N 5
NUMBER: 6
DESCRIBE IN COMMENTS

ACTIVE MARINE MAMMAL DETERRENT DEVICES
An "active" marine mammal deterrent device is a device which emits sound which may be detected by a marine mammal.

1 USED Y / N: Indicate whether "active" marine mammal deterrent devices (*i.e.* pingers) were on this gear **when it was set** by circling the appropriate letter.

2 NUMBER: Record the number of active marine mammal deterrent devices (*i.e.* pingers) on the gear **when it was set**. This information may be obtained from the Captain.

3 FREQUENCY: Record the frequency of the active marine mammal deterrent devices used on this gear in kilohertz (kHz). If more than one frequency of active deterrent device is used, record the frequency of the majority of the active deterrent devices on the gear. If an equal number of different frequency active deterrent devices are used, record the highest frequency used. This information may be obtained from the Captain.
Example: 10kHz.

4 BRAND(S): Record which brand(s) of active marine mammal deterrent devices are used on this gear, from these options: Unknown, Dukane, Airmar, Fumunda, Combination (record all brands in the COMMENTS), or Other (record the brand in the COMMENTS).

PASSIVE MARINE MAMMAL DETERRENT DEVICES

A "passive" marine mammal deterrent device is a device which may provide reflection of marine mammal echolocation signals or be detected visually. If used, describe in the COMMENTS.

5 USED Y / N: Indicate whether "passive" marine mammal deterrent devices were on this gear **when it was set** by circling the appropriate letter. Example: Net material that is designed to be more acoustically visible to marine mammals.

6 NUMBER: Record the number of passive marine mammal deterrent devices on the gear **when it was set**. This information can be obtained from the Captain.
NOTE: If some or all of the nets in the gear are made from material that is designed to be more acoustically visible to marine mammals, record the **number of nets** within the gear made from this material.

PANEL CHARACTERISTICS:

PANEL 1	LENGTH: 1 ft		DEPTH: 2 ft		DROPLINES: Y / N 3	LENGTH: 4 ft			
MESH	TYPE: 5		COLOR: 6		SIZE: 7 in		TWINE SIZE: 8		
FLOATS	NUMBER: 9		DIAMETER: 10 in		DIST. B/T: 11 ft		HANGING RATIO: 12		
LEADLINE	TOTAL WEIGHT: 13 lbs		14 INTERNAL / EXTERNAL / BOTH				NUMBER: 15		

RECORD FOR EACH UNIQUE PANEL IN A STRING OF GEAR

NOTE: Changes in **net depth**, **mesh size** and **mesh type** or a space between bridles of **greater than 50 ft** will result in a new panel.

1 LENGTH: Record, to the nearest foot, the horizontal distance of the panel, as measured along the floatline. This information may be obtained from the Captain.
NOTE: If there is a space between two nets, **do not** include this distance in the net length.

2 DEPTH (endline): Record, to the nearest tenth of a foot, the height of the panel. This value is obtained by measuring the length of the endline on the end of a net where the meshes are attached. This information may be obtained from the Captain.

3 DROPLINES Y / N: Indicate whether droplines are used in this gear by circling the appropriate letter.

4 LENGTH OF DROPLINES: Record length, in feet, of droplines, if present.

MESH

5 MESH TYPE: Record mesh type using one of the numerical codes listed on the left of the datasheet:

01=Mono
02=Multi
09=Other (such as KGM net)

6 MESH COLOR: Record mesh color using one of the numerical codes listed on the left of the datasheet. **Note:** 07-Mutli refers to multiple colors in the same panel (such as the KGM net) and 09-other refers to different parts of the net that are different colors or repairs in the net made with different colors.

7 MESH SIZE: Stretched mesh size, in inches, measured inside knot to knot. This information may be obtained from the captain.

8 TWINE SIZE: Record the twine size monofilament diameter (industry standard, #2-#40) of the net mesh used in this gear (See list below). This information should be obtained from the Captain.
NOTE: This number should reflect the total diameter of the net webbing, and not the diameter of an individual strand which may be twisted with other strands to create the net webbing (i.e. multi-filament mesh).

Twine Size	Monofilament Diameter
#2 (210/2)	.23mm
#3 (210/3 or #69)	.28mm
#4 (210/4 or #104)	.33mm
#6 (210/6 or #139)	.40mm
#7	.45mm
#8 (#177)	.47mm
#9/#10 (210/9 or #208)	.52mm
#12 (210/12 or #277)	.57mm
#14	.62mm
#16	.66mm
#18	.70mm
#20	.74mm
#24	.81mm
#30	.90mm
#40	1.05mm

FLOATS
9 NUMBER OF FLOATS: Record the total number of floats attached to the floatline on the panel. This information may be obtained from the captain.

10 FLOAT DIAMETER: Record the diameter, to the nearest tenth of an inch, of the majority of floats on the floatline. This information may be obtained from the captain.

11 DIST. B/T: Record, to the nearest foot, the average distance between floats along the floatline used on this panel. This information may be obtained from the Captain.

12 HANGING RATIO: This value is the fractional ratio of the length of the floatline to the length that the net would be if it was taken off the floatline and stretched out. This value will be calculated by your coordinator using the distance between floats and number of meshes between floats. If the Captain knows the hanging ratio of the net, record it on the data sheet but still record information in the calc box. If not, leave this line blank.

LEADLINE

13 TOTAL LEADLINE WEIGHT: Record the total weight of the leadline for this panel, to the nearest pound. This information may be obtained from the Captain.

14 INTERNAL/EXTERNAL/BOTH: Indicate whether the leadline contains internal leads, external leads, or a combination by circling the appropriate term on the datasheet. An example of a combination would be a piece of gear with an internal leadline but with weight added via a second string of external leads.

15 NUMBER OF LEADS: If external leads are present, record the total number present on the panel.

SPACE(S) BETWEEN PANELS:

1 SPACE BETWEEN PANELS: Y / N NUMBER: 2 AVERAGE WIDTH: 3 ft

1 SPACE BETWEEN PANELS Y / N: Record whether there is (are) any continuous space(s) greater than or equal to 50 feet between the nets in this gear by circling the appropriate letter.

2 NUMBER: Record the total number of spaces present between the nets in this gear.

3 AVERAGE WIDTH: Record, to the nearest foot, the average width of the space(s) present between the bridles of the nets in this gear. This should be a weighted average.
Example: A gillnet string has ten nets with 9 spaces. Three of these spaces are approximately 55 feet wide and six spaces are approximately 65 feet wide. The average width for these spaces should be recorded as: [(3*55) + (6*65)] ÷9 = 61.6, Round 61.6 to 62 feet.

CALC. BOX:

CALC. BOX
PANEL 1
MESHES/TIE
1
TIES/CORK
2
PANEL 2
MESHES/TIE
TIES/CORK
PANEL 3
MESHES/TIE
TIES/CORK

This box is used to allow the coordinator to calculate the hanging ratio. Record the following whole counts for each panel:

1 MESHES/TIE: The number of meshes in between ties (“Meshes to the Tie”). This information may be obtained from the Captain.

2 TIES/CORK: The number of ties between floats ("Ties to the Cork"). This information may be obtained from the Captain.

COMMENTS:

COMMENTS:

COMMENTS: Use the comments section for any information in addition to what was recorded, to make drawings or diagrams if the gear setup is unusual, and to explain other or unknown options. Record any calculations used. If more space is required, it is acceptable to use the back of the logs, in that case the comment "see back" is required.

GILLNET HAUL LOG INSTRUCTIONS

This log contains all the physical information relating location and effort of a single string fished. All Gillnet Haul logs will come after the associated Gillnet Gear Logs, ordered in numerical order according to haul number. The GILLNET HAUL LOG will serve as a cover sheet for the haul, the CATCH LOG/S, and the ANIMAL LOG/S will follow with all associated catch.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of Page:

Page 1 of __1__ Trip ID__2__ (office only)
Haul ID__3__ (office only)

1 PAGE 1 of ___: Record the total number of pages used on THIS HAUL and associated CATCH AND ANIMAL LOGS. The front page of any haul log will always be page 1. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Do not include incidental take log or turtle forms in this number.

2 TRIP ID: For lab use only. This number refers to the database. Please disregard.

3 HAUL ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP#: __1__ **VESSEL NAME:** __2__ **VESSEL NUMBER:** __3__

LANDING DATE (mm/dd/yyyy): __4__ **INCIDENTAL TAKE:** Y / N **5** **CATCH:** Y / N **6**

SET: __7__ **TARGET SPECIES:** __8__

1 OBS/TRIP #: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip. Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record “UNNAMED”. Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL NUMBER: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

4 LANDING DATE: Record the month, day, year that the vessel returned to the dock and the trip ended (mm/dd/yyyy).

5 INCIDENTAL TAKE Y / N: Indicate whether incidental take was caught (marine mammal, sea bird, sea turtle, sawfish) by circling the appropriate letter.

6 CATCH Y / N: Indicate whether any species were caught and the haul has any associated Animal Logs by circling the appropriate letter. Any organism presents in the meshes constitutes as catch. If the gear is hauled and there is absolutely no catch ("water haul" or "getting skunked") indicate this on the haul log by circling "N". Record "No Catch" in the COMMENTS section. were caught during this set Check the box if

7 SET: Record the set number, in sequence of the total number of sets for the trip, starting with 1 for the first haul. A set occurs each time a piece of gear is deployed and then hauled back. Set/Haul may be substituted for clarity if the observer feels it necessary. The set (or set/haul) number should correspond with the associated **CATCH LOG(S) and ANIMAL LOG(S). Note:** If there is more than one panel only one haul long needs to be completed unless there is a part off, set back, or net sharing.

- **PART OFF:** The net is cut or parts off, then the set ends and this indicates a new set number. If a line is cut/parted off during the set this should be treated as two separate sets and hauls, each having its own gear log, haul log, and associated catch and animal logs.

- **SET BACK:** The net is partially hauled back but is immediately set back for any reason. The first portion of the net is hauled per usual, then there is a decision made and the net is set back out, creating a new set number. The net is then hauled again and when the portion that was not originally hauled, a new set number is created. The sets should be treated as three separate sets and hauls, each having its own haul log and associated catch and animal logs. NOTE: The gear log will reflect the portion (length) of the net that was hauled for each set, so a setback will have two associated gear logs.

- **NET SHARING:** The net will be set by one vessel but maybe be picked up by another or more vessels, for any reason. The original vessel will have the set information, this vessel may haul back the net and that haul will end where the other vessel stopped picking the net. If the net is parted off/cut during this process, see part off. For the other vessel(s) there will not be any set information. Record the end when the vessel stops picking fish and sets back. If the vessels meet in the middle, there is no need to record set information. If the vessels did not meet in the middle record set information, whichever vessel retrieves the full net will have to make note of the different soak times, similar to a set back situation. The sets should be treated as separate sets and hauls, each having its own haul log and associated catch and animal logs. A gear log will need to be created to reflect each portion (length) of the net that was hauled. NOTE: If no haul data is collected for the set data collected then a haul log does not need to be created unless requested.

8 TARGET SPECIES: Record the PRIMARY SPECIES being targeted in the set using the three-character code abbreviations (ex. SSB = sandbar, YEG = yellowedge grouper). This information is obtained from the captain PRIOR to fishing activity. If the vessel is targeting small coastal sharks or large coastal sharks use SHX and comment details. MIX targets should only be used if one gear is being used to target various types of species and the captain lists two or more different types of species they plan on targeting (targeting SAS and
SMK).
SHX = sharks
GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species

GEAR CHARACTERISTICS:

GEAR NUMBER: 1 **GEAR CODE: 2**

1 GEAR NUMBER: Record the consecutive number assigned to the gear configuration that is associated with the gear being used to fish during the set. This number relates directly to the GILLNET GEAR LOG gear number. If there are multiple combinations of gear then an additional GILLNET GEAR LOG will be completed and the appropriate gear number entered.

2 GEAR CODE: Record the consecutive number assigned to the gear configuration that is associated with the gear being used to fish during the haul. This number relates directly to the GILLNET GEAR LOG gear number. If there are multiple combinations of gear then an additional GILLNET GEAR LOG will be completed and the appropriate gear number entered.
470 = drift gillnet
475 = strike gillnet
430 = sink gillnet.

ENVIRONMENTAL:

BOTTOM DEPTH (ft): 1 **BOTTOM TYPE: 2** **WIND DIRECTION (°): 3**

WIND SPEED (kts): 4 **WAVE HEIGHT (ft): 5** **TDR USED:** Y / N **6**

1 BOTTOM DEPTH: Record average depth (not a range) in whole feet. Depth can be obtained from electronics equipment.

2 BOTTOM TYPE: Record the predominant bottom type. Examples: Sand, Mud, Reef, Rock, or Seagrass. If unknown, record "UNKNOWN" and comment the reason.

3 WIND DIRECTION: Record the direction the wind is coming from as a compass heading in degrees (360).

4 WIND SPEED: Record the wind speed in knots. Enter the maximum observed, not a range.

5 WAVE HEIGHT: Record the wave height in feet. Enter the maximum observed, not a range.

6 TDR USED Y / N: Indicate whether you used a Temperature Depth Recorder on this haul.

SET/HAUL TABLE:

SET/HAUL	DATE	TIME	LATITUDE	LONGITUDE	TEMP (°F)
SET BEGIN	1 / /	2 :	3 ° .	° .	4
SET END	/ /	:	° .	° .	
HAUL BEGIN	5 / /	6 :	7 ° .	° .	9
HAUL END	/ /	:	° .	° .	

1 SET BEGIN/END DATE: Record the date (MM/DD/YY) the first part of the net hits the water.

2 SET BEGIN/END TIME: Record the local time (24-hour clock NOT hundredths of an hour) at which the first part of the net hits the water.

3 SET BEGIN/END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DD° MM.mmm) when the set begin and end time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml.

4 SET BEGIN TEMPERATURE: Record temperature (°F) when the set begin time is recorded.

5 HAUL BEGIN/END DATE: Record the date (MM/DD/YY) the net starts to come out of the water.

6 HAUL BEGIN/END TIME: Record the local time (24-hour clock NOT hundredths of an hour) at which the net starts to come out of the water.

7 HAUL BEGIN/END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DD° MM.mmm) when the haul begin and end time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml.

8 HAUL BEGIN TEMPERATURE: Record temperature (°F) when the haul begin time is recorded.

DURING HAULBACK:

SEABIRDS PRESENT: Y / N	**SPECIES:** _____
MARINE MAMMALS PRESENT: Y / N	**SPECIES:** _____
SEA TURTLES PRESENT: Y / N	**SPECIES:** _____

PROTECTED RESOURCES: Indicate whether seabirds, marine mammals, and/or sea turtles are present in the area during haul back by circling the appropriate letter. If so, record the common name of the species to the lowest taxonomic level possible.

NOTES:

NOTES:

_____

_____

NOTES: Use the notes/comments section for any information in addition to what was recorded, to make drawings or diagrams if the haul setup is unusual, and to explain other or unknown options. Record any calculations used, and any details about the catch, or protected species seen during the haul. If more space is required, it is acceptable to use the back of the logs, in that case the comment “see back” is required.

GILLNET CATCH LOG INSTRUCTIONS

This log gives the amount of each species caught, the status and action of individuals, and a length estimate of the composition of the catch. This log contains catch information such as: species, live/dead, kept/release, size estimate of all caught species on sets using Gillnet gears. This log separates the catch by **each unique panel** of gillnet gear. Individuals of each species are separated out by **disposition/action**. The Catch Logs will follow the Haul Log with the Set's catch composition.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of Page:

Page _____ of __1__ Trip ID __2__ (office only) Haul ID __3__ (office only)

1 PAGE___of ___: Record this page number and the total number of pages used on THIS HAUL and associated CATCH AND ANIMAL LOGS. The front page of any haul log will always be page 1 then the Catch Log and Individual Animal Logs will be numbered sequentially starting with the catch log as page number 2. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Do not include incidental take log or turtle forms in this number.
Example: A haul log (one sided), Catch log, and 4 animal logs. The Catch log is recorded as 2 of 6.

2 TRIP ID: For lab use only. This number refers to the database. Please disregard.

3 HAUL ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP #: __1__ SET #: __2__

ESTIMATED FORK LENGTHS – PANEL: __3__ MESH SIZE: __4__ in

1 OBS/TRIP#: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 SET #: Record the set number from the associated **HAUL LOG**, this should be in sequence of the total number of sets for the trip, starting with 1 for the first haul. A set occurs each time a piece of gear is deployed and then hauled back. Set/Haul may be substituted for clarity if the observer feels it necessary. The set (or set/haul) number should correspond with the associated **ANIMAL LOG(S)**.

3 PANEL: Record the panel number for the unique panels comprising this gear from which the associated catch was removed. This should correspond to one of the panel numbers on the associated **GEAR LOG**. A panel is considered unique if mesh size and/or net depth are different from the other panels in the string. If there are two panels of gear that are identical (except for length), but separated by a space between bridles less than 50 ft, consider these a single panel. The panel number should correspond with the associated **ANIMAL LOG(S)**. If there is more than one panel, a new log should be used for each panel.

Record information on this log for all species caught, separating the catch by *EACH UNIQUE PANEL*

4 MESH SIZE: Record the mesh size for the unique panels comprising this gear from which the associated catch was removed. This should correspond to the mesh size of the associated panel on the associated **GEAR LOG**. The mesh size should correspond with the associated **ANIMAL LOG(S)**.

ESTIMATED FORK LENGTHS CHART:

Species	Code	Total # Kept	Total # Discard Live	Total # Discard Dead
1	2	3	4	5

1 SPECIES: Record a three-letter abbreviation (SEE SPECIES CODE LIST) for each species, including marine mammals, sea turtles or sea birds that may be caught incidentally. Attempt to identify all animals to species. If unsure, use group/family abbreviation (SHX, TUN, GRP, etc.) and comment on possible species or characteristics.

2 CODE: Record the 4-digit species code (SEE SPECIES CODE LIST). If you are unable to identify a species or a species is unlisted, photograph and fill in group or family abbreviation.

IF UNSURE ABOUT ID, TAKE PICTURES, LIST ID CHARACTERISTICS AND for sharks TAKE FINCLIPS

DEPOSITION

When a species has individuals of more than one disposition (kept, discard live, discard dead), there should be a new line to indicate each disposition, **even if the lengths and status are all the same.** Example: 60 SAS caught, all measuring 30-60 cm, 20 of which are discarded dead and 40 kept. Record SAS on two separate lines for the two dispositions with 20 and 40 listed in the 30-60cm bin accordingly.

3 TOTAL # KEPT: Record the total number kept for each species caught.

4 TOTAL # DISCARDED LIVE: Record the total number discarded alive for each species caught.

5 TOTAL # DISCARDED DEAD: Record the total number discarded dead for each species caught.

ESTIMATED FORK LENGTHS BINS:

000-030	030-060	060-090	090-120	120-150	150-180	180-210	210-240

LENGTH BINS (000-030 to 210-240): Record the number of each species in that length category for each disposition in the appropriate box.

STATUS WHEN BOATED:

Status when boated	
Alive	Dead

STATUS WHEN BOATED: Record the number of each species that were alive and dead **WHEN BOARDED** in the appropriate box. These numbers may be estimated from general proportions of observed alive or dead coming on board.

***Example*:**

Page 2 of 4 Trip ID_____(office only) Haul ID_____(office only)

Southeast Fisheries Science Center
Gillnet Fishery Catch Worksheet

OBS/TRIP #: **ABC001** SET #: **1**

ESTIMATED FORK LENGTHS – PANEL: 1 MESH SIZE: 3.5 in

Species	Code	Total # Kept	Total # Discard Live	Total # Discard Dead	000-030	030-060	060-090	090-120	120-150	150-180	180-210	210-240	Status when boated	
													Alive	Dead
SMK	3840	326	0	0		299	27						50	276
SMK	3840	0	24	0		24							24	0
SMK	3840	0	0	10		10							1	9
BLU	0230	36	0	0		36							34	2
BLU	0230	0	0	3	1	2							0	3
CRO	0041	0	0	5	5								0	5
KGU	0058	2	0	0	1	1							0	2

GILLNET ANIMAL LOG INSTRUCTIONS

This log contains individual animal information such as: species, size and sex the of animals caught on sets using Gillnet gears. This log separates the catch by each unique panel of gillnet gear. Straight line fork length measurements should be taken from **10 individuals per species caught PER PANEL PER SET** and recorded on this log. The Animal Logs will follow the Catch Logs with individual animal information for that set.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of Page:

Page _____ of **1** Trip ID **2** (office only) Haul ID **3** (office only)

1 PAGE___of ___: Record this page number and the total number of pages used on THIS HAUL and associated CATCH AND ANIMAL LOGS. The front page of any haul log will always be page 1 then the Catch Log and Individual Animal Logs will be numbered sequentially starting with the catch log as page number 2 followed by the animal log as page number 3. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Do not include incidental take log or turtle forms in this number.
Example: A haul log (one sided), Catch log, and 4 animal logs. The Animal Logs are recorded as 3 of 6, 4 of 6, 5 of 6, and 6 of 6.

2 TRIP ID: For lab use only. This number refers to the database. Please disregard.

3 HAUL ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP #: **1** SET #: **2** PANEL: **3** MESH SIZE: **4** in

1 OBS/TRIP#: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 SET #: Record the set number from the associated **HAUL LOG**, this should be in sequence of the total number of sets for the trip, starting with 1 for the first haul. A set occurs each time a piece of gear is deployed and then hauled back. Set/Haul may be substituted for clarity if the observer feels it necessary. The set (or set/haul) number should correspond with the associated **CATCH LOG(S)**.

3 PANEL: Record the panel number for the unique panels comprising this gear from which the associated catch was removed. This should correspond to one of the panel numbers on the associated **GEAR LOG**. A panel is considered unique if mesh size and/or net depth are different

from the other panels in the string. If there are two panels of gear that are identical (except for length), but separated by a space between bridles less than 50 ft, consider these a single panel. The panel number should correspond with the associated **CATCH LOG(S)**. If there is more than one panel, a new log should be used for each panel.

Record information on this log for all species caught, separating the logs by *<u>EACH UNIQUE PANEL</u>*

4 MESH SIZE: Record the mesh size for the unique panels comprising this gear from which the associated catch was removed. This should correspond to the mesh size of the associated panel on the associated **GEAR LOG**. The mesh size should correspond with the associated **CATCH LOG(S).**

ANIMAL INFORMATION:

SPECIES			LENGTH (cm) Straight line (1) Curved line (2) Estimated (3)		SEX M F U	TAG # OR COMMENT	TAG CODE Released (1) Retagged (2) Recaptured (3)	SAMPLES TAKEN (Check appropriate boxes) 9					
Spec #	Name	Code	FL	Code				Oto	Vert	Stom	Repro	Fin	Pic
1	2	3	4	5	6	7	8						10

SPECIES

*** Record animal information for 10 individuals per species caught PER PANEL PER SET. When this is not possible, preference is for sharks and commercially important species. Use sorting baskets to separate individuals for measurement by panel. ***

1 SPEC #: Specimen numbers start at the beginning of each haul, with a value of 101 and count sequentially to the end of the haul. This number is used to avoid being misread at the fish house (100 vs 001) and to avoid duplication with any incidental take specimen numbers (1, 2, 3 etc.). Please number incidental takes starting with 001 and number sequentially as encountered within a single trip. This number should be reflected on the appropriate Incidental Take/ Protected Resource/ Turtle Forms.
--- If there are multiple panels each containing catch within a set, animal numbers should begin with the panel number followed by '01'. Example: specimens from Set 1 Panel 1 begin with '101', specimens from Set 1 Panel 2 begin with '201', etc. ---

2 NAME: Record the three-letter abbreviation (SEE SPECIES CODE LIST) for each species, including marine mammals, sea turtles or sea birds that may be caught incidentally. Attempt to identify all animals to species. If unsure, use group/family abbreviation (SHX, TUN, GRP, etc.) and comment on possible species or characteristics.

3 CODE: Record the 4-digit species code (SEE SPECIES CODE LIST). If you are unable to identify a species or a species is unlisted, photograph and fill in group or family abbreviation.

IF UNSURE ABOUT ID, TAKE PICTURES, LIST ID CHARACTERISTICS AND for sharks TAKE FINCLIPS

LENGTH

4 FL: Attempt to obtain a straight-line fork length measurement in centimeters from **10 individuals per species caught PER PANEL PER SET. When this is not possible, preference is for sharks and commercially important species.** Do not try to piece animals together that have been cut. Estimated lengths for incidentally taken marine mammals, birds, and turtles should also be recorded here. Actual measurements will be recorded on the incidental take log, bird life history forms, protected resources forms or the turtle life history forms. All sharks, tuna and other finfish species are to be taken as a straight-line fork measurement. Skates and rays should be measured at their widest point, wing tip to wing tip (disc width), comment "disk width taken". Record the curved measured length of all billfish, swordfish, and turtles to the nearest centimeter (cm.). Record length according to the standards in Section 1.2.3. in the Observer Manual. Estimated lengths should be taken for animals that are dangerous to handle, not brought on board, or when there are too many to accurately measure with the time given. Estimate to the nearest centimeter (cm.) if possible, otherwise estimate to the nearest foot (ft.) Measurements can easily be converted to centimeters using (1 foot =30 cm). Enter the converted length and record a 3 in the length code. If samples are taken (vertebrae, otolith, reproductive tract, stomach) then a straight-line measurement MUST be taken. **NOTE:** Only actual measurements should be recorded on this log, unless there is a picture taken of that individual or there is an incidental take.

5 CODE: Record the one-digit measurement type code. All sharks, tuna and other finfish species measurements are to be taken as a straight-line fork measurement, Code 1. Curved line estimates are only acceptable for sea turtle carapace and swordfish or billfish lengths, Code 2. Estimated lengths should be taken for all animals that are dangerous to handle, for all animals that are not brought on board, when there are too many to accurately measure with the time given, or for protected species in the animal log; use Code 3. If the animal is unknown or not observed properly, use Code 0. **NOTE:** Only actual measurements (code 1) should be recorded on this log, unless there is a picture taken of that individual or there is an incidental take.

Measurement Type	Code
Unknown/ No Measurement	0
Straight line	1
Curved line	2
Estimated	3

6 SEX: Record the code for the sex of this animal. If undeterminable use Code U.

Sex	Code
Unknown	U
Male	M
Female	F

7 TAG # OR COMMENT: Record the complete tag number (including any alpha prefix) if an animal is tagged then released; use Tag Code 1, Tagged and released alive. If an animal is already tagged and to be released healthy, attempt to re-tag and comment both tag numbers (taking a clear picture is also preferred), and use Tag Code 2, Retagged and released alive. If an

animal is already tagged and to be kept or discarded dead, request that the dead tagged animal be brought on board so that information about the animal and tag number can be recorded. If this is a tagged shark, comment the tag number, other necessary information, and take a vertebra, reproductive, stomach, and fin clip sample; include Tag Code 3, Recaptured and kept/released dead. (The fishers can report the tag for reward, most likely a T-shirt, if they wish; otherwise the observer may report the tag and comment that the tag was reported.) This area may also be used to record a brief comment about an individual animal. Examples of comments include incidental take details, distinguishing characteristics for identification, if an individual has damage, what type of damage, was damage caused by another animal on the line, any information about scenarios relating to the catch, or any other pertinent information related to the catch of that specimen.

8 TAG CODE: Indicate the origin of the tag number with the codes provided.

Tag State	Code
Tagged and released alive	1
Retagged and released alive	2
Recaptured and kept/released dead	3

9 SAMPLES TAKEN: Check the boxes for each type of samples taken (otolith, vertebrae, stomach, reproductive (includes shark reproductive tract and teleost gonads), fin clip) from individual animals. If a reproductive sample is taken, always take a vertebrae/otolith sample as well. Note that Fins and Whole samples should only be taken for special requests or studies.

10 PHOTOGRAPHS: If you take photographs of an animal that was caught in the fishing gear, make sure that it is recorded on the Animal log. If you were unable to obtain a straight length measurement, record an estimated length. Check the photograph taken box and make a note in the Comment field.

COMMENTS:

COMMENTS: Use the comments section for any information in addition to what was recorded above, be sure to record SPEC #. Make drawings or diagrams if the animal is unusual, and to explain other or unknown options. Record any other pertinent information related to the catch of that specimen. If more space is required, it is acceptable to use the back of the logs, in that case the comment “see back” is required.

Trip ID: _____ (office only)

TRIP SUMMARY
(This will be the cover sheet to your trip datasheets)

Obs Trip #: _____ **Vessel name:** _____ **Vessel #:** _____

Owner/Captain Name: _____ **# of Crew:** _____

Incidental Take: Y / N **If Yes, what set number(s)**: _____

Biological Samples Taken: Y / N **Check In Sheet Included:** Y / N

Departure Date: _____ **Time:** ___:___ **Departure Port:** _____
mm/dd/yyyy City, State

Return Date: _____ **Time:** ___:___ **Return Port:** _____
mm/dd/yyyy City, State

Sea Days: _____ **Number of Sets:** _____ **False Strike:** Y / N

Target (GN): SHARK / TELEOST/ MIX

Target (Reef and Shark): _____ **SRF □ SHX □ SADL □ SARF □ OTHER □**

Weigh out location: _____ **Weigh out copy included: Y / N**

Invoice: For trips two or more sea days. Fill out observer fields, leave invoice with captain/owner.

____ N/A

____ Left completed with captain/owner

Vessel accommodations:

Head: Y / N **AC and/or Heat:** Y / N (circle which applies)

Bunk: Y / N **Bunk Location:** _____

Fresh Water and/or Shower: Y / N (circle which applies) **Infections:** Y / N

Comments:

_____

_____

_____

_____

Office use only:
Stand by Days: _____ Data received: ___/___/_____ _____

Data entry: ___/___/____ _____ Dbase proofed: ___/___/_____

Debrief: ___/___/_____ Invoice filed: ___/___/_____/ NA

OBS/TRIP #:_____ DATE LANDED: / / TRIP ID:_____(office only) GEAR ID:_____ (office only)

Southeast Fisheries Science Center Gillnet Fishery Gear Log GEAR NUMBER: _____ NUMBER OF STRINGS (with this configuration): _____

COLOR

Clear	01
White	02
Pink	03
Black	04
Green	05
Blue	06
Multi	07
Red	08
Other	09

*More than one color= Multi (07)

TYPE

Mono	01
Multi	02
Other	09

CALC. BOX

PANEL 1 MESHES/TIE _____

TIES/CORK _____

PANEL 2 MESHES/TIE _____

TIES/CORK _____

PANEL 3 MESHES/TIE _____

TIES/CORK _____

WHOLE STRING

LENGTH: _____ft NUMBER OF PANELS: _____ TOTAL WEIGHT OF LEADLINE: _____lbs

SECURING METHOD (circle one): Sea bottom Vessel only None Combination

GROUNDLINE: Y / N LENGTH: _____ft DIAMETER: _____in

ANCHOR(S): Y / N NUMBER: _____ TOTAL WEIGHT: _____lbs STYLE: (circle one) Danforth Combination Unknown Dead Weight Other (Describe in Comments)

PANEL 1 LENGTH: _____ft DEPTH: _____ft DROPLINES: Y / N LENGTH: _____ft

MESH TYPE: _____ COLOR: _____ SIZE: _____in TWINE SIZE: _____

FLOATS NUMBER: _____ DIAMETER: _____in DIST. B/T: _____ft HANGING RATIO: _____

LEADLINE TOTAL WEIGHT: _____lbs INTERNAL / EXTERNAL / BOTH NUMBER: _____

PANEL 2 LENGTH: _____ft DEPTH: _____ft DROPLINES: Y / N LENGTH: _____ft

MESH TYPE: _____ COLOR: _____ SIZE: _____in TWINE SIZE: _____

FLOATS NUMBER: _____ DIAMETER: _____in DIST. B/T: _____ft HANGING RATIO: _____

LEADLINE TOTAL WEIGHT: _____lbs INTERNAL / EXTERNAL / BOTH NUMBER: _____

PANEL 3 LENGTH: _____ft DEPTH: _____ft DROPLINES: Y / N LENGTH: _____ft

MESH TYPE: _____ COLOR: _____ SIZE: _____in TWINE SIZE: _____

FLOATS NUMBER: _____ DIAMETER: _____in DIST. B/T: _____ft HANGING RATIO: _____

LEADLINE TOTAL WEIGHT: _____lbs INTERNAL / EXTERNAL / BOTH NUMBER: _____

SPACE BETWEEN PANELS: Y / N NUMBER: _____ AVERAGE WIDTH: _____ft

BUOYS NUMBER

HIGHFLIERS: Y / N _____

POLYBALLS: Y / N _____

OTHER: Y / N _____

BUOYLINE

NUMBER: _____

LENGTH: _____ft

DIAMETER: _____in

WEAK LINKS

USED ON SURFACE: Y / N

NUMBER: _____

TYPE: _____

USED ON STRING: Y / N

NUMBER: _____

TYPE: _____

TIE DOWNS

USED: Y / N

LENGTH: _____ft

MM DETERRENT DEVICES

ACTIVE USED: Y / N

NUMBER: _____

FREQUENCY: _____kHz

BRAND: _____

PASSIVE USED: Y / N

NUMBER: _____

DESCRIBE IN COMMENTS

COMMENTS:

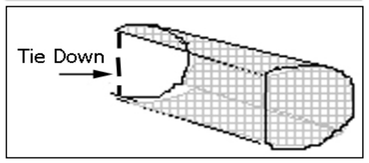
01/12/12

HAUL ID:_____ (office only) GEAR ID:_____ (office only)

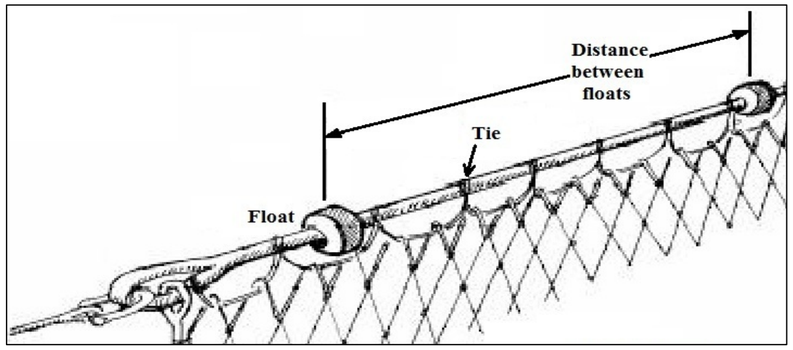
WEAK LINK TYPE CODES:

0 = Unknown
1 = Rope of Appropriate Breaking Strength
2 = Off the Shelf
3 = Overhand Knot
4 = Hog Rings
8 = Combination
9 = Other

ANCHOR STYLES



Twine Size	Monofilament Diameter
#2 (210/2)	.23mm
#3 (210/3 or #69)	.28mm
#4 (210/4 or #104)	.33mm
#6 (210/6 or #139)	.40mm
#7	.45mm
#8 (#177)	.47mm
#9/#10 (210/9 or #208)	.52mm
#12 (210/12 or #277)	.57mm
#14	.62mm
#16	.66mm
#18	.70mm
#20	.74mm
#24	.81mm
#30	.90mm
#40	1.05mm



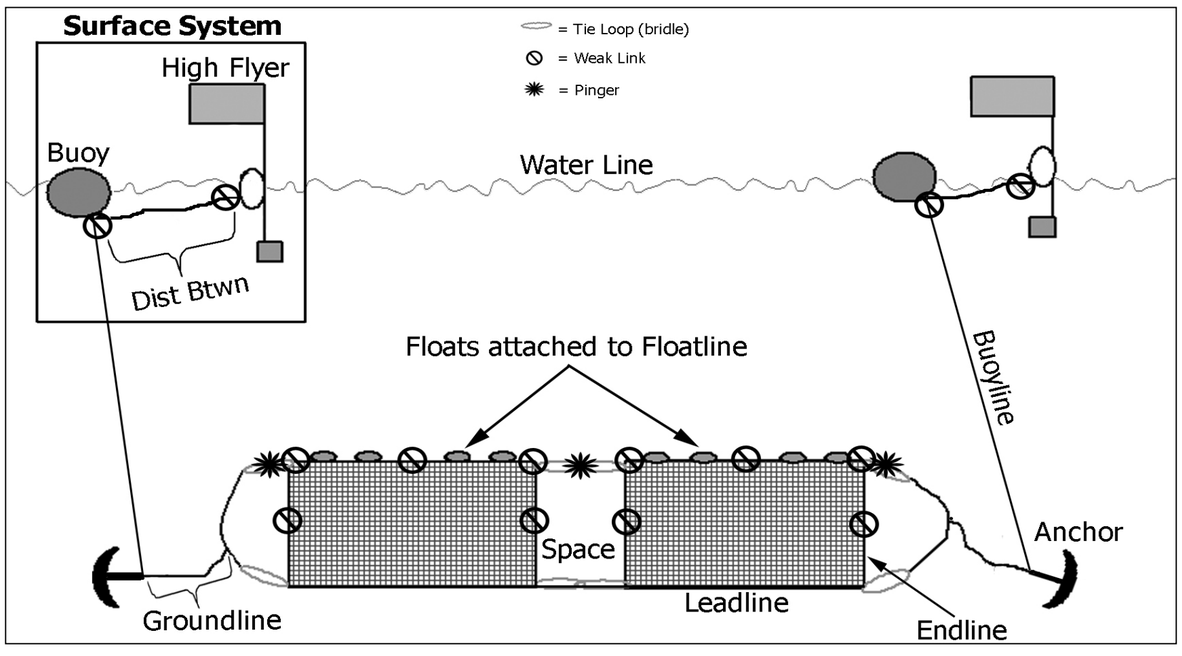


Photo Credit: NOAA Fisheries Service Northeast Regional Office (Original image modified to include additional information).

ADDITIONAL COMMENTS

WHOLE STRING LENGTH: Nearest foot
NOTE: If there is a space between two nets, **do not** include this distance in the net length.
TOTAL WEIGHT OF LEADLINE: Nearest pound
GROUNDLINE LENGTH: Nearest foot
GROUNDLINE DIAMETER: inches, 3 decimal places
ANCHORS TOTAL WEIGHT: Nearest pound
BUOYLINE LENGTH: Nearest foot
DIAMETER: inches, 3 decimal places
TIEDOWNS LENGTH: Nearest tenth of a foot
PANEL LENGTH: Nearest foot
NOTE: If there is a space between two nets, **do not** include this distance in the net length.

PANEL DEPTH (endline): Nearest tenth of a foot
LENGTH OF DROPLINES: Nearest foot
MESH SIZE: inches, 2 decimal places
FLOAT DIAMETER: Nearest tenth of an inch
DISTANCE BETWEEN FLOATS: Nearest foot
HANGING RATIO (H/R): Fractional ratio **If the Captain knows the hanging ratio of the net, record it on the data sheet. If not, leave this line blank.**
PANEL LEADLINE WEIGHT: Nearest pound
SPACES AVERAGE WIDTH: Nearest foot

Trip ID_____(office only)
Haul ID_____(office only)

Southeast Fisheries Science Center
Gillnet Fishery Haul Log

OBS/TRIP#: _____ VESSEL NAME: _____ VESSEL NUMBER:_____

LANDING DATE (mm/dd/yyyy): _____ INCIDENTAL TAKE: Y / N **CATCH:** Y / N

SET:_____ TARGET SPECIES: _____

GEAR CHARACTERISTICS

GEAR NUMBER: _____ GEAR CODE: _____

ENVIRONMENTAL (taken during set)

BOTTOM DEPTH (ft): _____ BOTTOM TYPE: _____ WIND DIRECTION (°): _____

WIND SPEED (kts): _____ WAVE HEIGHT (ft): _____ TDR USED: Y / N

SET/HAUL TABLE

SET/HAUL	DATE	TIME	LATITUDE	LONGITUDE	TEMP (ºF)
SET BEGIN	/ /	:	° .	° .	
SET END	/ /	:	° .	° .	
HAUL BEGIN	/ /	:	° .	° .	
HAUL END	/ /	:	° .	° .	

DURING HAULBACK

SEABIRDS PRESENT: Y / N **SPECIES: _____**

MARINE MAMMALS PRESENT: Y / N **SPECIES: _____**

SEA TURTLES PRESENT: Y / N **SPECIES: _____**

NOTES:

_____

_____

_____

_____

_____

AV. BOTTOM TEMP (ºF): _____(office only)

Page _____ of _____ Trip ID_____(office only) Haul ID_____(office only)

Southeast Fisheries Science Center
Gillnet Fishery Catch Worksheet

OBS/TRIP #: _____ SET #: _____

ESTIMATED FORK LENGTHS – PANEL: _____ MESH SIZE: _____in

Species	Code	Total # Kept	Total # Discard Live	Total # Discard Dead		000-030		030-060		060-090		090-120		120-150		150-180		180-210		210-240		Status when boated		
																						Alive		Dead

ESTIMATED FORK LENGTHS – PANEL: _____ MESH SIZE: _____in

Species	Code	Total # Kept	Total # Discard Live	Total # Discard Dead		000-030		030-060		060-090		090-120		120-150		150-180		180-210		210-240		Status when boated		
																						Alive		Dead

12/05/11

Page _____ of _____ Trip ID______(office only) Haul ID______(office only)

GILLNET ANIMAL LOG

OBS/TRIP #: __________ SET #: ______ PANEL: _____ MESH SIZE: _______in

SPECIES			**LENGTH (cm)** Straight line (1) Curved line (2) Estimated (3)		**SEX** M F U	**TAG # OR COMMENT**	**TAG CODE** Released (1) Retagged (2) Recaptured (3)	**SAMPLES TAKEN** (Check appropriate boxes)					
Spec #	Name	Code	FL	Code				Oto	Vert	Stom	Repro	Fin	Pic

COMMENTS

12/05/11

Page _____ of _____ Trip ID______(office only) Haul ID______(office only)

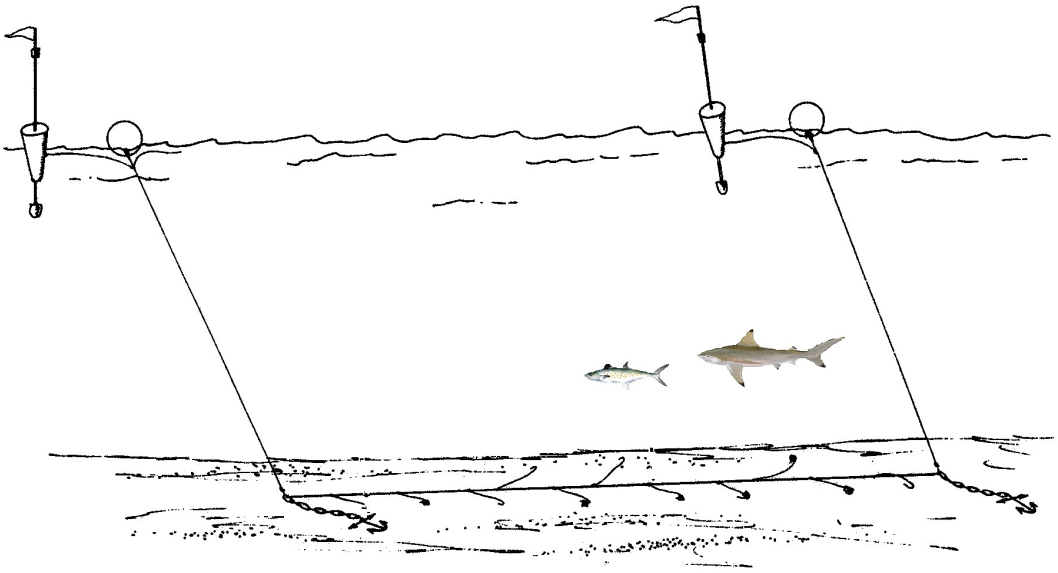
GILLNET ANIMAL LOG

OBS/TRIP #: __________ SET #: ______ PANEL: _____ MESH SIZE: _______in

SPECIES			LENGTH (cm) Straight line (1) Curved line (2) Estimated (3)		SEX M F U	TAG # OR COMMENT	TAG CODE Released (1) Retagged (2) Recaptured (3)	SAMPLES TAKEN (Check appropriate boxes)					
Spec #	Name	Code	FL	Code				Oto	Vert	Stom	Repro	Fin	Pic

COMMENTS

Shark Bottom Longline Observer Program Manual



Updated by Samantha Faller, Dana Jordan, Bradley Smith &Alyssa Mathers

JULY 2022

NOAA Fisheries Panama City Laboratory
Southeast Fisheries Science Center

SBLOP TRIP SUMMARY INSTRUCTIONS

The Trip Summary Log is to be the cover sheet of any Shark Bottom Longline Observer Program trip data. It is to be filled out after the trip. If multiple trips are conducted on the same vessel, there must be a trip summary for each trip.

If information is not available or unknown for any field except a "NO/YES" question, record the appropriate dash (-) or unknown code (U or 0) in the field.

OBS TRIP #: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record "UNNAMED".
Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

OWNER/CAPTAIN NAME: Record the first and last name of the person responsible for daily vessel operations, and circle whether this is the owner, captain, or both of the vessel, if both are yes, a circle is not necessary.

 # OF CREW: Record number of persons onboard including the captain, but not including observer

INCIDENTAL TAKE Y / N: Indicate whether incidental take was caught (marine mammal, sea turtle, sawfish, sturgeon or sea bird) by circling the appropriate letter.

IF YES, WHAT SET NUMBER(S): Record which set/haul numbers that an incidental take was caught.

BIOLOGICAL SAMPLES TAKEN Y / N: Indicate whether biological samples were taken during this trip by circling the appropriate letter.

CHECK IN SHEET INCLUDED Y / N: Indicate whether a sample check in form was used for this trip by circling the appropriate letter.

DEPARTURE DATE & TIME: Record the month, day, year and time that the vessel left the dock and the trip began (mm/dd/yyyy). Record time on a 24-hour clock.

DEPARTURE PORT: Record the city and the state (comment the specific dock location, if available) where the vessel left the dock and the trip began.
RETURN DATE & TIME: Record the month, day, year, and time that the vessel returned to the dock and the trip ended (mm/dd/yyyy). Record time on a 24-hour clock.
RETURN PORT: Record the city and the state (comment the specific dock location, if available) where the vessel returned to the dock and the trip ended.

SEA DAYS: Record the number of days spent at sea, this includes any steaming and active fishing. One (1) sea day is tallied for any amount of time spent at sea, even if less than 24 hours. If the vessel leaves the dock, fishes, returns and then sails again on the same day; each trip would be recorded as one sea day but only one sea day will be counted towards sea day coverage. If a vessel leaves the dock and returns without setting and/or retrieving gear this would be a false strike. In the **Shark Research Fishery**, there would be a false strike if a boat leaves the dock and returns without fishing and there is more than a day until the vessel leaves the dock again.

NUMBER OF SETS: Record the total amount of sets/hauls done during the trip. Include all sets/hauls, whether they were observed or not.

FALSE STRIKE Y / N: A false strike is when a vessel leaves the dock and returns without setting and/or retrieving gear. Indicate whether a false strike occurred by circling the appropriate letter. If the trip is a false strike this would be 1 sea day and the next trip would be the next trip ID. In the **Shark Research Fishery**, there would be a false strike if a boat leaves the dock and returns without fishing and there is more than a day until the vessel leaves the dock again. On a false strike trip there will only be a TRIP Summary log, no other logs are used.

TARGET (GN): For use on gillnet trips only.

TARGET (Reef and Shark): Record the three-letter species abbreviation for the species being targeted with the gear type. This information is obtained from the captain prior to fishing activity. If the specific species being targeted is known, use the species specific code (ex. SSB = sandbar, YEG = yellowedge grouper). If the vessel is targeting small coastal sharks or large coastal sharks use SHX and comment details. MIX targets should only happen if one gear is targeting more than one different class of species at one time (ex. SAS and SMK are being targeted).
SHX = sharks
GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species

Example: If a gear has three 8/0 hooks for snapper and one 14/0 hook at the end for grouper, then this would be a TEL target. If they are using a gear with all 8/0 hooks to target snapper and then use the same gear to target a mixture of snapper and grouper, this would still just be SNA target. Target is for the PREDOMINANT target species, despite what else they may hope to catch with that rigging.

TARGET SPECIFICATION: Record whether the trip is fishing for sharks within the sandbar research fishery (SRF) or whether this trip is a grouper set for deep-water (DEEP GRP) or shallow-water (SHALLOW GRP).

WEIGH OUT LOCATION: Record the location that the weigh out of the catch from the trip was done. Name of the fish house, dealer, and/or dock would be ideal. If this is a private sell, record “private sell” or the name of the buyer. If this is unknown, record N/A. In the SRF, a copy of the weigh out is required.

COPY INCLUDED Y / N: Indicate whether a copy of the weigh out is included with the trip data or not. Every effort to obtain a copy of the weigh out form should be made, if a paper copy cannot be obtained, a photograph is acceptable. In the SRF, a copy of the weigh out is required. If the weigh out occurs after the observer has left the area, the captain/owner/dealer/fish house can fax (850-235-3559), mail (3500 Delwood Beach Rd Panama City, FL 32408) or email a copy of the weigh out to the observer coordinator.

INVOICE: Indicate whether the reimbursement invoice is left with the captain or not applicable. If the trip is one sea day and/or there was no food available/offered to the observer, an invoice should not be issued and N/A should be recorded. Otherwise issue a invoice. **It is the observer’s responsibility to give the form to the owner/captain after the trip.** The observer should fill out their Observer Trip ID, observer name, vessel name, dates of the trip, meal expenses, and total cost. **Be sure to get captain/owner SS# and signature!** The observer can turn in the reimbursement invoice with their data, or the owner/captain can mail or fax a copy to the observer coordinator. Multiple trips on the same vessel can be included in one invoice. Be sure to record which trip the invoice is included with.

VESSEL ACCOMMODATIONS: Record observations about the vessel and vessel accommodations including the presence or absence of a head, AC or heat, a bunk and bunk location, fresh water, shower, and infections and cleanliness of crew. These observations are for the observer and the observer program only, and will help with future coverage of the vessel. In the case of an either-or option, circle the option that fits the yes observation, if both are yes, a circle is not necessary.

COMMENTS: Record any comments about the trip, the vessel, the crew, or any observations about the catch. Information on drug/alcohol use by the captain or crew should be recorded here as well. Please use the comments section liberally. If more space is required, use the back of the sheet and include "see back" on the front.

SBLOP GEAR LOG INSTRUCTIONS

This log contains detailed descriptions about the shark bottom longline gear fished. This gear log describes the average configurations of the gear on all hauls that used the same gear. One gear log is used to describe each different gear within a single trip. Each gear log is numbered consecutively starting from gear number 1. Significant changes in target, number of hooks, length of mainline, type of mainline, or fishing style between hauls may result in different gear logs.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of Page:

GEAR ID __1__ LONGLINE GEAR LOG

1 GEAR ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP NUMBER 1	VESSEL NAME 2	VESSEL NUMBER 3	DATE LANDED (mm/dd/yyyy) 4

GEAR NUMBER 5	# OF HAULS 6	AVG. # HOOKS 7	TOTAL # HOOKS (trip start) 8

1 OBS/ TRIP NUMBER: Record the three-character observer identifier (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record “UNNAMED”. Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL NUMBER: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

4 DATE LANDED: Record the month, day and year that the vessel returned to the dock/port (mm/dd/yyyy). This may not be the same day fish were unloaded and sold. Example: 01/01/2020

5 GEAR NUMBER: Record the consecutive number, starting at 1, assigned to each gear configuration. Additional gear logs would be used in the following cases:

- >50% difference in the mainline length, type, and/or number of hooks between hauls
- change in fishing method (bottom longline to pelagic)
- change in the target species (SHX to GRP)

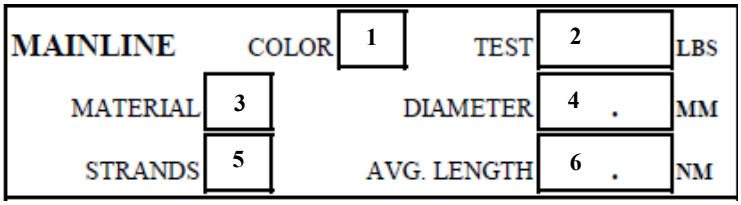
Example: The first two hauls use 18.0 circle hooks to target SHX (gear number 1). The next two hauls use 12.0 circle hooks to target reef fish. A second gear log would then be completed and numbered (gear number 2). The last haul uses a combination of these hooks targeting MIX (both SHX and REF). A third gear log would be completed and numbered (gear number 3).

6 # OF HAULS: Record the number of hauls that the gear was used in.

7 AVG. # HOOKS: Record the average amount of hooks set. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

8 TOTALS # HOOKS (trip start): Record the total number of hooks onboard at the start of the trip. This is NOT a sum or average of all hauls. This is a count at the start of a trip of all the assembled gangions with hooks, including all hooks in boxes, which might be used to fish. This may be obtained from the captain.

MAINLINE:



1 COLOR: Record the color of the mainline by writing the numerical code (1-9). If more than one color is present assign the code of 7 (multi). Steel mainlines are given the code 9 (other). Describe the codes 7 and 9 in the COMMENTS field.

COLOR CODES:

1 Clear
2 White
3 Pink
4 Black
5 Green
6 Blue
7 Multi (for any mixture of colors)
8 Red
9 Other (describe in comments)

2 TEST: Record the test or dry breaking strength of the mainline in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 600-1200 lbs.

3 MATERIAL: Record the material of the mainline used by writing the numerical code (1-3, 9). Please describe other materials in the COMMENTS field.

MATERIAL CODES:

1 Nylon
2 Cotton
3 Steel wire
9 Other

4 DIAMETER: Record to the nearest tenth of a millimeter (mm) the diameter of the mainline. This may be obtained from the captain. If unable to record, submit a labeled sample piece with

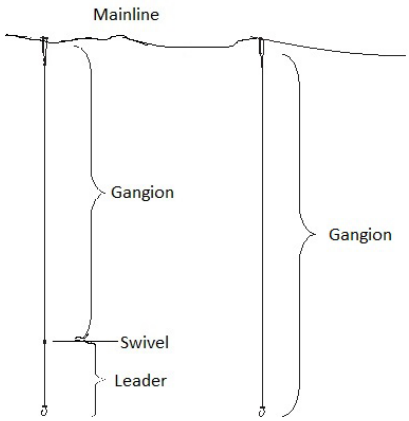
your data. General ranges found are 3.0-4.2 mm. It is common for the diameter of steel wire to be provided to you in inches by the captain, this would be converted as 1in = 25.4mm. Record this calculation in the COMMENTS field.

5 STRANDS: Record the number of strands of material that make up the mainline. Nylon (monofilament) should be 1 strand. Steel wire is usually 7x7, which should be 49 strands.

6 AVG. LENGTH: Record the average length of the mainline in nautical miles (nm). This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

GANGIONS:

GANGIONS	COLOR 1	TEST 2	LBS	
MATERIAL 3		DIAMETER 4 .	MM	
	SWIVELS PER GANGION 5			
AVG. LENGTH 6	FT	AVG. # 7		
	DISTANCE BETWEEN GANGIONS 8		FT	
LEADERS USED? ☐ 9		MATERIAL 10		
TEST 11	LBS	LENGTH 12	IN	



This is usually a 100-1200 pounds (lbs.) test nylon monofilament attached to a mainline by a snap. A gangion may vary in length and have about two swivels, one at the snap and another some distance above the hook. Fishers may refer to this as a "leader".

1 COLOR: Record the color of the gangions by writing the numerical code (1-9). If more than one color is present assign the color a code of 7 (multi). Steel mainlines are given the code 9 (other). Describe the codes 7 and 9 all other colors in COMMENTS field.

COLOR CODES:

1 Clear
2 White
3 Pink
4 Black
5 Green
6 Blue
7 Multi (for any mixture of colors)
8 Red
9 Other (describe in comments)

2 TEST: Record the test or dry breaking strength of the gangions in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 300-1200 lbs.

3 MATERIAL: Record the material of the gangions used by writing the numerical code (1-3, 9). Please describe other materials in the COMMENTS field.

MATERIAL CODES:

1 Nylon
2 Cotton
3 Steel wire
9 Other

4 DIAMETER: Record to the nearest tenth of a millimeter (mm) the diameter of the gangions. This may be obtained from the captain. If unable to record, submit a labeled sample piece with your data. General ranges found are 1.8-4.2 mm. It is common for the diameter of steel wire to be provided to you in inches by the captain. This would be converted as 1in = 25.4mm. Record this calculation in the COMMENTS field.

5 SWIVELS PER GANGION: Record the number of swivels used per gangion. One is generally located at the snap and a second swivel can be located some distance above the hook between the gangion and the leader or attached to the hook. Swivels with 3 loops are considered to only be 1 swivel.

6 AVG. LENGTH: Record, to the nearest foot (ft.), the average length of all the gangions used on the gear. Gangion length should not include the leader length. This is an average of all hauls with the same gear configuration.

7 AVG #: Record the amount of gangions used on the gear. This is an average of all hauls with the same gear configuration.

8 DISTANCE BETWEEN GANGIONS: Calculate the distance, in whole feet (ft.), between gangions. This is an average of all hauls with the same gear configuration. To estimate the distance between gangions: convert the average mainline length from nautical miles to feet by multiplying average mainline length by 6080 feet. Then divide the mainline length in feet by the average number of the hooks plus 1. Record this calculation in the COMMENTS field.
Avg. Mainline Length (ft.) = Avg. Mainline Length (nm.) * 6080 ft. Distance Between Gangions = Avg. Mainline Length (ft.) / (Avg # Hooks +1)

9 LEADERS USED?: Indicate if leaders are used between the gangion and the hook. This is a section of material that is different from the gangion, this is attached to the hook and is between the gangion and the hook. It may be mono or steel wire and may have a swivel at either end. The purpose of a leader is to reduce bite offs, make hook replacement easier and help to maintain the gangion's length. Fishers may refer to this as a "tail".

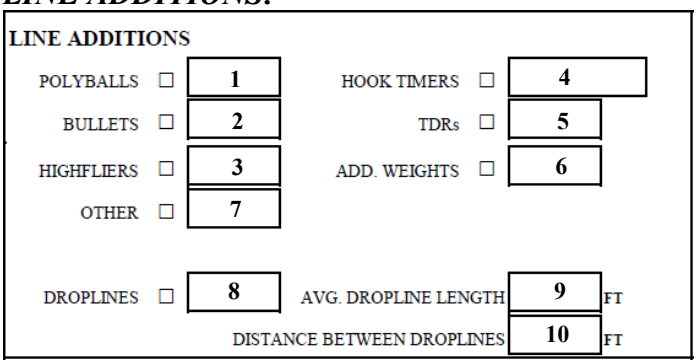
10 LEADER LENGTH: If present, record the length of the leader to the nearest inch (in). This is an average of all hauls with the same gear configuration.

11 LEADER TEST: If present, record the test or dry breaking strength of the leaders in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 300-1200 lbs.

12 LEADER MATERIAL: If present, record the material of the leaders used by writing the numerical code (1-3, 9). Please describe other materials in COMMENTS field.

MATERIAL CODES:
1 Nylon
2 Cotton
3 Steel wire
9 Other

LINE ADDITIONS:



1 POLYBALLS: Indicate if polyballs are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

2 BULLETS: Indicate if bullets (sometimes referred to as Daubs) are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

3 HIGHFLIERS: Indicate if highfliers are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field. Highfliers are a marker made up of a pole set through a float. One end of the pole is weighted so that it floats upright. There may be a simple flag, a strobe, reflective tape, a radar reflector or any combination of such attached to the top of the pole to make it more visible. A highflyer is usually used to mark the beginning and end of the mainline for bottom longlines, but can sometimes be used as reference points in the gear.

4 HOOKTIMERS: Indicate if hooktimers are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field. These are usually used for special projects and will come with instructions.

5 TDRs: Indicate if TDRs are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field. These are usually used for special projects and will come with instructions.

6 ADD. LINE WTS: Indicate if weights are placed along the length of the mainline. These are sometimes associated with droplines or floats. These are external and can be considered anchors. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

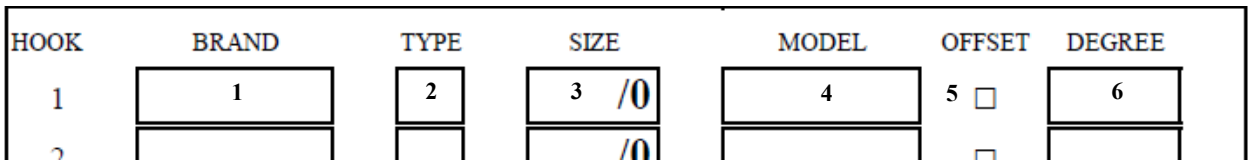
7 OTHER LINE ADDITIONS: Indicate if line additions, other then what is listed, are used. Record other types in the comments section. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

8 DROPLINES: Indicate if droplines are used. Droplines are lines attached to the mainline and a float of some kind. These are usually used as a reference point, If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

9 AVG. DROPLINE LENGTH: If present, record the length of the droplines to the nearest foot (ft.). This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

10 DISTANCE BETWEEN DROPLINES: If present, record the distance, in whole feet (ft.), between the droplines. This is an average of all hauls with the same gear configuration. To estimate the distance between gangions: convert the average mainline length from nautical miles to feet by multiplying average mainline length by 6080 feet. Then divide the mainline length in feet by the average number of the hooks plus 1. Record these calculations in the COMMENTS field.
Avg. Mainline Length (ft.) = Avg. Mainline Length (nm.) * 6080 ft. Distance Between Droplines = Avg. Mainline Length (ft.) / (Avg # Droplines +1)

HOOKS:



1 BRAND: Record the hook brand name in all capital letters and one word. Lindgran/Pitman is abbreviated as LGPN. This information can be obtained from the captain and/or verified from a manufacturer label. If this information is unknown or cannot be verified, record UNKNOWN and take a picture of the hook with the ruler for scale. Record additional hooks, over the amount allotted, in comments. Example: MUSTAD, EAGLECLAW, LGPN (for Lindgren/Pitman), HILINER.

2 TYPE: Write in C for circle, J for J-hook, T for treble or L for lure. L (Lure) is any Jig, Spoon, Skirt, or artificial bait. If the type is L (Lure), then a picture is required.

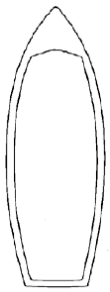
3 SIZE: Record the hook size. This information can be obtained from the captain and/or verified from a manufacturer label.
Example: 9/0 = nine aught

4 MODEL: Record the hook model or pattern number in one word. For Lindgren/Pitman (LGPN) black carbon circle hooks, use the code LPCIRBL.

5 OFFSETS: Offset refers to the amount of deviation in the plane of the hook point relative to that of the shank. If yes, check the box. Hooks can be offset manually (by the fishermen) or by the manufacturer.

6 DEGREES OFFSET: Record the degrees offset to the nearest whole number. This can be obtained from the manufacturer label or the captain. The standard is 10°. If done manually or the offset is unknown, estimate the degrees to the nearest whole number and take a picture.

VESSEL DIAGRAM:

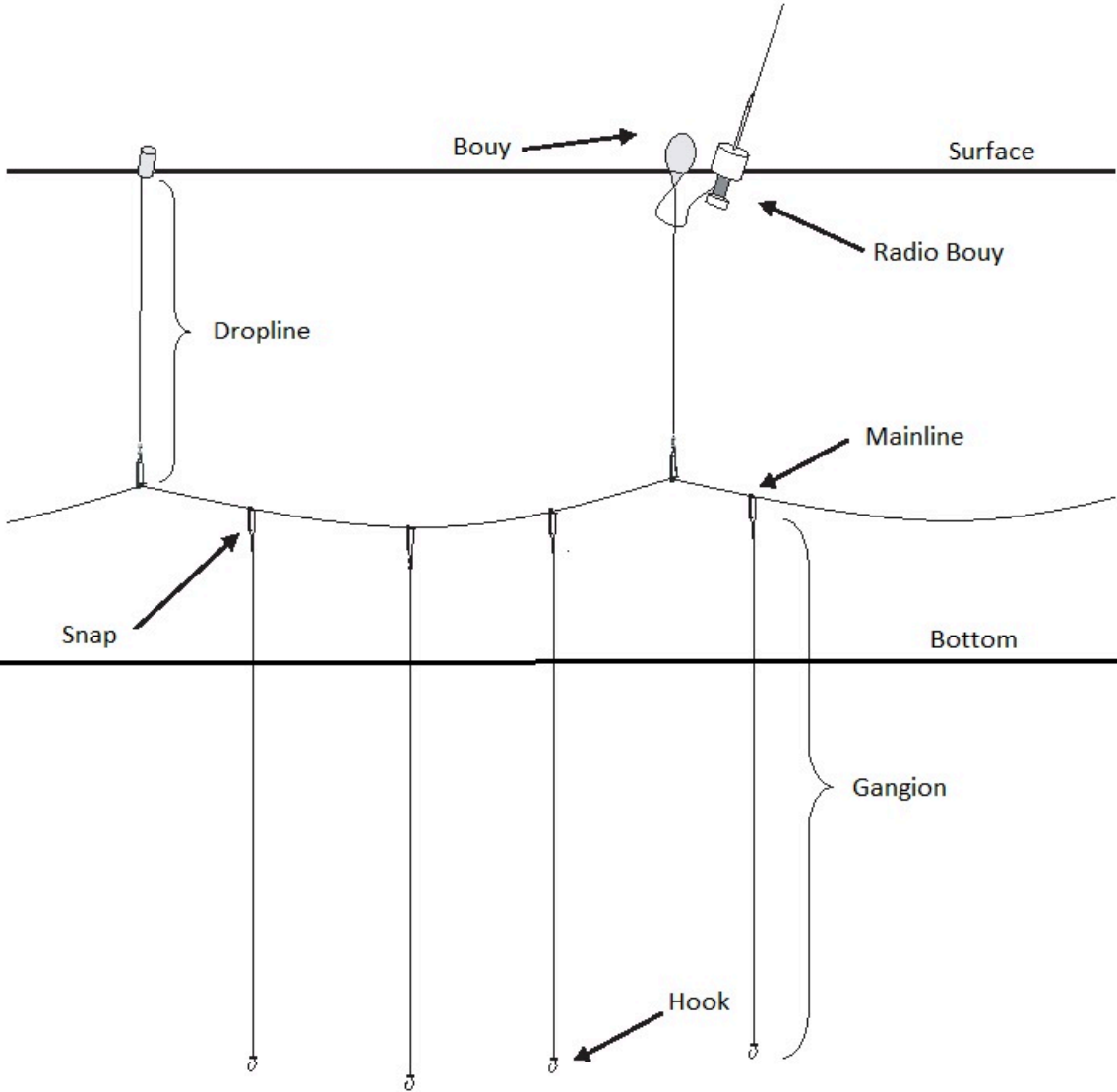


SKETCH: Indicate the general position of the longline reels and hauling station on the vessel diagram.

Suggested icons:

¤ Hauling Station ■ Longline Reel ← Flow of line

COMMENTS: Use the comments section for any information in addition to what was recorded, to make drawings or diagrams if the gear setup is unusual, and to explain other or unknown options. If more space is required, it is acceptable to use the back of the logs, in that case the comment “see back” is required.


Bouy
Surface
Radio Bouy
Dropline
Mainline
Snap
Bottom
Gangion
Hook

SBLOP HAUL LOG INSTRUCTIONS

This log contains all the physical information relating location and effort of a single string fished. All Shark Bottom Longline Haul logs will come after the associated Longline Gear Logs, ordered in numerical order according to haul number. The LONGLINE HAUL LOG will serve as a cover sheet for the haul and the ANIMAL LOG/S will follow with all associated catch.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of the Page:

HAUL ID 1 LONGLINE HAUL LOG SAMPLES TAKEN? ☐ 2 PAGE 1 of 3

1 HAUL ID: For lab use only. This number refers to the database. Please disregard.

2 SAMPLES TAKEN?: Check this box if there are biological samples taken during haulback.

3 PAGE 1 of ___: Record the total number of pages used on THIS HAUL and associated **ANIMAL LOGS.** The front page of any haul log will always be page 1. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Do not include incidental take log or turtle forms in this number.

HEADER:

DATE LANDED M 1 M D D Y Y | TRIP ID 2 | VESSEL NAME 3 | VESSEL # 4

HAUL # 5 | GEAR CODE 6 | GEAR NUMBER 7 | TARGET 8 | HAUL OBS? ☐9 | CATCH? ☐10 | INCIDENTAL TAKE? ☐ 11 | SPLIT HAUL?12☐

1 DATE LANDED: Record the month, day and year that the **VESSEL RETURNED TO THE DOCK/PORT** (mm/dd/yyyy). This may not be the same day fish were unloaded and sold. Example: 01/01/2020

2 TRIP ID: Record the three-character observer (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip. Example: ABC001.

3 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record "UNNAMED". Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

4 VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number. Example: USCG documentation number: 234567 or State registration number: FL2345XX

5 HAUL #: Record the haul number, start with 1 for the first haul and continue sequentially for all hauls made within a single trip. A haul is defined as each time a string/gear is set/hauled. Cut/ part offs and gear starts/ends are indications of new haul numbers. If a line is cut/parted off during the set this should be treated as two separate sets and hauls, each having its own haul log and associated animal logs.

6 GEAR CODE: Record the three-digit code for the gear fished during this haul.

675 = Pelagic Longline
676 = Bottom Longline
677 = Shark Rehooking

*Rehooking shark longline occurs when a vessel hauls more sharks than the trip limit and resets the extra catch closer to the dock (usually near the state/federal boundary), the haul back of this set would be recorded and the code would be 677.

7 GEAR NUMBER: Record the consecutive number assigned to the gear configuration that is associated with the gear being used to fish during the haul. This number relates directly to the LONGLINE GEAR LOG gear number. If there are multiple combinations of gear, large differences in mainline length and/or amount of hooks, or a change in target species, then an additional LONGLINE GEAR LOG will be completed and the appropriate gear number entered.

8 TARGET SPECIES: Record the PRIMARY SPECIES being targeted in the haul using the three-character code abbreviations (ex. SSB = sandbar, YEG = yellowedge grouper). This information is obtained from the captain PRIOR to fishing activity. If the vessel is targeting small coastal sharks or large coastal sharks use SHX and comment details. NOTE: A change in target species will require an additional Gear Log and Haul log. MIX targets should only be used if one gear is being used to target various species and the captain lists two or more different species they plan on targeting. If the gear contains more than one hook size that might be a MIX target. Example: The gear contains 8/0 and 12/0 circle hooks to target Vermilion Snapper- SNV and small coastal sharks-SHX. The species Vermilion Snapper- SNV and Gray Triggerfish- TRG are commonly caught on the same gear type and hook size.

SHX = sharks
GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species

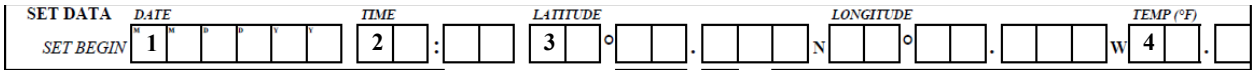
9 HAUL OBS?: Check box to indicate whether the haul was observed. An observed haul is defined as a haul where all of the catch hauled and discard information is recorded. An unobserved haul is defined as a haul where the complete catch and/or discard information is not collected. If you are unable to go on deck due to safety concern or illness, indicate this by NOT checking “HAUL OBS?” and record your reason in the COMMENTS section.

10 CATCH?: Check the box if there was anything caught and the haul has any associated Animal Logs. If the gear is hauled and there is absolutely no catch (“water haul” or “getting skunked”) indicate this on the haul log by NOT checking “CATCH?”. Record “No Catch” in the COMMENTS section.

11 INCIDENTAL TAKE?: Check this box if a marine mammal, sea bird, sawfish, sturgeon, or sea turtle was caught in this haul. An Incidental Take Log MUST be completed for all marine mammals caught, a Turtle Life History Form MUST be completed for each sea turtle caught, and a Protected Species Form MUST be completed for each sea bird, sawfish or sturgeon caught.

12 SPLIT HAUL?: Check box if this haul was a split haul. Refer to split haul section for further instructions. Note: This will also be reflected in the GEAR COND.

SET BEGIN DATA:



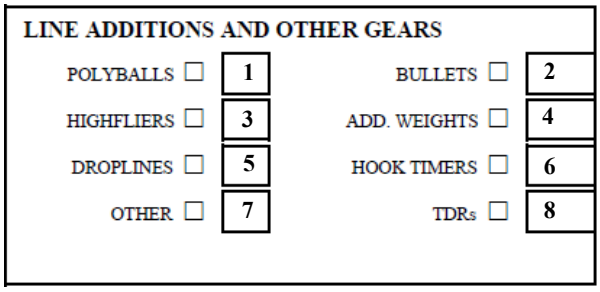
1 SET BEGIN DATE: Record the date (MM/DD/YY) the gear is set out.

2 SET BEGIN TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the first piece of gear (polyball, weight, other line addition or start of the line) ENTERS the water with the intent to fish.

3 SET BEGIN LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the set begin time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 SET BEGIN TEMPERATURE: Record temperature (ºF) when the set begin time is recorded.

LINE ADDITIONS AND OTHER GEARS:



1 POLYBALLS: Indicate if polyballs are used on the gear. If Yes, record the total amount used in the space.

2 BULLETS: Indicate if bullets (sometimes referred to as Daubs) are used on the gear. If Yes, record the total amount used in the space.

3 HIGHFLIERS: Indicate if highfliers are used on the gear. If Yes, record the total amount used in the space. Highfliers are a marker made up of a pole set through a float. One end of the pole is weighted so that it floats upright. There may be a simple flag, a strobe, reflective tape, a

radar reflector or any combination of such attached to the top of the pole to make it more visible. A highflyer is usually used to mark the beginning and end of the mainline for bottom longlines, but can sometimes be used as reference points in the gear.

4 ADD. LINE WTS: Indicate if weights are placed along the length of the mainline. These are sometimes associated with droplines and/or floats. These are external and can be considered anchors. If Yes, record the total amount used in the space. DROPLINES: Indicate if droplines are used. Droplines are lines attached to the mainline and a float of some kind. These are usually used as a reference point, If Yes, record the total amount used in the space.

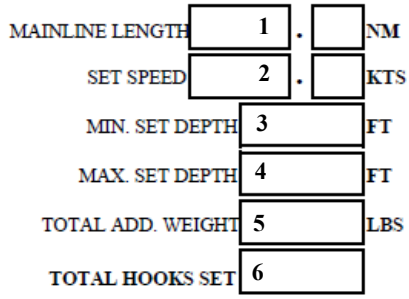
5 DROPLINES: Indicate if droplines are used. Droplines are lines attached to the mainline and a float of some kind. These are usually used as a reference point, If Yes, record the total amount used in the space.

6 HOOKTIMERS: Indicate if hooktimers are used on the gear. If Yes, record the total amount used in the space. These are usually used for special projects and will come with instructions.

7 OTHER: Indicate if line additions, other then what is listed, are used. Record other types in the comments section. If Yes, record the total amount used in the space.

8 TDRs: Indicate if TDRs are used on the gear. If Yes, record the total amount used in the space. These are usually used for special projects and will come with instructions.

HAUL DETAILS:



1 MAINLINE LENGTH: Record the length, to the nearest tenth of a nautical mile (NM), of the main line for this set. Use available electronics or calculate. **Note:** 1 nautical mile ≈ 6080 feet.
Average Set Speed (KTS or NM/HR) * Set Duration (HRS) = Length (NM).

2 SET SPEED: Record the speed of the vessel, to the nearest tenth of a knot (KTS), during the setting of the gear. This should be the average speed obtained from available electronics or calculation. Most GPS units will provide speed in knots, including the ones provided. Can be calculated by mainline length/set duration.

3 MIN. SET DEPTH: Record the minimum depth, to the nearest foot (FT), of the location where the gear was set. This can be obtained from the vessel's instruments or the captain. If

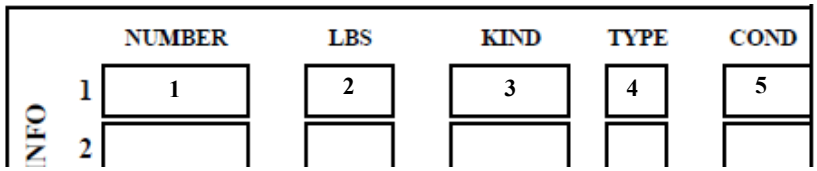
unable to record the depth because the vessel does not have the necessary electronics, COMMENT on haul and trip logs. **Note:** 1 fathom ≈ 6 feet.

4 MAX. SET DEPTH: Record the maximum depth, to the nearest foot (FT), of the location where the gear was set. This can be obtained from the vessel's instruments or the captain. If unable to record depth because vessel does not have the necessary electronics, COMMENT on haul and trip logs.

5 TOTAL ADD. WEIGHT: Record the total weight of additional line weights, to the nearest pound (LB) for this haul. This is the amount of weight attached to the mainline.

6 TOTAL HOOKS SET: Record the amount of hooks set for this haul.

BAIT INFORMATION:



1 NUMBER: Record the amount of individual baits used on this haul (hook number should = bait number). The highest amount of bait used should be listed as bait #1. If more than five baits are used, note the other baits in the COMMENTS. If hooks are being double baited this is still one bait used and the LBS should reflect the additional bait, a comment should also be made.

2 LBS: Record to the nearest pound (lbs.) the estimated total weight of bait used during the haul. Actual weight is acceptable. If the vessel is using Chum COMMENT the estimated total weight used during the haul and the kind of bait used in the chum.

3 KIND: Record the code that identifies the bait used.

1 = Mackerel	14 = Flatfish/Flounder	27 = Sparidae
2 = Herring/menhaden	15 = Grouper	28 = Scorpionfish
3 = Squid	16 = Bluefish	29 = Lizardfish
4 = Artificial	17 = Tilefish	30 = Remora
5 = Sardine	18 = Jacks	31 = Needlefish
6 = Scad	19 = Barracuda	32 = Snapper
7 = Shark	20 = Mullet	33 = Chum
8 = Skate/ray	21 = Ladyfish	34 = Ballyhoo
9 = Little tunny/bonita	22 = Toadfish	97 = Unknown
10 = Grunts	23 = Eel	98 = Unknown fish scraps
11 = Catfish	24 = Drum family	99 = Other describe
12 = Tunas	25 = Cichlid	
13 = Swordfish	26 = Hake	

Note: If scraps of an identifiable species were used, record that species KIND code and COMMENT the parts used. Grouper stomachs are still KIND 15, add in COMMENTS that stomachs were used.

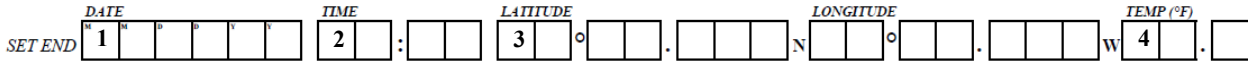
4 TYPE: Record the one-digit code that describes the type of bait used. TYPE CODE 5 is only used in conjunction with COND CODE 6.

1 = Whole	4 = Chum
2 = Cut	5 = Soak
3 = Live	9 = Other

5 COND: Record the one-digit code that describes the condition of the bait used. If a type of bait is used in more than one condition record COND 1-4 in the table and record additional conditions in the COMMENTS. Example: A bait type may be frozen and salted, record COND 1 and COMMENT COND 5.

1 = Frozen	5 = Salted
2 = Semi Frozen	6 = Reused
3 = Thawed	9 = Other
4 = Fresh	

SET END DATA:



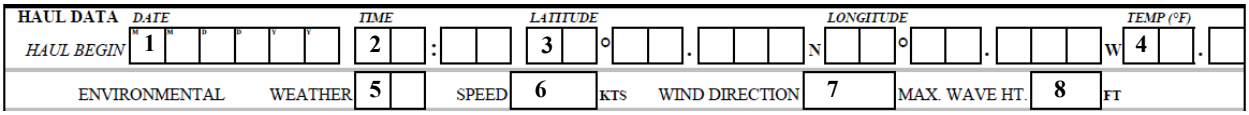
1 SET END DATE: Record the date (MM/DD/YY) that the set was completed.

2 SET END TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the last line addition or end of line is cast away from the vessel and the set is completed.

3 SET END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes at the completion of the set (DDº MM.mmm). **NOTE:** If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 SET END TEMPERATURE: Record temperature (ºF) at completion of the set.

HAUL BEGIN DATA:



1 HAUL BEGIN DATE: Record the date (MM/DD/YY) when the retrieval of the gear begins.

2 HAUL BEGIN TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the first piece of gear (polyball, weight, other line addition or start of the line) is pulled ABOARD the vessel.

3 HAUL BEGIN LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the haul begin time is recorded. **NOTE:** If you can only get LORAN, then record both TD's (letters) and LORAN

chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 SET BEGIN TEMPERATURE: Record temperature (ºF) when the haul begin time is recorded.

5 WEATHER: Record the two-digit code for the weather when the haul begin time is recorded.

01 = Clear	07 = Thunderstorms with lightning
02 = Partly cloudy	08 =Rain with fog
03= Continuous layer of clouds	09 = Fog or thick haze
04= Drizzle	10 = Snow or rain and snow mixed
05 = Continuous Rain	11 = Blowing snow
06 = Intermittent Rain/Showers	99 = Other, please describe in COMMENTS

6 WIND SPEED: Record the MAXIMUM wind speed, in whole knots (kts), when the haul begin time is recorded. If the value is less than 10, record a 0 in front of the value, 5 kts should be recorded as 05 kts. If wind is light or wind direction is difficult to determine, record either "VAR" for variable wind or a dash "-"for undetermined.

7 DIRECTION: Record the 3-digit direction, in compass DEGREES, that the wind is coming from when the haul begin time is recorded. Wind coming from the northeast should be recorded as 045. If wind is light or wind direction is difficult to determine, record either "VAR" for variable wind or a dash "-"for undetermined. The direction north is recorded as 000.

8 MAX WAVE HEIGHT: Record the MAXIMUM wave height, in whole feet (ft.), when the haul begin time is recorded. If the value is less than 10 record a 0 in front of the value, 5 ft. should be recorded as 05 ft. If the wave height is LESS THAN six inches, record 00.

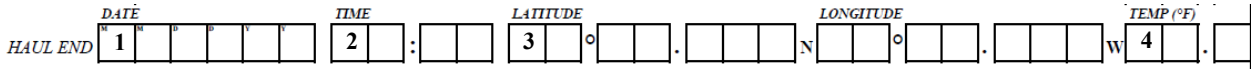
DELAY:

1 DELAY >20 MINUTES?: Indicate if there was a single event (part offs, mechanical repairs, tangles or other delays) that is greater than 20 minutes (0.3 hrs.).

2 DETAILS: Describe each delay that was >20 minutes, giving times and detailed descriptions of the event. Multiple part offs that are under 20 minutes may occur, BUT they are NOT cumulative and do NOT count towards the total delay. Comment all other delay instances <20 minutes in the haul COMMENTS section.

3 TOTAL TIME LOST (HRS): Record time in Hours to the nearest tenth (20 mins. ≈ 00.3HRS).

HAUL END DATA:



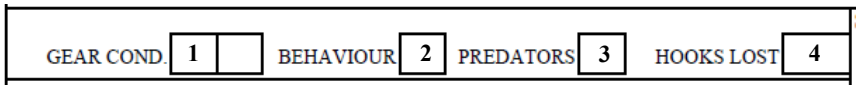
1 HAUL END DATE: Record the date (MM/DD/YY) that the haul is completed.

2 HAUL END TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the last line addition or end of line returned to the vessel and the haul is completed. If the line is parted off, tangled, or lost and left in the water more than 6 additional hours, not recovered or purposely left in the water. The time of part off would be the end of haul time. If the gear is recovered after 6 hours or being purposely part off this would be a split haul. Refer to spilt haul section for further instructions.

3 HAUL END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes at the completion of the haul (DDº MM.mmm). NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 HAUL END TEMPERATURE: Record temperature (ºF) at completion of the haul.

HAUL END CONDITIONS:



1 GEAR COND: Indicate the condition of the gear at the completion of the haul back by recording the most appropriate two-digit code listed below.

60 = No gear damage with greater than 10% hooks lost
61 = No gear damage with less than or equal to 10% hooks lost
62 = Less than 50% fouled gear due to weather/oceanic conditions. Gear tangled, spun up or otherwise lowered gear fishability.
63 = More than 50% fouled gear due to weather/oceanic conditions. Gear tangled, spun up or otherwise lowered gear fishability.
64 = Less than 50% fouled gear due to fish on the line. Gear tangled, spun up or otherwise lowered gear fishability.
65 = More than 50% fouled gear due to fish on the line. Gear tangled, spun up or otherwise lowered gear fishability
66 = Parted off, gear recovered
67 = Parted off, gear not recovered
68 = Gear completely damaged or lost
69 = Split haul (portion of gear having additional soak time)
70 = Parted off, gear partially recovered
71 = Trip limit reached, gear left in water
99 = Other: Please specify other gear condition in COMMENTS

2 BEHAVIOUR: Indicate the fishing behavior employed with codes list below.

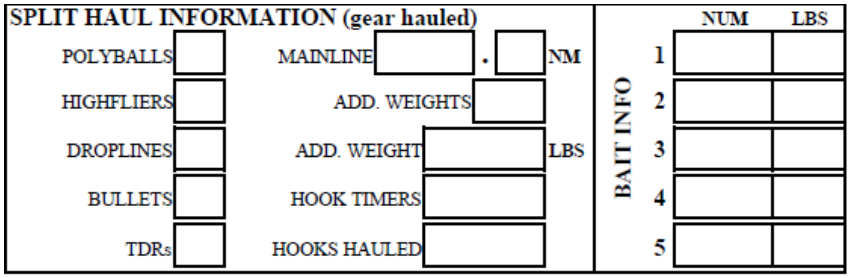
1 = Normal haul (first hook set is first hook hauled)
2 = Reverse haul (last hook set is first hook hauled)
6 = Other
9 = Unknown

3 PREDATORS: Record the presence of predators around the vessel during the haulback:

0 = None 1 = Dolphins
2 = Sharks 3 = Sea Birds
4 = Other 5 =Combination (note in comments)
9 = Unknown

4 HOOKS LOST: Record the number of hooks that did not return to the boat. This is directly related to GEAR COND field and should include "bite offs", and missing hooks. "Cut offs" are not considered hooks lost and should not be recorded here, this number can be recorded in the comments.

SPLIT HAULS:



A split haul occurs when a portion of the longline gear has a longer soak time that the rest of it. This situation may arise with a part off that takes **more than 6 hours** to recover or when the **trip limit is reached** and the line is intentionally parted. In either situation, the haul should be **split into two hauls** reflecting the two separate retrievals. The new haul will have the next sequential haul number unless the trip limit has been reached. If the trip limit is reached and the vessel returns to the dock the portion with the longer soak time will be on a new trip. In the case where the set information was observed then the information shall be recorded in the SET DATA; but if the set was not observed the information, if provided by captain or other means, can be recorded or commented but the comment "set data was not observed" needs to be included in the COMMENTS section of the haul log. **Note:** Gear Condition Code containing "parted off", mean unintentional gear breaks or part offs.

In the case of a split haul the original haul can have gear condition codes:

66 = Parted off, gear recovered
70 = Parted off, gear partially recovered
71 = Trip limit reached, gear left in water

Where the second haul of the gear could have gear condition codes:

69: SPLIT Haul (portion of gear having additional soak time)

Example: Reaching the trip limit is common for Large Coastal Shark (LCS) trips because the trip limit of 33 sharks. Once they catch their limit, the string will be parted off intentionally, the haul condition code will be 71 and the gear hauled back will be recorded in the split haul information box. The original set amounts of the gear can be recorded on the HAUL LOG but the gear amounts on the GEAR LOG will reflect the split haul information. The vessel will run back to the dock and unload their catch.

When the vessel starts a new trip and returns to the gear; a new trip and a new haul log will be created. The two haul logs will contain the same set information, but the haul with the additional soak time also gets a gear condition code of 69. The original set amounts of the gear can be recorded on the HAUL LOG but the gear amounts on the GEAR LOG will reflect the SPLIT HAUL INFORMATION. The actual amount of gear that is retrieved in this haul is recorded in the SPLIT HAUL INFORMATION box. The SPLIT HAUL INFORMATION from both hauls should add up to the total amount gear set.

Example: In the case, where the gear is parted off for any reason other than hitting the trip limit. The haul before the part off would be gear code 66 or 70, and the gear retrieved before the part off would be entered in the SPLIT HAUL INFORMATION box. The original set amounts of the gear can be recorded on the HAUL LOG but the gear amounts on the GEAR LOG will reflect the SPLIT HAUL INFORMATION.

Then if the gear takes more than 6 hours to locate then the recovered gear would be condition code 69. This would be a new haul and the gear recovered would be entered in the SPLIT HAUL INFORMATION on the new haul. On this new haul, the original set amounts of the gear can be recorded but the gear amounts on the GEAR LOG will reflect the SPLIT HAUL INFORMATION. If the SPLIT HAUL INFORMATION from both hauls add up to the total amount gear set, the original condition code would be 66; otherwise the condition code would be 70.

SPLIT HAUL INFORMATION: Record the amount of gear hauled for the number of droplines, bullets, polyballs, highfliers, hook timers, or TDRs. Record the amount of mainline, the number of additional line weights, the weight of additional line weights (lbs.), and the number of hooks hauled. The bait amounts will be estimated depending on the amount of hooks hauled. Please note bait number and lbs. in the **BAIT INFO** section.

COMMENTS: An additional space on the Haul Log for any other comments to help explain fishing situations. And for additional information relating to the haul. If more space is required, use the back of the sheet and include "see back" on the front.

In footer:

NOAA Fisheries Panama City SBLOP Office Use Only: TDRs start:_____ middle:_____ end:_____ SBLOP Haul log Revised 04-21

TDRS: This is for office use only. Once the average temperatures have been downloaded from the TDRs, they are recorded here so that there is a record with the original data.

SBLOP ANIMAL LOG INSTRUCTIONS

This log contains catch information such as: species, live/dead, kept/release, size and sex of animals caught on sets using shark bottom longline gears. When the target is an elasmobranch, the Shark Animal Log should be used. Special projects will use unique Animal Logs that best fit the project. The Animal Logs will follow the Haul Logs with that haul's catch.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of the Page:

HAUL ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE	SAMPLES
1	2	3	4	5	6 OF ____	7 Y/N

1 OBS/ TRIP ID: Record the three-character observer (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record
"UNNAMED". Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

4 HAUL #: Record the haul number from the associated HAUL LOG, this should be in sequence of the total number of hauls for the trip, starting with 1 for the first haul. A haul is defined as each time a string/gear is set/hauled. Cut/ part offs and gear starts/ends are indications of new haul numbers. If a line is cut/parted off during the set this should be treated as two separate sets and hauls, each having its own haul log and associated animal logs. The haul number should correspond with the associated **HAUL LOG.**

5 HAUL DATE: Record the month, day, year (MM/DD/YYYY) that the **haul back of the gear begins**.

6 PAGE NUMBER: Record this page number, and of the total number of pages used on THIS HAUL and the associated ANIMAL LOGS. The front page of any haul log will always be page

1 then the Individual Animal Logs will be numbered sequentially **starting with page number 2**. **If the back** of the Haul Log **is used**, the Animal Logs will **start with page number 3.** If the back of this log is not used, then the header would not be filled out and there would not be a page number. Do not include incidental take logs or turtle forms in this number.
Example: A haul log(one sided) and 5 animal logs, the Animal Logs are recorded as 2 of 6, 3 of 6, 4 of 6, 5 of 6 and 6 of 6

7 SAMPLES TAKEN: Circle YES if there are biological samples taken from any specimens on that page of the animal log. If there are not or there are pictures taken of any specimen circle NO.

SPECIES:

SPECIES		
SPEC #	NAME	CODE
1	**2**	**3**

1 SPEC #: Specimen numbers start at the beginning of each **haul**, with a **value of 101** and count sequentially to the end of the haul. This number is used to avoid being misread at the fish house (100 vs 001) and to avoid duplication with any incidental take specimen numbers (1, 2, 3 etc.). Number incidental takes **starting with 001** and number sequentially as encountered within a single **trip**. This number should be reflected on the appropriate Incidental Take/ Protected Resource/ Turtle Forms.

2 SPECIES NAME: Record a three-letter abbreviation (SEE SPECIES CODE LIST) for each species, including marine mammals, sea turtles or sea birds that may be caught incidentally. Attempt to identify all animals to species. If unsure, use group/family abbreviation (SHX, TUN, GRP, etc.) and comment on possible species or characteristics.

3 SPECIES CODE: Record the 4-digit species code (SEE SPECIES CODE LIST). If you are unable to identify a species or a species is unlisted, photograph and fill in group or family abbreviation.

IF UNSURE ABOUT ID, TAKE PICTURES, LIST ID CHARACTERISTICS AND for sharks TAKE FINCLIPS

FISHING DETAILS:

SHARK ANIMAL LOG

STATUS	HOOK		ACTION
	LOCATION	TYPE	
1	2	3	4

1 STATUS: Indicate the condition of the animal WHEN BOARDED with the codes provided. If damaged, then record damaged status code, and information about the damage in the damage section. Code 5 refers to animals that were tended or rehooked from a previous haul or trip, this will most likely be for a shark trip where the boat has reached quota and they set back sharks that were brought aboard. If the code 0/unknown is used there should also be a comment.

Status Code
0 = Unknown
1 = Alive
2 = Dead
3 = Alive and Damaged
4 = Dead and Damaged
5 = Previously Caught
6 = Alive and Barotrauma – Swim Bladder/Stomach Protruding
7 = Alive and Barotrauma – Eyes Protruding
8 = Alive and Barotrauma – Both Protruding

2 HOOK LOCATION: Indicate the location that the animal was hooked. For foul hooked animals, indicate in the comments section whether the hook was in the dorsal fin, pectoral fin, caudal fin, or some other area. For internally-hooked animals, indicate in the comments section whether the hook was in the gills/branchial arch or in the gut.

Hook Location Code
0 = None
1 = Mouth/Jaw
2 = Internal (comment location of internal hooking. Example: Left gill arch.)
3 = Foul (comment location of foul hooking. Example: Left Pec.)
9 = Unknown

3 HOOK TYPE: Indicate which style/type of hook the animal was caught on as recorded on the gear log (1-6). If unknown record 9.

4 ACTION: Record the fate of the animal with a one-digit code. For Code 8, provide a comment with the percent or portion of animal kept. Multiple codes can be used but additional code should be in the comments section. Example: A shark is kept for bait but fins are also kept to sell, record 7 and comment 4. Note: If an animal is kept whole as requested by the observer, the action would be released dead.

Action Code
0 = Unknown
1 = Kept
2 = Released dead
3 = Released alive
4 = Finned and carcass discarded
5 = Lost at surface
6 = Tended / Rehooked
7 = Kept as bait
8 = Portion of carcass kept
9 = Previously kept, discarded dead

ANIMAL DETAILS:

SHARK ANIMAL LOG

FL (CM)	L CODE	SEX	S CODE	DAMAGE	D CODE
1	2	3	4	5	6

1 FL (CM): Attempt to obtain a **straight-line fork length** measurement in centimeters (cm.) from **ALL CATCH**. Do not try to piece together animals that have been cut. Estimated lengths for incidentally taken marine mammals, birds, and turtles should also be recorded here. Actual measurements will be recorded on the incidental take log, the sea bird life history forms, protected resource forms or the turtle life history forms. All sharks, tuna and other finfish species are to be taken as a straight-line fork measurement. Record the curved measured length of all billfish, swordfish, and turtles to the nearest centimeter (cm.) according to the standards below. Skates and rays should be measured at their widest point, wing tip to wing tip (disc width) in centimeters (cm.). Estimated lengths should be taken for animals that are dangerous to handle, not brought on board, or when there are too many to accurately measure with the time given. Estimate to the nearest centimeter (cm.) if possible, otherwise estimate to the nearest foot (ft.) and converted to centimeters (1 foot = 30 cm.). **If samples are taken** (vertebrae, reproductive tract, stomach, etc.) then a **straight-line measurement MUST be taken.** See Section 1.2.3. in the Observer Manual for figures on proper measurements to take.

2 L CODE: Record the one-digit measurement type code. All sharks, tuna and other finfish species are to be taken as a straight-line fork measurement, Code 1. Curved line estimates are only acceptable for sea turtle carapace and swordfish or billfish lengths, Code 2. Estimated lengths should be taken for all animals that are dangerous to handle, for all animals that are not brought on board, when there are too many to accurately measure with the time given, or for

protected species in the animal log; use Code 3. If the animal is unknown or not observed properly use Code 0.

Measurement type Code
0 = Unknown/ No Measurement
1 = Straight line
2 = Curved line
3 = Estimated

3 SEX: Record the code for the sex of this animal. If undeterminable use Code U.

Sex Code
U = Unknown
M = Male
F = Female

4 S CODE: Record the code that describes the maturity stage. If the sex is U (unknown) the S Code is 0. If code 2 is used, comment the pup count; if possible separate left and right uterus counts.

Sex Stage Code
0 = Unknown
1 = Calcified claspers (elasmobranchs only)
2 = Pregnant (elasmobranchs only)
4 = Secondary sex characteristic – describe in comments
5 = Suspected mating scars
6 = Other (Or a combination of two or more stages)
7 = Uncalcified claspers (elasmo only)
8 = Attempted to sex, unknown
9 = Did not attempt to sex, unknown

5 DAMAGE: Record the one-digit code for the species that caused the damage. A picture should be taken of all damaged animals. Damage includes complete bites, scavenging, or any other type of discernable damage from another animal while that animal is on the gear. If the species that caused the damage is not recognizable, take pictures of the damage and comment. If there is no damage, this column should be Code 0. If the damage is caused by an animal that is also caught, comment Pred and that species number under the animal with damage. And comment Prey and that species number under the animal that caused the damage. Example: The lines for species 101 SAS and 102 TIG are tangled together. The tail of species 101 SAS and is in the mouth of Species 102 TIG. This is recorded as, in the comments of species 101 SAS: Pred 102, and in the comments of species 102 TIG: Prey 101.

Cause Code
0 = None
1 = Shark (SHX)
2 = Dolphin (MDO)
3 = Bird (BRD)
4 = Squid (SQI) (describe)
5 = Crustacean (CRU)
6 = Teleost (TEL)

7 = Fishing Gear
8 = Other
9 = Unknown

6 D CODE: Record the code for the amount/percentage of damage. A picture should be taken of all damaged animals. If unsure about the percentage of damage, take a picture and comment. If there is no damage use Code 0.

Amount Code
0 = None
1 = <10% damaged, including gills eaten out
2 = 25% damaged, or bitten up to the pelvic/anal fins
3 = 50% damaged, or bitten up to the pectoral fins
4 = 75% damaged, or bitten up to gills
5 = >90% damaged, or just the head
6 = Unknown

ADDITIONAL DETAILS:

SHARK ANIMAL LOG

COMMENT	SAMPLING BARCODE	SAMPLES TAKEN						
		VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO
1	**2**	**3**						

1 COMMENT: Record any information about an individual animal. A larger space is available at the bottom at the Log, be sure to include SPEC# in this space. Examples of comments include incidental take details, distinguishing characteristics for identification, if an individual has damage, what type of damage, was damage caused by another animal on the line, or any information about scenarios relating to the catch. For any teleost encountered, comment Vented Y or Vented N if venting happened or not; and comment weight and w-code is able to weigh. Also record the complete tag number in the comments (including any alpha prefix) if an animal is tagged then released, include Tag Code 1, Tagged and released alive. If an animal is already tagged and to be released healthy, attempt to re-tag and comment both tag numbers (taking a clear picture is also preferred), and include Tag Code 2, Retagged and released alive. If an animal is already tagged and to be kept or discarded dead, request that the dead tagged animal be brought on board so that information about the animal and tag number can be recorded. If this is a tagged shark, comment the tag number, other necessary information, and take a vertebra, reproductive, stomach, and fin clip sample; include Tag Code 3, Recaptured and kept/released dead. (The fishers can report the tag for reward, most likely a T-shirt, if they wish; otherwise the observer may report the tag and comment that the tag was reported.)

Tag State Code
1 = Tagged and released alive
2 = Retagged and released alive
3 = Recaptured and kept/released dead

2 SAMPLING BARCODE: Adhere the barcode sticker for the sampled animal in the appropriate box on the animal log. This number/barcode should be the same as on the sample check in form and on the sample labels. When using the barcodes follow the barcode instructions (see section 8.3 of the Observer Manual). The barcodes used on a deployment should be sent in with the sample check in sheet.

3 SAMPLES TAKEN: Check the boxes for each type of samples taken (Vertebrae, Reproductive (includes shark reproductive tract), Stomach, Fin clip, Fins, and Whole) for the individual animal. **If a reproductive sample is taken, always take a vertebrae sample as well.** Note that Fins and Whole samples should only be taken for special requests or studies. Also check the photo box to record if a picture was taken of that animal, this is not considered a sample taken.

Trip ID: _____ (office only)

TRIP SUMMARY
(This will be the cover sheet to your trip datasheets)

Obs Trip #: _____ **Vessel name:** _____ **Vessel #:** _____

Owner/Captain Name: _____ **# of Crew:** _____

Incidental Take: Y / N **If Yes, what set number(s)**: _____

Biological Samples Taken: Y / N **Check In Sheet Included:** Y / N

Departure Date: _____ **Time:** ___:___ **Departure Port:** _____
mm/dd/yyyy City, State

Return Date: _____ **Time:** ___:___ **Return Port:** _____
mm/dd/yyyy City, State

Sea Days: _____ **Number of Sets:** _____ **False Strike:** Y / N

Target (GN): SHARK / TELEOST/ MIX

Target (Reef and Shark): _____ **SRF □ SHX □ SADL □ SARF □ OTHER □**

Weigh out location: _____ **Weigh out copy included: Y / N**

Invoice: For trips two or more sea days. Fill out observer fields, leave invoice with captain/owner.

____ N/A

____ Left completed with captain/owner

Vessel accommodations:

Head: Y / N **AC and/or Heat:** Y / N (circle which applies)

Bunk: Y / N **Bunk Location:** _____

Fresh Water and/or Shower: Y / N (circle which applies) **Infections:** Y / N

Comments:

_____

_____

_____

_____

Office use only:
Stand by Days: _____ Data received: ___/___/_____ _____

Data entry: ___/___/____ _____ Dbase proofed: ___/___/_____

Debrief: ___/___/_____ Invoice filed: ___/___/_____/ NA

GEAR ID _____ **LONGLINE GEAR LOG**

OBS/TRIP NUMBER	VESSEL NAME	VESSEL NUMBER	DATE LANDED (mm/dd/yyyy)

GEAR NUMBER | # OF HAULS | AVG. # HOOKS | TOTAL # HOOKS (trip start)

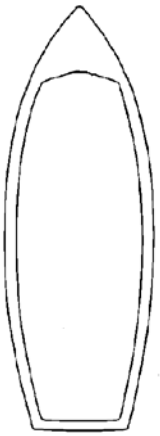
MAINLINE COLOR | TEST LBS
MATERIAL | DIAMETER . MM
STRANDS | AVG. LENGTH . NM

GANGIONS COLOR | TEST LBS
MATERIAL | DIAMETER . MM
SWIVELS PER GANGION
AVG. LENGTH FT | AVG. #
DISTANCE BETWEEN GANGIONS FT
LEADERS USED? ☐ | MATERIAL
TEST LBS | LENGTH IN

LINE ADDITIONS

POLYBALLS ☐ | HOOK TIMERS ☐
BULLETS ☐ | TDRs ☐
HIGHFLIERS ☐ | ADD. WEIGHTS ☐
OTHER ☐
DROPLINES ☐ | AVG. DROPLINE LENGTH FT
DISTANCE BETWEEN DROPLINES FT

INDICATE LOCATION OF HAULING STATION ON VESSEL DIAGRAM



HOOK	BRAND	TYPE	SIZE	MODEL	OFFSET	DEGREE
1			/0		☐	
2			/0		☐	
3			/0		☐	
4			/0		☐	
5			/0		☐	
6			/0		☐	

COMMENTS

HAUL ID _____ **LONGLINE HAUL LOG** **SAMPLES TAKEN?** ☐ **PAGE 1 of** ____

DATE LANDED (M M D D Y Y) **TRIP ID** **VESSEL NAME** **VESSEL #**

HAUL # GEAR CODE GEAR NUMBER TARGET HAUL OBS? ☐ CATCH? ☐ INCIDENTAL TAKE? ☐ SPLIT HAUL? ☐

SET DATA

	DATE (M M D D Y Y)	*TIME*	*LATITUDE*	*LONGITUDE*	*TEMP (°F)*
SET BEGIN		:	° . N	° . W	.
SET END		:	° . N	° . W	.

LINE ADDITIONS AND OTHER GEARS

POLYBALLS ☐ BULLETS ☐
HIGHFLIERS ☐ ADD. WEIGHTS ☐
DROPLINES ☐ HOOK TIMERS ☐
OTHER ☐ TDRs ☐

MAINLINE LENGTH . **NM**
SET SPEED . **KTS**
MIN. SET DEPTH **FT**
MAX. SET DEPTH **FT**
TOTAL ADD. WEIGHT **LBS**
TOTAL HOOKS SET

BAIT INFO

	NUMBER	LBS	KIND	TYPE	COND
1					
2					
3					
4					
5					

HAUL DATA

	DATE (M M D D Y Y)	*TIME*	*LATITUDE*	*LONGITUDE*	*TEMP (°F)*
HAUL BEGIN		:	° . N	° . W	.
HAUL END		:	° . N	° . W	.

ENVIRONMENTAL WEATHER SPEED **KTS** WIND DIRECTION MAX. WAVE HT. **FT**

DELAY >20 MINUTES? ☐ **DETAILS:**

TOTAL TIME LOST (HRS) .

GEAR COND. BEHAVIOUR PREDATORS HOOKS LOST

COMMENTS:

SPLIT HAUL INFORMATION (gear hauled)

POLYBALLS MAINLINE . **NM**
HIGHFLIERS ADD. WEIGHTS
DROPLINES ADD. WEIGHT **LBS**
BULLETS HOOK TIMERS
TDRs HOOKS HAULED

BAIT INFO

	NUM	LBS
1		
2		
3		
4		
5		

SHARK ANIMAL LOG

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE _____ OF _____	SAMPLES Y/N

SPECIES			STATUS	HOOK		ACTION	FL (CM)	L CODE	SEX	S CODE	DAMAGE	D CODE	COMMENT	SAMPLING BARCODE	SAMPLES TAKEN						
SPEC #	NAME	CODE		LOCATION	TYPE										VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO

COMMENTS

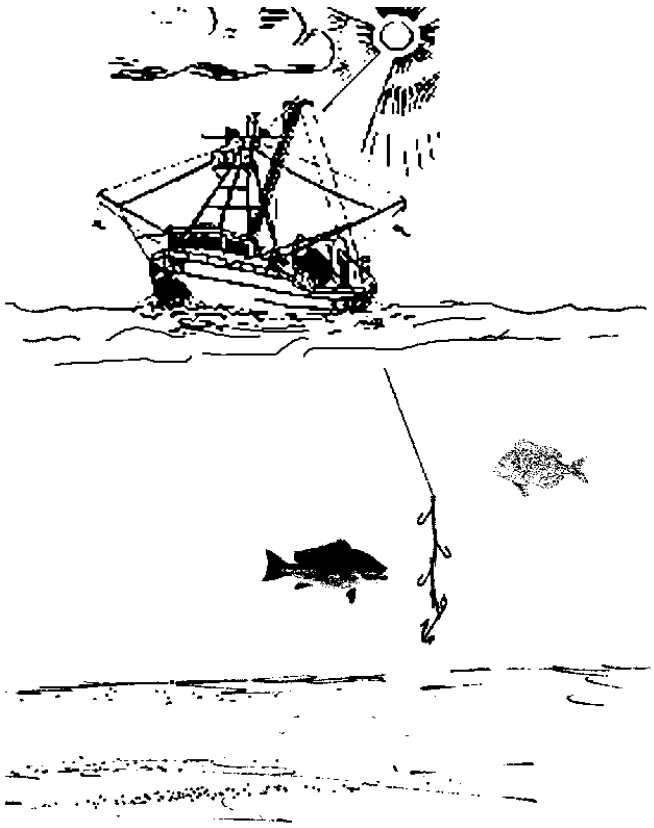
SHARK ANIMAL LOG

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE _____ OF _____	SAMPLES Y/N

SPECIES			STATUS	HOOK		ACTION	FL (CM)	L CODE	SEX	S CODE	DAMAGE	D CODE	COMMENT	SAMPLING BARCODE	SAMPLES TAKEN						
SPEC #	NAME	CODE		LOCATION	TYPE										VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO

COMMENTS

South Atlantic Reef Fish Observer Program Manual



Created by Samantha Faller, Dana Jordan, Bradley Smith, & Alyssa Mathers

July 2022

NOAA Fisheries Panama City Laboratory
Southeast Fisheries Science Center

TRIP SUMMARY INSTRUCTIONS

The Trip Summary Log is to be the cover sheet of any bottom longline trip data. It is to be filled out after the trip. If multiple trips are conducted on the same vessel, there must be a trip summary for each trip.

If information is not available or unknown for any field except a "NO/YES" question, record the appropriate dash (-) or unknown code (U or 0) in the field.

OBS TRIP #: Record the three-character observer identifier (Initials) and trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record “UNNAMED”.
Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

OWNER/CAPTAIN NAME: Record the first and last name of the person responsible for daily vessel operations, and circle whether this is the owner, captain, or both of the vessel, if both are yes, a circle is not necessary.

 # OF CREW: Record number of persons onboard including the captain, but not including observer

INCIDENTAL TAKE Y / N: Indicate whether incidental take was caught (marine mammal, sea turtle, sawfish, sturgeon or sea bird) by circling the appropriate letter.

IF YES, WHAT SET NUMBER(S): Record which set/haul numbers that an incidental take was caught.

BIOLOGICAL SAMPLES TAKEN Y / N: Indicate whether biological samples were taken during this trip by circling the appropriate letter.

CHECK IN SHEET INCLUDED Y / N: Indicate whether a sample check in form was used for this trip by circling the appropriate letter.

DEPARTURE DATE & TIME: Record the month, day, year and time that the vessel left the dock and the trip began (mm/dd/yyyy). Record time on a 24-hour clock.

DEPARTURE PORT: Record the city and the state (comment the specific dock location, if available) where the vessel left the dock and the trip began.
RETURN DATE & TIME: Record the month, day, year, and time that the vessel returned to the dock and the trip ended (mm/dd/yyyy). Record time on a 24-hour clock.
RETURN PORT: Record the city and the state (comment the specific dock location, if available) where the vessel returned to the dock and the trip ended.

SEA DAYS: Record the number of days spent at sea, this includes any steaming and active fishing. One (1) sea day is tallied for any amount of time spent at sea, even if less than 24 hours. If the vessel leaves the dock, fishes, returns and then sails again on the same day; each trip would be recorded as one sea day but only one sea day will be counted towards sea day coverage. If a vessel leaves the dock and returns without setting and/or retrieving gear this would be a false strike. In the Shark Research Fishery, there would be a false strike if a boat leaves the dock and returns without fishing and there is more than a day until the vessel leaves the dock again.

NUMBER OF SETS: Record the total amount of sets/hauls done during the trip. Include all sets/hauls, whether they were observed or not.

FALSE STRIKE Y / N: A false strike is when a vessel leaves the dock and returns without setting and/or retrieving gear. Indicate whether a false strike occurred by circling the appropriate letter. If the trip is a false strike this would be 1 sea day and the next trip would be the next trip ID. In the Shark Research Fishery, there would be a false strike if a boat leaves the dock and returns without fishing and there is more than a day until the vessel leaves the dock again. On a false strike trip there will only be a TRIP Summary log, no other logs are used.

TARGET (GN): For use on gillnet trips only.

TARGET (Reef and Shark): Record the three-letter species abbreviation for the species being targeted with the gear type. This information is obtained from the captain prior to fishing activity. If the specific species being targeted is known, use the species specific code (ex. SSB = sandbar, YEG = yellowedge grouper). If the vessel is targeting small coastal sharks or large coastal sharks use SHX and comment details. MIX targets should only happen if one gear is targeting more than one different class of species at one time (ex. SAS and SMK are being targeted).
SHX = sharks
GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species
Example: If a gear has three 8/0 hooks for snapper and one 14/0 hook at the end for grouper, then this would be a TEL target. If they are using a gear with all 8/0 hooks to target snapper and then use the same gear to target a mixture of snapper and grouper, this would still just be SNA target. Target is for the PREDOMINANT target species, despite what else they may hope to catch with that rigging.

TARGET SPECIFICATION: Record whether the trip is fishing for sharks within the sandbar research fishery (SRF) or whether this trip is a grouper set for deep-water (DEEP GRP) or shallow-water (SHALLOW GRP).

WEIGH OUT LOCATION: Record the location that the weigh out of the catch from the trip was done. Name of the fish house, dealer, and/or dock would be ideal. If this is a private sell, record "private sell" or the name of the buyer. If this is unknown, record N/A. In the SRF, a copy of the weigh out is required.

COPY INCLUDED Y / N: Indicate whether a copy of the weigh out is included with the trip data or not. Every effort to obtain a copy of the weigh out form should be made, if a paper copy cannot be obtained, a photograph is acceptable. In the SRF, a copy of the weigh out is required. If the weigh out occurs after the observer has left the area, the captain/owner/dealer/fish house can fax (850-235-3559), mail (3500 Delwood Beach Rd Panama City, FL 32408) or email a copy of the weigh out to the observer coordinator.

INVOICE: Indicate whether the reimbursement invoice is left with the captain or not applicable. If the trip is one sea day and/or there was no food available/offered to the observer, an invoice should not be issued and N/A should be recorded. Otherwise issue a invoice. **It is the observer's responsibility to give the form to the owner/captain after the trip.** The observer should fill out their Observer Trip ID, observer name, vessel name, dates of the trip, meal expenses, and total cost. **Be sure to get captain/owner SS# and signature!** The observer can turn in the reimbursement invoice with their data, or the owner/captain can mail or fax a copy to the observer coordinator. Multiple trips on the same vessel can be included in one invoice. Be sure to record which trip the invoice is included with.

VESSEL ACCOMMODATIONS: Record observations about the vessel and vessel accommodations including the presence or absence of a head, AC or heat, a bunk and bunk location, fresh water, shower, and infections and cleanliness of crew. These observations are for the observer and the observer program only, and will help with future coverage of the vessel. In the case of an either or option, circle the option that fits the yes observation, if both are yes, a circle is not necessary.

COMMENTS: Record any comments about the trip, the vessel, the crew, or any observations about the catch. Information on drug/alcohol use by the captain or crew should be recorded here as well. Please use the comments section liberally. If more space is required, use the back of the sheet and include "see back" on the front.

VERTICAL LINE GEAR LOG INSTRUCTIONS

This log contains detailed descriptions about vertical line gear that is used during a trip. This gear log describes the average set up of the gear used on all the hauls with that same gear configuration. Each gear log is numbered consecutively starting from gear number 1. Significant changes such as **target or type of power** between hauls may result in a new gear log.

SKETCHES OF THE GEAR CONFIGURATIONS ARE REQUIRED.

If information is not available or unknown for any field except a "NO/YES" question, record the appropriate dash (-) or unknown code (U or 0) in the field.

Top of Page:
GEAR ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP NUMBER 1	VESSEL NAME 2	VESSEL NUMBER 3	DATE LANDED (mm/dd/yyyy) 4

GEAR # 5	GEAR CODE 6	TARGET 7	# OF HAULS 8	TOTAL # HOOKS (trip start) 9

1 OBS/ TRIP NUMBER: Record the three character observer identifier (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip. Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record “UNNAMED”.
Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL NUMBER: Record the six digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number. Example: USCG documentation number: 234567 or State registration number:
FL2345XX

4 DATE LANDED: Record the month, day and year that the **vessel returned to the dock/port** (mm/dd/yyy). This may not be the same day fish were unloaded and sold.
Example: 01/01/2020

5 GEAR NUMBER: Record the consecutive number assigned to each gear configuration.

Additional gear logs would be used in the following cases:

- change in the reel power/type (hydraulic bandit vs electric bandit vs handline)
- change in the target species (SNV to GRP)

NOTE: A new gear log is NOT needed when hook size, reel mount or leader characteristics change. Such changes are documented by a new type configuration labeled as A-F.

Example: A gear log is created for Gear 1 which consists of two electric bandit reels with identical configurations. The boat changes one electric bandit reel to target GRP, while the other electric bandit reel is still targeting SNV. A second gear log would then be completed to reflect this change (Gear 2). Later the deckhand switches to fishing with a rod and reel. A third gear log would then need to be completed (Gear 3).

6 GEAR CODE: Record the three digit code for the gear fished during this haul.

610 = Handlines and Other Gear

611 = Hand Crank Rod & Reel	616 = Electric Rod & Reel
612 = Hand Crank Bandit	660 = Hand Trolling
613 = Hydraulic/ Electric Bandit	661 = Power Trolling

7 TARGET: Record the three letter species abbreviation for the species being target with the gear type. This information is obtained from the captain prior to fishing activity. If the specific species being targeted is known, use the species specific code (ex. SSB = sandbar, YEG = yellowedge grouper). MIX targets should only happen if one gear is targeting more than one different species at one time.

GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species

Example: If a gear has three 8/0 hooks for snapper and one 14/0 hook at the end for grouper, then this would be a MIX target. If they are using a gear with all 8/0 hooks to target snapper and then use the same gear to target a mixture of snapper and grouper, this would still just be SNA target. Target is for the PREDOMINANT target species, despite what else they may hope to catch with that rigging.

8 # OF HAULS: Record the number of hauls that the gear was used in (as in how many).

9 TOTAL # HOOKS (trip start): Record the total number of hooks onboard at the start of the trip. This is NOT a sum or average of all hauls. This is a count at the start of the trip of all the assembled leaders with hooks, including all hooks in boxes, which might be used to fish. This may be obtained from the captain.

***MAINLINE*:**

MAINLINE	COLOR	1	TEST	2	LBS	MATERIAL	3	DIAMETER	4 .	MM	STRANDS	5

1 COLOR: Record the color of the main line by writing the numerical code (1-9). If more than one color is present assign the code of 7(multi). Steel mainlines are given the code 9(other). Describe the codes 7 and 9 in the COMMENTS field.

COLOR CODES:

1 CLEAR
2 WHITE
3 PINK
4 BLACK
5 GREEN
6 BLUE
7 MULTI (for any mixture of colors)
8 RED
9 OTHER (describe in comments)

2 TEST: Record the test or dry breaking strength of the main line in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 20-400 lbs. If the measure of the test or the diameter of the line is unable to be verified, use the following chart to estimate either for the other. This is for MONOFILAMENT line only.

Monofilament line diameter	
test	mm bin
50	0.60-0.69
60	0.70-0.79
80	0.80-0.89
100	0.90-0.99
130	1.00-1.19
150	1.20-1.39
200	1.40-1.59
250	1.60-1.79
300	1.80-2.00

3 MATERIAL: Record the material of the mainline use by writhing the numerical code (1-4). Describe other materials in COMMENTS field.

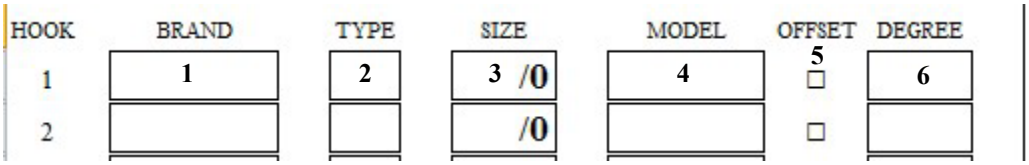
MATERIAL CODES

1 NYLON
2 COTTON
3 STEEL WIRE/CABLE
9 OTHER

4 DIAMETER: Record to the nearest tenth of a millimeter (mm) the diameter of the mainline. If unable to measure, refer to the test/diameter chart, and submit a labeled sample piece with your data. This may be obtained from the captain.

5 STRANDS: Record the number of strands of material that make up the mainline. Nylon (monofilament) should be 1 strand. Steel wire is usually 7x7, which should be 49 strands.

HOOKS:



1 BRAND: Record the hook brand name in all capital letters and one word. Lindgran/Pitman is abbreviated as LGPN. This information can be obtained from the captain and/or verified from a manufacturer label. If this information is unknown or cannot be verified, record UNKNOWN and take a picture of the hook with the ruler for scale. Record additional hooks, over amount allotted amount, in comments.
Example: MUSTAD, EAGLECLAW, LGPN (for Lindgren/Pitman), HILINER

2 TYPE: Write in **C** for circle, **J** for J-hook, **T** for treble or **L** for lure. L is any Jig, Spoon, skirt, or artificial bait. If the type is Lure, then a picture is required.

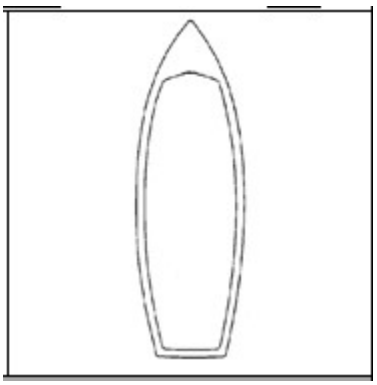
3 SIZE: Record the hook size. This information can be obtained from the captain and/or verified from a manufacturer label. Example: **9/0** = nine aught

4 MODEL: Record the hook model or pattern number in one word. For Lindgren/Pitman (LGPN) black carbon circle hooks, use the code LPCIRBL.

5 OFFSET: Offset refers to the amount of deviation in the plane of the hook point relative to that of the shank. If yes, check the box. Hooks can be offset manually (by the fishermen) or by the manufacturer.

6 DEGREES OFFSET: Record the degrees offset to the nearest whole number. This can be obtained from the manufacturer label or the captain. The standard is 10°. If done manually or the offset is unknown, estimate the degrees to the nearest whole number and take a picture.

VESSEL DIAGRAM:



SKETCH: Indicate the general position of the reels being used. Suggested icons:

⌑ Hydraulic Reel ○ Rod and Reel + Electric Reel

REELS:

TYPE A	MOUNT	1	WEIGHTS? Y / N	2	COLOR	3	TEST	4	LBS	MATERIAL	5	DIAMETER	6 .	MM	
	S. BAR? Y / N	7	# SWIVELS	8	# HOOKS	9	# LEADERS	10		LENGTHS: 1	11 .	FT	2 .	FT	

Record all reel and leader configurations observed. Additional types would be added in the following cases:

- change in the reel mount (portal vs fixed)
- change in number of hook
- change in number of leaders

There is space provided for up to 6 reel/type configurations. If more than 6 different types are used, make note of all the requested information for that type in the comments or on addition sheets of paper as needed. It is acceptable to use the back of the logs, in that case the comment "see back" is required.

Example: A gear log is created for Gear 1 which consists of three electric bandit reels with identical configurations (Type A). The crew removes one electric bandit reel from strap to the side of the boat and starts holding it for the rest of the trip. A second type would then be completed to reflect this change (Type B). Later one of the leaders is bit off the mainline. The crew doesn't replace the missing leader/hook and continues fishing. A third type would then need to be completed (Type C).

1 MOUNT: Record how the reel is being used. . Indicate "Other" type in the comments section.

REEL MOUNT CODES
0 UNKNOWN
1 FIXED
2 PORTABLE
3 OTHER

2 WEIGHTS?: Indicate if there were weights being used on the line rigging or not.

3 COLOR: Record the color of the leader by writing the numerical code (1-9). If more than one color is present assign the code of 7(multi). Steel mainlines are given the code 9(other). Describe the codes 7 and 9 in the COMMENTS field.

COLOR CODES:

1 CLEAR	6 BLUE
2 WHITE	7 MULTI (for any mixture of colors)
3 PINK	8 RED
4 BLACK	9 OTHER (describe in comments)
5 GREEN	

4 TEST: Record the test or dry breaking strength of the leader in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 20-400 lbs. If the measure of the test or the diameter of the line is unable to be verified, use the following chart to estimate either for the other. This is for MONOFILAMENT line only.

Monofilament line diameter	
test	mm bin
50	0.60-0.69
60	0.70-0.79
80	0.80-0.89
100	0.90-0.99
130	1.00-1.19
150	1.20-1.39
200	1.40-1.59
250	1.60-1.79
300	1.80-2.00

5 MATERIAL: Record the material of the mainline use by writhing the numerical code (1-4).

Describe other materials in COMMENTS field.

MATERIAL CODES

1 NYLON
2 COTTON
3 STEEL WIRE
9 OTHER

6 DIAMETER: Record to the nearest tenth of a millimeter (mm) the diameter of the leader. If unable to measure, refer to the test/diameter chart, and submit a labeled sample piece with your data. This may be obtained from the captain.

7 SPREADER BAR?: Indicate if a spreader bar is being used. Spreader bars typical look like a bent, L-shaped, metal rod with three circles, 2 at the ends and 1 in the center. They are also sometimes referred to as "L-bars."

8 # SWIVELS: Record the number of swivels used. Swivels with three loops are considered to only be 1 swivel.

9 # HOOKS: Record number of hooks used on one reel configuration. If there are multiple reels with the same configuration only record the amount of hooks on one configuration.

10 # LEADERS: Record the number of lines off the mainline also known as leaders. If no leader is used (mainline attached directly to the hook) then number of lines is still one. This number should equal the number of hook, if it does not record why in the COMMENTS section.

11 LENGTHS 1 & 2: Record the leader lengths to the tenth of a foot (ft) (NOT feet and inches). If leader lengths differ by LESS THAN 24 inches then this should be recorded as only ONE length, this is the average of two lengths. If they differ by 24 inches or MORE then this should be record as TWO different lengths.

Example: Leader 1 measures 12 inches and a second leader on the configuration measures 20 inches; this would be recorded as "Length 1" as an average of both leader measurements, which is 1.3 feet (20+12/2=16 inches). If leader 1 measures 12 inches and leader 2 measures 48 inches; this would be recorded as "Length 1" 1.0 decimal feet (12 inches) and "Length 2" 4.0 decimal feet (48 inches).

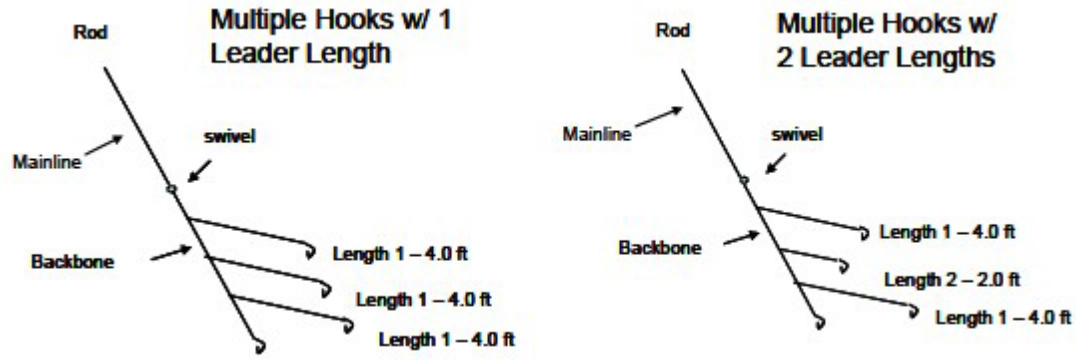
COMMENTS:

COMMENTS	GEAR SKETCH

COMMENTS: Use the comments section for any information in addition to what was recorded, and to explain other or unknown options. If more space is required, it is acceptable to use the back of the logs, in that case the comment "see back" is required.

GEAR SKETCH: SKETCH THE GEAR/TYPE CONFIGURATIONS. For each configuration (A-?) make a sketch of what the configuration looks like, be as detailed as possible. Using the back of this log to sketch configurations is acceptable, in this case the comment "see back" is required

GEAR SKETCH EXAMPLES



VERTICAL LINE HAUL LOG INSTRUCTIONS

This log contains descriptions about all the physical information relating to a location fished and fishing effort. All Vertical Haul logs will come after the associated Vertical Gear Logs, ordered in numerical order according to haul number. The Vertical Haul Log will serve as a cover sheet to the Animal Log/s that will follow with all associated catch.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of Page:

HAUL ID 1	VERTICAL HAUL LOG	SAMPLES TAKEN? □ 2	PAGE 1 of 3

1 HAUL ID: For lab use only. This number refers to the database. Please disregard.

2 SAMPLES TAKEN?: Check this box if there are biological samples taken during haulback.

3 PAGE 1 of ___: Record the total number of pages used on THIS HAUL and associated ANIMAL LOGS. The front page of any haul log will always be page 1. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Do not include incidental take log or turtle forms in this number.

HEADER:

OBS/TRIP NUMBER 1	VESSEL NAME 2	VESSEL NUMBER 3	DATE LANDED (mm/dd/yyyy) 4

HAUL # 5	GEAR # 6	GEAR CODE 7	TARGET 8

1 OBS/ TRIP NUMBER: Record the three character observer (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip. Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record “UNNAMED”.
Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL NUMBER: Record the six digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

4 DATE LANDED: Record the month, day and year that the **vessel returned to the dock/port** (mm/dd/yyyy). This may not be the same day fish were unloaded and sold. Example: 01/01/2020

5 HAUL #: Record the haul number, start with 1 for the first haul and continue sequentially for all hauls made within a single trip. A haul is defined as each time a reel is dropped and returned to the boat. The start of a haul is when baited hooks, jigs, or lures enter the water with the intent to fish. The following are situations/ fishing behaviors that would possible cause a haul to end and a new haul to start:

Anchored & Motor Fishing

- If there is a change in gear configuration that creates a NEW GEAR log/number, this IS a new haul. Change in reel type (electric to hand crank) or change in target species.
- If the boat picks up all reels and MOVES to a new location entirely, this is a NEW haul. A new location is defined as when the captain says "I'm going to try a different spot", the other side of a wreck or reef, or the other side of the ridge.
- If the boat picks up the lines to REPOSITION over the same spot and this takes MORE THAN 20 minutes to start fishing again, this is a NEW haul. If the boat picks up the reels to reposition over the same spot and this takes LESS THAN 20 minutes, this is NOT a

new haul and a comment is required in the Effort Data Table.

- If there is a PAUSE for MORE THAN 2 hours in fishing effort and the boat DOES NOT change position, this IS a new haul. If the pause in fishing effort lasts LESS THAN 2 hours, this is NOT a new haul. Example: Crew stops fishing to gut and pack fish. Comment needed in Effort Data Table.

Example: For Haul 1. 2 Electric bandit reels are set out to target Vermilion Snapper "SNV" both have 10 - 8/0 circle hooks. They start fishing at 0800 and stop at 0900 to change locations. This would be (Haul 1, Gear 1, Type-2As).

Example: For Haul 1. 2 Electric bandit reels are set out to target Vermilion Snapper "SNV" both have 10 - 8/0 circle hooks. They start fishing at 0800. At 0815 the crew brings out 1 portable Rod & Reel to target Red Grouper "RGR" - which creates a new Gear. All reels stop fishing at
0900 to change locations. This would be (Haul 1, Gear 1, Type-2As) & (Haul 2, Gear 2, Type-1A). These hauls would be concurrent of each other and you would need to check the Concurrent Box and put (1, 2) for the Concurrent Haul # Box.

Example: For Haul 1. 3 electric reels with identical configurations (Gear 1, Type-3As). All are set out creating (Haul 1, Gear 1, Type-3As). The crew removes one mounted electric reel from its holster and starts holding it for the rest of the trip. Only a second Type would then be completed to reflect this change (Haul 1, Gear 1, Type-2As, Type-1B). Later one of the leaders from Type-A is bit off the mainline. The crew doesn't replace the missing leader/hook and

continues fishing. A third Type would then need to be completed (Haul 1, Gear 1, Type-1A, Type-1B, Type-1C).

The boat changes reel type C to target GRP, while the other electric reels are still targeting SNV. A second gear log and haul log would then be completed to reflect this change (Haul 2, Gear 2, Type-1A).

All lines are reeled back and the boat takes 21 minutes to reposition, this would be a new haul for all gears and it would not matter where the boat went. Everything is then set out (Haul 3, Gear 1, Type-1A, Type-1B) & (Haul 4, Gear 2 Type-1A).

Drift & Trolling Fishing

- If there is a change in gear configuration that creates a NEW GEAR log/number, this IS a new haul. Change in reel type (electric to hand crank) or change in target species.
- If the boat picks up all reels and MOVES to a new location entirely, this is a NEW haul. A new location is defined as when the captain says "I'm going to try a different spot", the other side of a wreck or reef, or the other side of the ridge.
- If fishing lasts for MORE THAN 1 hour. The 1 hour mark IS a new haul.
- If there is a PAUSE for MORE THAN 20 minutes in fishing effort while the boat is actively moving, this IS a new haul. If the pause in fishing effort lasts LESS THAN 20 minutes, this is NOT a new haul.
- If the boat stops moving and continues to fish, the behavior would change and the original rules would apply.

Example: For Haul 1. 2 Rod & Reels are set out, both have the same configuration targeting King Mackerel "KGM". They start fishing at 0800 and stop at 0900 to change locations. This would be (Haul 1, Gear 1, Type-2As).

Example: For Haul 1. 2 Rod & Reels are set out, both have the same configuration targeting King Mackerel "KGM". They start fishing at 0800. At 0815 the crew brings out 1 more Rod & Reel to target Skipjack Tuna "SKJ"- which creates a new Gear. All reels stop fishing at 0900 to change locations. This would be (Haul 1, Gear 1, Type-2As) & (Haul 2, Gear 2, Type-1A). These hauls would be concurrent of each other and you would need to check the Concurrent Box and put (1, 2) for the Concurrent Haul # Box.

Example: For Haul 1. 2 Rod & Reels are set out, both have the same configuration targeting King Mackerel "KGM". They start fishing at 0800 and stop at 1000 to change locations. This would be (Haul 1, Gear 1, Type-2As, from 0800 to 0900) & (Haul 2, Gear 1, Type-2As, from 0900 to 1000) because they hit the 1 hour mark in this type of Behavior of fishing.

6 GEAR #: Record the consecutive number assigned the gear configuration that is associated with the gear being used to fish during the haul. This number relates directly to the VERTICAL GEAR LOG gear number.

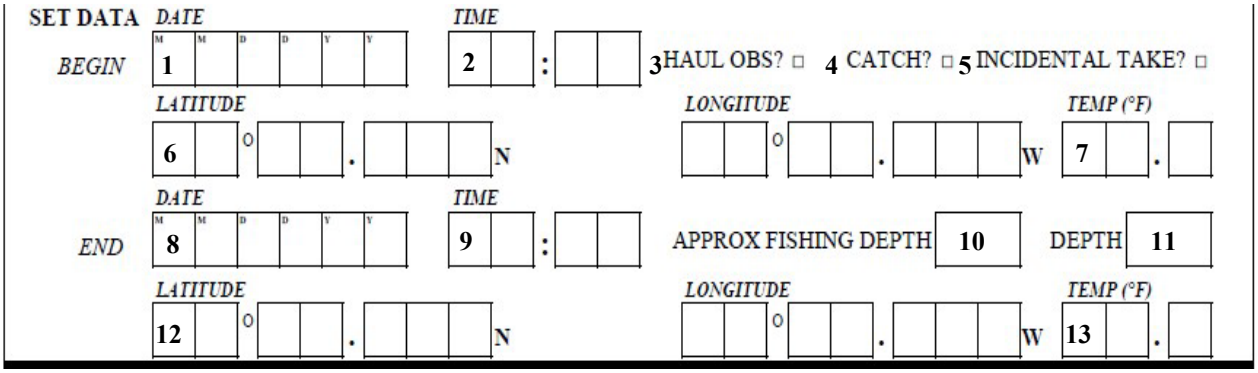
7 GEAR CODE: Record the three digit code for the gear fished during this haul.

610 = Handlines and other gear
611 = Hand Crank Rod & Reel
612 = Hand Crank Bandit
613 = Hydraulic/Electric Bandit
616 = Electric Rod & Reel
660 = Hand Trolling
661 = Power Trolling

8 TARGET: Record the primary species being targeted in the haul using the three character code abbreviations. This information is obtained from the captain PRIOR to fishing activity. If the specific species being targeted is known, use the species specific code (ex. SSB = sandbar, YEG = yellowedge grouper). NOTE: A change in target species will require an additional Gear Log and Haul log. MIX targets should only be used if one gear is being used to target various species and the captain lists two or more different species they plan on targeting. If the gear contains more than one hook size that would be a MIX target. Example: The gear contains 8/0 and 12/0 circle hooks to target Vermilion Snapper- SNV and Red Grouper-RGR. The species Vermilion Snapper- SNV and Gray Triggerfish- TRG are commonly caught on the same gear type and hook size.

GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species

SET DATA:



1 SET BEGIN DATE: Record the date (MM/DD/YY) the gear is set out.

2 SET BEGIN TIME: Record the local time (24 hour clock NOT hundredths of an hour). This is when a baited hook ENTERS the water with the intent to fish.

3 HAUL OBS?: Check the box to indicate that the haul was observed. An observed haul is defined as a haul where all of the catch hauled and discard information is recorded. An unobserved haul is defined as a haul where the complete catch and/or discard information is not collected. If you are unable to go on deck due to safety concern or illness, indicate this by NOT checking the box and record your reason in the COMMENTS section.

4 CATCH?: Check the box if there was anything caught on a hook and the haul has any associated Animal Logs**.** If the gear is hauled and there is absolutely no catch ("water haul" or "getting skunked") indicate this on the haul log by NOT checking "CATCH?". Record "No Catch" in the COMMENTS section.

5 INCIDENTAL TAKE?: Check this box if a marine mammal, sea bird, sawfish, sturgeon, or sea turtle was caught in this haul. An Incidental Take Log MUST be completed for all marine mammals caught, a Turtle Life History Form MUST be completed for each sea turtle caught, and a Protected Species Form MUST be completed for each sea bird, sawfish or sturgeon caught.

6 SET BEGIN LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the set begin time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

7 SET BEGIN TEMPERATURE: Record temperature (ºF) at when the set begin time is recorded.

8 SET END DATE: Record the date (MM/DD/YY) that the haul was completed.

9 SET END TIME: Record the local time (24 hour clock NOT hundredths of an hour). This is when the gear returns to the boat and the haul is completed.

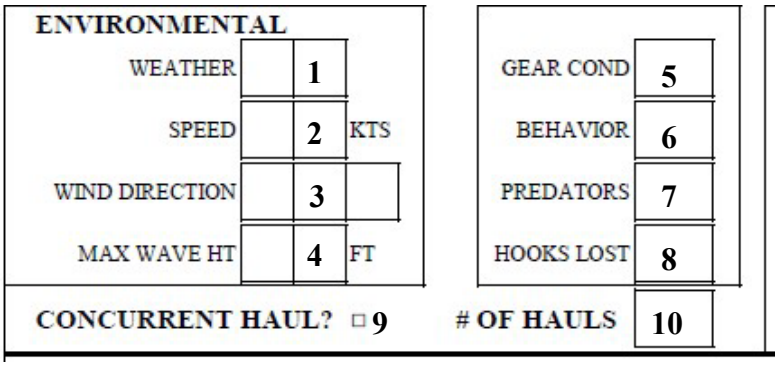
10 APPROX FISHING DEPTH: Record the approximate depth, in feet (ft.), at which the reels are being held in the water column. This can be obtained from the captain.

11 DEPTH: Record the bottom depth, in feet (ft.), where the vessel BEGINS fishing. This can be obtained from the vessel's instruments or the captain.

12 SET END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes at the completion of the haul (DDº MM.mmm). NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

13 SET END TEMPERATURE: Record temperature (ºF) at completion of the haul.

ENVIRONMENTAL/GEAR CONDITION:



1 WEATHER: Record the 2 digit code for the weather condition when the set begin time is recorded.

01 = Clear
02 = Partly cloudy
03 = Continuous layer of clouds
04 = Drizzle
05 = Continuous Rain
06 = Intermittent Rain/Showers
07 = Thunderstorms with lightning
08 = Rain with fog
09 = Fog or thick haze
10 = Snow or rain and snow mixed
11 = Blowing snow
99 = Other, please describe in COMMENTS

2 SPEED: Record the MAXIMUM wind speed, in whole knots (kts.), when the set begin time is recorded. If the value is less than 10, record a 0 in front of the value, 5 kts. should be recorded as 05 kts.

3 WIND DIRECTION: Record the 3 digit direction, in compass DEGREES, that the wind is coming from when the set begin time is recorded. Wind coming from the northeast should be recorded as 045. If wind is light or wind direction is difficult to determine, record either "VAR" for variable wind or a dash "-"for undetermined. The direction north is recorded as 000.

4 MAX WAVE HEIGHT: Record the MAXIMUM wave height, in whole feet (ft.), when the set begin time is recorded. If the value is less than 10 record a 0 in front of the value, 5 ft. should be recorded as 05 ft. If the wave height is LESS THAN six inches, record 00.

5 GEAR COND: Indicate the condition of the gear at the COMPLETION of the haul by recording the most appropriate 2 digit code.

60 = No gear damage with greater than 10% hooks lost
61 = No gear damage with less than or equal to 10% hooks lost
68 = Gear completely damaged or lost
72 = More than 50% gear lost
73 = Less than 50% gear lost
99 = Other: Please specify other gear condition in COMMENTS

6 BEHAVIOR: Indicate the fishing behavior employed DURING the haul with a 1 digit code. Refer to the HAUL section for the definitions and rules associated with the different behavior types. Note: 6 or other can be multiple behaviors and a comment is required.

3 = Anchored - Anchor holding position
4 = Drifting - No one is manning the wheel, not holding a position
5 = Trolling - Pulling lines behind the vessel while manning a course of direction
6 = Other - comment required
7 = Motor fishing - Manning the wheel to hold position
9 = Unknown - comment required

7 HOOKS LOST: Record the number of hooks that did not return to the boat. This is directly related to GEAR COND field and should include "bite offs", and missing hooks. "Cut offs" are not considered hooks lost and should not be recorded here, this number can be recorded in the comments.

8 PREDATORS: Record the presence of predators around the vessel **during** the haulback:
0 = None
1 = Dolphins
2 = Sharks
3 = Sea Birds
4 = Other
5 = Combination (comment required)
6 = unknown (comment required)

9 CONCURRENT HAUL?: Check the box if there are more than one hauls going at the same time.
Example: 3 Electric bandit reels are set out creating (Haul 1, Gear 1, Types A, B, C). The boat changes reel type C to target GRP, while the other electric bandit reels are still targeting SNV. A second gear log and haul log would then be completed to reflect this change (Haul 2, Gear 2, Type A). This second gear log would be a CONCURRENT haul with haul 1, the box on both haul logs would be checked.

All lines are reeled back and the boat changes position before fishing starts again. This would be a new haul for all gears. Everything is then set out (Haul 3, Gear 1, Type A, B) & (Haul 4, Gear 2, Type A). Then the deckhand adds a rod and reel. A third gear log and another haul log would then need to be completed (Haul 5, Gear 3, Type A). This new haul log would also be CONCURRENT to Hauls 3 and 4, because they are all going on at the same time.

10 HAUL #: Record all the haul numbers of the hauls that are running concurrently.

Example: Everything is set out (Haul 3, Gear 1, Type A, B) & (Haul 4, Gear 2 Type A). Then the deckhand adds a rod and reel. A third gear log and another haul log would then need to be completed (Haul 5, Gear 3, Type A). These 3 hauls are concurrent and the box would be checked. On Haul 3, the box HAUL # should be filled in with 3, 4, 5 and on Haul 4, the box HAUL # should be filled in with 3, 4, 5. Haul 5, the box HAUL # should be filled in with 3, 4, 5.

BAIT INFORMATION:

Note: The number of individual baits used is not required to be recorded for this fishery.

1 LBS: Record to the nearest pound (lbs.) the estimated total weight of bait used during the haul. Actual weight is acceptable. The highest amount of bait used should be listed as bait #1. If more than five baits were used, note other baits in the COMMENTS. If the vessel is using Chum COMMENT the estimated total weight used during the haul and the kind of bait used in the chum.

2 KIND: Record the code that identifies the bait used.

1 = Mackerel	14 = Flatfish/Flounder	27 = Sparidae
2 = Herring/menhaden	15 = Grouper	28 = Scorpionfish
3 = Squid	16 = Bluefish	29 = Lizardfish
4 = Artificial	17 = Tilefish	30 = Remora
5 = Sardine	18 = Jacks	31 = Needlefish
6 = Scad	19 = Barracuda	32 = Snapper
7 = Shark	20 = Mullet	33 = Chum
8 = Skate/ray	21 = Ladyfish	34 = Ballyhoo
9 = Little tunny/bonita	22 = Toadfish	97 = Unknown
10 = Grunts	23 = Eel	98 = Unknown fish scraps
11 = Catfish	24 = Drum family	99 = Other describe
12 = Tunas	25 = Cichlid	
13 = Swordfish	26 = Hake	

Note: If scraps of an identifiable species were used, record that species KIND code and COMMENT the parts used. Grouper stomachs are still KIND 15, add in COMMENTS that stomachs were used.

3 TYPE: Record the one digit code that describes the type of bait used.

1= Whole	4 = Chum
2= Cut	9 = Other
3 = Live	

4 COND: Record the one digit code that describes the condition of the bait used. If a type of bait is used in more than one condition record COND 1-4 in the table and record additional conditions in the COMMENTS. Example: A bait type may be frozen and salted, record COND 1 and COMMENT COND 5.

1 = Frozen	3 = Thawed
2 = Semi Frozen	4 = Fresh

5 = Salted
6 = Reused

9 = Other (COMMENT required)

***COMMENTS*:** An additional space on the Haul Log for any other comments to help explain fishing situations. And for additional information relating to the haul.

EFFORT DATA:

EFFORT DATA AVE REELS 1 AVE HOOKS 2 TOTAL TIME 3 TOTAL HH 4

% OF CONFIGS A 5 B C D E F

TIME	# REELS	# HOOKS	CONFIGURATIONS	COMMENTS	Δ TIME	HOOK HOURS
: 6	7	8	9	10		
:					11	12
:						
:						
:						

The effort data is used to calculate the total hook hours, which is the amount of time a hook was in the water and actively fishing.

HEADER:

1 AVE REELS: This is the average number of reels fished; this value is taken from the electronic effort data calculation excel sheet.

2 AVE HOOKS: This is the average number of hooks fished; this value is taken from the electronic effort data calculation excel sheet.

3 TOTAL TIME: This is the total change in time; this value is taken from the electronic effort data calculation excel sheet.

4 TOTAL HOOK HOURS: This is the total amount of hook hours; this value is taken from the electronic effort data calculation excel sheet.

5 % OF CONFIGS: This is the percentage of time that each configuration was used during the time fished; this value is taken from the electronic effort data calculation excel sheet.

FISHING EFFORT:

6 TIME: Record the time when a change in the fishing effort or the fishing gear type was made. If the behavior of the boat is motor fishing or trolling, when to record the time does not change but the rules for a new haul does (see HAUL section).The time should be recorded in the following situations:

- If the Gear Type (A-F) changes or is added.
- If a new reel/hooks are added to the water during the haul with the same gear number.
- If the reels/hooks are brought up because of catch or loss of bait and the time out of the water is the time is MORE THAN 3 minutes, this time IS recorded in the Fishing Effort section of the Haul Log, the time should be recorded as when the reel brought up and redropped and a comment is needed to describe the change. If this time is LESS THAN 3 minutes, then the change in effort is not affected and the time is NOT recorded.
- If the boat picks up the lines to reposition and takes LESS THAN 20 minutes, this is NOT a new haul. This time IS to be recorded in this Fishing Effort section of the Haul Log, the time should be recorded as when the reel is brought up and re-dropped and a comment is needed to describe the change. If the pause takes MORE THAN 20 minutes, this IS a new haul.
- If there is a pause of LESS THAN 2 hours with all the lines out of the water and the boat does not move. This time IS to be recorded in this Fishing Effort section of the Haul Log, the time should be recorded as when the reel is brought up and re-dropped and a comment is needed to describe the reason for the pause. Ex: Crew gutting and packing fish. If this pause is MORE THAN 2 hours, this IS a new haul.

Example:

A gear log is created for Gear 1 which consists of three electric bandit reels with identical configurations (Gear 1, 3 Type As). All are set out creating Haul 1 (Gear 1, 3 Type As, Haul 1). During Haul 1, 1 of the reels is reeled back and the crew takes 5 minutes to re-bait the hook because he needed to cut up more bait, this would be recorded as a change in time from when the hook left the water to when it was recast.

Another reel is brought back and is out of the water for 11 minutes, while the crew member eats a snack, this time is recorded when the reel left the water, to when it returned.

The third reel is brought out for a minute to remove a fish and cast back, this is not recorded.

All the reels are reeled in and are out of the water to reposition for 15 minutes, this IS recorded from the time when the last of the three reels leaves the water and when the first of the three reels returns to the water, as long as they all enter the water within 3 minutes of the first one.

Later one of the leaders is bit off the mainline. The crew doesn't replace the missing leader/hook and continues fishing. The removal and recast would be recorded as a new gear type (Gear 1, Type B, Haul 1).

7 # REELS: Record the total number of reels/rods fishing in the given time period.

8 # HOOKS: Record the total number of hooks being fished in the given time period.

9 CONFIGURATIONS: Record each gear type/configuration being fished in the given time period. This corresponds with the amount of the gear type and alphabetical gear type code (A-F) being used in the given time period. (2 reels of type A equals 2A)

10 COMMENTS: Any time a change happens, describe briefly in the comments. If a reel is added or removed from the water, if a reel type changes, or if fishing pauses for MORE THAN 3 minutes. At the start of fishing the comment must be "start fishing" and at the end of fishing the comment must be "end fishing".

11 Δ TIME: This is the change in time between each fishing change in the given time period. This value is taken from the electronic effort data calculation excel sheet.

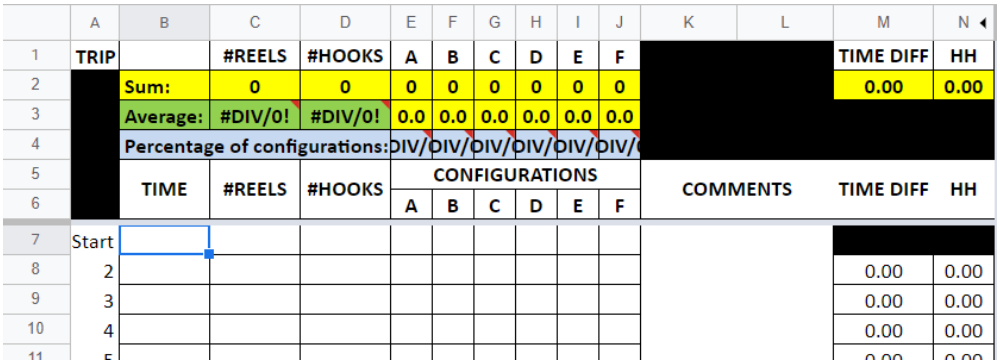
12 HOOK HOURS: This is the number of hours of the total number of hooks fished in the given time period. This value is taken from the electronic effort data calculation excel sheet.

EXAMPLE OF EFFORT DATA:

Example: A gear log is created for Gear 1 which consists of three electric bandit reels with 2 hooks each and identical configurations (Gear 1, 3 Type As). All are set out at 0900 creating Haul 1 (Gear 1, 3 Type As, Haul 1). During Haul 1, 1 of the reels is reeled back at 0910 and the crew member takes 3 minutes to re-bait the hook because he needed to cut up more bait, this would be recorded as a change in time from when the hook left the water to when it was re-cast. Another reel is brought back at 0915 and is out of the water for 11 minutes, while the crew member eats a snack, this time is recorded when the reel left the water to when it returned. The third reel is brought out at 0927 for a minute to remove a fish and cast back, this is not recorded. All the reels are reeled in and are out of the water to reposition for 15 minutes at 0930, this IS recorded from the time when the last of the three reels leaves the water and when the first of the three reels returns to the water, as long as they all enter the water within 3 minutes of the first one. Later at 1010 one of the leaders is bit off the mainline. The crew doesn't replace the missing leader/hook and continues fishing a minute later. The removal and recast would be recorded as a new gear type (Gear 1, Type B, Haul 1). At 1018 the haul ends.

TIME	# REELS	# HOOKS	CONFIGURATIONS	COMMENTS	Δ TIME	HOOK HOURS
09:00	3	6	3A	Start Fishing		
09:10	2	4	2A	One reel paused to cut bait		
09:13	3	6	3A	Resume Fishing		
09:15	2	4	2A	One reel pause for a snack		
09:26	3	6	3A	Resume Fishing		
09:30	0	0	0	Pause Fishing to Reposition		
09:45	3	6	3A	Resume Fishing		
10:10	2	4	2A	One reel removed because bit off		
10:11	3	5	2A, 1B	Resume Fishing		
10:18	0	0	0	End Fishing		

CALCULATIONS SHEET:



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	TRIP		#REELS	#HOOKS	A	B	C	D	E	F			TIME DIFF	HH
2		Sum:	0	0	0	0	0	0	0	0			0.00	0.00
3		Average:	#DIV/0!	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0				
4		Percentage of configurations:			DIV/	DIV/	DIV/	DIV/	DIV/	DIV/				
5		TIME	#REELS	#HOOKS	CONFIGURATIONS						COMMENTS		TIME DIFF	HH
6					A	B	C	D	E	F				
7	Start													
8	2												0.00	0.00
9	3												0.00	0.00
10	4												0.00	0.00
11	5												0.00	0.00

This is the electronic version of the Effort Data Section of the Haul Log. This Google Drive spreadsheet, called the Calculations Sheet, is used to obtain all the calculated values in the header of the Effort Data Section of the Haul Log. The equations to calculate the average reels, average hooks, change in time, hook hours, and percentage of configurations are programmed into the spreadsheet. The calculation sheets will come in workbooks of 10 sheets (10 hauls), each sheet will be used for the calculation of one (1) haul.

- Save the template in the correct observer folder and name it, TRIPID.H1-10 (Or the haul numbers on the sheet).
- Fill in the "TRIP" box with the observer trip number. The box is in the upper left corner of the Calculation Sheet. Only the first haul of the book needs to be filled out. (Circled in picture)
- Fill in the TIME, # REELS, # HOOKS, and Configurations used into the appropriate cells and the sheet will calculate AVE REELS, AVE HOOKS, Δ TIME, HOOK HOURS, and % OF CONFIGS.
- Transcribe these numbers into the EFFORT DATA Section of the HAUL

BOTTOM LONGLINE GEAR LOG INSTRUCTIONS

This log contains detailed descriptions about the bottom longline gear fished. This gear log describes the average configurations of the gear on all hauls that used the same gear. One gear log is used to describe each different gear within a single trip. Each gear log is numbered consecutively starting from gear number 1. Significant changes in target, number of hooks, length of mainline, type of mainline, or fishing style between hauls may result in different gear logs.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of Page:

GEAR ID __1__ LONGLINE GEAR LOG

1 GEAR ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP NUMBER 1	VESSEL NAME 2	VESSEL NUMBER 3	DATE LANDED (mm/dd/yyyy) 4

GEAR NUMBER 5	# OF HAULS 6	AVG. # HOOKS 7	TOTAL # HOOKS (trip start) 8

1 OBS/ TRIP NUMBER: Record the three-character observer identifier (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record “UNNAMED”. Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL NUMBER: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

4 DATE LANDED: Record the month, day and year that the vessel returned to the dock/port (mm/dd/yyyy). This may not be the same day fish were unloaded and sold. Example: 01/01/2020

5 GEAR NUMBER: Record the consecutive number, starting at 1, assigned to each gear configuration. Additional gear logs would be used in the following cases:

- >50% difference in the mainline length, type, and/or number of hooks between hauls
- change in fishing method (bottom longline to pelagic)
- change in the target species (SHX to GRP)

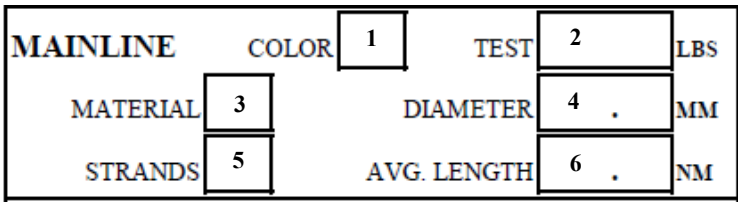
Example: The first two hauls use 12.0 circle hooks to target GRP (gear number 1). The next two hauls use 18.0 circle hooks to target SHX. A second gear log would then be completed and numbered (gear number 2). The last haul uses a combination of these hooks targeting MIX (both GRP and SHX). A third gear log would be completed and numbered (gear number 3).

6 # OF HAULS: Record the number of hauls that the gear was used in.

7 AVG. # HOOKS: Record the average amount of hooks set. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

8 TOTALS # HOOKS (trip start): Record the total number of hooks onboard at the start of the trip. This is NOT a sum or average of all hauls. This is a count at the start of a trip of all the assembled gangions with hooks, including all hooks in boxes, which might be used to fish. This may be obtained from the captain.

MAINLINE:



1 COLOR: Record the color of the mainline by writing the numerical code (1-9). If more than one color is present assign the code of 7 (multi). Steel mainlines are given the code 9 (other). Describe the codes 7 and 9 in the COMMENTS field.

COLOR CODES:

1 Clear
2 White
3 Pink
4 Black
5 Green
6 Blue
7 Multi (for any mixture of colors)
8 Red
9 Other (describe in comments)

2 TEST: Record the test or dry breaking strength of the mainline in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 600-1200 lbs.

3 MATERIAL: Record the material of the mainline used by writing the numerical code (1-3, 9). Please describe other materials in the COMMENTS field.

MATERIAL CODES:

1 Nylon
2 Cotton
3 Steel wire
9 Other

4 DIAMETER: Record to the nearest tenth of a millimeter (mm) the diameter of the mainline. This may be obtained from the captain. If unable to record, submit a labeled sample piece with

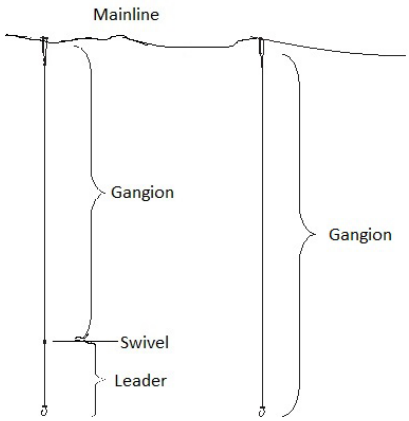
your data. General ranges found are 3.0-4.2 mm. It is common for the diameter of steel wire to be provided to you in inches by the captain, this would be converted as 1in = 25.4mm. Record this calculation in the COMMENTS field.

5 STRANDS: Record the number of strands of material that make up the mainline. Nylon (monofilament) should be 1 strand. Steel wire is usually 7x7, which should be 49 strands.

6 AVG. LENGTH: Record the average length of the mainline in nautical miles (nm). This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

GANGIONS:

GANGIONS	COLOR 1	TEST 2	LBS	
MATERIAL 3		DIAMETER 4 .	MM	
	SWIVELS PER GANGION 5			
AVG. LENGTH 6	FT	AVG. # 7		
	DISTANCE BETWEEN GANGIONS 8		FT	
LEADERS USED? ☐ 9		MATERIAL 10		
TEST 11	LBS	LENGTH 12	IN	



This is usually a 100-1200 pounds (lbs.) test nylon monofilament attached to a mainline by a snap. A gangion may vary in length and have about two swivels, one at the snap and another some distance above the hook. Fishers may refer to this as a "leader".

1 COLOR: Record the color of the gangions by writing the numerical code (1-9). If more than one color is present assign the color a code of 7 (multi). Steel mainlines are given the code 9 (other). Describe the codes 7 and 9 all other colors in COMMENTS field.

COLOR CODES:

1 Clear
2 White
3 Pink
4 Black
5 Green
6 Blue
7 Multi (for any mixture of colors)
8 Red
9 Other (describe in comments)

2 TEST: Record the test or dry breaking strength of the gangions in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 300-1200 lbs.

3 MATERIAL: Record the material of the gangions used by writing the numerical code (1-3, 9). Please describe other materials in the COMMENTS field.

MATERIAL CODES:

1 Nylon
2 Cotton
3 Steel wire
9 Other

4 DIAMETER: Record to the nearest tenth of a millimeter (mm) the diameter of the gangions. This may be obtained from the captain. If unable to record, submit a labeled sample piece with your data. General ranges found are 1.8-4.2 mm. It is common for the diameter of steel wire to be provided to you in inches by the captain. This would be converted as 1in = 25.4mm. Record this calculation in the COMMENTS field.

5 SWIVELS PER GANGION: Record the number of swivels used per gangion. One is generally located at the snap and a second swivel can be located some distance above the hook between the gangion and the leader or attached to the hook. Swivels with 3 loops are considered to only be 1 swivel.

6 AVG. LENGTH: Record, to the nearest foot (ft.), the average length of all the gangions used on the gear. Gangion length should not include the leader length. This is an average of all hauls with the same gear configuration.

7 AVG #: Record the amount of gangions used on the gear. This is an average of all hauls with the same gear configuration.

8 DISTANCE BETWEEN GANGIONS: Calculate the distance, in whole feet (ft.), between gangions. This is an average of all hauls with the same gear configuration. To estimate the distance between gangions: convert the average mainline length from nautical miles to feet by multiplying average mainline length by 6080 feet. Then divide the mainline length in feet by the average number of the hooks plus 1. Record this calculation in the COMMENTS field.
Avg. Mainline Length (ft.) = Avg. Mainline Length (nm.) * 6080 ft. Distance Between Gangions = Avg. Mainline Length (ft.) / (Avg # Hooks +1)

9 LEADERS USED?: Indicate if leaders are used between the gangion and the hook. This is a section of material that is different from the gangion, this is attached to the hook and is between the gangion and the hook. It may be mono or steel wire and may have a swivel at either end. The purpose of a leader is to reduce bite offs, make hook replacement easier and help to maintain the gangion's length. Fishers may refer to this as a "tail".

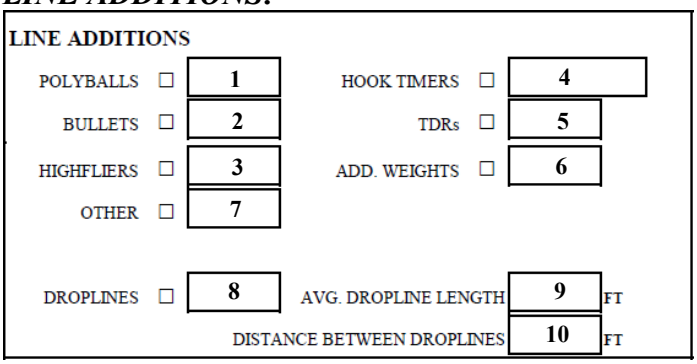
10 LEADER LENGTH: If present, record the length of the leader to the nearest inch (in). This is an average of all hauls with the same gear configuration.

11 LEADER TEST: If present, record the test or dry breaking strength of the leaders in pounds (LBS). This information can be obtained from the captain and/or verified from a manufacturer label. General ranges found are 300-1200 lbs.

12 LEADER MATERIAL: If present, record the material of the leaders used by writing the numerical code (1-3, 9). Please describe other materials in COMMENTS field.

MATERIAL CODES:
1 Nylon
2 Cotton
3 Steel wire
9 Other

LINE ADDITIONS:



1 POLYBALLS: Indicate if polyballs are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

2 BULLETS: Indicate if bullets (sometimes referred to as Daubs) are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

3 HIGHFLIERS: Indicate if highfliers are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field. Highfliers are a marker made up of a pole set through a float. One end of the pole is weighted so that it floats upright. There may be a simple flag, a strobe, reflective tape, a radar reflector or any combination of such attached to the top of the pole to make it more visible. A highflyer is usually used to mark the beginning and end of the mainline for bottom longlines, but can sometimes be used as reference points in the gear.

4 HOOKTIMERS: Indicate if hooktimers are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field. These are usually used for special projects and will come with instructions.

5 TDRs: Indicate if TDRs are used on the gear. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field. These are usually used for special projects and will come with instructions.

6 ADD. LINE WTS: Indicate if weights are placed along the length of the mainline. These are sometimes associated with droplines or floats. These are external and can be considered anchors. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

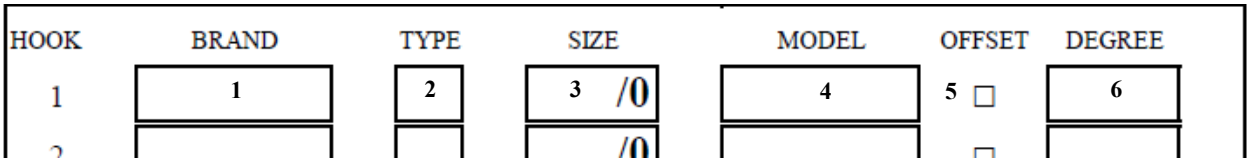
7 OTHER LINE ADDITIONS: Indicate if line additions, other then what is listed, are used. Record other types in the comments section. If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

8 DROPLINES: Indicate if droplines are used. Droplines are lines attached to the mainline and a float of some kind. These are usually used as a reference point, If Yes, record the total amount used in the space. This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

9 AVG. DROPLINE LENGTH: If present, record the length of the droplines to the nearest foot (ft.). This is an average of all hauls with the same gear configuration. Record this calculation in the COMMENTS field.

10 DISTANCE BETWEEN DROPLINES: If present, record the distance, in whole feet (ft.), between the droplines. This is an average of all hauls with the same gear configuration. To estimate the distance between gangions: convert the average mainline length from nautical miles to feet by multiplying average mainline length by 6080 feet. Then divide the mainline length in feet by the average number of the hooks plus 1. Record these calculations in the COMMENTS field.
Avg. Mainline Length (ft.) = Avg. Mainline Length (nm.) * 6080 ft. Distance Between Droplines = Avg. Mainline Length (ft.) / (Avg # Droplines +1)

HOOKS:



1 BRAND: Record the hook brand name in all capital letters and one word. Lindgran/Pitman is abbreviated as LGPN. This information can be obtained from the captain and/or verified from a manufacturer label. If this information is unknown or cannot be verified, record UNKNOWN and take a picture of the hook with the ruler for scale. Record additional hooks, over the amount allotted, in comments. Example: MUSTAD, EAGLECLAW, LGPN (for Lindgren/Pitman), HILINER.

2 TYPE: Write in C for circle, J for J-hook, T for treble or L for lure. L (Lure) is any Jig, Spoon, Skirt, or artificial bait. If the type is L (Lure), then a picture is required.

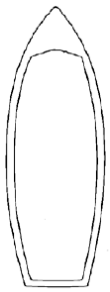
3 SIZE: Record the hook size. This information can be obtained from the captain and/or verified from a manufacturer label.
Example: 9/0 = nine aught

4 MODEL: Record the hook model or pattern number in one word. For Lindgren/Pitman (LGPN) black carbon circle hooks, use the code LPCIRBL.

5 OFFSETS: Offset refers to the amount of deviation in the plane of the hook point relative to that of the shank. If yes, check the box. Hooks can be offset manually (by the fishermen) or by the manufacturer.

6 DEGREES OFFSET: Record the degrees offset to the nearest whole number. This can be obtained from the manufacturer label or the captain. The standard is 10°. If done manually or the offset is unknown, estimate the degrees to the nearest whole number and take a picture.

VESSEL DIAGRAM:



SKETCH: Indicate the general position of the longline reels and hauling station on the vessel diagram.

Suggested icons:

¤ Hauling Station ■ Longline Reel ← Flow of line

COMMENTS: Use the comments section for any information in addition to what was recorded, to make drawings or diagrams if the gear setup is unusual, and to explain other or unknown options. If more space is required, it is acceptable to use the back of the logs, in that case the comment “see back” is required.

BOTTOM LONGLINE HAUL LOG INSTRUCTIONS

This log contains all the physical information relating location and effort of a single string fished. All Bottom Longline Haul logs will come after the associated Longline Gear Logs, ordered in numerical order according to haul number. The LONGLINE HAUL LOG will serve as a cover sheet for the haul and the ANIMAL LOG/S will follow with all associated catch.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of the Page:

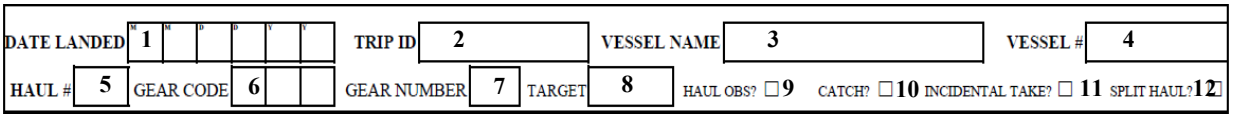
HAUL ID 1 LONGLINE HAUL LOG SAMPLES TAKEN? ☐ 2 PAGE 1 of 3

1 HAUL ID: For lab use only. This number refers to the database. Please disregard.

2 SAMPLES TAKEN?: Check this box if there are biological samples taken during haulback.

3 PAGE 1 of ___: Record the total number of pages used on THIS HAUL and associated **ANIMAL LOGS.** The front page of any haul log will always be page 1. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Do not include incidental take log or turtle forms in this number.

HEADER:



1 DATE LANDED: Record the month, day and year that the **VESSEL RETURNED TO THE DOCK/PORT** (mm/dd/yyyy). This may not be the same day fish were unloaded and sold. Example: 01/01/2020

2 TRIP ID: Record the three-character observer (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip. Example: ABC001.

3 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record "UNNAMED". Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

4 VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number. Example: USCG documentation number: 234567 or State registration number: FL2345XX

5 HAUL #: Record the haul number, start with 1 for the first haul and continue sequentially for all hauls made within a single trip. A haul is defined as each time a string/gear is set/hauled. Cut/ part offs and gear starts/ends are indications of new haul numbers. If a line is cut/parted off during the set this should be treated as two separate sets and hauls, each having its own haul log and associated animal logs.

6 GEAR CODE: Record the three-digit code for the gear fished during this haul.
675 = Pelagic Longline
676 = Bottom Longline

7 GEAR NUMBER: Record the consecutive number assigned to the gear configuration that is associated with the gear being used to fish during the haul. This number relates directly to the LONGLINE GEAR LOG gear number. If there are multiple combinations of gear, large differences in mainline length and/or amount of hooks, or a change in target species, then an additional LONGLINE GEAR LOG will be completed and the appropriate gear number entered.

8 TARGET SPECIES: Record the PRIMARY SPECIES being targeted in the haul using the three-character code abbreviations (ex. SSB = sandbar, YEG = yellowedge grouper). This information is obtained from the captain PRIOR to fishing activity. If the vessel is targeting small coastal sharks or large coastal sharks use SHX and comment details. NOTE: A change in target species will require an additional Gear Log and Haul log. MIX targets should only be used if one gear is being used to target various species and the captain lists two or more different species they plan on targeting. If the gear contains more than one hook size that might be a MIX target. Example: The gear contains 8/0 and 12/0 circle hooks to target Vermilion Snapper- SNV and small coastal sharks-SHX. The species Vermilion Snapper- SNV and Gray Triggerfish- TRG are commonly caught on the same gear type and hook size.
SHX = sharks
GRP = grouper
SNA = snapper
TIL = tilefish
MIX = multiple target species

9 HAUL OBS?: Check box to indicate whether the haul was observed. An observed haul is defined as a haul where all of the catch hauled and discard information is recorded. An unobserved haul is defined as a haul where the complete catch and/or discard information is not collected. If you are unable to go on deck due to safety concern or illness, indicate this by NOT checking "HAUL OBS?" and record your reason in the COMMENTS section.

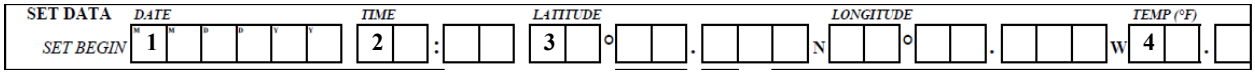
10 CATCH?: Check the box if there was anything caught and the haul has any associated Animal Logs. If the gear is hauled and there is absolutely no catch ("water haul" or "getting skunked") indicate this on the haul log by NOT checking "CATCH?". Record "No Catch" in the COMMENTS section.

11 INCIDENTAL TAKE?: Check this box if a marine mammal, sea bird, sawfish, sturgeon, or sea turtle was caught in this haul. An Incidental Take Log MUST be completed for all marine

mammals caught, a Turtle Life History Form MUST be completed for each sea turtle caught, and a Protected Species Form MUST be completed for each sea bird, sawfish or sturgeon caught.

12 SPLIT HAUL?: Check box if this haul was a split haul. Refer to split haul section for further instructions. Note: This will also be reflected in the GEAR COND.

SET BEGIN DATA:



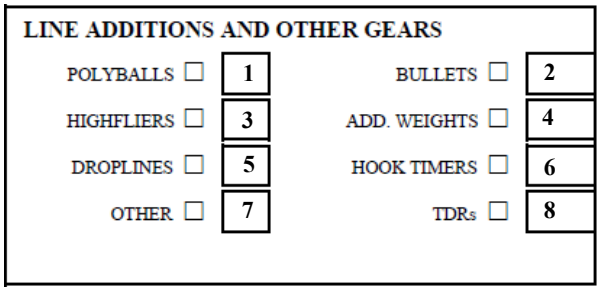
1 SET BEGIN DATE: Record the date (MM/DD/YY) the gear is set out.

2 SET BEGIN TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the first piece of gear (polyball, weight, other line addition or start of the line) ENTERS the water with the intent to fish.

3 SET BEGIN LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the set begin time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 SET BEGIN TEMPERATURE: Record temperature (ºF) when the set begin time is recorded.

LINE ADDITIONS AND OTHER GEARS:



1 POLYBALLS: Indicate if polyballs are used on the gear. If Yes, record the total amount used in the space.

2 BULLETS: Indicate if bullets (sometimes referred to as Daubs) are used on the gear. If Yes, record the total amount used in the space.

3 HIGHFLIERS: Indicate if highfliers are used on the gear. If Yes, record the total amount used in the space. Highfliers are a marker made up of a pole set through a float. One end of the pole is weighted so that it floats upright. There may be a simple flag, a strobe, reflective tape, a radar reflector or any combination of such attached to the top of the pole to make it more visible. A highflyer is usually used to mark the beginning and end of the mainline for bottom longlines, but can sometimes be used as reference points in the gear.

4 ADD. LINE WTS: Indicate if weights are placed along the length of the mainline. These are sometimes associated with droplines and/or floats. These are external and can be considered anchors. If Yes, record the total amount used in the space. DROPLINES: Indicate if droplines are used. Droplines are lines attached to the mainline and a float of some kind. These are usually used as a reference point, If Yes, record the total amount used in the space.

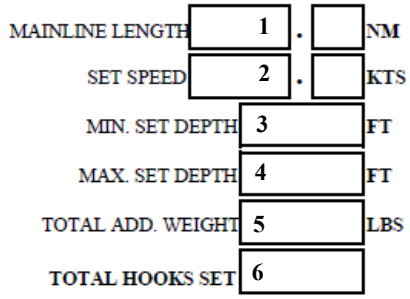
5 DROPLINES: Indicate if droplines are used. Droplines are lines attached to the mainline and a float of some kind. These are usually used as a reference point, If Yes, record the total amount used in the space.

6 HOOKTIMERS: Indicate if hooktimers are used on the gear. If Yes, record the total amount used in the space. These are usually used for special projects and will come with instructions.

7 OTHER: Indicate if line additions, other then what is listed, are used. Record other types in the comments section. If Yes, record the total amount used in the space.

8 TDRs: Indicate if TDRs are used on the gear. If Yes, record the total amount used in the space. These are usually used for special projects and will come with instructions.

HAUL DETAILS:



1 MAINLINE LENGTH: Record the length, to the nearest tenth of a nautical mile (NM), of the main line for this set. Use available electronics or calculate. **Note:** 1 nautical mile ≈ 6080 feet.
Average Set Speed (KTS or NM/HR) * Set Duration (HRS) = Length (NM).

2 SET SPEED: Record the speed of the vessel, to the nearest tenth of a knot (KTS), during the setting of the gear. This should be the average speed obtained from available electronics or calculation. Most GPS units will provide speed in knots, including the ones provided. Can be calculated by mainline length/set duration.

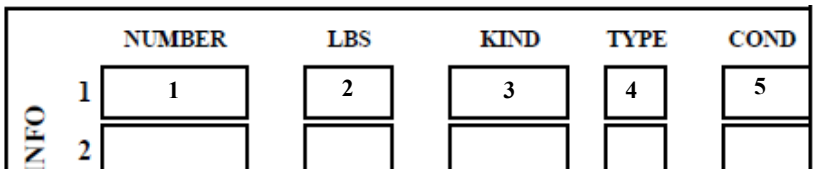
3 MIN. SET DEPTH: Record the minimum depth, to the nearest foot (FT), of the location where the gear was set. This can be obtained from the vessel's instruments or the captain. If unable to record the depth because the vessel does not have the necessary electronics, COMMENT on haul and trip logs. **Note:** 1 fathom ≈ 6 feet.

4 MAX. SET DEPTH: Record the maximum depth, to the nearest foot (FT), of the location where the gear was set. This can be obtained from the vessel's instruments or the captain. If unable to record depth because vessel does not have the necessary electronics, COMMENT on haul and trip logs.

5 TOTAL ADD. WEIGHT: Record the total weight of additional line weights, to the nearest pound (LB) for this haul. This is the amount of weight attached to the mainline.

6 TOTAL HOOKS SET: Record the amount of hooks set for this haul.

BAIT INFORMATION:



1 NUMBER: Record the amount of individual baits used on this haul (hook number should = bait number). The highest amount of bait used should be listed as bait #1. If more than five baits are used, note the other baits in the COMMENTS. If hooks are being double baited this is still one bait used and the LBS should reflect the additional bait, a comment should also be made.

2 LBS: Record to the nearest pound (lbs.) the estimated total weight of bait used during the haul. Actual weight is acceptable. If the vessel is using Chum COMMENT the estimated total weight used during the haul and the kind of bait used in the chum.

3 KIND: Record the code that identifies the bait used.

1 = Mackerel	14 = Flatfish/Flounder	27 = Sparidae
2 = Herring/menhaden	15 = Grouper	28 = Scorpionfish
3 = Squid	16 = Bluefish	29 = Lizardfish
4 = Artificial	17 = Tilefish	30 = Remora
5 = Sardine	18 = Jacks	31 = Needlefish
6 = Scad	19 = Barracuda	32 = Snapper
7 = Shark	20 = Mullet	33 = Chum
8 = Skate/ray	21 = Ladyfish	34 = Ballyhoo
9 = Little tunny/bonita	22 = Toadfish	97 = Unknown
10 = Grunts	23 = Eel	98 = Unknown fish scraps
11 = Catfish	24 = Drum family	99 = Other describe
12 = Tunas	25 = Cichlid	
13 = Swordfish	26 = Hake	

Note: If scraps of an identifiable species were used, record that species KIND code and COMMENT the parts used. Grouper stomachs are still KIND 15, add in COMMENTS that stomachs were used.

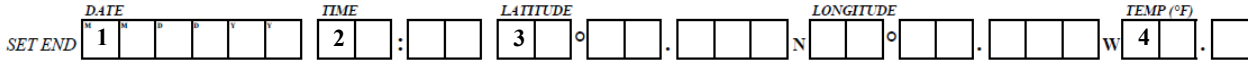
4 TYPE: Record the one-digit code that describes the type of bait used. TYPE CODE 5 is only used in conjunction with COND CODE 6.

1 = Whole 4 = Chum
2 = Cut 5 = Soak
3 = Live 9 = Other

5 COND: Record the one-digit code that describes the condition of the bait used. If a type of bait is used in more than one condition record COND 1-4 in the table and record additional conditions in the COMMENTS. Example: A bait type may be frozen and salted, record COND 1 and COMMENT COND 5.

1 = Frozen 5 = Salted
2 = Semi Frozen 6 = Reused
3 = Thawed 9 = Other
4 = Fresh

SET END DATA:



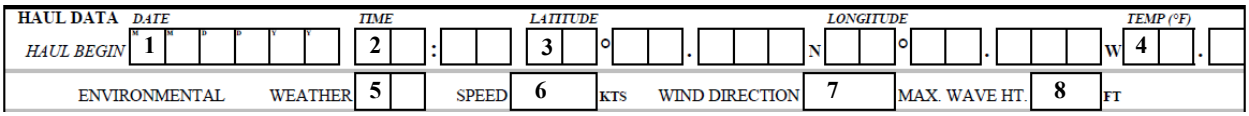
1 SET END DATE: Record the date (MM/DD/YY) that the set was completed.

2 SET END TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the last line addition or end of line is cast away from the vessel and the set is completed.

3 SET END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes at the completion of the set (DDº MM.mmm). **NOTE:** If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 SET END TEMPERATURE: Record temperature (ºF) at completion of the set.

HAUL BEGIN DATA:



1 HAUL BEGIN DATE: Record the date (MM/DD/YY) when the retrieval of the gear begins.

2 HAUL BEGIN TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the first piece of gear (polyball, weight, other line addition or start of the line) is pulled ABOARD the vessel.

3 HAUL BEGIN LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the haul begin time is recorded. **NOTE:** If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 SET BEGIN TEMPERATURE: Record temperature (ºF) when the haul begin time is recorded.

5 WEATHER: Record the two-digit code for the weather when the haul begin time is recorded.

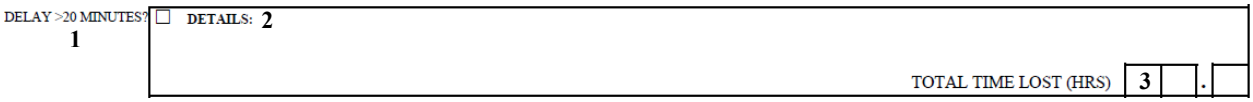
01 = Clear	07 = Thunderstorms with lightning
02 = Partly cloudy	08 =Rain with fog
03= Continuous layer of clouds	09 = Fog or thick haze
04= Drizzle	10 = Snow or rain and snow mixed
05 = Continuous Rain	11 = Blowing snow
06 = Intermittent Rain/Showers	99 = Other, please describe in COMMENTS

6 WIND SPEED: Record the MAXIMUM wind speed, in whole knots (kts), when the haul begin time is recorded. If the value is less than 10, record a 0 in front of the value, 5 kts should be recorded as 05 kts. If wind is light or wind direction is difficult to determine, record either "VAR" for variable wind or a dash "-"for undetermined.

7 DIRECTION: Record the 3-digit direction, in compass DEGREES, that the wind is coming from when the haul begin time is recorded. Wind coming from the northeast should be recorded as 045. If wind is light or wind direction is difficult to determine, record either "VAR" for variable wind or a dash "-"for undetermined. The direction north is recorded as 000.

8 MAX WAVE HEIGHT: Record the MAXIMUM wave height, in whole feet (ft.), when the haul begin time is recorded. If the value is less than 10 record a 0 in front of the value, 5 ft. should be recorded as 05 ft. If the wave height is LESS THAN six inches, record 00.

DELAY:

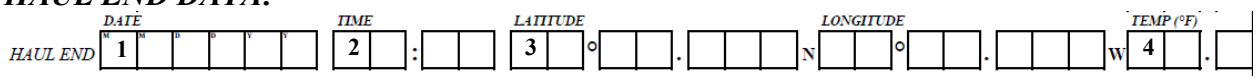


1 DELAY >20 MINUTES?: Indicate if there was a single event (part offs, mechanical repairs, tangles or other delays) that is greater than 20 minutes (0.3 hrs.).

2 DETAILS: Describe each delay that was >20 minutes, giving times and detailed descriptions of the event. Multiple part offs that are under 20 minutes may occur, BUT they are NOT cumulative and do NOT count towards the total delay. Comment all other delay instances <20 minutes in the haul COMMENTS section.

3 TOTAL TIME LOST (HRS): Record time in Hours to the nearest tenth (20 mins. ≈ 00.3HRS).

HAUL END DATA:



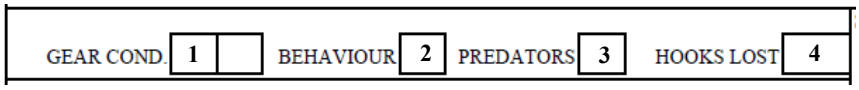
1 HAUL END DATE: Record the date (MM/DD/YY) that the haul is completed.

2 HAUL END TIME: Record the local time (24-hour clock NOT hundredths of an hour). This is when the last line addition or end of line returned to the vessel and the haul is completed. If the line is parted off, tangled, or lost and left in the water more than 6 additional hours, not recovered or purposely left in the water. The time of part off would be the end of haul time. If the gear is recovered after 6 hours or being purposely part off this would be a split haul. Refer to spilt haul section for further instructions.

3 HAUL END LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes at the completion of the haul (DDº MM.mmm). NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml .

4 HAUL END TEMPERATURE: Record temperature (ºF) at completion of the haul.

HAUL END CONDITIONS:



1 GEAR COND: Indicate the condition of the gear at the completion of the haul back by recording the most appropriate two-digit code listed below.

60 = No gear damage with greater than 10% hooks lost
61 = No gear damage with less than or equal to 10% hooks lost
62 = Less than 50% fouled gear due to weather/oceanic conditions. Gear tangled, spun up or otherwise lowered gear fishability.
63 = More than 50% fouled gear due to weather/oceanic conditions. Gear tangled, spun up or otherwise lowered gear fishability.
64 = Less than 50% fouled gear due to fish on the line. Gear tangled, spun up or otherwise lowered gear fishability.
65 = More than 50% fouled gear due to fish on the line. Gear tangled, spun up or otherwise lowered gear fishability
66 = Parted off, gear recovered
67 = Parted off, gear not recovered
68 = Gear completely damaged or lost
69 = Split haul (portion of gear having additional soak time)
70 = Parted off, gear partially recovered
71 = Trip limit reached, gear left in water
99 = Other: Please specify other gear condition in COMMENTS

2 BEHAVIOUR: Indicate the fishing behavior employed with codes list below.

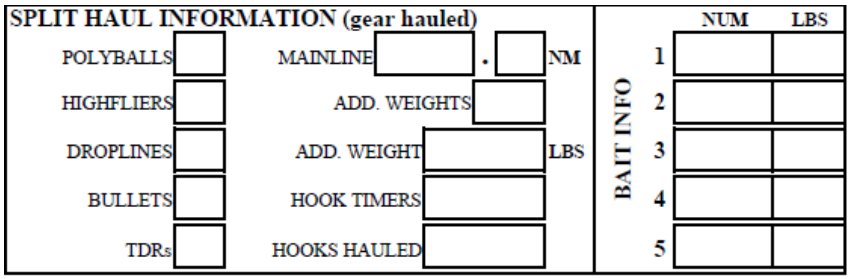
1 = Normal haul (first hook set is first hook hauled) 6 = Other
2 = Reverse haul (last hook set is first hook hauled) 9 = Unknown

3 PREDATORS: Record the presence of predators around the vessel during the haulback:

0 = None
1 = Dolphins
2 = Sharks
3 = Sea Birds
4 = Other
5 =Combination (note in comments)
9 = Unknown

4 HOOKS LOST: Record the number of hooks that did not return to the boat. This is directly related to GEAR COND field and should include "bite offs", and missing hooks. "Cut offs" are not considered hooks lost and should not be recorded here, this number can be recorded in the comments.

SPLIT HAULS:



A split haul occurs when a portion of the longline gear has a longer soak time that the rest of it. This situation may arise with a part off that takes **more than 6 hours** to recover or when the **trip limit is reached** and the line is intentionally parted. In either situation, the haul should be **split into two hauls** reflecting the two separate retrievals. The new haul will have the next sequential haul number unless the trip limit has been reached. If the trip limit is reached and the vessel returns to the dock the portion with the longer soak time will be on a new trip. In the case where the set information was observed then the information shall be recorded in the SET DATA; but if the set was not observed the information, if provided by captain or other means, can be recorded or commented but the comment “set data was not observed” needs to be included in the COMMENTS section of the haul log. **Note:** Gear Condition Code containing “parted off”, mean unintentional gear breaks or part offs.

In the case of a split haul the original haul can have gear condition codes:

66 = Parted off, gear recovered
70 = Parted off, gear partially recovered
71 = Trip limit reached, gear left in water

Where the second haul of the gear could have gear condition codes:

69: SPLIT Haul (portion of gear having additional soak time)

Example: Reaching the trip limit is common for Large Coastal Shark (LCS) trips because the trip limit of 33 sharks. Once they catch their limit, the string will be parted off intentionally, the haul condition code will be 71 and the gear hauled back will be recorded in the split haul information box. The original set amounts of the gear can be recorded on the HAUL LOG but the gear amounts on the GEAR LOG will reflect the split haul information. The vessel will run back to the dock and unload their catch.

When the vessel starts a new trip and returns to the gear; a new trip and a new haul log will be created. The two haul logs will contain the same set information, but the haul with the additional soak time also gets a gear condition code of 69. The original set amounts of the gear can be recorded on the HAUL LOG but the gear amounts on the GEAR LOG will reflect the SPLIT HAUL INFORMATION. The actual amount of gear that is retrieved in this haul is recorded in the SPLIT HAUL INFORMATION box. The SPLIT HAUL INFORMATION from both hauls should add up to the total amount gear set.

Example: In the case, where the gear is parted off for any reason other than hitting the trip limit. The haul before the part off would be gear code 66 or 70, and the gear retrieved before the part off would be entered in the SPLIT HAUL INFORMATION box. The original set amounts of the gear can be recorded on the HAUL LOG but the gear amounts on the GEAR LOG will reflect the SPLIT HAUL INFORMATION.

Then if the gear takes more than 6 hours to locate then the recovered gear would be condition code 69. This would be a new haul and the gear recovered would be entered in the SPLIT HAUL INFORMATION on the new haul. On this new haul, the original set amounts of the gear can be recorded but the gear amounts on the GEAR LOG will reflect the SPLIT HAUL INFORMATION. If the SPLIT HAUL INFORMATION from both hauls add up to the total amount gear set, the original condition code would be 66; otherwise the condition code would be 70.

SPLIT HAUL INFORMATION: Record the amount of gear hauled for the number of droplines, bullets, polyballs, highfliers, hook timers, or TDRs. Record the amount of mainline, the number of additional line weights, the weight of additional line weights (lbs.), and the number of hooks hauled. The bait amounts will be estimated depending on the amount of hooks hauled. Please note bait number and lbs. in the **BAIT INFO** section.

COMMENTS: An additional space on the Haul Log for any other comments to help explain fishing situations. And for additional information relating to the haul. If more space is required, use the back of the sheet and include "see back" on the front.

In footer:

NOAA Fisheries Panama City SBLOP Office Use Only: TDRs start:_____ middle:_____ end:_____ SBLOP Haul log Revised 04-21

TDRS: This is for office use only. Once the average temperatures have been downloaded from the TDRs, they are recorded here so that there is a record with the original data.

TELEOST ANIMAL LOG INSTRUCTIONS

This log contains catch information such as: species, live/dead, kept/release, size and sex of animal caught on sets using gears to target snapper/grouper species. When the target is a teleost species, the Teleost Animal Log should be used. Special projects will use unique Animal Logs that best fit the project (i.e. South Atlantic Deepwater Project). The Animal Logs will follow the Haul Logs with that haul's catch.

If information is not available or unknown for any field except a "NO/YES" question, record a dash (-) or unknown code (U or 0) in the field.

Top of the Page:

HAUL ID: For lab use only. This number refers to the database. Please disregard.

HEADER:

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE	SAMPLES
1	2	3	4	5	6 OF ____	7 Y/N

1 OBS/ TRIP NUMBER: Record the three-character observer (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

2 VESSEL NAME: Record the name of the vessel. Care should be taken to record the correct spelling of the vessel's name in ALL CAPITALS. Do not use punctuation; hyphens, commas, or periods. If the vessel does not have a name record
"UNNAMED". Example: MR ROGERS, SY KAI MAI, MISSYS DREAM

3 VESSEL #: Record the six-digit U.S. Coast Guard Documentation Number. The vessel may not have a Coast Guard Number, instead record the state registration number and include the two-letter state abbreviation prefix. Either should be displayed prominently on the vessel and are not the same as the NMFS or state fishing permit number.
Example: USCG documentation number: 234567 or State registration number: FL2345XX

4 HAUL #: Record the haul number from the associated HAUL LOG, this should be in sequence of the total number of hauls for the trip, starting with 1 for the first haul. A haul is defined as each time a reel is dropped and returned to the boat and drop again within a certain amount of time or when the gear is returned to the vessel. This number should relate to the haul number that was happening when these logs animals were caught. The haul number should correspond with the associated **HAUL LOG**

5 HAUL DATE: Record the month, day, year (MM/DD/YYYY) of **the haul completion**.

6 PAGE NUMBER: Record this page number, and of the total number of pages used on THIS HAUL and these associated ANIMAL LOGS. The front page of any haul log will always be page 1 then the Individual Animal Logs will be numbered sequentially **starting with page**

number 2. **If the back** of the Haul Log **is used**, the Animal Logs will **start with page number 3.** If the back of this log is not used, then the header would not be filled out and there would not be a page number. Do not include incidental take log or turtle forms in this number.
Example: A haul log and 5 animal logs, the Animal Logs are recorded as 2 of 6, 3 of 6, 4 of 6, 5 of 6 and 6 of 6

7 SAMPLES TAKEN: Circle YES if there are biological samples taken from any specimens on that page of the animal log. If there are not or there are pictures taken of any specimen circle NO.

SPECIES:

SPECIES		
SPEC #	NAME	CODE
1	**2**	**3**

1 SPEC #: Specimen numbers start at the beginning of each **haul**, with a **value of 101** and count sequentially to the end of the haul. This number is used to avoid being misread at the fish house (100 vs 001) and to avoid duplication with any incidental take specimen numbers (1, 2, 3 etc.). Number incidental takes **starting with 001** and number sequentially as encountered within a single **trip**. This number should be reflected on the appropriate Incidental Take/ Protected Resource/ Turtle Forms.

2 SPECIES NAME: Record a three-letter abbreviation (SEE SPECIES CODE LIST) for each species, including marine mammals, sea turtles or sea birds that may be caught incidentally. Attempt to identify all animals to species. If unsure, use group/family abbreviation (SHX, TUN, GRP, etc.) and comment on possible species or characteristics. Within this log only, if the same species is caught and it fills an animal log page; the first column should be filled out and a line/arrow can be drawn down the column to indicate on that page is all the same species.

3 SPECIES CODE: Record the 4-digit species code (SEE SPECIES CODE LIST). If you are unable to identify a species or a species is unlisted, photograph and fill in group or family abbreviation. Within this log only, if the same species is caught and it fills an animal log page; the first column should be filled out and a line/arrow can be drawn down the column to indicate on that page is all the same species.

IF UNSURE ABOUT ID, TAKE PICTURES, LIST ID CHARATERISTICS AND for sharks TAKE FINCLIPS

FISHING DETAILS:

TELEOST ANIMAL LOG

STATUS	HOOK LOCATION	HOOK TYPE	ACTION	VENTED
1	2	3	4	5

1 STATUS: Indicate the condition of the animal WHEN BOARDED with the codes provided. If damaged, then record damaged status code, and information about the damage in the damage section. Code 5 refers to animals that were tended or rehooked from a previous haul or trip, this will most likely be for a shark trip where the boat has reached quota and they set back sharks that were brought aboard. If the code 0/unknown is used there should also be a comment.

Status Code
0 = Unknown
1 = Alive
2 = Dead
3 = Alive and Damaged
4 = Dead and Damaged
5 = Previously Caught
6 = Alive and Barotrauma – Swim Bladder/Stomach Protruding
7 = Alive and Barotrauma – Eyes Protruding
8 = Alive and Barotrauma – Both Protruding

2 HOOK LOCATION: Indicate the location that the animal was hooked. For foul hooked animals, indicate in the comments section whether the hook was in the dorsal fin, pectoral fin, caudal fin, or some other area. For internally-hooked animals, indicate in the comments section whether the hook was in the gills/branchial arch or in the gut.

Hook Location Code
0 = None
1 = Mouth/Jaw
2 = Internal (comment location of internal hooking. Example: Left gill arch.)
3 = Foul (comment location of foul hooking. Example: Left Pec.)
9 = Unknown

3 HOOK TYPE: Indicate which style/type of hook the animal was caught on as recorded on the gear log (1-6). If unknown record 9.

4 ACTION: Record the fate of the animal with a one-digit code. For Code 8, provide a comment with the percent or portion of animal kept. Multiple codes can be used but additional code should be in the comments section. Example: A shark is kept for bait but fins are also kept

to sell, record 7 and comment 4. Note: If an animal is kept whole as requested by the observer, the action would be released dead.

Action Code
0 = Unknown
1 = Kept
2 = Released dead
3 = Released alive
4 = Finned and carcass discarded
5 = Lost at surface
6 = Tended / Rehooked
7 = Kept as bait
8 = Portion of carcass kept
9 = Previously kept, discarded dead

5 VENTED: Record if the animal was properly vented by crew or observer before being released. All boxes should be filled in with Y (yes), N (no) or U (unknown) for venting. All kept animals should be N, comment if this is not the case. In the event the crew uses a descending device to release discards please fill with Y (yes) and make a comment indicating a descending device was used instead of a venting tool.

ANIMAL DETAILS:

TELEOST ANIMAL LOG

FL (CM)	L CODE	WT. (KG)	W CODE	SEX	S CODE	DAMAGE	D CODE
1	2	3	4	5	6	7	8

1 FL (CM): Attempt to obtain a **straight-line fork length** measurement in centimeters (cm.) from **ALL CATCH**. Do not try to piece together animals that have been cut. Estimated lengths for incidentally taken marine mammals, birds, and turtles should also be recorded here. Actual measurements will be recorded on the incidental take log, the sea bird life history forms, protected resource forms or the turtle life history forms. All sharks, tuna and other finfish species are to be taken as a straight-line fork measurement. Record the curved measured length of all billfish, swordfish, and turtles to the nearest centimeter (cm.) according to the standards below. Skates and rays should be measured at their widest point, wing tip to wing tip (disc width) in centimeters (cm.). Estimated lengths should be taken for animals that are dangerous to handle, not brought on board, or when the crew is targeting bait fish to use as live bait. Estimate to the nearest centimeter (cm.) if possible, otherwise estimate to the nearest foot (ft.) and converted to centimeters (1 foot = 30 cm.). **If samples are taken** (otolith, reproductive tract,

stomach, etc.) then a **straight-line measurement MUST be taken.** See Section 1.2.3. in the Observer Manual for figures on proper measurements to take.

2 L CODE: Record the one-digit measurement type code. All sharks, tuna and other finfish species are to be taken as a straight line fork measurements, Code 1. Curved line estimates are only acceptable for sea turtle carapace and swordfish or billfish lengths, Code 2. Estimated lengths should be taken for all animals that are dangerous to handle, for all animals that are not brought on board, when there are too many to accurately measure with the time given, or for protected species in the animal log; use Code 3. If the animal is unknown or not observed properly use Code 0.

Measurement type Code
0 = Unknown/ No Measurement
1 = Straight line
2 = Curved line
3 = Estimated

3 WEIGHT (KG): Record the weight in kilograms (kg.) to the nearest tenth (0.1). **All biological sampled reef fish MUST be weighed**. Sharks are not to be weighed, unless a weight study is done. If the weight is converted, comment the math (1 lb. is 0.454 kg.). In certain cases where the pace of catch is too great or sea conditions make it impossible to obtain an accurate weight please leave blank. We do not prefer estimated weights. If estimated, add a comment.

4 W CODE: Record the type of weight obtained using the one-digit code. If the length is estimated then the weight should be estimated for all reef fish. All converted weights are estimated, Code 3. If no weight is obtained use Code 0.

Weight type Code
0 = Unknown/ No Weight
1 = Whole
2 = Gutted
3 = Estimated

5 SEX: Record the code for the sex of this animal. If undeterminable use Code U.

Sex Code
U = Unknown
M = Male
F = Female

6 S CODE: Record the code that describes the maturity stage. If the sex is U (unknown) the S Code is 0.

Sex Stage Code
0 = Unknown
3 = Running ripe - Males with sperm; Females with hydrated oocytes (teleosts only)
4 = Secondary sex characteristic – describe in comments
5 = Suspected mating scars
6 = Other (Or a combination of two or more stages)

7 DAMAGE: Record the one-digit code for the species that caused the damage. A picture should be taken of all damaged animals. Damage includes complete bites, scavenging, or any other type of discernable damage from another animal while that animal is on the gear. If the species that caused the damage is not recognizable, take pictures of the damage and comment. If there is no damage, this column should be Code 0. If the damage is caused by an animal that is also caught, comment Pred and that species number under the animal with damage. And comment Prey and that species number under the animal that caused the damage. Example: The lines for species 101 SAS and 102 TIG are tangled together. The tail of species 101 SAS and is in the mouth of Species 102 TIG. This is recorded as, in the comments of species 101 SAS: Pred 102, and in the comments of species 102 TIG: Prey 101.

Cause Code
0 = None
1 = Shark (SHX)
2 = Dolphin (MDO)
3 = Bird (BRD)
4 = Squid (SQI) (describe)
5 = Crustacean (CRU)
6 = Teleost (TEL)
7 = Fishing Gear
8 = Other
9 = Unknown

8 D CODE: Record the code for the amount/percentage of damage. A picture should be taken of all damaged animals. If unsure about the percentage of damage, take a picture and comment. If there is no damage use Code 0.

Amount Code
0 = None
1 = <10% damaged, including gills eaten out
2 = 25% damaged, or bitten up to the pelvic/anal fins
3 = 50% damaged, or bitten up to the pectoral fins
4 = 75% damaged, or bitten up to gills
5 = >90% damaged, or just the head
6 = Unknown

ADDITIONAL DETAILS:

TELEOST ANIMAL LOG

COMMENT	SAMPLING BARCODE	SAMPLES TAKEN							
		OTO	VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO
1	2	3							

1 COMMENT: Record any information about an individual animal. A larger space is available at the bottom at the Log, be sure to include SPEC# in this space. Examples of comments include incidental take details, distinguishing characteristics for identification, if an individual has damage, what type of damage, was damage caused by another animal on the line, or any information about scenarios relating to the catch. Also record the complete tag number in the comments (including any alpha prefix) if an animal is tagged then released, include Tag Code 1, Tagged and released alive. If an animal is already tagged and to be released healthy, attempt to re-tag and comment both tag numbers (taking a clear picture is also preferred), and include Tag Code 2, Retagged and released alive. If an animal is already tagged and to be kept or discarded dead, request that the dead tagged animal be brought on board so that information about the animal and tag number can be recorded. If this is a tagged shark, comment the tag number, other necessary information, and take a vertebra, reproductive, stomach, and fin clip sample; include Tag Code 3, Recaptured and kept/released dead. (The fishers can report the tag for reward, most likely a T-shirt, if they wish; otherwise the observer may report the tag and comment that the tag was reported.)

Tag State Code
1 = Tagged and released alive
2 = Retagged and released alive
3 = Recaptured and kept/released dead

2 SAMPLING BARCODE: Adhere the barcode sticker for the sampled animal in the appropriate box on the animal log. This number/barcode should be the same as on the sample check in form and on the sample labels. When using the barcodes follow the barcode instructions (see section 8.3 of the Observer Manual). The barcodes used on a deployment should be sent in with the sample check in sheet.

3 SAMPLES TAKEN: Check the boxes for each type of samples taken (Otolith, Reproductive (includes teleost gonads), Stomach, Fin clip, Fins, and Whole) for the individual animal. **If a reproductive sample is taken, always take an otolith sample as well.** Note that Fins and Whole samples should only be taken for special requests or studies. Also check the photo box to record if a picture was taken of that animal, this is not considered a sample taken.

Trip ID: _____ (office only)

TRIP SUMMARY
(This will be the cover sheet to your trip datasheets)

Obs Trip #: _____ **Vessel name:** _____ **Vessel #:** _____

Owner/Captain Name: _____ **# of Crew:** _____

Incidental Take: Y / N **If Yes, what set number(s)**: _____

Biological Samples Taken: Y / N **Check In Sheet Included:** Y / N

Departure Date: _____ **Time:** ___:___ **Departure Port:** _____
mm/dd/yyyy City, State

Return Date: _____ **Time:** ___:___ **Return Port:** _____
mm/dd/yyyy City, State

Sea Days: _____ **Number of Sets:** _____ **False Strike:** Y / N

Target (GN): SHARK / TELEOST/ MIX

Target (Reef and Shark): _____ **SRF □ SHX □ SADL □ SARF □ OTHER □**

Weigh out location: _____ **Weigh out copy included: Y / N**

Invoice: For trips two or more sea days. Fill out observer fields, leave invoice with captain/owner.

____ N/A

____ Left completed with captain/owner

Vessel accommodations:

Head: Y / N **AC and/or Heat:** Y / N (circle which applies)

Bunk: Y / N **Bunk Location:** _____

Fresh Water and/or Shower: Y / N (circle which applies) **Infections:** Y / N

Comments:

_____

_____

_____

_____

Office use only:
Stand by Days: _____ Data received: ___/___/_____ _____

Data entry: ___/___/____ _____ Dbase proofed: ___/___/_____

Debrief: ___/___/_____ Invoice filed: ___/___/_____/ NA

GEAR ID _____

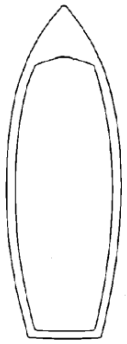
VERTICAL GEAR LOG

OBS/TRIP NUMBER	**VESSEL NAME**	**VESSEL NUMBER**	**DATE LANDED (mm/dd/yyyy)**

GEAR # ____ GEAR CODE ____ ____ ____ TARGET ____ # OF HAULS ____ TOTAL # HOOKS (trip start) ____

MAINLINE COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM** STRANDS ____

HOOK	BRAND	TYPE	SIZE	MODEL	OFFSET	DEGREE
1			/0		☐	
2			/0		☐	
3			/0		☐	
4			/0		☐	
5			/0		☐	
6			/0		☐	



TYPE A MOUNT ____ WEIGHTS? Y / N COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM**
S. BAR? Y / N # SWIVELS ____ # HOOKS ____ # LEADERS ____ LENGTHS: 1 . **FT** 2 . **FT**

TYPE B MOUNT ____ WEIGHTS? Y / N COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM**
S. BAR? Y / N # SWIVELS ____ # HOOKS ____ # LEADERS ____ LENGTHS: 1 . **FT** 2 . **FT**

TYPE C MOUNT ____ WEIGHTS? Y / N COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM**
S. BAR? Y / N # SWIVELS ____ # HOOKS ____ # LEADERS ____ LENGTHS: 1 . **FT** 2 . **FT**

TYPE D MOUNT ____ WEIGHTS? Y / N COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM**
S. BAR? Y / N # SWIVELS ____ # HOOKS ____ # LEADERS ____ LENGTHS: 1 . **FT** 2 . **FT**

TYPE E MOUNT ____ WEIGHTS? Y / N COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM**
S. BAR? Y/ N # SWIVELS ____ # HOOKS ____ # LEADERS ____ LENGTHS: 1 . **FT** 2 . **FT**

TYPE F MOUNT ____ WEIGHTS? Y/ N COLOR ____ TEST ____ **LBS** MATERIAL ____ DIAMETER . **MM**
S. BAR? Y / N # SWIVELS ____ # HOOKS ____ # LEADERS ____ LENGTHS: 1 . **FT** 2 . **FT**

COMMENTS

GEAR SKETCH

HAUL ID _____ **VERTICAL HAUL LOG** **SAMPLES TAKEN?** □ **PAGE** ____ **of** ____

OBS/TRIP NUMBER	VESSEL NAME	VESSEL NUMBER	DATE LANDED (mm/dd/yyyy)

HAUL # ____ GEAR # ____ GEAR CODE ____ ____ ____ TARGET ____

SET DATA

BEGIN *DATE* (M M D D Y Y) *TIME* ____ : ____ HAUL OBS? □ CATCH? □ INCIDENTAL TAKE? □

LATITUDE ____ ____ ° ____ ____ . ____ ____ ____ N *LONGITUDE* ____ ____ ° ____ ____ . ____ ____ ____ W *TEMP (°F)* ____ ____ . ____

END *DATE* (M M D D Y Y) *TIME* ____ : ____ APPROX FISHING DEPTH ____ DEPTH ____

LATITUDE ____ ____ ° ____ ____ . ____ ____ ____ N *LONGITUDE* ____ ____ ° ____ ____ . ____ ____ ____ W *TEMP (°F)* ____ ____ . ____

ENVIRONMENTAL

WEATHER ____ ____
SPEED ____ ____ KTS
WIND DIRECTION ____ ____ ____
MAX WAVE HT ____ ____ FT

GEAR COND ____
BEHAVIOR ____
PREDATORS ____
HOOKS LOST ____

CONCURRENT HAUL? □ **HAUL #** ____

BAIT INFO

	NUMBER	LBS	KIND	TYPE	COND
1					
2					
3					
4					
5					

COMMENTS

EFFORT DATA **AVE REELS** ____ **AVE HOOKS** ____ **TOTAL TIME** ____ **TOTAL HH** ____

% OF CONFIGS **A** ____ **B** ____ **C** ____ **D** ____ **E** ____ **F** ____

TIME	# REELS	# HOOKS	CONFIGURATIONS	COMMENTS	Δ TIME	HOOK HOURS
:						
:						
:						
:						
:						
:						
:						

HAUL ID ____________ **VERTICAL HAUL LOG** **SAMPLES TAKEN? □** **PAGE ____ of ____**

TIME	# REELS	# HOOKS	CONFIGURATIONS	COMMENTS	Δ TIME	HOOK HOURS
:						
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GEAR ID _____ **LONGLINE GEAR LOG**

OBS/TRIP NUMBER	VESSEL NAME	VESSEL NUMBER	DATE LANDED (mm/dd/yyyy)

GEAR NUMBER | # OF HAULS | AVG. # HOOKS | TOTAL # HOOKS (trip start)

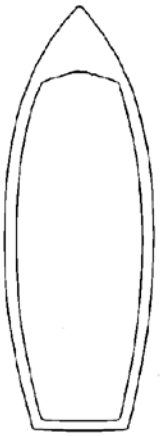
MAINLINE COLOR | TEST LBS
MATERIAL | DIAMETER . MM
STRANDS | AVG. LENGTH . NM

GANGIONS COLOR | TEST LBS
MATERIAL | DIAMETER . MM
SWIVELS PER GANGION
AVG. LENGTH FT | AVG. #
DISTANCE BETWEEN GANGIONS FT
LEADERS USED? ☐ | MATERIAL
TEST LBS | LENGTH IN

LINE ADDITIONS

POLYBALLS ☐ | HOOK TIMERS ☐
BULLETS ☐ | TDRs ☐
HIGHFLIERS ☐ | ADD. WEIGHTS ☐
OTHER ☐
DROPLINES ☐ | AVG. DROPLINE LENGTH FT
DISTANCE BETWEEN DROPLINES FT

INDICATE LOCATION OF HAULING STATION ON VESSEL DIAGRAM



HOOK	BRAND	TYPE	SIZE	MODEL	OFFSET	DEGREE
1			/0		☐	
2			/0		☐	
3			/0		☐	
4			/0		☐	
5			/0		☐	
6			/0		☐	

COMMENTS

HAUL ID _____ **LONGLINE HAUL LOG** **SAMPLES TAKEN?** ☐ **PAGE 1 of** ____

DATE LANDED (M M D D Y Y) **TRIP ID** **VESSEL NAME** **VESSEL #**

HAUL # GEAR CODE GEAR NUMBER TARGET HAUL OBS? ☐ CATCH? ☐ INCIDENTAL TAKE? ☐ SPLIT HAUL? ☐

SET DATA

	DATE (M M D D Y Y)	*TIME*	*LATITUDE*	*LONGITUDE*	*TEMP (°F)*
SET BEGIN		:	° . N	° . W	.
SET END		:	° . N	° . W	.

LINE ADDITIONS AND OTHER GEARS

POLYBALLS ☐ BULLETS ☐
HIGHFLIERS ☐ ADD. WEIGHTS ☐
DROPLINES ☐ HOOK TIMERS ☐
OTHER ☐ TDRs ☐

MAINLINE LENGTH . **NM**
SET SPEED . **KTS**
MIN. SET DEPTH **FT**
MAX. SET DEPTH **FT**
TOTAL ADD. WEIGHT **LBS**
TOTAL HOOKS SET

BAIT INFO

	NUMBER	LBS	KIND	TYPE	COND
1					
2					
3					
4					
5					

HAUL DATA

	DATE (M M D D Y Y)	*TIME*	*LATITUDE*	*LONGITUDE*	*TEMP (°F)*
HAUL BEGIN		:	° . N	° . W	.
HAUL END		:	° . N	° . W	.

ENVIRONMENTAL WEATHER SPEED **KTS** WIND DIRECTION MAX. WAVE HT. **FT**

DELAY >20 MINUTES? ☐ **DETAILS:**

TOTAL TIME LOST (HRS) .

GEAR COND. BEHAVIOUR PREDATORS HOOKS LOST

COMMENTS:

SPLIT HAUL INFORMATION (gear hauled)

POLYBALLS MAINLINE . **NM**
HIGHFLIERS ADD. WEIGHTS
DROPLINES ADD. WEIGHT **LBS**
BULLETS HOOK TIMERS
TDRs HOOKS HAULED

BAIT INFO

	NUM	LBS
1		
2		
3		
4		
5		

TELEOST ANIMAL LOG

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE _____ OF _____	SAMPLES Y/N

SPECIES			STATUS	HOOK		ACTION	VENTED	FL (CM)	L CODE	WT. (KG)	W CODE	SEX	S CODE	DAMAGE	D CODE	COMMENT	SAMPLING BARCODE	SAMPLES TAKEN							
SPEC #	NAME	CODE		LOCATION	TYPE													OTO	VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO

COMMENTS

TELEOST ANIMAL LOG

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE _____ OF _____	SAMPLES Y/N

SPECIES			STATUS	HOOK		ACTION	VENTED	FL (CM)	L CODE	WT. (KG)	W CODE	SEX	S CODE	DAMAGE	D CODE	COMMENT	SAMPLING BARCODE	SAMPLES TAKEN							
SPEC #	NAME	CODE		LOCATION	TYPE													OTO	VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO

COMMENTS

Southeast Fisheries Observer Programs

Sampling Manual

NOAA Fisheries

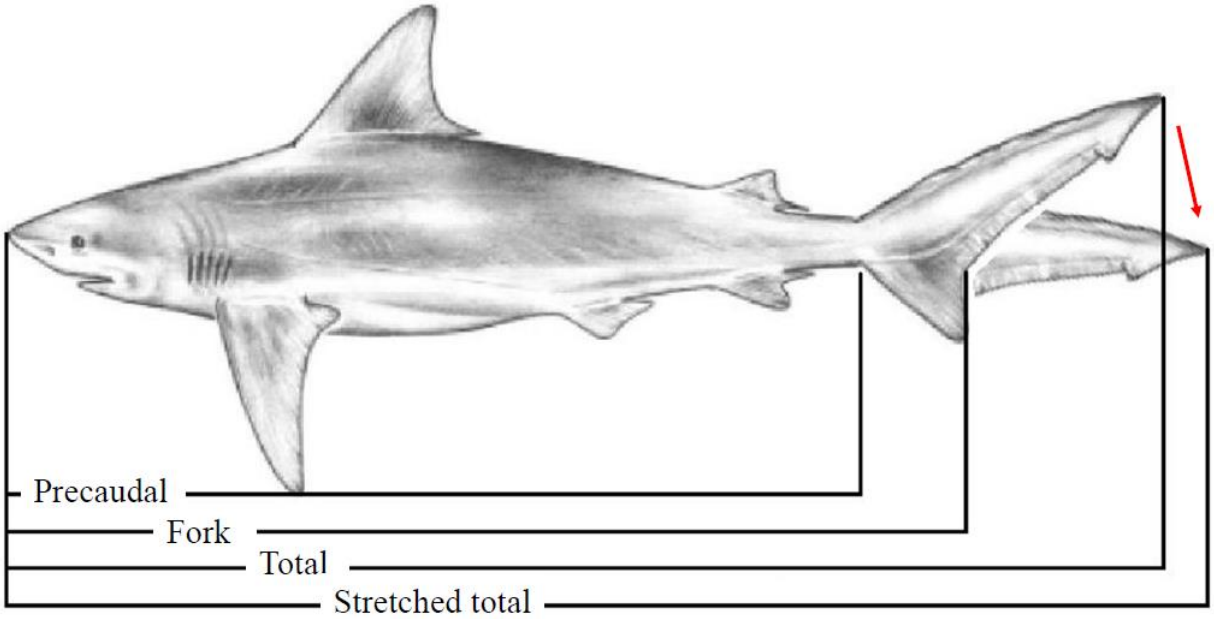
Panama City Laboratory

10.1 Shark Sampling Protocol

- Ensure that straight line fork length measurements (see below) are taken from specimens sampled. Estimates of length cannot be used in age structure studies or for length-at-maturity. If you get an estimated length, your efforts will be a waste.
- **ALL SAMPLES** will have a waterproof label (filled in with pencil) within the Ziploc, with identifying information similar to below (dependent on survey):

OBS/TRIP# _____
Haul # _____
Species Code _____
Specimen # _____
Contents of bag _____

Measurement of sharks

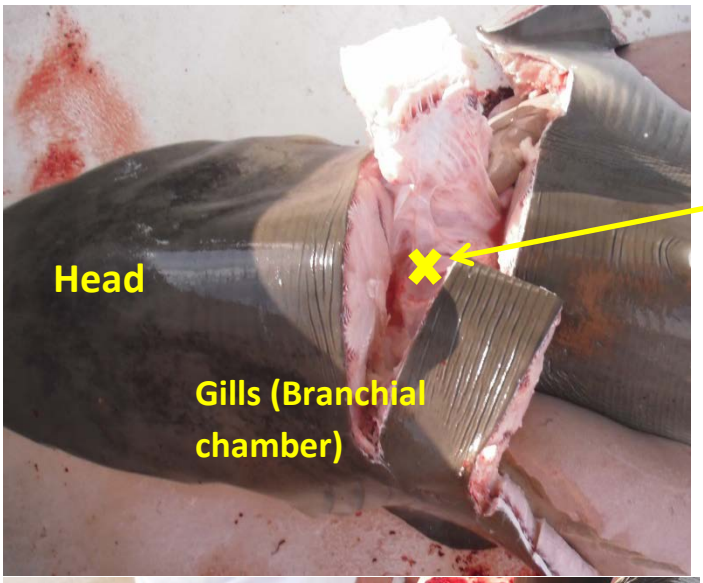


Straight measurements in centimeters

Vertebrae Extraction

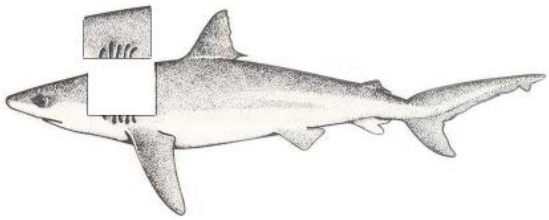
Most vertebrae samples will be coming from observers aboard shark directed commercial fishing vessels. Due to these animals being marketable product vertebrae will generally be taken from behind the head. In instances where sharks are not being kept and are able to be sampled, vertebrae can be taken from below the first dorsal fin.

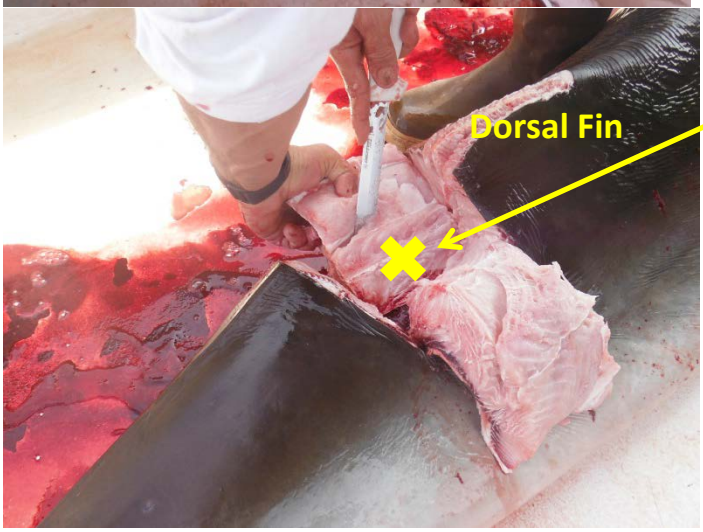
- Remove vertebrae from the areas just behind the head (branchial chamber). Samples should be at least 5 vertebrae long (usually around 10 cm).
    - **REMEMBER** to consider that this shark is a marketable product and care should be taken not to decrease the value.
    - If the shark is to be discarded, take the vertebrae from under the 1st dorsal fin.
- Place sample in Ziploc bag with internal label and store on ice or freeze until shipping.



Remove approximately 10 cm of vertebrae from here

Centra (Vertebrae) Collection



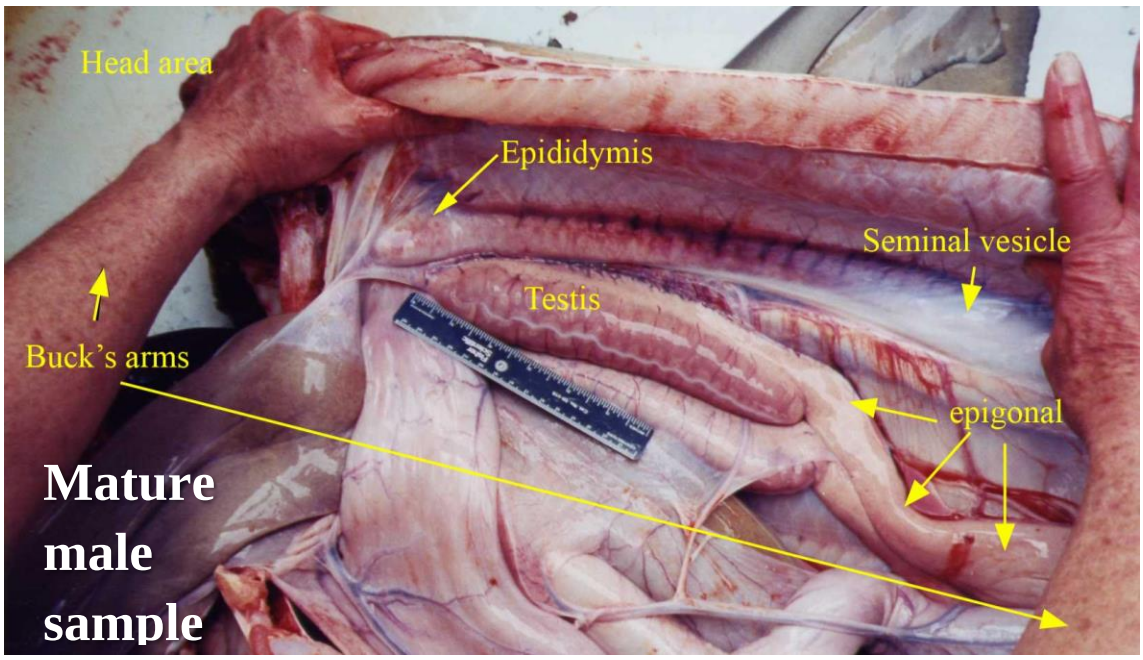


In discarded sharks take sample from here, below 1st dorsal fin.

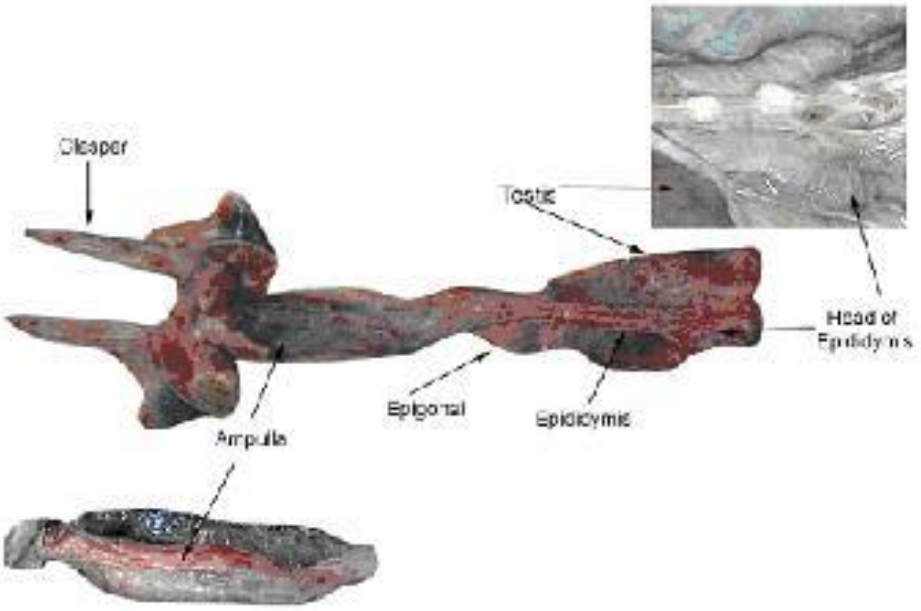
Reproduction Extraction

- **A VERTEBRAL SAMPLE MUST ALSO BE TAKEN!**
- Remove reproductive tissue, all reproductive tissue needs to include **BOTH** sides. If male, include at least the left clasper, preferably attached to pelvic fin (fins can only be removed at dock, you may have to wait for clasper).
- Place sample in Ziploc bag with internal label.

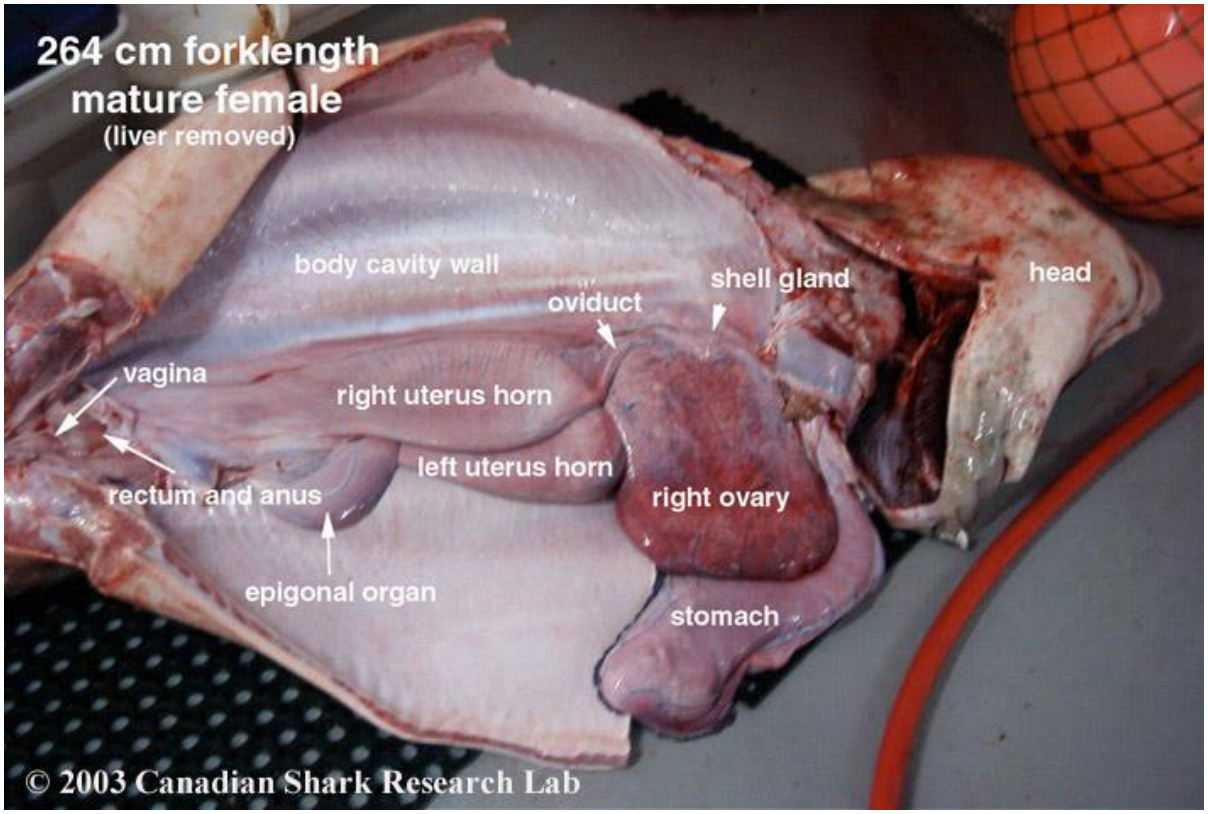
MALE REPRODUCTIVE SAMPLING



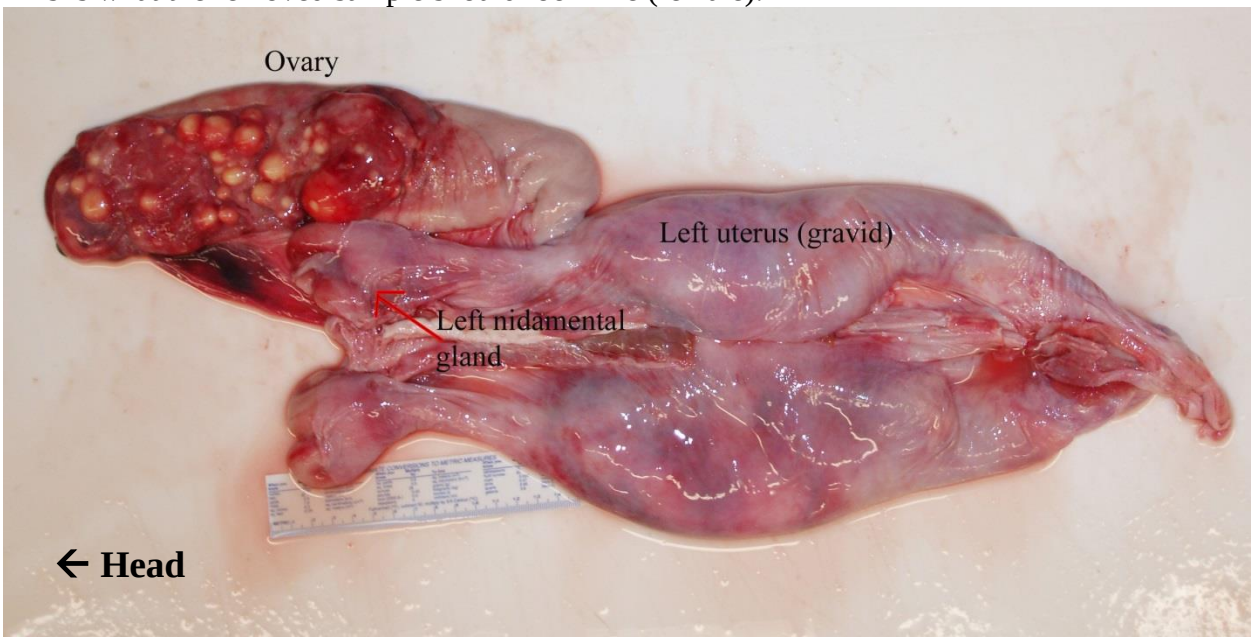
This is what the removed sample should look like (male).



FEMALE REPRODUCTIVE SAMPLING

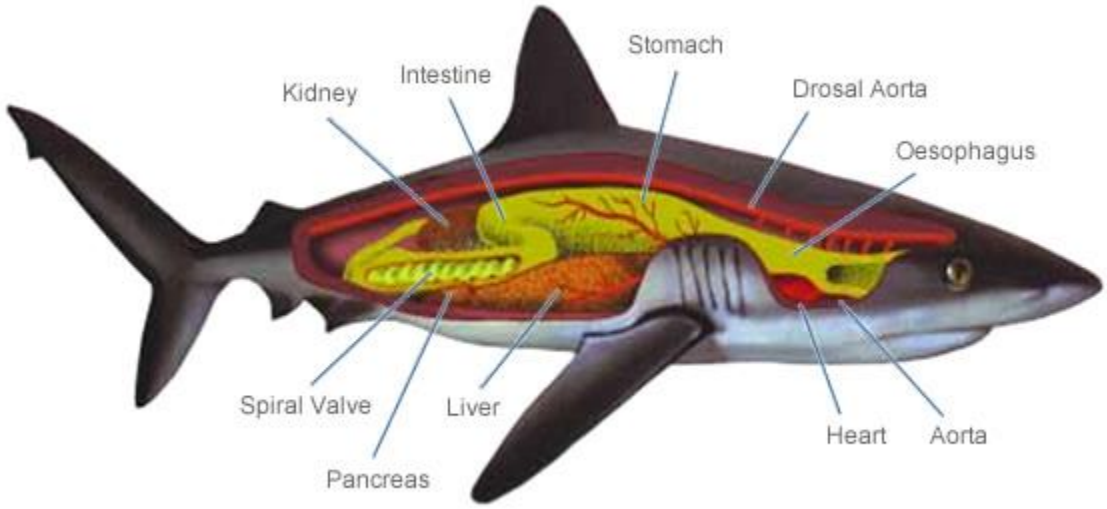


This is what the removed sample should look like (female).



Stomachs –

- Remove stomach from esophagus (just after throat) through j-valve (just after stomach).
- If stomach is large, use ziptie or string to tie up each end of the sample.
- Place sample in Ziploc bag with internal label and store on ice or freeze until shipping.



Fin clips –

- Remove a small portion of the trailing edge of the first or second dorsal fin.
- Place fin clip in vial with 70% EtOH.
- Place vial and waterproof label in dime bag. Each vial gets its own dime bag.

Fin sets – when requested

- For any dead specimens that will be discarded, remove 1st dorsal, pectoral and lower caudal fins (2nd dorsal also for lemon and sand tiger sharks) at the dock.
- Place sample in Ziploc bag with internal label and store on ice or freeze until shipping.

Jaws – when requested

- Jaws may be collected from any dead prohibited species. Remove jaws from head, taking care with the sharp teeth.
- Place sample in Ziploc bag with internal label and store on ice or freeze until shipping.

Whole specimens –when requested

- Dead specimens (<100cm FL) from prohibited species and other discards can be collected whole.
- Place sample in garbage/carcass bag with internal and external labels and store on ice or freeze until shipping.

Cooler Shipping Protocol

Please take caution in packaging the cooler. The major concern is that there is enough ice in the cooler to preserve the samples so that they can be included in analyses. If samples arrive rotten it is possible they will not be utilized, wasting time and resources. It is important to minimize smell and leakage throughout transport as well.

Before packing the cooler:

1) Fill out sample labels in pencil and affix a sample barcode to the back of the label
2) Place each sample type (vert, repro, stomach, other) in its own Ziploc bag.
    - Verts in individual pint/quart Ziplocs
    - Repros in individual Ziplocs/garbage bags (based on size)
    - Stomachs in individual Ziplocs/garbage bags (based on size)
    - Fin clips in blue lidded vials, inside a dime bag with sample label
3) If able, double bag samples (except fin clips), ensuring that any extra air has been removed from each bag so that the sample comes in contact with the ice.

- Pack a cooler as follows:
    1) An absorptive pad on the bottom.
    2) Place empty trash bag inside cooler.
    3) Place labeled and bagged samples (except fin clips) inside the trash bag.
    4) Ice inside of garbage bag OR ice inside 1 and 2 gallon Ziploc bags. **DO NOT USE DRY ICE!**
        - Use as much ice as possible, do not leave blank space
        - Do NOT cram samples into a cooler without enough ice. ONE ZIPLOC BAG OF ICE IS NOT ENOUGH ICE
        - It is VERY normal to have two coolers for one trip, especially during pupping season.
    5) An absorptive pad over the top.
    6) Samples Taken Form and extra barcodes IN Ziploc, on top of absorptive pad.
    7) Fin Clips in individual mini-Ziplocs (dime bags), IN another Ziploc bag, and IN data sheet bag.
        - DO NOT leave fin clips loose with other samples.
        - Fin Clips are stored at room temperature prior to being sent to collaborators, keeping them clean and dry are a priority.
    8) Ziptie the cooler shut.

- **COOLERS** must be shipped **UPS Next Day Air**
    1) UPS return labels will be generated by the coordinators and may be included in the cooler shipped before the trip. If a return label is needed, ask a coordinator.
    2) Use cooler handle/luggage tags secured with a white ziptie for the shipping label. Do NOT use sticker tag holders on the top of the cooler. These may be included in the cooler when shipped before the trip, but can also be obtained from the UPS Store.
    3) If landing on a Thursday, Friday, weekend, or holiday do NOT ship a cooler

without consulting the coordinators first.

- The observer is responsible for keeping the samples on ice or frozen until the cooler can be shipped.

4) NEVER ship data in coolers with biological samples

- Packing coolers, organizing of samples, and time driving to and at the UPS Store are claimable hours and should be included on timesheets.
- More bags, tags, and/or coolers can be requested. Ziplocs and garbage bags can be purchased anywhere and claimed as expenses if the coordinators can't get any to you in enough time. Coordinators will ship coolers to the observer on a trip by trip basis.

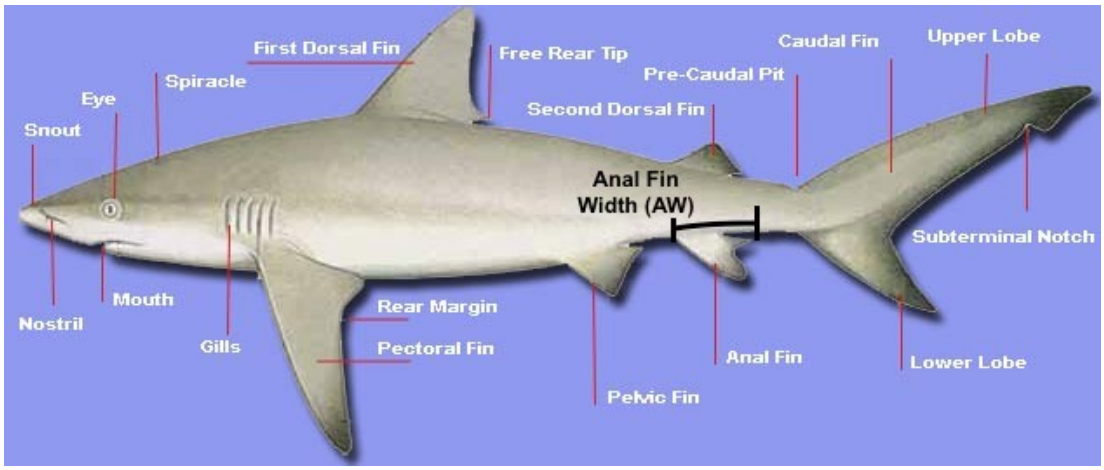
10.1.2. Anal fin data collection

Purpose: Collect data on anal fin widths to help with length/fin width relationships in target species sharks.

Target Species:
Atlantic sharpnose shark
Bonnethead shark
Scalloped hammerhead shark
Great hammerhead shark
Blacktip shark

Data Collection:
Measurements should be taken on at least 5 animals of each target species, per day, if encountered. Be sure to measure the fork length of the animal and determine the sex. Anal fin measurements should be taken from the origin of the anal fin to the end of the free tip, if the free tip is present (see diagram). If the free tip is not present, measure what is there and make a note that a portion was missing. A fin clip should then be taken for that specimen. Note these measurements in your data in the "Comments" section.

You must take a fin clip on every shark where an anal fin measurement was taken



Illustrates anal fin location and proper width measurement.
If present, include free rear tip in measurement

10.1.3. Instructions for Weight Conversion Project

Introduction: The ACCSP (Atlantic Coast Cooperative Statistics Program) is funding a multi-partner multispecies study to validate or determine conversion factors from whole weight to landed weight. Although the project involves a variety of State Fisheries Management authorities, for Highly Migratory Species the NMFS SEFSC is carrying out the research.

Species of interest:
Silky
Lemon
Spinner
Bull
All Hammerhead species

Criteria:

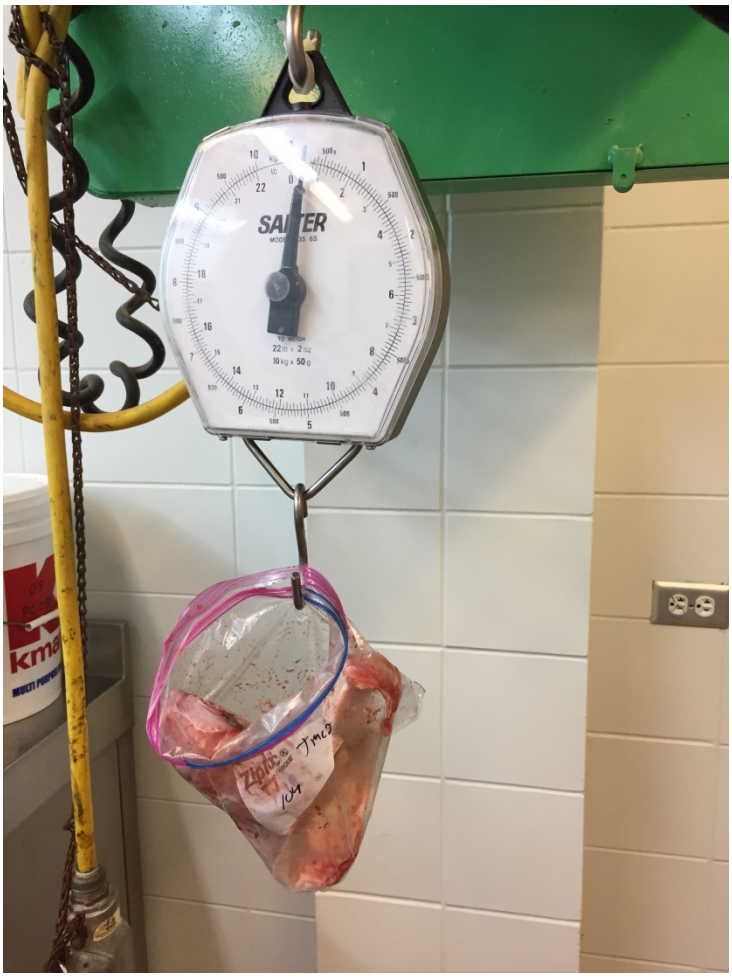
1) Set aside and mark 3 sharks of any species PER TRIP, if encountered.
2) The specimen must be undamaged, and not kill cut.
3) The animal must be intended to be brought back to the dock and weighed individually.
4) Reason with the fisherman when selecting large specimens; do not sample only small specimens.
5) Obtain whole, carcass, and fin weight for each specimen. Note: the unit that weight is being obtained in can be either pounds or kilograms (lbs or kg). Comment whether or not the carcass had the belly flaps on or if they were cut off. Use hanging salter scales to obtain the fin weight.

At the dock, assist fisherman when obtaining weights and be patient as they may not get to your specimens right away. Record the whole weight of specimen in your deck book or animal log comment section at the bottom of the page along with specimen #.

Remember to zero the scale before weighing. Ensure that the specimen is clear of hanging over on the ground or leaning against objects that may affect the measurement. For very large animals cut the specimen into manageable pieces but make sure to catch as much blood as possible. If you suspect that more than 16 oz. of blood have been lost include a comment with the weights.

Stand by the butcher while the fish is being processed, ask him to place (or give to you and you place) the fins aside to be weighted separately. The fish should be dressed in an industry-standard fashion. Make a note if the fish was dressed with the belly flaps on or the belly flaps cut off. Obtain the carcass weight on dock scale.

Use your hanging salter scales to obtain the fin weight. You can use a mesh bag, plastic bag, ziploc, or garbage bag to hold them in. Zero out the scale with the weight of the bag and then weigh fins. Dock scale is not precise enough for the fin weight.

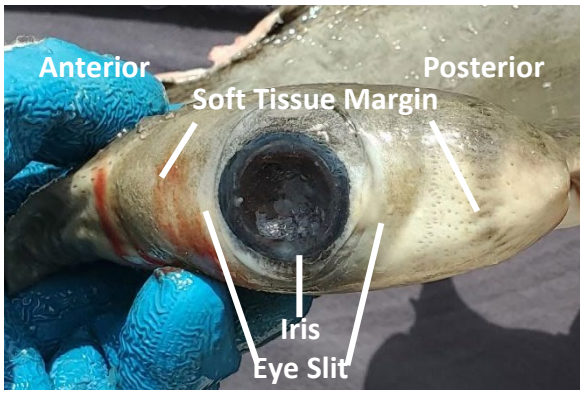


10.1.4. Hammerhead Eye Removal Procedure

The Panama City observer program is currently collecting eyes (left and right eyes) from scalloped hammerhead sharks in the South Atlantic.

If taking the eyes from a shark, remember to take a longer section of vertebrae than normal (approx. 7-8 centra instead of 5)

These samples will be used in an ongoing aging research project using the shark lenses.



Eye anatomy for referenced in protocol.

To make the cuts, find where the soft tissue ends and cartilage begins for the eye cavity (soft tissue margin).

For the anterior cut, start on the soft tissue margin in front of the eye slit. Cut from the eye inward until the length of the cut is approximately equal to the width of the eye slit.

To make the posterior cut, start in the soft tissue margin behind the eye slit. Cut until the length of the cut is approximately equal to the width of the eye slit.

Note: Cutting in this margin, far away from the eye slit, ensures that the eyeball is not damaged: which may cause the loss of the lens.

Cuts should be made at an angle, in order to make a wedge-shape.

Place both eye wedges in the same quart-sized Ziploc with the label and barcode.

Mark the eye sample on the Sample Check-In sheet within an un-used column or line, do not write on the margins of this sheet.

10.1.5. INSTRUCTIONS FOR PHOTOGRAPHING SHARKS IN THE WATER

Obtaining good photographs or videos of sharks that are in the water and are intended to be released is crucial to verifying the identification of that animal. All efforts should be made to take as many pictures/ videos as possible to help with positive identification. Below are criteria that should be followed while taking pictures and videos.

1) In general, be sure camera is fully charged and functional prior to observing fishing operations. If on a vessel with running air conditioning, camera lenses tend to fog when leaving the cool air. Be sure to check camera for fogging. Keep the camera lens clean of water droplets or other materials. If you begin taking pictures and think they are coming out blurry and unusable, taking a video of the animal is a great substitute.

2) The whole body of the animal should be visible in some pictures. If needed, have fishermen gently maneuver the shark along the boat so that you can see a whole profile view of the animal. Try to maneuver the animal as close to the surface as possible without lifting completely out of the water.

3) Critical features to identification include **dorsal fin shape**, **dorsal fin placement** in proximity to pectoral fins, and **second dorsal fin shape** with trailing edge. Close up shots of these areas should be taken in addition to whole body pictures. Pictures of the back for **presence/absence of interdorsal ridge** as well as pictures of the **head and snout (ventral and dorsal shots)** are also helpful.

4) Photographing at night can be difficult and so multiple shots of various angles should be taken to ensure at least one good picture. Using the flash on the camera and/or a flashlight to help highlight the animal can be helpful. Again, attempt to maneuver the shark as close to the surface as possible.

Creating a photo label for pictures taken

First Create a Google Drive folder for your trip.

Use your appropriate observer trip ID to name the folder.

EXAMPLE: PCB001

Upload all pictures from that trip to that folder.

Naming format should be as follows:

EXAMPLE: PCB014 H1 #123 DUS

4 Characteristics needed for photo label:

1. Trip ID #
2. Haul #
3. Specimen #
4. Species Code if known

For multiple pictures of the same specimen put a number in () for each photo to account for each picture taken

EXAMPLE: PCB015 H2 #111 FAL (1)
PCB015 H2 #111 FAL (2)
PCB015 H2 #111 FAL (3)

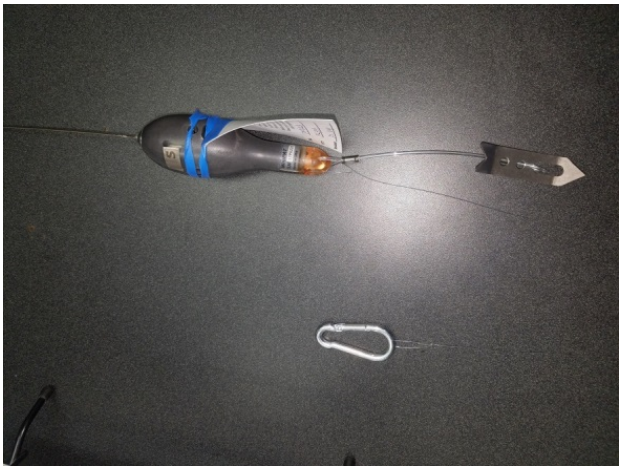
10.1.7. Satellite Tagging Instructions

These guidelines are necessary to prevent the loss of tags, as well as valuable data, when attempting to place a tag.

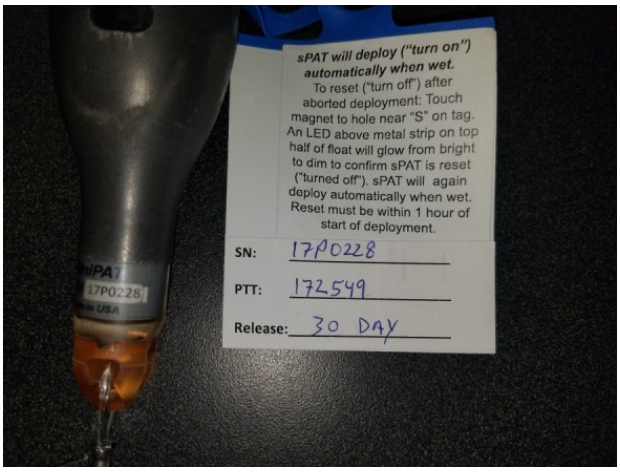
A weak-link of 6lb mono has been tied onto the base of the tag, as well as onto a small carabiner clip.

We are using telescoping poles, and the weak-link is made for when the pole is fully extended.

****We are only tagging active animals so be sure shark is in good condition before placing a tag. ****



Unclip the carabiner from the tag's anchor and unroll the weak-link.



Remove the label, make sure that it matches what is stamped on the base of the tag, and store in a safe place after making note of the SN number in your field diary.

After attaching the tip to the end of the pole, place a rubber band that will be tight around the tag onto the pole. This will simply help keep the tag from falling off, as well as helps give that extra pull when you are making sure that the tag is set in the shark.

Place the tag anchor onto the tip, with the tether facing upward (towards the tagging tip).

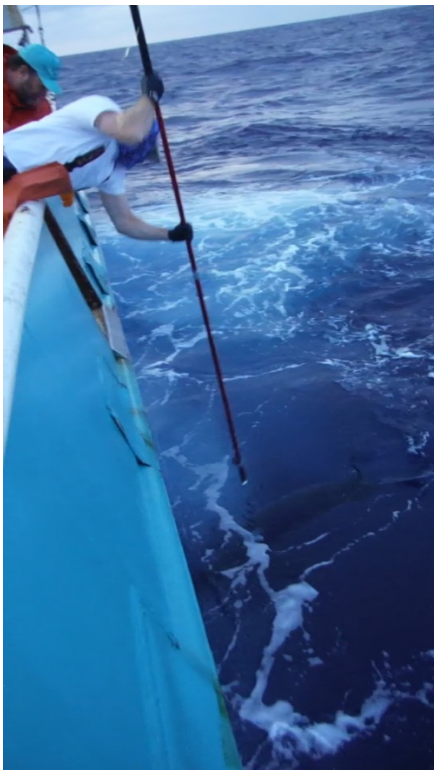
Bring the rubber band over the antenna and onto the bulb of the tag.

Clip the carabiner into the wire loop in the middle of the pole.

When you go to tag the shark, leave everything connected. The weak-link will allow you to recover the tag if it falls off the tip. When your tagging is successful, you simply give a good tug (if the shark doesn't do it for you) to break the link.

Be sure to check that the tip has remained tight inside of the bushing prior to tagging an animal.

Have the crew maneuver the animal alongside of the boat as much as possible to bring it in close and parallel.



Hold the pole firmly with both hands. Angle pole so that you will hit the fleshy area beneath the dorsal fin but not so low that you hit the vertebrae. Location of hand placement will depend on the size of the gunnel.

Aim the tag at the base of the dorsal fin, in the fleshy part, with the anchor tip facing towards the head. On smaller animals, take care to decrease your angle so as not to hit the vertebrae.

Take care not to blindly strike, as you risk thrusting the tip into the side or belly, and could hit internal organs. Hovering the tip close to the animal while lining up your shot will help to avoid hitting it in the wrong area.

Use force to plunge the tip and anchor through the tough skin. Hesitation will cause you to lose momentum and risks a failed attempt. If the full anchor is not inserted, use your hand to hit the back of the pole and drive it in all of the way.

Once inserted completely, pull back the pole to set the anchor, as well as release the tip. Give another quick tug to pull the tag through the rubber band, and to break the weak-link. This action also helps secure the tag.

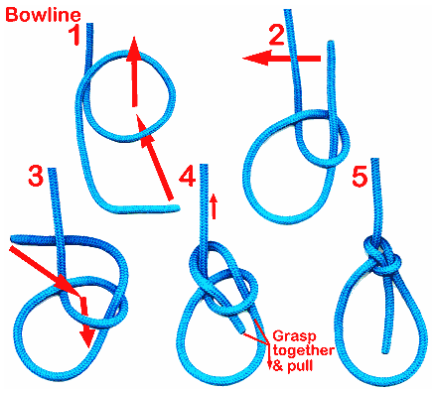
Take a finclip from the animal, in addition to photos and videos, to positively identify the species. If you can, have a crewmember take photos/videos during the tagging process, but do not risk safety in order to do so.

Also be sure to take as accurate of measurements as possible, and any other pertinent information (i.e. sex and sex code).

Cut the gangion as close to the hook as is deemed safe to release the shark.

DO NOT remove the animal from the water. The aim of this project is to mimic normal fishing practices as much as possible. Become familiar with the vessels fishing habits ahead of time so that your time is not wasted while an animal is alongside the vessel. Make sure that the pole and tag are rigged and are easily accessible during haulback to minimize handling time.

If you have concerns with rain, a Ziploc with a paper towel and rubber band can be placed over the tag. Note that the water sensor is the silver ring at the base of the antenna. It will only activate after being submerged for several seconds.



If for some reason your link gets broken, and you need to tie your own weak-link, find the lightest mono you can (down to 6 lbs) and tie a non-slip loop through the tag base and carabiner.

10.1.7.1. Satellite Tag Quick Reference Guide

Only tag active animals, be sure the shark is in good condition before placing a tag.

Take picture/video, fin clip, measurement, and sex/sex code of all tagged animals.

- Set up the tagging pole with the satellite tag. Make sure:
  - The anchor is secured and tight on the tagging pole tip and the tether is inward
  - A rubber band is around the tag's bulb
  - The weak-link and carabiner are secure
    - **Note:** Double check that the label and SN number on the tag matches the stamp on the base of the tag. Record label information with the animal data
- When the animal is positioned securely along-side the vessel:
  - Firmly hold the tagging pole with both hands
  - Aim at the base of the dorsal fin from the back of the animal
  - Aim with a medium to low angle.
    - **DO NOT** remove the animal from water
    - **DO NOT** hesitate or blindly strike, this could cause fatal damage
    - **Note:** decrease the aiming angle with smaller animals
- Use force to fully insert the tagging anchor into the flesh
  - If not fully inserted, hit the back of the pole to drive it in
  - Once fully inserted, pull back on the tagging pole to set the anchor and release the tag
- **Note:** In case of rain, cover the tag with a ziplock bag and secure with rubber bands, then remove the bag before placing the tag
- For the entire tagging instruction, see Satellite Tagging Instructions document or contact coordinator

You should **always** take samples from priority/prohibited species regardless of special requests by your coordinator.

<u>ALL</u> PREVIOUSLY TAGGED SHARKS BEING RETAINED/DEAD MUST BE FULLY SAMPLED FOR VERT, REPRO, STOMACH, & FIN CLIP

5 animals/**trip**
minimum

	COMMON NAME	SPP CODE	SPP #	VERT	STOM	REPRO	FIN CLIP	WHOLE	TAG	PIC
PRIORITY SPECIES	Smooth Hammerhead	SHH	3522	X	X	X	X		X	X
	Blacktip	SBK	3495	X		X	X		X	X
	Spinner	SSP	3496	X		X	X		X	X
	Sandbar (*prohibited*)[1]	SSB	3513	X		X	X		X	X
	Lemon	LEM	3517	X		X	X		X	X
	Bull	SBU	3497	X		X	X		X	X
	Tiger	TIG	3515	X		X	X		X	X
	Great Hammerhead	GHH	3524	X		X	X		X	X
	Scalloped Hammerhead	SPL	3523	X		X	X		X	X
	Silky	FAL	3493	X	X	X	X		X	X
	Common Thresher	PTH	3509	X	X	X	X		X	X
	Cuban Dogfish	DCU	3531	X	X	X	X	X		X
	Shortspine Dogfish	DGM	3534	X	X	X	X	X		X
	Roughskin Dogfish	DGR	3535	X	X	X	X	X		X
	Gulper Shark	GLP	3533	X	X	X	X		X	X
PROHIBITED SPECIES	Dusky	DUS	3514	X	X	X	X		X	X
	Shortfin Mako	SMA	3505	X	X	X	X		X	X
	Longfin Mako	LMA	3502	X	X	X	X		X	X
	Night	SNI	3494	X	X	X	X		X	X
	Caribbean Reef	SRF	3490	X	X	X	X		X	X
	Bignose	SBG	3491	X	X	X	X		X	X
	Sand Tiger	SST	3482	X	X	X	X		X	X
	White Shark	GWS	3512	X	X	X	X		X	X
	Bigeye Thresher	BTH	3510	X	X	X	X		X	X
	Smalltooth Sawfish	SSW	3230	X	X	X	X		X	X
	Angel Shark	ANG	3582	X	X	X	X		X	X
	Bluntnose Sixgill	SIX	3528	X	X	X	X		X	X
	Bigeye Sixgill	BSX	3529	X	X	X	X	X	X	X
	Sevengill	SEV	3587	X	X	X	X	X	X	X
	Spotted Eagle Ray	SPE	3656				X			X

If a repro is taken, a vert **must** also be taken.

If unsure of ID, or if an easily confused species, take pictures and a **fin clip**

[1]*Sandbar sharks should **only** be sampled* during Shark Research Fishery trips; 3 sandbars sampled per trip.

*****PROHIBITED SPECIES TAKE PRECEDENCE AND SHOULD ALWAYS BE TAGGED OR SAMPLED*****

OBS/TRIP# ___________ Haul # ________________. Species Code__________. Specimen # ____________ Contents of bag__________	OBS/TRIP# ___________ Haul # ________________. Species Code__________. Specimen # ____________ Contents of bag__________	OBS/TRIP# ___________ Haul # ________________. Species Code__________. Specimen # ____________ Contents of bag__________	OBS/TRIP# ___________ Haul # ________________. Species Code__________. Specimen # ____________ Contents of bag__________
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NOAA Fisheries Service

2022 South Atlantic Teleost Sampling Request and Procedures

NOAA Fisheries Service
3500 Delwood Beach Road
Panama City, FL 32408

Please contact the following for questions:

Brad Smith
850-381-1695
bradley.smith@noaa.gov

Samantha Faller
850-348-3176
samantha.faller@noaa.gov

Jul 2022

Common Name	Scientific Name	Sp. Abbr	Code	Otolith	Gonad	Fin Clip
GAG GROUPER	*Mycteroperca microlepis*	GAG	1423	X	X	
RED GROUPER	*Epinephelus morio*	RGR	1416	X	X	X
BLACK GROUPER	*Mycteroperca bonaci*	BLG	1422	X	X	
SCAMP GROUPER	*Mycteroperca phenax*	CGR	1424	X	X	X
SNOWY GROUPER	*Epinephelus niveatus*	OGR	1414	X	X	
YELLOWEDGE GROUPER	*Hyporthodus flavolimbatus*	YEG	1415	X	X	X
SPECKLED HIND	*Epinephelus drummondhayi*	SHI	1411			X
YELLOWMOUTH GROUPER	*Mycteroperca interstitialis*	YMG	1425			X
RED SNAPPER	*Lutjanus campechanus*	RSN	3764	X	X	
MUTTON SNAPPER	*Lutjanus analis*	MSN	3763	X	X	
VERMILION SNAPPER	*Rhomboplites aurorubens*	SNV	3765	X	X	
YELLOWTAIL SNAPPER	*Ocyurus chrysurus*	YTS	3767	X	X	
LANE SNAPPER	*Lutjanus synagris*	LUL	3761	X	X	X
TILEFISH (Golden)	*Lopholatilus chamoeleonticeps*	TIL	4470	X	X	
BLUELINE TILEFISH	*Caulolatilus microps*	BLT	4474	X	X	
GREATER AMBERJACK	*Seriola dumerili*	GAJ	1812	X	X	
RED PORGY	*Pagrus pagrus*	PRD	3300	X	X	
GRAY TRIGGERFISH*	*Balistes capriscus*	TRG	0106	X*	X	
BLACK SEA BASS	*Centropristis philadelphica*	SBL	0087	X	X	
WHITE GRUNT	*Haemulon plumieri*	WGT	1441	X	X	

Species List and Sampling Protocol

* Dorsal spine is taken for triggerfish in lieu of otolith

Sampling Protocol:

Target a minimum of 5 sampled fish of the above species listed, per sea day. You must collect both the left otolith and the gonads from each fish. If the gonads are too large, weigh the entire gonad, cut a small subsample, and place into the formalin vial. If you break or lose the otolith, remove the otolith from the other side of the head and note that it is from the right side. Try to collect from multiple species off the above list if they are being retained by the boat. Do not destructively sample fish that are not being kept by the boat.

List of Supplies for Otolith and Gonad Sampling for Observers

Otolith Collection

- ☐ 50 Pre-Stamped Otolith Envelopes
- ☐ 20 freezer proof quart Ziploc bags

Use to group otolith envelopes per set/haul. Label with OBS/TRIP ID and Set/Haul #.

Gonad Collection

BUCKET # _____

- ☐ 1 3.5-gallon Bucket
- ☐ 1 100-gram spring scale (rinse with fresh water & lubricate with 3 in 1, daily)
- ☐ 50 Pre-Stamped Gonad Labels on waterproof paper
- ☐ 50 vials pre-filled with 10% buffered formalin. 5 pre-filled vials are grouped in quart sized Ziplocs. Please label Ziplocs with Trip # and Set/Haul #
- ☐ Safety Supplies – 5 pairs nitrile gloves, 1 pair safety glasses

Fin-clip Collection

- ☐ 10 vials pre-filled with DMSO
- ☐ Field scissors
- ☐ 15 disposable bleach wipes
- ☐ Small Ziploc bags (dime bags)

General Supplies:

- ☐ 2 Chisels different sizes – small (1/4”), medium (1/2”)
- ☐ 2 Forceps – pointed, curved
- ☐ Species List and Requested Samples laminated page
- ☐ 2 – Black Sharpies and 2 – Pencils
- ☐ 3 in 1 lubricant
- ☐ 1 laminated MSDS sheet and 2 absorbent pads
- ☐ 200 barcodes

Sagittal Otolith Removal Procedures

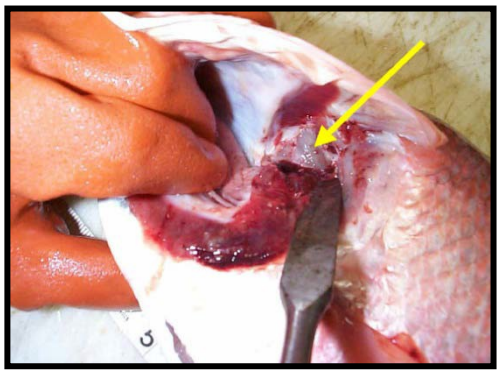
1. Cut the operculum to fold forward and open it wide towards the anterior end of the fish.

2. Cut away the gill arches at their insertion.

3. Use a chisel to scrape away tissue from the otolith capsule, the capsule will feel like a large knob or protrusion.

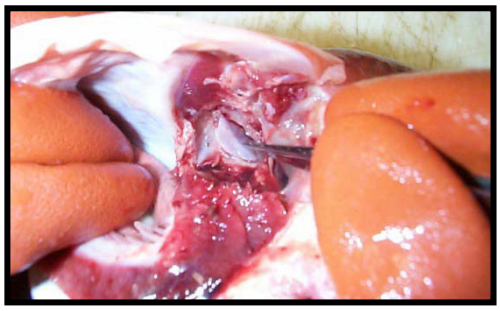
4. Open the capsule with a chisel, the large sagittal otoliths can be easily removed with forceps.

5. Rub off any attached membranes from the otolith, rinse with fresh water and pat dry.



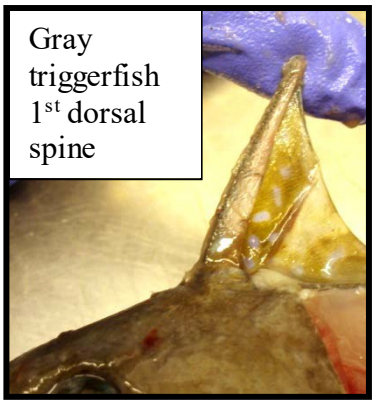
6. Place otolith in the provided pre-stamped otolith envelope.

7. *Gray triggerfish only – do not remove otolith, remove the 1st dorsal spine. Insert a knife at the base of the spine and cut out the whole spine, including the knuckle. Remove excess tissue, rinse, pat dry & store in otolith envelope.*



8. Please fill out the following information on the provided pre-stamped envelopes and place **barcode** on envelope:

   OBS/TRIP ID:
   Set/Haul #:
   Species Abbreviation: Specimen #:
   Date:
   Samples: Otolith and/or Gonad
   (circle sample(s) taken)



9. Please store all otoliths in the provided quart Ziploc bags, labeled with:
   OBS/TRIP ID
   Set/Haul #

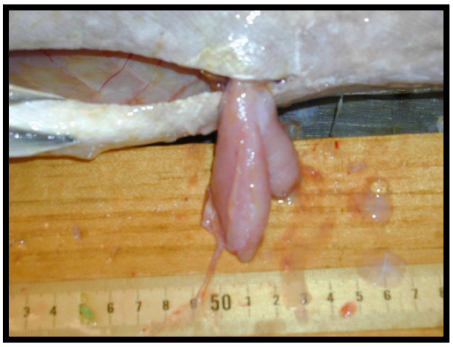
10. Assigning specimen numbers.
    SBLOP – each haul Specimen Number starts at #101

Gonad Removal & Subsampling Procedures

1. Using a sharp knife, insert the tip just inside the anus.

2. Make a shallow cut through the ventral abdomen up to the base of the pelvic fin.

3. The gonad will be the only bi-lobed organ in the abdominal cavity, located dorsally to the anus, and will be attached to the upper-rear abdominal wall.



4. Grab the two lobes and carefully pull them away from the abdominal wall.

5. Cut the posterior end from the abdominal wall without cutting any of the lobes.

6. If the gonad is small enough to be submerged in the provided vial, make a small incision in the gonad and submerge the entire gonad in the prefilled vial along with gonad sample label.

7. If the gonad weighs greater than 10g, weigh the entire gonad and record weight in appropriate column.
   Next use a knife to remove a **cross-section** of gonad tissue, with **tunica albuginea** (casing/wall) **intact,** about the size of a fingertip from the **posterior** part of the gonad. Place sample along with gonad sample label in the sample vial and place **barcode** label on gonad vial. Vials are filled with 10% neutral buffered formalin.

gonad < 10g

gonad > 10g

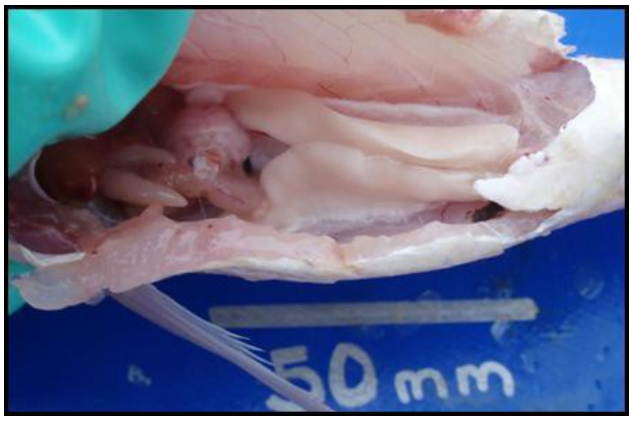
8. Use a **PENCIL**, to write the following information on the provided pre-stamped gonad label and place the label in the vial and place **barcode** on outside of vial:
   OBS/TRIP ID:_____
   Set/Haul #:_____
   Species Abbreviation: Specimen #:__

9. Place 5 gonads samples from a single haul in a Ziploc bag. Do not mix samples from different hauls. Write the following information on the Ziploc using a **SHARPIE**:
   OBS/TRIP ID:___ Set/Haul #:

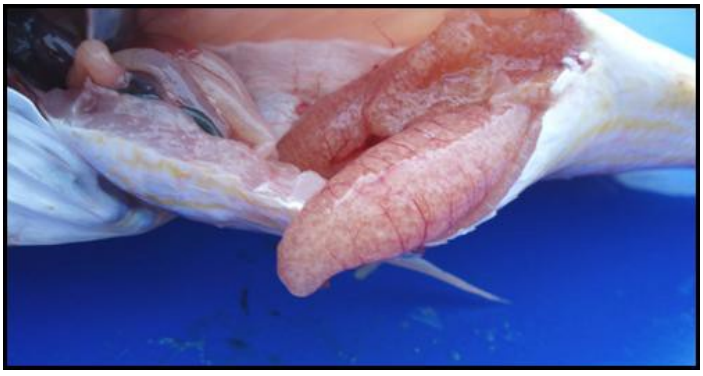
Identifying Sex

Both male and female gonads go through morphological changes depending on the stage of reproduction. Male gonads are thin, normally white to pinkish in color and taper to a point whereas, female gonads are oval in shape, appear pink to red in color, and during the peak of spawning small, fully developed oocytes can be seen with the naked eye.

Male



Female



Record Unknown for those gonads that you have sampled but cannot distinguish as a male or female.

Fin-Clip Collection

1. Use scissors to remove about 2cm^2 (~ ¾ inch^2) section of anal fin or choose a fin that is light in color (not bright yellow, orange or red).

2. Place one fin clip section in one vial (pre-filled with DMSO*). Please do not use larger (or more) pieces of tissue as fixation often will be incomplete and the DNA degraded.

3. After taking a fin clip, wipe the cutting equipment with a disposable bleach wipe, followed by fresh water to minimize chances of cross-contamination.

4. Place vial in a small Ziploc with filled out label and a **barcode** placed on the inside of the small Ziploc.

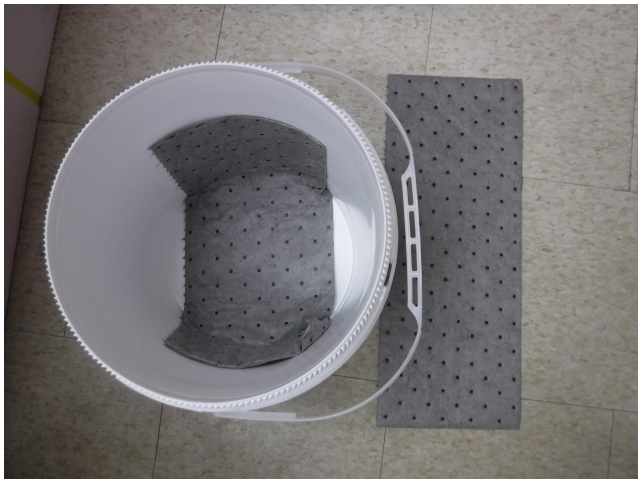
*DMSO solution is deionized water saturated with salt. It is non-flammable and non-toxic.

The goal of fin clip samples is to collect genetic material throughout the South Atlantic. Only collect genetic material from a maximum of 3 fish from the requested species, per trip.

Teleost Bucket Shipping Protocol

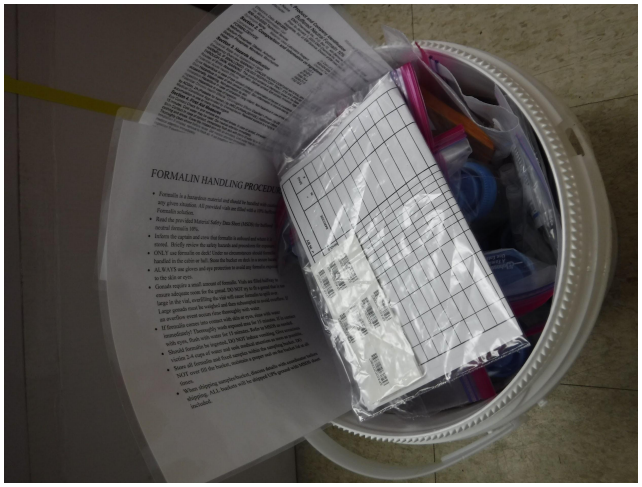
The shipping of potential hazardous material needs to be done properly and safely. The following is the proper procedure to ship vials, pre-filled with 10% buffered formalin, that are used in teleost gonad sample collection. NOTE: the bucket will be sent in a box, make sure to keep this box to return the used bucket and samples.

1. Ensure that the absorbent material (PIG mat) at the bottom of the bucket is dry. If not remove and dispose of and replace with new absorbent material.



2. Place bagged vials in the up right position inside the bucket.

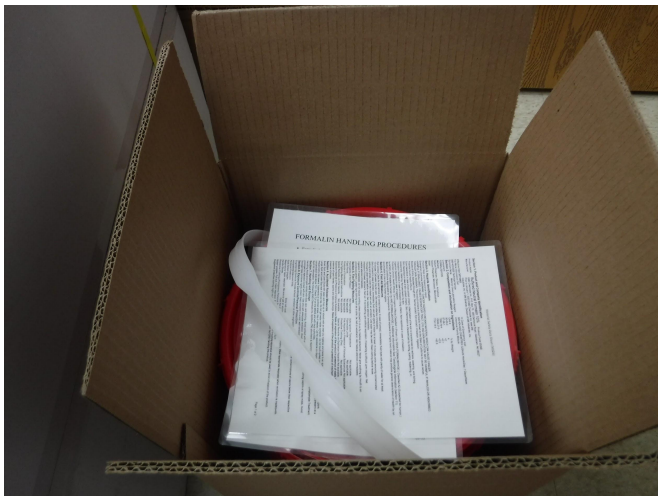
3. Place a laminated formalin MSDS, (other paper) and the completed sample check in sheet, in a ziploc bag, inside the bucket.



4. Replace lid tightly on bucket. Note: some buckets screw on (pictured) , others snap on (not pictured).

5. **IF** the lid of the bucket snaps on (different than pictured); wrap the bucket in a heavy duty trash bag and zip tie closed. This is not necessary for buckets with screw-on lids (pictured) because those lids have O-rings.

6. Place another MSDS on top of the bucket.



7. Place the sealed bucket and MSDS inside a box to ship.

Note: All teleost samples are to be shipped via ground transport.

FORMALIN HANDLING PROCEDURES

- Formalin is a hazardous material and should be handled with caution in any given situation. All provided vials are filled with a 10% buffered Formalin solution.
- Read the provided Material Safety Data Sheet (MSDS) for buffered neutral formalin 10%.
- Inform the captain and crew that formalin is onboard and where it is stored. Briefly review the safety hazards and procedures for exposure.
- ONLY use formalin on deck! Under no circumstances should formalin be handled in the cabin or hull. Store the bucket on deck in a secure location.
- ALWAYS use gloves and eye protection to avoid any formalin exposure to the skin or eyes.
- Gonads require a small amount of formalin. Vials are filled halfway to ensure adequate room for the gonad. DO NOT try to fit a gonad that is too large in the vial, overfilling the vial will cause formalin to spill over. Large gonads must be weighed and then subsampled to avoid overflow. If an overflow event occurs rinse thoroughly with water.
- If formalin comes into contact with skin or eyes, rinse with water immediately! Thoroughly wash exposed area for 15 minutes. If in contact with eyes, flush with water for 15 minutes. Refer to MSDS as needed.
- Should formalin be ingested, DO NOT induce vomiting. Give conscious victim 2-4 cups of water and seek medical attention as soon as possible.
- Store all formalin and fixed samples within the sampling bucket. DO NOT over fill the bucket, maintain a proper seal on the bucket lid at all times.
- When shipping samples/bucket, discuss details with coordinator before shipping. ALL buckets will be shipped UPS ground with MSDS sheet included.

Material Safety Data Sheet (MSDS)

Section 1. Product and Company Identification

Product Name Buffered Neutral Formalin 10% **Product Code** 65346

Manufacturer EMD Chemicals Inc., P.O. Box 70, 480 Democrat Road, Gibbstown, NJ 08027
Prior to January 1, 2003 EMD Chemicals Inc. was EM Industries, Inc. or EM Science, Division of EM Industries, Inc.

Effective Date 3/27/2003

For More Information Call
856-423-6300 Technical Service

In Case of Emergency Call
800-424-9300 CHEMTREC (USA)24 Hours/Day: 7 Days/Week

Synonym None. **Material Uses** Laboratory Reagent **Chemical Family** Mixture.

Section 2. Composition and Information on Ingredients

Component	CAS #	% by Weight
FORMALDEHYDE	50-00-0	4
Methanol	67-56-1	<2
Sodium Phosphate, Dibasic, Anhydrous	7558-79-4	<0.7
Sodium Phosphate, Monobasic, Monohydrate	10049-21-5	<0.5
Water	7732-18-5	>92.8

Section 3. Hazards Identification

Physical State and Appearance Liquid.

Emergency Overview WARNING ! CANCER HAZARD CONTAINS MATERIAL WHICH CAN CAUSE CANCER HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Routes of Entry Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Potential Acute Health Effects

Eyes Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.

Skin Hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Non-permeator by skin.

Inhalation Hazardous in case of inhalation (lung irritant). Non-hazardous in case of inhalation.

Ingestion Hazardous in case of ingestion.

Potential Chronic Health Effects: Carcinogenic Effects Classified + (Proven.) by OSHA [FORMALDEHYDE]. Classified A2 (Suspected for human.) by ACGIH, 2A (Probable for human.) by IARC [FORMALDEHYDE]. Additional information See Toxicological Information (section 11)

Medical Conditions Aggravated by Overexposure: Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Section 5. Fire Fighting Measures

Flammability of the Product Non-flammable.
Auto-ignition Temperature Not applicable.
Flash Points Not applicable.
Flammable Limits Not applicable.
Products of Combustion Not applicable.
Fire Hazards in Presence of Various Substances Not applicable.
Fire Fighting Media and Instructions Not applicable.
Protective Clothing (Fire) Not applicable.
Special Remarks on Fire Hazards Not available.
Special Remarks on Explosion Hazards Not available.

Explosion Hazards in Presence of Various Substances **Risks of explosion of the product in presence of static discharge:** Slightly explosive in presence of open flames, sparks and static discharge. **Risks of explosion of the product in presence of mechanical impact:** Slightly explosive in presence of shocks.

Section 6. Accidental Release Measures

Small Spill and Leak Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill and Leak Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Spill Kit Information The following EMD Chemicals Inc. SpillSolv (TM) absorbent is recommended for this product: SX1340 Formaldehyde Treatment

Section 7. Handling and Storage

Handling Avoid prolonged contact with eyes, skin, and clothing. Avoid contact with eyes. Do not ingest. Avoid breathing vapors or spray mists. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Wash thoroughly after handling.

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits.

Personal Protection

Eyes Splash goggles. **Body** Lab coat.

Respiratory Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands Gloves. **Feet** Not applicable.

Protective Clothing (Pictograms) Personal Protection in Case of a Large Spill

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product	Name Exposure Limits
FORMALDEHYDE	**OSHA Final Rule (United States, 1989).** STEL: 2 ppm 15 minute(s). TWA: 0.75 ppm 8 hour(s).
	OSHA Transitional Rule (United States, 1993). STEL: 2 ppm 15 minute(s). TWA: 0.75 ppm 8 hour(s).
	NIOSH REL (United States, 1994).CEIL: 0.1 ppm 15 minute(s).TWA: 0.01 ppm 10 hour(s).
Methanol	**OSHA (United States, 1989). Skin** TWA: 260 mg/m3, TWA: 200 ppm 10 hour(s).STEL: 325 mg/m3
	OSHA Final Rule (United States, 1989). Skin STEL: 325 mg/m3 15 minute(s). STEL: 250 ppm 15 minute(s).
	ACGIH (United States, 1994). Skin STEL: 328 mg/m3 15 minute(s).STEL: 250 ppm 15 minute(s).

Sodium Phosphate, Dibasic, Anhydrous Not available. Sodium Phosphate, Monobasic, Monohydrate Not available. Water Not available.

Section 9. Physical and Chemical Properties

Odor Pungent. **Color** Clear. Colorless. **Physical State and Appearance** Liquid.
Molecular Weight Not applicable. **Molecular Formula** Not applicable. **pH** 7 [Neutral.]
Boiling/Condensation Point The lowest known value is 64.55°C (148.2°F) (METHANOL). Weighted average: 99.08°C (210.3°F)
Melting/Freezing Point May start to solidify at -0.1°C (31.8°F) based on data for: Water. Weighted average: -5.72°C (21.7°F)
Specific Gravity Weighted average: 0.96 (Water = 1)
Vapor Pressure The highest known value is 12.9 kPa (97 mmHg) (@ 20°C) (METHANOL).
Vapor Density The highest known value is 1.11 (Air = 1) (METHANOL). Weighted average: 1.06 (Air = 1)
Volatility 99.9% (v/v). (METHANOL.)
Odor Threshold The lowest known value is 0.05 ppm (FORMALDEHYDE) Weighted average: 33.14 ppm
Evaporation Rate 0.36 (Water) compared to (n-BUTYL ACETATE=1)
VOC 6 (%) **LogKow** Not available. **Solubility** Soluble in water.

Section 10. Stability and Reactivity

Stability and Reactivity The product is stable. **Conditions of Instability** Not available.
Incompatibility with Various Substances Highly reactive with oxidizing agents, acids, alkalis. Slightly reactive to reactive with metals.
Rem/Incompatibility Not available.
Hazardous Decomposition Products COx , Na2O **Hazardous Polymerization** Will not occur.

Section 11. Toxicological Information

RTECS Number: Formaldehyde LP8925000, Methanol PC1400000, Sodium Phosphate, Dibasic, Anhydrous WC4500000, Sodium dihydrogen phosphate monohydrate Not available., Water ZC0110000
Toxicity Acute oral toxicity (LD50): 42 mg/kg [Mouse]. (FORMALDEHYDE)., Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit]. (METHANOL). Acute toxicity of the vapor (LC50): 64000 ppm 4 hour(s) [Rat]. (METHANOL).
Chronic Effects on Humans **CARCINOGENIC EFFECTS**: Classified + (Proven.) by OSHA [FORMALDEHYDE]. Classified A2 (Suspected for human.) by ACGIH, 2A (Probable for human.) by IARC [FORMALDEHYDE].
Acute Effects on Humans Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching. Hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening,or, occasionally, blistering. Non-permeator by skin. Hazardous in case of inhalation (lung irritant). Non-hazardous in case of inhalation. Hazardous in case of ingestion.
Synergetic Products (Toxicologically) Not available.
Irritancy Draize Test: Not available. **Sensitization** Not available.
Carcinogenic Effects Classified + (Proven.) by OSHA [FORMALDEHYDE]. Classified A2 (Suspected for human.) by ACGIH, 2A (Probable for human.) by IARC [FORMALDEHYDE].
Toxicity to Reproductive System Not available. **Teratogenic Effects** Not available. **Mutagenic Effects** Not available.

Section 12. Ecological Information

Ecotoxicity Not available. **BOD5 and COD** Not available.
Toxicity of the Products of Biodegradation The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

EPA Waste Number U122 U154 **Treatment** Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

Section 14. Transport Information

DOT Classification Proper Shipping Name: CHEMICALS, N.O.S. RQ: Not applicable.
TDG Classification Not available. **IMO/IMDG Classification** Not available. **ICAO/IATA Classification** Not available.

Section 15. Regulatory Information

U.S. Federal Regulations TSCA 8(b) inventory: FORMALDEHYDE ; Methanol; Sodium Phosphate, Dibasic, Anhydrous; Sodium Phosphate, Monobasic, Monohydrate; Water SARA 302/304/311/312 extremely hazardous substances: FORMALDEHYDE SARA 302/304 emergency planning and notification: FORMALDEHYDE SARA 302/304/311/312 hazardous chemicals: FORMALDEHYDE ; METHANOL; Sodium Phosphate, Dibasic, Anhydrous SARA 311/312 MSDS distribution - chemical inventory - hazard identification: FORMALDEHYDE : Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; METHANOL: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; Sodium Phosphate, Dibasic, Anhydrous: Immediate (Acute) Health Hazard SARA 313 toxic chemical notification and release reporting: FORMALDEHYDE 4%; METHANOL 1.98%. Clean Water Act (CWA) 307: No products were found., Clean Water Act (CWA) 311: FORMALDEHYDE ; Sodium Phosphate, Dibasic, Anhydrous Clean air act (CAA) 112 accidental release prevention: FORMALDEHYDE, Clean air act (CAA) 112 regulated flammable substances: No products were found., Clean air act (CAA) 112 regulated toxic substances: FORMALDEHYDE
State Regulations Pennsylvania RTK: FORMALDEHYDE : (special hazard, environmental hazard, generic environmental hazard); METHANOL: (environmental hazard, generic environmental hazard); Sodium Phosphate, Dibasic, Anhydrous: (environmental hazard, generic environmental hazard) Massachusetts RTK: FORMALDEHYDE ; METHANOL; Sodium Phosphate, Dibasic, Anhydrous New Jersey: Buffered Neutral Formalin 10% California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: FORMALDEHYDE California prop. 65 (no significant risk level): FORMALDEHYDE California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: FORMALDEHYDE

Section 16. Other Information

National Fire Protection Association (U.S.A.)

Histology Sampling Guidelines

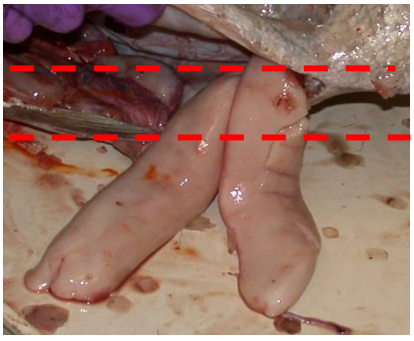
1. DO NOT OVERFILL JARS – no more than ¼ of space in jar

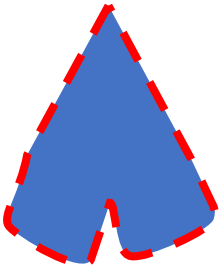
Overfilled Jar

Ideal amount of tissue

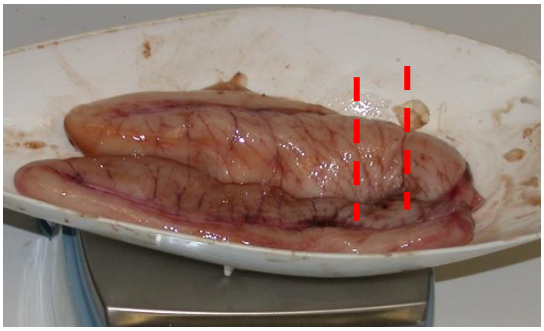
Properly filled Jar

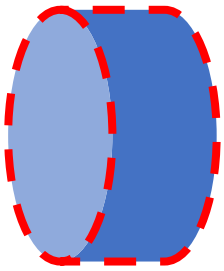
2. Gonad too big?
   Take the part closest to where the two lobes come together (posterior end)



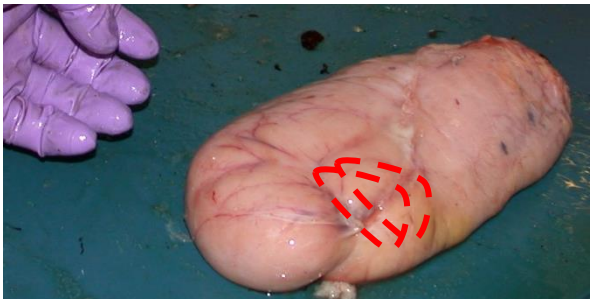


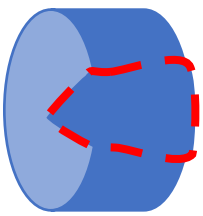
3. Gonad still too big?
   Take ½ inch cross section of one gonad lobe (near posterior end)





4. Gonad STILL too big?
   Take triangular piece of a cross section of one lobe (near posterior end)





NMFS Observer Program
OBS/TRIP ID:_____
Haul #:_____
Species: _____
Specimen #: _____

NMFS Observer Program **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**
NMFS Observer Program **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**
NMFS Observer Program **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**
NMFS Observer Program **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**
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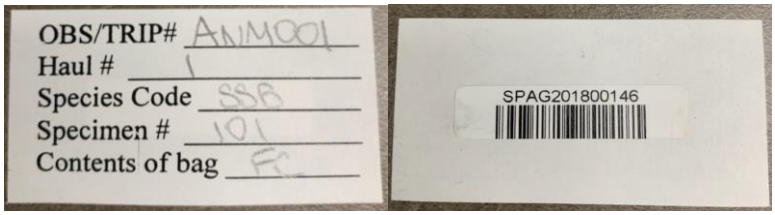
NMFS Observer Program **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**	**NMFS Observer Program** **OBS/TRIP ID:______________** **Haul #:___________________**

Instructions for Barcoding Samples and Datasheets

Barcodes are used to track samples and their associated data across multiple forms and databases. Barcodes aid in reducing labelling and transcription errors, while increasing efficiency. One unique barcode number is to be used for **all** samples taken from an individual animal. You should **never** reuse a barcode number on a different animal, even if on a different trip. You should use barcodes on all samples taken, no matter the trip target, gear type, or location.

Key Points:

- Only one unique barcode number per animal
- Never reuse barcodes
- Barcodes should be placed on all sample labels and data sheets
- Return all used barcode sheets to the lab at the end of your trip

Barcodes are provided as a stack of perforated sheets, with 12 barcode stickers per number, and therefore per animal. It does not matter which order you assign barcode numbers to each animal, as long as each barcode number is used only once.	
When removing barcode stickers from the sheet, it is preferable that you leave the far right column intact, unless needed for a large number of samples. We will place these on tracking sheets used at the office and in the lab during sampling processing, as well as to store in case of later use.	
Place a barcode on the back of each sample label for that individual animal.	

Please face the barcode out and have it visible on the inside of the Ziploc bag, so that it can be checked-in quickly.

When using a trash bag for a large sample, you may place a barcode on the exterior label, but also place a label within the trash bag, in case the exterior label falls off.

When collecting teleost gonad samples, place the barcode inside of the jar. We have had instances of barcodes falling off the exterior of the jars due to leaking formalin.

Then place a matching barcode on the Animal Log data sheet and the Sample Tracking data sheet.

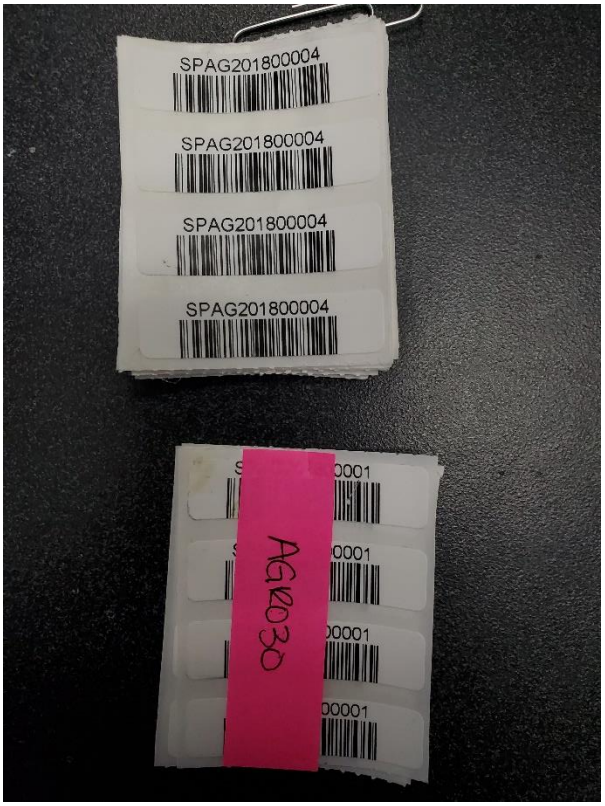
On the Sample Tracking sheet, continue to order the animals by Haul and Specimen Number, **do not** order by barcode number.

SHARK ANIMAL LOG

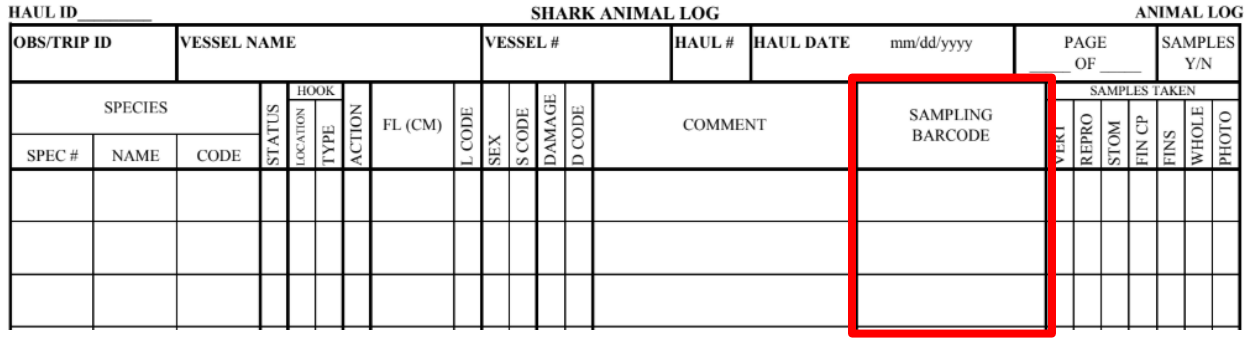
EL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE OF

DAMAGE	D CODE	COMMENT	SAMPLING BARCODE	REPRO

FINS	WHOLE	BARCODE	✔ IN	SPAG #

Return all used barcode sheets in the Ziploc bag with your Sample Tracking data sheet (and fin clips) at the end of your trip. In addition to being used on sample datasheets in the lab, this also prevents reusing the barcode numbers on subsequent trips.	

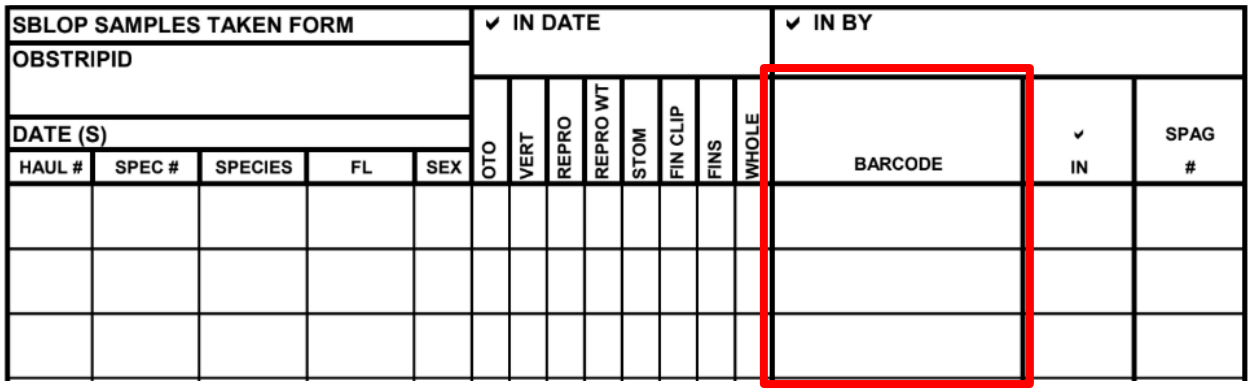
Additional barcode placement reference images:



HAUL ID_____ SHARK ANIMAL LOG ANIMAL LOG

OBS/TRIP ID	VESSEL NAME	VESSEL #	HAUL #	HAUL DATE mm/dd/yyyy	PAGE ___ OF ___	SAMPLES Y/N

SPECIES			STATUS	HOOK LOCATION	HOOK TYPE	ACTION	FL (CM)	L CODE	SEX	S CODE	DAMAGE	D CODE	COMMENT	SAMPLING BARCODE	SAMPLES TAKEN VERT	REPRO	STOM	FIN CP	FINS	WHOLE	PHOTO
SPEC #	NAME	CODE																			



SBLOP SAMPLES TAKEN FORM	✔ IN DATE								✔ IN BY		
OBSTRIPID											
DATE (S)											
HAUL #	SPEC #	SPECIES	FL	SEX	OTO	VERT	REPRO	REPRO WT	STOM	FIN CLIP	FINS	WHOLE	BARCODE	✔ IN	SPAG #

SAMPLES TAKEN FORM

OBSTRIPID **PAGE ____ of ____**

DATE (S)

HAUL #	SPEC #	SPECIES	FL	SEX	✔ IN DATE & BY: OTO	VERT	REPRO	REPRO WT	STOM	FIN CLIP	FINS	WHOLE	✔ ENTERED: BARCODE	✔ PROOFED: ✔ IN	SPAG #

SAMPLES TAKEN FORM

OBSTRIPID **PAGE ____ of ____**

DATE (S)

HAUL #	SPEC #	SPECIES	FL	SEX	✔ IN DATE & BY: OTO	VERT	REPRO	REPRO WT	STOM	FIN CLIP	FINS	WHOLE	✔ ENTERED: BARCODE	✔ PROOFED: ✔ IN	SPAG #

PC FISHERIES OBSERVER SPECIES CODES (Alphabetized by Common Name)			
Common Name	**Scientific Name**	**Code**	**#**
ALFONSINO	Beryx decadactylus	ALF	1600
AMBERJACK GREATER	Seriola dumerili	GAJ	1812
AMBERJACK LESSER	Seriola fasciata	LAJ	1815
AMBERJACKS	Seriola	AMJ	0030
ANCHOVY BAY	Anchoa mitchilli	ABY	0162
ANGELFISH BLUE	Holocanthus bermudensis	BAF	0579
ANGELFISH FAMILY	Pomacanthidae	ANF	0578
ANGLERFISH MONKFISH	Lophius sp.	AGL	0121
BALLOONFISH	Diodon holocanthus	BAL	0031
BALLYHOO	Hemiramphus brasiliensis	BLY	0150
BANDED RUDDERFISH	Seriola zonata	RUD	1817
BARRACUDA GREAT	Sphyraena barracuda	GBA	0181
BARRACUDAS	Sphyraena	BAR	0180
BARRELFISH	Hyperoglyphe perciformis	BRF	0193
BASS LARGEMOUTH	Micropterus salmoides	BAM	4181
BASS LONGTAIL	Hemanthias leptus	BSL	3374
BASS STRIPED	Morone saxatilis	BAI	4180
BASS WHITE	Morone chrysops	BAW	5000
BATFISH FAMILY	Ogcocephalidae	BAT	0032
BATFISH POLKA-DOT	Ogcocephalus radiatus	BPD	0033
BEARDFISH	Polymixia lowei	BDF	0194
BIGEYE	Priacanthus arenatus	BGE	0140
BIGEYE FAMILY	Priacanthidae	BEF	0141
BIGEYE SHORT	Pristigenys alta	BGS	0145
BILLFISH	Istiophoridae	BIL	2180
BIRD COMMON LOON	Gavia immer	LOO	6301
BIRD DOVEKIE	Alle alle	DOV	6300
BIRD GANNET NORTHERN	Morus bassanus	GAN	6171
BIRD GREAT BLACK-BACKED GULL	Larus marinus	GBB	6205
BIRD GULL	Laridae	GUX	6200
BIRD GULL HERRING	Larus smithsonianus	GHE	6206
BIRD GULL LAUGHING	Larus atricilla	GLA	6208
BIRD PELICAN, BROWN	Pelecanus occidentalis	PEL	6201
BIRD SHEARWATER GREAT	Puffinus gravis	SWG	6402
BIRD SHEARWATERS	Puffinus	SWX	6400
BIRD STORM PETREL WILSONS	Oceanites oceanicus	SPW	6434
BIRDS	Aves	BRD	6100
BLUEFISH	Pomatomus saltatrix	BLU	0230
BONITO ATLANTIC	Sarda sarda	BON	0330
BRYOZOA	Bryozoa	BRY	7200
BUFFALO SMALLMOUTH	Ictiobus bubalus	BSM	0421
BULLEYE	Cookeolus japonicus	BLE	0146
BUMPER ATLANTIC	Chloroscombrus chrysurus	ABU	0040
BURRFISH STRIPED	Chilomycterus schoepfi	BRS	2762
BUTTERFISH	Peprilus triacanthus	BUT	0037

BUTTERFISH GULF	Peprilus burti	BGF	0038
CARP	Cyprinus carpio	CRP	0630
CATFISH BLUE	Ictalurus furcatus	BLC	0662
CATFISH CHANNEL	Ictalurus punctatus	CCH	0663
CATFISH GAFFTOPSAIL	Bagre marinus	CGF	0035
CATFISH HARDHEAD	Arius felis	CHH	0036
CEPHALOPODS	Cephalopoda	CEP	0005
CHUB BERMUDA	Kyphosus sectator	CBM	1090
CIGARFISH BIGEYE	Cubiceps pauciradiatus	CUB	0530
COBIA	Rachycentron canadum	CBA	0570
CONEY	Cephalopholis fulva	CNY	1430
CORAL	Anthozoa	COR	8160
CORNETFISH BLUESPOTTED	Fistularia tabacaria	FIS	0010
CORNETFISH RED	Fistularia petimba	FIP	0011
COWFISH SCRAWLED	Acanthostracion quadricornis	COW	0028
CRAB	Decapoda	CRA	7190
CRAB ATLANTIC ROCK	Cancer irroratus	CAI	7120
CRAB BLUE	Callinectes sapidus	CBL	0114
CRAB CANCER	Cancer	CAC	7140
CRAB FLAME BOX	Calappa flammea	CAF	7130
CRAB HERMIT	Paguroidea	CAH	7185
CRAB HORSESHOE	Limulus polyphemus	HSC	7240
CRAB JONAH	Cancer borealis	CAB	7110
CRAB KING	Paralithodes	CAK	7090
CRAB SPIDER	Majidae	MAJ	7187
CRAB SWIMMING	Portunidae	CPO	7020
CREOLEFISH	Paranthias furcifer	TIF	1431
CRIMSON ROVER	Erythrocles monodi	CRV	2525
CROAKER ATLANTIC	Micropogonias undulatus	CRO	0041
CUBBYU	Equetus umbrosus	CYU	0042
CUTLASSFISH ATLANTIC	Trichiurus lepturus	CAT	0009
DAMSELFISHES	Pomacentridae	DMX	0196
DEALFISH	Trachipterus arcticus	DEA	0985
DOCTORFISH	Acanthurus chirurgus	AQH	0012
DOLPHIN	Delphinidae	MDO	9038
DOLPHIN ATLANTIC SPOTTED	Stenella frontalis	MAD	9040
DOLPHIN BOTTLENOSE	Tursiops truncatus	MBD	9036
DOLPHIN COMMON	Delphinus delphis	MCO	9042
DOLPHIN FISH (MAHI MAHI)	Coryphaena hippurus	DOL	1050
DOLPHIN PANTROPIC SPOTTED	Stenella attenuata	MPD	9039
DOLPHIN RISSOS	Grampus griseus	MRD	9037
DOLPHIN SPINNER SHORTBEAK	Stenella clymene	MCL	9041
DOLPHIN STRIPED	Stenella coeruleoalba	MSD	9043
DRUM BANDED	Larimus fasciatus	DBA	0043
DRUM BLACK	Pogonias cromis	DBL	0044
DRUM RED	Sciaenops ocellatus	RDD	1082
DRUM SAND	Umbrina coroides	SDR	1083

DRUM STAR	Stellifer lanceolatus	DST	0045
EEL	Anguilliformes	EEL	1140
EEL BEARDED BROTULA	Brotula barbata	BBR	1144
EEL BLACKPORED	Ophichtus melanoporus	EBP	1153
EEL CONGER	Congridae	CNG	1142
EEL KING SNAKE	Ophichthus rex	KSE	1137
EEL MORAY BLACKEDGE	Gymnothorax nigromarginatus	EBE	1141
EEL MORAY BLACKTAIL	Gymnothorax kolpos	EBT	1151
EEL MORAY FAMILY	Muraenidae	MEL	1143
EEL MORAY GREEN	Gymnothorax funebris	EGM	1147
EEL MORAY OCELLATED	Gymnothorax saxicola	EOM	1145
EEL MORAY PURPLEMOUTH	Gymnothorax vicinus	PME	1150
EEL MORAY RETICULATE	Muraena retifera	RMO	1148
EEL MORAY SPOTTED	Gymnothorax moringa	SMO	1149
EEL PALE-SPOTTED	Ophichthus puncticeps	PSE	1146
EEL SPOTTED SPOON NOSE	Echiophis intertinctus	ESN	1152
ESCOLAR	Lepidocybium flavobrunneum	GEM	2501
ESCOLAR LONGFIN	Scombrolabrax heterolepis	ESL	2506
FILEFISH	Aluterus	FLE	0047
FILEFISH UNICORN	Aluterus monoceros	FUN	0109
FILEFISH WHITESPOTTED	Cantherhines macrocerus	FIW	0046
FLOUNDER	Paralichthys	FLO	0048
FLOUNDER CHANNEL	Syacium micrurum	FLH	9052
FLOUNDER DUSKY	Syacium papillosum	FLU	9051
FLOUNDER GULF	Paralichthys albigutta	FLG	0049
FLOUNDER OCELLATED	Ancylopsetta quadrocellata	FLC	1250
FLOUNDER PEACOCK	Bothus lunatus	FLP	9050
FLOUNDER SOUTHERN	Paralichthys lethostigma	FLS	0050
FLOUNDER SUMMER	Paralichthys dentatus	FLD	1210
FLOUNDER WINDOWPANE	Scophthalmus aquosus	FLW	9053
FLYING GURNARD	Dactylopterus volitans	GFL	9055
FROGFISH FAMILY	Antennariidae	FRO	8787
GAR ALLIGATOR	Atractosteus spatula	AGA	1331
GAR FAMILY	Lepisosteidae	GAR	1330
GAR SPOTTED	Lepisosteus oculatus	SGA	1332
GASTROPOD	Gastropoda	GPD	7230
GROUPER	Serranidae	GRP	1410
GROUPER BLACK	Mycteroperca bonaci	BLG	1422
GROUPER GAG	Mycteroperca microlepis	GAG	1423
GROUPER GOLIATH	Epinephelus itajara	GOL	1421
GROUPER GRAYSBY	Cephalopholis cruentata	GSG	1428
GROUPER MARBLED	Dermatolepis inermis	MBG	1417
GROUPER MISTY	Hyporthodus mystacinus	MSG	1420
GROUPER NASSAU	Epinephelus striatus	NAG	1430
GROUPER RED	Epinephelus morio	RGR	1416
GROUPER SCAMP	Mycteroperca phenax	CGR	1424
GROUPER SNOWY	Hyporthodus niveatus	OGR	1414

GROUPER WARSAW	Hyporthodus nigritus	WGR	4740
GROUPER YELLOWEDGE	Hyporthodus flavolimbatus	YEG	1415
GROUPER YELLOWFIN	Mycteroperca venenosa	YFG	1426
GROUPER YELLOWMOUTH	Mycteroperca interstitialis	YMG	1425
GRUNT BARRED	Conodon nobilis	BGU	1427
GRUNT BLUESTRIPED	Haemulon sciurus	SGU	0051
GRUNT CAESAR	Haemulon carbonarium	CGU	1429
GRUNT COTTONWICK	Haemulon melanurum	CGT	1447
GRUNT FAMILY	Haemulidae	GRT	1440
GRUNT MARGATE	Haemulon album	MGT	1442
GRUNT STRIPED	Haemulon striatum	GST	1448
GRUNT WHITE	Haemulon plumieri	WGT	1441
GUITARFISH ATLANTIC	Rhinobatos lentiginosus	GUI	0052
HAKE GULF	Urophycis cirrata	HAG	1550
HAKE OFFSHORE	Merluccius albidus	HAO	5081
HAKE SILVER	Merluccius bilinearis	HSL	5090
HAKE SOUTHERN	Urophycis floridana	HAK	3901
HAKE SPOTTED	Urophycis regia	HSP	5093
HAKES MERLUCCIID FAMILY	Merluccius	HKM	5070
HAKES PHYCID FAMILY	Phycidae	HKP	1522
HARVESTFISH	Peprilus paru	HAR	0053
HERRING	Clupeidae	HER	0055
HERRING ATLANTIC THREAD	Opisthonema oglinum	HAT	0054
HIND RED	Epinephelus guttatus	REH	1413
HIND ROCK	Epinephelus adscensionis	RHI	1412
HIND SPECKLED	Epinephelus drummondhayi	SHI	1411
HOGCHOKER	Trinectes maculatus	HOG	1760
HOGFISH	Lachnolaimus maximus	HOF	1790
HOGFISH SPOTFIN	Bodianus pulchellus	HGS	3476
HOUNDFISH	Tylosurus crocodilus	HOU	0056
JACK	Carangidae	JAK	0034
JACK ALMACO	Seriola rivoliana	AJC	1810
JACK BAR	Caranx ruber	CXR	1816
JACK BLUERUNNER	Caranx crysos	JBR	0270
JACK BLUNTNOSE	Hemicaranx amblyrhynchus	JBL	0007
JACK CREVALLE	Caranx hippos	JCR	0870
JACK FAMILY	Carangidae	JKF	0057
JACK HORSE-EYE	Caranx latus	JHE	1800
JACK LEATHERJACKET	Oligoplites saurus	LJK	1809
JACK YELLOW	Carangoides bartholomaei	JYL	1803
JELLYFISH	Scyphozoa	JLY	8145
KINGFISH	Menticirrhus sp.	KIG	1811
KINGFISH GULF	Menticirrhus littoralis	KGU	0058
KINGFISH NORTHERN	Menticirrhus saxatilis	KNO	0059
KINGFISH SOUTHERN	Menticirrhus americanus	KSO	0060
LADYFISH	Elops saurus	LAD	0111
LANCETFISH	Alepisauridae	LAX	2035

LIONFISHES	Pterois	LNF	2080
LITTLE TUNNY	Euthynnus alletteratus	LTA	4653
LIZARDFISH FAMILY	Synodontidae	LIZ	0029
LIZARDFISH INSHORE	Synodus foetens	LZD	0062
LIZARDFISH SANDDIVER	Synodus intermedius	LSD	0039
LIZARDFISH SNAKEFISH	Trachinocephalus myops	SKF	0108
LOBSTERS	Nephropidae	LOB	0113
LOOKDOWN	Selene vomer	LKD	0063
MACKEREL ATLANTIC	Scomber scombrus	AMK	0064
MACKEREL BULLET	Auxis rochei	BMK	0065
MACKEREL CERO	Scomberomorus regalis	MCE	0066
MACKEREL CHUB	Scomber japonicus	CHM	2150
MACKEREL FRIGATE	Auxis thazard	FRM	1900
MACKEREL KING	Scomberomorus cavalla	KGM	1940
MACKEREL SNAKE	Gempylus serpens	TRX	2504
MACKEREL SPANISH	Scomberomorus maculatus	SMK	3840
MARINE MAMMAL	Mammalia	MAM	9010
MARLIN BLUE	Makaira nigricans	BUM	2179
MARLIN WHITE	Kajikia albida	WHM	2177
MENHADEN	Brevoortia	MEN	0067
MENHADEN ATLANTIC	Brevoortia tyrannus	MAT	0068
MENHADEN GULF	Brevoortia patronus	MGU	0069
MENHADEN YELLOWFIN	Brevoortia smithi	MYF	0070
MISC FINFISH	Teleost	MFI	5261
MIXED BAIT	Mixed bait	MBT	9990
MIXED SPECIES		MIX	0001
MOJARRA YELLOWFIN	Gerres cinereus	YFM	0098
MOLLUSC	Mollusca	MOL	0002
MOONFISH	Selene setapinnis	MNF	0071
MULLET SILVER	Mugil curema	MSI	2346
MULLET STRIPED	Mugil cephalus	MST	2341
NEEDLEFISH ATLANTIC	Strongylura marina	ATN	0190
OCTOPUS	Octopoda	OCT	7860
OILFISH	Ruvettus pretiosus	OIL	2502
OPAH	Lampris guttatus	OPA	2503
PARROTFISH FAMILY	Scaridae	PTF	2520
PERCH SAND	Diplectrum formosum	PSA	3110
PERCH SILVER	Bairdiella chrysoura	PSI	0072
PERMIT	Trachinotus falcatus	PER	0073
PIGFISH	Orthopristis chrysoptera	PIG	0074
PILOTFISH	Naucrates ductor	PLF	0075
PINFISH	Lagodon rhomboides	PIN	2670
PINFISH SPOTTAIL	Diplodus holbrookii	BTP	3309
POMFRETS	Bramidae	POA	2710
POMPANO AFRICAN	Alectis ciliaris	PAF	2719
POMPANO FLORIDA	Trachinotus carolinus	PFL	2720
PORCUPINEFISH	Diodon hystrix	POQ	3579

PORGY FAMILY	Sparidae	PRG	3580
PORGY GRASS	Calamus arctifrons	PGS	3305
PORGY JOLTHEAD	Calamus bajonado	JPO	3312
PORGY KNOBBED	Calamus nodosus	PKN	3308
PORGY LITTLEHEAD	Calamus proridens	POL	0076
PORGY RED	Pagrus pagrus	PRD	3300
PORGY SAUCEREYE	Calamus calamus	POS	0077
PORGY SHEEPSHEAD	Calamus penna	PSH	3581
PORGY SILVER	Diplodus argenteus	SPR	3313
PORGY WHITEBONE	Calamus leucosteus	POW	0078
PORKFISH	Anisotremus virginicus	PRK	2750
PUFFER	Tetraodontidae	PUX	2760
PUFFER BLUNTHEAD	Sphoeroides pachygaster	PBH	2763
PUFFER OCEANIC	Lagocephalus lagocephalus	PUL	2769
PUFFER SMOOTH	Lagocephalus laevigatus	PSL	2761
PUFFER SPINY FAMILY	Diodontidae	PUS	0079
RAY ATLANTIC DEVIL	Mobula hypostoma	DEV	3654
RAY BULLNOSE	Myliobatis freminvillei	RBU	3652
RAY BUTTERFLY	Gymnura	RBT	3651
RAY CHILEAN DEVIL	Mobula tarapacana	CDV	3665
RAY COWNOSE	Rhinoptera bonasus	RCN	3653
RAY EAGLES	Myliobatis	EAG	3655
RAY GIANT DEVIL	Mobula mobular	GDV	3666
RAY LESSER ELECTRIC	Narcine brasiliensis	RLE	0080
RAY MANTA	Mobula birostris	RMA	0081
RAY MOBULA	Mobula sp.	RMB	9054
RAY SPOTTED EAGLE	Aetobatus narinari	SPE	3656
RAYS/SKATES	Raja	SRX	3650
REMORA	Remora remora	RRM	0082
REMORA FAMILY	Remora	REM	2865
ROSEFISH BLACK BELLIED	Helicolenus dactylopterus	RBB	2420
RUNNER RAINBOW	Elagatis bipinnulata	RUN	1814
SAILFISH	Istiophorus platypterus	SAL	0083
SAILFISH ATLANTIC	Istiophorus albicans	SAI	3026
SAND DOLLAR KEYHOLE	Mellita quinquiesperforata	SDK	8056
SAND FLEA	Crustacea	SFE	7109
SARDINE SPANISH	Sardinella aurita	SAR	3870
SAWFISH LARGETOOTH	Pristis pristis	LSW	3506
SAWFISH SMALLTOOTH	Pristis pectinata	SSW	3230
SCAD REDTAIL	Decapterus tabl	DCT	1813
SCAD ROUND	Decapterus punctatus	RSC	1801
SCORPIONFISH FAMILY	Scorpaenidae	SCO	0085
SCORPIONFISH LONGSPINE	Pontinus longispinis	SCL	0097
SCORPIONFISH SPINYCHEEK	Neomerinthe hemingwayi	SCS	0086
SCORPIONFISH SPOTTED	Scorpaena plumieri	SPC	0099
SEA CUCUMBER	Holothuroidea	CUC	8085
SEA LICE	Amphipoda	LIC	7111

SEABASS BANK	Centropristis ocyurus	SBB	3375
SEABASS BLACK	Centropristis striata	SBL	0087
SEABASS FAMILY	Serranidae	SBF	0088
SEABASS ROCK	Centropristis philadelphica	SBR	3362
SEAHORSE LINED	Hippocampus erectus	SHL	0112
SEAROBIN BLUESPOTTED	Prionotus roseus	SEB	0084
SEAROBIN LEOPARD	Prionotus scitulus	SEL	0008
SEAROBIN, NORTH AMERICAN	Prionotus	SER	0089
SEASTAR/STARFISH	Asteroidea	STF	8280
SEATROUT	Cynoscion sp.	STT	3447
SEATROUT SAND	Cynoscion arenarius	STN	3455
SEATROUT SILVER	Cynoscion nothus	STS	0091
SEATROUT SPOTTED	Cynoscion nebulosus	STP	3447
SEATROUT WEAKFISH	Cynoscion regalis	STW	0092
SHAD	Alosa sp.	SHA	3474
SHAD ALABAMA	Alosa alabamae	ASH	3473
SHAD GIZZARD	Dorosoma cepedianum	SHG	1340
SHARK	Elasmobranchii	SHX	3508
SHARK ATLANTIC ANGEL	Squatina dumeril	ANG	3582
SHARK ATLANTIC SHARPNOSE	Rhizoprionodon terraenovae	SAS	3518
SHARK BIGNOSE	Carcharhinus altimus	SBG	3491
SHARK BLACKNOSE	Carcharhinus acronotus	SBN	3485
SHARK BLACKTIP	Carcharhinus limbatus	SBK	3495
SHARK BLOTCHED CATSHARK	Scyliorhinus meadi	CSB	3525
SHARK BLUE	Prionace glauca	BSH	3504
SHARK BONNETHEAD	Sphyrna tiburo	BHH	3483
SHARK BULL	Carcharhinus leucas	SBU	3497
SHARK CARIBBEAN REEF	Carcharhinus perezi	SRF	3490
SHARK CATSHARK CHAIN	Scyliorhinus retifer	DGC	3520
SHARK COW SHARKS	Hexanchidae	SCW	3577
SHARK CROCODILE	Pseudocarcharias kamoharai	SCR	3578
SHARK DOGFISH CUBAN	Squalus cubensis	DCU	3531
SHARK DOGFISH FAMILY	Squalidae	SDG	3503
SHARK DOGFISH ROUGHSKIN	Cirrhigaleus asper	DGR	3535
SHARK DOGFISH SHORTSPINE	Squalus mitsukurii	DGM	3534
SHARK DOGFISH SMOOTH	Mustelus canis	DGS	3511
SHARK DOGFISH SPINY	Squalus acanthias	DGY	3521
SHARK DUSKY	Carcharhinus obscurus	DUS	3514
SHARK FINETOOTH	Carcharhinus isodon	SFT	3481
SHARK FINS	Shark fins	FIN	3475
SHARK GALAPAGOS	Carcharhinus galapagensis	GAL	3492
SHARK GREENLAND	Somniosus microcephalus	SGR	3532
SHARK GULPER	Centrophorus granulosus	GLP	3533
SHARK HAMMERHEAD	Sphyrna	XHH	3516
SHARK HAMMERHEAD GREAT	Sphyrna mokarran	GHH	3524
SHARK HAMMERHEAD SCALLOPED	Sphyrna lewini	SPL	3523
SHARK HAMMERHEAD SMOOTH	Sphyrna zygaena	SHH	3522

SHARK HOUNDSHARK FAMILY	Triakidae	SHD	3536
SHARK LEMON	Negaprion brevirostris	LEM	3517
SHARK MACKEREL	Lamnidae	SMF	0093
SHARK MAKO	Isurus	XMA	3571
SHARK MAKO LONGFIN	Isurus paucus	LMA	3502
SHARK MAKO SHORTFIN	Isurus oxyrinchus	SMA	3505
SHARK NIGHT	Carcharhinus signatus	SNI	3494
SHARK NURSE	Ginglymostoma cirratum	NUR	3480
SHARK OCEANIC WHITETIP	Carcharhinus longimanus	OCS	3498
SHARK PORBEAGLE	Lamna nasus	POR	3501
SHARK REQUIEM	Carcharhinidae	SRQ	0094
SHARK SAND TIGER	Carcharias taurus	SST	3482
SHARK SANDBAR	Carcharhinus plumbeus	SSB	3513
SHARK SHARPNOSE SEVENGILL	Heptranchias perlo	SEV	3587
SHARK SILKY	Carcharhinus falciformis	FAL	3493
SHARK SIXGILL BIGEYE	Hexanchus vitulus	BSX	3529
SHARK SIXGILL BLUNTNOSE	Hexanchus griseus	SIX	3528
SHARK SMOOTHHOUND FLORIDA	Mustelus norrisi	SFL	3507
SHARK SPINNER	Carcharhinus brevipinna	SSP	3496
SHARK THRESHER	Alopias	XTH	3500
SHARK THRESHER BIGEYE	Alopias superciliosus	BTH	3510
SHARK THRESHER COMMON	Alopias vulpinus	PTH	3509
SHARK TIGER	Galeocerdo cuvier	TIG	3515
SHARK WHITE	Carcharodon carcharias	GWS	3512
SHARKSUCKER	Echeneis naucrates	SUK	2863
SHARKSUCKER WHITEFIN	Echeneis neucratoides	WSK	2864
SHEEPSHEAD	Archosargus probatocephalus	SHE	0095
SHRIMP	Penaeidae	SHR	7380
SHRIMP MARINE	Dendrobranchiata	SHP	7381
SKATE CLEARNOSE	Raja eglanteria	CLE	3657
SKATE ROUNDEL	Raja texana	SRD	3664
SKATE SAN BLAS	Dipturus garricki	SBS	3661
SKATE WINTER	Leucoraja ocellata	WIS	3662
SNAPPER BLACK	Apsilus dentatus	BSN	3755
SNAPPER BLACKFIN	Lutjanus buccanella	BFS	3757
SNAPPER CARDINAL	Pristipomoides macropthalmus	CRS	3773
SNAPPER CUBERA	Lutjanus cyanopterus	CSN	3759
SNAPPER DOG	Lutjanus jocu	DSN	3754
SNAPPER FAMILY	Lutjanidae	SNA	0096
SNAPPER GRAY	Lutjanus griseus	SNG	3762
SNAPPER LANE	Lutjanus synagris	LUL	3761
SNAPPER MAHOGANY	Lutjanus mahogoni	MHS	3772
SNAPPER MUTTON	Lutjanus analis	MSN	3763
SNAPPER QUEEN	Etelis oculatus	QSN	3770
SNAPPER RED	Lutjanus campechanus	RSN	3764
SNAPPER SCHOOLMASTER	Lutjanus apodus	SMS	3771
SNAPPER SILK	Lutjanus vivanus	SNS	3758

SNAPPER VERMILION	Rhomboplites aurorubens	SNV	3765
SNAPPER WENCHMAN	Pristipomoides aquilonaris	WNS	3756
SNAPPER YELLOWTAIL	Ocyurus chrysurus	YTS	3767
SOAPFISH WHITESPOTTED	Rypticus maculatus	WSS	1433
SPADEFISH	Chaetodipterus faber	SPD	0100
SPANISH FLAG	Gonioplectrus hispanus	GOH	3371
SPEARFISH LONGBILL	Tetrapturus pfluegeri	SPF	4010
SPEARFISH ROUNDSCALE	Tetrapturus georgii	SPG	4009
SPEARFISHES	Tetrapturus	SPX	4000
SPONGE	Porifera	PRF	8200
SPOT	Leiostomus xanthurus	SPO	0101
SQUID	Loliginidae	SQI	8030
SQUIRRELFISHES	Holocentridae	SQU	4120
STINGRAY	Dasyatis	STR	2862
STINGRAY ATLANTIC	Hypanus sabinus	SAT	0102
STINGRAY BLUNTNOSE	Hypanus say	SBO	3659
STINGRAY PELAGIC	Pteroplatytrygon violacea	SPS	3663
STINGRAY ROUGHTAIL	Bathytoshia centroura	SRO	3658
STINGRAY SOUTHERN	Hypanus americanus	SSO	3660
STURGEON	Acipenser	STU	0104
STURGEON ATLANTIC	Acipenser oxyrhynchus	STA	0103
SUNFISH OCEAN	Mola mola	MOC	4263
SUNFISH RED EAR	Lepomis microlophus	RES	4264
SUNFISH SHARPTAIL	Masturus lanceolatus	MLA	4261
SUNFISHES	Molidae	MOX	4260
SWORDFISH	Xiphias gladius	SWO	4320
TARPON	Megalops atlanticus	TAR	4350
TATTLER	Serranus phoebe	TAT	1432
TERRAPIN DIAMONDBACK	Malaclemys terrapin	TDB	8081
THREADFIN BARBU	Polydactylus virginicus	BTF	4450
TILEFISH ANCHOR	Caulolatilus intermedius	ANT	4479
TILEFISH BLACKLINE	Caulolatilus cyanops	BKT	4476
TILEFISH GOLDEN	Lopholatilus chamaeleonticeps	TIL	4470
TILEFISH GOLDFACE	Caulolatilus chrysops	GFT	4472
TILEFISH GRAY BLUELINE	Caulolatilus microps	BLT	4474
TILEFISH SAND	Malacanthus plumieri	MAL	4478
TOADFISH FAMILY	Batrachoididae	TOD	4500
TOADFISH GULF	Opsanus beta	TOG	4501
TOADFISH LEOPARD	Opsanus pardus	TOL	4502
TOMTATE	Haemulon aurolineatum	TOM	0105
TRIGGERFISH	Balistidae	TRS	4560
TRIGGERFISH GRAY	Balistes capriscus	TRG	0106
TRIGGERFISH QUEEN	Balistes vetula	TRQ	4563
TRIPLETAIL	Lobotes surinamensis	TRI	0107
TUNA	Thunnus	TUN	4656
TUNA ALBACORE	Thunnus alalunga	ALB	4651
TUNA BIGEYE	Thunnus obesus	BET	4657

TUNA BLACKFIN	Thunnus atlanticus	BLK	4658
TUNA BLUEFIN	Thunnus thynnus	BFT	4652
TUNA SKIPJACK	Katsuwonus pelamis	SKJ	4654
TUNA YELLOWFIN	Thunnus albacares	YFT	4655
TUNICATES	Tunicata	TNC	0522
TURTLE	Chelonioidea	TTX	8120
TURTLE GREEN	Chelonia mydas	TTG	8112
TURTLE HAWKSBILL	Eretmochelys imbricata	THB	8113
TURTLE KEMP'S RIDLEY	Lepidochelys kempii	TKR	8119
TURTLE LEATHERBACK	Dermochelys coriacea	TLB	8118
TURTLE LOGGERHEAD	Caretta caretta	TTL	8114
UNCODED ANIMAL	Uncoded animal	UNC	9999
UNKNOWN	Unknown animal	UNK	0000
UNKNOWN TELEOST	Osteichthyes	TEL	5350
URCHIN SEA	Echinodermata	URC	0003
WAHOO	Acanthocybium solandri	WAH	4710
WHALE	Cetacea	WHA	9006
WHALE BEAKED	Ziphiidae	WBK	9048
WHALE KILLER	Orcinus orca	MKW	9020
WHALE NORTHERN BOTTLENOSE	Hyperoodon ampullatus	WNB	9049
WHALE PILOT	Globicephala	MPW	9026
WHALE PILOT LONGFIN	Globicephala melas	PWL	9027
WHALE PILOT SHORTFIN	Globicephala macrorhynchus	PWS	9028
WHALE PYGMY SPERM	Kogia breviceps	PSW	9013
WHALE RIGHT NORTH ATLANTIC	Eubalaena glacialis	MRW	9029
WHIFF BAY	Citharichthys spilopterus	WFB	0110
WORM	Polychaeta	WOR	0004
WRASSE FAMILY	Labridae	WRA	1880
WRECKFISH	Polyrion americanus	WRK	5131

Quick reference guide to the identification of sharks commonly caught on bottom longline gear

First dorsal fin origin anterior to pelvic fin origin

OR

First dorsal fin origin above or posterior to pelvic fin origin → **GO TO PAGE 2A**

Spines present on both dorsal fins → **GO TO PAGE 2B**

No spines on both dorsal fins

Second dorsal fin slightly smaller than first dorsal fin → **GO TO PAGE 3A**

Length of upper lobe of caudal fin much shorter than length of body

Second dorsal fin much smaller than first dorsal fin

Length of upper lobe of caudal fin approximately equal to length of body

Head expanded laterally

Head not expanded laterally

Strong caudal keel present; snout very pointed; Homocercal caudal fin

Caudal keel absent or poorly developed; snout pointed to blunt; Heterocercal caudal fin → **GO TO PAGE 3B**

Eyes are large and extend onto top of head; nuchal grooves present on dorsal surface of head

Eyes are small and do not extend onto top of head; nuchal grooves absent on dorsal surface of head

Head length greater than pectoral fin length

Head length less than pectoral fin length;

Bigeye thresher shark
Alopias superciliosus

Thresher shark
Alopias vulpinus

Shortfin mako
Isurus oxyrinchus

Longfin mako
Isurus paucus

Front of head with central indentation; sides of head project past front of head; pelvic fin rear margin straight

Front of head lacks central indentation; sides of head do not project past front of head; pelvic fin rear margin falcate

Front of head without central indentation; sides of head project past front of head

Head shovel-shaped; body usually covered with numerous black spots

Scalloped hammerhead
Sphyrna lewini

Great hammerhead
Sphyrna mokarran

Smooth hammerhead
Sphyrna zygaena

Bonnethead
Sphyrna tiburo

A First dorsal fin origin above or posterior to pelvic fin origin

OR

B First dorsal fin origin anterior to pelvic fin origin; spines present on both dorsal fins

Six or more gill slits; second dorsal fin absent

Five gill slits; two dorsal fins present

Seven gill slits; dorsal fin with distinct black marking

Sharpnose sevengill shark
Heptranchias perlo

Six gill slits; length of dorsal fin base less than twice as long as distance from dorsal fin insertion to caudal origin

Bluntnose sixgill shark
Hexanchus griseus

Six gill slits; length of dorsal fin base more than twice as long as distance from dorsal fin insertion to caudal origin; dorsal fin usually with white tip

Bigeye sixgill shark
Hexanchus nakamurai

1. There are 10 other species of scyliorhinid sharks in the area. All other species lack reticulated pattern or have elongated labial furrows.

Body dorsoventrally compressed; Hypocercal tail

Atlantic angel shark
Squatina dumeril

Body fusiform

Nasal barbels present; eyes posterior to corners of mouth

Nurse shark
Ginglymostoma cirratum

Nasal barbels absent; eyes anterior to corners of mouth

Chain dogfish [1]
Scyliorhinus retifer

Subterminal notch present on caudal fin

Gulper shark [2]
Centrophorus spp.

2. There are at least 10 other species of gulper sharks in the area. Identification to species level is difficult in the field.

Subterminal notch absent on caudal fin

Precaudal pit absent

Roughskin dogfish
Cirrhigaleus asper

Precaudal pit present

First dorsal fin origin posterior to pectoral fin free rear tips; usually with numerous white spots on body

Spiny dogfish
Squalus acanthias

Cuban dogfish
Squalus cubensis

First dorsal fin origin above or anterior to pectoral fin free rear tips; no white spots on body

Distance from tip of snout to inner corner of nostril < than distance from inner corner of nostril to upper labial furrow; pectoral fin free rear tip pointed

Distance from tip of snout to inner corner of nostril > than distance from inner corner of nostril to upper labial furrow; pectoral fin free rear tip rounded

Shortspine dogfish
Squalus mitsukurii

PAGE 2

Some photographs provided by S. Branstetter, J. Castro, E. Hoffmayer, and S. Iglésias

A Second dorsal fin only slightly smaller than first dorsal fin

OR

B Second dorsal fin much smaller than first dorsal fin

First dorsal fin origin posterior to pectoral fin free rear tip

First dorsal fin origin above or anterior to pectoral fin free rear tip

Interdorsal ridge absent

Interdorsal ridge present

GO TO PAGE 4B

Fifth gill slit posterior to pectoral fin origin; upper teeth triangular, serrated and lack cusplets

Lemon shark
Negaprion brevirostris

Fifth gill slit anterior to pectoral fin origin; upper teeth needle-like, smooth and have cusplets

Sand tiger [3]
Carcharias taurus

Second dorsal fin origin above midpoint of anal fin base

Second dorsal fin origin above or anterior to anal fin origin

Labial furrows well developed; preanal ridges present

Atlantic sharpnose shark
Rhizoprionodon terraenovae

Labial furrows poorly developed; preanal ridges absent

Smalltail shark
Carcharhinus porosus

Upper and lower labial furrows approximately equal in length

Florida smoothhound [4]
Mustelus norrisi

Upper labial furrows longer than lower labial furrows

Smooth dogfish [4]
Mustelus canis

All fins, with possible exception of second dorsal lack dark markings

Dark markings present on apices of most fins

GO TO PAGE 4A

Snout length ≥ mouth width; upper teeth with distinct notch; gill slits shorter than pectoral fin base; black smudge on nose

Blacknose shark
Carcharhinus acronotus

Snout length < mouth width; teeth with narrow cusps; third gill slit longer than pectoral fin base

Finetooth shark
Carcharhinus isodon

3. There are two other species of sand tigers in the area. The first dorsal fin origin of both species is above or anterior to the pectoral fin free rear tip. The teeth of *Odontaspis ferox* has four cusplets. The second dorsal fin of *O. noronhai* is considerably larger than the anal fin and its teeth have two cusplets.

4. There is at least one other species of smoothhound in the area. The only way to reliably differentiate among the species in the field is based on scale morphology and vertebral counts.

A Interdorsal ridge absent

OR

B Interdorsal ridge present

Second dorsal fin origin anterior to anal fin origin; snout length << than mouth width

Second dorsal fin origin above anal fin origin; snout length ~ equal to or > than mouth width

Caudal keels, spiracles and long labial furrows present; body usually with dark spots or bands

Caudal keels, spiracles and labial furrows absent

Bull shark
Carcharhinus leucas

Tiger shark
Galeocerdo cuvier

First dorsal fin origin posterior to pectoral fin free rear tip

First dorsal fin origin above or anterior to pectoral fin free rear tip

Snout length < than mouth width; relatively small eye; free margin of second dorsal > height of second dorsal

Snout length > than mouth width; relatively large eye

Silky shark
Carcharhinus falciformis

Night shark [6]
Carcharhinus signatus

No distinct marking on anal fin [5]

Anal fin with distinct black mark on tip [5]

Blacktip shark
Carcharhinus limbatus

Spinner shark
Carcharhinus brevipinna

Second dorsal fin free rear tip length > than second dorsal fin height; upper tooth cusp continuous with base

First dorsal fin noticeably tall; second dorsal free rear tip ≤ second dorsal fin height; upper tooth cusp differentiated from base

First dorsal fin origin over pectoral fin insertion; first dorsal fin noticeably large

Dusky shark
Carcharhinus obscurus

Reef shark
Carcharhinus perezi

Sandbar shark [7]
Carcharhinus plumbeus

5. Spinner sharks less than 100 cm can lack black mark on the anal fin. The distance from the tip of the snout to the front of the nostrils is greater than the distance from the front of the mouth to the front of the nostrils for a spinner shark. The distance from the tip of the snout to the front of the nostrils is ≤ the distance from the front of the mouth to the front of the nostrils for the blacktip shark. Blacktip sharks are generally more heavy-bodied.

6. Night sharks are frequently reported to have green eyes; however, this is rarely observed.

7. The bignose shark, *Carcharhinus altimus*, is very similar in appearance except its dorsal fin is not as large and second dorsal fin origin is anterior to the anal fin origin. Conversely, the second dorsal fin origin is above the anal fin origin on the sandbar shark.

W.B. Driggers III [1], L.F. Hale [1], I.E. Baremore [1], M.S. Passerotti [1], E.R. Hoffmayer [2]
1. National Marine Fisheries Service, Southeast Fisheries Science Center
2. University of Southern Mississippi, Gulf Coast Research Laboratory

Amberjack Identification

Unless it is a very large specimen, amberjacks are easily confused with several other species within the family group. They may be distinguished from each other by the number of gill rakers, the length of the anal fin base, and the numbers of spines and rays in the dorsal fin. Gill rakers are the finger-like extensions projecting forward from the front gill arch.

GREATER AMBERJACK

The greater amberjack has a bluish-brown back, and a wide amber-brown stripe down the length of each side. A dark bar extends diagonally from the dorsal fin through each eye. Greater amberjacks have 11-19 gill rakers, a long anal fin base, 7 dorsal fin spines, and 30-34 dorsal fin rays. Greater amberjacks have the noticeable "boot" on the upper maxilla.

LESSER AMBERJACKS

Lesser amberjacks have a faint band from the eyes to nape. They have a deeper body, large eyes, and a flat upper maxilla. Lessers have 21-24 gill rakers, a long anal fin base, 8 dorsal fin spines, and 29-32 dorsal fin rays.

ALMACO JACKS

Deep bodied and a brownish coloration dorsally with a dark band that runs from the eyes to first dorsal fin and an amber stripe on sides. The lobes on the dorsal and anal fin are noticeably elongated. These also have the "boot" on the upper maxilla. Almaco jacks have 21-26 gill rakers, a long anal fin base, 7 dorsal fin spines, and 28-31 dorsal fin rays.

BANDED RUDDERFISH

Banded rudderfish are typically grayish dorsally and may have a dark band form the eye to first dorsal fin. They have a more slender body and an amber stripe along their sides. Juveniles have dark vertical bands. Banded rudderfish have a short anal fin base, 12-16 gill rakers, 8 dorsal fin spines, and 34-39 dorsal fin rays.

FOR REFERENCE:

1. 7 dorsal fin spines - greater amberjack or almaco jack
    - > 20 gill rakers - almaco jack
    - < 20 gill rakers - greater amberjack
2. 8 dorsal spines – lesser amberjack or banded rudderfish
    - > 20 gill rakers – lesser amberjack
    - < 17 gill rakers – banded rudderfish

Note: Greater amberjack and almaco jack both have the "boot" on the upper maxilla

Southeast Fisheries Observer Programs

Incidental Take Manual

NOAA Fisheries

Panama City Laboratory

INCIDENTAL TAKE INTERACTION INSTRUCTIONS

If at any time during an observed trip a marine mammal, sea turtle, sawfish, sturgeon or sea bird directly contacts the vessel, or the vessel's fishing gear; AND any part of the animal is entangled, snagged, ensnared, caught, hooked, collided with, hit, injured or killed by the vessel or its gear, regardless of the final condition and release of the animal, it should be documented. If a dead or injured marine mammal, sea turtle, sawfish, sturgeon or sea bird is seen in the water during or immediately after a haul back, the observer must decide if the animal was once entangled in the gear of the vessel (i.e. whether the animal is determined to be an incidental take). Gear or gear marks on the animal and/or damage to the fishing gear may help to distinguish incidental takes from sightings.

FOR ALL INCIDENTAL TAKES, A RECORD IS ENTERED IN ANIMAL LOG AND THE SPECIES-APPROPRIATE INCIDENTAL TAKE LOG FILLED OUT. ALL ANIMALS INCIDENTALLY TAKEN MUST BE PHOTOGRAPHED AS PHOTOS ARE NECESSARY TO ASSIST IN SPECIES IDENTIFICATION.

FOR INCIDENTALLY CAUGHT **MARINE MAMMALS**:

1. **Contact your observer coordinator FIRST and IMMEDIATELY**. Your coordinator will contact the marine mammal stranding hotline for further instructions. The marine mammal coordinator may then call you with further instructions.
   If you are unable to get in touch with your coordinator, notify the captain and call the marine mammal emergency stranding pager – **305-862-2850**.
2. Report the location (Lat/Long), the degree of entanglement, and take photographs of the marine mammal and any distinguishing characteristics (callosities, flukes).
3. Once directions have been given from your observer coordinator and the marine mammal coordinator, then proceed to fill out the **MARINE MAMMAL INCIDENTAL TAKE LOG** (Section 9.4.). Instructions are in section 9.3.
4. If actual measurements or samples are collected, fill out the **MARINE MAMMAL BIOLOGICAL SAMPLE LOG** (section 9.6.). Instructions are in section 9.5.
5. If animal is dead, flag carcass with surveyor tape/spray paint before discarding carcass.

FOR INCIDENTALLY CAUGHT **SEA TURTLES**:

1. Report incidental catch to your observer coordinator upon landing or during your weekly call (while at sea).
2. Fill out the species-appropriate **SEA TURTLE LIFE HISTORY FORM.**
3. Sampling protocols can be found in the Sea Turtle Manual, section 9.9.
4. If animal is dead, flag carcass with surveyor tape/spray paint before discarding carcass.

FOR INCIDENTALLY CAUGHT **SAWFISH, STURGEON OR SEABIRDS**:

1. Report incidental catch to your observer coordinator upon landing or during your weekly call (while at sea).
2. Fill out the species-appropriate **PROTECTED RESOURCES FORM.**
3. Sampling protocols can be found the end of this section (section 9.10.).
4. If animal is dead, collect samples and then flag carcass with surveyor tape/spray paint before discarding carcass.

MARINE MAMMAL INCIDENTAL TAKE LOG INSTRUCTIONS

The purpose of this log is to document incidentally taken marine mammals. The same log may be used for all marine mammals incidental takes occurring on a trip, regardless of haul number. Enter each animal onto the log sheet as a separate entry, take a photograph to confirm species identification, and record detailed comments describing how the animal was involved in the gear, including the position of hook (if hooked) or description of how animal was entangled. Also note how much gear was left attached to the animal upon release and whether any injury was evident. This log should not include animals that may be observed near the gear.

DO NOT RECORD INFORMATION ON SEA TURTLES OR SEA BIRDS ON THIS LOG. THESE ANIMALS SHOULD BE RECORDED ON THE RESPECTIVE SPECIES-SPECIFIC INCIDENTAL TAKE LOGS.

If an entanglement of a marine mammal occurs, follow these guidelines:

FIRST AND IMMEDIATELY - CALL YOUR OBSERVER COORDINATOR YOUR COORDINATOR WILL CONTACT THE MARINE MAMMAL COORDINATOR FOR FURTHER INSTRUCTION.

If you are unable to get in touch with your coordinator, follow the instructions below:

- Notify the captain and call the marine mammal emergency stranding pager
- – 305-862-2850.
- Report the location (Lat/Long), the degree of entanglement, and take photographs of the marine mammal and any distinguishing characteristics (callosities, flukes).
- Once directions have been given from your observer coordinator and the marine mammal coordinator, then proceed to fill out the MARINE MAMMAL INCIDENTAL TAKE LOG.
- If animal is dead, flag carcass with surveyor tape/spray paint before discarding carcass. If the captain is unwilling to cooperate with any of the above procedures, the observer will be required to document the events.

Top of the Page:

OBS/ TRIP NUMBER: Record the three character observer identifier (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

DATE LANDED: Record the month, day and year that the **vessel returned to the dock/port** (mm/dd/yyyy). This may not be the same day fish were unloaded and sold.
Example: 01/01/2020.

PAGE NUMBER: Record the total number of pages of the marine mammal incidental take logs; record Page 1 OF _____. The front page of any take log will always be page 1. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Include Marine Mammal Biological Sample logs in this total number.

INCIDENTAL TAKE INFORMATION:

PSID #: PROTECTED SPECIES ID NUMBER, assign a consecutive identification number (starting at 001, reflected from the haul log) to each animal that is incidentally taken on this trip. If there are insufficient lines on one form to record all animals caught on this trip, continue listing animals on an additional Marine Mammal Incidental Take Log, making sure to fill in the preceding number.

HAUL NUMBER: Record the haul number in which this animal was incidentally taken, as related to the corresponding Haul Log.

GEAR NUMBER: Record the gear number in which this animal was incidentally taken, as specified on the corresponding Gear Characteristics Log (ex. String 1, String 2, etc.).

TIME (24 hours): Record the local time (24 hour clock NOT hundredths of an hour) that each animal was brought onboard or alongside the vessel. (Example: 20:32)

ADD COND CODE: ACTIVE DETERRENT DEVICE CONDITION FOR GILLNET ONLY Record the condition of the active deterrent device that immediately follows an incidental take by recording the most appropriate code: NOTE: Record additional condition of the active deterrent device that immediately precedes an incidental take in COMMENTS.

Code	**Pinger State**
0	Unknown.
1	No Pingers Used On Gear.
2	Audible.
3	Inaudible, Tested and Working.
4	Inaudible, Tested and Not Working.
5	Inaudible. Not Tested.
6	Absent (Lost).
9	Other. Describe in COMMENTS.

NOTE: "Tested" means the pinger signal was actually tested

SPECIES NAME: Record a three letter abbreviation (SEE SPECIES CODE LIST) for each species Attempt to identify all animals to species. If unsure, use group/family abbreviation (MDO, or WHA.) and comment on possible species or characteristics i.e. baleen whale, unidentified dolphin, seal, etc. PHOTOGRAPHS SHOULD BE TAKEN FOR ALL INCIDENTAL TAKES

SPECIES CODE: Record the 4 digit species code (SEE SPECIES CODE LIST). If you are unable to identify a species or a species is unlisted, photograph and only fill in group or family abbreviation

TAG NUMBERS: Record the complete alphanumeric numbers from the tag(s) that you attach or that were already attached to the animal. Example: D09999

TAG CODES: Indicate the origin of the tag number recorded above, for each tag attached to the animal, by recording the appropriate one digit code:

Tag Code	Tag State
0	Unknown.
1	Tag Applied by Observer.
2	No Tag(s).
3	Tags Already Present, Left On.
4	Tags Already Present, Removed.

ENTANGLEMENT SITUATION: Indicate the initial entanglement situation of the animal by recording the most appropriate two digit code:

00 = Unknown.
01 = Fell from gear at a point unknown (i.e. animal fell from gear, but time during haulback unknown).
02 = Fell from gear before exiting water
03 = Fell from gear once hauled out of water (i.e. animal mostly completely out of water when fell from gear because weight and pulling action of net).
04 = Fell from gear due to force of roller (i.e. animal reached roller and it's force caused it to fall from gear).
05 = Removal requires cutting of gear/animal
06 = Removal does NOT require cutting of gear/animal. i.e. pulling, unwrapping, unrolling, and/or detangling gear allows animal to be removed from gear, without cutting gear and/or animal.
12 = Hooked, ingested.
14 = Hooked, Head.
15 = Hooked, Flipper
17 = Hooked, other/unknown. Describe situation in COMMENTS.
28 = Contact with vessel or vessel equipment other than fishing gear.
29 = Entangled in gear other than vessel's fishing gear (e.g. ghost gear)
99 = Other. Describe situation in COMMENTS.

NOTE: If more than one code applies to a situation choose the code that describes the primary entanglement/interaction.

ANIMAL CONDITION CODE: Indicate the condition of the animal when RELEASED by recording the most appropriate two digit code:

00 = Unknown. Explain why you cannot identify the animal condition in COMMENTS.
01 = Alive, see COMMENTS.
04 = Alive, hook/gear in/around mouth, attempt to determine where in the mouth the hook is, etc. and describe in COMMENTS.
05 = Alive, hook/gear in/around flipper. Describe more fully in COMMENTS.
06 = Alive, hook/gear in/around another single body part, i.e. hook in the neck; specify which in COMMENTS.
07 = Alive, hook/gear in/around several body parts, describe more fully in COMMENTS
08 = Alive, seen by captain and/or crew ONLY
10 = Dead, condition unknown.
11 = Dead, fresh. See Figure 9.2.1.
12 = Dead, moderately decomposed. See Figure 9.2.2.
13 = Dead, severely decomposed. See Figure 9.2.3.
14 = Dead, seen by captain and/or crew ONLY

NOTE: If more than one code applies, choose the code that describes the most specific condition of the animal (e.g. a dolphin is alive and released with gear around the left front flipper – chose code 05 as it is the most specific).

ANIMAL ONBRD?: (ANIMAL ONBOARD?) Indicate whether the animal was brought onboard the vessel by recording the appropriate one digit code:

0 No. Note the reason in COMMENTS.
1 Yes.

PHOTOS TAKEN?: Indicate whether any photograph(s) are taken of the animal by recording the appropriate one digit code:

0 No. Note the reason in COMMENTS.
1 Yes.

All marine mammals incidentally taken must be photographed as photos are necessary to assist in corroborating species identification. Only under extreme conditions should this field reflect that no photos were taken.

SAMPLED?: Indicate whether this animal has been measured or sampled by recording the appropriate one digit code:

0 No. Note the reason in COMMENTS.
1 Yes.

Note: If yes, appropriate log must also be included in the trip.

EST. LENGTH: Record an estimated FL to the nearest centimeters (30 cm=1 foot). For marine mammals, the estimated length should be a straight line estimate of total length. If actual measurements are taken on this animal, record a dash (-) in this field. Actual measurements are recorded on the Marine Mammal Biological Sample Log.

COMMENTS: Record details about how the animal was involved in the gear, how much gear (nearest foot) was left attached to the animal and the condition of the animal upon its release. If more room is needed, use the back of this log, making sure to indicate "See Back" on the front. Reference each comment with the corresponding field name and PSID. Record any additional information regarding the incidental take(s), especially when data are unable to be collected. The COMMENTS section should include a list of identifying characteristics, details on the entanglement situation and a description of the overall condition of the animal. Record additional comments about the condition of the animal as these data are needed for obtaining better information on the condition at the time of capture. Document how much of the animal was examined (i.e. only dorsal and lateral sides seen). Thoroughly describe new and/or healed wounds, the amount and location of scavenger damage and/or decomposition, the firmness and coloration of tissues, condition of the skin (i.e. cracked, sloughing, dull, glossy), the presence or absence of blood (record if bleeding), and any missing parts. Include descriptive comments about the animal's behavior on deck and upon release (lethargic, active, calm, vocalizing, struggling, swam away, sank, floated at surface, righted itself, dove, breathing patterns, etc.). Also record the amount and location of gear remaining on the animal

BAD EXAMPLE: Animal was tail wrapped in a dropline, 2 wraps, approx 4' mono left attached animal dove downward strongly, a small cut on tail from line.

GOOD EXAMPLE: While hauling back a bottlenose dolphin was spotted at 0821, wrapped in a dropline. While in the line the dolphin was alive and lively but struggling to stay upright. The dropline appeared to be wrapped around the base of the tail twice. There was blood in the water about a tablespoon but as the dolphin struggle more the amount of blood was closer to a cup. The blood appeared to be coming from the right side of the tail, where the dropline was cutting into the skin. The rest of the body was uninjured and doesn’t appear to have gear or gear marks anywhere else. The crew pulled the gear and dolphin close to the boat to release it but the dolphin was struggling too much and the crew stated the gear is too tight around the tail to cut it off. The crew cut the line to the bouy and the mainline about 6 inches away from the tail; leaving 3 feet of dropline wrapped around the dolphin’s tail. The line was made of clear mono having a diameter of 1milimeter (mm). When the line was cut, the dolphin dove downward without hesitation, it moved quickly. After a few minutes of searching the surface, the dolphin was not seem at the surface. The dolphin was gray in color, the snout was short and think, and the melon of the dolphin was very premediate. The dolphin was also larger in size, about 9ft long.

Figure 11.2.1. Animal Condition Codes (When Released)
11 = Dead, Fresh.

Normal appearance (as if the animal was still alive). Carcass not bloated with gas and/or when body punctured - no sound of gas escaping. Tongue and penis not bloated and/or protruding. Body, muscles, and blubber firm to the touch. Muscle tissue appearance close to that of meat for human consumption. Blubber creamy white or pinkish coloration, no evidence of liquefying fat. Skin cannot be easily pulled or separated from underlying tissue. Eyes, when present, may be clear, cloudy blue/white, or red. May have white foam seeping from mouth/blowhole. May have fresh scavenger damage with tissue missing, but remaining muscle-firm pink/red; blubber-firm, creamy white to pink; skin-firm with normal coloration; and organs still easily distinguishable. Easily recognizable or identifiable to species.

Dead, Fresh (code 11)

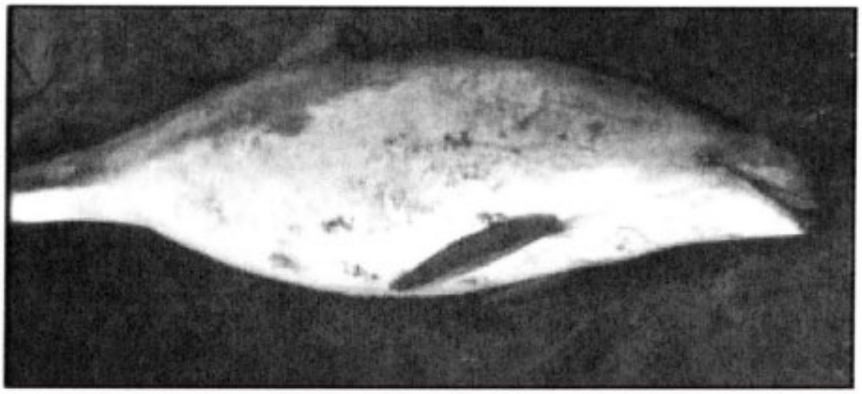


Figure 1. Illustration of Animal Condition Code 11 (NOTE: Illustrations is of a pregnant female)

Figure 11.2.2. Animal Condition Codes (When Released)
12 = Dead, Moderately Decomposed.

Does not appear as if it was "just alive or swimming". Carcass bloated with decomposition gases and/or if body cavity can be punctured- likely to have gas escape or body cavity collapse. Tongue and/or penis may be bloated and protruding from orifices. Skin cracked and sloughing, may be easily separated from underlying body tissue. Hair may easily be separated from underlying tissue without tugging or stroking. Edges of wounds/tissue damage likely to be soft and mushy with grayish/whitish coloration. Muscle tissues likely to be soft and poorly defined and pinkish white/gray in coloration. Organs/musculature mostly intact but different types may not be easily distinguishable. Carcass may be intact but collapsed due to internal tissue/organ deterioration. Tissues usually smell strongly of rotting flesh. May be fragile but can usually be moved mostly intact. Recognizable by species (even though body parts may be missing).

Dead, Moderately Decomposed (code 12)

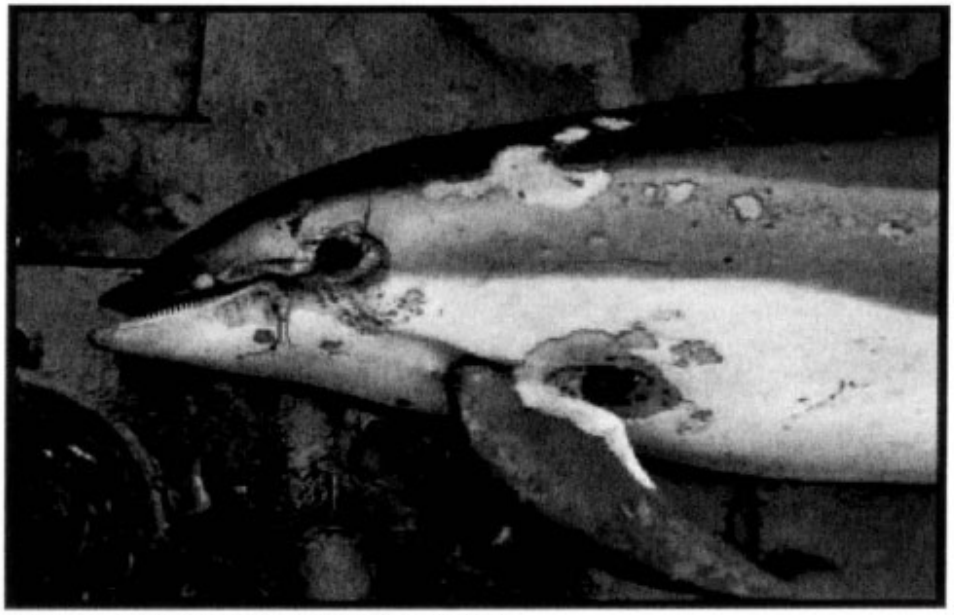


Figure 2. Illustration of Animal Condition Code 12

Figure 11.2.3. Animal Condition Codes (When Released)
13 = Dead, Severely Decomposed.

Any remaining skin/hair is easily separated from underlying tissue. Where skin/hair is gone, exposed blubber and other soft tissue is mushy and ill-defined. Muscle/blubber may be liquefied and/or falling off bones. Muscle tissue usually uniform in coloration and texture with no distinct fibers visible. Tissues/organs exuding from body are dull in coloration with little visible distinction between tissue/organ type. Carcass may be collapsed and deteriorating or partially intact. Connective tissue holding bones together is soft and deteriorating. Unrecognizable to species or species group by typical coloration, patterns, or markings.

Dead, Severely Decomposed (code 13)

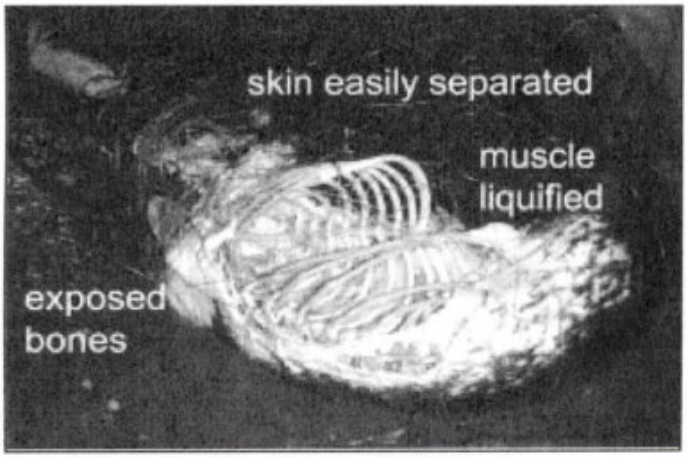


Figure 3. Illustration of Animal Condition Code 13

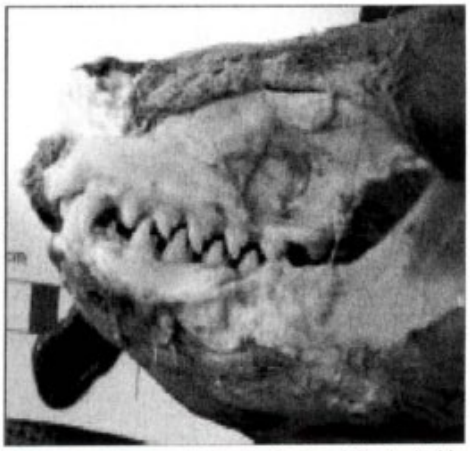


Figure 4. Close up of head of animal illustrated in Figure 3

MARINE MAMMAL INCIDENTAL TAKE LOG
NMFS SOUTHEAST FISHERIES OBSERVER PROGRAM
OBINC 01/01/10

OBS/TRIP ID	
DATE LANDED mm/yy	/
PAGE #	☐ OF ☐

PSID #	HAUL NUM	GEAR NUM		TIME (24 hours)	ADD COND CODE	SPECIES NAME	SPECIES CODE	TAG NUMBER(S) (record most recent first)	TAG CODE(S)	ENTANG SITU CODE	ANIMAL COND CODE	ANIMAL ONBRD? 0=No 1=Yes	PHOTO TAKEN? 0=No 1=Yes	SAMPLED? 0=No 1=Yes	EST LEN (cm) (if no actual)
___ 1				:											
___ 2				:											
___ 3				:											
___ 4				:											
___ 5				:											
___ 6				:											
___ 7				:											
___ 8				:											
___ 9				:											
___ 0				:											

COMMENTS: List identifying characteristics, describe in detail the entanglement situation, include a description of the overall body condition of the animal, behavior on deck and upon release and any other related information. Use back of log if more room is needed.

OMB Control No.: 0648-0593
Expires on: 10/31/2018

OBS/TRIP ID	
DATE LANDED mm/yy	/
PAGE #	☐ OF ☐

ACTIVE DETERRENT DEVICE (ADD) CONDITION CODES:

0 = Unknown
1 = No Pingers Used On Gear
2 = Audible
3 = Inaudible, Tested and Working
4 = Inaudible, Tested and Not Working
5 = Inaudible, Not Tested
6 = Absent (Lost)
9 = Other

TAG CODES:

0 = Unknown
1 = Tag Applied by Observer
2 = No Tag(s)
3 = Tag Already Present, Left On
4 = Tag Already Present, Removed

NOTE: Record Turtle Pit Tags on the Sample Log.

ENTANGLEMENT / INTERACTION SITUATION CODES:

00 = Unknown
01 = Fell From Gear at a Point Unknown
02 = Fell From Gear Before Exiting Water
03 = Fell From Gear Once Hauled Out of Water
04 = Fell From Gear Due to Force of Roller
05 = Removal Requires Cutting of Gear/Animal
06 = Removal Does NOT Require Cutting of Gear/Animal
08 = Caught in Wings of Trawl Net
10 = Sea Bird Caught, Gangion Attached to Mainline
11 = Sea Bird Caught, Gangion Unattached to Mainline
12 = Hooked, Ingested
13 = Hooked, Beak
14 = Hooked, Head
15 = Hooked, Flipper
16 = Hooked, Carapace
17 = Hooked, Other/Unknown
18 = Caught Inside Dredge Chain Bag
19 = On Top of Dredge or Dredge Frame
20 = Caught in Dredge Frame or Between Bails
21 = Caught Inside Dredge in Twine Top
22 = Caught on Sweep/Tickler/Rock Chains
23 = Caught in Bridles/Cables/Warp
24 = Inside Mouth of Trawl Net
25 = Inside Belly of Trawl Net
26 = Inside Codend of Trawl Net
27 = Caught in Sweep or Footrope of Trawl Net
28 = Contact with Vessel or Vessel Equipment other than Fishing Gear
29 = Entangled in Gear other than Vessel's Fishing Gear (e.g. Ghost Gear Caught by Vessel)
99 = Other

NOTE: If more than one code applies to a situation choose the code that describes the primary entanglement/interaction (e.g. a turtle is observed inside the twine top of a dredge and falls from the gear as it is hauled up - choose code 21 as it best describes the primary interaction).

ANIMAL CONDITION CODES (when released):

00 = Unknown
01 = Alive, see comments
04 = Alive, Hook/Gear In/Around Mouth
05 = Alive, Hook/Gear In/Around Flipper
06 = Alive, Hook/Gear In/Around Another Single Body Part
07 = Alive, Hook/Gear In/Around Several Body Parts
08 = Alive, Seen by Captain/Crew ONLY
09 = Alive, resuscitated (turtle)
10 = Dead, Condition Unknown
11 = Dead, Fresh
12 = Dead, Moderately Decomposed
13 = Dead, Severely Decomposed
14 = Dead, Seen by Capt/Crew ONLY

NOTE: If more than one code applies, choose the code that describes the most specific condition (e.g. a turtle is alive and released with gear around the left front flipper - choose code 05 as it is most specific at release).

ADDITIONAL COMMENTS

OMB Control No.: 0648-0593
Expires on: 10/31/2018

MARINE MAMMAL BIOLOGICAL SAMPLE LOG

The purpose of this log is to record sex, body measurements, and biological samples taken from all incidentally taken marine mammals.

INSTRUCTIONS

A. OBS/ TRIP NUMBER: Record the three character observer identifier (Initials)/trip identifier (3 numbers). This should be used on all data forms and field notes for a single trip.
Example: ABC001.

B. DATE LANDED: Record the month, day and year that the **vessel returned to the dock/port** (mm/dd/yyyy). This may not be the same day fish were unloaded and sold.
Example: 01/01/2020.

C. PAGE NUMBER: Record the total number of pages of the marine mammal incidental take logs; record Page 1 OF _____. The front page of any take log will always be page 1. Each page after will increase count numerically from 2. If the back of this log is used, then it would be page 2, if not, it will not get a number. Include Marine Mammal Biological Sample logs in this total number.

1. PSID #: Record the consecutive identification number (Protected Species ID) for each animal that is sampled during this trip. This should be the same number as recorded on the Incidental Take Log.

2. SPECIES NAME: Record the COMPLETE common name of each incidentally taken marine mammal biologically sampled on this trip.
NOTE: If it is not possible to make a positive species identification, identify the animal to the most specific generic group of which you are positive, *i.e.* baleen whale, unidentified dolphin, seal *etc.* **DO NOT GUESS AT SPECIES IDENTIFICATION**.

3. SEX: Indicate the sex of the marine mammal with the appropriate code:

0 = Unknown.
1 = Male.
2 = Female.

4. BODY TEMPERATURE: Record, to the nearest tenth of a degree Fahrenheit, the dorsal musculature temperature. This measurements should be taken for all incidental takes of cetaceans and pinnipeds. It must be taken as close as possible to the time the animal is brought onboard, and before cutting into the animal occurs. To take a temperature, always insert the probe gently, and keep probe entry sites consistent. See Figure 1, letter H for cetaceans and Figure 2, letter D for pinnipeds.

5. BLUBBER THICKNESS: Record, to the nearest tenth of a centimeter, the thickness of the blubber of the cetacean or pinniped. Measure from where the blubber meets the muscle, up to and including the skin.

CETACEAN: To obtain this measurement, make an incision two to three inches behind the blow hole of the marine mammal. See Figure 1, letter G.

PINNIPED: To obtain this measurement, make an incision in the ventral surface of the marine mammal, about five or six inches anterior to the navel, in the middle of the body. See Figure 2, letter D.

BODY MEASUREMENTS

Six body measurements will be taken and recorded for each cetacean. Three body measurements will be taken and recorded for each pinniped.

When measurements are taken which require a mammal to be placed on one side, the preferred method is for the animal to be lying on the right side, *i.e.* **measurements taken on the left side**. The body measurements are diagramed and specified in Figures 1-3. All length measurements are recorded in whole centimeters.

Do not piece together animal parts that have been removed from the body to obtain these measurements. Rather, record a dash (-) in the field, and explain why the measurement is not taken in COMMENTS.

6. TOTAL LENGTH:

CETACEAN: Record the **straight line** length from the tip of the jaw (top or bottom jaw, whichever is longer) to the fluke notch. See Figure 1, letter A.

PINNIPED: Record the **straight line** measurement from the snout to the tip of the tail. See Figure 2, letter A.

7. GIRTH: (circumference of animal)

CETACEAN: Record the girth of the animal just under the pectoral flippers at the axilla. See Figure 1, letter F.

PINNIPED: Record the girth of the animal just under the fore-flippers at the axilla. See Figure 2, letter C.

8. HIND FLIPPER OR PECTORAL FLIPPER LENGTH:

CETACEAN: Record the **straight line** length of one flipper of the cetacean. This length is taken from the outside or anterior edge of the flipper to the tip of the flipper. This is the longest length along the pectoral flipper. See Figure 1, letter B.

PINNIPED: Record the **straight line** length of one **rear** flipper of the pinniped. This length is taken from the outside anterior edge of the flipper at the joint where the flipper connects to the body (this is best located by flexing the flipper forward and measuring from the point where the flipper flexes) to the tip of the flipper. See Figure 2, letter B.

9. PECTORAL FLIPPER WIDTH:

CETACEAN: Using the same flipper on which the length was measured, record the **straight line** width, at its widest part. See Figure 1, letter C.

PINNIPED: No measurement taken; record a dash (-) in this field.

10. DORSAL FIN HEIGHT:

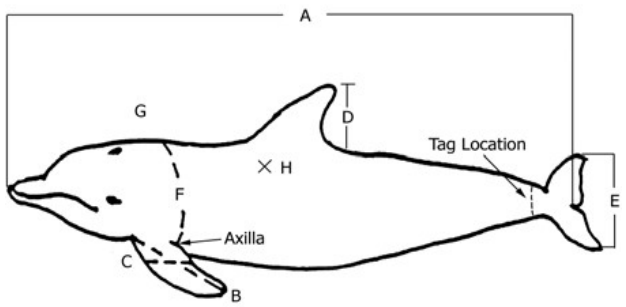
CETACEAN: Record the **straight line** height of the dorsal fin of the cetacean from the posterior tip of the fin to the insertion at the body. See Figure 1, letter D.

PINNIPED: No measurement taken; record a dash (-) in this field.

11. FLUKE WIDTH:

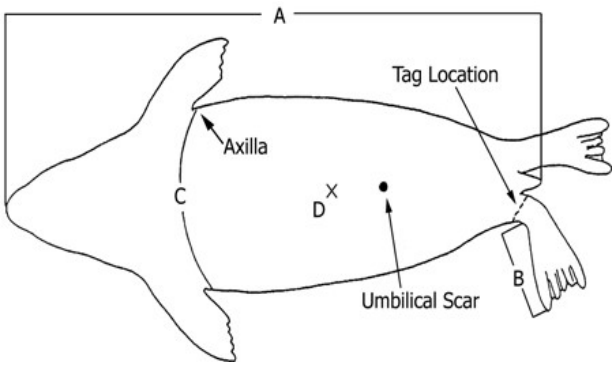
CETACEAN: Record the width of the flukes of the cetacean, from one tip to the other. See Figure 1, letter E.

PINNIPED: No measurements taken; record a dash (-) in this field.



A. Total Length - snout tip to fluke notch
B. Flipper Length
C. Flipper Width, maximum
D. Height of Dorsal Fin
E. Fluke Width, from tips of flukes
F. Girth at Axilla (circumference)
G. Blubber Thickness
H. Body Temperature

Figure 1. Cetacean body measurements (straight line).



A. Total Length - snout to tip of tail
B. Rear Flipper Length
C. Girth at Axilla (circumference)
D. Blubber Thickness (ventral) and Body Temperature (dorsal)

Figure 2. Pinniped body measurements (straight line).

12. **WHOLE ANIMAL RETAINED?:** Record "1" if the animal is retained by the observer to be brought to shore. Record "0" if the whole animal is not retained.

JAW/TISSUE/ORGAN/HEAD SAMPLES

Listed below are the samples that may be considered priorities for certain species. It is very important to determine, before you begin cutting a cetacean for jaw/tissue/organ/head samples, if you will be able to take a BODY TEMPERATURE MEASUREMENT (#4). This measurement must be taken as close as possible to the time the animal is brought onboard, and before cutting into the marine mammal occurs.

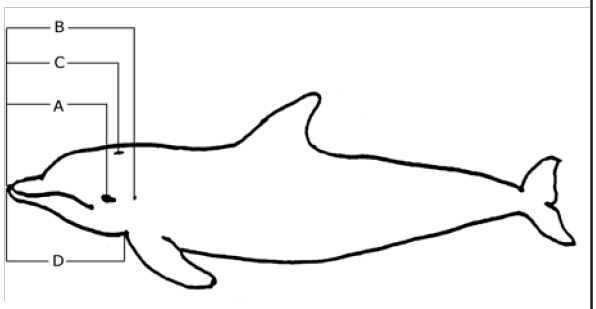
For the following fields, record the **total number** of samples taken. If a sample is not taken, record a "0" (zero).

13. **FINCLIP/FLIPPER/SKIN:** If unable to collect sample prior to animal going overboard, always check the net/gear for skin that might be opportunistically collected.
14. **JAW**
15. **STOMACH**
16. **BLUBBER**
17. **MUSCLE**
18. **REPRODUCTIVE TRACT**
19. **HEAD/SKULL**
20. **OTHER:** Record the number of additional samples collected in COMMENTS.

ADDITIONAL MEASUREMENTS FOR BOTTLENOSE DOLPHINS

In addition to the body measurements required for all incidentally taken cetaceans, the following four measurements are to be taken for all bottlenose dolphins greater than 2 meters (approximately 7 feet) in total length: **snout to center of eye**, **snout to ear**, **snout to center of blowhole** and **snout to flipper anterior**. All measurements are **straight**, made parallel to longitudinal body axis. See Figure 3.

Keep in mind that these additional measurements need to be taken before the head is removed. If time constraints necessitate choosing between taking the head or taking these additional measurements; take the head.



A. Snout to Center of Eye
B. Snout to Ear
C. Snout to Center of Blowhole
D. Snout to Flipper Anterior

Figure 3. Additional measurements (straight line) for Bottlenose dolphins.

COMMENTS

Animal specific:

For **each animal**, document how much of the animal was examined (i.e. only dorsal and lateral sides seen). Thoroughly sketch and describe identifying characteristics, new and/or healed wounds, the amount and location of scavenger damage and/or decomposition, the firmness and coloration of tissues, condition of the skin (i.e. cracked, sloughing, dull, glossy), the presence or absence of blood (record if bleeding), any missing parts, and smell. Include comments about the animal's behavior on deck and upon release (lethargic, active, calm, vocalizing, struggling, swam away, sank, floated at surface, righted itself, dove, etc). Also record the amount and location of gear remaining on the animal. Reference each description with the animal's unique PSID # (#1) and be sure to circle which side of the animal is illustrated.

General:

Record any additional information regarding the marine mammal incidental take(s), especially when data are unable to be collected. Reference each comment with its corresponding field name.

MARINE MAMMAL BIOLOGICAL SAMPLE LOG
NMFS FISHERIES OBSERVER PROGRAM
OBBMM 01/01/10

OBS/TRIP ID	**A**
DATE LANDED mm/yy	**B** /
PAGE #	**C** ☐ OF ☐

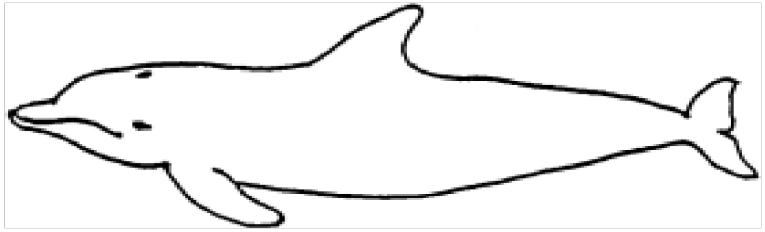
PSID#	SPECIES NAME	SEX	MARINE MAMMAL MEASUREMENTS					CETACEANS ONLY			NUMBER OF SAMPLES TAKEN								
		0=U 1=M 2=F	Body Temp °F	Blubber Thickness cm	Total Length cm	Axillary Girth cm	Hind/Pec Flip Len cm	Pec Flip Width cm	Dorsal Fin Height cm	Fluke Width cm	Whole	Finclip/ Flipper/ Skin	Jaw	Stom	Blub	Musc	Repro Tract	Head/ Skull	Other list in comments
1	**2**	**3**	**4 .**	**5 .**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
			.	.															
			.	.															
			.	.															
			.	.															

General Comments:

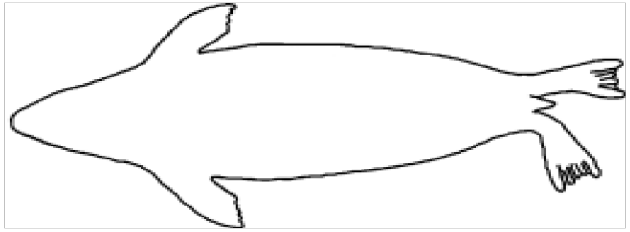
BOTTLENOSE DOLPHIN
PSID # _____
A. Snout-eye (cm) _____
B. Snout-ear (cm) _____
C. Snout-blow (cm) _____
D. Snout-flip (cm) _____

BOTTLENOSE DOLPHIN
PSID # _____
A. Snout-eye (cm) _____
B. Snout-ear (cm) _____
C. Snout-blow (cm) _____
D. Snout-flip (cm) _____

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc.
PSID# _____



Circle one: Left / Right



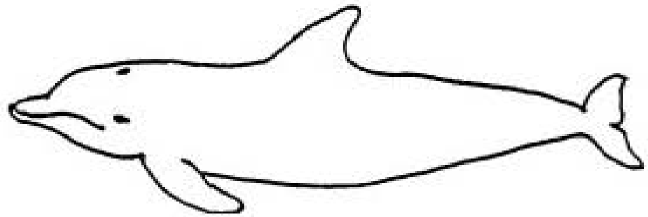
Circle one: Dorsal / Ventral

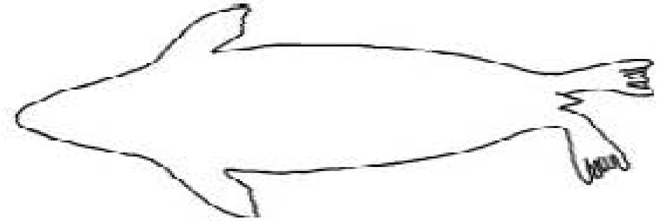
OMB Control No.: 6048-0593
Expires on: 09/30/2012

OBS/TRIP ID	
DATE LANDED mm/yy	/
PAGE #	☐ OF ☐

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # ____________



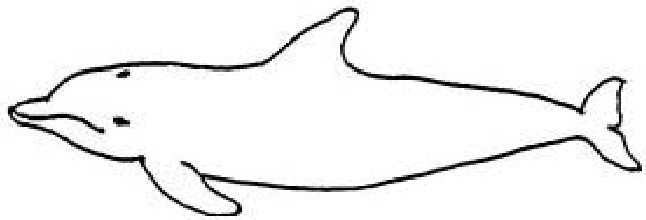


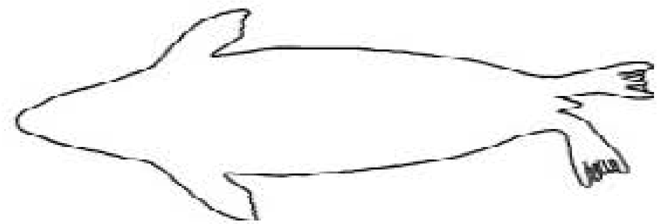
Circle one: Left / Right

Circle one: Dorsal / Ventral

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # ____________



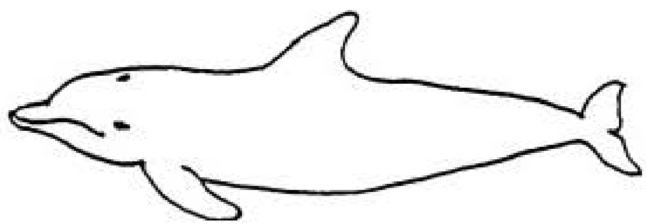


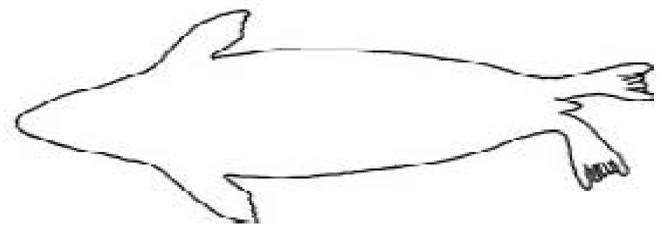
Circle one: Left / Right

Circle one: Dorsal / Ventral

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # ____________



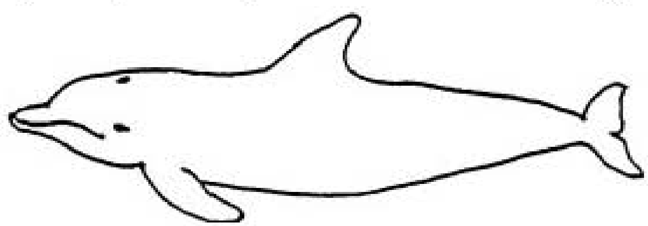


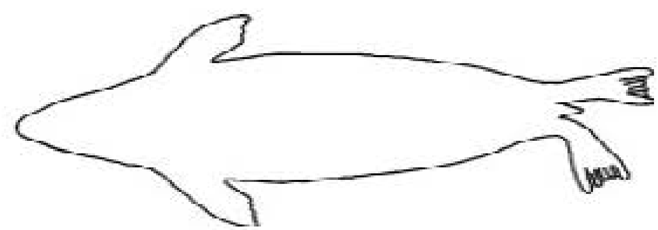
Circle one: Left / Right

Circle one: Dorsal / Ventral

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # ____________





Circle one: Left / Right

Circle one: Dorsal / Ventral

OMB Control No.: 0648-0593
Expires on: 10/31/2018

OMB Control No.: 0648-
0593Expires on: 09/30/2012

MARINE MAMMAL BIOLOGICAL SAMPLE LOG
NMFS FISHERIES OBSERVER PROGRAM
OBBMM 01/01/10

OBS/TRIP ID	**A81025C**
DATE LANDED mm/yy	**01** / **01**
PAGE #	1 OF 2

PSID#	SPECIES NAME	SEX 0=U 1=M 2=F	MARINE MAMMAL MEASUREMENTS					CETACEANS ONLY			NUMBER OF SAMPLES TAKEN								
			Body Temp °F	Blubber Thickness cm	Total Length cm	Axillary Girth cm	Hind/Pec Flip Len cm	Pec Flip Width cm	Dorsal Fin Height cm	Fluke Width cm	Whole	Finclip/ Flipper/ Skin	Jaw	Stom	Blub	Musc	Repro Tract	Head/ Skull	Other list in comments
01	**Harbor Porpoise**	**2**	**87.6**	**3.5**	**123**	**84**	**19**	**8**	**10**	**30**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
04	**Harbor Seal**	**1**	**46.7**	**2.1**	**111**	**77**	**27**	**---**	**---**	**---**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	**0**	**0**
05	**Bottlenose Dolphin**	**2**	**75.8**	**2.6**	**202**	**116**	**32**	**16**	**19**	**50**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**3**
			.	.															
			.	.															

General Comments:

PSID05- Other samples = fetus, heart, and liver

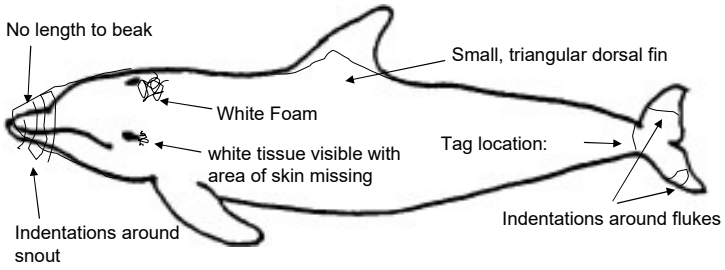
BOTTLENOSE DOLPHIN
PSID # **0 5**
A. Snout-eye (cm) **30**
B. Snout-ear (cm) **34**
C. Snout-blow (cm) **32**
D. Snout-flip (cm) **48**

BOTTLENOSE DOLPHIN
PSID #
A. Snout-eye (cm)
B. Snout-ear (cm)
C. Snout-blow (cm)
D. Snout-flip (cm)

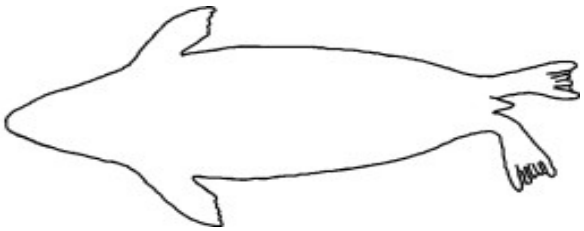
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc.

PSID# **0 1**

Indents around tip of snout & flukes not thru skin- linear, < .2mm in width. White foam coming from blowhole. Skin firm like unripe banana, blubber creamy white, muscle deep maroon color & like meat @ grocery; skin behind L eye missing w/blubber visible= 1in wide x 1/4in deep -blood trickle approx. = 1tsp. volume



Circle one: (Left) / Right



Circle one: Dorsal / Ventral

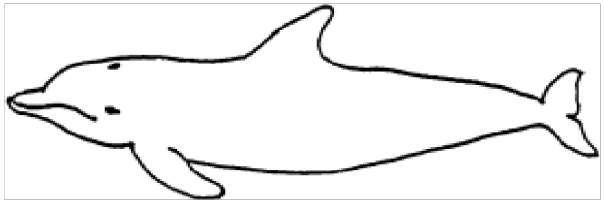
OMB Control No.: 0648-
0593Expires on: 09/30/2012

OBS/TRIP ID	**A81025C**
DATE LANDED mm/yy	**01** / **01**
PAGE #	**2** OF **2**

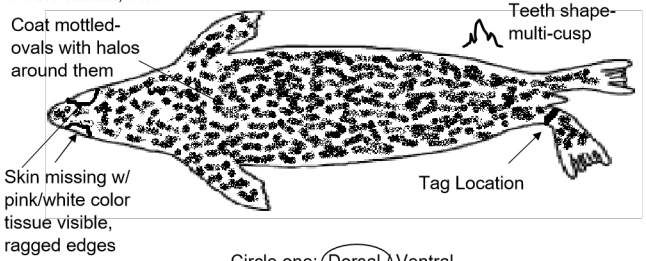
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # **0 4**

L eye cloudy/milky white; Damaged tissue around eyes (4cm in diam) eyeballs still present; not actively bleeding anywhere on body. Linear marks around head/ neck area and underneath chest around L pectoral flipper



Circle one: Left / Right

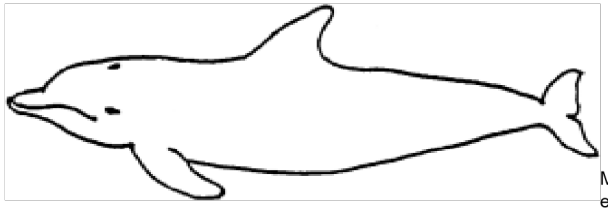


Circle one: (Dorsal) / Ventral

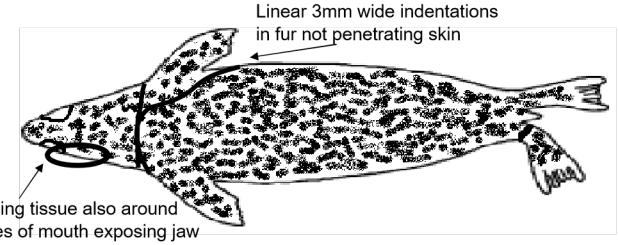
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # **0 4**

Skin tissue around R jaw missing and exposing pink/white undertissue with ragged edges= 8cm x 4cm x 1 cm depth; bone not visible



Circle one: Left / Right

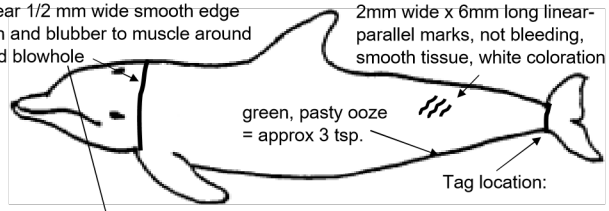


Circle one: Dorsal / (Ventral)

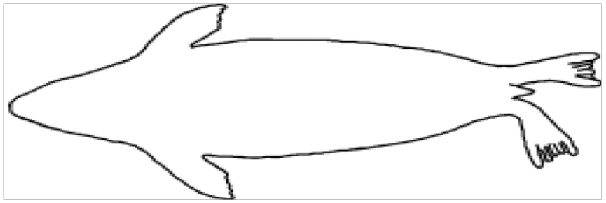
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # **0 5**

Cut around entire head behind blowhole; 3 linear marks on L peduncle; no other visible damage or wounds on L side of body; green pasty substance oozing from anal slit



Circle one: (Left) / Right

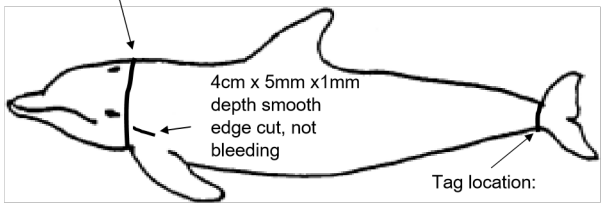


Circle one: Dorsal / Ventral

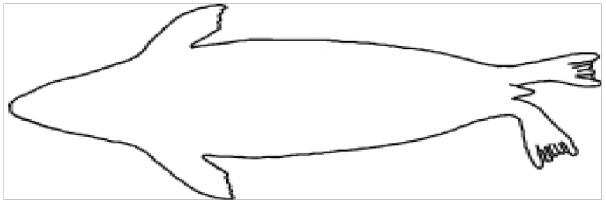
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID # **0 5**

Skin taut, firm and smooth like fresh eggplant; no discharge from blowhole; eyes intact but cloudy/milky white; gums light pink coloration; when cut for blubber sample blood was bright red & muscle warm; no missing or worn teeth-all conical w/ sharp points; cut over L pec flipper



Circle one: Left / (Right)



Circle one: Dorsal / Ventral

OMB Control No.: 0648-0593Expires on: 09/30/2012

PRECAUTIONS WHEN HANDLING MARINE MAMMALS:

Marine mammals can carry microbes which may cause illness in humans and other animals.

Safety measures to prevent illness and infections

Use common sense!

Wear gloves and other protective gear when handling animal and specimens.

Wash hands and areas of contact thoroughly after contact.

Clean/wash gear thoroughly after each use.

Report any animal bite, scratch, or other significant exposure to marine animal blood, saliva, or excretions.

Tell your physician that you work with marine animals

MARINE MAMMAL SAMPLE PRIORITIES:

Minimum sampling requirements should always be collected. Whole animals should be collected whenever possible. If whole animal cannot be retained, collect head/jaw.

Sample priorities after collection of above tissue when additional sampling is feasible should be: stomach fetus blubber kidney muscle heart liver

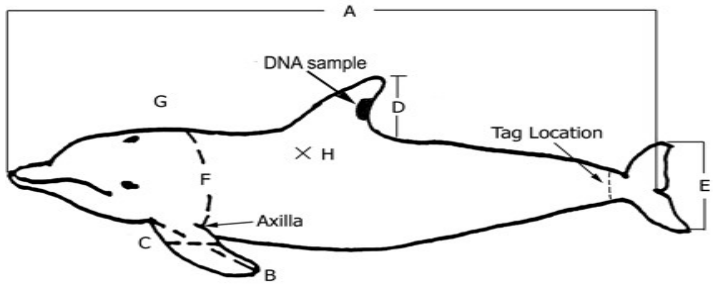
MARINE MAMMAL MINIMUM SAMPLING PROTOCOLS

MINIMUM REQUIREMENTS

Live animals: Photograph and return to the water.

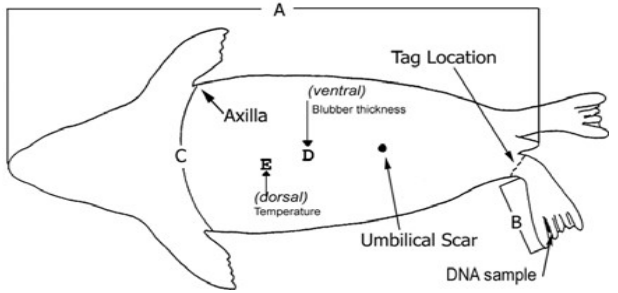
Dead animals:
1. DNA sample
2. Tag
3. Identify, noting immediate observable characteristics
4. Photograph
5. Body Measurements:
   7 for cetaceans (bottlenose = 11), 4 for pinnipeds
6. Body Temperature
7. Sex Determination
8. Describe any new and/or healed wounds

Figure 30. Marine mammal carcass tag



A. Total Length: snout tip to fluke notch
B. Flipper Length
C. Flipper Width, maximum
D. Height of Dorsal Fin
E. Fluke Width, from tips of flukes
F. Girth at Axilla (circumference)
G. Blubber Thickness
H. Body Temperature

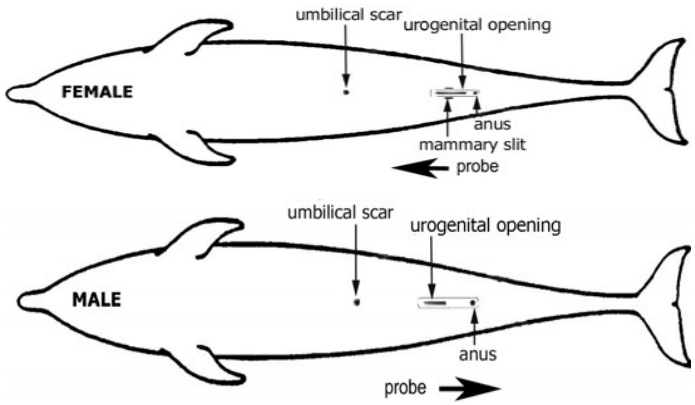
Figure 31. Cetacean body measurements (straight line).



A. Total Length - snout to tip of tail
B. Rear Flipper Length
C. Girth at Axilla (circumferance)
D. Blubber Thickness (ventral)
E. Body Temperature (dorsal)

Figure 32. Pinniped body measurements (straight line).

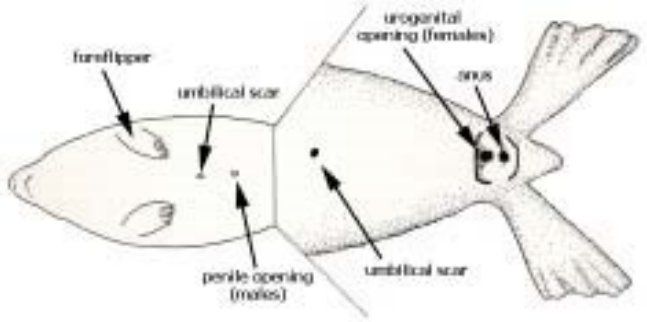
MARINE MAMMAL MINIMUM SAMPLING: sex determination



Dead Cetaceans:
Probe the urogenital opening: female = direction of the opening will be forward; males = direction of the opening will be toward the back (fluke).

Live Cetaceans:
Presence of mammary slits on both sides of the urogenital = females; lack of mammary slits is not indicative of males, as females may be immature and not yet show mammary slits. Females - urogenital opening close to anus (almost one opening); Male - urogenital opening separated from anal opening (two distinct openings).

Figure 33. External sex characteristics of cetaceans.



Pinnipeds (live or dead):
Examine the urogenital opening by stretching the rear flippers taut and very wide apart at the base of the tail, looking inside the outer opening: females = two distinct inner openings (anal opening and vaginal opening); males =
only a anal opening.

opening in males is along the ventral midline
n the umbilical scar and the anus. Mammary teats
re posterior to the umbilical scar in females.
er, it is often very difficult, to locate either the
opening or the teats on a pinniped.

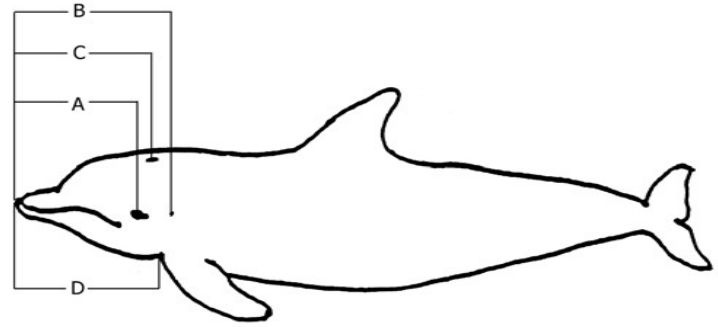
Figure 34. External sex characteristics of pinnipeds.

MARINE MAMMAL ADDITIONAL SAMPLING PROTOCOLS

Marine Mammal Additional Sampling Protocols

Below are additional marine mammal **measurements** for **Bottlenose dolphins only (Figure 36). Photographs** of the profile of the **dorsal fin** from **both sides** should be taken Figure 35). Be sure to fill out separate tags for each sample collected (Figure 37).

Figure 35. Profile of Bottlenose dolphin dorsal fin from both sides.



A. Snout to Center of Eye
B. Snout to Ear
C. Snout to Center of Blowhole
D. Snout to Flipper Anterior Insertion

Figure 36. Additional measurements (straight line) for Bottlenose dolphins.

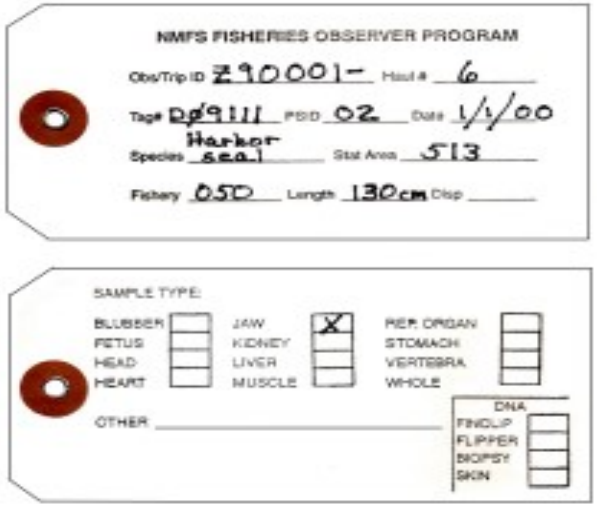


Figure 37. Properly filled out white Tyvek sample tag.

MARINE MAMMAL ADDITIONAL SAMPLING: internal anatomy

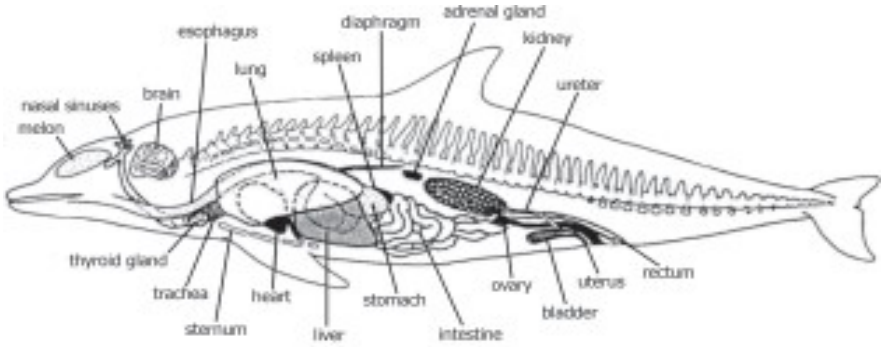


Figure 38. Internal anatomy of cetaceans.

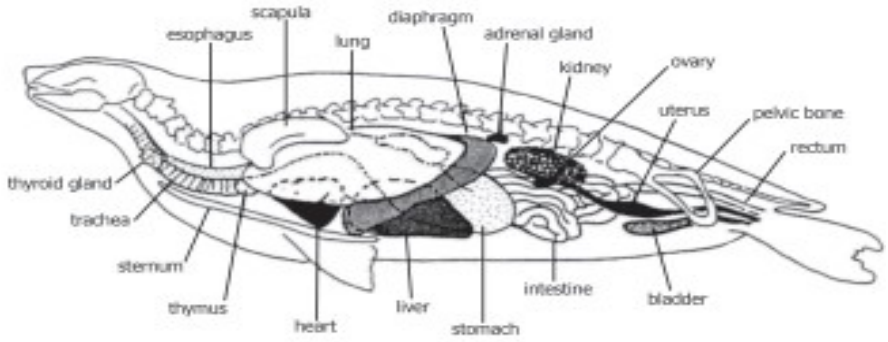


Figure 39. Internal anatomy of pinnipeds.

MARINE MAMMAL BIOLOGICAL SAMPLE LOG
NMFS FISHERIES OBSERVER PROGRAM
OBBMM 01/01/10

OBS/TRIP ID	
DATE LANDED mm/yy	/
PAGE #	☐ OF ☐

PSID#	SPECIES NAME	SEX	MARINE MAMMAL MEASUREMENTS					CETACEANS ONLY			NUMBER OF SAMPLES TAKEN								
		0=U 1=M 2=F	Body Temp °F	Blubber Thickness cm	Total Length cm	Axillary Girth cm	Hind/Pec Flip Len cm	Pec Flip Width cm	Dorsal Fin Height cm	Fluke Width cm	Whole	Finclip/ Flipper/ Skin	Jaw	Stom	Blub	Musc	Repro Tract	Head/ Skull	Other list in comments
			.	.															
			.	.															
			.	.															
			.	.															
			.	.															

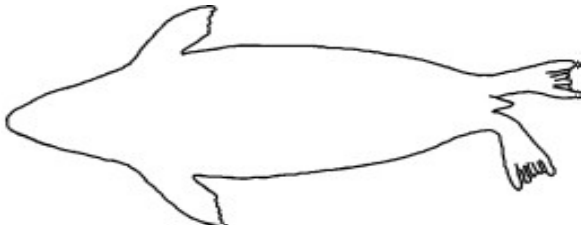
General Comments:

BOTTLENOSE DOLPHIN
PSID # _____
A. Snout-eye (cm)
B. Snout-ear (cm)
C. Snout-blow (cm)
D. Snout-flip (cm) _____

BOTTLENOSE DOLPHIN
PSID # _____
A. Snout-eye (cm)
B. Snout-ear (cm)
C. Snout-blow (cm)
D. Snout-flip (cm) _____

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc.
PSID# _____

Circle one: Left / Right



Circle one: Dorsal / Ventral

OMB Control No.: 0648-0593
Expires on: 10/31/2018

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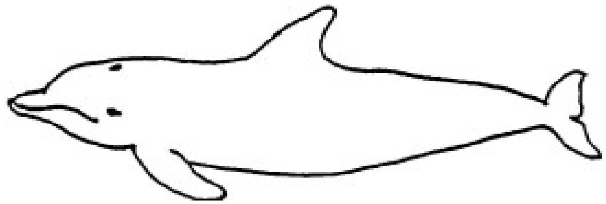
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID #____________



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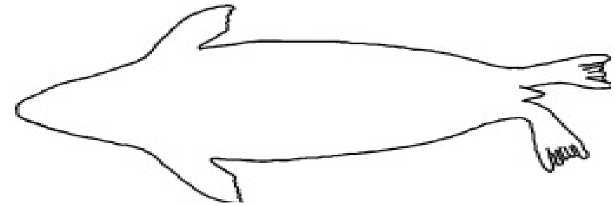

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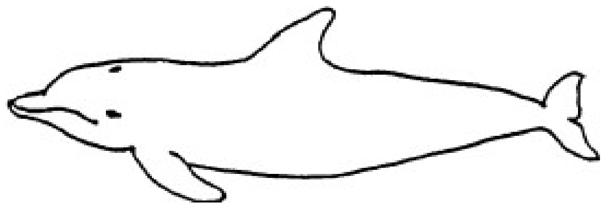
Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID #____________



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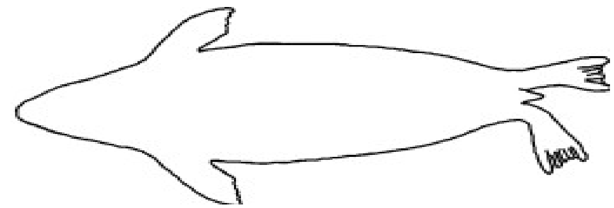
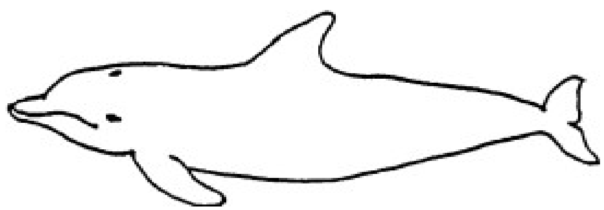


Circle one: Dorsal / Ventral

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID #____________



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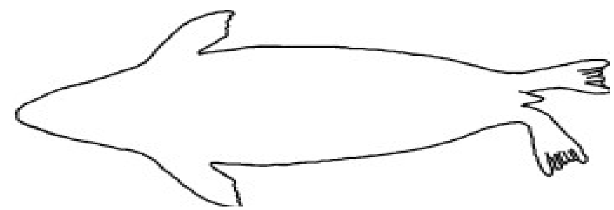
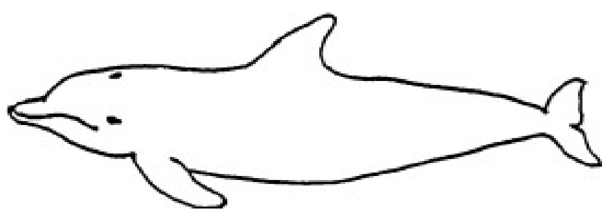


Circle one: Dorsal / Ventral

Sketch and describe ID characteristics, overall body condition, note any scavenger damage and/or decomposition, new and/or healed wounds, any gear on the animal, etc:

PSID #____________



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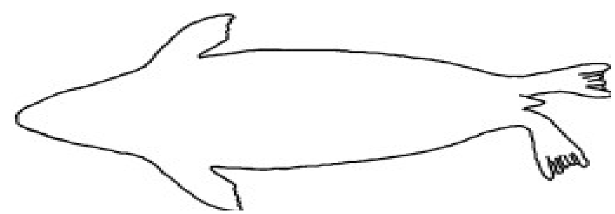

Circle one: Dorsal / Ventral

OMB Control No.: 0648-0593
Expires on: 10/31/2018

NOAA Technical Memorandum NMFS-SEFSC-579

SOUTHEAST FISHERIES SCIENCE CENTER SEA TURTLE RESEARCH TECHNIQUES MANUAL

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Fisheries
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149

December 2008

NOAA Technical Memorandum NMFS-SEFSC-579

SEA TURTLE RESEARCH TECHNIQUES MANUAL

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December 2008

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This report should be cited as follows:

National Marine Fisheries Service Southeast Fisheries Science Center. 2008. Sea Turtle Research Techniques Manual. NOAA Technical Memorandum NMFS-SEFSC-579, 92 p.

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Updates will be provided periodically at this location.

Table of Contents

List of Figures

Figures **Page**

List of Tables

Tables **Page**

Preface

This document is a compilation of the current research techniques and protocols of the National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC). This sea turtle research techniques manual was developed in support of NMFS/SEFSC research permit applications and to provide a comprehensive training document for NMFS researchers and fishery observers. Methods vary among researchers, but the techniques described here are accepted by the SEFSC after consultation with research, academic, and veterinary colleagues.

Only authorized personnel may conduct the procedures described in this manual while working with listed threatened or endangered sea turtles. The Endangered Species Act of 1973 prohibits any person from harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing or collecting any listed threatened or endangered species. Authorization to "take" (as described in the previous sentence) a listed threatened or endangered species must be granted under an ESA Section 10(a)(1)(B) permit or similar authorization. Additional state permits or import permits may be required as well. When conducting research, authorized personnel must carry all relevant permits and authorization letters and follow all terms and conditions, including reporting requirements, as outlined in the permit(s).

While this document represents the best practices currently available, sea turtle research is a dynamic field, and new techniques and technologies may become available in the future. Periodic updates will be made to this document to reflect these changes, and revised documents will be available online at:

http://www.sefsc.noaa.gov/seaturtletechmemos.jsp

This manual was made possible through the contributions of many people who provided information, photographs, and helpful comments. We sincerely thank the contributors: Larisa Avens, Lisa Belskis, Scott Benson, Joanne Braun-McNeill, Peter Dutton, Joseph Flanagan, Craig Harms, Ben Higgins, Terra Kelly, Catherine McClellan, Steve Morreale, Chris Sasso, Amanda Southwood, and Jeanette Wyneken. Ben Higgins, and the sea turtle staff at the NMFS Galveston Laboratory, and Joanne Braun-McNeill, and the sea turtle staff at the NMFS Beaufort Laboratory, were invaluable in contributing photographs, and Patrick Opay provided useful comments. We also wish to acknowledge and thank Jim Bohnsack and Alex Chester for their review of this manual.

Chapter 1: Species Identification

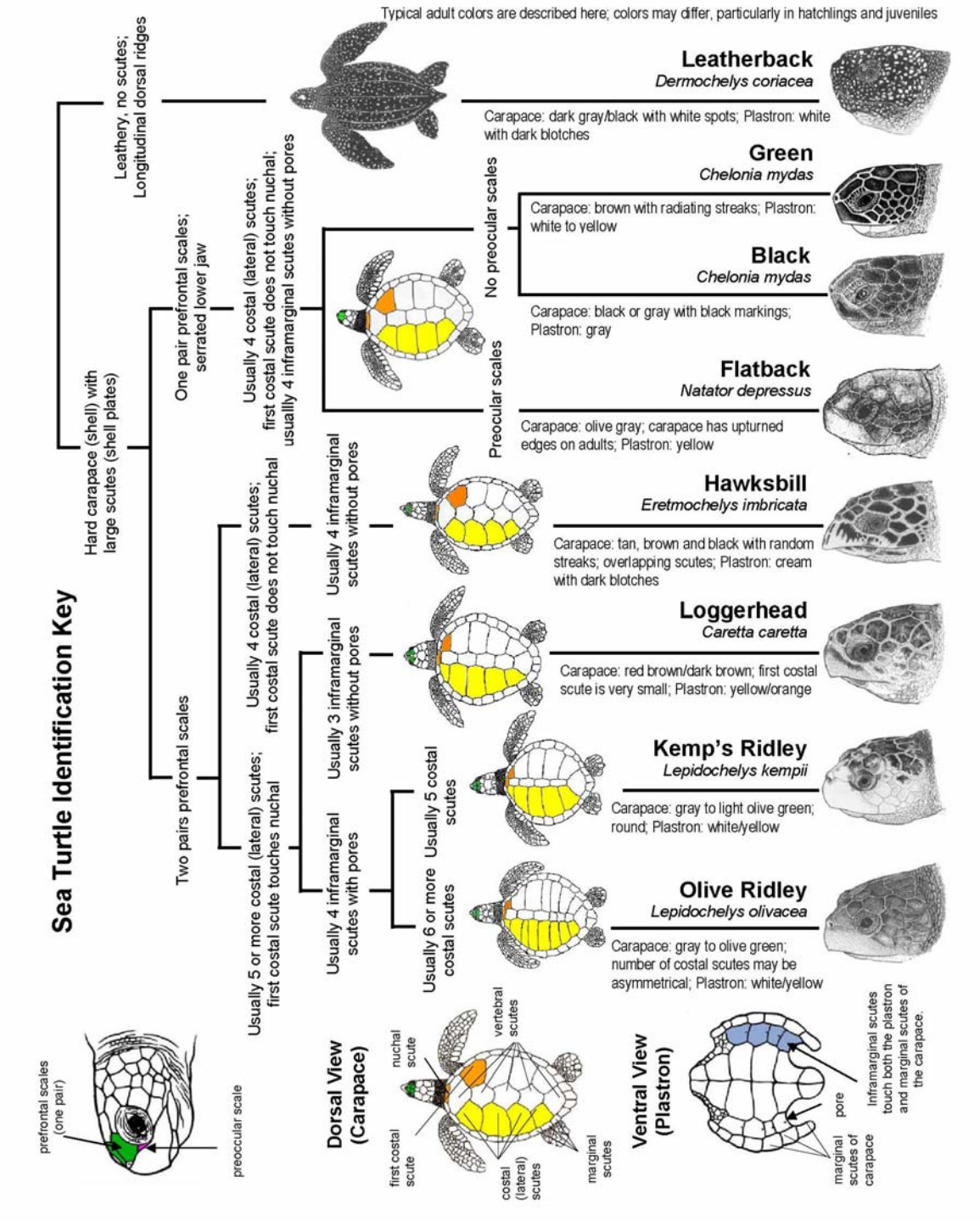


Figure 1-1. Sea turtle identification key (NMFS/SEFSC diagram modified from seaturtle.org).

Leatherback, ***Dermochelys coriacea*** (**Spanish:** Baula, Tortuga Laúd, Tora, Cardón, Tinglar; **French:** Tortue Luth; **Portuguese:** Tartaruga Gigante, Tartaruga-de-couro)
Adult Size Range: Length: 165-190+ cm/ 65-75+ in; **Weight:** 400-500 kg females, males to 900 kg/ 885-1985 lb
Range: All oceans, sub-arctic to tropical; mainly pelagic oceanic (surface dwelling in the open ocean) but found in bays and over continental shelves

Green, Black*, ***Chelonia mydas*** (**Spanish:** Tortuga Verde, Tortuga Blanca; Tortuga Negra, Prieta; **French**: Tortue Verte; **Portuguese:** Tartaruga Verde, Aruanã)
Adult Size Range: Length: 90-120 cm/ 35-45 in; **Weight:** 120-230 kg/ 265-510 lb
Range: All subtropical and tropical seas; bays and coastal waters; black form restricted to eastern Pacific Ocean; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults
*The status of the black turtle or eastern Pacific green turtle as *Chelonia agassizii* or *C. mydas agassizii* as a distinct species or subspecies is not supported, although it is often treated as such.

Flatback, ***Natator depressus*** (**Spanish:** Kikila, Tortuga Aplanada, Tortuga Franca Oriental; **French:** Chelonée à dos Plat; **Portuguese:** Tartaruga de Casco Achatado)
Adult Size Range: Length: to 100 cm/ 40 in; **Weight:** to 90 kg/ 200 lb
Range: Tropical coastal Australia, including the waters up to Irian Jaya, Papua New Guinea and Java; pelagic neritic (surface dwelling in coastal waters)

Hawksbill, ***Eretmochelys imbricata*** (**Spanish:** Tortuga Carey; **French:** Tortue Imbriquée, Tortue Caret; **Portuguese:** Tartaruga-de-pente, Tartaruga de Escamas, Tartaruga Bico de Falcão, Tartaruga Verdadeira)
Adult Size Range: Length: 90-110+ cm/ 35-45+ in; **Weight:** 60-80 kg/ 130-175 lb
Range: All oceans; tropical waters, rarely subtropical; reef areas; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

Loggerhead, ***Caretta caretta*** (**Spanish:** Caguama, Amarilla, Cabezona, Tortuga Boba; **French:** Caouanne; **Portuguese:** Tartaruga Boba, Tartaruga Comum, Tartaruga Careta, Tartaruga Cabeçuda, Tartaruga amarela, Careba Dura, Careba Amarela)
Adult Size Range: Length: 90-130 cm/ 35-50 in; **Weight:** 100-180 kg/ 220-400 lb
Range: All oceans; primarily subtropical and temperate waters; often associated with structures (i.e., reefs, wrecks, platforms); pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

Kemp's Ridley, ***Lepidochelys kempii*** (**Spanish:** Tortuga Lora, Cotorra; **French:** Tortue de Kemp; **Portuguese:** Tartaruga de Kemp)
Adult Size Range: Length: to 70 cm/ 28 in; **Weight:** 35-50 kg/ 80-110 lb
Range: Gulf of Mexico, eastern USA, rarely in eastern North Atlantic; coastal, primarily subtropical and temperate waters; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

Olive Ridley, ***Lepidochelys olivacea*** (**Spanish:** Tortuga Golfina, Tortuga Olivacea, Parlama, Guaraguá, Maní; **French:** Tortue Olivâtre; **Portuguese:** Tartaruga Oliva, Tartaruga Olivácea, Tartaruga Pequena, Xibirro)
Adult Size Range: Length: 70-80 cm/ 28-32 in; **Weight:** 35-60 kg/ 80-130 lb
Range: Pacific, Indian and Atlantic Oceans, rarely in eastern North Atlantic; pelagic oceanic (surface dwelling in the open ocean); most often in tropical waters

Sources:

Seaturtle.org

Pritchard, P. C. H. and Mortimer, J. A. (1999) Taxonomy, External Morphology, and Species Identification. pp. 21-38. In: Eckert, K.L., K.A. Bjorndal, F.A. Abreu-Grobois, and M. Donnelly (Editors). 1999. Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication No. 4. (for further details see http://www.iucn-mtsg.org/publications.htm)

Wyneken, J. The Anatomy of Sea Turtles. 2001. U.S. Department of Commerce NOAA Technical Memorandum NMFS-SEFSC-470, 172 pp.

Sea turtle figures used by permission of the Marine Turtle Specialist Group (iucn-mtsg.org), Peter Pritchard and Jeanette Wyneken
Illustrations by Tom McFarland and Dawn Witherington

Chapter 2: Handling

All Turtles

After capture, every turtle should be assessed to determine their general state of health and suitability for subsequent research procedures, including an examination of the oral cavity (see Chapter 4: Oral Cavity Anatomy). Remove any attached gear if applicable (see NMFS 2008), and attempt to resuscitate all comatose turtles (see Chapter 3: Resuscitation) when necessary. Successfully resuscitated turtles benefit from being held on deck as long as possible (up to 24 hours) when conditions permit to allow stress toxins to dissipate from the body. All captured turtles should be subject to standard processing protocols before release: identification, standard measurements, weight, photographs, flipper and PIT tags, and skin biopsies (in select cases). Some may be subject to the additional procedures described in this manual, depending on the results of their general assessment and the directed research needs.

Figure 2-1. Keep the turtle moist and in the shade (NMFS/SEFSC photo).

Turtles should be protected from temperature extremes of heat and cold, provided adequate air flow, and kept moist during sampling. Keep the skin and eyes moist while the turtle is on deck; cover the animal's body with a wet towel (Figure 2-1) and periodically spray it with water or apply petroleum or water-based lubricant jelly to the skin and carapace. If using towels, pay particular attention to the ambient temperature, as evaporative cooling may chill the animal under some conditions. If the turtle is to be held out of water for an extended period of time (e.g., transport, surgery) or in cool air temperatures, use petroleum or water-based lubricant jelly on the skin as necessary to avoid drying instead of using wet toweling. Keep the turtle in the shade, maintaining its body temperature between 60° and 90° F, similar to water temperatures at capture. If air temperatures are greater than 80° F, ensure that the turtle does not overheat; conversely, if air temperatures are less than 60° F, ensure that the turtle does not become hypothermic. Safely isolate the turtle and immobilize it on a cushioned surface such as a foam pad, an automobile tire or similar. The area surrounding the turtle should not contain any materials that could be accidentally ingested.

Transport turtles in individual containers to ensure that they are unable to injure themselves or each other. Do not transport turtles in open vehicles during excessive heat or cold. Do not pick up turtles by their flippers, but rather, lift them by grasping both sides of the carapace (a better support of their weight) or use a stretcher that provides adequate support. In order to minimize the

risk of either introducing a new pathogen into a population or amplifying the rate of transmission of an endemic pathogen from animal to animal, thoroughly clean containers in which turtles are being transported with soap and water and disinfect them with a mild bleach solution.

Conduct field and laboratory procedures using latex or similar disposable gloves whenever possible. Remove the gloves following the proper method: 1) Grip one glove on the outside of the glove near the cuff. Reflect and peel it down until it comes off inside out. Cup it with your other gloved hand. 2) Place 2 fingers of your bare hand inside the cuff of the glove that is still on your hand. 3) Peel that glove off so that it comes off inside out with the first glove inside it. During these steps, take care not to snap the glove during the removal so that material could spray or aerosolize. 4) Dispose of the gloves in an appropriate container and thoroughly wash your hands with soap and water.

All equipment (tagging equipment, tape measures, etc.) that comes into contact with sea turtle body fluids, cuts, or lesions must be disinfected between the processing of each turtle. Whenever feasible, equipment that does not contact fluids, cuts, or lesions should be disinfected between the processing of each turtle as well. To disinfect field equipment, use an appropriate disinfectant such as a freshly mixed 1:10 solution of household bleach (~5 – 6 % sodium hypochlorite). To prepare 1:10 bleach solution, add one volume of household bleach (e.g., 1 cup, liter) to 10 volumes of clean water (e.g., 10 cups, liters). Spray or soak equipment for at least 2 minutes for equipment disinfection and use fresh solution each time.

Figure 2-2. Green turtle displaying fibropapilloma tumors (Photo courtesy of the Turtle Hospital, Marathon, Florida).

NOAA Fisheries researchers (including fishery observers) must maintain a separate set of sampling equipment for handling animals displaying fibropapilloma (FP) tumors or lesions (Figure 2-2). Whenever an animal suspected of having FP tumors is encountered, care must be taken to ensure that the same equipment is not later used on other turtles. For most, this means that some equipment (e.g., calipers, scales) should not be used on affected turtles because one is not likely to have a duplicate set. If a spare set of calipers is not available, use a tape measure and record curved measurement only. Quarantine the tape measure and use the spare until the original tape measure can be disinfected. Use the same protocols for tagging pliers and PIT tag injectors – quarantine the equipment and then use spares thereafter. The PIT tag scanner may be used again after removing and disposing of the plastic bag around the PIT tag reader and replacing it with a new plastic bag. NOAA Fisheries observers in the field should place contaminated equipment (used on a turtle displaying FP tumors) into a plastic bag

thorough disinfection as soon as possible. Any equipment that comes into contact with animals displaying FP tumors must be disinfected using bleach solution (as described above).

During release, turtles should be lowered as close to the water's surface as possible, in water of similar temperature as capture, when fishing gear is not in use (if applicable) and engines are in neutral.

Leatherback Turtles

Exercise extra care when handling, sampling and releasing leatherback turtles during directed capture research activities (Figure 2-3), as field and laboratory observations indicate that they have more friable skin and softer bones than hardshell turtles. Leatherback turtles shall not be turned on their backs. Precautions shall be taken to ensure that animals are supported from underneath during handling and release.

The additional recommended monitoring protocols will be taken for animals captured during directed research activities. In order to improve monitoring of the animals during directed capture and to improve our basic understanding of the biology and medical status of leatherbacks, a designated observer should be on each capture outing team. Whenever possible, this observer should be a veterinarian; however, a dedicated observer with training in the techniques required for this position is also acceptable.

<u>Recommended Monitoring Protocols:</u>

- Perform a gross examination upon capture, including assessment of body fat (subjective), activity, alertness, pre-existing injuries, weight and length.

Figure 2-3. Handling a leatherback during directed research capture activities (NMFS/SEFSC photo).

- Record respiratory rate over a two-minute period, logged every 20 minutes.
- Record response to noxious stimuli (either tail pinch or blink response), logged every 20 minutes.
- Record heart rate determined by digital or Doppler detection on femoral artery, ultrasound, rectal pulse oximiter, or EKG, logged every 20 minutes.
- Record body temperature detected by anal probe inserted 15 cm, logged every 20 minutes.
- Assure cooling by running ambient seawater over the carapace and forelimbs during the time on deck.
- Collect two tubes of blood in a clot tube and urine or feces if possible.
- Relate changes in the animal's condition to the chief scientist so that an ongoing assessment of the animal's condition can be made.

The chief scientist for each outing will be trained by a veterinarian in the following information and procedures:

- Acceptable parameters for heart rate, respiration, temperature, and responsiveness, as defined by baseline data gathered in the field as well as in collaboration with veterinarians and colleagues from NMFS/SWFSC.

- Appropriate response to changes suggesting a need to abort further animal handling and initiate release.

- Safe water reintroduction and monitoring of a turtle in possible distress.

- Appropriate first aid measures for animals in distress. These measures may include intubation, artificial respiration, and administration of pharmaceuticals to stimulate respiration and/or cardiac contraction.

During laboratory procedures, monitor each turtle manually, noting its response to stimuli (surgical stimuli, eye reflex, withdrawal reflex) and respiratory intervals. Monitor the following parameters on each turtle using instruments such as electrocardiogram (ECG or EKG), blood gases, and cloacal temperature (to allow temperature corrections for blood gases).

Adverse reactions could be indicated by cardiac arrhythmia, cardiac arrest, respiratory arrest, seizures, or severe blood gas alterations. Veterinarians are still in the process of defining normal and altered blood gas parameters by establishing baselines, but alarming values would be recognized (Dr. Craig Harms, pers. comm.). The response to adverse reactions would depend on the type of reaction, but would likely involve basic supportive therapy including intubation and assisted respirations, IV fluids (for shock and to hasten elimination of drugs through renal excretion), anti-arrhythmic drugs (e.g., IV lidocaine for VPCs), cardioresuscitory drugs (e.g., IV epinephrine for cardiac arrest), or anti-seizure medication (e.g., IV diazepam).

Avoid any animal deemed to be in distress at any time during the pre-capture period. In addition to animal monitoring, include an emergency field kit for intervention on each directed capture research outing. This kit should be available to the field team veterinary observers or the chief scientist and should include:

- Oxygen canister and a demand breathing valve
- Endotracheal tubes
- Oral speculum and appropriate sized blade
- Water-based lubricant jelly
- Betadine® ointment or similar
- Gauze sponges
- Medical tape
- Isopropyl alcohol
- Needles and syringes (various sizes)

  Doxapram, epinephrine, lidocaine, furosemide, diazepam, dexamethasone sodium phosphate, sodium bicarbonate, and saline solution

Chapter 3: Resuscitation

If a turtle appears to be comatose or unresponsive, as determined by testing for bilateral responsiveness (Figure 3-1), attempt to revive the turtle (Figures 3-2a and b) before putting it back into the water. A fully conscious turtle has bilateral reflexes and has a central (e.g., brain) recognition of the stimulus. An unresponsive turtle will not have full bilateral responses nor central recognition of a stimulus. A comatose turtle will have lost all reflexes. To test eye reflexes, check for a blink response by gently touching the corner of the eye or eyelid. Pinch both front and rear flippers and the tail to check for response; a lack of bilateral response for any of these tests may indicate the need for resuscitation. Use the method of resuscitation described on the following Sea Turtle Resuscitation Guidelines (66 FR 67495, December 31, 2001). Regulations (66 FR 67495, December 31, 2001; 50 CFR 223.206) allow a fisherman to keep incidentally captured turtles on deck up to 24 hours for resuscitation purposes.

Figure 3-1. Testing eye reflex (NMFS/SEFSC photo).

Figures 3-2a and b. Resuscitation position with 15-30° elevation on (a) a cushioned surface and (b) on a standard automobile tire (NOTE: a slightly greater angle of head inclination than depicted in photo (b) would be preferable to better facilitate water drainage.) (NMFS/SEFSC photos).

Successfully resuscitated turtles benefit from being held on deck as long as possible, when conditions permit, to allow stress toxins to dissipate from the body. Keep the skin and the eyes moist while the turtle is on deck (Figure 3-2b) by covering the animal's body with a wet towel, periodically spraying it with

water, or by applying petroleum or water based lubricant jelly to its skin and carapace. Comatose or unresponsive turtles captured during directed research activities should be transported as quickly as possible to a rehabilitation facility whenever feasible.

A turtle that has shown no sign of life after 24 hours on deck (held in the shade, kept moist and its body temperature maintained above 60° F) may be considered dead. If the turtle cannot be revived before returning to port, it should be returned to the water, preferably in a non-fishing area. Mark the turtle (spray paint it or tag it) before returning it to the water.

In the past, an alternative method of resuscitation known as plastral pumping was recommended (see FR 43 32801, July 28, 1978; 57 FR 57354, December 4, 1992). This practice involved placing the turtle on its carapace and pumping the plastron with a hand or foot. However, we strongly discourage this technique, as further study determined that it may actually do more harm than good and should not be attempted during resuscitation (per 66 FR 67495, December 31, 2001). Plastral pumping may cause the airway to block and cause the viscera to compress the lungs which are located dorsally, thereby hindering lung ventilation.

Sea Turtle Resuscitation Guidelines

If a turtle appears to be unresponsive or comatose, attempt to revive it before release. Turtles can withstand lengthy periods without breathing; a comatose sea turtle will not move, breathe voluntarily, or show reflex responses or other signs of life. In other cases, an unresponsive turtle may show shallow breathing or reflexes such as eyelid or tail movement when touched. Use the following method of resuscitation in the field if veterinary attention is not immediately available:

- **Place the turtle on its plastron (lower shell) and elevate the hindquarters approximately 15 - 30 degrees to permit the lungs to drain off water for a period of 4 up to 24 hours. A board, tire or boat cushion, etc. can be used for elevation.**

- **Keep the turtle in the shade, at a temperature similar to water temperature at capture. Keep the skin (especially the eyes) moist while the turtle is on deck by covering the animal's body with a wet towel, periodically spraying it with water, or by applying petroleum jelly to its skin and carapace. Do not put the turtle into a container with water.**

- **Do not put the turtle on its carapace (top shell) and pump the plastron (breastplate) or try to compress the turtle to force water out, as this is dangerous to the turtle and may do more harm than good.**

- **Periodically, gently touch the corner of the eye or eyelid and pinch the tail near the vent (reflex tests) to monitor consciousness.**

- **Sea turtles may take some time to revive; do not give up too quickly. Turtles that are successfully resuscitated benefit from being held on deck as long as possible (up to 24 hours) to fully recover from the stress of accidental forced submergence.**

- **Release successfully resuscitated turtles over the stern of the boat, when fishing or scientific collection gear is not in use, the engine is in neutral, and in areas where they are unlikely to be recaptured or injured by vessels. A turtle that has shown no sign of life after 24 hours on deck may be considered dead and returned to the water in the same manner.**

NMFS/SEFSC Photos

References:

Federal Register, December 31, 2001. Government Printing Office, Washington DC 66 (250), pp. 67495- 67496.

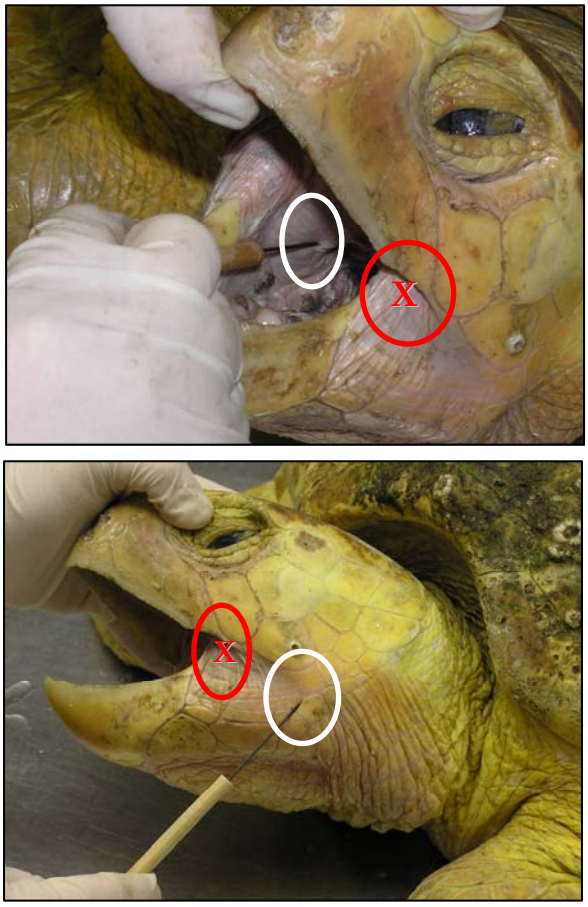
October 2008

Figure 3-3. Resuscitation guidelines (NMFS/SEFSC).

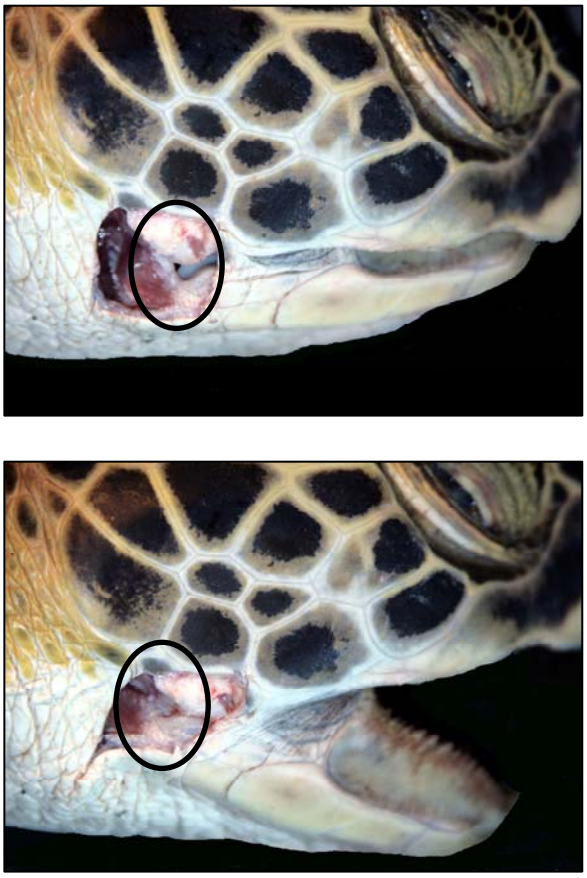
Chapter 4: Oral Cavity Anatomy

The oral cavity is described here to assist in performing general health assessments and to identify the location of hooks in incidentally captured turtles, especially to distinguish hooks that are swallowed from those lodged in the oral cavity (Figures 4-1 ─ 4-7). The anatomy details described here are intended primarily to provide the basic knowledge necessary to assess whether hook removal may cause further injury. Do not attempt to remove hooks when it appears that removal will cause further serious injury to the turtle. For example, the removal of hooks lodged in the jaw joint (Figures 4-1 and 4-2) the glottis, or in the esophagus where the insertion point is not visible may cause greater injury to the turtle than leaving the hook in place. For all hooked animals, follow the guidance in the NOAA Technical Memorandum NMFS-SEFSC-580, Careful Release Protocols for Sea Turtle Release with Minimal Injury (NMFS SEFSC 2008).

The upper and lower beak (Figure 4-3), or rhamphotheci, of hardshell sea turtles are keratinized and cover many of the bones of the upper jaw and dentary of the lower jaw. They differ among species and can be used for identification. The tongue (Figures 4-3 and 4-4) is a large, nonprotrusible, muscular organ fixed to the floor of the mouth. The glottis (Figures 4-4 and 4-5), the opening to the trachea and the valve to open and close the airway, is located at the back of the tongue. The esophagus (Figure 4-6) starts at the back of the mouth behind the tongue and links the oral cavity to the stomach. Most of the length of the esophagus is lined with sharp, keratinized papillae that angle toward the stomach. These are presumed to trap food, preventing food particles from being regurgitated when excess water is expelled. The roof of the mouth (Figure 4-7) is ventral to the braincase.



Figures 4-1a and b. Internal view (a) and external view (b) of jaw joint location, indicated by the pointer. The jaw joint should not be confused with "the corner of the mouth" indicated here in red. (NMFS/SEFSC photos).



Figures 4-2a and b. External view of jaw joint location with skin and muscle removed, shown with the jaws closed (a) and open (b). (Photos by J. Wyneken, Florida Atlantic University).

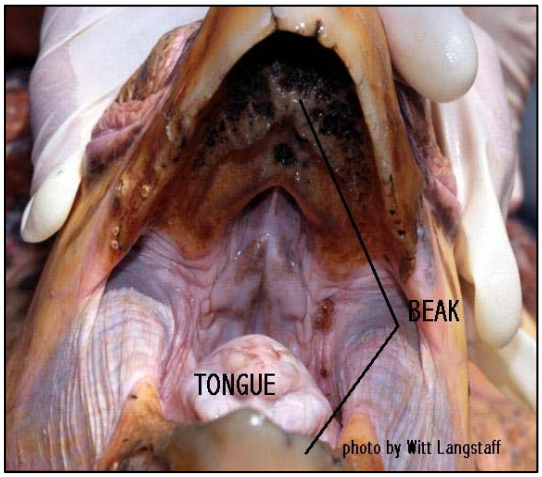


Figure 4-3. The upper and lower beak, or rhamphotheci, of a loggerhead (Photo by W. Langstaff).

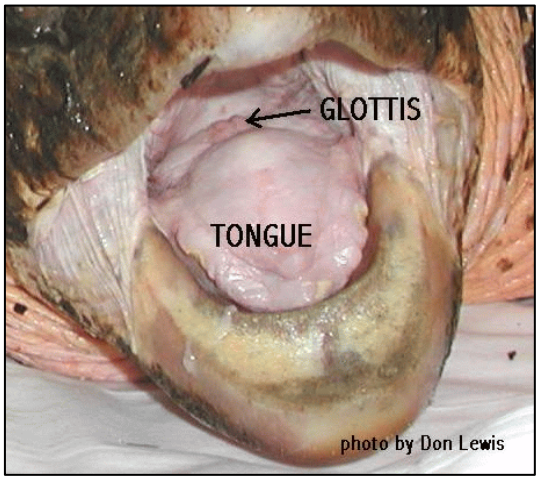
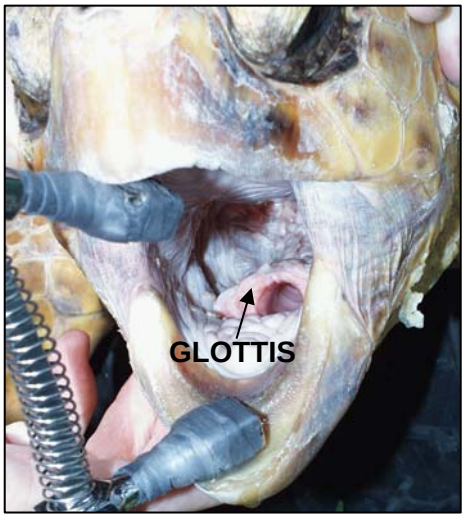
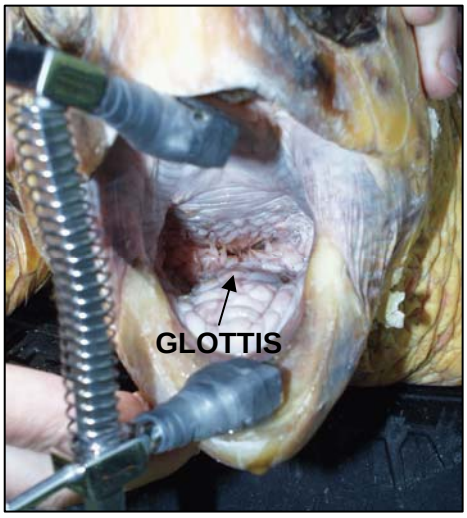


Figure 4-4. The tongue and glottis, which is closed in this photograph (Photo by D. Lewis).





Figures 4-5a and b. Glottis (a) open and (b) closed (Photos by C. Harms, N.C. State University).

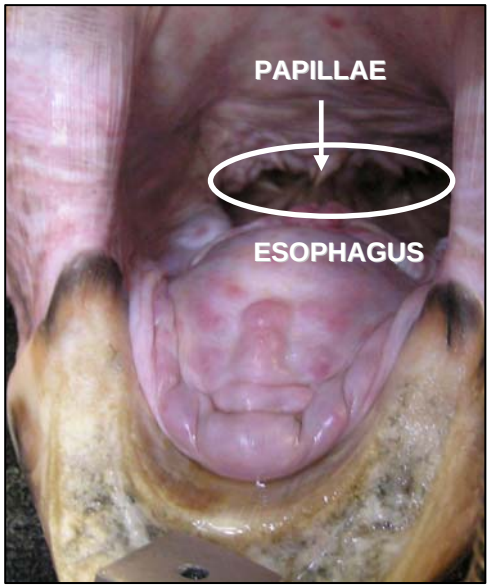


Figure 4-6. The entrance of the esophagus is marked by the presence of papillae (NMFS/SEFSC photo).

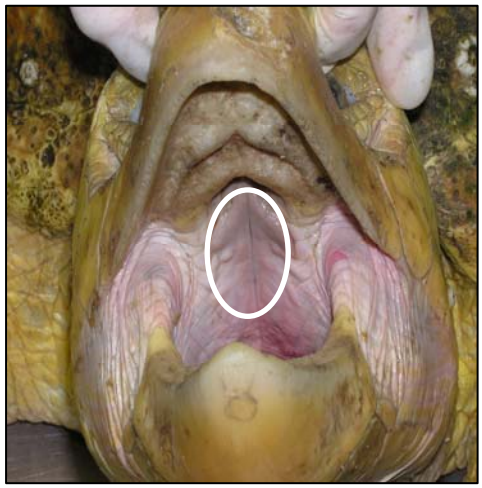


Figure 4-7. Roof of the mouth and upper jaw (NMFS/SEFSC photo).

Chapter 5: Morphometrics

Standard Measurements

If the turtle can be brought onboard or on land, take standard carapace measurements: CCL, SCL_{STD}, SCL_{MIN}, CCW, and SCW. Use a flexible fiberglass tape measure to take over-the-curve measurements and calipers for straight measurements; record in centimeters, rounded to the nearest 0.1 cm. For measurements over-the-curve (CCL and CCW), follow the curvature of the carapace. If barnacles affect these measurements, record this in the comments on the datasheet. For leatherbacks, generally only curved measurements are taken.

Figure 5-1. Curved carapace length taken with flexible fiberglass tape measure (NMFS/SEFSC photo).

Methodology to weigh turtles will differ slightly depending on the type of scale available, but in all cases, the turtle must be adequately restrained so there is no potential for injury from this procedure. The scale, sling or platform used should be disinfected between animals when practicable.

CCL – Curved Carapace Length, standard (notch-to-tip): Record the distance between the center of the nuchal scute and the posterior tip of the longest postcentral scute, following the curvature of the dorsal centerline (Figures 5-1 and 5-3). On leatherbacks, take the measurement alongside (not over the top) the central vertebral ridge (Figure 5-4).

Figure 5-2. Straight carapace length (SCL) measurement, notch-to-tip (NMFS/SEFSC photo).

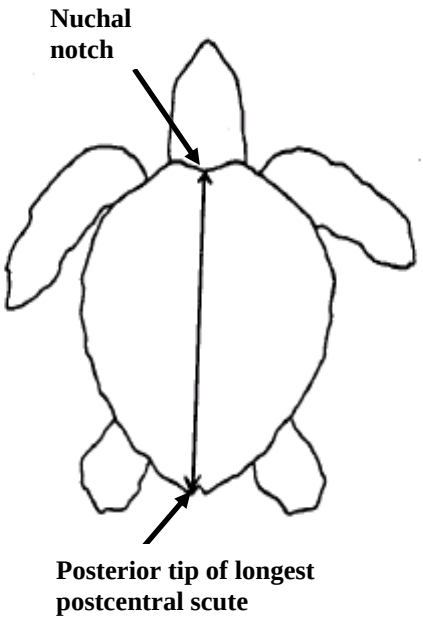


Figure 5-3. Carapace length (CCL and SCL) measurement, notch to tip [Figure modified from Bolten (1999)].

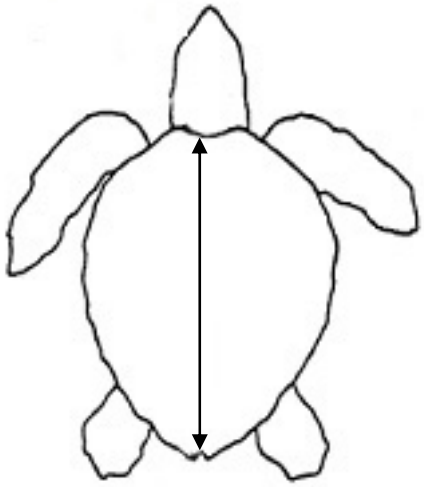


Figure 5-5. Carapace length (CCL and SCL) measurement, notch to notch [Figure modified from Bolten (1999)].

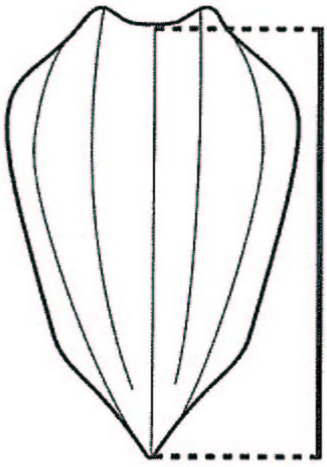


Figure 5-4. Curved carapace length (CCL) and straight carapace length (SCL) in leatherback turtles. In both cases, length is measured from the nuchal notch (anterior edge of the carapace at the midline) to the posterior tip of the caudal peduncle [Figure and caption text taken from Bolten (1999)].

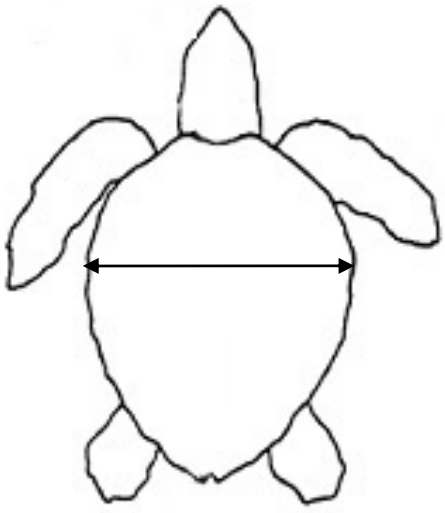


Figure 5-6. Carapace width (CCW and SCW) measurement [Figure modified from Bolten (1999)].

SCL_{STD} – Straight Carapace Length, standard (notch-to-tip): Record the distance between the center of the nuchal scute and the posterior tip of the longest postcentral scute (Figures 5-2 and 5-3).

SCL_{MIN} – Straight Carapace Length, minimal (notch-to-notch): Record the distance between the center of the nuchal scute and the notch between the two postcentral scutes (Figure 5-5).

CCW – Curved Carapace Width: On leatherbacks, measure the width from side ridge to side ridge (ridges depicted in Figure 5-4) at the widest point. On hardshell turtles, record the maximum distance between the lateral edges of the carapace, measured over the curvature of the shell, perpendicular to the longitudinal axis of the carapace at the widest point (Figures 5-6 and 5-7).

SCW – Straight Carapace Width: Record the maximum distance between the lateral edges of the carapace taken perpendicular to the longitudinal axis of the carapace at the widest point (Figures 5-6 and 5-8).

Figure 5-7. Curved carapace width (CCW) measurement (NMFS/SEFSC photo).

Figure 5-8. Straight carapace width (SCW) measurement (NMFS/SEFSC photo).

Additional Measurements

Additional measurements (maximum carapace length, maximum head width, maximum head length, body depth, plastron length, total tail length, plastron-to-vent length, vent-to-tip length, and circumference) may be taken as needed, following the protocols of Wyneken (2001).

Oral Cavity Measurements

Measures of the jaw and internal oral cavity anatomy may be taken to investigate oral cavity dimensions, particularly as they relate to a turtle's ability to swallow hooks of various sizes. All measures are taken using spring and/or dial calipers while the mouth is held open with a canine mouth gag (a type of oral speculum available from veterinary equipment suppliers). The canine mouth gag tips should be padded to reduce damage to the beak as the turtle bites down on the gag. All mouth measurement instruments should be cold sterilized using 2% chlorhexidine gluconate or similar between each use.

These oral cavity measures include:

Internal Gape Width: Measure is taken with spring calipers at the midpoint of the lateral oral commissures, the soft tissue connecting upper and lower jaws at the angles of the mouth, while the jaws are held open to their full extent with a canine mouth gag. Fixed spring caliper distance is then measured using dial calipers.

Esophagus Width: Measure is taken with spring calipers at the entrance of the esophagus (Figure 5-9), marked by the first presence of papillae. This distance is then measured with dial calipers. Note: this is a flexible opening, and the measurement represents a close approximation of the unstretched diameter of the esophagus width.

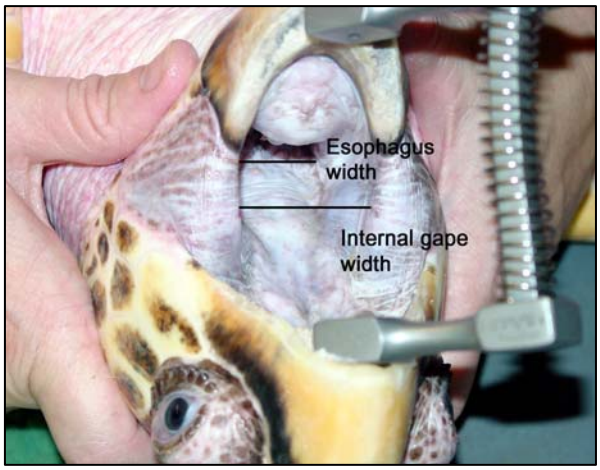


Figure 5-9. Internal oral cavity measurements: internal gape width, esophagus width (NMFS/SEFSC photo).

Figure 5-10. Gape Height (NMFS/SEFSC photo).

Gape Height: Measure is taken using dial calipers while jaws are held open to full extent with a canine mouth gag (Figure 5-10), representing the maximum internal distance between the distal points of the upper and lower jaw.

Upper Jaw Length: Measure is taken with dial calipers from the soft tissue at the insertion point of the rhamphotheca (keratinaceous beak) to the distal point of the upper jaw (Figure 5-11).

Lower Jaw Length: Measure is taken with dial calipers from the soft tissue at the insertion point of the rhamphotheca (keratinaceous beak) to the distal point of the lower jaw (Figure 5-12).

Figure 5-11. Upper jaw length (NMFS/SEFSC photo).

Figure 5-12. Lower jaw length (NMFS/SEFSC photo).

Chapter 6: Marking

Temporary Marking

Turtles may be temporarily marked using a non-toxic substance (e.g., paint, livestock paint sticks, non-toxic fingernail polish). No potentially harmful or toxic paints, such as xylene or toluene-based paints, or those containing tributyl tin and cyanide or copper cyanide, should be used. No reflective paints or paints with exothermic set-up reactions should be used. Paint should be applied without crossing the suture lines separating the scutes whenever possible.

Shell Etching

An etching tool such as a Dremel® with a pear-shaped bit can be used to place an etch or groove in the carapace of hardshell turtles. The bit and carapace should be disinfected before use, and the groove should not penetrate the scute. The groove could be marked with non-toxic paint if desired. Care should be exercised when choosing this technique, as discomfort may result from the procedure.

Flipper Tags

If a turtle is encountered without flipper tags, apply two new flipper tags to the trailing edge of the rear flippers just proximal to the first scale. If this site is unsuitable (lesions, scars, missing flippers, etc.), locate an alternate site along the trailing edge of a suitable flipper (i.e., the trailing edge of the front flipper(s) immediately proximal and adjacent to the first scale, or between the first and second large scales distal to the axilla). Turtles larger than 30 cm SCL should generally receive flipper tags. Experienced taggers may be comfortable tagging smaller animals in some cases. Extra care should be taken when positioning the tag in smaller animals to allow room for growth, although the tag should be positioned to allow for growth on all turtles. Check carefully for previous tagging scars on both front and rear flippers and note if present.

There may be circumstances where a previously applied tag will need to be removed prior to applying a new one. If a tag is damaged, covered in fouling organisms (e.g., barnacles) that cannot be removed, or if the tag appears to be in danger of coming off, the tag should be removed and replaced with a new tag. There may also be situations where a tag may be improperly placed (i.e., overgrown with tissue or tearing out), or injurious to the animal. In these situations, the tag should be carefully removed and replaced at the discretion of the tagger if they feel that removal will not cause further injury. Generally, the tag can be removed using two pairs of pliers to uncrimp the tip, but wire or bolt cutters may be necessary. If a previously applied tag is removed, the identification number should be recorded, and the tag should be reported to the original tagging project and the Cooperative Marine Turtle Tagging Project (CMTTP). Return the voided tag to the CMTTP or program coordinator.

To apply self-piercing, self-locking Inconel® alloy flipper tags:

Step **(1)** Remove a tag from the strip (Figure 6-1) and record its identification number on the tagging form. Be careful not to bend the tag from its original shape. Only peel back enough tape on the

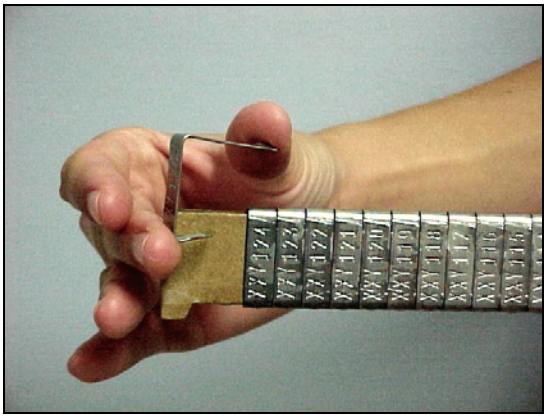


Figure 6-1. Remove cleaned tag from strip (NMFS/SEFSC photo).

Figure 6-2. Inserting the tag into the applicator (NMFS/SEFSC photo).

strip to remove one or two tags at a time to prevent loss of remaining tags. Scrub all tags with hot, soapy water to remove the oily residue present when shipped from manufacturer and disinfect with isopropyl alcohol or 10% povidone-iodine solution prior to use. Tags provided to NMFS/SEFSC observers will be cleaned before distribution.

(2) Hold the applicator in one hand. With the pointed (piercing) side of the tag facing the depression in the jaw of the pliers and with the hole placed adjacent to the depression, place the end of your index finger of the other hand inside the tag against the bend. Pull the tag straight back into the open jaws of the applicator, aligning the point opposite the small depression (Figure 6-2). A firm pull will be needed to snap the tag completely into the correct position. Take care not to squeeze the applicator together before you are ready to tag the turtle or the tag will fall out. Swab the tag, applicator tips, and tagging site with 10% povidone-iodine solution.

(3) *Rear Flipper Tagging (preferred site):* Locate the correct site (Figure 6-3) to apply the tag (the trailing edge of the rear flipper just proximal to the first scale). Juvenile and subadult hardshell turtles can be placed on their carapace to facilitate access to the tagging site. If someone is available to help, they should hold the turtle and restrain the flipper while the tag is applied. Be sure to position the tag so there will be adequate overhang (approximately 1/3 the length of the

Figure 6-3: Applying an Inconel® tag to the rear flipper of a loggerhead turtle (NMFS/SEFSC photo).

tag) after it is attached to the flipper (Figure 6-4).

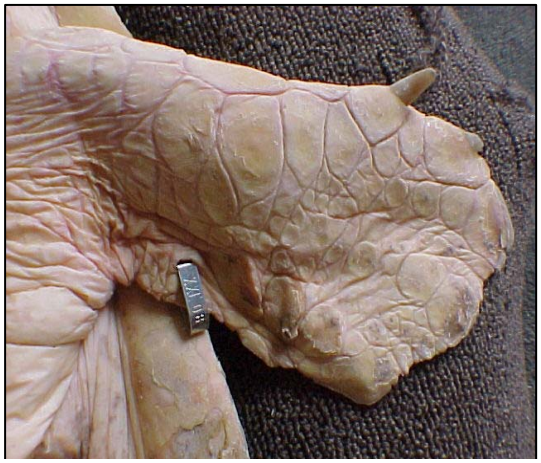


Figure 6-4. Inconel® tag applied to the rear flipper of a sea turtle (NMFS/SEFSC photo).

Front Flipper Tagging: Although the rear flipper is the preferred location, there may be circumstances where the front flipper is tagged instead. Place the turtle on its plastron and locate the correct site to apply the tag (the trailing edge of the front flipper(s) immediately proximal and adjacent to the first scale (Figure 6-5), or between the first and second large scales distal to the axilla). If someone is available to help, they should hold the turtle and restrain the flipper while the tag is applied. Be sure to position the tag so there will be adequate overhang (approximately 1/3 the length of the tag) after it is attached to the flipper.

(4) Apply the tag by squeezing the applicator together in a firm, steady manner. The tag point will pierce the flipper and lock into place with the tip bending securely over the opposite side like a staple point. Squeeze the applicator together with some force in order to fully lock the tag; it may be helpful to use both hands. If the tag does not lock, grasp it once again with the pliers and apply more pressure. You can use the tips of the pliers to pinch down on the end of the tag's tip to ensure that the tip is securely locked. If you cannot get the tag to lock, remove it and apply another tag to the same flipper. A tag that is not applied properly will be shed quickly.

Figure 6-5. Applying an Inconel® tag to the front flipper of a loggerhead turtle (NMFS/SEFSC photo).

(5) Repeat the entire procedure and apply a second tag at the same site on the other flipper (Figure 6-6). All turtles should be double tagged in this manner using consecutive tag numbers

Figure 6-6. Two rear flipper tags (NMFS/SEFSC photo).

whenever possible. If a tag is damaged for any reason, please record this information on the tagging form and return the damaged tag. If the recommended tagging site has been injured or is unsuitable for tag application, use an alternate site along the trailing edge of the flipper.

PIT Tags

Currently, NMFS/SEFSC is using sterile-packed single use 125 kHz Destron PIT tags. These inert tags are 12 mm x 2.1 mm glass encapsulated RFID tags. They are positioned inside the turtle where loss or damage due to abrasion, breakage, corrosion over time is virtually non-existent (Balazs 1999).

Scanning Protocol

All turtles encountered should be checked for PIT tags. Rarely, a turtle may have more than one PIT tag. PIT tag scanners in use by the SEFSC generally are capable of reading frequencies of 125 kHz, 128 kHz, 134.2 kHz, and/or 400 kHz. Researchers should avoid using AVID encrypted tags; these encrypted tags cannot be read by all scanners, and few scanners capable of reading encrypted tags are widely in use by researchers in the field.

Figure 6-7. Scanning for internal PIT tags (NMFS/SEFSC photo).

(1) Keep the PIT tag scanner inside a plastic sealed bag at all times during use to prevent it from getting wet. Scan a sample tag to verify that the PIT tag reader is working properly. The button on the scanner needs to be continuously depressed throughout the scanning process, and the screen may display "WORKING" or similar (depending on the type of scanner) when functioning properly.

(2) Place the PIT tag scanner directly on the turtle's skin; on leatherbacks you may have to press hard into the skin with the reader, as the tag may be deep. For hardshell turtles, slowly scan the dorsal surface of both front flippers (Figure 6-7), the shoulder and neck areas, and rear flippers. Attempt to scan the ventral surfaces, especially all four flippers and the neck, as some projects tag in the rear flippers or other locations; small turtles can be turned over for access to ventral surfaces. For leatherbacks, scan the dorsal musculature of both forelimbs, the shoulder region and the top of the neck. It is important to slowly move the scanner multiple times, allowing it to cycle through different tag frequencies to avoid missing a tag.

(3) If a PIT tag is detected, record the identification code exactly as it appears on the scanner display, including any hyphens that may appear as part of the code. ID codes usually are hexadecimal (digits 0-9 and letters A-F) and are 10 bytes (125, 128, or 400 kHz tags) or 15 bytes (134.2 kHz tags) long. Double check to make sure you have recorded the ID code exactly as it appears on the reader display. Please be especially careful with letters and numbers

that easily are confused, such as the letter O and the number Ø. Record all tag IDs (there could be more than one PIT tag). If the scanner display reads "AVID" or the ID reads inconsistently, you may have detected an encrypted AVID tag. Encrypted tags may display a 16 byte alphanumeric code (0-9 and A-Z) on non-AVID reader displays. Record what you see on the viewer and insert a new PIT tag in the opposite shoulder/flipper.

(4) Wipe off the plastic bag. If a tag ID code remains on the display, press the scanner button again until it reads "no tag found" to extend the battery life, although the PIT tag scanner automatically turns itself off eventually. When not in the field, store the unit with the plastic bag open so that humidity does not accumulate and damage the unit. Replace or recharge batteries as needed, and do not store the unit for long periods with the batteries installed.

Application Protocol

Turtles larger than 30 cm SCL should receive PIT tags if scanning reveals no PIT tags present. In some cases, experienced taggers may feel comfortable tagging smaller turtles in the triceps superficialis muscle. The tag should occupy less than 20% of the muscle's total volume and 1/5 of its length, and it should not be located near the ends of the muscle (J. Wyneken pers. comm.). To determine if a small turtle should be tagged in the triceps superficialis, pinch the muscle forward and assess the tag size relative to the muscle size.

(1) Scan the PIT tag before opening the package to ensure that it is a functional tag. Double check that the number on the display matches the label.

(2) Record the PIT tag number on the datasheet and peel off the self-adhesive label on the PIT tag package, if available, and attach it to the datasheet.

(3) Remove the loaded needle from the sterile wrapper and insert it into the injector, or remove the preloaded syringe and needle if using these, taking care not to depress the plunger.

(4) Swab the PIT tag injection location and the end of the injector with 10% povidone-iodine solution

(5) Place the tag into musculature, where it will become encapsulated. Leatherbacks should be tagged in the center of the dorsal musculature (triceps complex) of the forelimb (Figures 6-8 and 6-9); insert the entire needle perpendicular to the skin (Note: The preferable site for leatherbacks is the musculature above the right forelimb, as some nesting research projects only scan the right side). Hardshell turtles should be tagged in the triceps superficialis muscle (Figures 6-10 and 6-11); pierce the skin of the flipper with the needle and insert the entire needle parallel to the surface just under the skin and into the muscle. Slide the plunger forward. (Note: The preferable site for Kemp's ridleys is the left triceps superficialis muscle to maximize the chances of tag detection, as the nesting project in Rancho Nuevo scans the left front flipper).

(6) Put your thumb over the injection site and apply pressure while carefully removing the needle. Dispose of the needle in a sharps container. If the

injection site bleeds, swab it with 10% povidone-iodine solution and apply pressure until the bleeding stops.

(7) Scan the flipper for the PIT tag to ensure that it is functioning in the turtle.

Figure 6-8. Leatherback turtle PIT tagged in the dorsal musculature (Photo courtesy of S. Eckert, Duke University).

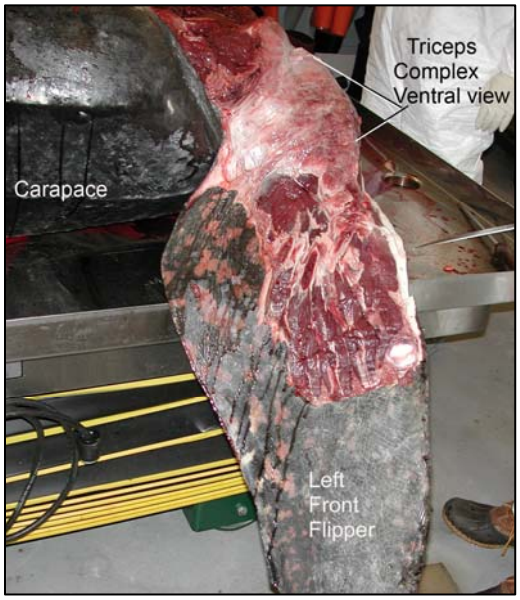
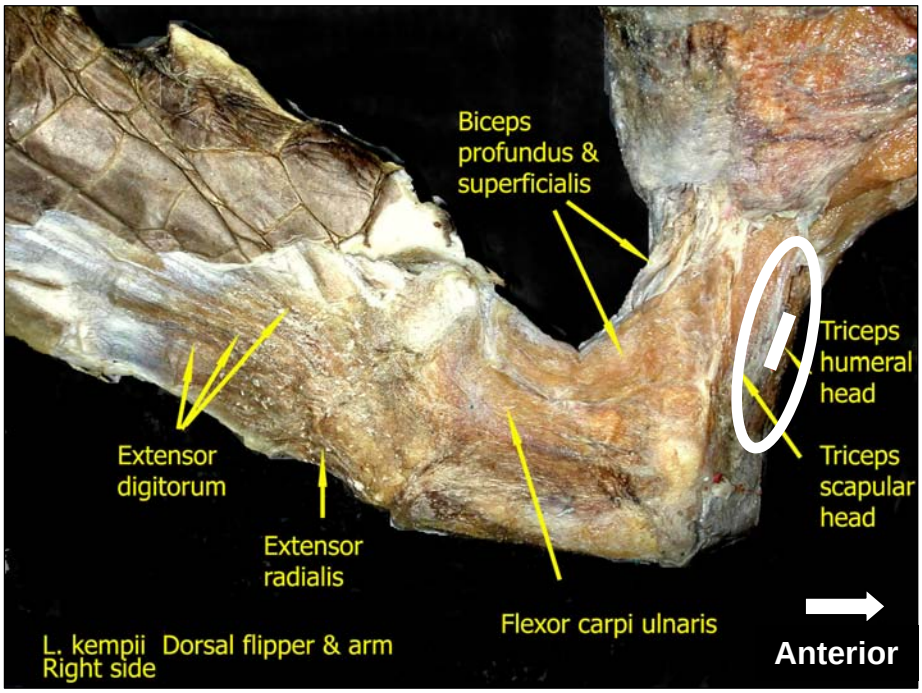
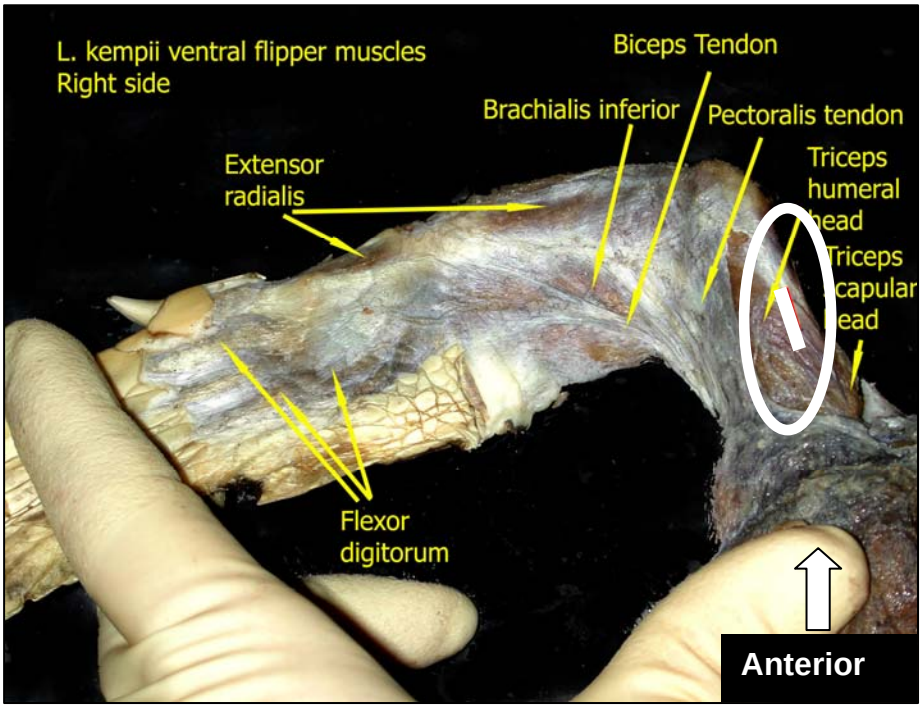


Figure 6-9. Annotated leatherback musculature depicting the triceps complex. (Photo courtesy of J. Wyneken, Florida Atlantic University).

Figure 6-10. Inserting PIT tag into the triceps superficialis muscle of a Kemp's ridley (NMFS/SEFSC photo).





Figures 6-11a and b. PIT tag placement (white line) in hardshell turtles, shown in dorsal view (a) and ventral view (b) of a dissected Kemp's ridley flipper (Photos and annotations by J. Wyneken, Florida Atlantic University).

Carapace Tagging

Tagging leatherbacks externally allows researchers, observers and fisherman to report tag sightings even when they are unable to bring the turtle onboard. Color-coded tagging, such as Floy® dart tags, would allow for the easy identification of an animal that had interacted with a fishery when encountered again on the high seas or on a nesting beach. These tags have a stainless steel applicator tip and a nylon dart head. Further detailed descriptions of Floy® dart tags can be found at: http://www.floytag.com/images/floycatalog.pdf. The tagging protocol is relatively simple and has been used for a number of years in marine and freshwater fish species.

1) Clean harpoon applicator tip and dart anchor thoroughly with 10% povidone-iodine wipes.

2) Load tag into applicator.

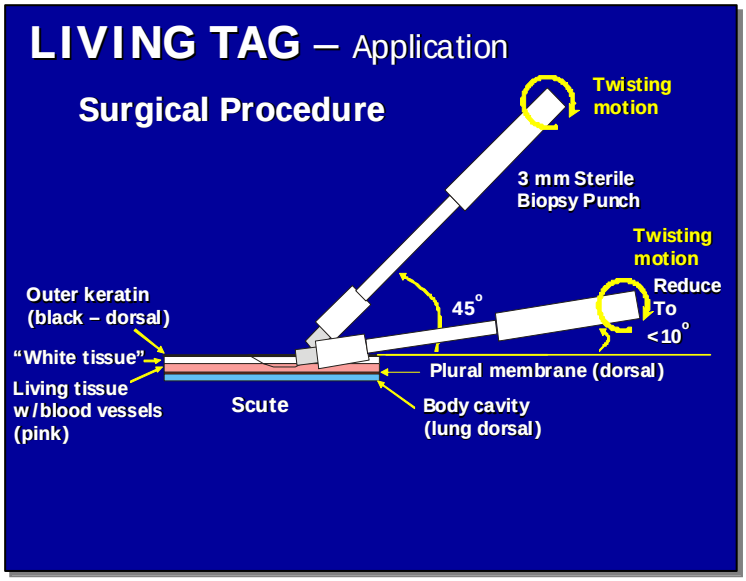
3) Tag animal with a quick, forceful jab high on carapace adjacent to the central ridge to optimize visibility.

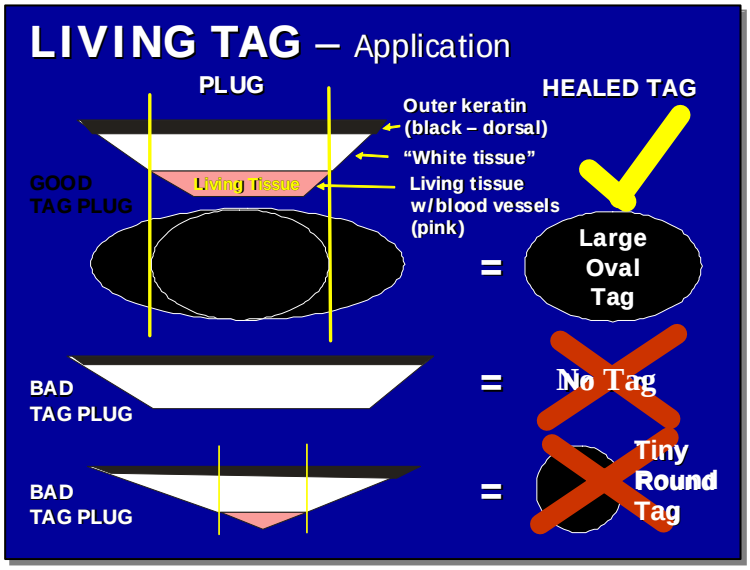
Living Tags

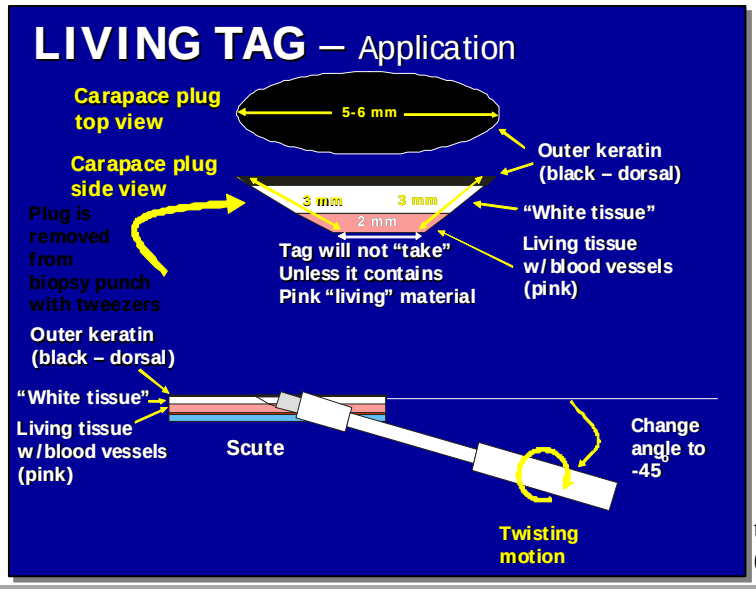
Living tags provide a permanent marking method for sea turtles, and they are particularly useful with post hatchlings and small juveniles that cannot be marked using traditional tagging methods. A living tissue plug is removed from the plastron and transplanted into the carapace, leaving a permanent, identifiable light spot that grows with the animal on the contrasting dark carapace.

At least 24 hours prior to tagging, thoroughly scrub the carapace and plastron with clean water, antibacterial soap, and a scrub brush (e.g., toothbrush). Flakes of keratin, if present, can be scraped off with a scalpel blade held perpendicular to the carapace. Clean the area with fresh water and dry with a paper towel just prior to tagging (Figures 6-12a and b). Wear latex or similar disposable gloves and keep the area and equipment clean. Select a standard scute location on the carapace to receive the living tag plug. The ideal location is usually fairly central in the scute, and the topography of the carapace should match that of the plastron plug (i.e., do not take a plastron plug from a flat area and then take a peak from the carapace; a flat carapace location should receive a flat

Figures 6-12a and b. Cleaning the (a) carapace and (b) plastron (NMFS/SEFSC photos).







Figures 6-13a-c. Living tag procedure (NMFS/SEFSC diagrams).

plastron plug). For loggerheads, NMFS/SEFSC has found that the best tags were taken from the relatively thick tissue of the humeral or pectoral scutes on the plastron, so that bone was not sampled.

The order that the living tissue is obtained does not matter; the carapace or the plastron can be sampled first. The goal is to minimize the time required for the procedure. First, the method of taking carapace tissue is described. Place the blade of a sterile 3 ─ 6 mm biopsy punch at the carapace surface forming an approximate 45º angle. Using moderate force and a twisting action (twisting reduces the amount of force required to cut through the carapace material), let the biopsy punch cut into the carapace material to a depth of approximately 1 ─ 2.5 mm (Figure 6-13a).

Depth control is critical to obtaining a good plug. You must reach the area containing "pink" living tissue (only one mm thick on a seven-month-old Kemp's ridley, two mm in a 120 g loggerhead) that is vascularized. If you go too deep, you may puncture the lung (carapace) or enter body cavity (plastron). Once at the correct depth, reduce the angle of the biopsy punch to approximately five degrees, push forward two to three mm, and then angle back up to the surface, creating a plug that is 5 to 6 mm in length, three mm wide and 2.5 mm in depth (Figure 6-13b).

The side profile of the plug should be layered (Figures 6-13b and c) with a layer of black or brown/white keratin, layer of "white" bone/cartilage, and a thin layer of "pink" vascularized (blood vessel) material. Take care to ensure that no pigmented keratin material contaminates the white and pink layers of the plug, and if the plug is temporarily placed aside, it should be placed with the keratin (shell) side down to avoid contaminating the "living" areas of the plug. Only tag plugs with suitable living tissue will form good living tags; tag plugs with no living tissue will not take, and those with little living tissue will form small, potentially undetectable healed living tags. Depending on the skill level of the tagger, oval shaped tags may remain oval or heal in a circular shape. The shape, size and area of the living tissue on the tag plug and tag hole dictate the final shape and size of the living tag. Unless reciprocal transplants are to be done, discard the carapace plug (Figure 6-14); attempting to transplant carapace plug into plastron hole is rarely successful on Kemp's ridleys, but has been found to work well on loggerheads.

Figure 6-14. Removing the carapace tissue plug (NMFS/SEFSC photo).

Next, select an all white or cream-colored scute from the plastron matching the profile of carapace surface where the tag will be placed as the source of the living tag plug. Use a 3 ─ 6 mm biopsy punch to remove a plastron plug, and use forceps disinfected with 70% isopropyl alcohol to handle the plug (Figure 6-15). Clean off forceps in alcohol between handling the carapace plug and the plastron plug. The presence of moisture will cause tissue adhesive to foam or clump; excess moisture (including blood) should be blotted from the area to receive glue. Use veterinary

Figure 6-15. Removing the plastron tissue plug. (NMFS/SEFSC photo).

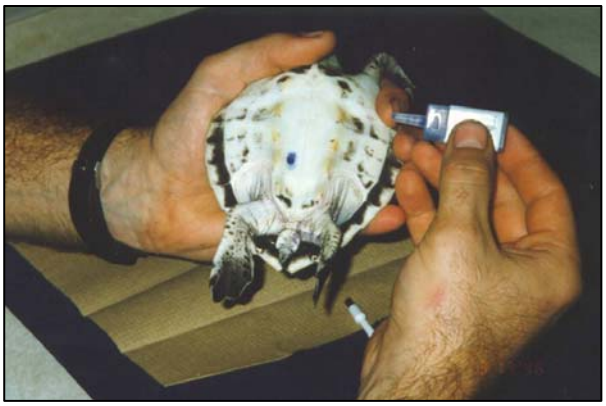


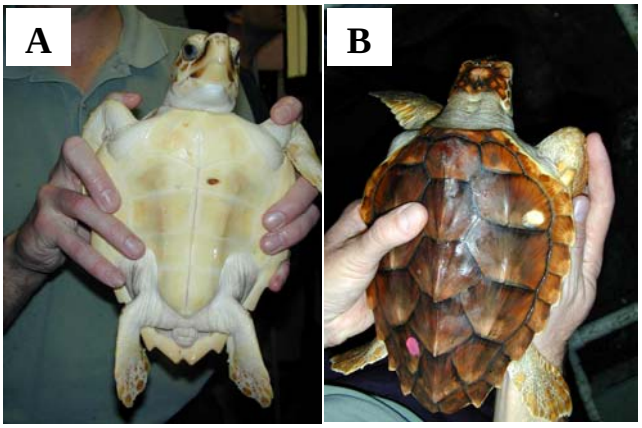
Figure 6-16. Sealing plastron with tissue glue (NMFS/SEFSC photo).

Figure 6-17. Inserting the plastron tissue plug onto the carapace (NMFS/SEFSC photo).

quality tissue adhesive (such as Nexaband® or Vetbond®) to fill and seal the empty plastron donor hole where the plug was taken if there is no reciprocal transplant, ensuring that all edges are sealed with one continuous film (Figure 6-16).

Insert the plastron plug into the carapace hole and press it into place. Rotate the plastron plug in the carapace hole to get the best fit possible, and then press down the plug to expel any liquid that might have pooled in the hole (Figure 6-17). If the plastron plug is a good match for the carapace hole, pressing down will create a slight vacuum that will hold the tag in place until it can be glued. Blotting with a paper towel helps remove any excess liquid that will interfere with the tissue glue. Apply veterinary quality tissue adhesive (such as Nexaband® or Vetbond®) around the perimeter of the tag, taking care not to allow the glue to flow over the complete surface of the tag or get under the plastron plug. If glue gets under the plastron plug, or if too much glue is used and the surface of the tag is completely covered, the tag will not "take." Use only enough glue to seal the perimeter of the plastron plug to the edges of the carapace hole, and do not try to wipe off excess glue, as the tag may stick to the wiping object and pull out.

Turtles should be left out of the water for 15 – 30 minutes after tagging to allow the glue to dry. It takes about six weeks for the living tag to heal before it can be determined whether or not the tissue graft was successful (Figures 6-18a and b).



Figures 6-18a and b. A 14-month-old loggerhead showing living tags on (a) the carapace and (b) the plastron. (Photos by J. Wyneken, Florida Atlantic University).

Wire Tags

Successfully tagging large numbers of hatchlings presents a significant challenge. Coded Wire Tags (CWTs) provide a reliable method for marking hatchlings, and they have been used extensively in captive reared and wild Kemp's ridley hatchlings (Higgins et al. 1997). CWTs have also been used in larger turtles, such as yearling Kemp's ridleys from the NOAA Kemp's ridley headstart project (1978-1992). A small section of coded wire is injected using a specialized tag injector into the dorsal surface of the front flipper near the claw (Figure 6-19).

The tags may be either non-magnetized or magnetized at the time of insertion, but the wire tag must be magnetized for detection with a handheld magnetometer. A non-magnetized tag can be magnetized immediately before detection by passing a magnet over the front flippers where the tags would be implanted, or before tagging by using a pre-magnetized roll of wire or using a magnetized head on the tag injectors (Higgins et al. 1997, Fontaine et al. 1993).

CWTs may be inscribed with binary or decimal coding. They each may be coded with a unique label or more often, each tag on a spool of coded wire is identical, allowing for the identification of groups and not individuals. To read the code on a CWT, dissection and examination under a microscope is necessary. Therefore, the code on CWTs is only obtained when a turtle is recovered dead, allowing for dissection and removal of the tag.

CWTs are detected using a wand type tag detector (magnetometer) or by x-ray radiography. To detect a tag using a wand tag detector, make sure that there are no metal objects (e.g., jewelry, watches) in the area, as they can interfere with magnetic tag detection. Test the unit by passing it over a metal with a known magnetic content and confirm an audible beep. If possible, position the turtle at least one meter away from the ground, sand, metal equipment, vehicles, electronic circuits, walls with pipes or reinforcement steel, etc. Immobilize the turtle and extend the flipper away from the turtle's body and hold the detector perpendicular to the leading edge of the flipper next to the body. Pass the wand over the surface of the flipper keeping it perpendicular to the leading edge of the flipper, keeping it as close to the flipper surface as possible without touching it (Figure 6-20) . Scan each surface of both flippers at least three times up and down the length of the flipper. If no tags are detected after three passes along the entire flipper, try several short passes back and forth in the area of the claw. If a suspected tag is detected (the wand beeps), carefully pass the wand over the suspected tag site to confirm consistent multiple readings. Check around the flipper to make sure there are no metal sources that could cause a false positive reading.

If no tag is detected after examining both surfaces of the front flippers, pass a magnet over the flippers in an attempt to magnetize a non-magnetized wire tag (Figure 6-21). The magnet should be passed in only one direction in parallel sweeps from the leading edge of the flipper towards the trailing edge in overlapping sweeps. Take care not to sweep the magnet perpendicular from the leading edge to the trailing edge, as this could result in a failure of the tag to take a magnetic charge or the un-magnetization of a previously magnetized tag. After passing the magnet over each flipper surface, follow the previously described procedure for tag detection.

A detailed description of the protocol for wire tagging and detection (Higgins et al. 1997) can be found at: http://www.sefsc.noaa.gov/seaturtletechmemos.jsp and http://galveston.ssp.nmfs.gov/publications/pdf/279.pdf.

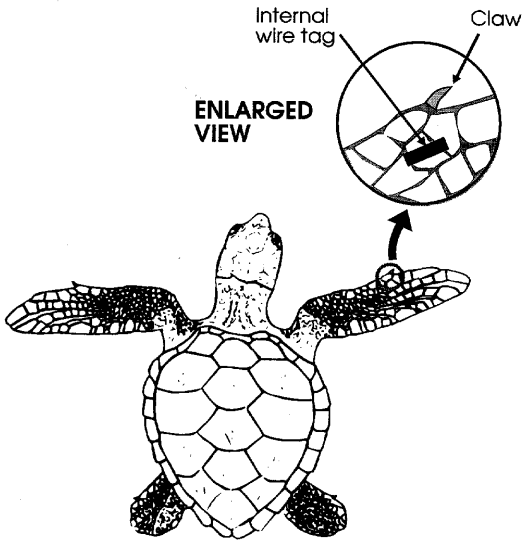


Figure 6-19. Implantation location of internal wire tag in hatchling flipper (Diagram from Higgins 1997).

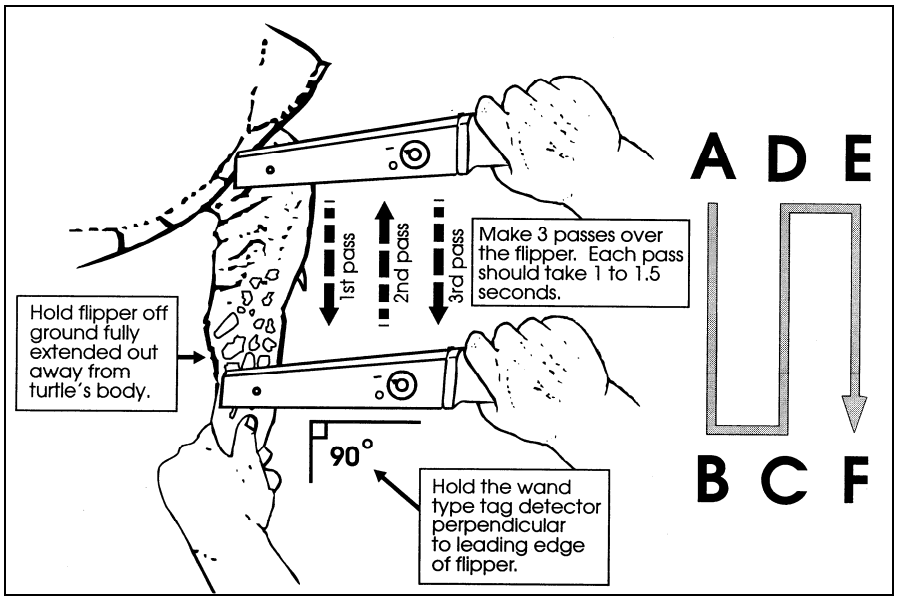


Figure 6-20. Proper positioning of wand over the turtle's flipper for magnetized wire tag detection (Diagram from Higgins 1997).

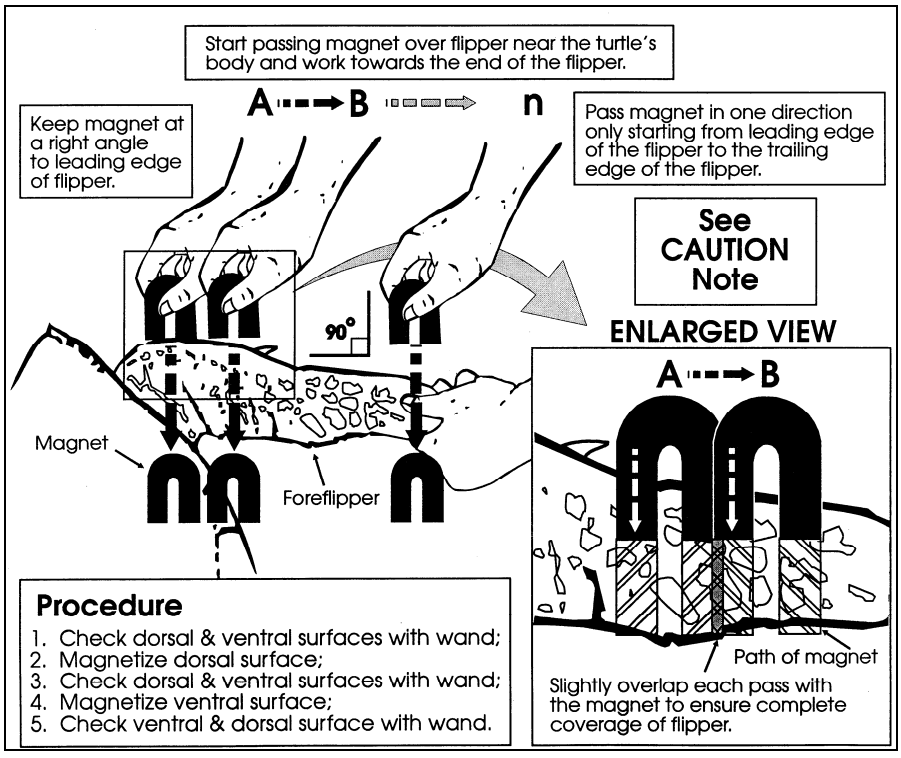


Figure 6-21. Proper technique for magnetizing a previously non-magnetized wire tag in a flipper (Diagram from Higgins 1997).

Oxytetracycline Marking

In certain circumstances, sea turtles may be injected with the antibiotic oxytetracycline (Figure 6-22). Oxytetracycline marks the bones of the sea turtle at the time of injection so they can be used in future aging studies if the turtle strands dead. One dose administered prior to hook removal, skin biopsy, and tagging could offer the same beneficial prophylactic effects as presurgical antibiotics may offer in preventing post-surgical infections as well.

The quantity of tetracycline to be administered depends on the weight of the animal, which can be estimated from its straight carapace length (SCL_{N-T}) if the actual weight is unknown. Estimated dosage quantities are provided on the Dosage Cards for Kemp's ridleys (Table 6-1), loggerheads (Table 6-2), and green sea turtles (Table 6-3). These values are based on length-weight regression models derived from morphometric data collected from wild-caught turtles in the coastal waters of North Carolina. As such, we do not recommend using the estimated dosage provided on turtles outside the Atlantic Ocean and Gulf of Mexico to account for potential differences in length-weight relationships among populations. Measure the straight carapace length of the turtle in cm and use the Dosage Cards to find the corresponding dosage (25 mg/kg assuming an oxytetracycline concentration of 200 mg/ml). If the actual weight of the turtle is known, or if you are using a different concentration of the drug, calculate the dosage using the formula:

Dosage (ml) = Weight (kg) x 25 (mg/kg) / concentration (mg/ml).

Verify that product has not expired, as this product can become toxic after expiration, and confirm the product's concentration. Wear disposable gloves and draw the necessary dosage from the bottle with a disposable syringe. Use a 3-cc syringe for antibiotic quantities 0.6 – 2.9 ml and a 5-cc syringe for larger quantities.

Figure 6-22. Oxyetracycline injection (NMFS/SEFSC photo).

On a restrained turtle, clean the injection site with 10% povidone-iodine solution. Insert the needle in the right front dorsal shoulder musculature (latissimus dorsi, terres major, and deltoides) in a single injection site using a sterile, disposable syringe and a 20-gauge 1" needle. Animals with a SCL > 70 cm should have their dosage split into two equal volumes to administer in each shoulder. Before injecting the tetracycline, pull back on the syringe plunger to make sure the needle is not in a blood vessel. If there is no blood coming into the syringe, apply continuous force to the plunger to administer the antibiotic. If blood does enter the syringe, readjust the needle placement by partially retracting the needle

(do not remove entirely) and changing the angle of insertion. Check again to verify the needle is not in a blood vessel before administering the antibiotic. After removing the needle, apply pressure with a 10% povidone-iodine swab in the area to stop any bleeding and prevent infection. Dispose of the needle and syringe in a sharps container.

OXYTETRACYCLINE DOSAGE FOR KEMP'S RIDLEY SEA TURTLES

SCL N-T (cm)	Drug Dosage (ml)		SCL N-T (cm)	Drug Dosage (ml)
20	0.2		43	1.4
21	0.2		44	1.5
22	0.2		45	1.6
23	0.3		46	1.7
24	0.3		47	1.7
25	0.3		48	1.8
26	0.4		49	1.9
27	0.4		50	2.1
28	0.5		51	2.2
29	0.5		52	2.3
30	0.5		53	2.4
31	0.6		54	2.5
32	0.6		55	2.6
33	0.7		56	2.8
34	0.8		57	2.9
35	0.8		58	3.0
36	0.9		59	3.2
37	0.9		60	3.3
38	1.0		61	3.5
39	1.1		62	3.6
40	1.1		63	3.8
41	1.2		64	3.9
42	1.3		65	4.1

Table 6-1. Oxytetracycline dosage card for Kemp's ridley sea turtles assuming a dose of 25 mg/kg and an oxytetracycline concentration of 200 mg/ml. Dosage (ml) = Weight (kg) x 25 (mg/kg) / concentration (mg/ml). Dosage calculations are based on estimated weight from Kemp's ridley morphometric data regressions where: Weight (kg) = $0.0006(SCL)^{2.6121}$ with $R^2 = 0.894$.

OXYTETRACYCLINE DOSAGE FOR LOGGERHEAD SEA TURTLES

SCL N-T (cm)	Drug Dosage (ml)		SCL N-T (cm)	Drug Dosage (ml)
40	1.3		73	6.7
41	1.4		74	7.0
42	1.5		75	7.3
43	1.6		76	7.5
44	1.7		77	7.8
45	1.8		78	8.1
46	1.9		79	8.4
47	2.0		80	8.7
48	2.1		81	9.0
49	2.2		82	9.3
50	2.4		83	9.6
51	2.5		84	9.9
52	2.6		85	10.2
53	2.8		86	10.5
54	2.9		87	10.8
55	3.1		88	11.2
56	3.2		89	11.5
57	3.4		90	11.9
58	3.5		91	12.2
59	3.7		92	12.6
60	3.9		93	12.9
61	4.1		94	13.3
62	4.3		95	13.7
63	4.5		96	14.0
64	4.7		97	14.4
65	4.9		98	14.8
66	5.1		99	15.2
67	5.3		100	15.6
68	5.5		101	16.0
69	5.8		102	16.4
70	6.0		103	16.8
71	6.2		104	17.3
72	6.5		105	17.7

Table 6-2. Oxytetracycline dosage card for loggerhead sea turtles assuming a dose of 25 mg/kg and an oxytetracycline concentration of 200 mg/ml. Dosage (ml) = Weight (kg) x 25 (mg/kg) / concentration (mg/ml). Dosage calculations are based on estimated weight from loggerhead morphometric data regressions where: Weight (kg) = $0.022\ (SCL)^2 - 1.1789(SCL) + 22.751$ with $R^2 = 0.897$.

OXYTETRACYCLINE DOSAGE FOR GREEN SEA TURTLES

SCL N-T (cm)	Drug Dosage (ml)		SCL N-T (cm)	Drug Dosage (ml)
20	0.1		57	2.6
21	0.2		58	2.8
22	0.2		59	2.9
23	0.2		60	3.1
24	0.2		61	3.2
25	0.2		62	3.4
26	0.3		63	3.5
27	0.3		64	3.7
28	0.3		65	3.8
29	0.4		66	4.0
30	0.4		67	4.2
31	0.5		68	4.4
32	0.5		69	4.6
33	0.6		70	4.8
34	0.6		71	4.9
35	0.7		72	5.1
36	0.7		73	5.4
37	0.8		74	5.6
38	0.8		75	5.8
39	0.9		76	6.0
40	1.0		77	6.2
41	1.0		78	6.5
42	1.1		79	6.7
43	1.2		80	7.0
44	1.3		81	7.2
45	1.3		82	7.5
46	1.4		83	7.7
47	1.5		84	8.0
48	1.6		85	8.3
49	1.7		86	8.6
50	1.8		87	8.8
51	1.9		88	9.1
52	2.0		89	9.4
53	2.1		90	9.8
54	2.3		91	10.1
55	2.4		92	10.4
56	2.5			

Table 6-3. Oxytetracycline dosages for green sea turtles assuming a dose of 25 mg/kg and an oxytetracycline concentration of 200 mg/ml. Dosage (ml) = Weight (kg) x 25 (mg/kg) / concentration (mg/ml). Dosage calculations are based on estimated weight from green sea turtle morphometric data regressions where:
Weight (kg) = $0.0002(SCL)^{2.861}$ with $R^2 = 0.777$.

Chapter 7: Electronic Tags

Electronic tags allow researchers to remotely monitor information such as position, movement patterns, dive behavior, survival, and environmental parameters. Satellite tags are used to collect data on location, depth, and/or temperature. Deployment length is dependent on battery size and will vary depending on research question and animal size. Sonic tags emit an acoustic signal that can be received underwater with a hydrophone. Triangulation of the acoustic signal allows researchers to determine an animal's location. Radio tags emit a radio signal on a specific frequency that can be detected by an antenna when a turtle surfaces. Radio tags provide location information via triangulation of the signal above the water.

Electronic tags, including sonic, radio, satellite transmitting, and archival tags are attached to sea turtles via two methods: direct and tethered. All tags and attachment materials should weigh less than five percent of a turtle's weight, and tags should be streamlined to minimize any effects of drag. Researchers must make attachments as hydrodynamic as possible. Tag dimensions vary by manufacturer and tag type, but should be proportional to turtle size and consistent with weight restrictions. Each attachment must be made so that there is no risk of entanglement. The lanyard (if used) length must be less than 1/2 of the carapace length of the turtle to avoid entanglement in the turtle's front flippers and prevent the turtle from biting the tag. It must include a corrodible, breakaway link that will corrode and release the tag-transmitter after the tag-transmitter life is finished. Adequate ventilation around the head of the turtle must be provided during the attachment of tags if attachment materials produce fumes. To prevent skin or eye contact with harmful chemicals used as attachment materials, turtles must not be held in water during the application process. Ideally, turtles will be and held no longer than two hours; however, there may be weather or logistical events that may require bringing turtles to shore for tagging and temporary holding. In that event, turtles should be released as weather permits, no more than one day after capture.

Electronic Tag Specifications

Below is a list of tag types currently in use or being considered for use by the NMFS/SEFSC. Specific manufacturers and models are not listed here because of the dynamic nature of this field of technology. Attachment methods are constantly refined and improved by researchers; the methods defined here have been tested and approved by NMFS/SEFSC, but do not constitute an exhaustive list of potential acceptable methods. Argos transmitting satellite and archival tags operate within approved frequencies, 401.618 MHz to 401.680 MHz. Sonic tags operate in the 25 – 80 kHz range, and radio tags use a range of 164 – 166 MHz.

Tag Attachment Protocols

Tether Attachment Protocol (see Epperly et al. 2007)

Hardshell turtles

Tethers for satellite, radio, or sonic tags are attached to the trailing edge at the rear of the carapace (Figure 7-1) to reduce drag while

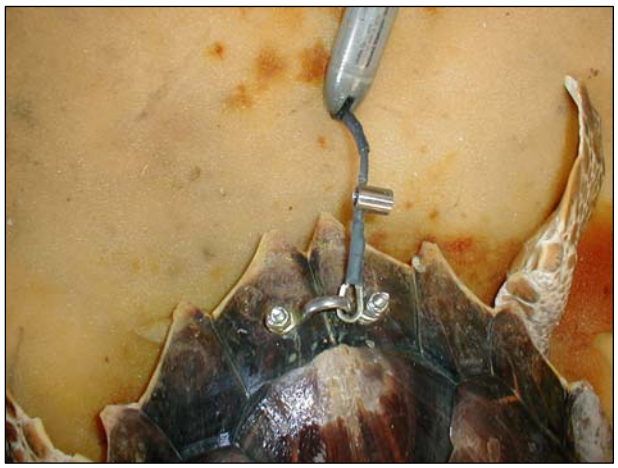


Figure 7-1. Attachment of an archival satellite tag on a hardshell turtle (NMFS/SEFSC photo).

being towed by the turtle. Tags are streamlined and as light as possible (< five percent of body weight) to keep drag to a minimum. When handling the turtle and equipment, use disposable gloves and change them often to maintain the most sterile environment possible.

After removing epibionts and thoroughly scrubbing the area with water and povidone-iodine disinfectant, drill a 0.5 cm hole through one of the turtle's pygal bones, as well as the overlying scutes, with a drill bit soaked in povidone-iodine disinfectant for 15 minutes prior to use. Pass a plastic electrician's tie through the hole and secure. Transmitters should be housed in bullet-shaped buoys (approximately 10 cm diameter and 10 cm in height) secured to one end of a tether that consists of one mm diameter stainless steel fishing leader. Connect the tether to the plastic electrician's tie in the turtle's shell with a ball-bearing swivel and two short lengths of either 30 lb braided fishing line (e.g., Spiderwire®) or 30 lb test monofilament fishing line. This configuration will allow the turtles to break free if either the buoy or tether becomes entangled in submerged or floating debris or bottom structure.

1. Immobilize the turtle and clean dorsal and ventral surfaces of postcentral scutes using a scouring pad and scrub brush, and if needed for barnacle removal, a chisel. Activate tag.

2. Pour ~ two oz 10% povidone-iodine to thoroughly soak the hardware into a bag containing the hardware, exclusive of the nylon parts, and a new drill bit, and soak for at least 15 minutes, agitating frequently. Use alcohol swabs to clean the nylon parts, as iodine breaks down nylon over time, while alcohol is inert.

3. Saturate sterile gauze sponges with 10% povidone-iodine and cleanse the dorsal and ventral surfaces of the postcentral scutes several times over a 15 minute period.

4. Install a 3/16" titanium drill bit into the portable drill and align the eyestrap (pad eye) on the postcentral scutes. Be sure to position the eyestrap as far forward (toward head) as possible on the postcentral scutes to capture the underlying bone. However, be cognizant that you will be drilling at an angle; do not drill so far up as to intercept the integument on the ventral surface (Figure 7-1). Using the holes of the eyestrap as a guide, drill once quickly through the scute. Use a blood clotting gel such as Clotisol® or ferric subsulfate to stop bleeding, if necessary, after first cleaning the dropper tip with an alcohol swab.

5. Flood the area thoroughly with 10% povidone-iodine.

6. Select an appropriate length 1/8" bolt and insert it through the eyestrap. If the bolts are too long, insert them from the bottom so that they can be trimmed later. Use nylon washers against the carapace and the plastron and a stainless washer between the eyestrap and the nut or head of the bolt.

7. Thread thimble of tag tether over eyestrap before inserting the second bolt.

8. Repeat steps six and seven for the second hole.

9. Turn the turtle onto its carapace, being careful to protect the tag (try to keep it in the PVC sleeve), and secure the bolts with washers and lock nuts using a wrench.

10. Use bolt cutters to cut off any excess length of the bolts if necessary.

Leatherback Turtles- Pygal Tether Attachment (Figure 7-2)

1. Immobilize the turtle and activate the tag. When handling the turtle and equipment use disposable gloves, changing them often to maintain the most sterile environment possible.

2. Pour enough 10% povidone-iodine into a hardware bag containing two 1/4" X 1 5/8" acetal polyoxymethylene resin (e.g., Delrin®) disks, a new 5/16" drill bit, and 1/4" outer diameter surgical tubing to coat items. Agitate the bag frequently to disinfect the hardware.

3. Saturate sterile gauze sponges with 10% povidone-iodine or use 10% povidone-iodine scrubs and cleanse the dorsal and ventral areas of turtle in the pygal region (Figure 7-2). Do this several times.

4. Install the drill bit into a portable drill and drill a single hole through the center of the pygal region. Use a blood clotting agent such as Clotisol® or ferric subsulfate to stop bleeding, if necessary, after first cleaning the dropper tip with an alcohol swab.

5. Flood hole thoroughly with 10% povidone-iodine.

6. Swab outside of surgical tubing with a triple antibiotic ointment such as Neosporin® and pass surgical tubing through the hole until it is flush at the top.

7. Cut excess surgical tubing flush at the bottom using scissors or line cutters.

8. Thread monofilament tether through an acetal polyoxymethylene resin (e.g., Delrin®) disk that has been swabbed with triple antibiotic ointment on the bottom.

9. Pass monofilament through surgical tubing. Lubricate monofilament with triple antibiotic ointment if needed.

10. Secure monofilament at the bottom with the second acetal polyoxymethylene resin disk (swabbed with topical antibiotic ointment) and a crimp below the disk so that the tether is tight and secure. Cut off any excess monofilament.

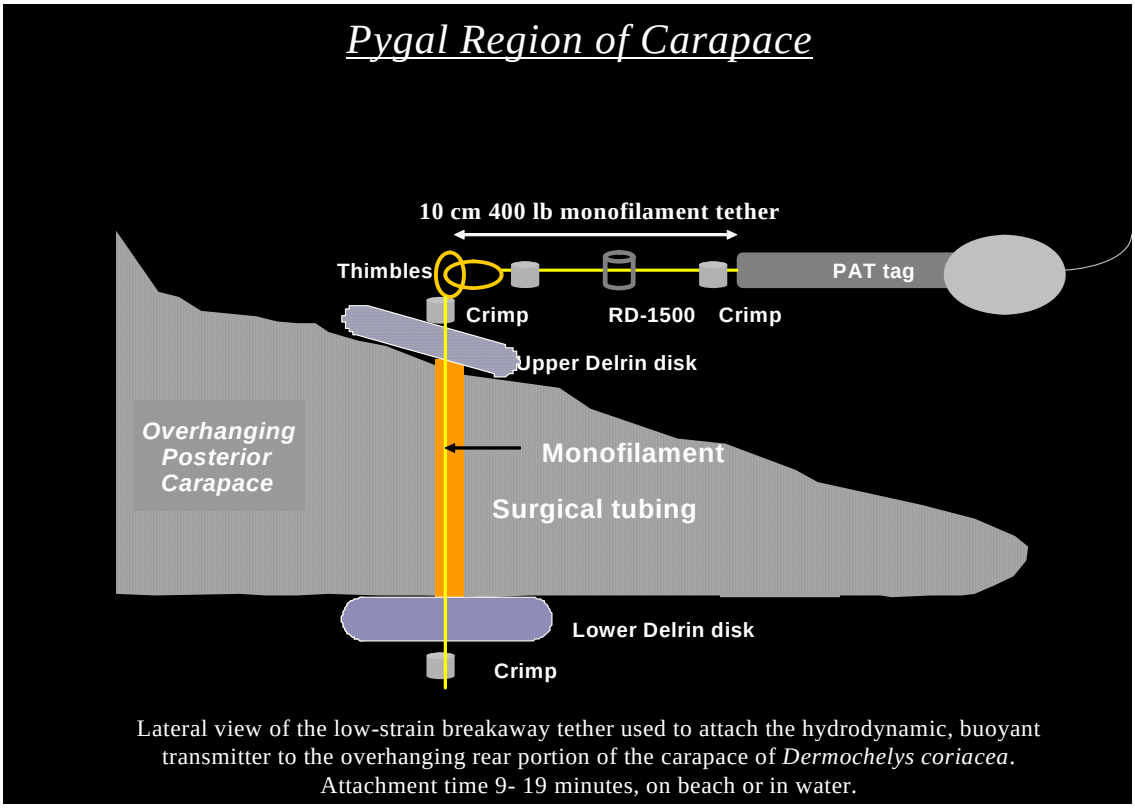


Figure 7-2. Attachment of archival tag using a tether through the pygal region of a leatherback (NMFS/SEFSC diagram).

Harness Attachment Method (Figure 7-3, Method developed by Scott Eckert and adapted from Eckert and Eckert 1986)

Note: Recent concerns about the effects of drag have been raised regarding this harness attachment method. Drag effects are currently being researched, and new materials and attachment methods are currently under investigation. NMFS **does not** currently use or endorse this method of attachment pending futher research.

1. Activate satellite tag.

2. Place plastron strap under the posterior end of plastron (approximately 10 – 20 cm from the edge.

3. Feed each end of the plastron strap through the loop of their respective vinyl tube covered shoulder strap.

4. Center the elastic tubes with the four D-rings on the carapace with two D-rings forward for the shoulder straps and one D-ring to each side for the plastron strap.

5. Secure the plastron strap at each end to the D-rings, making sure that tension of elastic tubes is not too great and allows for growth of the turtle without allowing movement of the harness. The attached loops for the shoulder straps should be just below the D-ring.

6. Feed the vinyl tube with each shoulder strap under the front flippers and curve the tubes over the turtle's carapace.

7. Secure the shoulder straps to the remaining D-rings until an appropriate amount of tension is present in the elastic tubes which will allow for growth of the turtle yet ensure the harness will remain in place. Some trimming of the vinyl tubes may be needed to properly secure the shoulder straps.

8. Attach the transmitter plate to the vinyl tubes ahead of shoulder D-rings and loosely attach with four large cable ties. Do not secure yet, as some adjustments may still be needed for the harness.

9. Check overall tension on shoulder straps, the plastron strap, and the elastic tubes. Make any needed adjustments at this time. Do not over tighten the harness. The harness should be secure on the turtle but still allow for growth.

10. Once all the straps are properly adjusted, secure the shoulder strap loops to the plastron strap on each side of the turtle several centimeters below the D-rings for the plastron strap using small cable ties. A hole will need to be punched with an awl (or similar tool) through the hole in the loop and the plastron strap for the cable ties.

11. Next, secure the plastron strap below each of the D-rings with a cable tie by punching a hole with the awl through the tensioned plastron strap and its loose end below the D-ring.

12. Secure the shoulder straps with cable ties below their D-rings.

13. Tighten cable ties for the transmitter plate to the vinyl tubes.

14. Trim all excess strap material and cable ties.

Figure 7-3. Satellite tag attached using the harness attachment method (NMFS/SEFSC photo).

Direct Attachment Protocol

Epoxy Attachment for Satellite Tags on Hardshell Turtles (see Godley et al. 2002)

Holding – Use a tub to safely hold the turtle in a natural prone position while attaching the transmitter. The tub size will vary based on the size of the animal (e.g., a plastic fish box for small animals or a plastic pool or tank for large animals). Place a cushioned pad on the bottom of the tub to cushion the turtle. The tub will serve to comfortably restrict movement of the turtle during the attachment procedure and can be used aboard a boat or on land. A wet cloth draped over the turtle's eyes to completely block vision often reduces the turtle's desire to move. Shelter the turtle from

direct sunlight, wind, and rain with a tarp during the attachment procedure.

Preparing the carapace – Remove epibionts (barnacles, algae, etc.) from the carapace at the mounting and bonding site of transmitter. In general, the ideal location to place the transmitter is the point where the first and second vertebral scutes meet (Figure 7-4). This section of the carapace rises to a maximum point above the sea surface each time the turtle breathes, and the base antenna on the transmitter will break the plane of the water's surface. Alternatively, transmitters may be attached directly to the second vertebral scute on the carapace (Papi et al. 1997, Polovina et al. 2000, Griffin 2002). Attachment media may also encompass sections of the first and third vertebral scutes, as well as the first and second costal scutes. Thoroughly scrub these areas with a scrub brush and 10% povidone-iodine, rinse with fresh water, dry with a towel, and then lightly sand with sandpaper. When smooth, lightly wipe the entire area with an alcohol pad or a small amount of acetone.

Mounting the transmitter on the carapace – Activate the transmitter in the lab prior to entering the field. Coat all surfaces of the transmitter except the bottom with anti-fouling paint if desired, and cover saltwater switches with electrical or masking tape. The size and weight of the satellite transmitter used will depend on the size of the turtle. Large tags will be attached to the carapace using a two-part epoxy, or a combination of two-part epoxy and fiberglass resin and cloth (< 200 g). The tag and attachment materials should not exceed five percent of the turtle's body weight.

Use a two-part cool setting epoxy (e.g., Power-Fast®) to secure the transmitter on to the carapace. The epoxy components are discharged from the cartridge in equal amounts via a caulk gun, and are incorporated in a specialized mixing nozzle so no modification of amounts is required. There is no danger of setting too quickly. Use a small amount of epoxy (< 50 g) to create an even base for the transmitter to rest and to secure it to the carapace. Drying time will vary between 20 – 60 minutes depending on ambient temperature and humidity. Secure small tags with the epoxy alone; apply additional epoxy or two coats of fiberglass material on larger transmitters to ensure a long attachment life (i.e., one year). When the base has hardened, fiberglass cloth and resin (e.g., Power-Fast® or Bondo®) may be used to further secure the transmitter to the carapace from the edges and/or top to the surrounding scutes. If using fiberglass cloth and resin, use 20 drops of catalyst to two oz of fiberglass resin and mix liberally for about 15 seconds.

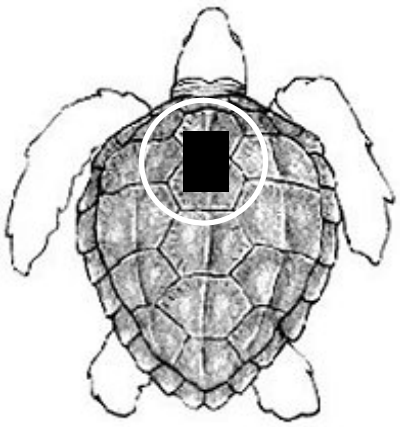
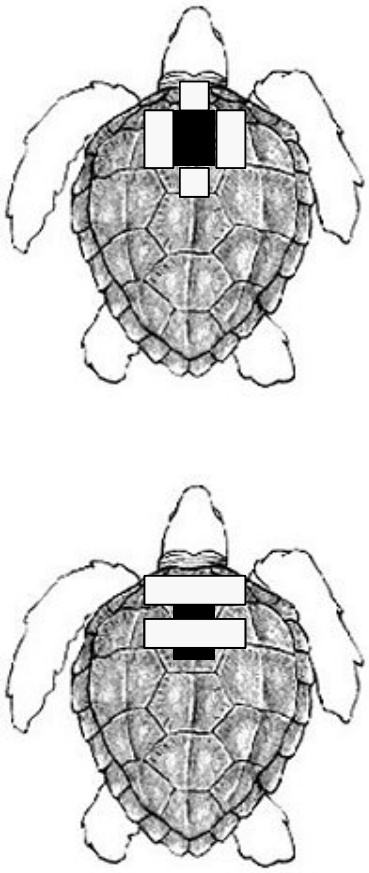


Figure 7-4. Position of satellite transmitter attachment on turtle's carapace (Diagram by C. McClellan, Duke University).

The amount of catalyst may change based on ambient temperatures and humidity, and will be tested in advance to determine hardening time. Use a liberal coat of mixed resin on the transmitter and carapace where pre-cut strips



Figures 7-5a and b. Placement of (a) the first layer and (b) the second layer of fiberglass (Diagrams by C. McClellan, Duke University).

of fiberglass cloth will be applied in two layers over the transmitter, allowing each layer to dry completely (approximately 15 – 20 minutes). Use two five cm wide by 11 cm wide by 5 cm long squares of fiberglass cloth in the first layer, one piece on each edge of the tag (Figure 7-5a). The second layer consists of two 5 cm wide by 13 cm long strips of fiberglass cloth, one over the tag and one across the front of the tag (Figure 7-5b).

Take care to prevent fiberglass resin from running off the shell or coming in contact with the turtle's skin or eyes by wiping up drips immediately. Maintain adequate ventilation while using fiberglass media (e.g., Bondo®). A coat of fiberglass anti-fouling paint may be applied over attachment media to prevent fouling on these materials. When the attachment materials are dry, remove the tape from the saltwater switches and polish with sandpaper to remove any residual grime. Sand the fiberglass as well to remove any sharp edges. Release the turtle at or near the point of capture. Ideally, turtles will be tagged on the boat and held no longer than 1.5 hours, barring unforeseen weather or logistical events (Figure 7-6).

An alternative attachment method is to use a roll of 1.0 cm diameter adhesive (e.g., Sonic Weld®, Ed Greene and Company) around the bottom edge of the transmitter to form a well, followed by application of epoxy resin (e.g., Foil Fast®, Rawlplug Company) epoxy to the entire bottom surface of the transmitter within the well using a glue gun. Heat generated by curing epoxy has not been noticed by researchers during the application process. Preparation and setting time is approximately one hour, after which turtles are released in close proximity to where they were collected.

Figure 7-6. A satellite tagged loggerhead ready for release (Photo by C. McClellan, Duke University).

Direct Satellite Tag Attachment for Leatherbacks

1. Immobilize the turtle and activate the tag. When handling the turtle and equipment, use disposable gloves and change them often to maintain the most sterile environment possible. Attachment methods may vary depending on tag design; one suggested attachment method is described here.

2. Pour enough 10% povidone-iodine to thoroughly soak the hardware (e.g., four 1/4" X 1 5/8" acetal polyoxymethylene resin (e.g., Delrin®) disks and a new three mm drill bit) in a bag. Agitate the bag frequently to disinfect the hardware.

3. Saturate sterile gauze sponges with 10% povidone-iodine or use 10% povidone-iodine scrubs and cleanse the central ridge area of turtle (Figure 7-7). Do this several times.

4. Install drill bit into a portable drill and drill two small holes through the ridge. If necessary, use a blood clotting agent such as Clotisol® or ferric subsulfate to stop bleeding by applying drops into the holes after first cleaning the dropper tip with an alcohol swab. The hole will only penetrate a few millimeters horizontally through the carapace ridge and will not enter the body cavity.

5. Flood holes thoroughly with 10% povidone-iodine.

6. Thread one monofilament or coated wire tether through an acetal polyoxymethylene resin disk that has been swabbed with triple antibiotic ointment (e.g., Neosporin®) on the bottom.

7. Swab outside of the tether monofilament with triple antibiotic ointment and pass through the hole.

8. Once passed through the hole, secure the monofilament with a second acetal polyoxymethylene resin disk (swabbed with triple antibiotic ointment) and a crimp so that the tether is tight and secure. Cut off any excess monofilament.

9. Repeat steps six through eight for the second monofilament tether.

Figure 7-7. Direct carapace attachment on leatherback (Photo courtesy of Sandra Ferraroli, Centre National de la Recherche Scientifique).

Sonic and Radio Transmitter Attachment

General information – Transmitters will be programmed by the manufacturer and tested in the lab prior to entering the field. Activation of the transmitter simply involves removing a magnet. Coat the transmitter with anti-fouling paint before attaching to the turtle.

Holding the turtle in a prone position – Use a container to safely hold the turtle in a natural prone position while attaching the transmitter. The container size will vary depending upon the size of the animal and could range from a

plastic fish box for small animals to a plastic pool or tank. The container will serve to comfortably restrict movement of the turtle to a minimum during the attachment procedure and can be used aboard a boat or on land. Place a cushioned pad on the bottom of the container and shelter turtles from direct sunlight, wind, or rain with a tarp during the attachment procedure. A wet cloth draped over the turtle's eyes to completely block vision often reduces the turtle's desire to move.

Mounting the sonic transmitter on the carapace – In general, locating the transmitter on the posterior section of the carapace will reduce drag and will keep the transmitter submerged even when the turtle surfaces to breathe (Figure 7-8). Sonic transmitters are available in various sizes enabling us to tag both small and large sea turtles (loggerhead, green, and Kemp's ridley). Given that the transmitter and attachment materials cannot exceed five percent of the turtle's body weight, transmitters will be placed only on turtles > 20 cm SCL.

Attachment media will encompass sections of the last vertebral scute as well as the last costal scute. Remove epibionts (barnacles, algae, etc.) from the carapace at the site of transmitter attachment using a hoof pick or other blunt instrument. Thoroughly scrub these areas, rinse with fresh water, dry, and then lightly sand with sandpaper. When smooth, lightly wipe the entire area with an alcohol pad or a small amount of acetone. Use a two-part cool setting epoxy (e.g., Power-Fast®) to secure the transmitter on to the carapace. The epoxy components are discharged from the cartridge in equal amounts via a caulk gun and are incorporated in a specialized mixing nozzle, so no modification of amounts is required, and there is no danger of setting too quickly. Use a small amount of epoxy (< 20 g) to create an even base for the transmitter to rest and to secure it to the carapace. Taper the attachment media to prevent it from catching on rocks or fishing nets. Drying time will vary between 20 – 60 minutes, depending on ambient temperatures and humidity. When the attachment materials are dry, release the turtle at or near the point of capture.

Mounting the radio transmitter on the carapace – Radio transmitters are available in various sizes, enabling tagging of both small and large sea turtles. The transmitter and attachment materials should not exceed five percent of the turtle's body weight. Therefore, transmitters should be placed only on turtles > 20 cm SCL. Small (e.g., ~30 g cylindrical) transmitters can be attached directly to the carapace of smaller turtles (25 – 40 cm SCL) or tethered to the posterior end of the carapace of larger turtles (> 40 cm SCL). Larger (e.g., ~60 g rectangular) transmitters can be attached directly to the carapace of larger turtles (> 40 cm SCL).

Use a two-part cool setting epoxy (e.g., Power-Fast®) to secure the transmitter to the

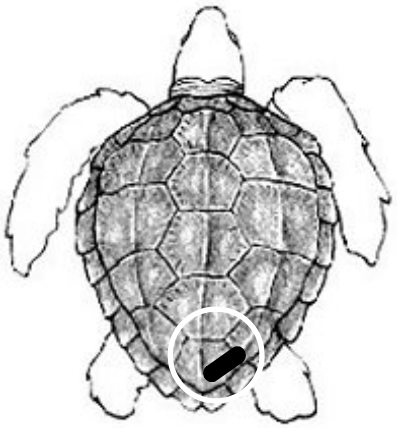


Figure 7-8. Position of sonic transmitter attachment (Diagram by C. McClellan, Duke University).

carapace. The epoxy components are discharged from the cartridge in equal amounts via a caulk gun and are incorporated in a specialized mixing nozzle, so no modification of amounts is required, and there is no danger of setting too quickly. Use a small amount of epoxy (< 20 g) to serve the dual function of creating an even base for the transmitter to rest and securing it to the carapace. Taper the attachment media to prevent it from catching on rocks or fishing nets. Drying time will vary between 20 – 60 minutes, depending on ambient temperatures and humidity. When the attachment materials are dry, release the turtle at or near the point of capture.

Stomach Temperature Pill

Satellite-linked data recorders (e.g., Mk10-AL, 93 x 51 x 22 mm, 125 g; Wildlife Computers Redmond, WA) and stomach temperature pills (e.g., STP3, 21.5 mm diameter, 63 mm length; Wildlife Computers, Redmond, WA) may be deployed in turtles > 105 cm in length. Currently these devices are used to record temperature as described here, but future advancements may allow multiple parameters to be sampled.

Adult loggerhead turtles maintain internal body temperatures several degrees higher than ambient water temperature (T_W) (Sato et al. 1994). Ingestion of prey at ambient T_W has the effect of rapidly lowering stomach temperature (T_S), such that fluctuations in T_S may be used to identify a feeding event. The magnitude of the decrease in T_S and time necessary for T_S to recover to previous levels following prey ingestion reflects both prey size and ambient T_W. The STP3 possesses four thermistors to detect T_S, and a transmitter to relay T_S data to a satellite-linked data recorder, such as the MK10-AL, mounted on the turtle's carapace. The T_S data are intercepted and archived by the MK10-AL instrument. Data recognition software then analyzes the T_S data to identify large fluctuations indicative of ingestion. When one of these events is recognized, software then pick 6 points that characterizes the fluctuation, records the time the fluctuation occurred, the depth at which the fluctuation was recorded, and the ambient Tw. This information is transmitted, along with location data and dive behavior data, the next time the Mk10-AL uplinks to an Argos satellite when the turtle surfaces to breathe.

The satellite-linked data recorder will be attached to the turtle's carapace between the first and second vertebral scutes using Power-Fast® marine epoxy or similar. Stomach temperature pills will be inserted in animals (must be > 105 cm CCL) to a depth of 20 – 25 cm into the esophagus using a lubricated flexible rubber tube. Generally it is not necessary to restrain the turtle with a net while inserting the STP3. Rather, use nylon webbing straps to hold the mouth open. One person holds strap on upper jaw and another person holds strap on lower jaw while a third person uses the lubricated rubber tube to push the pill into the turtle's esophagus.

The insertion of the pill is a quick procedure, and the turtle's mouth is usually held open for less than one minute. A damp cloth is placed over the turtle's eyes to keep it calm during the procedure. Ensure that the pill is properly sized for the animal to prevent potential intestinal blockage. Previous studies have shown that an STP3 inserted in this manner is eventually pushed into the stomach by peristaltic action and food ingestion (Southwood et al. 2005), causing no residual effects.

Chapter 8: Biopsy Sampling

Biopsies, the sampling of single or multiple tissues, are routinely collected to:

- Provide information relative to the life history of the population being studied – Skin biopsies have been collected for genetic studies, while bone biopsies have been collected for aging studies;

- Better understand the nature of a lesion and determine the most appropriate therapy – Single or multiple samples are collected, determined by the type of lesion biopsied;

- Determine sex – Small pieces of gonadal tissue can be evaluated histologically to determine the sex of the animal;

- Evaluate the animal for contaminants – Both fat and liver biopsies provide a way to monitor organochlorine contaminants in wildlife populations. Biopsies also may be obtained from other visceral structures, usually through a laparoscopic incision;

- Conduct stable isotope analysis – Analysis of stable isotope levels of carbon and nitrogen provides insight into diet, foraging behavior and potentially distributional patterns; and

- Conduct biochemical analyses – Muscle biopsies can be evaluated to determine aerobic and anaerobic metabolic capacity, thermal tolerance, or stable isotope analysis.

Skin Biopsy

Protocol for Turtles Boated or on Land

Small hardshell turtles should be turned onto their carapaces briefly to facilitate skin biopsy sampling; this may not be possible for large turtles. The sample site should be along the posterior edge of a rear flipper in soft tissue, not a scale. If a rear flipper is not accessible, samples can be taken from the front flippers as well. Thoroughly soak and scrub the area with 10% povidone-iodine solution followed by an isopropyl alcohol wipe, then thoroughly swab again with 10% povidone-iodine solution prior to sampling. A new, sterile biopsy tool should be used for each turtle to prevent cross-contamination.

The researcher should wear gloves to protect the hand that is holding the flipper and the sampling surface. A vial cap, plastic dive slate, or other plastic surface cleaned with 70% isopropyl alcohol should be placed beneath the sampling site as a hard surface against which to press. Press a new biopsy punch firmly into the flesh just along the posterior edge and rotate one complete turn, cutting all the way through the flipper to the plastic surface (Figure 8-1). Repeat the tissue punch process with the same punch to obtain two plugs from each animal. An alternative method is to remove a plug of skin from the shoulder region using a sterile 6 mm biopsy punch to cut a skin plug and forceps and surgical scissors to extract and trim the sample.

Figure 8-1. Skin biopsy taken from trailing edge of rear flipper (NMFS/SEFSC photo).

Place the tissue plugs into the vial containing a suitable storage solution, such as saturated NaCl solution with or without 20% DMSO. If the sample does not come out of the corer easily, place it into the vial by inserting a new, clean wooden applicator stick through the hollow handle of the biopsy punch, shaking the punch in the vial, or snapping the tip off of the biopsy punch and placing the entire tip in the vial. Wipe the punched area with 10% povidone-iodine solution. If necessary, a blood clotting agent, such as ferric subsulfate or Clotisol®, or a cyanoacrylate tissue glue such as Nexaban® (Veterinary Products Lab, Phoenix, AZ, USA) or an over-the-counter equivalent such as Super-Glue® or Krazy-Glue® can be used for hemostasis. Using a pencil, label a piece of waterproof paper with the date, species, id, master tag, and trip number if applicable, and place in the vial. Label the outside of the vial using a permanent marker with date, species, id, and master tag and seal the label with clear tape. To prevent spillage, wrap laboratory sealing film, such as Parafilm®, around the cap of the vial. Place vial within a labeled sample bag (e.g., Whirl-pak®) and close.

Wear gloves each time you collect a sample and handle the buffer vials. The NMFS/SEFSC observer programs currently use a saturated sodium chloride solution for tissue sample storage, but some programs may use 20% dimethyl sulfoxide (DMSO) buffer saturated with sodium chloride instead. If you are using DMSO buffer, it is nontoxic and nonflammable, but handling the buffer without gloves may result in exposure, producing a garlic/oyster taste in the mouth along with breath odor. This substance soaks into skin very rapidly along with any dissolved contaminants. Do not store the buffer where it will experience extreme heat, and do not freeze the sample. The buffer must be stored at room temperature or cooler, such as in a refrigerator.

Protocol for Turtles Not Boated

When a turtle that cannot be boated is alongside the vessel, a corer attached to a biopsy pole is used to obtain a biopsy sample. The sampling gear consists of a 12’ anodized aluminum breakdown biopsy pole, such as the NOAA/Epperly Biopsy Pole, or similar biopsy harpoon and a disinfected stainless steel biopsy corer.

Assemble the pole sections together if necessary to attain the desired pole length. The corers should be stored in ethanol-cleaned vials. Clean the end of the threaded stud on the biopsy pole section with an alcohol swab. Carefully remove the corer from its vial and screw it tightly on the end of the stud of the biopsy pole.

No more than two biopsies should be conducted per animal, and if you are unsuccessful obtaining a sample after two

attempts, no further attempt should be made (as required by permit conditions). Suitable sampling sites for hardshell turtles include the flippers, shoulders, and pelvic regions. A forceful jab perpendicular or oblique to the body is needed to penetrate the skin of most turtles (Figure 8-2). There are nerve bundles high on the shoulders near the carapace that should be avoided, as should the heavily vascularized armpit area. The best method to obtain biopsy samples from leatherbacks is to scrape a ribbon of tissue from the carapace with the corer, leaving a gray superficial scar that will heal well over time. Do not target the carapace, head and neck, or limbs with a jabbing motion when sampling leatherbacks.

Due care should be taken not to strike anyone when handling the pole onboard. Unscrew the corer from the pole, and place the entire corer with tissue sample into the sample vial. Do not attempt to remove the tissue from the corer. Clean the adapter stud with an alcohol swab and label the vial as previously described.

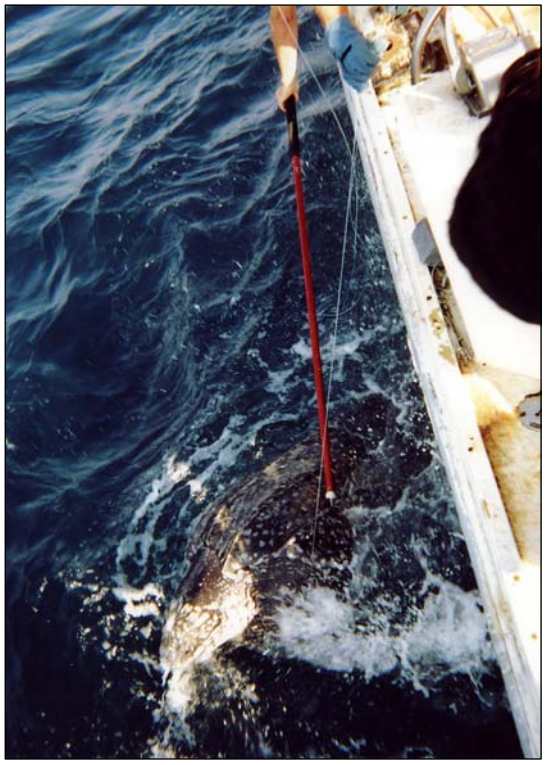


Figure 8-2. Taking a biopsy from a leatherback not boated (NMFS/SEFSC photo).

Lesion Biopsy

Samples may be taken to better understand the nature of a lesion and determine the most appropriate therapy. Single or multiple samples are collected, determined by the type of lesion biopsied. The methods used to collect and preserve the sample vary, depending upon the nature of the lesion and which diagnostic tests will be performed. For histologic evaluation, samples are fixed in 10% neutral buffered formalin (NBF). Samples to be examined for microbial isolation attempts are first cleansed with sterile saline before being placed in an appropriate transport media or sterile container for shipment to a diagnostic laboratory. Never freeze tissues undergoing histologic examination to preserve them, as this will result in tissue damage due to crystallization.

Fat Biopsy

Subcutaneous fat is collected from the inguinal region (Figure 8-3). Only a veterinarian or other highly trained individual using sterile surgical instruments should conduct this procedure. This procedure should not be performed on any compromised animals (e.g., those that are emaciated, with heavy parasite loads or bacterial infections) unless medically advised or necessary based on the experimental design of a health related study. After manually restraining the turtle, scrub the inguinal area with 10% povidone-iodine solution.

Infuse lidocaine hydrochloride (e.g., Phoenix Pharmaceuticals, Inc., St. Joseph, MO, USA), up to 2 mg/kg, intradermally and subcutaneously around the proposed incision sites in the inguinal areas ten minutes prior to the procedure to block any pain and discomfort to the turtle. Pull the rear flipper on the side of the incision back and toward the opposite side, causing the skin to remain taut. Make a two cm incision in the inguinal fo ssa using a disposable scalpel blade; blunt dissection of the connective tissue will be accomplished using surgical scissors. After grasping the connective tissue layer with forceps, use the surgical scissors to cut sharply down into the subcutaneous fat. Use the connective tissue layer to assist with gripping the fat with the forceps (as the consistency of the fat makes it difficult to seize it), and excise an approximately 0.4 – 4.0 g (~0.44 –4.4 cc) of the fat, which will then be placed in hexane-rinsed aluminum foil and immediately frozen at -80°C.

To close the incision, use a buried, simple continuous (or continuous horizontal mattress) subcuticular pattern using a monofilament nominally absorbable suture, such as one of the three following (Govett et al. 2004): polyglyconate (e.g., Maxon™, US Surgical, Norwalk, CT, USA), or poliglecaprone 25 (e.g., Monocryl™, Ethicon, Somerville, NJ, USA), or polydioxanone (e.g., PDS II™, Ethicon), followed by cyanoacrylate tissue glue on the surface. Depending on the size of the biopsy, it may be necessary to close the fat layer to eliminate dead space and reduce the chances of seroma or hematoma formation.

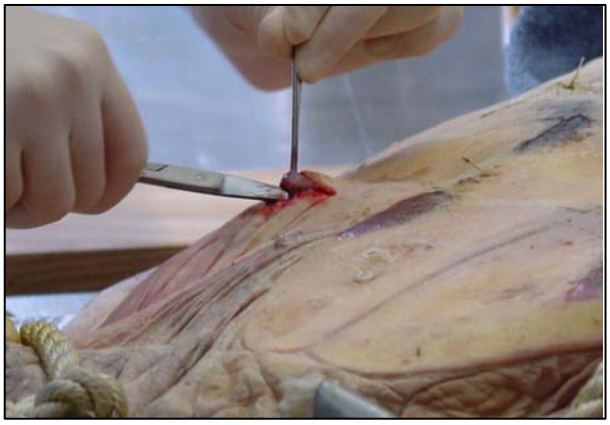


Figure 8-3. Taking a fat biospy sample (NMFS/OPR photo).

To reduce post-surgical complications (i.e., infections), a single dose of antibiotic (Table 8-1) may be administered prior to surgery. A non-steroidal, anti-inflammatory drug (e.g., ketoprofen at 2 mg/kg IM, MacLean et al. 2008) may be administered to reduce post-operative pain. If administered to green turtles, be especially watchful, as an older related anti-inflammatory compound, flunixin meglumine (e.g., Banamine®), can be lethal to green turtles (D. Mader, pers. comm.).

Drug	Dosage	Source
ceftazidime	20 mg/kg IM	Stamper et al. 1999
oxytetracycline	25 mg/kg IM	Harms et al. 2004
enrofloxacin	20 mg kg oral	Jacobson et al. 2005
ticarcillin	50 or 100 mg/kg IM	Manire et al. 2005
amikacin	5 mg/kg IM	Carpenter 2005

Table 8-1. Several antibiotic choices to reduce post-surgical complications.

Muscle biopsy

Surgical muscle biopsy (Southwood et al. 2003, Southwood et al. 2006)

Muscle tissue may be collected for biochemical analyses to determine aerobic and anaerobic metabolic capacity, thermal tolerance, or stable isotope analysis. Muscle tissue may be obtained from either the iliotibialis muscle of the rear flipper (Figure 8-4a) or the deltoidus muscle (Figure 8-4b), which protracts and abducts the front flippers during swimming. Only a veterinarian or other highly trained individual using sterile surgical instruments should conduct this procedure. This procedure should not be performed on any compromised animals (e.g., those that are emaciated, with heavy parasite loads or bacterial infection) unless medically advised or necessary based on the experimental design of a health related study.

Figures 8-4a and b. Muscle tissue may be excised from (a) the iliotibialis muscle or from (b) the deltoidus muscle (Photos from A.L. Southwood).

Thoroughly clean the incision area with 95% ethyl alcohol and 10% povidone-iodine solution. Inject up to 2 mg/kg 2% lidocaine (e.g., Vetoquinol Inc., Lavaltrie, QC) intramuscularly, intradermally, and subcutaneously into the incision area 10 minutes before the sample is to be taken. Make a 1.5 cm incision in the skin using a disposable scalpel blade and use surgical scissors for blunt dissection to expose muscle. Grasp muscle tissue with tissue forceps and use surgical scissors to excise approximately 200-300 mg of muscle tissue. Wrap the excised tissue in aluminum foil or place in a suitable storage vial and freeze in liquid nitrogen immediately. Use monofilament absorbable suture (e.g., polygloconate, MaxonTM, US Surgical, Norwalk, CT, USA; polydioxanone, Ethicon PDS IITM, Piscataway, NJ, USA; or poliglecaprone, Ethicon MonocrylTM) to close the incision area. A simple interrupted pattern with 3-0 suture may be used to pull muscle tissue together and horizontal mattress using 2-0 suture may be used to close the skin incision. Treat incision area with topical antibiotic cream (e.g., povidone-iodine ointment or triple antibiotic ointment) and give the turtle a single dose of antibiotic (Figure 7-4) at a site other than the incision site to reduce the risk of infection. Samples should be stored in an ultrafreezer at -80ºC.

Non-Surgical Muscle Biopsy

When a small sample is sufficient, an alternative non-surgical method, which is

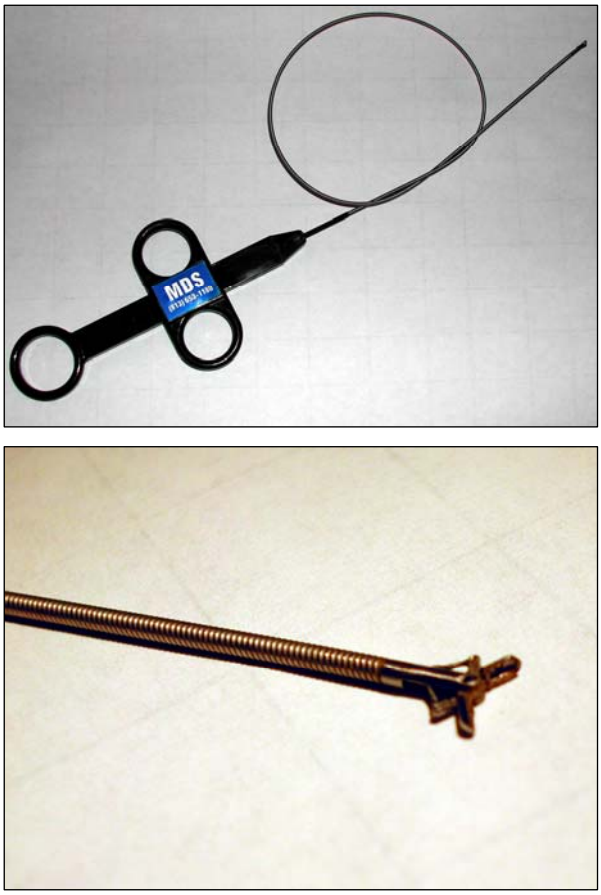
possible to conduct in the field, is to take a muscle biopsy sample in the shoulder region after thoroughly cleaning the area with 10% povidone-iodine solution and alcohol. Collect one sample on each side of the neck using a sterile 6 mm biopsy punch to the depth of the corer. Hold the sample with forceps and trim using surgical scissors. The samples should be placed in a suitable storage vial and stored in an ultrafreezer at -80ºC. If bleeding occurs, a blood clotting agent, such as ferric subsulfate or Clotisol® can be used, or the region may be cauterized or sutured if necessary.

Biopsies Taken During Laparoscopy

Laparoscopies (Chapter 15: Laparoscopy) are performed to identify the sex of the animal, as well as to collect tissues for health assessments and for histology to confirm sex identification. It is possible to sample tissues such as the gonads, liver, kidney, spleen, and mesenteric fat, as well as any lesions. Below we describe in detail the methods for two of these; the methods for the other tissues will be done with similar care and attention to the well being of the turtle.

Gonad Biopsy

This procedure can be performed in the course of laparoscopy for sex determination, but should only be conducted by a veterinarian or other highly trained individual. This procedure should not be performed on any compromised animals (e.g., those that are emaciated or having heavy parasite loads, bacterial infections, etc.) unless medically advised or necessary based on the experimental design of a health related study. Propofol may be administered (5 mg/kg IV, MacLean et al. 2008) as a short-acting (depending on ambient temperature considerations) general anesthetic prior to the procedure. A nonsteroidal anti-inflammatory drug (e.g., ketoprofen, 2 mg/kg IM, MacLean et al. 2008) may be administered to reduce post-operative pain with no sedation, but special care should be taken with green turtles, as an older related anti-inflammatory compound, flunixin meglumine (e.g., Banamine®), can be lethal in that species (D. Mader, pers. comm.). A single pre-surgical dose of antibiotic (Table 8-1) may be administered to reduce the chances of post-surgical infections.



Figures 8-5a and b. Endoscopic cup biopsy forceps used for gonad biopsies (Photo by J. Vaughan, Florida Atlantic University).

Follow the procedure for laparoscopy in Chapter 15. Once the gonad is identified, extend the incision about three to four mm, attach the biopsy guide over the scope or open a biopsy port if the trocar is so equipped, and feed the biopsy tool into its port. Using an endoscopic cup biopsy forcep (Figures 8-5a and b), sample a one to two mm piece of the side of the cranial 1/3 of the gonad (about 1/3 the way down), avoiding vascular areas (the gonad sits on top of some of the renal blood vessels). Also, make sure the paramesonephric duct (i.e., the oviduct in females) is not lying on the sampling site. Sampling 1/3 of the way down from the cranial pole of the gonad will avoid accessory ducts (epididymus, vas deferens, Wolfian ducts, etc.), thus allowing access to the greater concentrations of follicles in the caudal ends of the ovaries. In addition, if one were to sample all the way cranially, this may disrupt the epididymus/vas deferens of males. Using a clean hypodermic needle, retrieve samples from the forcep cup, place into microcentrifuge tubes (e.g., Eppendorf®) filled with 10% buffered formalin, and store at room temperature. If any bleeding occurs (it is exceedingly rare for it to bleed beyond the surface sampling site), administer 10 ml/kg of intracoelomic fluids (e.g., Lactated Ringer's solution, 0.9% saline solution). After completing the examination, remove all air prior to suturing the wound. Close the incision as described in Chapter 15. Label the biopsy sample tubes with a permanent marker on the top and the side and properly package them prior to shipping.

Liver Biopsy

Liver biopsy samples for toxicology analysis may be collected in the course of laparoscopy for sex determination. This procedure should not be performed on any compromised animals (e.g., those that are emaciated or having heavy parasite loads, bacterial infections) unless medically advised. Propofol may be administered (5 mg/kg IV, MacLean et al. 2008) as a short-acting (depending on ambient temperature considerations) general anesthetic prior to the procedure. A nonsteroidal anti-inflammatory drug (e.g., ketoprofen, 2 mg/kg IM, MacLean et al. 2008) may be administered to reduce post-operative pain with no sedation, but special care should be taken with green turtles, as an older related anti-inflammatory compound, flunixin meglumine (e.g., Banamine®), can be lethal in that species (D. Mader, pers. comm.). A single pre-surgical dose of antibiotic (Table 8-1) may be administered to reduce the chances of post-surgical infections.

Follow the procedure for laparoscopy in Chapter 15. After laparoscopic examination of the gonads (if applicable), leave the laparoscope and sleeve in place and make a second one cm skin incision in the same inguinal space as the laparoscope. Advance a second trocar into the body cavity at a location that can be verified by the laparoscope as safe from any internal organ contact. Once the trocar is in the body cavity, advance a 4-mm cup biopsy instrument into the field of view and guide it to the liver. Take the biopsy at a location at the margin of the liver with minimal observable vascularity, avoiding the vascular areas (the gonad sits on top of some of the renal blood vessels). Make sure the paramesonephric duct (that will be the oviduct in females) is not lying on the sampling site. Using an endoscopic cup biopsy forcep, sample a one to two mm piece of the liver by firmly clamping the desired tissue with the cutting cup biopsy tip and retracting until the

tissue comes away. Obtain two biopsies of approximately 0.1 g (one to two mm) each from each turtle. Use a hypodermic needle to get the samples out of the forcep cup and into microcentrifuge tubes (e.g., Eppendorf®) filled with 10% buffered formalin. Observe the biopsy site directly for hemorrhage; if clotting fails to occur rapidly, insert a small piece of absorbable gelatin sponge hemostatic device (e.g., Gelfoam® Pharmacia & Upjohn, Kalamazoo, MI, USA) via the instrument port, and apply to the biopsy site to promote clotting. Close the incision as described in Chapter 15.

Release

Hold turtles receiving propofol out of water for at least one hour following the conclusion of the procedure, and do not return to the water until fully responsive. Hold all animals temporarily in tanks to ensure normal swimming and diving activity have returned prior to release.

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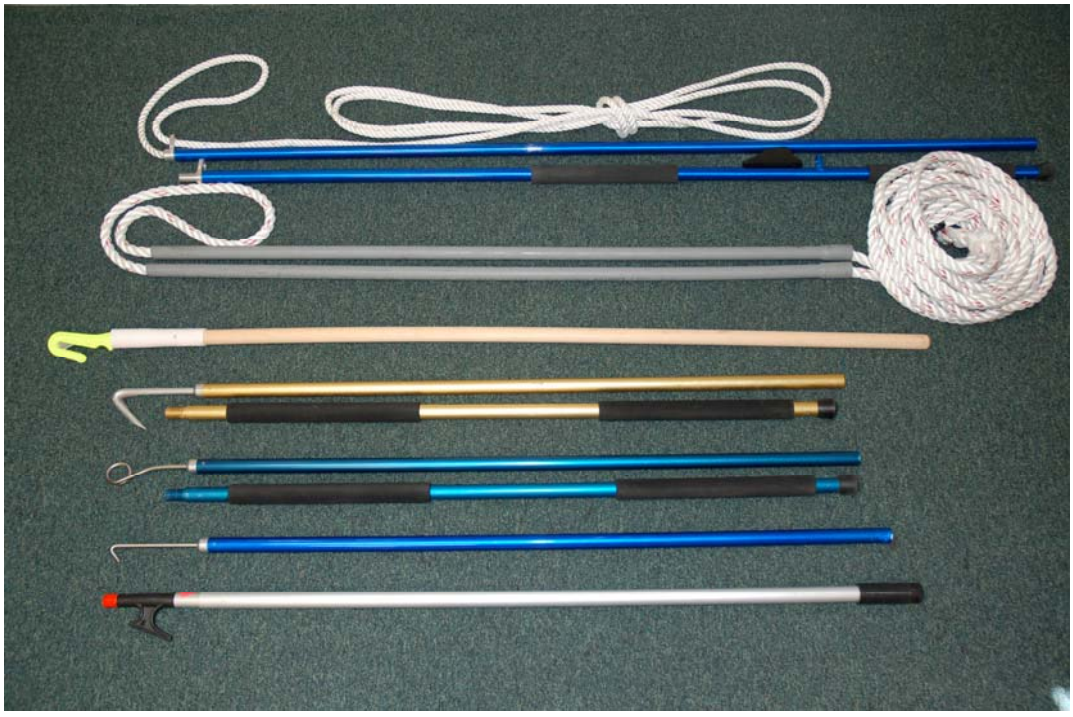
NOAA Technical Memorandum NMFS-SEFSC-580

CAREFUL RELEASE PROTOCOLS FOR SEA TURTLE RELEASE WITH MINIMAL INJURY



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December 2008

NOAA Technical Memorandum NMFS-SEFSC-580

CAREFUL RELEASE PROTOCOLS FOR SEA TURTLE RELEASE WITH MINIMAL INJURY

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December 2008

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ACKNOWLEDGEMENTS

The development of these protocols involved a large number of very cooperative people from government, industry, and academia. We are especially grateful to all the NMFS fisheries observers who have provided their feedback on the use of careful release equipment and protocols. Invaluable was the cooperation and assistance of the captains, crew, managers, and owners of the vessels participating in the NED experimental fishery for their input and willingness to try the gear removal devices and develop many of the procedures outlined in this document.

We appreciate also the efforts of many past and current NOAA Fisheries staff and contractors: Debra Abercrombie, Myrto Argyropoulou, Larisa Avens, Lawrence Beerkircher, Lisa Belskis, Charles Bergmann, Cheryl Brown, Marina Burgos, Kimberly Damon-Randall, Sheryan Epperly, Lance Garrison, Dominy Hataway, Ben Higgins, Nick Hopkins, Dennis Lee, Joanne Braun-McNeill, Sara McNulty, David Morin, Chris Sasso, Lesley Stokes, Wendy Teas, and John Watson.

Many thanks go to the Blue Water Fishermen's Association, Fisheries Research Institute, and Aquatic Release Conservation (ARC). Special thanks go to Shawn Dick, Jess Dick, Kristin Raabe, and the entire staff from ARC for their contributions. We also would like to thank our academic colleagues for their input: Dr. Craig Harms and Dr. Jeanette Wyneken. The NOAA/Laforce Line Cutter was designed by Lionel Laforce, the NOAA/Arceneaux Line Clipper by Stuart (Joe) Arceneaux, and the NOAA/Bergmann Dehooker by Charles Bergmann. Some of the devices were conceptualized by members from the industry: the turtle tether by Jay McCormack (current version was designed by ARC), the T&G Ninja Sticks by Tony Geismann and Georg Hinteregger, the Roby Dehooker by Doug Roby, the Scotty's Dehooker by Scott Drabinowitz, the large turtle hoist by Jim Budi and Malcolm MacLean, and the ARC Dehookers by Shawn Dick. Earlier versions of this document benefited from reviews by a number of people, including Colleen Bass, the late Nelson Beideman, Russell Dunn, Greg Fairclough, Rick Pearson, and Shawn Dick.

TABLE OF CONTENTS

Appendix A: Design Standards and Equipment for the Careful Release of Sea Turtles Caught in Hook and Line Fisheries

List of Figures

Chapter 1 Introduction

The following sea turtle handling protocols describe the tools and techniques for removing fishing gear from incidentally captured sea turtles. They should be followed whenever an interaction, such as a hooking and/or an entanglement, with a sea turtle occurs. The equipment and techniques described here are intended to reduce sea turtle injury and to promote post-release survival. The document, which updates Epperly et al. 2004, is designed primarily to give specific handling guidelines for removing gear from sea turtles captured in hook-and-line fisheries. Interactions with other gear types (e.g., trawls, gillnets, fixed gear) and species (e.g., fish, marine mammals) are mentioned briefly here, but this is not intended to be a comprehensive guide for interactions with these gear types or species.

These protocols synthesize the results of scientific research involving sea turtle mitigation measures and post-hooking mortality criteria developed for pelagic longline fisheries. In 2001-2003, experiments were conducted in the Western Atlantic Northeast Distant Waters statistical reporting area (NED) to evaluate sea turtle mitigation measures in the pelagic longline fisheries (Watson et al. 2004, Watson et al. 2005). Post-trip interviews with the captains and NMFS observers were conducted to specifically discuss the efficacy of various tools provided to remove gear from sea turtles. Based on user feedback from these experiments and field-testing subsequent to these experiments, gear removal tools have been updated, and equipment design standards have been revised accordingly.

Several fisheries have mandatory release gear requirements and handling and release guidelines for the handling of incidentally-caught sea turtles [e.g., 69 FR 40734, July 6, 2004 (HMS PLL); 71 FR 45428, August 9, 2006 (GOM reef fish); 72 FR 5633, February 7, 2007 (HMS BLL); HMS pelagic longline and bottom longline fishery regulations are located in 50 CFR 635 and South Atlantic snapper-grouper and Gulf of Mexico reef fish regulations are located in 50 CFR 622]; requirements and appropriate release tools may vary by fishery. This document contains the general approved design standards for all currently certified release gears. Individual fisheries may have more specific design standards. Check with the applicable regulations as the final authority for required tools and specifications in each fishery. A laminated instruction card for sea turtle handling/release guidelines should be prominently displayed in the wheelhouse or near the steering station for instant reference, and this may be required by some fisheries (e.g., Atlantic HMS fisheries, 66 FR 48813, September 24, 2001).

This guidance is intended for lawful activities authorized under the ESA, including prosecution of fisheries with incidental take statements and actions to provide assistance to stranded turtles. A demonstration of the use of these tools and techniques can been seen in the video “Removing Fishing Gear from Longline Caught Sea Turtles” (Hataway and Epperly 2004).

Handling Recommendations for Other Species

Although these release protocols and equipment design standards have been developed primarily with sea turtles in mind, many of the devices and techniques also are effective on some species of fish, marine mammals and seabirds. Although bringing sea turtles onboard for gear removal is recommended whenever feasible, it is not advisable to bring most other large species (e.g., marine mammals, medium and large sharks, sawfish, billfish, some finfish) onboard for gear removal. Deeply ingested (where the insertion point of the barb is not visible) hooks should not be removed from any species, including sea turtles; however, all species would benefit from having as much line removed from the hook as possible. For further information on reef fish release, including discussions on hook removal and weighted release devices ("release sinkers"), see Bartholomew and Bohnsack (2005). Information on using venting tools may be found at: http://www.flseagrant.org/program_areas/fisheries/venting/ and http://isurus.mote.org/research/cfe/fish-bio/how-to-vent-a-fish.htm.

Caution must be exercised when handling sharks (Figure 1-1a), and the use of long-handled dehookers is advised. Billfish (Figure 1-1b) and tuna often benefit from dehooking and resuscitation or recovery before release; see details on billfish handling and recovery in Prince et al. (2002). Specific guidelines for releasing smalltooth sawfish have been established (71 FR 45428, August 9, 2006), and additional information on sawfish and billfish/tuna handling can be found at: http://www.flmnh.ufl.edu/fish/education/sawfishbrochure.pdf, http://www.nmfs.noaa.gov/pr/species/fish/smalltoothsawfish.htm, and http://www.sefsc.noaa.gov/fisheriesbiology.jsp.

Figures 1-1a and b. Dehooking a shark (a) and recovering a billfish (b) before release [Photos courtesy of Aquatic Release Conservation (ARC)].

Sturgeon bycatch, including several Endangered Species Act (ESA) listed species, has been documented in several coastal and estuarine fisheries that use gill nets, trawls, pots, traps, weirs, pound nets and hook-and-line. In some instances, particularly when captured in gill nets, the fish

may benefit from resuscitation if their opercular flaps were obstructed or in areas of low dissolved oxygen. If a sturgeon is removed from fishing gear and appears non-responsive, attempt to resuscitate the fish by flushing water over the gills for several minutes (~ five to ten minutes) or "swim" the fish by gently moving it through the water to flush water over the gills.

More information on sturgeon conservation can be found at:
http://www.nmfs.noaa.gov/pr/species/fish/ and at http://www.nero.noaa.gov/prot_res/.

Marine Mammal Careful Handling and Release Guidelines

Summarized from: Marine Mammal Handling/Release Guidelines: A quick reference for Atlantic pelagic longline gear (Appendix D).

Available from: http://www.nmfs.noaa.gov/pr/pdfs/interactions/handling_release.pdf

Marine mammal interactions are a relatively rare event in most fisheries; however, due to the protected status and small population sizes of most marine mammal species, each event is significant. Therefore, it is important that fishermen provide as much documentation as possible about these interactions and work to carefully remove gear from marine mammals where conditions and safety considerations allow. When an interaction with a marine mammal occurs, the fishermen should document the appearance and size of the animal, the types of injuries that occurred, efforts to release the animal, and the characteristics of any gear remaining on the animal after release. These data on each marine mammal interaction must be reported to the NMFS Office of Protected Resources on the Marine Mammal Injury/Mortality Reporting Form (see reporting address and form availability information below) if there is an incidental mortality or injury to a marine mammal during commercial fishing activities. The incident must be reported within 48 hours after the end of the fishing trip, or for non-vessel fisheries, within 48 hours of the occurrence. Detailed documentation is critical because if this whale is seen again with the gear remaining or with serious injuries, it could be counted twice against the allowed incidental take for the fishery if the initial interaction was not properly documented and reported.

In the case of small cetaceans (e.g, dolphins and pilot whales) entangled in fishing gear or hooked, the crew should work carefully to disentangle the animal and/or remove gear as conditions and human safety allows. The vessel crew should avoid abrupt actions or vessel movements that may panic the animal. The vessel should stop alongside the animal, attempt to recover gear, and gently work to bring the animal alongside the vessel. Work to minimize the amount of tension on the animal from gear remaining in the water, and ensure that the animal has access to the surface to breathe. Cut wraps or other entangling gear from the animal's body using a gaff or long-line cutter, being careful to avoid direct contact between the animal and sharp objects. If the animal is hooked, cut the barb off the hook using long-handled bolt cutters and/or use a NMFS approved de-hooking device to remove the hook. If a hook remains attached to the animal, cut any attached line as close to the hook as possible.

In the case of large whales (for example humpback whales, right whales, or sperm whales), fishers should not attempt to directly disentangle the animal without assistance. Instead, the vessel should be maneuvered in such a way as to minimize tension on the line, and the fishers

should immediately contact the U.S. Coast Guard at VHF Ch. 16 or contact the Provincetown Center for Coastal Studies Disentanglement Hotline at (800) 900-3622 for instructions if fishing within the U.S. EEZ. It is strongly recommended that disentanglement is only attempted with the assistance or advice of these experts. However, if contact is not possible (e.g., due to the vessel's location), the decision to attempt disentanglement should be made based on the experience and comfort level of the crew due to the significant risk of the procedure. If the crew decides to proceed with disentanglement, proper documentation of the interaction (video, multiple photographs and drawings) is essential. The primary goal if attempting disentanglement should be to remove all complete loops wrapped around the animal if possible. If the line is embedded in the flesh and healed over, cut the lines on either side as short as possible, and do not attempt to remove that section of line. Never enter the water to attempt disentanglement under any circumstances.

If a marine mammal interaction occurs, it is likely that another will occur if fishing is continued in the same area. Following an interaction, fishermen should notify other vessels working in the area that the interaction occurred and move to another area or wait 48 hours before continuing fishing operations.

Contact Information: NMFS Office of Protected Resources Attn: MMAP, 1315 East-West Highway, Silver Spring, MD 20910. Fax Number: 301-427-2522.

MMAP Form Available at:
http://www.nmfs.noaa.gov/pr/pdfs/interactions/mmap_reporting_form.pdf.

Vessel/Crew's Responsibilities upon Sighting a Sea Turtle

Generally, it is expected that all turtles less than three feet straight carapace length can be boated safely if sea conditions permit; larger turtles should also be boated when conditions and equipment permit. If it is determined that the turtle cannot be brought aboard without causing further injury to the turtle, or if conditions are such that the turtle cannot be safely brought aboard, then protocols for turtles not boated should be followed (refer to Chapter 2). Whenever possible, turtles should be brought onboard to make gear removal easier and safer, following the handling guidelines for turtles boated (refer to Chapters 3 - 5). The vessel's crew must attempt to remove all of the gear from the turtle. The captain and crew are responsible for the turtle's safety from first sighting until release, and all efforts should be made to release the turtle with minimal injury and minimal remaining gear.

Gear Removal Protocols

General guidelines for removing gear from sea turtles not boated and boated follow in Chapters 2 – 5. These removal tools and techniques are applicable to a variety of fisheries, but a few gear-specific protocols are introduced here.

Trawl Fisheries

In trawl fisheries, care should be taken not to drop the turtle from the net onto the deck below or allow the bag to slam into the side of the vessel, as this can result in serious injury. Turtles incidentally captured in trawl fisheries may have sustained an extended period of forced submergence and may require resuscitation (Chapter 3).

Gillnet Fisheries

If a sea turtle is entangled in gillnet gear, slow the vessel and adjust the vessel direction to move towards the turtle. Once the turtle is brought alongside the vessel, stop and put the vessel in neutral. Slowly retrieve the net, avoiding tugging or yanking motions. Considering the size of the turtle, sea conditions, and crew safety, determine whether the turtle can be boated. Avoid pulling up the turtle by the gear that it is entangled in, as this could injure the turtle. Bring the turtle onboard using a dip net or turtle hoist. If the turtle cannot be disentangled easily from the net, carefully cut the net off the turtle using a blunt-sided line cutter and attempt to remove any gear attached to the turtle. If conditions do not permit the turtle to be boated, control the turtle with a pair of turtle control devices if possible, and bring the turtle close to the vessel. Try to work the turtle free from the net, and use long-handled line cutters to cut the net and lines off of the turtle if necessary.

Fixed Gear Fisheries

Sea turtles can become entangled in the vertical lines of fixed gear (e.g., crab pots, whelk pots). If a turtle is encountered entangled in fixed gear, contact the NMFS Northeast Region Stranding Hotline at 1-978-281-9351 (when the interaction occurred in the coastal waters of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, and Virginia) or the U.S. Coast Guard on VHF Ch. 16 (all other U.S. coastal waters) for further instructions. It is recommended that disentanglement is only attempted with the assistance or advice of experts.

Specific guidelines for disentangling sea turtles captured in fixed gear, gear collection protocols and required documentation procedures can be found at:
http://www.nero.noaa.gov/prot_res/stranding/stdn.html and
http://www.nero.noaa.gov/prot_res/stranding/SeaTurtleDisentanglementNetwork.pdf.

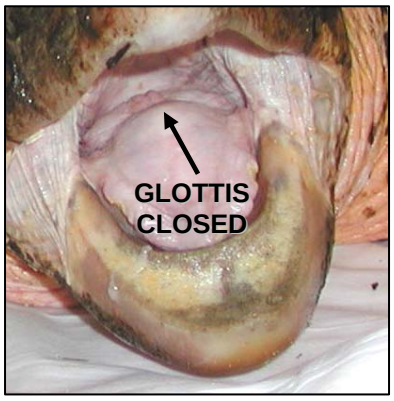
Hook-and-line Fisheries

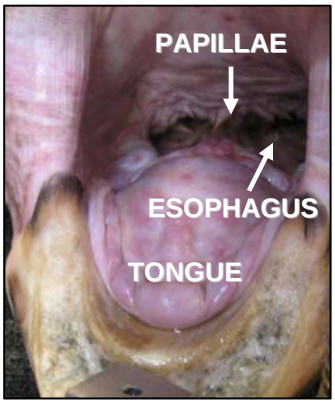
Captains and crews in hook-and-line fisheries should scan the line as far ahead as possible during gear retrieval to sight turtles in advance and to avoid getting ahead of the line while retrieving gear. Upon sighting a turtle, the vessel and line reel speed should be slowed and the vessel direction adjusted to move toward the turtle, minimizing tension on the line. Gentle, consistent tension should be kept with enough slack to keep the turtle near the vessel but in the water. Once the turtle is brought alongside the vessel, stop and put the vessel in neutral. Do not use gaffs or other sharp objects in direct contact with the turtle to retrieve or control it, although a gaff may be used to control the line. Assess the turtle's condition and size, nature of the interaction,

location of the hook, and available crew. The vessel must be stopped in order to respond to these interactions, and a decision must be made whether the turtle can be brought onboard safely. There are three possible sea turtle interactions with hook-and-line fishing gear: (1) entangled but not hooked, (2) hooked but not entangled, and (3) hooked and entangled. The protocols here are written to optimize the success of gear removal, utilizing at least three crew members in some scenarios. If there are not at least three crew members available, modifications to the protocols have been suggested where appropriate (e.g., the turtle control devices can be tied off, some mouth gags offer hands-free operation).

Assessing Whether to Remove Hooks

The decision whether to remove a hook is very important, and may directly affect the turtle's chances for survival. If you are unsure whether hook removal will cause further serious injury to the turtle, do not remove the hook. All externally embedded hooks should be removed. Chapter 4 contains details on opening the mouth of boated turtles to conduct an assessment of ingested hook location. Hooks in the mouth should be removed when they are visible in part or whole, but judgment should be used in each case. If the hook is in the braincase, glottis, or otherwise deeply embedded where you believe removal will cause more damage, do not remove the hook.





Figures 1-1 a, b and c. Oral cavity anatomy [(a) Photo courtesy of Don Lewis, (b) & (c) NMFS/SEFSC photos]

The glottis (Figures 1-1a and b) is located in the middle of the tongue (Figure 1-1c, large muscular organ fixed to the floor of the mouth), and consists of the opening to the trachea and the valve to open and close the airway. The esophagus begins at the back of the mouth and is lined with papillae (Figure 1-1c). Only remove hooks from the esophagus (Figure 1-1c) when the insertion point of the barb is clearly visible, and exercise extreme caution during hook removal. Never attempt to remove a hook that has been swallowed when the insertion point is not visible, as removal may cause more damage to the turtle than leaving the hook in place. When a hook cannot safely be removed, monofilament cutters should be used to cut the line as close as possible to the eye of the hook. If part of the hook is visible and accessible, but cannot be removed (e.g., hook in glottis), bolt cutters should be used to cut off and remove the visible part of the hook. See Chapter 2 for details about removing hooks from turtles not boated and Chapter 5 for turtles that are boated.

Releasing the Turtle

Once gear is removed and the turtle recovered, boated turtles should be released in waters of similar temperature as at capture, when fishing or scientific collection gear is not in use, the engine is in neutral, and in an area where they are unlikely to be recaptured or injured by vessels. Make sure that the turtle is safely away from the vessel before starting the engines. Release the turtle by lowering it over the aft portion of the vessel, close to the water's surface, when gear is not in use and the engines are in neutral. The turtle's behavior and swimming and diving abilities should be monitored after release and recorded. A turtle that has shown no sign of life after 24 hours on deck may be considered dead and returned to the water in the same manner.

Chapter 2 Equipment and Techniques for Sea Turtles Not Boated

When a turtle is too large to be boated, or if sea conditions prevent the safe boating of turtles, the gear must be removed while the turtle remains in the water. The turtle should be brought as close as possible and allowed a short time to calm down if necessary before being brought fully alongside, where gear removal must be conducted as quickly as possible. Do not ever enter the water to remove gear from an animal under any circumstances. The first section in this chapter details the tools and methods to control the turtle for both the crew's and the turtle's safety. The second section details the tools and techniques to be used for gear removal. Next, different possible scenarios involving three types of potential hook-and-line gear interactions are described, outlining the combination of tools (Figure 2-1) best adapted for each scenario.

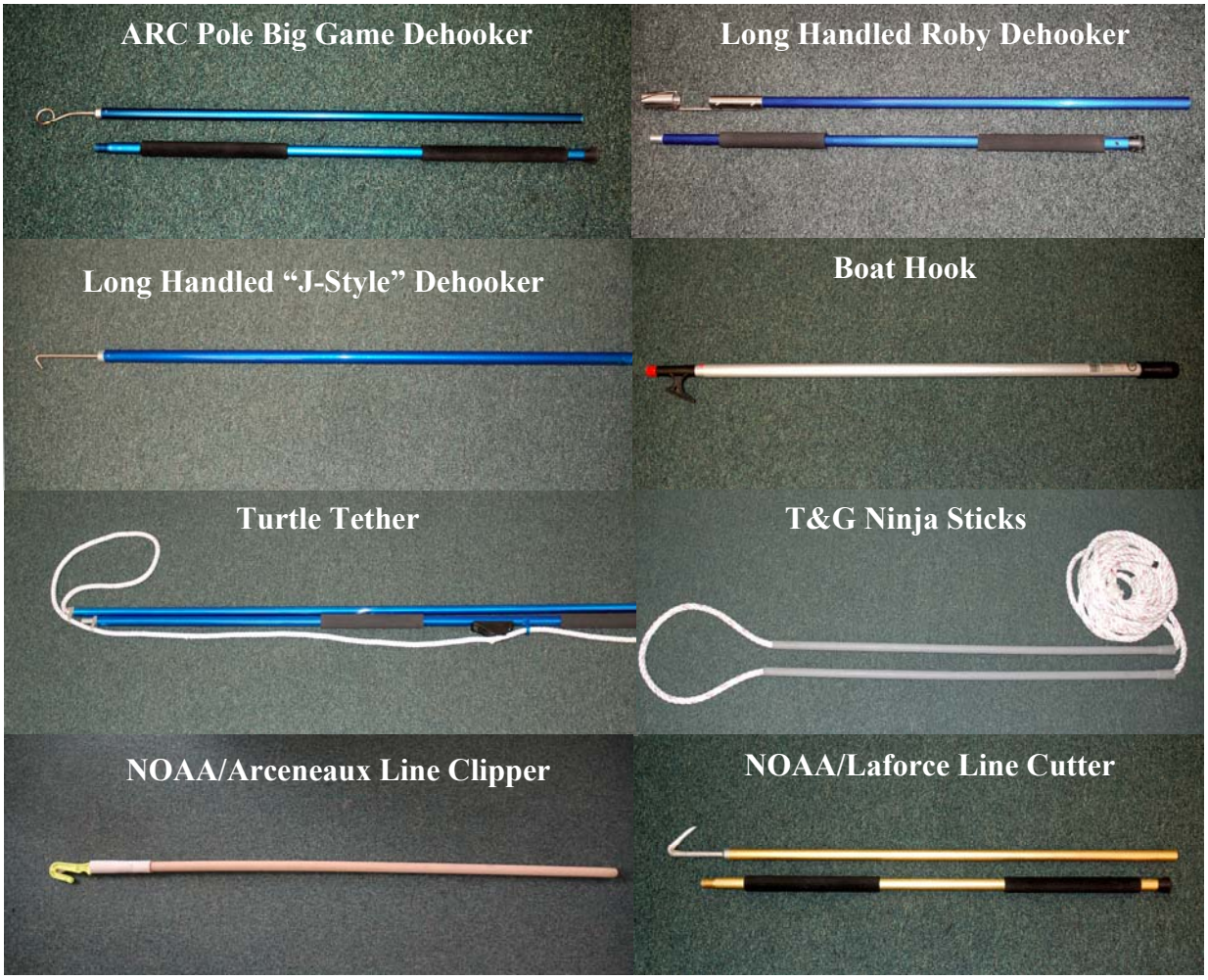


Figure 2-1. Long-handled tools for sea turtles not boated (NMFS/SEFSC photos).

Turtle Control Devices

Turtle control devices were designed in response to safety concerns for fishing vessel crew members and for incidentally captured sea turtles, as well as to facilitate the likelihood of maximum gear removal potential. These devices, which should be used in pairs, take pressure off the involved gear and help stabilize the animal. They secure the front flippers of the sea turtle so that the animal can be controlled at the side of the vessel, facilitating rapid gear removal while reducing the chances that taut line could snap under the strain of the active sea turtle and recoil towards the crew members on deck. These devices should never be used around the turtle's neck or head. After securing the animal's flippers at the side of the vessel, use dehookers and line cutters as needed, depending on the type of gear interaction, as described on Pages 2-13 – 2-14. Currently, there are two turtle control device styles that reduce safety risks associated with removing gear from active sea turtles not boated, particularly leatherbacks.

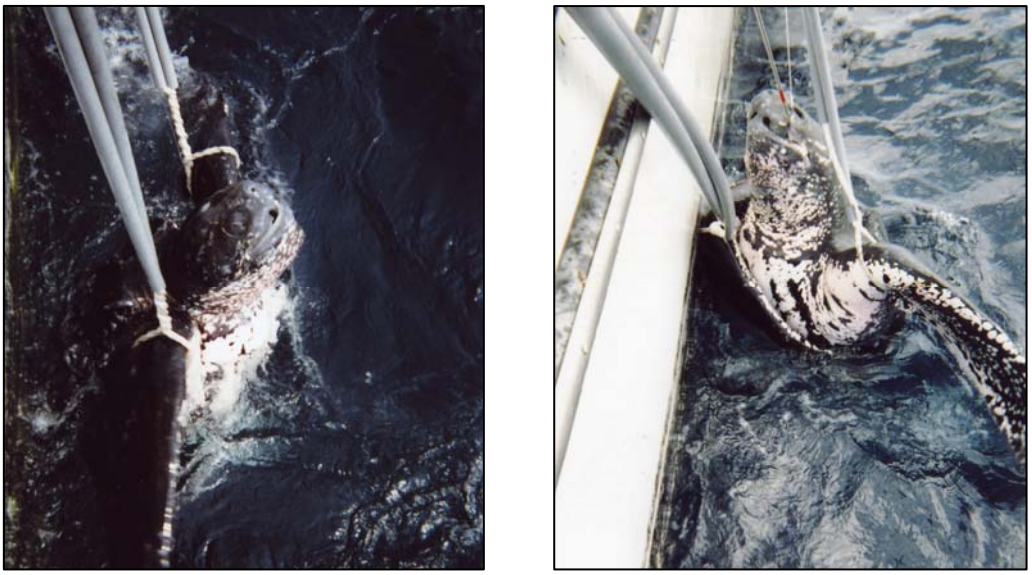
(1) Turtle Tether

The first type of turtle control device, referred to as the "Turtle Tether," is designed to "noose" the flipper using one pole and a line threaded through eyebolts. The end of the negatively buoyant tether line should be threaded through an eyebolt at the end of the tether, then through two eyebolts farther down the pole. A tag line threaded through the end of the tether must be attached to the vessel to ensure that the turtle cannot escape with the tether attached. Loop the stiff rope around the front flipper up to the "shoulder" region, tighten, and cinch the rope in the cleat. Keep a firm hold of the tether pole to keep the animal near the vessel, allowing for dehooking and disentanglement (Figures 2-2a and b). To optimize safe handling of the turtle, two people should each operate a set of the Turtle Tethers to capture both flippers and restrain the turtle alongside the vessel.

Figures 2-2a and b. Controlling a leatherback using a turtle tether (NMFS/SEFSC photos)

(2) T&G Ninja Sticks

The second type of turtle control device, referred to as the "T&G Ninja Sticks," consists of two long poles (electrical conduit PVC, fiberglass, aluminum, or similar) with line threaded through or securely affixed to both lengths. The free end of the line should be tethered to the vessel unless an additional tag line is used, leaving enough slack to create a ~24" working section of line between the two poles to secure the flipper. Holding one pole in each hand, capture the flipper, bring the poles together, and twist the line until the flipper is secured. To optimize safe handling of the turtle, two people should each operate a set of the T&G Ninja Sticks to capture both flippers and restrain the turtle alongside the vessel (Figures 2-3a and b).



Figures 2-3a and b. Controlling a leatherback using a pair of T&G Ninja Sticks (NMFS/SEFSC photos).

Equipment to Remove Line and Netting

(1) Long-handled Line Clipper/Cutter

Line cutters are designed to cut high-test monofilament line, netting material, and line (e.g., braided/twisted rope) from entangled sea turtles. Carefully slide the blunt end of the line cutter under the line or netting that you wish to remove and pull the line cutter to capture it within the recessed blade(s) of the device (Figure 2-4a). In hook and line fisheries, a line cutter may also be used to cut the monofilament line as close as possible to the hook, minimizing remaining gear when hook removal is not possible.

Figures 2-4a and b. Using line cutter (a) and monofilament cutter (b) on entangled leatherbacks (NMFS/SEFSC photos).

(2) Monofilament Cutters

If the turtle is close to the vessel, hand-held monofilament cutters may be used to remove line or netting material from hooked and/or entangled turtles (Figure 2-4b). Turtles should be released with as little gear as possible remaining.

Equipment to Remove Hooks

(1) Long-handled Dehooker for Internal Hooks

(a) ARC (Aquatic Release Conservation) Pole Big Game Dehookers

The ARC Pole Big Game Dehooker models, which are manufactured in several sizes, are examples of NOAA Fisheries certified equipment. These dehookers are designed for removing hooks that are external or that are lodged in the mouth, throat, or esophagus without touching or removing the animal from the water. The device engages and secures the leader, allowing the hook to be secured within an offset loop without re-engaging the barb during the removal process (Figure 2-5). Specific instructions for the long-handled pole models are given here, and more general guidelines for using all types of ARC dehookers can be found in Plate 2-1.

Figure 2-5. Removing hook with an ARC Pole Big Game Dehooker (NMFS/SEFSC photo).

Instructions for using ARC Pole Big Game Dehookers:

1) The person controlling the leader must carefully bring the animal alongside the vessel, using a turtle control device to help control the turtle if possible. They should stay to the left of the dehooking person and maintain a taut leader.
2) The person with the dehooker should be to the right of the person with the leader to capture the leader, and no one should get in between the leader and the dehooking device in case the line breaks or the hook dislodges.
3) There is only one correct way to place the pigtail over the leader. The person controlling the leader must maintain leader tension. The person with the dehooker places the dehooker on the leader at a 90° angle with the open end of the curl facing them, and the tail end of the curl facing up. Pull until the curl of the dehooking device captures the line (like a bow and arrow), and rotate the device 1/4 turn clockwise. When placed correctly, the leader will be in the center of the pigtail curl.
4) Slide the dehooker down the leader until it engages the shank of the hook and bottoms out. Slightly rotate the device back and forth to ensure proper engagement on the hook. If the dehooker has been notched (see instructions below) to help facilitate circle hook removal, the hook will seat into the notch.
5) When the hook is engaged, the dehooking device must be brought together with the leader, parallel to the line. If the line is not parallel with the dehooking device, the point of the hook will have a tendency to turn out and allow for possible re-engagement after release.
6) Working together, the person with the leader and the person with the dehooker must communicate and keep the line taut until the exact moment that the person using the dehooker disengages the hook with a short, sharp jab downward. If removing a circle hook, a rocking or twisting motion of approximately 180° during the downward jab motion may be necessary to facilitate circle hook removal. After engaging shank of the

hook, keep the line parallel with tension and start a rocking (back and forth) and pushing motion to remove the circle hook. The rocking motion in addition to the traditional pushing motion allows the circle hook to be twisted and pushed out.

7) The leader person must give a little slack when the person with the dehooker is jabbing downward, so timing and communication are important. After the hook is removed, the point of the hook will rotate and stop on the offset bend of the dehooker (Figure 2-6), protecting the point and preventing re-engagement of the hook.

Figure 2-6. Point of the hook is shielded to prevent re-engagement (NMFS/SEFSC photo).

Notch Modification for the ARC Dehookers:

In collaboration with the Australian Fisheries Management Authority and industry experts, ARC tested a notch modification to their dehookers. They determined that notching the pigtail curl allows the fisher to use a rocking and pushing (instead of just pushing) motion that increases the effectiveness of circle hook removal. The notch is created where the hook lies in the bottom portion of the curl (Figure 2-7a), securing the shank enough to rock the hook from side to side while pushing the circle hook out. The notch modification can be easily and quickly accomplished with a simple metal file (Figure 2-7b) in approximately 15 minutes. During laboratory trials, the notch modification (Figure 2-7c) was found to be an effective modification to these tools to assist in hook removal, particularly circle hook removal, while maintaining the integrity of the device's tensile strength. However, it was determined that by maintaining proper line tension and using a rocking or twisting motion while pushing downward, circle hooks still could be removed effectively without the notch modification. Detailed instructions for notching the ARC dehookers can be found in Appendix A, Chapter A2.

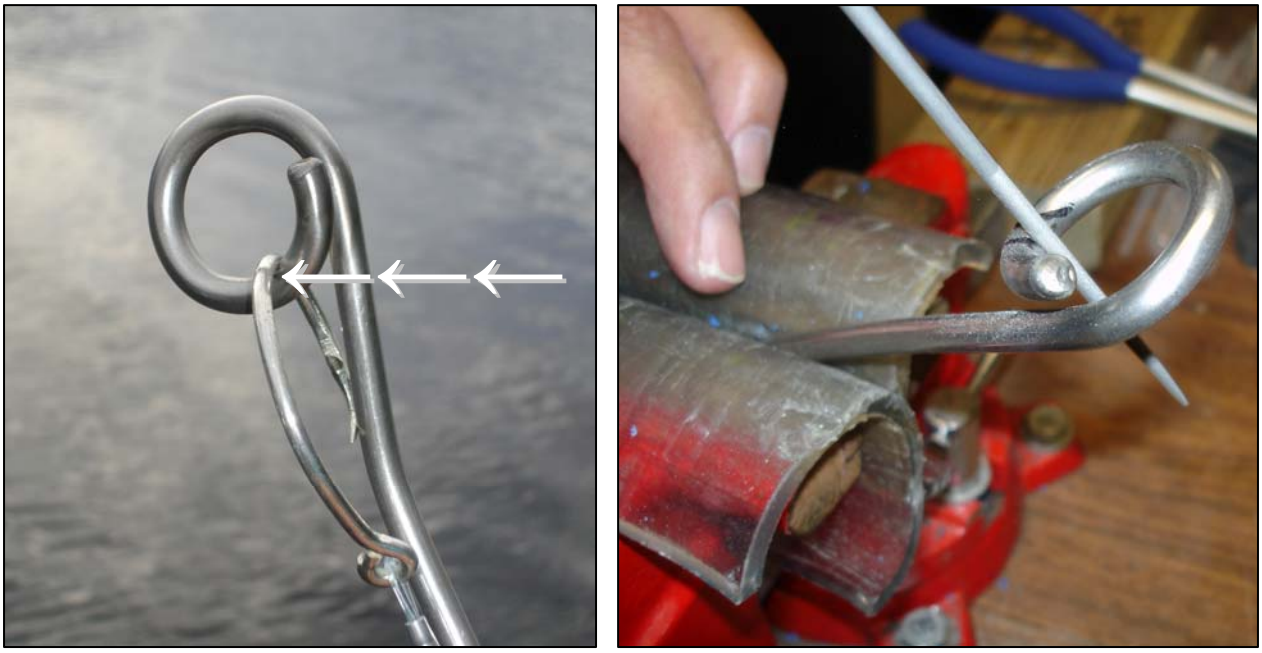
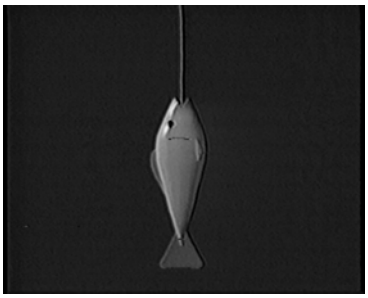


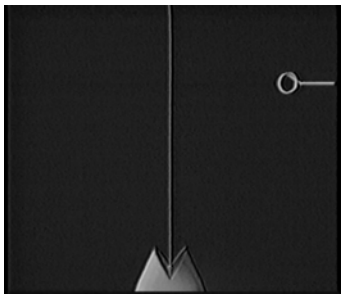
Figure 2-7 a, b and c. Notch the pigtail curl where the shank of the hook contacts the vertical bottom of the pigtail curl, ~1/16" - 1/8" deep and ~1/8" wide using a metal file [(a) Photo courtesy of ARC; (b) and (c) NMFS/SEFSC photos].

Plate 2-1 Instructions for ARC Dehookers

The illustrations here depict fish, but the technique can be used for sea turtles, marine mammals, and sea birds as well.



Step 1



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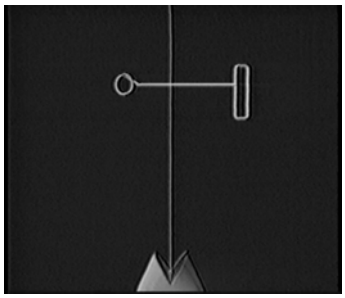

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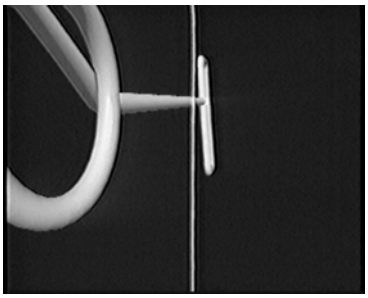
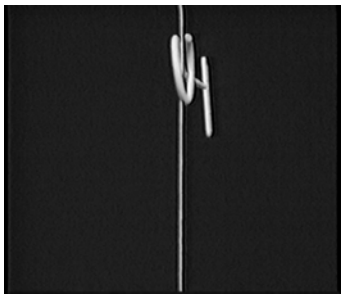


Step 4



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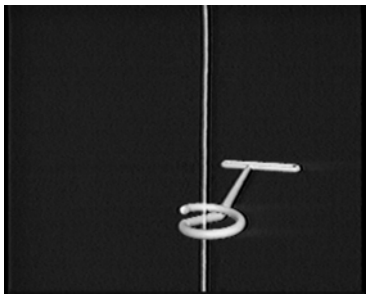


Step 6

Figures provided by Aquatic Release Conservation

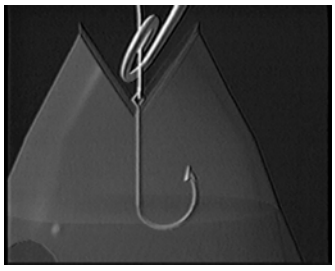
(1 – 2) Grab the leader with one hand and hold the dehooker in your other hand, making sure the open end of the pigtail is facing up.

(3) Place the rod of the dehooker on the leader perpendicular to the leader as you would a bow and arrow.

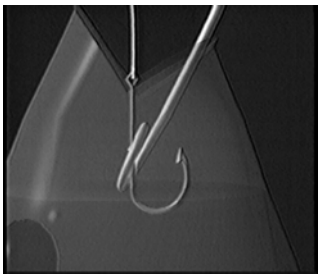
(4 – 5) Draw the dehooker back towards you until you engage the line.

(6) Turn the dehooker 1/4 turn clockwise. This puts the leader in the center of the curl.

Plate 2-1 Continued



Step 7



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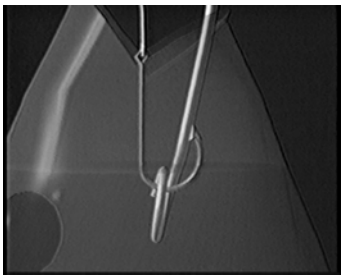

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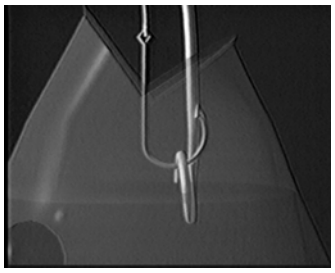

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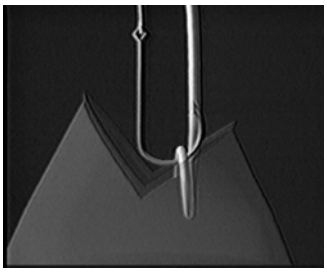

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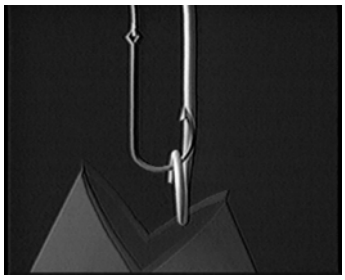


Step 12

(7 - 9) Keeping your hands apart, follow the leader down until the dehooker bottoms out on the hook.

(10) Bring your hands together making sure the leader is tight and parallel with the dehooking device.

(11-12) Give a slight thrust downward (or rocking/twisting downward thrust) with the dehooking device until the hook disengages, then pull out the dehooker with the hook. The point of the hook will be hidden by the offset bend so that the hook does not re-engage.

(2) Long-handled Dehooker for External Hooks

(a) Aquatic Release Conservation (ARC) Pole Big Game Dehookers

Refer to the description of this device beginning on Page 2-4.

(b) Long-handled J-Style Dehooker

This long-handled dehooking device may be used for dehooking in circumstances where the animal is hooked externally. Hold the leader in one hand with tension and hold the dehooker in your other hand. Place the dehooker on the leader and follow the leader down until it bottoms out on the shank of hook (Figure 2-8). With tension on the leader, the ideal position for dehooking is to lower the hand with the leader to the 8 o'clock position and raise the hand with the dehooker to the two o'clock position (Illustrated in Plate 5-3); depending on the positioning, a smaller angle may be appropriate. Twist the dehooker slightly and pull until the hook is dislodged. Be cautious not to allow the hook to re-engage once removed.

Figure 2-8. Using J-Style dehooker on externally hooked leatherback (NMFS/SEFSC photo).

(c) Long-handled Roby Dehooker

This dehooker is suitable for removing external hooks and can be mounted to a long handle for use on turtles not boated. The design, which incorporates four notches at 90° angles at the base of a cylinder, grasps the hook very securely (Figure 2-9), facilitating the twisting motion necessary to remove circle hooks. Engage the line by feeding it through the diagonal slit in the side of the cylinder, and then secure the hook in the notches. Once the hook is secured, use a pushing motion to release the hook. If you are removing a circle hook, a twisting motion of approximately 180° while thrusting the dehooker downward may be required to remove the circle hook.

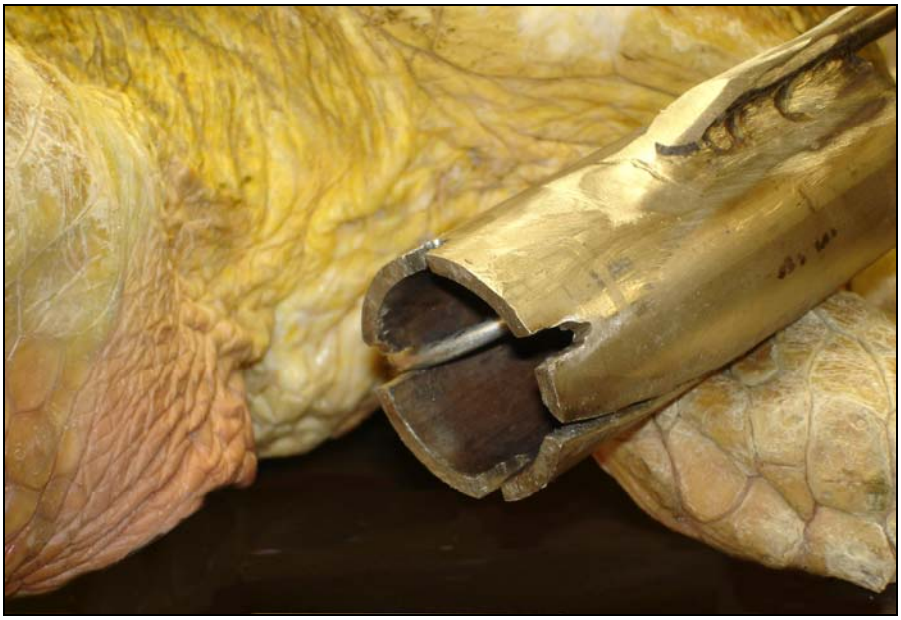


Figure 2-9. Roby dehooker (NMFS/SEFSC photo).

Plate 2-2 Instructions for the Roby Dehooker

Step 1

Step 2

Step 3

Step 4

(1) Hold leader in one hand with tension and hold the Roby dehooker in the other hand. Feed the leader through the diagonal slit in the cylinder.

(2) Position the dehooker so that it is firmly seated against the shank of the hook, secured in the notches.

(3) Bring both hands together (leader and dehooker parallel with each other) while maintaining tension on the leader.

(4) With the leader and dehooker together, give a short, sharp jab to dislodge the hook and remove it from the animal. Rotate or twist up to 180° during the jabbing motion if necessary to remove the hook, particularly when removing circle hooks. Maintain line tension and take care to prevent the hook from re-engaging after removal.

Long-handled Device to Pull an "Inverted V" during Disentanglement

A standard boat hook, long-handled J-Style dehooker, or standard fishing gaff may be used to assist in disentanglements and to pull a "V" for dehooking entangled sea turtles, as described in the "Inverted V" dehooking technique below.

"Inverted V" Dehooking Technique

1) Once at the surface, the animal may have a tendency to entangle itself more. After the first inspection, let the turtle calm down for a short period of time (in some cases up to 10 minutes) then gently draw it to the boat, using turtle control devices when practical to control the animal.

2) An additional crew member should carefully engage the monofilament leader closest to the embedded hook with a gaff, boat hook or long-handled J-Style dehooker, depending on the distance to the hook. If using a gaff, care should be taken to ensure that the point of the gaff does not ever contact the turtle. The gaff person should pull the line upward into an "Inverted V" to enable engagement of the dehooking device on the line closest to the hook (Figure 2-10).

3) Follow the instructions on Pages 2-4 – 2-12 to remove the hook from the turtle using a long-handled dehooking device. The gaff person would serve the same function as the leader person.

4) After the hook is removed and secured by the dehooker, carefully remove all line with the line cutter to disentangle the animal (Pages 2-3 – 2-4).

Figure 2-10. Pulling an "Inverted V" (Photo courtesy of ARC).

Possible Scenarios Encountered for Sea Turtles Not Boated in Hook-and-line Fisheries

(1) Entangled but not hooked (*recommended personnel and equipment: at least three crew / two turtle control devices / long-handled dehooker for internal hooks / line cutter / long-handled device to pull an "Inverted V"*)

Control the turtle at the side of the boat using the involved line, or preferably with a turtle control device (Pages 2-2 – 2-3). If there are not at least three crew members available, the turtle control devices should be tied off. Secure the loose hook with the long-handled dehooker for internal hooks and carefully slide the blunt end of the line cutter under the line that you wish to remove. The dehooker for internal hooks is preferable because it can hold the loose hook to control it and protect the barb from reengaging. Pull the line cutter and the line will be captured within the recessed blade(s) of the device (Figure 2-4a). A long-handled J-Style dehooker, boat hook, or gaff may be carefully used to manage the line while cutting with the line cutters. Monofilament cutters may also be useful if the turtle is close to the side of the vessel (Figure 2-4b).

(2) Hooked but not entangled (Figure 2-11) (*recommended personnel and equipment: at least three crew / two turtle control devices / long-handled dehooker*).

Control the turtle at the side of the boat using the involved line, or preferably with turtle control devices (Pages 2-2 – 2-3). If there are not at least three crew members available, the turtle control devices should be tied off. The choice of dehooker will depend on the location and depth of the hook. Do not attempt to remove hooks that have been swallowed beyond where the insertion point of the barb is visible, or when it appears that hook removal will cause further serious injury to the turtle. If the hook cannot be removed, ensure that as much line as possible is removed and, if possible, remove some of the hook with bolt cutters.

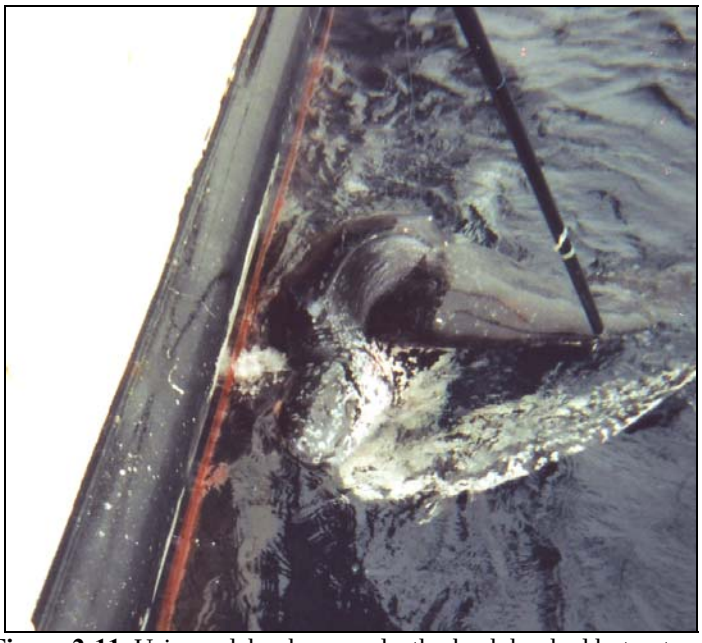


Figure 2-11. Using a dehooker on a leatherback hooked but not entangled (NMFS/SEFSC photo).

(3) Hooked and entangled (Figure 2-12) (*recommended personnel and equipment: multiple crew / two turtle control devices / dehooker / line cutter / long-handled device to pull an "Inverted V"*)

Control the turtle at the side of the boat using the line (if applicable), or preferably with turtle control devices (Pages 2-2 – 2-3). For turtles wrapped in line or hooked in the armpit or shoulder with the line running underneath the turtle, not over the turtle, the "Inverted V" technique is necessary for release (Page 2-10). Remove the hook first prior to line removal. Follow the instructions on Pages 2-3 – 2-12 for removing hooks and line.

Figure 2-12. A hooked and entangled leatherback (NMFS/SEFSC photo)

Chapter 3 Boating and Holding Sea Turtles

Boating the Turtle

It is very important that the turtle is never pulled out the water, even partially or for a short distance, using the gear with which the turtle is hooked or entangled. This could cause serious injury to the turtle, especially when the turtle has swallowed a hook. Once boated, the turtle will be handled according to the procedures for boated turtles.

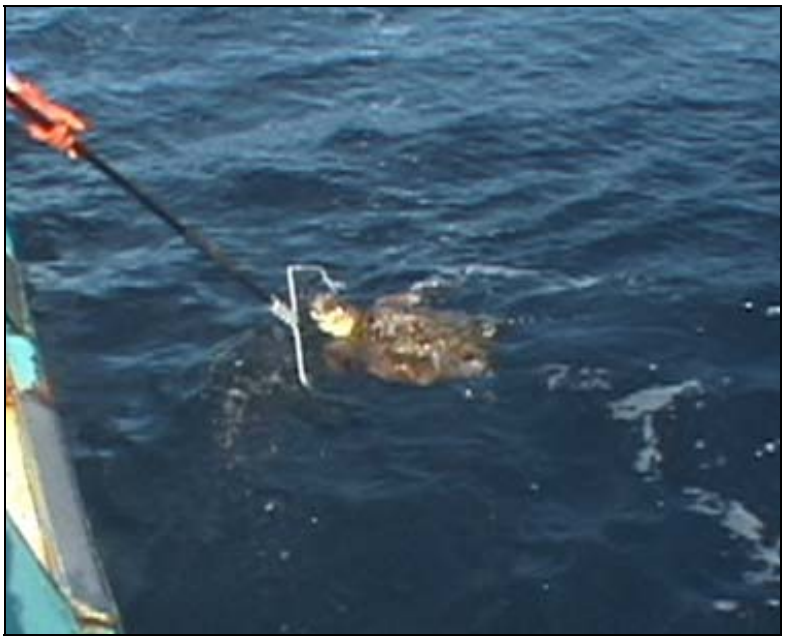


Figure 3-1. Bringing a turtle onboard using a dip net (NMFS/SEFSC photo).

(1) Dip Net

If the turtle is small enough and conditions are such that it can be brought aboard the vessel safely (Figure 3-1), use a dip net (Figure 3-2) meeting standards specified in NMFS regulations to carefully bring the turtle aboard. Place the net under the turtle, and safely lift the turtle out of the water and onto the deck. If the vessel is equipped with "cut out doors," use this door to minimize the distance from the water for the turtle to be retrieved.

Figure 3-2. Dip net (NMFS/SEFSC photo).

(2) Turtle Hoist

(a) Large Turtle Hoist

A large turtle hoist is recommended to bring turtles onboard that cannot be boated using a smaller dip net or on vessels equipped with a hydraulic lift. This is particularly useful when removing gear from leatherback sea turtles. The hoist is lowered into the water using a hydraulic lift and brought near the turtle. Once the hoist is in the water, the turtle can be guided into the device using the attached gear and/or turtle control device. Once the turtle is positioned within the hoist, release tension on the gear, and the turtle will descend deeper into the lift. The hoist and turtle are then raised slowly back onto the deck (Figure 3-3). The device is designed so that when onboard, the turtle is suspended above the deck on a platform of mesh netting supported by a rigid ring and contained within a webbing fence (Figure 3-4). The turtle is immobilized in this lift, facilitating

safe and rapid gear removal. Once all gear has been removed, the hoist and turtle are lowered back into the water deep enough for the turtle to swim out of the frame. Orient the hoist so that the turtle is facing away from the boat upon release. The use of this device is demonstrated in the video "Leatherbacks Aboard" (Epperly and Hataway 2004).

Figure 3-3. Bringing leatherback onboard using a large turtle hoist (NMFS/SEFSC photo).

Figure 3-4. Leatherback supported onboard in large turtle hoist (NMFS/SEFSC photo).

(b) Small Turtle Hoist

A small turtle hoist (Figure 3-5) is recommended to bring turtles onboard that cannot be boated using a traditional dip net with an extended reach handle. This is particularly useful when removing gear from sea turtles while on a vessel with a high freeboard or when storage space is extremely limited. Once the hoist is in the water, the turtle can be guided into the device using the attached gear and/or turtle control device. Use the attached lines to guide the frame under the turtle, and haul the lines evenly to capture the

turtle and bring it onboard, using care to maintain the net parallel to the water's surface so that the turtle cannot slip out. A pulley system or hydraulic lift can be used to hoist the frame out of the water if available. Once all gear has been removed, the hoist and turtle are lowered back into the water deep enough for the turtle to swim out of the frame, releasing tension on the outer lines if necessary to tip the frame. Orient the hoist so that the turtle is facing away from the boat upon release.

Figure 3-5. Small turtle hoist (Photo courtesy Alvaro Segura, World Wildlife Fund).

Holding the Turtle

While onboard, the turtle must be kept moist and in the shade, maintaining its body temperature above 60° F, similar to water temperatures at capture. It must be safely isolated and immobilized on a cushioned surface. The large turtle hoist serves this purpose; smaller turtles will need to be placed on a cushioned surface, such as an automobile tire. If you encounter a turtle with a tag, note the tag number and species and report the find to the address on the tag. All gear should be removed immediately. If possible, and especially if the turtle appears lethargic, leave the turtle on deck at least four hours up to twenty-four hours and monitor its condition, allowing stress toxins to dissipate.

(1) Cushion/Support Device

A suitably-sized cushion/support device, such as a standard automobile tire (Figure 3-6) without a rim or boat cushion, should be used to safely isolate and immobilize the animal once it is onboard. Place the turtle in its normal orientation whenever possible while immobilized, unless there is a reason to have it temporarily resting on its carapace.

Figure 3-6. Loggerhead supported using an automobile tire (NMFS/SEFSC photo)

(2) Comatose Turtles

If a turtle appears to be comatose (unresponsive, unconscious), attempt to revive it before release per 66 FR 67495, December 31, 2001. Place the turtle on its plastron (lower shell) and elevate the hindquarters approximately 15 - 30° (Refer to Plate 3-1) to permit the lungs to drain off water for a period of four up to twenty-four hours. A board, tire or boat cushion, etc. can be used. Keep the skin, and especially the eyes, moist while the turtle is on deck by covering the animal's body with a wet towel, periodically spraying it with water, or by applying petroleum jelly to its skin and carapace. Periodically, gently touch the corner of the eye or eyelid and pinch the tail near the vent (reflex tests) to monitor responsiveness. Do not put the turtle in a container of water for resuscitation, as even shallow water may cause it to drown.

Turtles can withstand lengthy periods without breathing; a comatose sea turtle may not move, breathe voluntarily, or show reflex responses or other signs of life. In other cases, a lightly comatose turtle may show shallow breathing or reflexes such as eyelid or tail movement when touched. Sea turtles may take some time to revive; do not give up too quickly. Regulations (66 FR 67495, December 31, 2001; 50 CFR 223.206) allow a fisherman to keep a turtle on deck up to 24 hours for resuscitation purposes without a permit. Even turtles that are successfully resuscitated benefit from being held on deck as long as possible (up to 24 hours) to fully recover from the stress of accidental forced submergence.

In the past, an alternative method of resuscitation, known as plastral pumping, was sometimes recommended (see FR 43 32801, July 28, 1978; 57 FR 57354, December 4, 1992). This practice involved placing the turtle on its carapace and pumping the plastron with hand or foot. However, we strongly discourage this technique, as further study determined that it may actually do more harm than good and should not be attempted during resuscitation (per 66 FR 67495, December 31, 2001). Plastral pumping may cause the airway to block and cause the viscera to compress the lungs which are located dorsally, thereby hindering lung ventilation.

Plate 3-1

Sea Turtle Resuscitation Guidelines

If a turtle appears to be unresponsive or comatose, attempt to revive it before release. Turtles can withstand lengthy periods without breathing; a comatose sea turtle will not move, breathe voluntarily, or show reflex responses or other signs of life. In other cases, an unresponsive turtle may show shallow breathing or reflexes such as eyelid or tail movement when touched. Use the following method of resuscitation in the field if veterinary attention is not immediately available:

- **Place the turtle on its plastron (lower shell) and elevate the hindquarters approximately 15 - 30 degrees to permit the lungs to drain off water for a period of 4 up to 24 hours. A board, tire or boat cushion, etc. can be used for elevation.**

- **Keep the turtle in the shade, at a temperature similar to water temperature at capture. Keep the skin (especially the eyes) moist while the turtle is on deck by covering the animal's body with a wet towel, periodically spraying it with water, or by applying petroleum jelly to its skin and carapace. Do not put the turtle into a container with water.**

- **Do not put the turtle on its carapace (top shell) and pump the plastron (breastplate) or try to compress the turtle to force water out, as this is dangerous to the turtle and may do more harm than good.**

- **Periodically, gently touch the corner of the eye or eyelid and pinch the tail near the vent (reflex tests) to monitor consciousness.**

- **Sea turtles may take some time to revive; do not give up too quickly. Turtles that are successfully resuscitated benefit from being held on deck as long as possible (up to 24 hours) to fully recover from the stress of accidental forced submergence.**

- **Release successfully resuscitated turtles over the stern of the boat, when fishing or scientific collection gear is not in use, the engine is in neutral, and in areas where they are unlikely to be recaptured or injured by vessels. A turtle that has shown no sign of life after 24 hours on deck may be considered dead and returned to the water in the same manner.**

NMFS/SEFSC Photos

References:

Federal Register, December 31, 2001. Government Printing Office, Washington DC 66 (250), pp. 67495- 67496.

October 2008

Chapter 4 Equipment and Techniques for Opening the Mouth of Boated Turtles

Opening the Mouth

When a turtle with an internal hook injury is brought on board, it will likely have its mouth open. If the animal is not voluntarily opening its mouth, there are a few mouth-opening techniques you can apply:

1) Block the turtle's nostrils to encourage the turtle to open its mouth (Figure 4-1).

2) Tickle the throat or pull outward on the throat skin.

3) Cover the nostrils and carefully apply light pressure to the anterior corner of the eye socket (not the eye itself) with one hand and apply firm pressure in the throat area with your other hand.

Figure 4-1. Opening the mouth (NMFS/SEFSC photo).

If you still cannot open the mouth, use a mouth opener, such as rope loops covered with protective tubing or an avian speculum. The mouth openers will enable you to access the turtle's mouth, while the mouth gags will keep the turtle's mouth open so you can remove any hooks and/or line. Keep in mind that various mouth gags will block your view inside the mouth in different ways. Therefore, select which mouth gag will best suit the dehooking or disentanglement procedure that you need to perform. You can improve your visibility at the back of the turtle's mouth and upper esophagus by using the needle-nose pliers. After securing the mouth open, gently slide the pliers in the closed position forward into the upper esophagus and separate the pliers' jaws to open the esophagus.

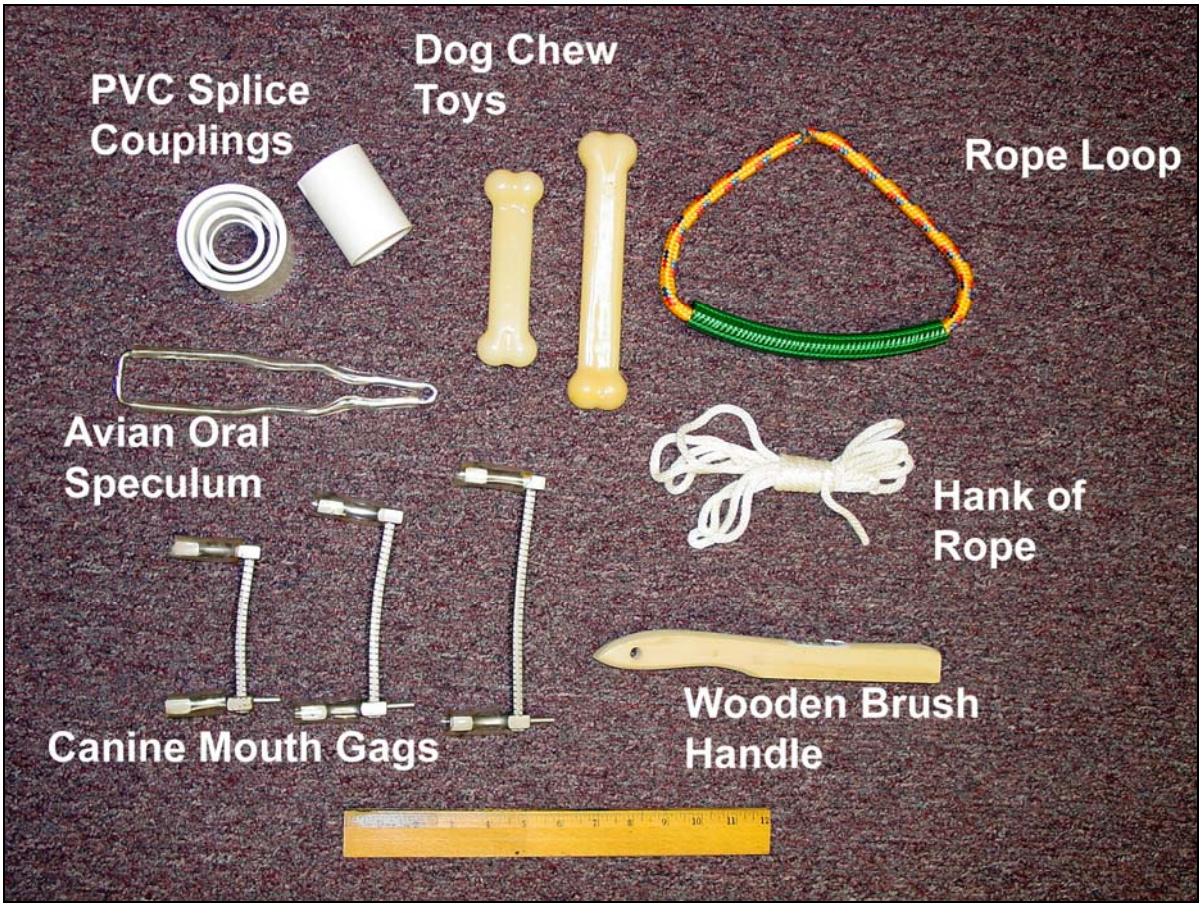


Figure 4-2. Mouth openers and gags (NMFS/SEFSC photo).

Mouth Openers and/or Gags

The following devices (Figure 4-2) can be used to open the mouth and/or maintain the mouth open: Use caution with these methods, as injury can result if these tools slip.

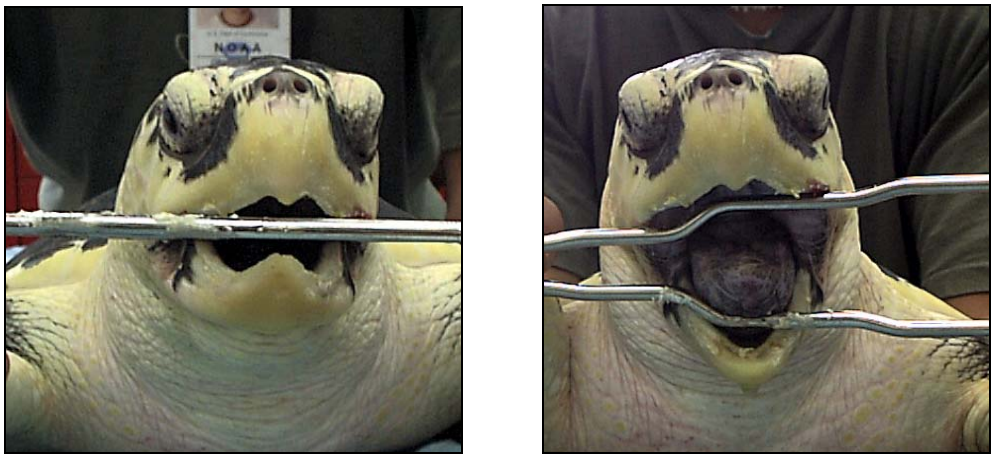
(1) Set of Two Rope Loops with Protective Tubing (both a mouth opener and mouth gag)

Slide the ropes with protective tubing in between the jaws and move them away from the front of the mouth to gain the greatest leverage (Figure 4-3). Care should be taken to avoid contact with the eyes. With the free ends of the rope knotted together to form a loop, you can hold the lower rope loop with your foot and the other with one hand, leaving one free hand.

Figure 4-3. Opening the mouth using rope loops (Photo courtesy of ARC).

(2) Large Avian Oral Speculum (both a mouth opener and mouth gag)

Slide the avian speculum flat inside the turtle's mouth (Figure 4-4a) and rotate it (Figure 4-4b). Notice that the speculum is stepped and can be used for different sized turtles by selecting for its different widths. This mouth opener can be used only on the smallest of animals, as larger turtles can easily crush the avian speculum.



Figures 4-4a and b. Using an avian speculum as an (a) mouth opener and (b) gag (NMFS/SEFSC photos).

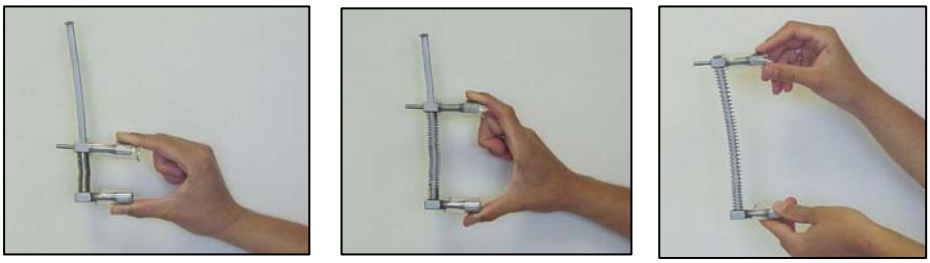
(3) Block of Hard Wood (mouth opener and mouth gag)

Soak the wood block/handle first to soften it and decrease damage to the beak. Position it in the posterior corner of the mouth to keep the mouth open (Figures 4-5a and b).

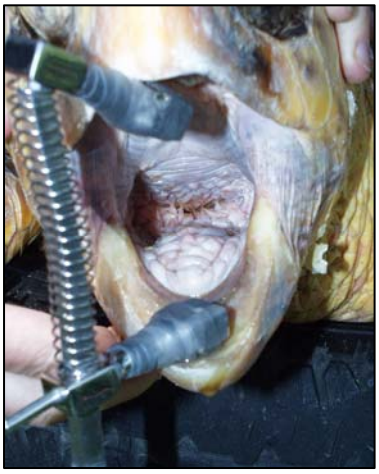
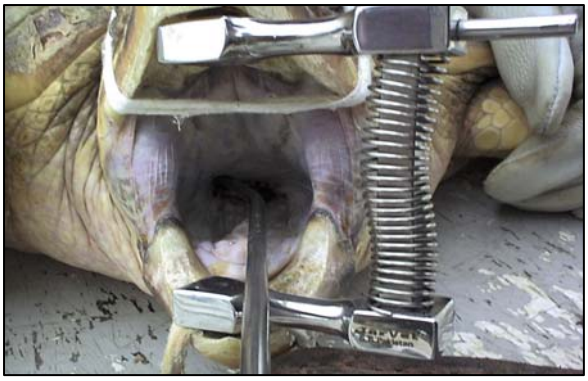
Figures 4-5 a and b. Wooden brush handle used as (a) mouth opener and (b) gag [(a) Photo courtesy of ARC, (b) NMFS/SEFSC photo]

(4) Set of Three Canine Mouth Gags (mouth gag)

This type of gag locks into the open position and allows for hands free operation once it is in place. The canine mouth gag's arms are compressible when they are perpendicular to the main axis. The rubber feet on the gag lock nicely into the groove on the upper and lower beak. When the turtle bites down on the extremity of the arms, they will shift from being perpendicular and therefore will lock. Use the smallest one possible that will not crush. Compress the gag and insert it in the turtle's mouth. As the turtle opens its mouth, the gag will expand (Figures 4-6a – c). Maintain your hold on the gag until it has locked in place. Do not force the turtle's mouth open all the way; let the spring tension on the gag and turtle's own mouth movement set the maximum open position. Position the mouth gag at the front center of the jaw with the axis off to one side to provide the maximum open working area in the mouth and the surest footing for the gag (Figures 4-7a and b).



Figures 4-6a, b, and c. (a) Canine mouth gag fully compressed, (b) partially compressed, and (c) fully open (NMFS/SEFSC photos).

Figures 4-7a and b. Canine mouth gag (NMFS/SEFSC photos).

(5) Set of Two Sturdy Dog Chew Bones (mouth gag)

Position the proper size dog chew bone in the posterior corner of the mouth to keep the mouth open. The larger bones (Figure 4-8a) are easy to hold, but block access to much of the mouth. Smaller bones (Figure 4-8b) do not reduce your view inside the turtle's mouth and work equally well.


Figures 4-8a and b. Large (a) and small (b) dog chew bones (NMFS/SEFSC photo).

(6) Hank of Rope (mouth gag)

Position the lanyard in the posterior corner of the jaw to keep the mouth open (Figure 4-9). Alternatively, you can place the rope across the entire width of the mouth and block both sides of the jaw, but this blocks your view of the back of the mouth.

Figure 4-9. Hank of rope mouth gag (NMFS/SEFSC photo)

(7) Set of Four PVC couplings (mouth gag)

Insert the appropriate size PVC coupling (chosen by considering both the size of the turtle and the tools to be used) inside the turtle's mouth (Figure 4-10). Hold it with a pair of pliers to stabilize it inside the mouth. In order to prevent the coupling from interfering with the dehooking devices, thread the line through the coupling before inserting it.

Figure 4-10. PVC coupling mouth gag (NMFS/SEFSC photo).

Chapter 5 Equipment and Techniques for Removing Gear from Boated Turtles

When dehooking is possible, several devices (Figure 5-1 and Figure 5-2) may be used to remove hooks, depending on the depth and location. Some hooks that are lightly hooked externally may be easily removed using your hand. If the hook has been deeply ingested, a short-handled dehooker for internal hooks must be used. If the hook is external or in the front of the mouth or beak with the barb of the hook clearly visible, a short-handled dehooker for internal hooks or a short-handled dehooker for external hooks may be used.

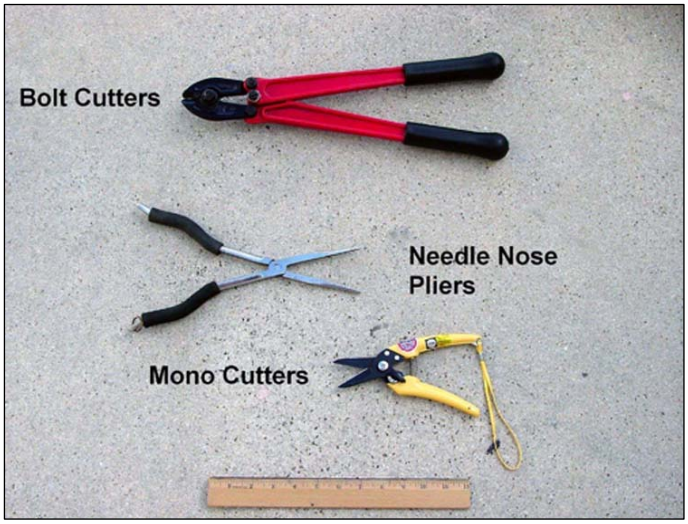


Figure 5-1. Bolt cutters, needle-nose pliers, and monofilament cutters (NMFS/SEFSC photo).

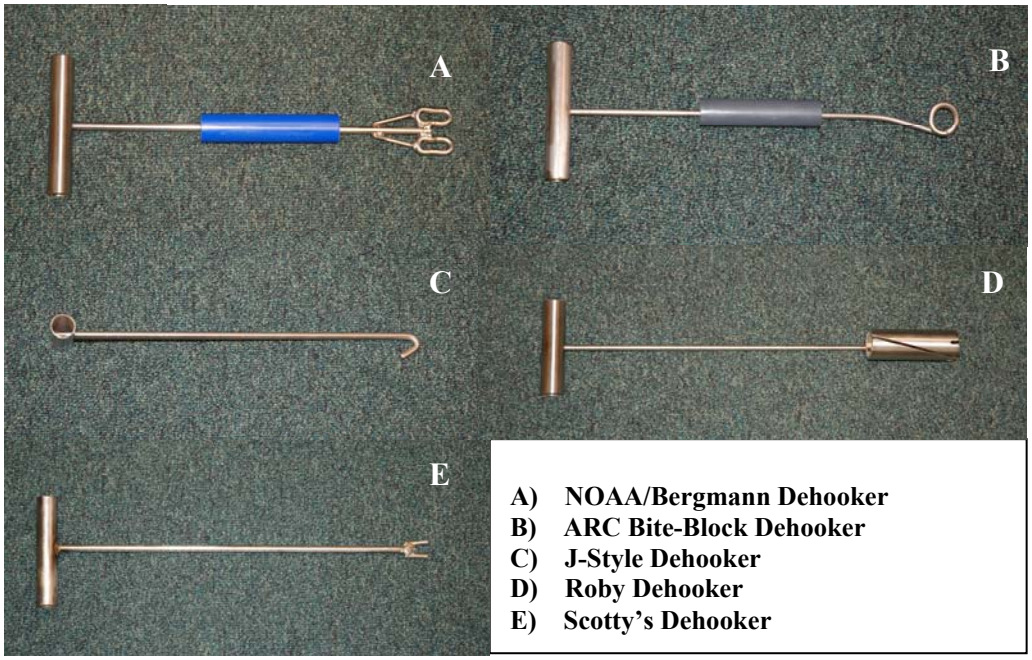


Figure 5-2. Short handled dehookers (NMFS/SEFSC photos).

Needle-nose or Long-nose Pliers

The needle-nose pliers can be used to remove hooks that are deep in the animal's flesh and must be twisted during removal. They are also useful in holding PVC splice couplings in place when used as mouth openers, and they can be used to remove hooks in the mouth in some situations.

Bolt Cutters

Bolt cutters are essential for removing hooks, as the easiest way to remove a hook may be to cut off the eye or barb so that the hook can be pushed through or backed out without causing further injury to the sea turtle. If the hook cannot be removed, bolt cutters should be used to cut off as much of the hook as possible.

Equipment to Remove Line and Netting

Refer to description in Chapter 2.

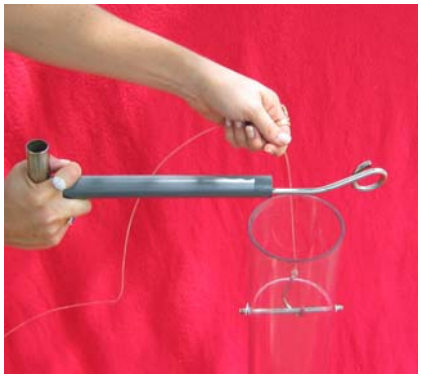
Short-handled Dehooker for Internal Hooks

(1) 17" Bite Block Deep-Hooked (Sea Turtle) ARC Dehooker

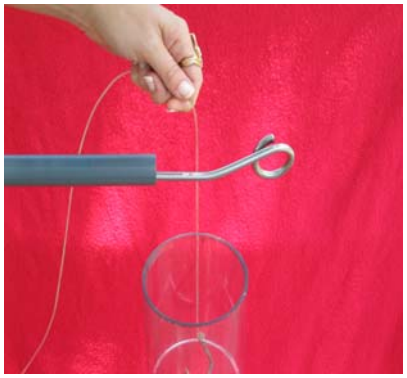
This dehooking device has been designed to prevent sea turtles from biting down on the dehooking device during internal hook removal (Figure 5-3). The PVC bite block also reduces the damage on the sea turtle's beak if the turtle bites down. This dehooker can be modified to facilitate removal of circle hooks, as described in the notch modification text in Chapter 2. Refer to Plate 5-1 for detailed instructions on using this device.

Figure 5-3. Bite Block Deep-hooked (Sea Turtle) ARC Dehooker (NMFS/SEFSC photo).

Plate 5-1 Instructions for the 17” Bite Block Deep-Hooked (Sea Turtle) ARC Dehooker

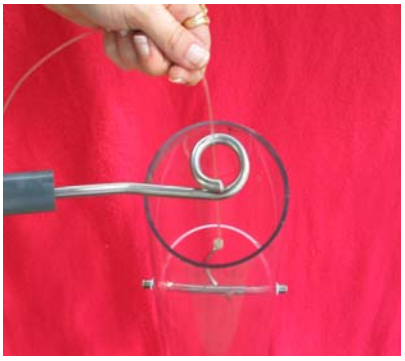


Step 1

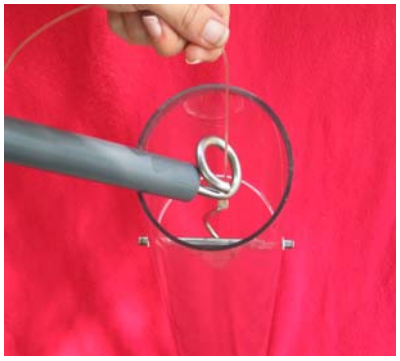


Step 2

Step 3



Step 4



Step 5

Step 6

Figures provided by Aquatic Release Conservation

(1) To correctly use this dehooking device, you must keep the PVC bite block pulled up along the handle when engaging the leader to allow for proper leader and hook engagement.

(2) Maintain leader tension and place the dehooker on the leader at a 90° angle with the open end of the curl up.

(3) Pull the dehooker towards you (like a bow & arrow) until the open end of the curl engages/captures the leader.

(4) Turn the dehooker 1/4 turn clockwise. The leader is now in the center of the pigtail.

(5) Release the bite block, allowing it to slide to the bottom of the dehooker. Following the leader, insert the curl and PVC end into the mouth as far as the animal will allow.

(6) Should the sea turtle bite down, the dehooker will slide up to 5” in and out.

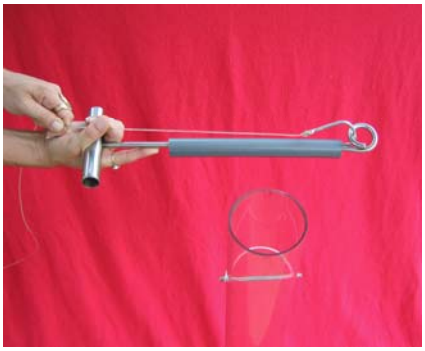
Plate 5-1 Continued

Step 7

Step 8

Step 9

Step 10



Step 11

Figures provided by Aquatic Release Conservation

(7) With the sliding motion allowed by the bite block, continue to follow the leader down the shank of the hook. If the dehooker has been notched to help facilitate circle hook removal, the hook will seat into the notch.

(8) After the dehooker is seated on the shank of the hook, (leader tight) give a sharp, short jab downward with the dehooker. As the hook is removed, the point of the hook will rotate and stop on the offset angle of the dehooker, protecting the point and preventing re-engagement of the hook

(9) After the hook is dislodged, keep the leader tight and pull the dehooker out until it stops at the PVC bite block.

(10) The bite block will cover the hook and further prevent re-engagement.

(11) Wait for the turtle to open its mouth and remove the entire dehooking device and hook.

(2) NOAA/Bergmann Dehooker

This dehooker has been found to be effective in removing both external and internal hooks during field and laboratory trials. The design, similar to that of the Scotty's dehooker (Pages 5-10 – 5-11), employs a pushing method to remove hooks (Figure 5-4). Because it grasps the hook securely, it also facilitates the twisting motion necessary to remove circle hooks. Unlike the Scotty's dehooker, it has rounded terminal ends, enabling its use for internal hooks in addition to external hooks. However, because the barb of a J-hook may not be protected, this device should not be used to remove internal J-hooks.

This dehooker works by pushing or pushing/twisting the hook out of the turtle; consider hook location and placement prior to use. Hold the leader in one hand with tension and hold the NOAA/Bergmann dehooker in the other hand. Position the dehooker so that it is firmly seated against the shank of the hook. Bring both hands together (leader and dehooker parallel with each other) while maintaining tension on the leader. With the leader and dehooker together, give a short, sharp jab to dislodge the hook and remove it from the animal. If you are removing a circle hook, a twisting motion of approximately 180° while thrusting the dehooker may be required to remove the circle hook. Be cautious not to allow the hook to re-engage once removed. The barb of the circle hook should rest against the center of the dehooker with proper line tension to prevent reengagement. Refer to Plate 5-2 for detailed instructions on using this device.

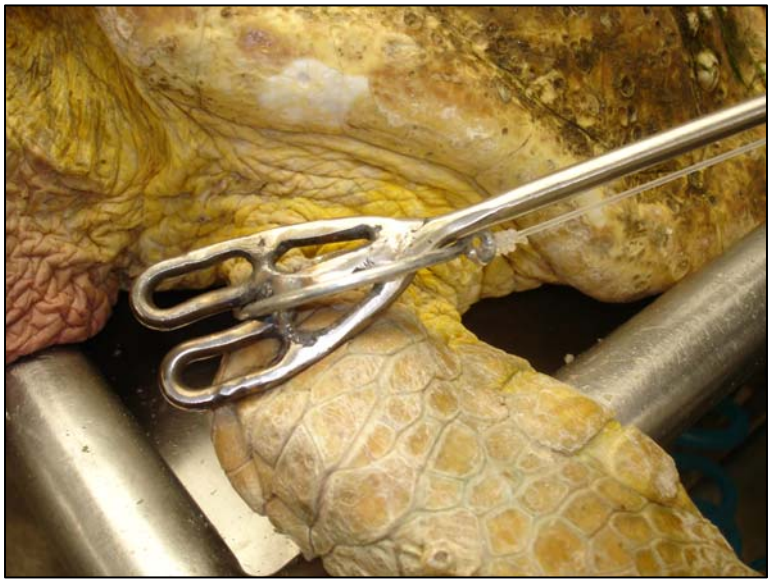


Figure 5-4. NOAA/Bergmann dehooker (NMFS/SEFSC photo).

Plate 5-2 Instructions for NOAA/Bergmann Dehooker

Step 1

Step 2

Step 3

Step 4

(1) Hold leader in one hand with tension and hold the dehooker in the other hand.

(2) Position the dehooker so that it is firmly seated against the shank of the hook.

(3) Bring both hands together (leader and dehooker parallel with each other) while maintaining tension on the leader.

(4) With the leader and dehooker together, give a short, sharp jab to dislodge the hook and remove it from the animal. Rotate or twist up to 180° if necessary to remove the hook, particularly when removing circle hooks. Maintain line tension at an angle if necessary to prevent the hook from re-engaging after removal.

Short-handled Dehooker for External Hooks

(1) 17" Bite Block Deep-Hooked (Sea Turtle) ARC Dehooker

Refer to description beginning on Page 5-2.

(2) NOAA/Bergmann Dehooker

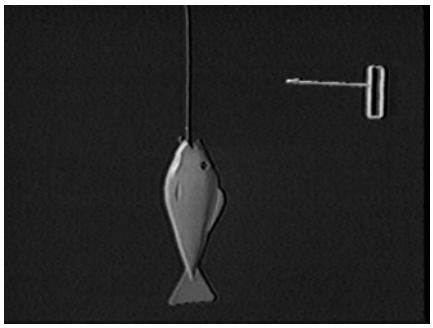
Refer to description beginning on Page 5-5.

(3) Short-handled J-Style Dehooker

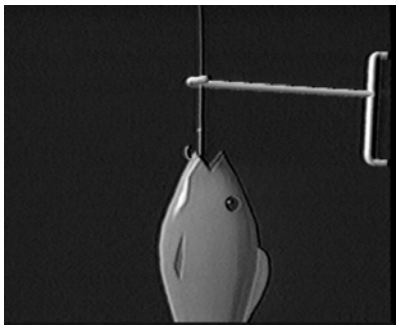
The J-Style dehooker is designed for use only when the hook is visible in the front of the mouth or beak, or if it is external (Figure 5-5). This dehooker works by rotating and pulling the hook out of the turtle; consider hook location and placement prior to use. Hold the leader in one hand with tension and hold the J-Style dehooker in your other hand. Place the dehooker on the leader and follow the leader down until it bottoms out on the shank of hook. With tension on the leader, lower the hand with the leader to the eight o'clock position, and raise the hand with the dehooker to the two o'clock position. Twist the dehooker slightly and pull until the hook is dislodged, and be cautious not to allow the hook to re-engage once removed. Refer to Plate 5-3 for detailed instructions on using this device.

Figure 5-5. J-Style dehooker (NMFS/SEFSC photo).

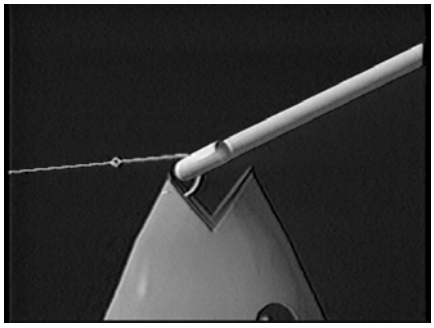
Plate 5-3 Instructions for the J-Style Dehooker



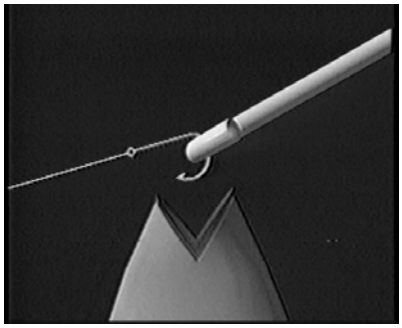
Step 1



Step 2



Step 3



Step 4

Figures provided by Aquatic Release Conservation

(1) Grab the leader with one hand and hold the dehooking device with your other hand (with the end facing toward you).

(2) Place the dehooking device on the leader.

(3) Follow the leader down until you engage the hook.

(4) Pull the dehooking device and leader apart with constant pressure and raise the hand with the dehooking device to the two o'clock position and lower the hand with the leader to the eight o'clock position. With a slight twist and shake the hook will be disengaged.

(4) Scotty's Dehooker

The Scotty's dehooker is designed for use only when the hook is visible in the front of the mouth or beak (Figure 5-6), or if it is external. This dehooker works by pushing or pushing/twisting the hook out of the turtle; consider hook location and placement prior to use. Hold the leader in one hand with tension and hold the Scotty's dehooker in your other hand. Position the dehooker so that it is firmly seated against the shank of the hook. Bring both hands together (leader and dehooker parallel with each other) while maintaining tension on the leader. With the leader and dehooker together, give a short, sharp jab to dislodge the hook and remove it from the animal. Be cautious not to allow the hook to re-engage once removed.

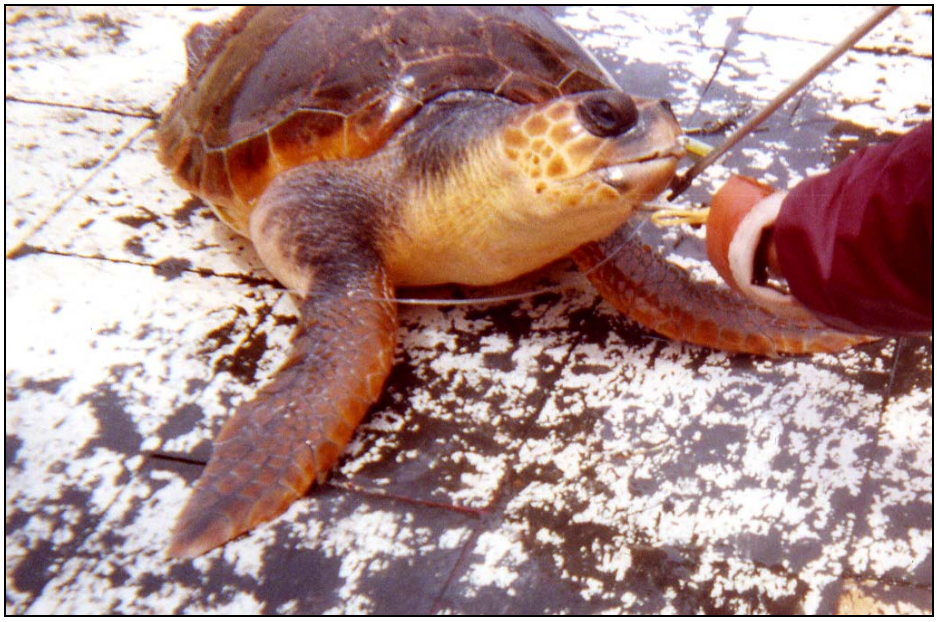
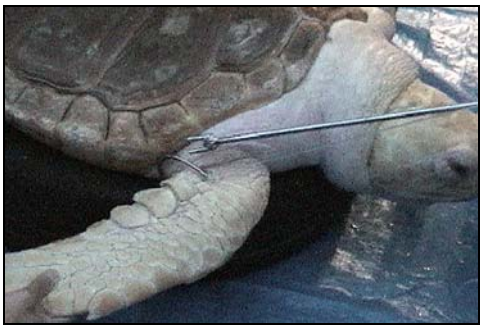
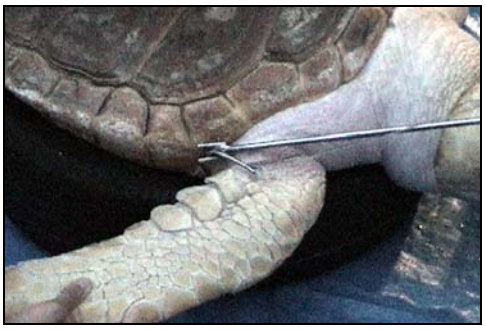


Figure 5-6. Scotty's dehooker (NMFS/SEFSC photo).

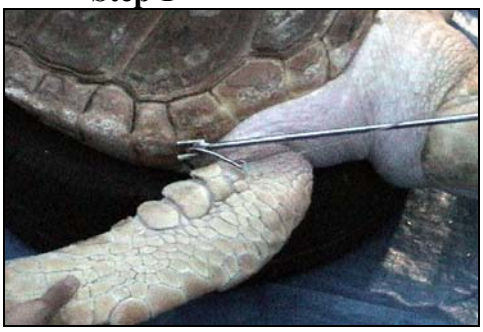
Plate 5-4 Instructions for Scotty's Dehooker



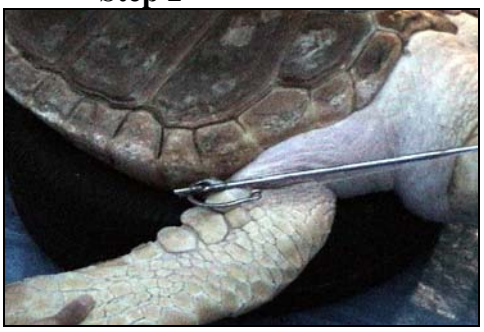
Step 1



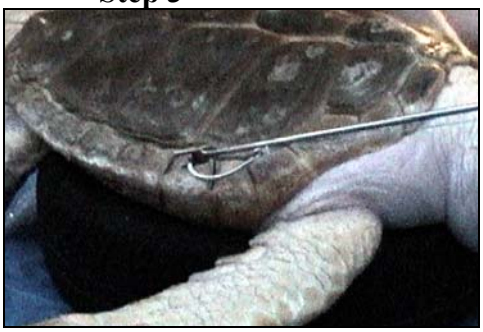
Step 2



Step 3



Step 4



Step 5

(1) Hold leader with tension in one hand and hold the Scotty's dehooker in the other hand.

(2) Position the dehooker so that it is firmly seated against the shank of the hook.

(3) Bring both hands together (leader and dehooker parallel with each other) while maintaining tension on the leader. With the leader and dehooker together, give a short, sharp jab to dislodge the hook and remove it from the animal.

(4) Rotate or twist slightly if necessary to remove the hook.

(5) Be careful not to allow the hook to re-engage once removed.

(5) Short-handled Roby Dehooker (Refer to Plate 2-3)

The short-handled Roby dehooker is suitable for removing external hooks and works by pushing and twisting the hook out of the turtle; consider hook location and placement prior to use. The design, which incorporates four notches at 90° angles at the base of a cylinder, grasps the hook very securely, facilitating the twisting motion necessary to remove circle hooks. Engage the line by feeding it through the diagonal slit in the side of the cylinder, and then position the dehooker so that it is firmly seated against the shank of the hook, which is secured in the notches. Once the hook is secured, give a short, sharp jab to dislodge the hook and remove it from the animal. If you are removing a circle hook, a twisting motion of approximately 180° during the downward jab may be required to remove the circle hook.

Appendix A

DESIGN STANDARDS AND EQUIPMENT FOR THE CAREFUL RELEASE OF SEA TURTLES CAUGHT IN HOOK AND LINE FISHERIES

Chapter A1 Introduction

The purpose of the careful release equipment is to increase post-release survival of incidentally-captured sea turtles by releasing them with minimal injury. These specifications have been revised and expanded, based upon field-testing of equipment, user feedback, and product design updates resulting in part from experiments in the Northeast Distant (NED) statistical reporting area and subsequent experiments and observations.

Several fisheries have mandatory release gear requirements; requirements and appropriate release tools may vary by fishery. This document contains the general approved design standards for currently certified release gears. Individual fisheries may have more specific design standards. Check with the applicable regulations as the final authority for required tools and specifications in each fishery. Note: approved release gear previously constructed according to original Atlantic Highly Migratory Species (HMS) Pelagic Longline Fishery design standards (FSEIS June 22, 2004; 69 FR 40736 July 6, 2004) would still qualify for this fishery under these current standards.

New release tools may be certified by submitting them to the NOAA Fisheries Southeast Fisheries Science Center for testing. Gear specialists and researchers will assess each item's usefulness and safety in removing gear from animals during laboratory and/or field trials. When new items are certified by NOAA Fisheries, a notice will be published in the Federal Register.

The National Marine Fisheries Service does not recommend or endorse any proprietary product or material mentioned in this document. However, example models of certified commercially available products are listed for convenience; other products meeting minimum design standards may be available or may be constructed. The use of registered or trademarked products is by reference only; no endorsement or affiliation is implied for any of these products.

The “pigtail style” dehookers described in this document are manufactured by Aquatic Release Conservation, Inc. (ARC). ARC has stated that their dehookers are covered by their U.S. and international patents, specifically identifying U.S. Patent # 4,914,853, #6,840,002 and U.S. Design Patent # 382,628, as well as modifications to these patents. In essence, ARC has given permission, by means of a license, to all individual fisheries participants to make, have made, construct, and use, any of its patented dehookers provided that these dehookers are for individual use. No authority is granted by ARC to make dehookers for resale or for gifts. The precise rights granted by ARC are defined in a License Agreement to be found at the ARC website located at: http://dehooker4arc.com/disclaimer.cfm. If an individual fisheries participant desires to enter into and take advantage of this License Agreement, they must register with ARC and execute a License Agreement. The government has not studied any of the ARC patents, and therefore has no opinion whatsoever as to the validity of these patents or whether making or using the ARC dehookers would infringe patents of others.

Chapter A2 Equipment for Sea Turtles Not Boated

In circumstances where a sea turtle is too large to be boated, or conditions preclude the safe boarding of the animal, vessels should possess, maintain, and utilize the following equipment and release the turtle with minimal injury.

Turtle Control Devices

In response to safety concerns for fishing vessel crew members and for incidentally captured sea turtles, as well as to facilitate the likelihood of maximum gear removal, turtle control devices were devised. Their function is to control the front flippers of the sea turtle so that the animal can be controlled at the side of the vessel during gear removal. Restraint is most effective when a pair of turtle control devices is used. Currently, there are two approved turtle control device styles, the "Turtle Tether" and the "T&G Ninja Sticks;" both reduce safety risks associated with removing gear from active sea turtles not boated, particularly leatherbacks. Minimum design standards are as follows:

(1) Turtle Tether

(a) *Design Standards:*

(i) *Line*. 15 – 20' of 1/2" hard lay negative buoyancy line (e.g., Samson crab rope #SSR-100-MHL) or similar is used to make a ~ 30" loop to slip over the flipper. The line is fed through a ~ 3/4" inside diameter fair lead, eyelet or eyebolt at the working end of a pole and through a ~ 3/4" eyelet or eyebolt in the midsection. A 1/2" quick release cleat (e.g., Clamcleat® or similar) holds the line in place near the end of the pole. A final ~ 3/4" eyelet or eyebolt should be positioned ~ 7" behind the cleat to secure the line, while allowing a safe working distance to avoid injury when releasing the line from the cleat.

(ii) *Extended reach handle.* The line must be securely fastened to an extended reach handle or pole. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface, and will vary based on the vessel design). There is no restriction on the type of material used to construct this handle as long as it is sturdy. The handle must include a tag line to attach the tether to the vessel to prevent the turtle from breaking away with the tether still attached.

(b) *Example Model(s) Meeting Current Design Standards:*

(i) *Turtle Tether (*e.g., *ARC Model TT08, Model TT12) (Plate B-1)*

(2) T&G Ninja Sticks

(a) ***Design Standards:***

(i) *Line.* Approximately 30 – 35' of 1/2" to 5/8" soft lay polypropylene line, nylon line, or similar is fed through 2 PVC conduit, fiberglass, or similar sturdy poles and knotted using an overhead (recommended) knot at the end of both poles or otherwise secured. There should be ~ 18 - 24" of exposed rope between the poles to be used as a working surface to capture and secure the flipper. Knot the line at the ends of both poles to prevent line slippage if they are not otherwise secured. The remaining line is used to tether the apparatus to the boat unless an additional tag line is used.

(ii) *Extended reach handles*. Two lengths (cut to freeboard height) of rigid electrical conduit sunlight resistant 3/4" Schedule 40 PVC, fiberglass, aluminum or similar should be used. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface, and will vary based on the vessel design).

(b) ***Example Model(s) Meeting Current Design Standards:***

(i) *"T&G Ninja Sticks" (Plate B-2)*

<u>Equipment to Remove Line and Netting</u>

(1) Long-handled Line Clipper/Cutter

Line clippers or cutters are designed to cut high test monofilament line as close as possible to the hook and to assist in removing other line and netting from entangled sea turtles, in an effort to minimize remaining gear upon release. NOAA Fisheries has established minimum design standards for the line clippers (65 FR 16347, March 28, 2000, and 66 FR 17370, March 30, 2001) that can be purchased or fabricated using available and low cost materials. One long-handled line clipper or cutter and a set of replacement blades should be onboard. The minimum design standards for line clippers or cutters are as follows:

(a) ***Design Standards:***

(i) *A protected and secured cutting blade*. The cutting blade(s) must be capable of cutting 2.0 – 2.1 mm monofilament line (400# test) or polypropylene multi-strand material, known as braided or tarred mainline, and it should be maintained in working order. The blade must be curved, recessed, contained in a holder, or otherwise designed to facilitate its safe use so that direct contact between the cutting surface and the sea turtle or the user is prevented. The cutting instrument must be securely attached to an extended reach handle and easily replaced. One extra set of replacement blades meeting these

standards must also be carried on board to replace all cutting surfaces on the line cutter or clipper;

(ii) *Extended reach handle*. The line cutter blade must be securely fastened to an extended reach handle or pole. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface and will vary based on the vessel design). For flexibility of configuration during use and for storage purposes, it is recommended that the handle break down into sections, although this is not a requirement. There is no restriction on the type of material used to construct this handle as long as it is sturdy and facilitates the secure attachment of the cutting blade.

(b) *Example Model(s) Meeting Current Design Standards:*

(i) *NOAA/Arceneaux Line Clipper (Plate B-3)*. The NOAA/Arceneaux line clipper can be fabricated by securely attaching a flat hardened stainless steel seat belt cutter with recessed cutting blades (such as the Lifesaver II Seat Belt Cutter™, Lifesaver Seat Belt Cutter™, Emergency Seat Belt Cutter, Innovative Scuba Razor Line Cutter or similar) to an extended reach handle using bolts and/or cable ties. A replacement blade set would require one additional seat belt cutter for the NOAA/Arceneaux Line Clipper;

(ii) *NOAA/Laforce Line Cutter (Plate B-4)*. The Laforce Line Cutter has a cutting end manufactured from a 6" long 1/2" aluminum rod with a 4 1/8" end at a 45° angle with two 420 C stainless steel serrated cutting blades secured inside the angle. It must be attached to an extended reach handle. A set of replacement blades would require two stainless steel serrated cutting blades for the NOAA/Laforce Line Cutter.

(2) Monofilament Cutters

Monofilament cutters should be used to remove netting, entangling line, or line as close as possible to the eye of the hook in the event that the hook was swallowed, or when the hook cannot be removed. This reduces the amount of gear retained by the animal in the event that all gear cannot be removed safely. Minimum design standards are as follows:

(a) *Design Standards:*

(i) *General*. These should be ~ 7 1/2" in length with ~1 3/4" long, 5/8" wide (closed) blades.

(b) *Example Model(s) Meeting Current Design Standards:*

(i) *Any monofilament cutters meeting design standards [e.g., Jinkai Model MC-T].*

Equipment to Remove Hooks

Dehooking devices may be designed to remove internal hooks, external hooks, or both. All long-handled tools should be able to capture and control the line, and the dehooking end must be securely fastened to the extended reach handle. They also should be designed to allow a twisting motion, which is necessary for circle hook removal.

(1) Long-handled Dehooker for Internal Hooks.

Some long-handled dehooking devices are designed to remove internal hooks from sea turtles that cannot be boated, and it may also be used to remove external hooks. Because this design should shield the barb of the hook and prevent it from re-engaging, this device also may be used to engage a loose hook during line removal when the turtle is entangled but not hooked.

Minimum design standards are as follows:

(a) ***Design Standards:***

(i) *Hook removal device.* The hook removal device should be constructed of ~ 3/16" - 5/16" marine grade stainless steel (316L) or similar and have a dehooking end no larger than 1 7/8" outside diameter. This device must securely control the leader while shielding the barb to prevent the hook from re-engaging during removal. It cannot have any unprotected sharp terminal points, as these could cause injury to the mouth and esophagus during hook removal. The device must be of a size appropriate to secure the range of hook sizes and styles in the applicable fishery (e.g., 16/0 - 20/0 circle hooks in the Atlantic pelagic longline swordfish and tuna fisheries would require use of 5/16" wire and an outside diameter of 1 7/8");

(ii) *Extended reach handle*. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface and will vary based on the vessel design). For flexibility of configuration during use and for storage purposes, it is recommended that the handle break down into sections, although this is not a requirement. There is no restriction on the type of material used to construct this handle as long as it is sturdy and facilitates the secure attachment of the hook removal device.

(b) ***Example Model(s) Meeting Current Design Standards:***

(i) *ARC Pole Big Game Dehooker Models BP04, BP08, BP11, P610 and BPIN (Plate B-5).* These devices are constructed of a 5/16" 316 L stainless steel rod curled into a pigtail spiral loop end with no exposed terminal point, and they are recommended for hook sizes 6/0 to 20/0. The rod is 7" from point of attachment to the end of the loop, and includes a 5.3° angle offset to shield the barb of the hook. The loop is designed at a 12.2° angle

bend from the rod and has an inside diameter of 1 1/4" and an outside diameter of 1 7/8 with an 1/8" gap between rod and loop to facilitate line engagement. Some models are manufactured with a three-part anodized aluminum pole that breaks down into 4' sections for storage. The 9" insert model (*BPIN*) must be attached to an extended reach handle.

Notch Modification for the ARC Dehookers

Any of the ARC models listed above can be notched to facilitate circle hook removal (refer to Chapter 2 for photographs and more discussion on the notch modification). The notch is created where the hook lies in the bottom portion of the curl, securing the shank enough to rock the hook from side to side while pushing the circle hook out. The notch modification can be accomplished with a metal file in approximately 15 minutes. The depth and width of each notch should be customized for the hooks used, although no notch should be deeper than 1/3 of the wire diameter to maintain the integrity of the device's tensile strength.

Instructions for notching the dehooker:

1. Place the type and size circle hook that you are using in the pigtail curl with the line parallel and tight.

2. Mark with a felt-tip pen/marker the exact location that the shank of the circle hook comes into contact with the vertical bottom of the pigtail curl.

3. Remove the hook, take a metal file (rectangle recommended, e.g., General 6 Piece Needle File Set from Ultratech Tool System, model # 707476), and notch (file) the marked area of the pigtail curl, where the shank of the hook was, approximately 1/16" to 1/8" deep and approximately 1/8" wide, depending on the hooks used. Use eye protection while filing the notch.

4. The width and depth of the notch should be determined by the size and type of the circle hook used in that particular fishery in order to facilitate the best fit. Do not exceed a depth of ~ 1/3 the wire diameter to avoid compromising the tensile strength of the wire.

(2) Long-handled Dehooker for External Hooks. Some long-handled dehookers are designed for use on externally hooked sea turtles that cannot be boated. The long-handled dehooker for internal hooks will also satisfy this purpose.

Minimum design standards are as follows:

(a) ***Design Standards:***

(i) *Hook removal device.* The dehooker should be constructed of ~ 3/16" – 5/16" marine grade stainless steel (316L) rod if constructing a wire style dehooker (e.g., the ARC and J-style dehookers). When constructing other styles (e.g., NOAA/Bergmann and Roby

dehookers), marine grade stainless steel (316L) should be used for all components. The design should be such that the hook can be rotated out without pulling it out at an angle. The dehooking end should be blunt with all edges rounded (it is critical that there are no sharp edges) and the outside diameter should be no greater than 1 7/8"; a smaller diameter end may be more appropriate in fisheries which often encounter small turtles or use small hooks. The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the applicable fishery (e.g., 16/0 – 20/0 circle hooks in the Atlantic pelagic longline swordfish and tuna fisheries would require use of 5/16" wire and an outside diameter of 1 7/8");

(ii) *Extended reach handle.* The hook removal device must be securely fastened to an extended reach handle or pole. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface and will vary based on the vessel design).

(b) ***Example Model(s) Meeting Current Design Standards:***

(i) *ARC Pole Big Game Dehooker Models BP04, BP08, BP11, P610 and BPIN (Plate B-5).* These devices are constructed of a 5/16" 316 L stainless steel rod curled into a pigtail spiral loop end with no exposed terminal point, and they are recommended for hook sizes 6/0 to 20/0. The rod is 7" from point of attachment to the end of the loop, and includes a 5.3° angle offset to create a 1/8" gap between rod and loop to facilitate line engagement. The loop is designed at a 12.2° angle bend from the rod and has an inside diameter of 1 1/4" and an outside diameter of 1 7/8". Some models are manufactured with a three-part anodized aluminum pole that breaks down into 4' sections for storage. The 9" insert model (*BPIN*) must be attached to an extended reach handle;

(ii) *Long-handled J-Style Dehooker or "Flip Stick" [e.g., ARC Model LJ6P (Plate B-6)]*. The dehooker should be constructed of ~ 3/16" – 5/16" diameter marine grade stainless steel (316L) rod ≥ 48" in length with a 1" dehooking end at a 45° angle to the rod forming a "J" shape;

(iii) *Long-handled Roby Dehooker (Plate B-7).* This device has a 3 3/4" long cylinder (1 5/8" outside diameter) with four ~ 1/8" notches at 90° angles on the edge and a ~ 1/8" diagonal slit to capture the line across the length of the cylinder. To attach the working end to a long handle, two pieces of 1/4" x 1" x 3" flat bar one at upper end and one at the midrange of the central rod can be welded and formed around long handled pole and securely fastened using a through bolt.

Long-handled Device to Pull an "Inverted V" during Disentanglement

The primary use for this tool is to pull a "V" when implementing the "Inverted V" dehooking technique for disentangling and dehooking entangled sea turtles. Minimum design standards are as follows:

(1) ***Design Standards:***

(i) *Hook end.* The device, such as a boat hook, gaff, or long-handled J-Style dehooker should be constructed of stainless steel or aluminum. The semicircular or "J" shaped end must be securely attached to a handle. A sharp point, such as a gaff hook, is only to be used in holding the monofilament line and should never contact the sea turtle;

(ii) *Extended reach handle.* The device must be securely fastened to an extended reach handle or pole. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface and will vary based on the vessel design).

(2) ***Example Model(s) Meeting Current Design Standards:***

(i) *Any long-handled J-Style Dehooker or "Flip Stick" [e.g., ARC Model LJ6P (Plate B-6)]* See Page A2-6 above for a description;

(ii) *Any standard boat hook (e.g., Davis Telescoping Boat Hook to 96" Model 85002A;*

(iii) *Any standard fishing gaff [e.g., West Marine # F6H5 Hook and # F6-006 Handle].*

Chapter A3 Boating and Holding Sea Turtles

Whenever possible, sea turtles must be brought on board immediately and handled in accordance with the procedures outlines in the standards for the handling of incidentally caught sea turtles [50 CFR 223.206 (d)(1)], unless extreme sea conditions prevent the crew from safely boating the turtle. Generally, all turtles < 3' straight carapace length should be boated. Vessels should maintain and utilize the following equipment and release the turtle with minimal injury:

Boating the Turtle

(1) Dip Net. A dip net facilitates the safe handling of sea turtles by allowing them to be brought onboard for gear removal without causing further injury to the animal. The turtle should never be brought onboard without a net or hoist. Using the involved gear to raise the turtle may result in serious injury and impact post-release survivorship, especially in cases where the turtle has ingested the hook. NMFS has established minimum design standards for the dip nets (65 FR 16347, March 28, 2000 and 66 FR 17370, March 30, 2001). These minimum design standards for dip nets are as follows:

(a) ***Design Standards:***

(i) *Size of dip net*. The dip net must have a sturdy net hoop of at least 31" inside diameter and a bag depth of at least 38" to accommodate turtles less than 3' carapace length. The bag mesh openings may not exceed 3" x 3" (bar measure). There should be no sharp edges or burrs on the hoop or where it is attached to the handle. There is no requirement for the hoop to be circular as long as it meets the minimum specifications;

(ii) *Extended reach handle.* The dip net hoop must be securely fastened to an extended reach handle or pole. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface and will vary based on the vessel design). For flexibility of configuration during use and for storage purposes, it is recommended that the handle break down into sections, although this is not a requirement. There is no restriction on the type of material used to construct this handle, as long as it is sturdy enough to support a minimum of 100 lbs without bending or breaking, and facilitates the sturdy attachment of the net hoop.

(b) ***Example Model(s) Meeting Current Design Standards:***

(i) *ARC 12' Breakdown Lightweight Dip Net Model DN6P (6'), DN08 (8') or DN14 (12') or ARC Net Assembly (hoop, net, coupling-DNIN) and handle (Plate B-8).* This dip net is constructed of a hollow heavy duty aluminum tubing to form a 97" circumference hexagonal frame, and the 38" bag is 2 1/2" square nylon mesh;

(ii) *Lindgren-Pitman, Inc. Model NMFS-Turtle Net.* This dip net is constructed of heavy duty stainless steel tubing to form a 31" diameter circular frame with a 45" bag of 2" square nylon mesh;

(iii) *Bluewater Tackle.* This lightweight dip net is constructed of a composite material frame and handle with a bag of 3" stretch mesh;

(iv) *Howell Tackle.* This lightweight dip net is constructed of a composite material frame and handle with a bag of 3" stretch mesh.

(2) Turtle Hoist. A hoist is recommended to bring turtles onboard that cannot be boated using a smaller dip net, or where storage constraints do not allow for an extended reach handle. Minimum design standards are as follows:

(a) ***Large Turtle Hoist.*** This style is recommended for boating large turtles, such as leatherbacks, which need a supportive platform while onboard.

(1) ***Design Standards:***

(i) *General*. The hoist should be designed so that when onboard, the turtle is suspended above the deck on a platform of mesh netting supported by a rigid ring, and contained within a webbing fence a minimum of 18" high. The top two rings (1 3/4" 50 series aluminum round bar) should be ~ 7'6" in diameter, and the bottom ring (1 1/2" 50 series aluminum round bar) should be ~ 4' in diameter. The middle and bottom rings are connected using 12 angled (~ 25") spoke braces of ~ 23" (1" 50 series aluminum round bar or 6061 T6 1" Schedule 40 pipe) welded in place with an appropriate welding wire (5052, 6061 or 3003 wire). Knotless polypropylene 8 mm 600 ply netting, 6.5" stretch is stretched across the middle ring. The fence is supported by the top and middle rings, which are connected by a 3 mm, 4.7" stretch mesh braided polyethylene webbing to create a fence a minimum of 18" high, wrapped along the top ring with 1/2" polypropylene rope. 8" x 2 1/2" rubber cookies (4 per each of 12 sections) can be used on the middle ring to facilitate rolling the hoist up the side of the vessel and to cushion impact of hoist against the side of the vessel. In rough seas, a vang is necessary to hold the hoist close to side of vessel. A three or four point bridle is attached to the top ring using pairlinks and 3/4" nylon 3-strand line, and a hydraulic lift is used to bring hoist aboard. The hoist should be capable of lifting a minimum of 1/2 ton.

(2) ***Example Model(s) Meeting Current Design Standards:***

(i) *Large Turtle Hoist (Plate B-9).* This hoist (designed, in part, and constructed by Blue Water Fishing Tackle Co., Inc., D.N. Kelley Shipyard, Diversified Marine LLC, Eagle Eye II Corporation, Polar Packaging, Inc., Reidar's Manufacturing, Inc., *F/V Sea Hawk*, and Scandia, Inc.) was designed to bring leatherbacks onboard following the above specifications. Modifications to the

vessel will likely be necessary to install the hoist, including: a platform to house the lift, alterations to the boom including strongback, pivoting gooseneck, hydraulic ram attachment and reinforcement, hydraulic ram, hydraulic runs, or a duel winch arrangement, and for safe lifting, a 2200 PSI planetary hydraulic winch with hydraulic runs, control and rigging (SS wire and blocks).

(b) ***Small Turtle Hoist.*** In some cases, such as on a vessel with a high freeboard distance or if there is not enough room for storing a dip net, an extended reach handle may be impractical, even with small turtles. A supportive frame with mesh netting, but without an extended reach handle, may be best in these circumstances.

(1) ***Design Standards:***

(i) *General*. The frame should be rigid and capable of supporting at least 100 pounds, with a minimum diameter of 31" to accommodate turtles less than 3' carapace length. This frame can be hinged or otherwise designed so that it can be folded for ease of storage as long as it can be quickly reassembled. If the frame is designed to fold or break down for storage, the hardware must be self contained (e.g., barrel bolts on both sides to lock down frame with no loose pieces like through bolts and nuts), and there must be no sharp edges. The shape of the frame does not matter (e.g., round, square, rectangular, or a "U-shaped" or "J-shaped" basket) as long as it meets the required specifications and securely contains the turtle. The frame may be constructed of heavy duty stainless steel tubing welded into shape or ~ 2" PVC pipe connected at the corners using 90° elbow fittings. PVC pipes should be drilled to facilitate water drainage for ease of hauling. A shallow bag net with mesh openings not to exceed 3" x 3" (bar measure) should be securely affixed to the frame, and lines (e.g., polypropylene, nylon, polyester) should be securely attached to each corner to control and retrieve the frame and net. The lines can be operated using a pulley system if available on the vessel. No extended reach handle is needed on this type of net.

(2) ***Example Model(s) Meeting Current Design Standards:***

(i) *Small Turtle Hoist (Plate B-10)*. This is a frame net without a handle, with a square, rectangular or round stainless steel or PVC frame with a mesh bag securely affixed and lines attached to the corners or at least three points around a circle to bring turtles onboard.

Holding the Turtle

(1) Cushion/support Device.

(a) ***Design Standards:***

(i) The device should effectively cushion and support the animal while it is onboard. It should be appropriately sized to fully support a range of turtle sizes.

(b) ***Example Model(s) Meeting Current Design Standards:***

(i) *A standard automobile tire*. A standard (not from a truck or heavy equipment) passenger vehicle tire not mounted on a rim, free of exposed steel belts, is effective for supporting the turtle while it is onboard. If the turtle is too large for the tire, it must be contained and supported on an alternative cushioned surface. An assortment of sizes is recommended to accommodate a range of turtle sizes.

(ii) *Boat cushion.* A standard boat cushion will effectively support smaller turtles.

(iii) *Large turtle hoist.* This style is recommended for supporting large turtles, such as leatherbacks, which need a supportive platform while onboard.

Chapter A4 Equipment for Opening the Mouth of Boated Turtles

Opening the Mouth

In many cases, a mouth opener or gag must be used in order to remove internal hooks from boated turtles. It must be designed to allow access to the hook or line without causing further injury to the turtle. It is recommended that at least one type allow for hands-free operation of the gear removal devices once the gag is in place (only the canine mouth gag satisfies this recommendation, see item (2) below). Design standards are included in the item description. A minimum of two of the seven different types/categories of mouth openers/gags from the following list will offer the necessary flexibility:

Mouth Openers and/or Mouth Gags

(1) Set of Two Rope Loops Covered with Protective Tubing. A set consists of two pieces of poly braid rope covered with light duty garden hose or similar flexible tubing each tied or spliced into a loop to provide a one-handed method for keeping the mouth open. The upper loop gives the user control using one hand, and the second rope/hose length is secured on lower beak using the user's foot for extra control. This keeps the mouth open to allow access to the hook and/or line. Two 36" lengths of poly-braid rope (3/8" diameter suggested) should be covered with an 8" section of 1/2" or 3/4" tubing and each tied or spliced into two loops. Any set of rope loops covered with tubing meeting these specifications is acceptable;

(2) Large Avian Oral Speculum. An avian oral speculum gives you the ability to hold the mouth open and control the head with one hand while removing the hook with the other hand. This tool is for use only on small turtles, as larger turtles may be able to crush the speculum. The avian oral speculum should be 9" long, and constructed of 3/16" wire diameter surgical stainless steel (Type 304). It should be covered with 8" of clear vinyl tubing (5/16" outside diameter, 3/16" inside diameter), friction tape (e.g., 3M™ Temflex™ 1755 Cotton Friction Tape) or similar to pad the surface. Example models meeting these specifications include: Model # 85408 from Webster Vet Supply; VSP # 216-08 from Veterinary Specialty Products; Jorvet Model J-51z; and Krusse Model 273117. These can be purchased through veterinary supply businesses;

(3) Block of Hard Wood. A smooth block of hard wood is an inexpensive, effective and practical mouth-gagging device that meets these requirements and is readily available on most vessels. Placed in the corner of the jaw, it is used to gag open the mouth. The wood should be of a type that does not splinter (e.g., maple) with rounded edges, and it should be sanded smooth, if necessary, and soaked in water to soften the wood. The dimensions should be approximately 11" x 1" x 1" or appropriately sized for the size of turtles that might be caught. Any block of hard wood meeting these specifications is acceptable. A long-handled, wire brush with a maple wooden handle and the wires removed is an inexpensive, effective and practical device that meets these requirements (e.g., *Olympia Tools Long-Handled Wire Brush and Scraper #974174).*

A wooden hammer handle may be suitable, providing it is made from wood which does not splinter under pressure (e.g. ash, maple);

(4) Set of Three Canine Mouth Gags. The use of canine mouth gags is highly recommended to hold the mouth open, as the gag locks into the open position and allows for hands free operation once it is in place. These tools are for use only on small and medium sized turtles, as larger turtles may be able to crush the mouth gag. A set of canine mouth gags should include one of each of the following sizes: small (~ 5"), medium (~ 6"), and large (~ 7"). They must be constructed of stainless steel. The ends should be covered with clear vinyl tubing, friction tape (e.g., 3M™ Temflex™ 1755 Cotton Friction Tape) or similar to pad the surface. A set includes one of each size and can be purchased through veterinary supply businesses. An example set meeting these specifications is *Jorvet Model #4160, 4162, and 4164*;

(5) Set of Two Sturdy Dog Chew Bones. These "chew toys" are inexpensive, easy to handle, and sold in several sizes in pet stores. Placed in the corner of the jaw, it is used to gag open the mouth. They should be designed of durable nylon or thermoplastic polymer, strong enough to withstand biting without splintering. One large (e.g., "Giant" 8" or "Wolf" 5 1/2") and one small (e.g., "Regular" 4 1/2" or "Petite" 3 1/2") will accommodate a variety of beak sizes. Example models meeting current specifications include: Nylabone® (a trademark owned by T.F.H. Publications, Inc.); Gumabone® (a trademark owned by T.F.H. Publications, Inc.); and Galileo® dog chew (a trademark owned by T.F.H. Publications, Inc.);

(6) Hank of Rope. A lanyard of braided rope (e.g., nylon, polypropylene, polyester) can be folded to create a hank of rope. Placed in the corner of the jaw, it is used to gag open the mouth. A 6' lanyard of approximately 3/16" braided nylon rope can be folded to create a hank of rope. Any size soft braided nylon rope is acceptable, provided it creates a hank of approximately 2 - 4" thickness;

(7) Set of Four PVC Couplings. Inexpensive PVC couplings can be positioned inside the mouth to allow access to the back of the mouth. They should be held in place with the needle-nose pliers. Standard Schedule 40 PVC couplings in a variety of sizes (1", 1 1/4", 1 1/2", and 2") will ensure proper fit and access. A set includes all four sizes.

Chapter A5 Equipment for Removing Gear from Boated Turtles

Assess what the best hook removal technique is in each circumstance. Depending on the position and depth of the hook, needle-nose pliers and/or bolt cutters may be the most efficient way to remove hooks. If required, dehooking devices may be used to remove external or internal hooks (if the insertion point of the hook can be seen). All short-handled dehooking tools for removing internal hooks should have a bite block to protect the turtle's beak. They should also be designed to allow a twisting motion, which is necessary for circle hook removal. The NOAA/Bergmann dehooker is approved for removing external circle or J-hooks, and internal circle hooks from turtles boated. It should not be used to remove internal J-hooks from turtles boated.

Needle-nose or Long-nose Pliers

Long-nose or needle-nose pliers can be used to assist in removal of hooks that are embedded in the animal's flesh and must be twisted during removal, or for removing hooks from the front of the mouth. They are also useful in holding PVC splice couplings in place when used as mouth openers. Minimum design standards are as follows:

(1) ***Design Standards:***

(i) *General.* They should be ~ 12" in length. It is recommended that these be of stainless steel material.

(2) ***Example Model(s) Meeting Current Design Standards:***

(i) *Any 12" long-nose or needle-nose pliers* [*e.g., 12" S.S. NuMark Model #030 281 109 871, Offshore Angler® Stainless Longreach Pliers Model #38-481-759-00, Pittsburgh® 15" Long Nose Locking Pliers]*.

Bolt Cutters

Bolt cutters are essential for removing hooks, and must be of a size practical to be used inside the turtle's mouth. They are used to cut off the eye or barb so that the hook can be pushed through easily without causing further injury to the sea turtle. They also are used to cut off as much of the hook as possible when the remainder cannot be removed. Minimum design standards are as follows:

(1) ***Design Standards:***

(i) *General*. They should be ~ 14 – 17" in total length, ~ 4" long blades that are ~ 2 1/4" wide (closed) with ~ 10 – 13" long handles. They must be able to cut hard metals such as stainless or carbon steel hooks up to 1/4" diameter.

(2) ***Example Model(s) Meeting Current Design Standards:***

(i) *Any bolt cutters meeting design standards [e.g., H.K. Porter Model 1490 AC].*

Equipment to Remove Line

(1) Monofilament Cutter. Monofilament cutters should be used to remove line as close as possible to the eye of the hook in the event that the hook was swallowed, or when the hook cannot be removed. This reduces the amount of gear retained by the animal in the event that the hook cannot safely be removed. Minimum design standards are as follows:

(a) ***Design Standards:***

(i) *General*. These should be ~ 7 1/2" in length with ~1 3/4" long, 5/8" wide (closed) blades.

(b) ***Example Model(s) Meeting Current Design Standards:***

(i) *Any monofilament cutters meeting design standards [e.g., Jinkai Model MC-T]*

Short-handled Dehooker for Internal Hooks

This dehooker is designed to remove internal hooks from boated sea turtles, including hooks in the front of the mouth, as well as external hooks. Minimum design standards are as follows:

(1) Design Standards:

(i) *Hook removal device.* The dehooker should be constructed of ~ 3/16" – 5/16" marine grade stainless steel (316L) rod if constructing a wire style dehooker (e.g., ARC dehooker). When constructing other styles (e.g., NOAA/Bergmann dehooker), marine grade stainless steel (316L) should be used for all components. The end must allow the hook to be secured and the barb to be shielded without re-engaging during the removal process. It must be no larger than 1 7/8" total width; a smaller diameter end may be more appropriate in fisheries which often encounter small turtles or use small hooks. It cannot have any unprotected terminal points as this could cause injury to the esophagus during hook removal (it is critical that there are no sharp edges). A sliding PVC bite block should be used to protect the beak and facilitate hook removal if the turtle bites down on the dehooking device. The bite block should be constructed of a 3/4" or smaller inside diameter high impact plastic cylinder (e.g., Schedule 80 PVC) that is 4 - 6" long to allow for at least 5" of slide along the shaft. The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the applicable fishery (e.g., 16/0 - 20/0 circle hooks in the Atlantic pelagic longline swordfish and tuna fisheries would require use of 5/16" wire and an outside diameter no greater than 1 7/8");

(ii) *Handle length*. The handle should be ≤ 47" (recommended length of 16" – 24") with a ~ 4 – 6" long tube T-handle of ~ 1" diameter, wire loop handle or similar.

(2) Example Model(s) Meeting Current Design Standards:

(i) *17" Bite Block Deep-Hooked (Sea Turtle) ARC Dehooker Model ST08 (Plate B-11).* This device is constructed of a 1/4" 316 L stainless steel rod curled into a pigtail spiral loop end. The loop is placed at a 5.3° angle offset to create a 1/8" gap between rod and loop to facilitate line engagement. The loop is designed at a 12.2° angle bend from the rod, and an inside diameter of 13/16" and an outside diameter of 1 5/16". It has a 3/4" I.D. high impact plastic cylinder bite block 5" in length. This model may be notched according to the instructions in Chapter A2.

(ii) *The NOAA/Bergmann Dehooker (Plate B-12).* This device has two ~2 3/4"rounded prongs at the end to form a uniform gap of at least 7/32". It has a 3/4" inside diameter high impact plastic cylinder bite block 5" in length. *Note*: This dehooker is approved for removing external circle or J-hooks, and internal circle hooks from turtles boated. It **should not be used to remove internal J-hooks** from turtles boated.

Short-handled Dehooker for External Hooks. These dehookers are designed for use when the hook is external, or when hooks are located in the front of the mouth. Minimum design standards are as follows:

(1) Design Standards:

(i) Hook removal device. The dehooker should be constructed of ~ 3/16" – 5/16" marine grade stainless steel (316L) rod if constructing a wire style dehooker (e.g., the ARC, Scotty's and J-Style dehookers). When constructing other styles (e.g., NOAA/Bergmann and Roby dehookers), marine grade stainless steel (316L) should be used for all components. The design should be such that the hook can be rotated out without pulling it out at an angle, and the dehooking end should be blunt and all edges rounded (it is critical that there are no sharp edges). The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the applicable fishery (e.g., 16/0 - 20/0 circle hooks in the Atlantic pelagic longline swordfish and tuna fisheries would require use of 5/16" wire and an outside diameter of 1 7/8");

(ii) *Handle length.* The handle length should be ≤ 47" (recommended length of 16"-24"), with a ~ 5" long tube T-handle of ~ 1" diameter, wire loop handle or similar is recommended.

(2) Example Model(s) Meeting Current Design Standards:

(i) *17" Bite Block Deep-Hooked (Sea Turtle) ARC Dehooker Model ST08 (Plate B-11).* This model may be notched according to the instructions in Chapter A2. See description on Page A5-2 above;

(ii) *NOAA/Bergmann Dehooker (Plate B-12).* See description on Page A5-2;

(iii) *Short-handled J-Style Dehooker (Plate B-6)* [e.g., ARC Hand Held Large J-Style Dehooker Model LJ07 or LJ24]. See description on Page A5-2 above;

(iv) *Scotty's Dehooker (Plate B-13).* This device has two 1 1/4" long prongs at the end to form a 3/4" wide fork. This device is approved for removing external circle or J-hooks from turtles boated. It should **not** be used to remove any internal hooks;

(v) *Short-handled Roby Dehooker (Plate B-14).* This device has a ~ 3 3/4" long cylinder (1 5/8" outside diameter) with four ~1/8"notches at 90° angles on the edge and a ~1/8" diagonal slit to capture the line across the length of the cylinder.

Appendix B

DESIGN SCHEMATICS FOR CAREFUL RELEASE EQUIPMENT

Plate B-1

TURTLE TETHER

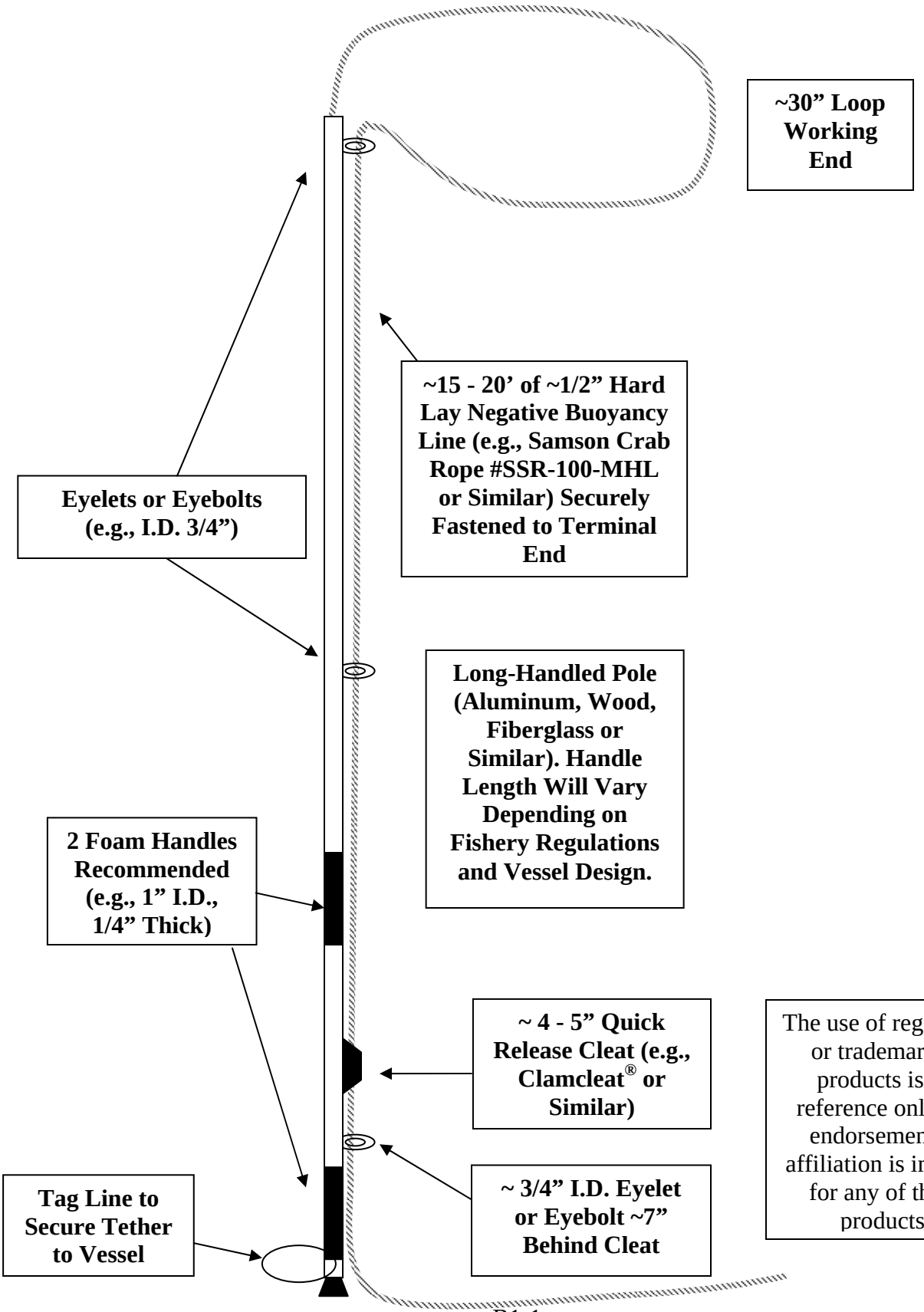


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Plate B-2

T&G NINJA STICKS

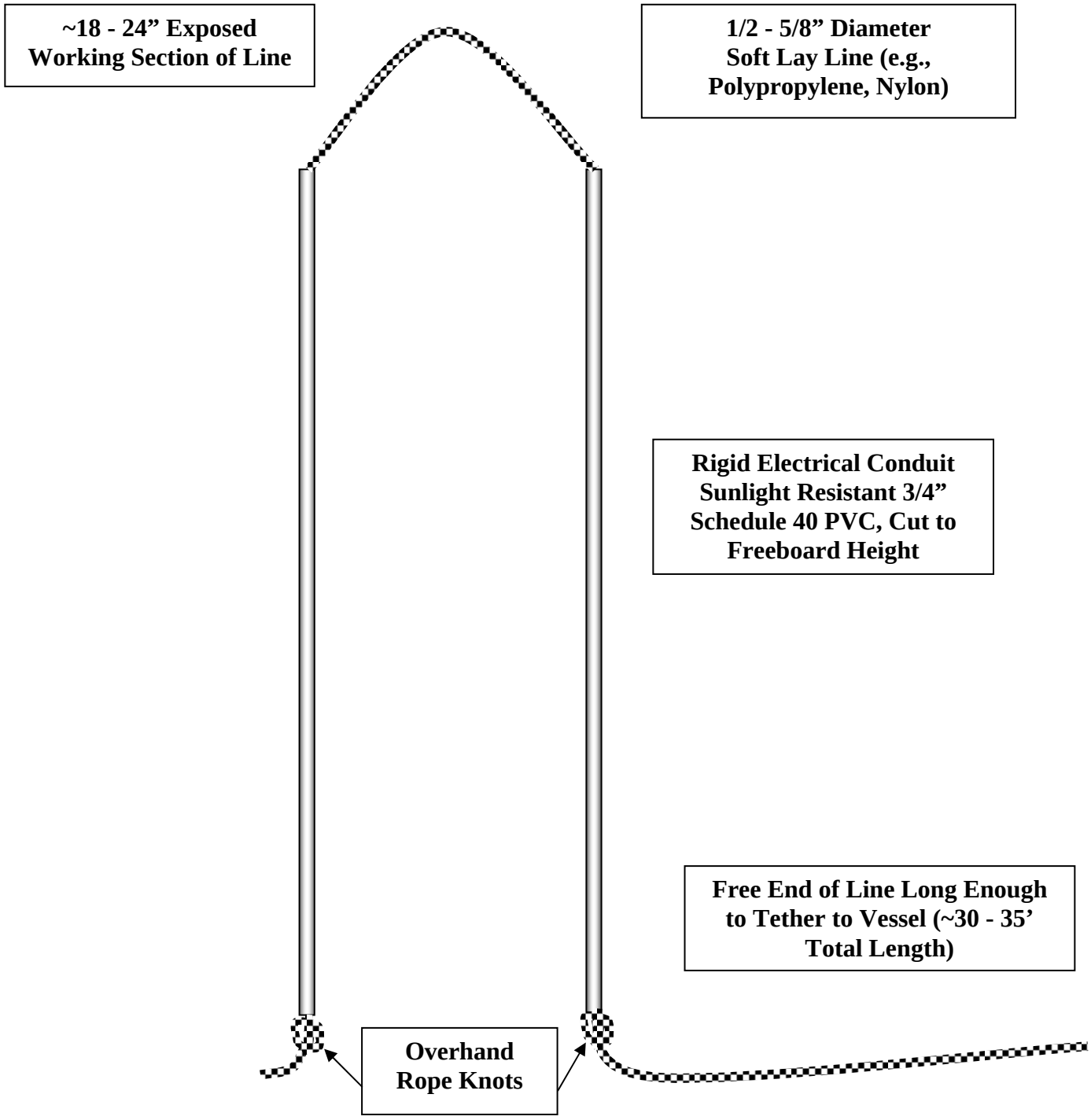
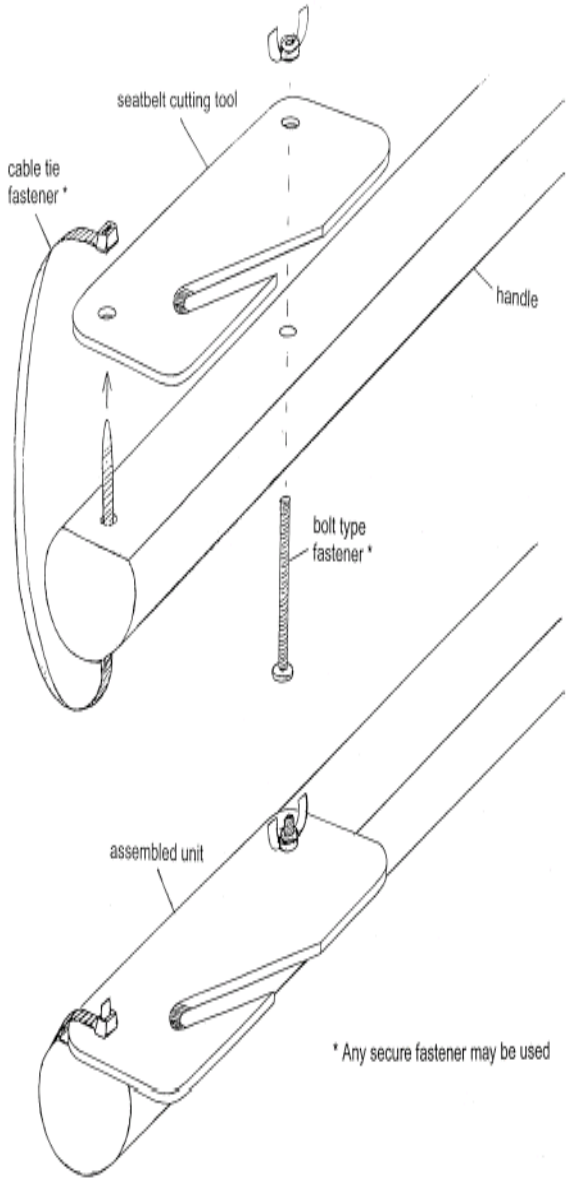


Plate B-3

NOAA/ARCENEAUX LINE CLIPPER

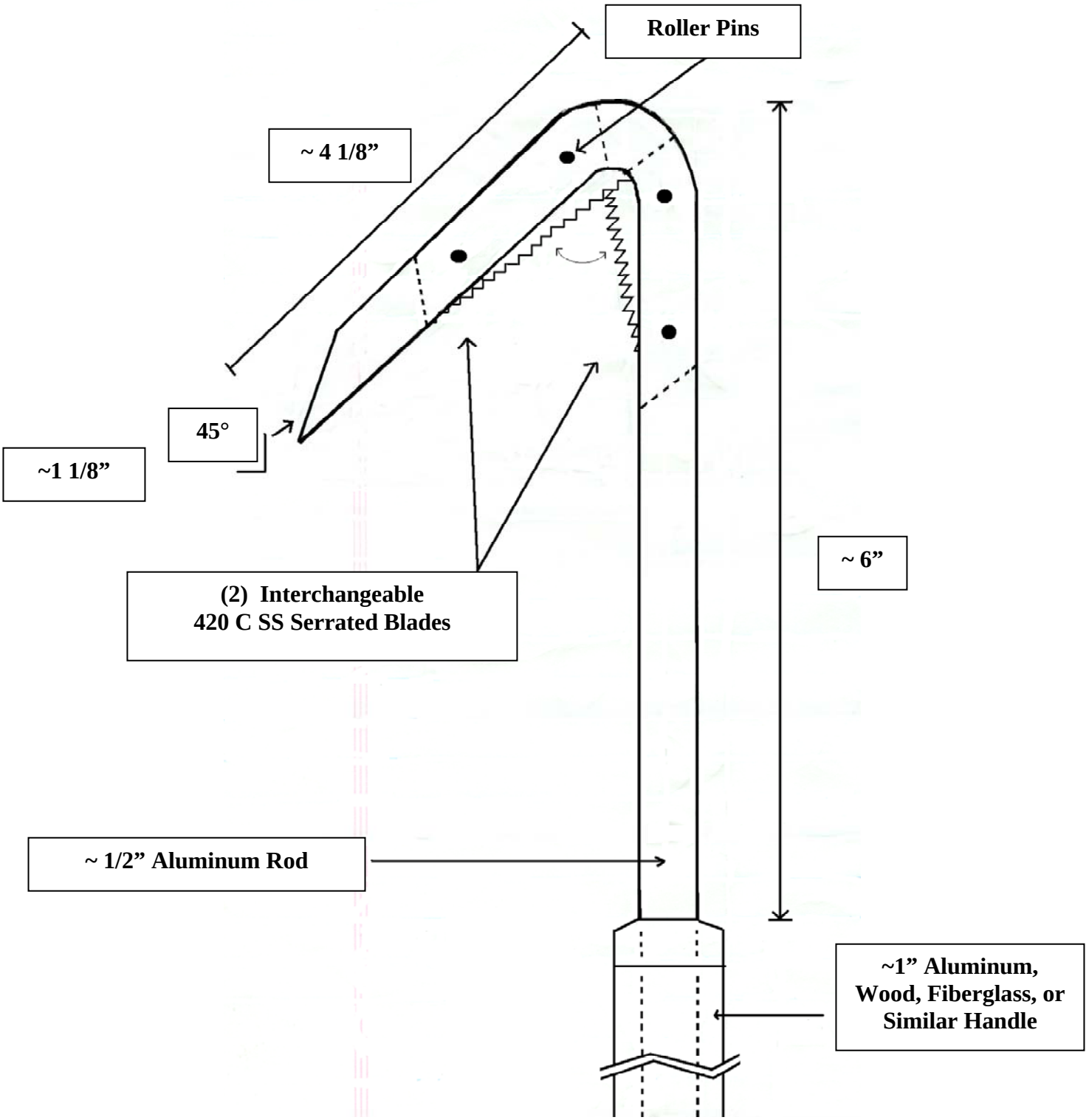


50 CFR 660.33 Ch. VI (10-1-02 Edition)

[65 FR 16347, Mar. 28, 2000, as amended at 67 FR 40236, June 12, 2002; 67 FR 48576, July 25, 2002]

Plate B-4

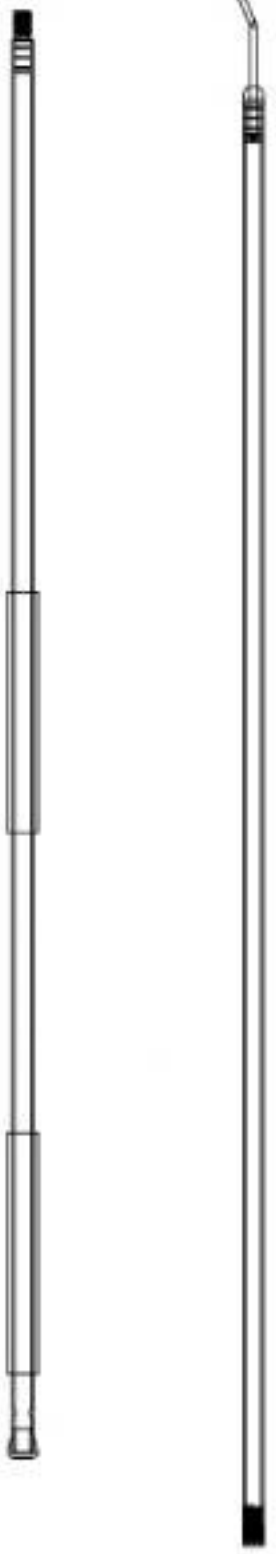
NOAA/LAFORCE LINE CUTTER



Modified Version of Diagram Provided by ARC

Plate B-5

ARC POLE BIG GAME DEHOOKER

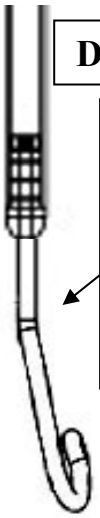


~ 3/16" - 5/16" 316L SS Rod

Total Length 4 - 12' Depending on Freeboard Height. Working End Must Be Securely Attached to Sturdy Handle (e.g., Wood, Aluminum, Fiberglass) (2 Breakdown Pole Sections Depicted Here).

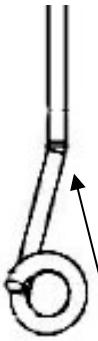
2 Foam Handles (Optional) (e.g., 1" I.D., 1/4" Thick)

Detail of Working End



5.3° to 13° (Range) Offset Angle to Shield the Point of the Hook

~ 5 - 7" From Point of Insertion to End of Curl



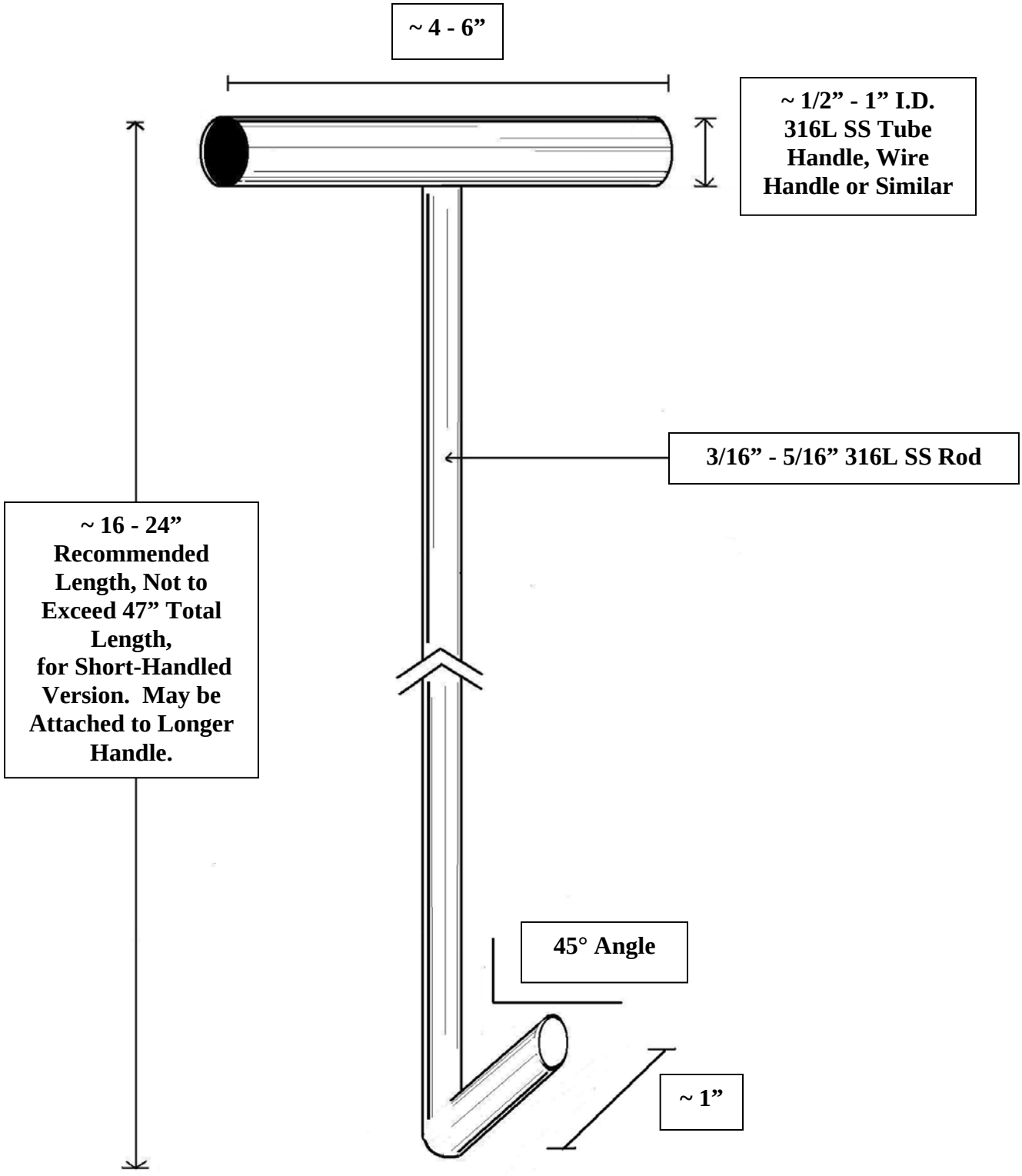
12.2° to 24° (Range) Angle Bend from the Rod to Accept a Range of Hook Sizes

Loop I.D. 1 1/4" and O.D. No Greater than 1 7/8" with ~1/8" Gap Between Rod and Loop to Facilitate Line Engagement

Modified Version of Diagram Provided by ARC
U.S. Patent # 4,914,853; U.S. Design Patent # 382,628

Plate B-6

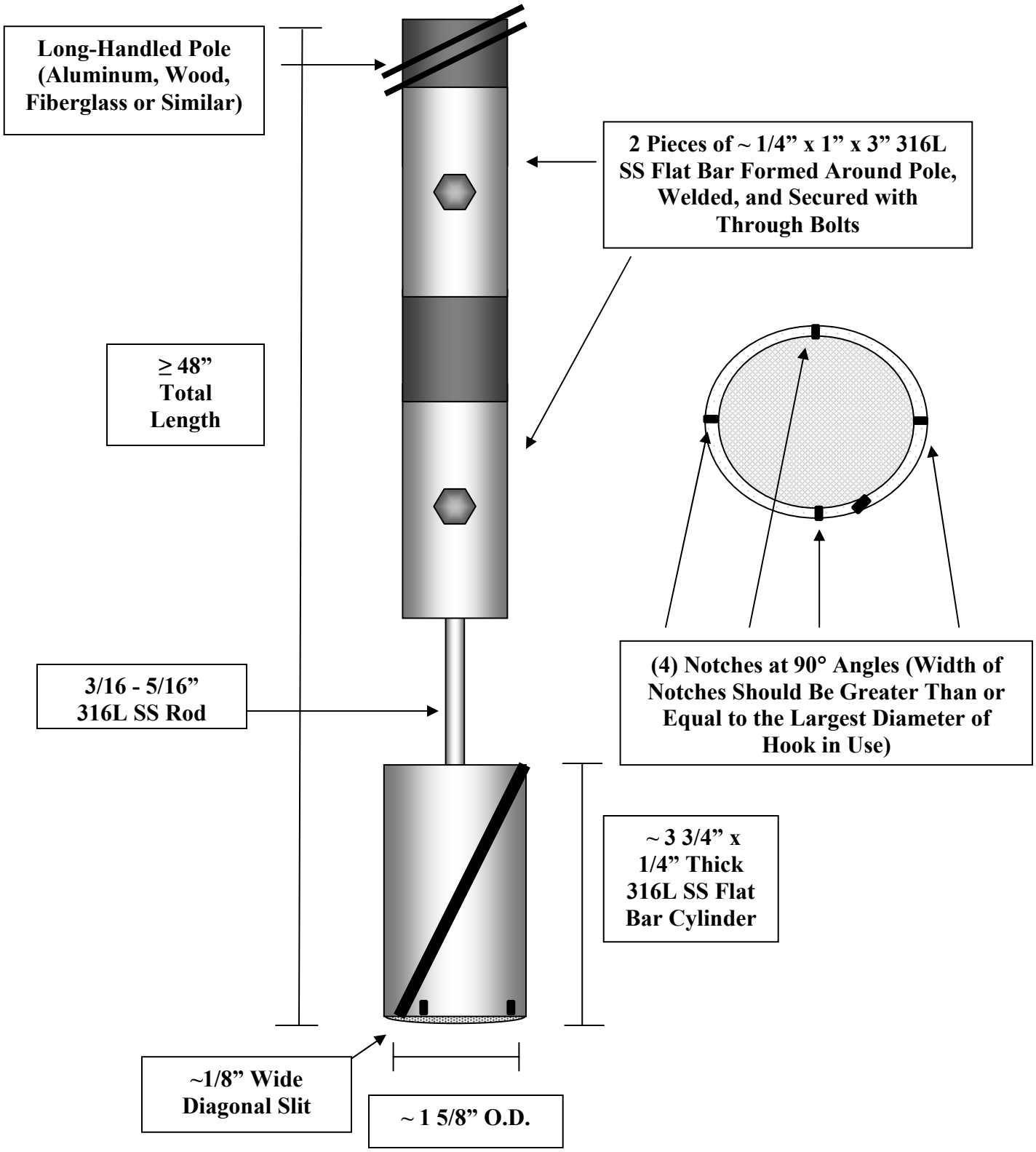
J- STYLE DEHOOKER



Modified Version of Diagram Provided by ARC

Plate B-7

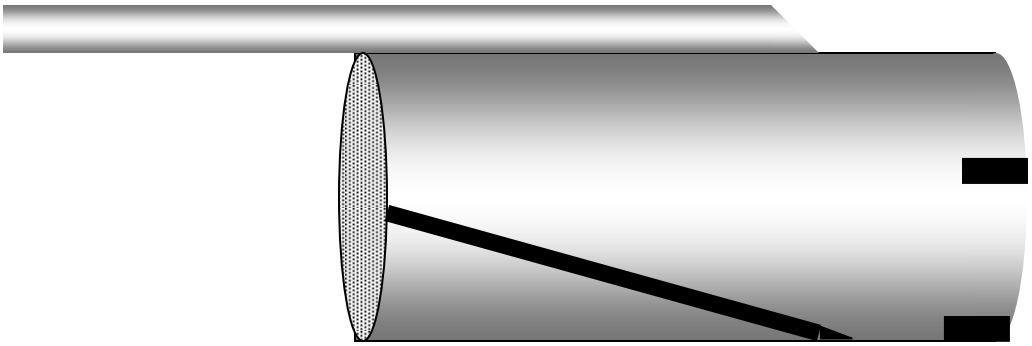
LONG-HANDLED ROBY DEHOOKER



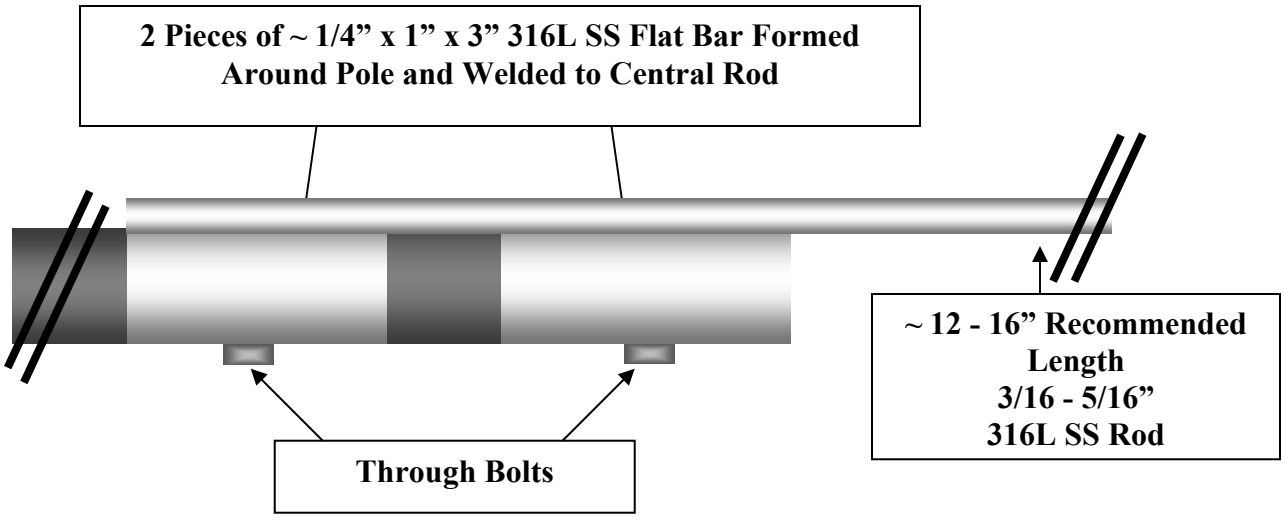
All Edges Must Be Rounded So That They Are Not Sharp

Plate B-7 Continued

Side Views



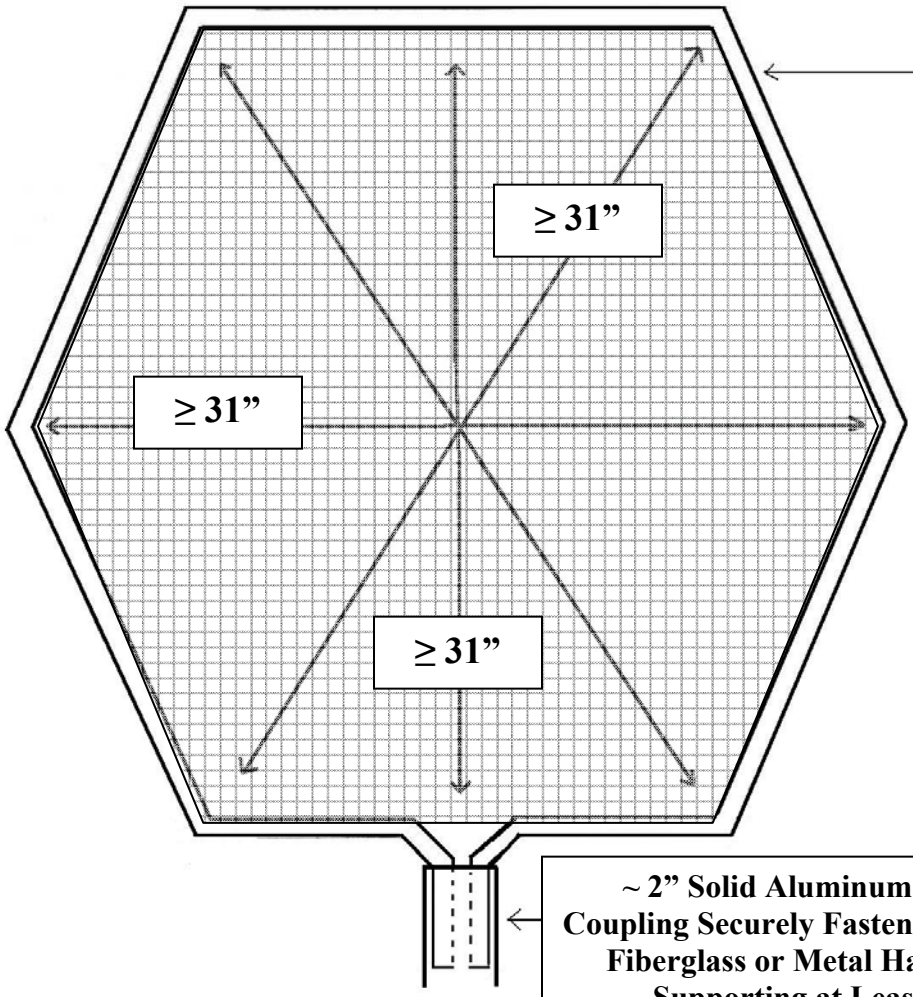
All Edges Must Be Rounded So That They Are Not Sharp



Attachment Method May Vary as Long as Working End Is Securely Attached

Plate B-8

DIP NET



~ 3/4” Heavy Duty Hollow Aluminum, Marine Grade SS Tubing, or Composite Material Frame. Hexagonal Shape Depicted Here as an Example, But Other Shapes (e.g., Round) Are Acceptable.

~ 2” Solid Aluminum, SS, or Similar Coupling Securely Fastened to Sturdy Wood, Fiberglass or Metal Handle Capable of Supporting at Least 100 Pounds

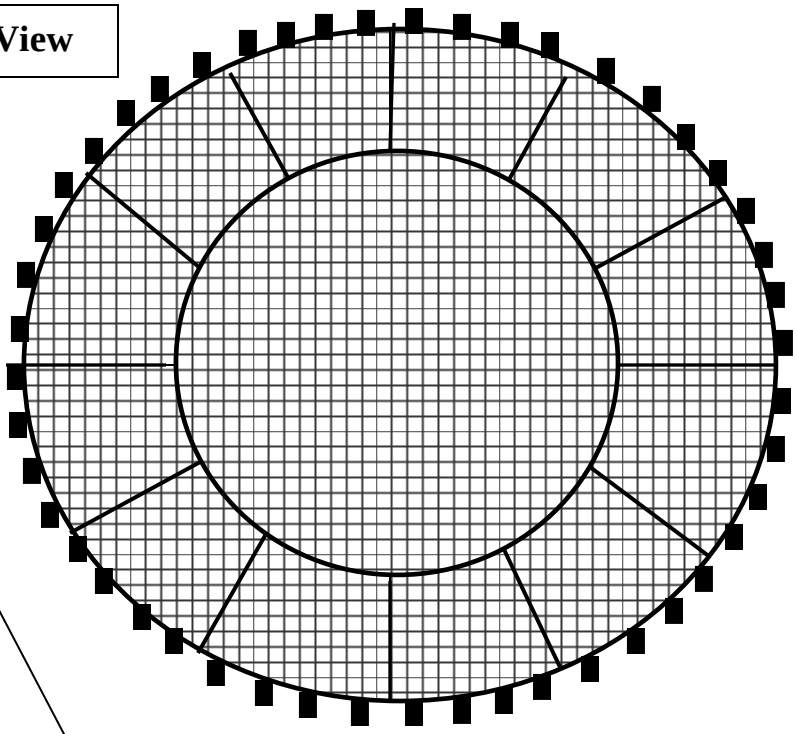
Mesh Openings Must Not Exceed 3” x 3” (Bar Measure).
Bag Depth Must Be ≥ 38”.

Modified Version of Diagram Provided by ARC

Plate B-9

LARGE TURTLE HOIST

Top View



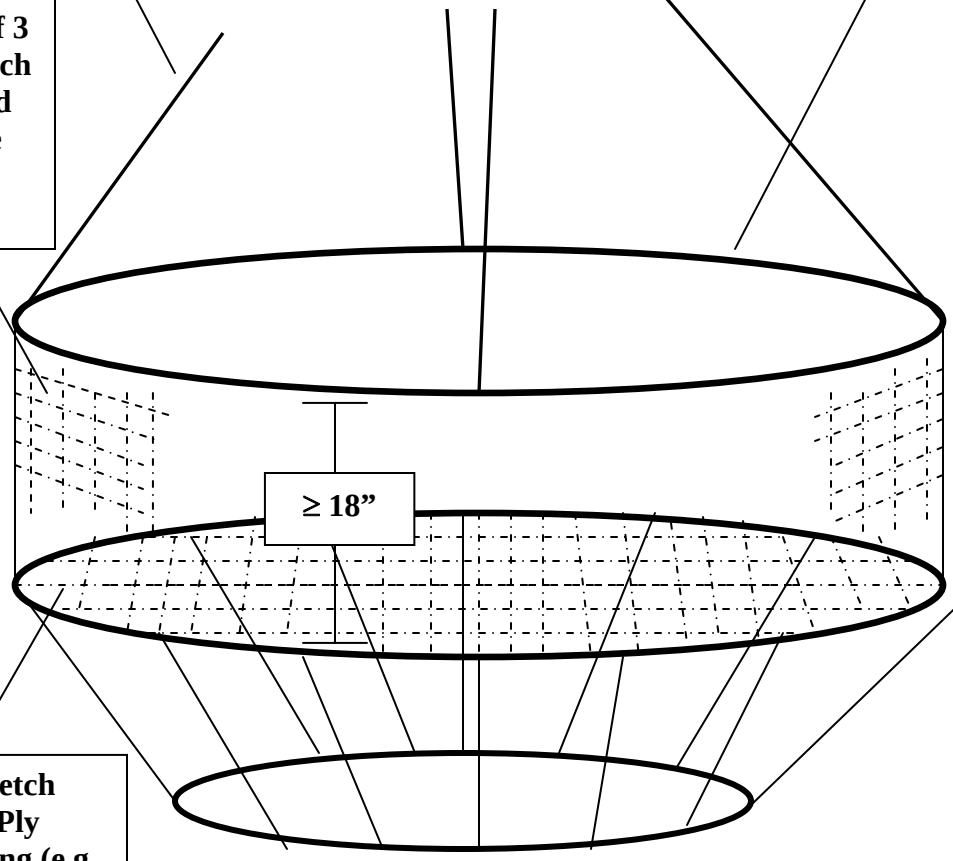
4 Round Rubber Cookies (8” x 2 1/2”) per section (48 Total) on Top

3 or 4 Point Bridle Attached with Pairlinks and 3/4” Nylon 3-Strand Line

Top/Fence Ring 7’ 6” Diameter (1 3/4” Round 50 Series Aluminum Bar Wrapped in 1/2” Polypropylene Wrap Rope)

Fence Constructed of 3 mm, 4.7” Stretch Mesh Braided Polyethylene Webbing

Middle Ring 7’ 6” Diameter (13/4” Round 50 Series Aluminum Bar) Wrapped in 1/2” Polysteel Rope Around Circumference



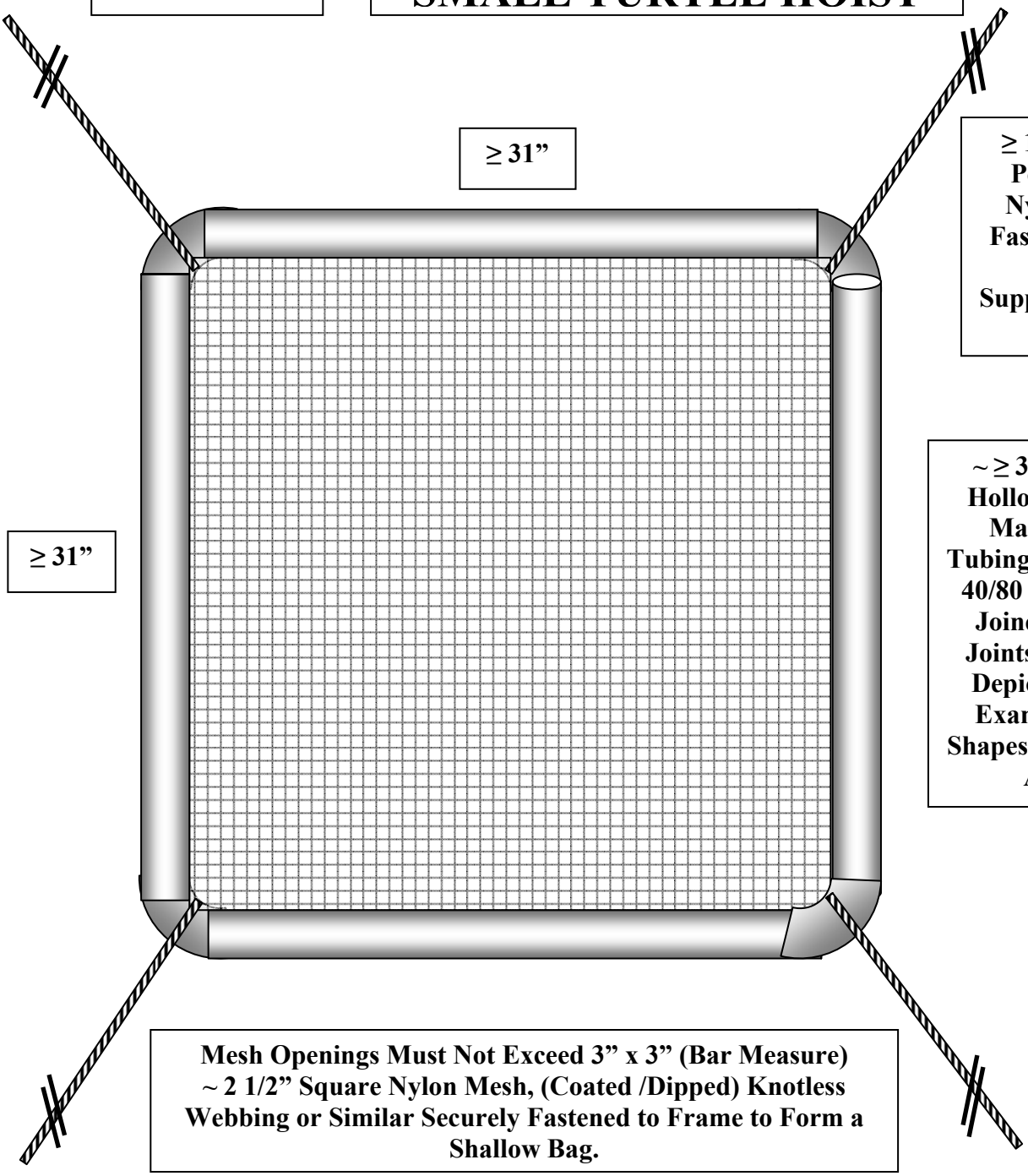
(12) Beveled Spokes ~23” (1” Round 50 Series Aluminum Bar or 6061 T6 Schedule 40 Pipe) Set at ~25°. Welded Using Appropriate Welding Wire (5052, 6061 or 3003).

8 mm, 6.5” Stretch Knotless 600 Ply Polyethylene Netting (e.g., Ultra Cross Netting by NET Systems, Inc.)

Bottom Ring 4’ Diameter (1 ½” Round 50 Series Aluminum Bar)

Plate B-10

SMALL TURTLE HOIST



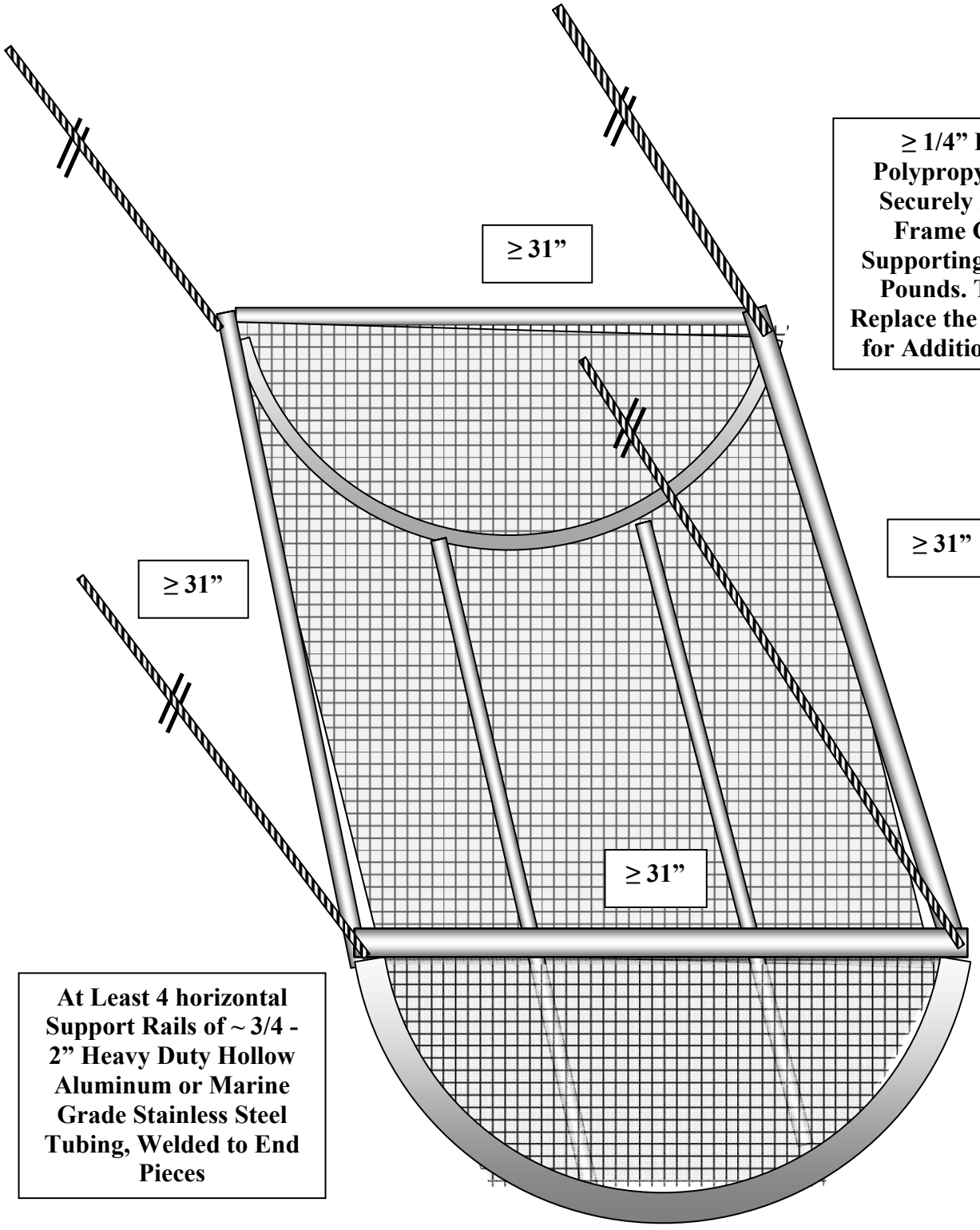
≥ 1/4" Line (e.g., Polypropylene, Nylon) Securely Fastened to Frame Capable of Supporting At Least 100 Pounds

~ ≥ 3/4" Heavy Duty Hollow Aluminum or Marine Grade SS Tubing, or ~ 2" Schedule 40/80 PVC. Welded or Joined Using Elbow Joints. Square Shape Depicted Here As an Example, but Other Shapes (e.g., Round) Are Acceptable.

Mesh Openings Must Not Exceed 3" x 3" (Bar Measure) ~ 2 1/2" Square Nylon Mesh, (Coated /Dipped) Knotless Webbing or Similar Securely Fastened to Frame to Form a Shallow Bag.

Plate B-10
Continued

BASKET STYLE SMALL TURTLE HOIST



≥ 1/4” Line (e.g., Polypropylene/Nylon) Securely Fastened to Frame Capable of Supporting at Least 100 Pounds. Tubing Can Replace the Outside Lines for Additional Stability.

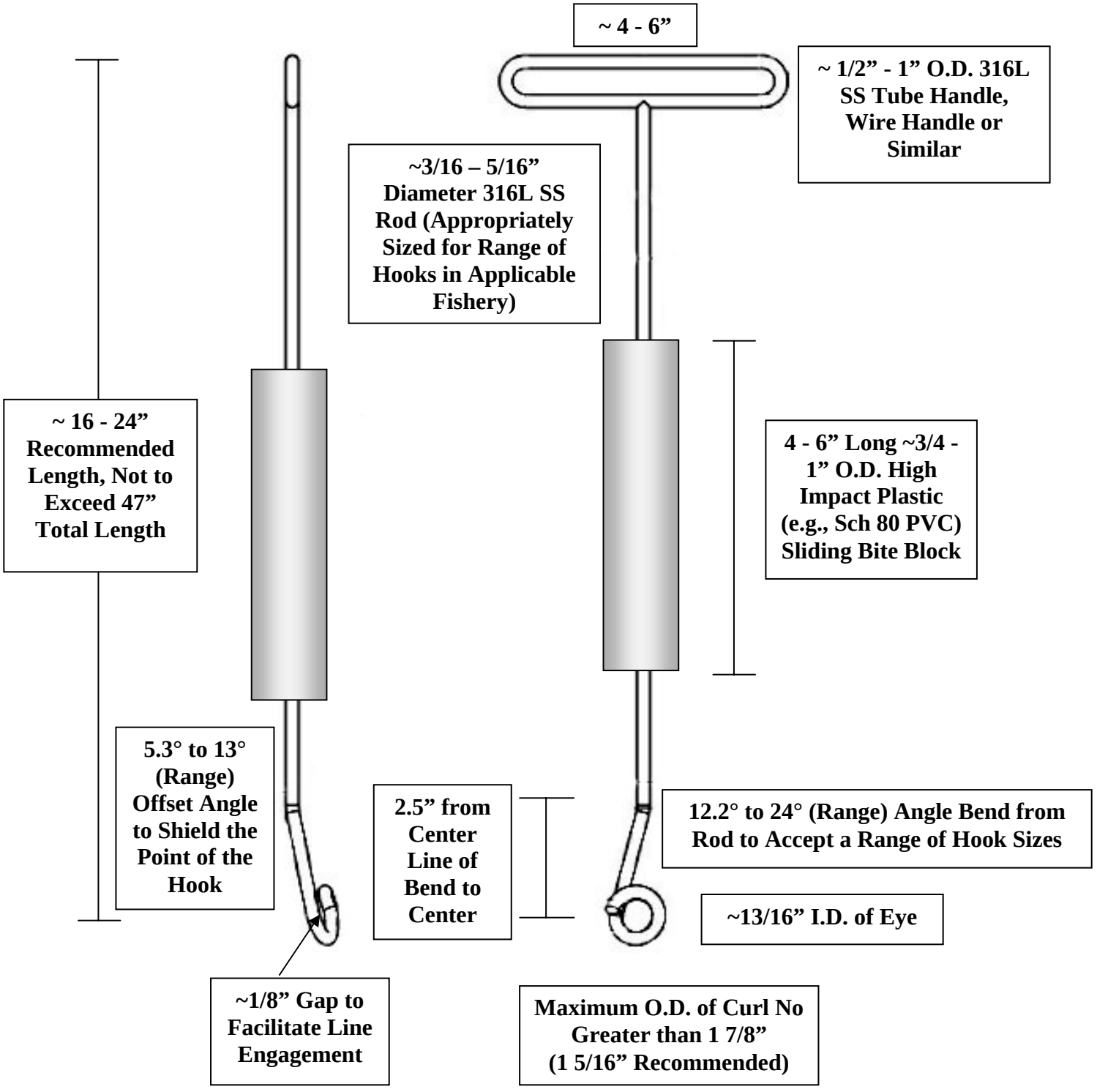
End Rails of Basket Can Be Welded or Attached Using Clips So That It Is Removable

At Least 4 horizontal Support Rails of ~ 3/4 - 2” Heavy Duty Hollow Aluminum or Marine Grade Stainless Steel Tubing, Welded to End Pieces

Recommended ~ 2 1/2” Square Nylon Mesh (Coated / Dipped) Knotless Webbing or Similar Securely Fastened to Frame to Form a Shallow Bag.

Plate B-11

ARC BITE BLOCK DEHOOKER



Modified Version of Diagram Provided by ARC
U.S. Patent # 4,914,853 and 6,840,002; U.S. Design Patent # 382,628; International Patent # WO/2005/055712

Plate B-12

NOAA/BERGMANN DEHOOKER

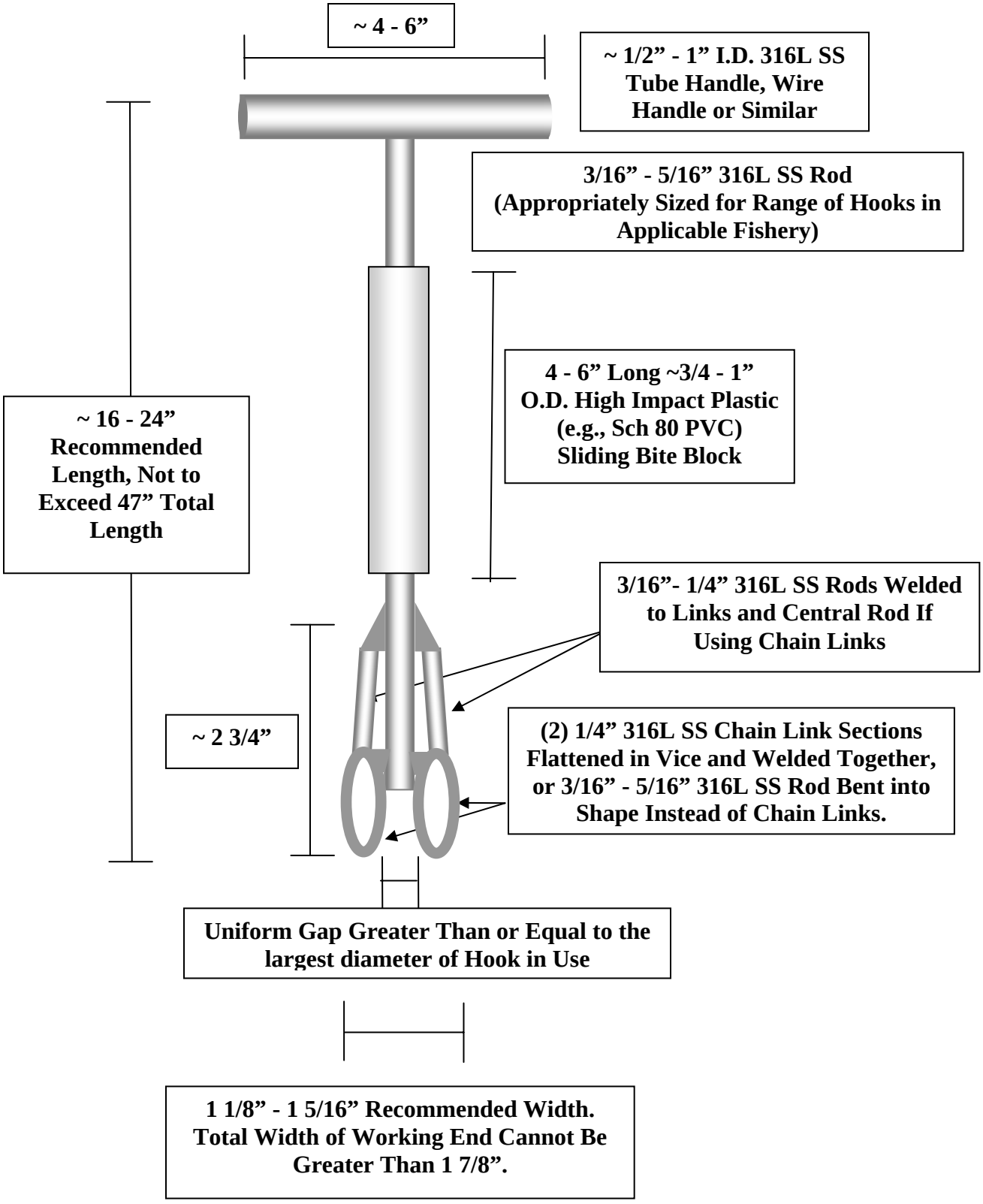
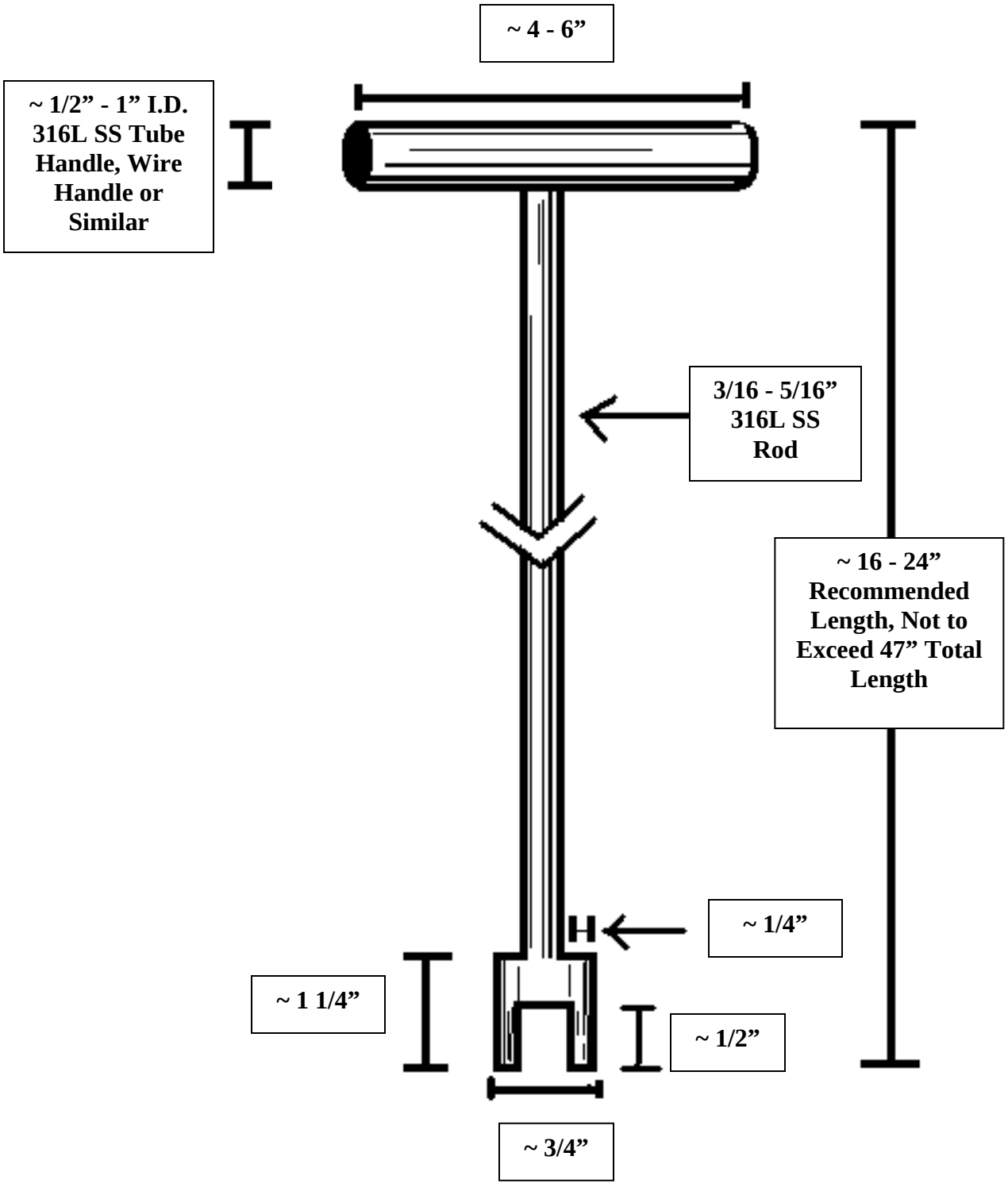


Plate B-13

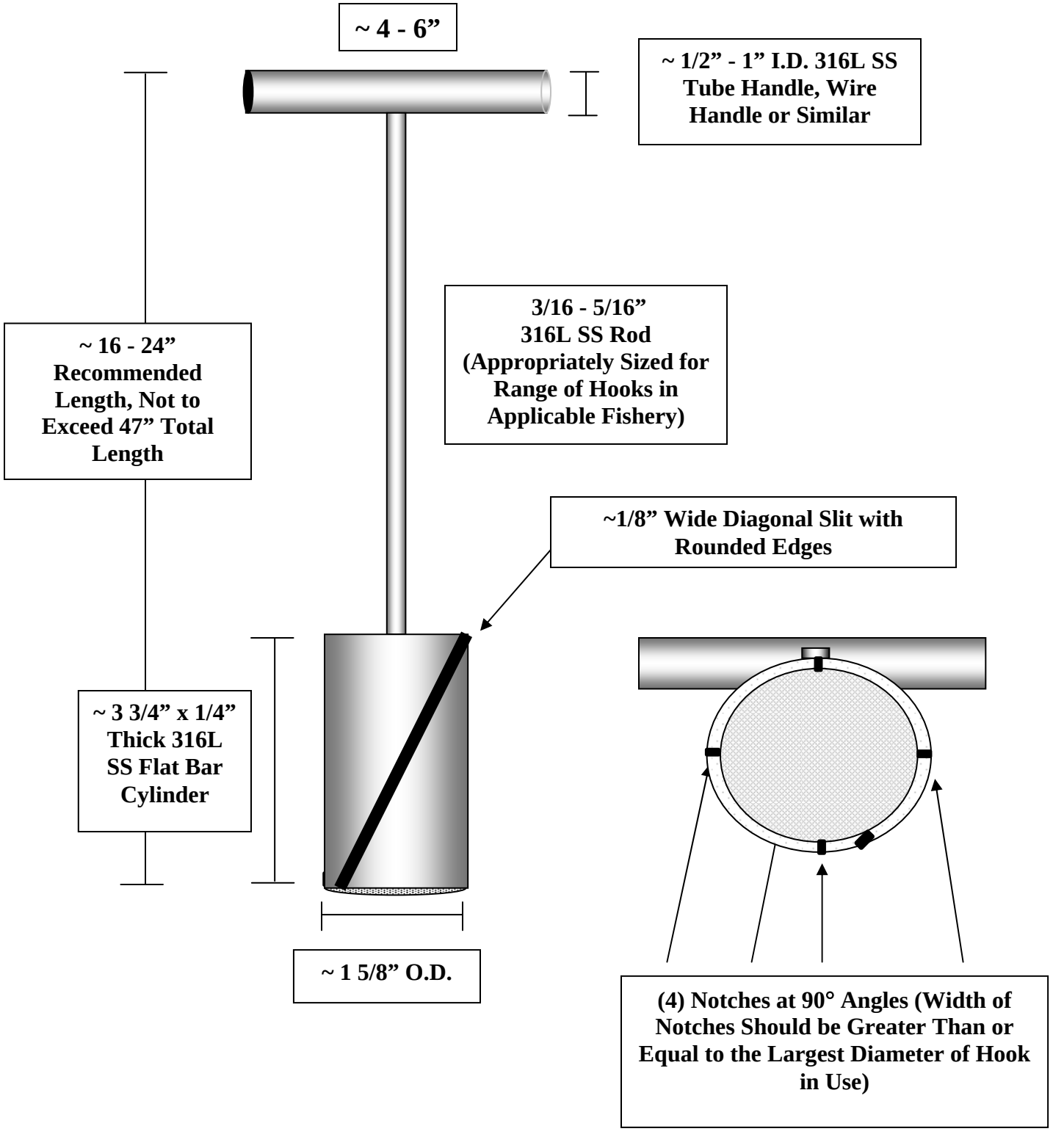
SCOTTY'S DEHOOKER



Modified Version of Diagram Provided by ARC

Plate B-14

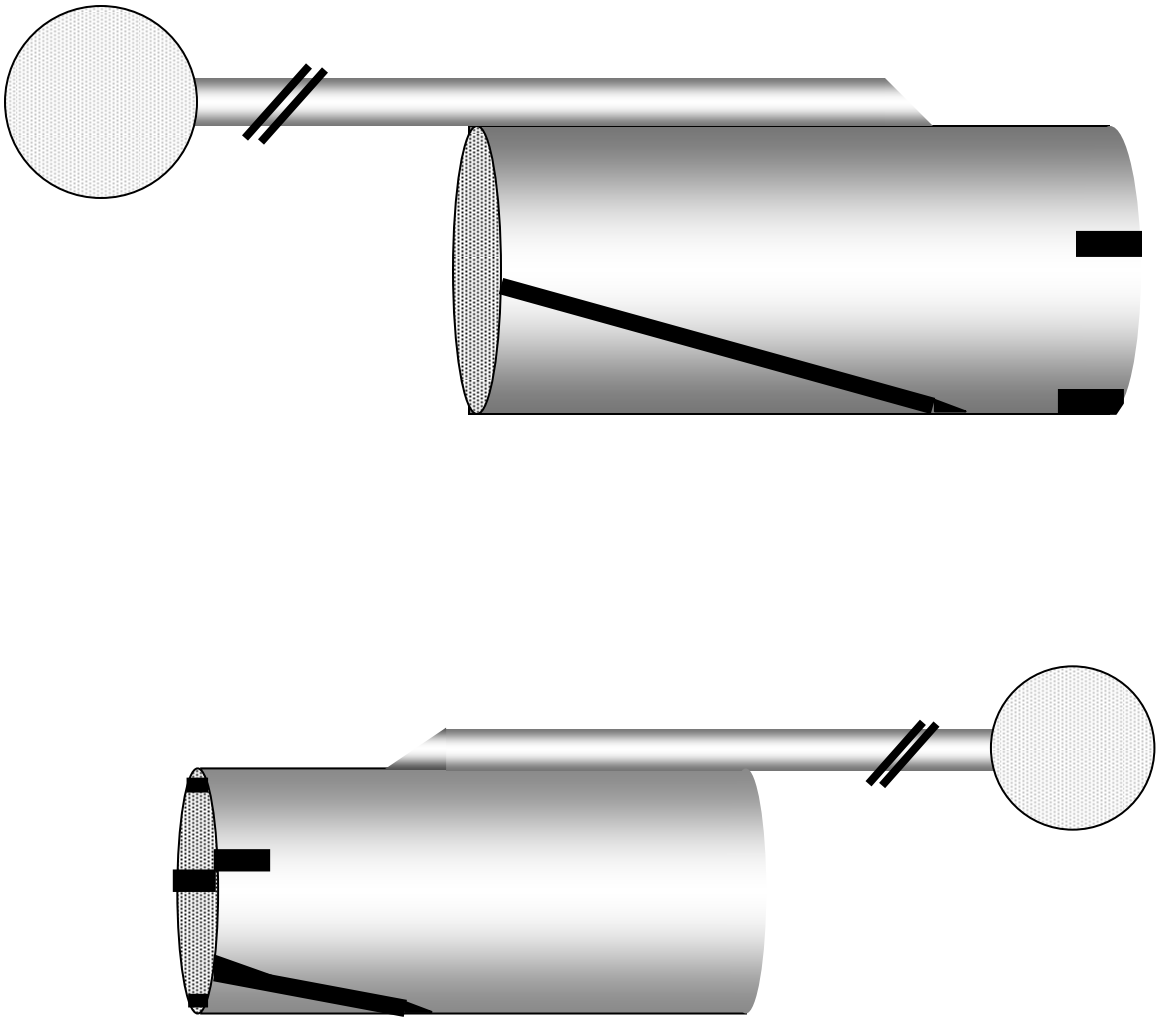
SHORT-HANDLED ROBY DEHOOKER



All Edges Must be Rounded So That They Are Not Sharp

Plate B-14 Continued

Side Views



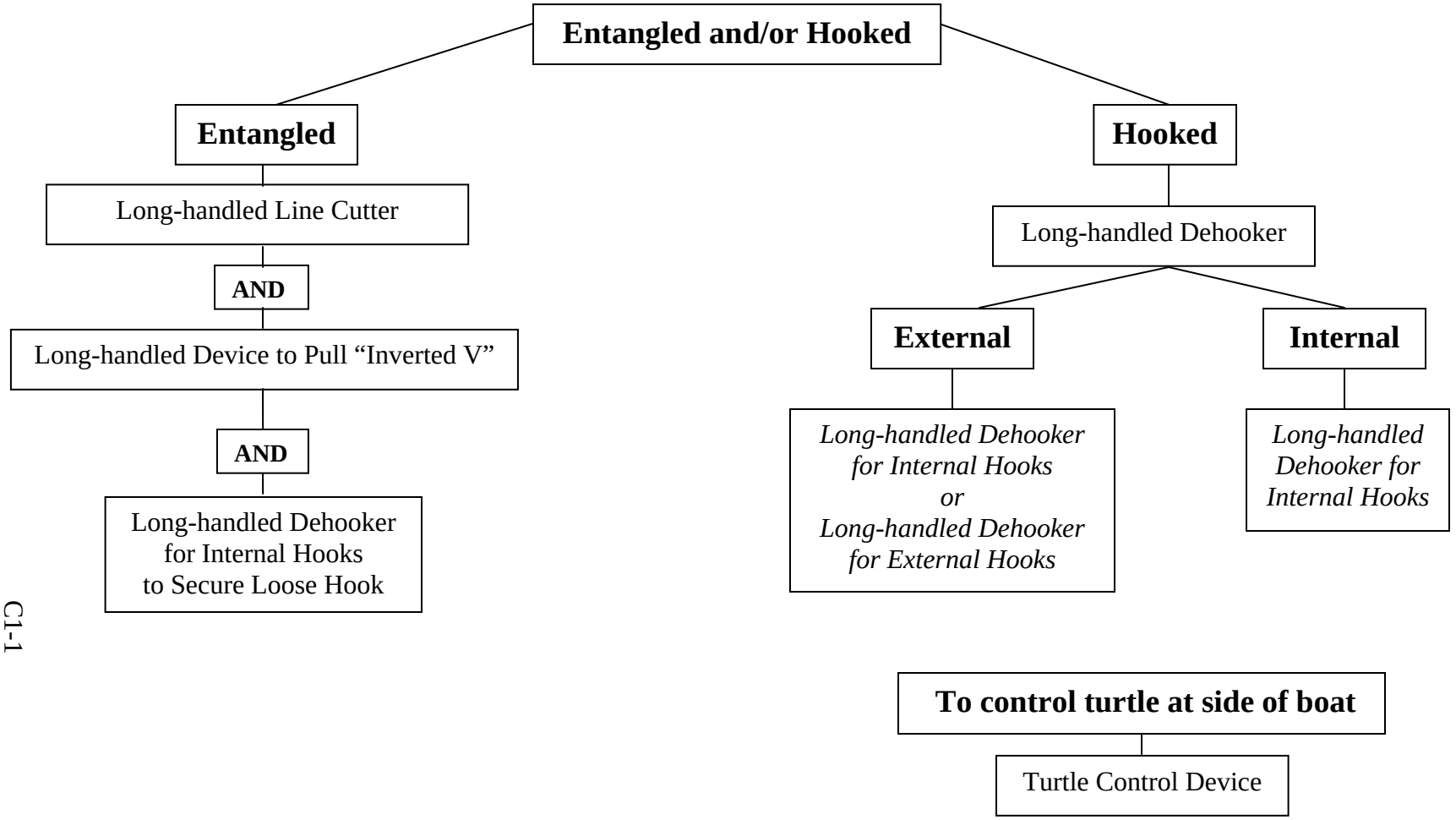
All Edges Must Be Rounded So That They Are Not Sharp

Appendix C

EQUIPMENT SELECTION FLOWCHART FOR THE CAREFUL RELEASE OF INCIDENTALLY CAPTURED SEA TURTLES

Plate C-1

Sea Turtles Not Boated

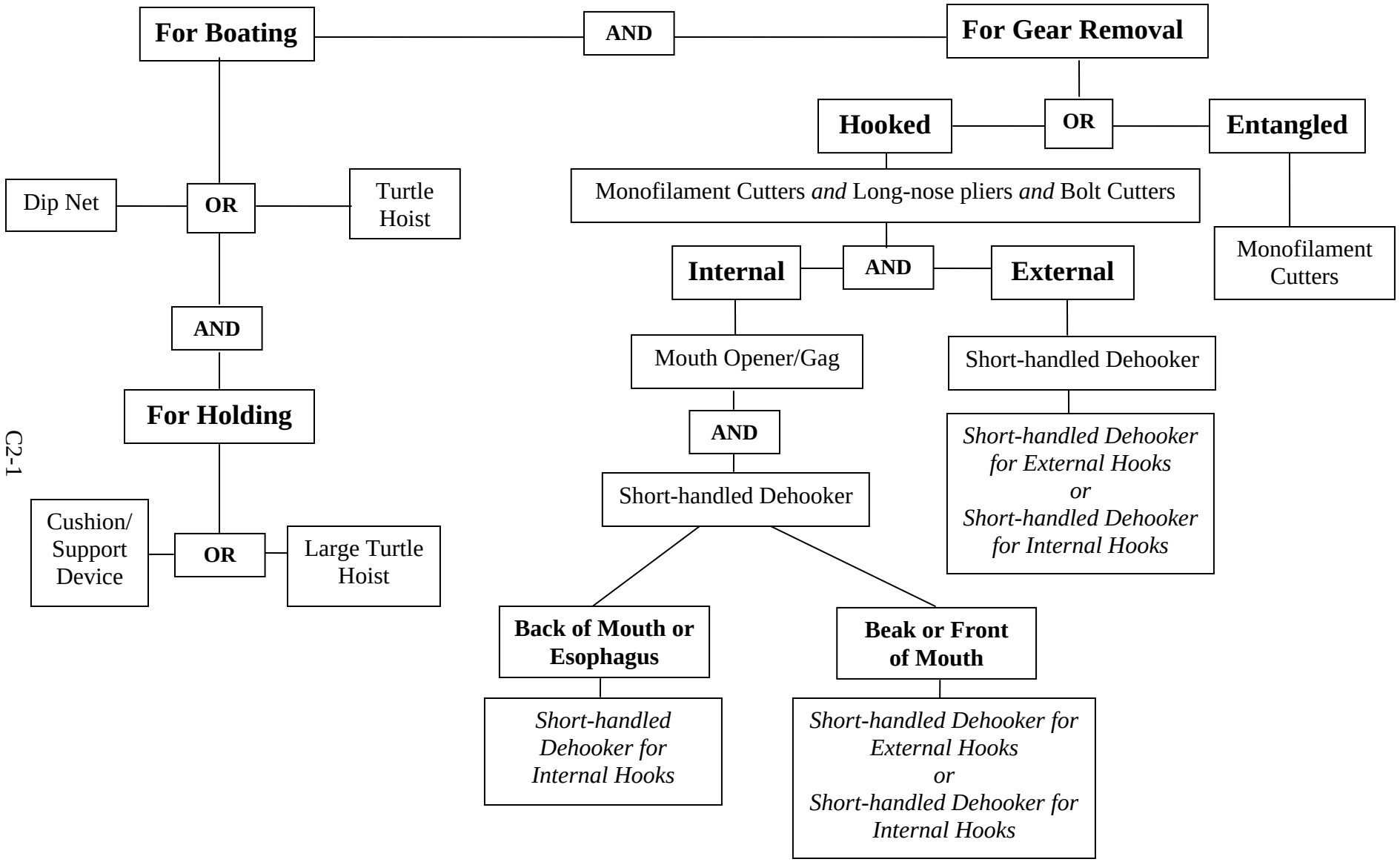


To control turtle at side of boat

Turtle Control Device

Plate C-2

Sea Turtles Boated



Appendix D

SEA TURTLE AND MARINE MAMMAL HANDLING AND CAREFUL RELEASE PLACARDS

Sea Turtle Handling/Release Guidelines: Quick Reference for Atlantic Longline Gear

Guidelines for all turtles

- Scan mainline as far ahead as possible to sight turtles in advance and reduce likelihood of jerking turtles out of the water.
- Do not get ahead of the mainline while picking up gear. This reduces the chance of fouling or running over gear and turtle.
- Upon sighting a turtle:
  - Slow vessel and mainline reel speed
  - Adjust direction of the vessel to move toward turtle
  - Minimize tension on the mainline and branchline with the turtle
- Holding the snap-clip of the branchline with the turtle on it, continue to move toward the turtle at a slow speed. **STOP VESSEL** and **PUT IN NEUTRAL** once turtle is brought alongside.
- Slowly retrieve branchline with turtle, keeping a gentle, consistent tension on the line. Avoid tugging or yanking line quickly. **DO NOT USE GAFFS OR SHARP OBJECTS** in direct contact with the turtle to retrieve it; a gaff may be used only to control the line during line removal.
- Ensure that enough slack is left in the line to keep turtle near the vessel, yet in water, until it can be determined whether or not it is possible to release turtle in the water, or safely bring it aboard.
- If turtle can be safely brought aboard and vessel is equipped with "cut-out doors," use this cut-out area to bring turtles aboard to minimize the distance from the water.
- Resuscitate comatose boated turtles as needed, holding them for up to 24 hours (keep moist and in the shade) if necessary.
- More information on releasing sea turtles is available in the *Careful Release Protocols for Sea Turtle Release with Minimal Injury* and on the web at: http://www.nmfs.noaa.gov/sfa/hms.

Guidelines for turtles not boated

- Control turtle by maintaining pressure on branchline, or preferably, with turtle tether, and bring the turtle as close to the vessel as possible.
- If entangled and not hooked, use dehooking tools to secure unattached hooks. Use clippers to cut the line. DO NOT leave line attached.
- If hooked and entangled, remove the hook first. Then, after the hook is removed, proceed to remove all line.
- All externally embedded hooks should be removed without lifting the turtle clear of the water. If hook removal is not possible, cut the line at the eye of the hook (or as close as possible).
- If hooked internally: do not attempt to remove hook if the hook has been swallowed beyond where the insertion point of the barb is visible, or when it appears that the hook removal will cause further injury. Remove as much of the line and/or hook as possible.

Guidelines for boated turtles

- If possible, bring turtle on board using a suitable dip net or other approved lifting device. Support turtle on a cushioned surface, such as a tire, while onboard.

DO NOT LIFT THE TURTLE OUT OF THE WATER USING THE BRANCHLINE, GAFF, OR OTHER SHARP OBJECTS

- Remove all externally embedded hooks. Internal hooks should be removed when the insertion point of the barb is clearly visible. Do not remove the hooks that have been swallowed when the insertion point is not visible, or when it appears hook removal will cause further damage (e.g., in the brain case or glottis). Remove as much of the line and/or hook as possible.

Stop!

To release turtle (1) STOP VESSEL and place in neutral; (2) Ease turtle gently into the water, head first, through cut-out door if so equipped; and (3) Observe that turtle is safely away from the vessel before engaging the propeller and continuing operations.

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

Revised 8/2004

Sea Turtle Handling/Release Guidelines: Quick Reference for Atlantic Shark GILLNET Gear

October 2006

Guidelines for Handling Gear

- Gillnet gear should be set and/or fished to achieve maximum net **tautness**. This will prevent turtles from becoming entangled in the net in the case of an encounter.
- Scan net as far ahead as possible to sight turtles in advance and reduce the risk of jerking turtles out of the water.
- Vessel operators are required to check nets every 0.5 to 2 hours (50 CFR§ 635.21 (e) (3) (vi)).

Upon Sighting a Turtle

- **Slow vessel** and adjust direction to move towards the turtle. Once turtle is alongside, place the vessel in **neutral**.
- Slowly retrieve the net, avoiding tugging or yanking motions.
- Considering the size of the turtle, sea conditions, and safety of crew, determine whether the turtle can be boated. (All turtles should be **boated if possible**.)

Guidelines for Turtles Boated

- **Boat the turtle** using a dipnet or large turtle hoist. Avoid pulling up the turtle by the gear it is entangled in, as this could injure the animal. Gaffs may only be used to control the fishing gear, **DO NOT USE GAFFS OR SHARP OBJECTS** to retrieve the turtle.
- **Support the turtle** on a cushioned surface, such as a tire, while it is onboard.
- If the turtle cannot easily be disentangled from the net, **carefully cut the net** off the turtle. **Blunt-sided** line cutters such as first-aid clippers are preferred. If one-sided cutters/clippers are used, carefully slide the blunt end under the line or net you want to cut. Attempt to remove any lines or net attached to the turtle.
- **Identify** the species of turtle and record when and where the interaction occurred.

Guidelines for Turtles NOT Boated

- If the turtle is too large to be boated, control the turtle with a turtle tether if possible and bring the turtle close to the vessel.
- **Identify** the species of turtle and record when and where the interaction occurred.
- Try to work the turtle free from the net while the turtle is next to the boat. Use line cutters/clippers with a handle extension or first-aid clippers to cut the net off the turtle if necessary. Carefully slide the **BLUNT END** of the line cutter under the line or net you want to remove. Attempt to remove any lines or net attached to the turtle.

Guidelines for UNCONSCIOUS Turtles

- Place the turtle on its lower shell and **elevate** its hindquarters approximately 6 inches to permit the lungs to drain off water (Figure A).
- Keep the **skin and eyes moist** by covering the turtle with a moist towel or periodically spraying it with water while it is onboard. Place the turtle in the shade if necessary, while maintaining its body temperature above 60°F.
- Check for muscle **reflexes** approximately every 3 hours by touching the eyelid or tail (Figure B). An unconscious, but live turtle may or may not respond to touch.
- Be patient. Sea turtles caught and held underwater are stressed and may take some time to revive. If the turtle has shown no sign of life before returning to port, or after 24 hours on deck, it may safely be considered dead. Release the turtle in the water in a non-fishing area.

A

B

Contact Information

More information on releasing sea turtles is available on the on the web at: http://www.nmfs.noaa.gov/sfa/hms and in the publication, *Careful Release Protocols for Sea Turtle Release with Minimal Injury,* which is available on this website. Call (301) 713-2347 to obtain a copy of the report or for additional copies of this placard.

Stop!

GUIDELINES FOR RELEASING A TURTLE

(1) **STOP VESSEL** and place in **NEUTRAL**;
(2) **Ease turtle** gently into the water, head first, through cut-out door if so equipped;
(3) Observe that turtle is safely **away from the vessel** before engaging the propeller and move 1 nmi before continuing fishing operations.

NOAA — National Oceanic and Atmospheric Administration — U.S. Department of Commerce

Sea Turtle Handling/Release Guidelines: Quick Reference for the Reef Fish Fishery

Guidelines for all turtles

- Scan as far as possible to sight turtles in advance and reduce likelihood of jerking turtles out of the water.
- Longline Vessels: Do not get ahead of the line while picking up gear. This reduces the chance of fouling or running over gear and turtle.

  Upon sighting a turtle:
  - Slow vessel and line reel speed
  - Adjust direction of the vessel to move toward turtle
  - Minimize tension on the line with the turtle

  Holding the line with the turtle on it, continue to move toward the turtle at a slow speed. **STOP VESSEL** and **PUT IN NEUTRAL** once turtle is brought alongside.
- Slowly retrieve line with turtle, keeping a gentle, consistent tension on the line. Avoid tugging or yanking line quickly. **DO NOT USE GAFFS OR SHARP OBJECTS** in direct contact with the turtle to retrieve it; a gaff may be used only to control the line during line removal.
- Ensure that enough slack is left in the line to keep turtle near the vessel, yet in water, until it can be determined whether or not it is possible to release turtle in the water, or safely bring it aboard.
- If turtle can be safely brought aboard and vessel is equipped with "cut-out doors," use this cut-out area to bring turtles aboard to minimize the distance from the water.
- Resuscitate comatose boated turtles as needed, holding them for up to 24 hours (keep moist and in the shade) if necessary.
- More information on releasing sea turtles is available in the *Careful Release Protocols for Sea Turtle Release with Minimal Injury* and on the web at: sero.nmfs.noaa.gov.

Guidelines for turtles not boated

- Control turtle by maintaining pressure on line, or preferably, with a type of turtle tether, and bring the turtle as close to the vessel as possible. DO NOT lift turtles clear of the water.
- If entangled and not hooked, use dehooking tools to secure unattached hooks. Use clippers to cut the line. DO NOT leave line attached.
- If hooked and entangled, remove the hook first. Then, after the hook is removed, proceed to remove all line.
- All externally embedded hooks should be removed. If hook removal is not possible, cut the line at the eye of the hook (or as close as possible).
- Internal hooks should be removed only if an internal dehooker is being used. Do not attempt to remove hook if the hook has been swallowed beyond where the insertion point of the barb is visible, or when it appears that the hook removal will cause further injury. Remove as much of the line and/or hook as possible.

Guidelines for boated turtles

- If possible, bring turtle on board using a suitable dip net or other approved lifting device. Support turtle on a cushioned surface, such as a tire, while onboard.

  DO NOT LIFT THE TURTLE OUT OF THE WATER USING THE LINE, GAFF, OR OTHER SHARP OBJECTS
- Remove all externally embedded hooks.
- Internal hooks should be removed when the insertion point of the barb is clearly visible and only if an approved internal dehooker is being used. Do not remove the hooks that have been swallowed when the insertion point is not visible, or when it appears hook removal will cause further damage (e.g., in the brain case or glottis). Remove as much of the line and/or hook as possible.

Stop!

To release turtle (1) STOP VESSEL and place in neutral;
(2) Ease turtle gently into the water, head first, through cut-out door if so equipped;
and (3) Observe that turtle is safely away from the vessel before engaging the propeller and continuing operations.

NOAA — National Oceanic and Atmospheric Administration — U.S. Department of Commerce

See http://sero.nmfs.noaa.gov/ for additional copies of placard. Revised 10/2006

Required Item				Examples of NMFS Approved Models
These Items Required for Any Vessel with a Freeboard Height Greater than 4ft	Long-handled line cutter (6ft. or 150 percent of freeboard height, which ever is greater)			LaForce Line Cutter; Arceneaux Line Clipper
	Choose At Least One	Long-handled[1] (6ft. (1.83 m) or 150 percent of freeboard height, which ever is greater) dehooker for ingested hooks[2]		ARC Pole Model, BP11 Deep Hooked Dehooker
		Long-handled[1] (6 ft. (1.83 m) or 150 percent of freeboard height) dehooker for external hooks		ARC 6 ft. Pole Big Game Dehooker Model 6P10; ARC Model LJ6P (6 ft. or 1.83 m)
	These Items Required for Any Vessel with a Freeboard Height of 4ft or Less	Dipnet (must have at least 31 in diameter and handle may be of variable length)		ARC Breakdown Lightweight Dipnet Model (DN6P (6 ft.), DNO8 (8 ft.), or DN14 (12 ft.)); Lindgren Pittman, Inc. Model NMFS-Turtle Net; ARC net assembly and Handle (Model DNIN)
		Choose At Least One	Short Handled Dehooker for Ingested Hooks[2]	ARC 17-in. Hand Held Bite Block Deep Hooked Turtle Dehooking Device (Model ST08)
			Short Handled Dehooker for External Hooks	ARC 16-in Hand Held Large J-style Dehooker (Model LJ07); ARC 24-in Hand Held Large J-style Dehooker (Model LJ24); or ARC 17-in. (43.18 cm) Hand Held Bite Block Deep Hooked Turtle Dehooking Device (Model STO8); or Scotty's Dehooker
		Long-nose or Needle-nose Pliers		12 in. S.S. NuMark Model #030281109871; any 12-in. stainless steel long or needle-nose pliers
		Bolt Cutter		H.K. Porter Model 1490 AC
		Monofilament Line Cutter		Jinkai Model MC-T
		Two (2) of the following Mouth Openers and Mouth Gags		
		Choose At Least Two Different Types	Block of Hard Wood	Any block of hard wood or long-handled wire brush (e.g., Olympia Tools Model 974174)
			Set of (3) Canine Mouth Gags	Jorvet Model 4160, 4162, and 4164
			Set of (2) Sturdy Dog Chew Bones	Nylabone©, Gumabone©, or Galileo© (trademarks owned by T. F. H. Publications, Inc)
			Set of (2) Rope Loops Covered with Hose	Any set of (2) rope loops covered with hose meeting design standards
			Hank of Rope	Any size soft braided nylon rope is acceptable, provided it creates a hank of rope approximately 2–4 in. thickness
			Set of (4) PVC Splice Couplings	A set of (4) Standard Schedule 40 PVC splice couplings (1-in., 1.25-in., 1.5-in., and 2-in.)
			Large Avian Oral Speculum	Webster Vet Supply Model (Model 85408); Veterinary Specialty Products (Model VSP 216–08); Jorvet (Model J–51z); and Krusse (Model 273117)
Gear Recommended[3]			Standard Automobile Tire[3] Recommended for all vessels	Any standard automobile tire or other comparable, cushioned, elevated surface that allows boated turtles to be immobilized
			Long-handled device to pull an ''inverted V'' (6 ft. (1.83 m) or 150 percent of freeboard height, which ever is greater)[3] Recommended for vessels with a freeboard height greater than 4ft.	ARC Model LJ6P (6 ft.); ARC Pole Model Deep Hooked Dehooker (Model BP11); ARC 6 ft. Pole Big Game Dehooker (Model P610); Davis Telescoping Boat Hook (Model 85002A); West Marine Fishing Gaff (Model F6H5 with F6–006 handle)

[1] A short–handled dehooker with an appropriate length handle extender will also fulfill this requirement.

[2] A dehooker that is approved for the removal of both internal and external hooks is recommended. Do not attempt to remove ingested hooks until you have received training on the proper use of internal dehookers and internal dehooking techniques.

[3] This gear was inadvertently omitted in the final rule due to an error. Therefore, these items are currently not required but are recommended. Measures to require these items will be proposed and if approved, they will be required.

Disclaimer: This placard is meant to help fishermen comply with sea turtle release measures contained in regulations published in the *Federal Register* on August 9, 2006 (71 FR 45428), and select the appropriate required sea turtle release gear for their vessel. All sea turtle release gear must meet the specific requirements in 50 CFR 635.21(c)(5)(A-L). Any discrepancies between the contents of this guide and the regulations will be resolved in favor of the regulations published in the *Federal Register* or Code of Federal Regulations.

SEA TURTLE DISENTANGLEMENT NETWORK

EMERGENCY CONTACT NUMBERS – Please Call Immediately
NOAA Fisheries Service Stranding HOTLINE: 978-281-9351
PCCS (Mass. Only): 800-900-3622 or USCG VHF CH. 16

Sea turtles can become accidentally entangled in active or discarded fixed fishing gear and other man-made material. These entanglements may prevent the recovery of endangered and threatened sea turtle populations. NOAA Fisheries has established the Sea Turtle Disentanglement Network to promote reporting and increase successful disentanglement of sea turtles. Please report all sea turtle entanglements and disentanglements, including documentation, to the contact numbers listed above.

How to Approach an Entangled Sea Turtle:

- Look for moving or unusually clumped buoys and lines near the turtle.
- Approach turtle slowly and carefully until vessel is alongside, then stop the vessel.
- If possible, record lat/lon and time at turtle's initial location.

How to Assess and Document the Entanglement:

- Is the turtle moving, attempting to swim away from the vessel or diving?
- How is the turtle entangled: flippers (front right, front left, etc.), head, shell?
- Are there single or multiple wraps of line on the turtle?
- Are the wraps restricting the turtle's movement or cutting into the skin?
- Is the turtle bleeding?
- Are there any other new or old injuries (such as propeller wounds)?

Leatherback Photos: Don Lewis

Loggerhead Photo: Thomas Dellinger / University of Madeira, Portugal

How to Disentangle:

- Do not get into the water with the turtle or bring it aboard. Work from the vessel with the turtle in the water.
- Determine which line is under strain from anchoring or drifting gear.
- Grapple the anchoring line and maintain a firm hold to keep turtle close to the vessel without lifting the turtle above the water. To avoid losing the turtle before completely disentangled, ***do not release or cut this line before trying to remove all other gear.***
- Try to unravel the gear from the turtle without cutting. Be careful around powerful flippers, jaws, and claws.
- If the gear cannot be removed by unraveling and the turtle is at risk of strangulation, drowning or further injury, try to cut the line.
- Avoid cutting turtle by pulling line away from the turtle with a boat hook before cutting.
- If gear must be cut, tie it off to the boat or existing gear to avoid losing the gear. Save all cut off/removed gear for analysis ashore (see *Documentation*).
- If you cannot free the turtle of ***ALL gear***, report the last known location, area landmarks, wind and current speed and direction, and any identifying characteristics about the turtle or gear. Report this information to the red contact numbers above or VHF Ch. 16.

How to Release:

- Leave engines in neutral and release the turtle from the last line (the anchoring line).
- Record the lat/lon and time of release.
- Ensure that the turtle is safely away from the vessel before starting the engines.
- Observe turtle behavior after release. Did it dive and/or swim away or did it remain relatively immobile at the surface?

Documentation:

- Log critical information (time, location, sea turtle description, signs of injury, behavior) when you encounter an entangled sea turtle.
- Log information about gear (line type, color and diameter, buoy/float type and color, buoy/pot ID#s), and final location of gear (brought ashore, left at site,etc.). Photograph/video the gear and sea turtle if possible.
- Reports and documentation (time, location, description, photos, video) of dead or injured sea turtles are also important.
- Report logged information to the red contact numbers at top of this card. Send photos, video and any removed gear to:

NOAA Fisheries Protected Resources Division
One Blackburn Drive, Gloucester, MA 01930

MARINE MAMMAL
HANDLING/RELEASE GUIDELINES
A Quick Reference for Atlantic Pelagic Longline Gear

GUIDELINES FOR ALL MARINE MAMMALS

- Have an identification guide, paper, and camera ready at all times in case of an interaction.
- Document as much information as possible to describe the marine mammal, particularly physical appearance and potential injuries:
  - Animal's length
  - Animal's features to be used for species identification (color pattern, dorsal fin shape, head shape)
  - Any gear remaining on the animal (type, placement, color, size, etc.)
  - Any existing tags on the animal (description, tag number)
- Take photographs from different angles. Pictures of the head, dorsal fin, and tail are most helpful in species ID. Fishermen should submit these photos to NMFS Office of Protected Resources, along with the Injury/Mortality Reporting Form.
- Attempt to release the animal with minimal injury (see below).
- After an interaction with a marine mammal:
  - Remove remainder of the gear from the water
  - Record all injuries and mortalities of marine mammals within 24 hrs of returning to shore on the NMFS Marine Mammal Injury/Mortality Reporting Form (see below)
  - Move at least one nautical mile away to avoid further interactions
  - Alert other fishermen in the area of the presence of marine mammals
- Reporting Requirement: Submit the Marine Mammal Injury/Mortality Reporting Form by fax to (301) 427-2522, or by mail: NMFS Office of Protected Resources Attn: MMAP, 1315 East West Highway, Silver Spring, MD 20910. Additional copies of the reporting form may be requested from the same address, or found online at: http://www.nmfs.noaa.gov/pr/pdfs/interactions/mmap_reporting_form.pdf.

GUIDELINES FOR SMALL MARINE MAMMALS

- Ensure the crew is ready to assist.
- Avoid abrupt actions or vessel movements that may panic the animal.
- As soon as the opposite side of the mainline is available, use two long gaffs to recover it. DO NOT USE GAFFS OR SHARP OBJECTS in direct contact with the animal. A gaff should be used only to control the line.
- Move the vessel cautiously, STOP THE VESSEL within range of the marine mammal.
- Gently bring the marine mammal alongside the vessel.
- If a tangle exists:
  - Gaff the other side of the mainline and attach it to the vessel or float ball to isolate the vessel and marine mammal from any tension on the remaining gear in the water
  - Work the tangle off the marine mammal as smoothly and quickly as possible
- If the animal is hooked:
  - Use a NMFS-approved dehooking device
  - Cut the barb off the hook with long-handled bolt cutters
  - Cut the line with line cutters as close to the hook as possible
- Remove as much line as possible from the animal.
- DO NOT use a tether, ninja sticks, or other devices more appropriate for dehooking or disentangling sea turtles to control the animal.

GUIDELINES FOR LARGE WHALES

- If a large whale is alive and entangled in fishing gear, contact the Provincetown Center for Coastal Studies Disentanglement Hotline at (800) 900-3622 or immediately contact the U.S. Coast Guard at VHF Ch. 16 for instructions.
  - -Maneuver the vessel in such a way as to minimize tension on the line
- If a large whale is dead and on the line, immediately contact the U.S. Coast Guard at VHF Ch. 16 for instructions.

SAFETY FIRST!

Hooked or entangled marine mammals can be unpredictable. There are inherent human safety concerns associated with handling/disentangling marine mammals. Be prudent and safe on the water. Human safety is paramount.

GET A MOVE ON!

If you have one marine mammal interaction, there is a high likelihood that you will have additional encounters if you continue fishing in the same area. Alert other fishermen via radio communication and MOVE, or wait 48 hours to reset gear rather than risk further interactions.

(727) 824-5312 • www.nmfs.noaa.gov

MARINE MAMMAL
SPECIES FACT SHEET

LONG-FINNED PILOT WHALE
Globicephala melas

SIZE: 16-18 ft, 4,000-5,000 lbs
BODY: Long robust body, bulbous head with prominent melon and slight beak. Sickle-shaped flippers are sharply pointed and long. Black with white cape behind dorsal fins, prominent white anchor patch on abdomen between flippers, very long peduncle.
DIET: Squid and fish.
HABITAT: Pelagic continental shelf edge and slope, submerged banks; associated with Gulf Stream features.

SHORT-FINNED PILOT WHALE
Globicephala macrorhynchus

SIZE: 15-18 ft, 3,000-4,000 lbs
BODY: Long robust body, flippers gently curved, pointed and less than one-sixth of body length, all black, diffuse white anchor patch between fins, very long dorsal fin.
DIET: Squid and fish.
HABITAT: Tropical, pelagic to coastal; in the Gulf Stream.

RISSO'S DOLPHIN
Grampus griseus

SIZE: 10-12.5 ft, 500-600 lbs
BODY: Blunt head with squared melon but no beak. Vertical crease in forehead. Light gray back and sides with darker dorsal fin, flippers, and flukes. White color from scarring, large prominent dorsal fin, and darker than body. Large black eyes.
DIET: Squid specialist.
HABITAT: Pelagic; continental shelf edge and steep upper sections of slope; tropical waters.

BOTTLENOSE DOLPHIN
Tursiops truncatus

SIZE: 6-12 ft, 330-1,435 lbs
BODY: Short, thick well-defined beak. Coastal form is shorter and slimmer, offshore form is larger. Gray with no distinctive color pattern. Dorsal fin is tall with broad base, located on the middle back.
DIET: Fish, invertebrates, and squid.
HABITAT: Coastal form: shallow, warm inshore waters. Offshore form: offshore waters of shelf edge and slope.

PYGMY SPERM WHALE
Kogia breviceps

SIZE: 10-12 ft, 695-880 lbs
BODY: Robust body with squared or conical shark-like head with tiny underslung lower jaw. Dark gray, lighter down sides to white belly. Pale crescent-shaped false gill on each side between eye and flipper. Tiny dorsal fin, located aft of mid-back.
DIET: Squid, fish, and crustaceans.
HABITAT: Pelagic; continental shelf edge, and slope.

HARBOR PORPOISE
Phocoena phocoena

SIZE: 4.5-6 ft, 125-145 lbs
BODY: Smallest cetacean in the U.S. Atlantic. Stocky with small pointed flippers, no beak. Dark gray or black on back with lighter sides and white belly. No distinctive markings. Dorsal fin is small, triangular; located slightly aft of mid-body.
DIET: Schooling fish and invertebrates.
HABITAT: Coastal, cold waters usually less than 650 ft.

HUMPBACK WHALE
Megaptera noveaengliae

SIZE: 36-52 ft, 25-30 tons
BODY: Flippers long, usually white, flukes broad with irregular trailing edge. Black with white on throat and belly. Small dorsal fin with a broad base, raised bump in front, and "knuckles" behind. Shows flukes when diving.
DIET: Small schooling fish (herring, sand lance, capelin) and krill.
HABITAT: Pelagic and coastal.

MINKE WHALE
Balaenoptera acutorostrata

SIZE: 29-33 ft, 5-10 tons
BODY: Small, sleek body, head is sharply pointed with a flat rostrum. Flippers pointed, flukes broad. Black or dark grey, white band on both flippers. Prominent dorsal fin, two thirds back on body.
DIET: Variety of schooling fish, squid, and zooplankton.
HABITAT: Pelagic, but common in bays and shallow coastal waters.

ATLANTIC SPOTTED DOLPHIN
Stenella frontalis

SIZE: 7-7.5 ft, 220-310 lbs
BODY: Long, thick, white-tipped beak. Tri-color background, variable spotting. Dorsal fin is tall, dark, located on middle back.
DIET: Squid and variety of fish.
HABITAT: Coastal to pelagic. Tropical to warm-temperate waters over the continental shelf.

PANTROPICAL SPOTTED DOLPHIN
Stenella attenuata

SIZE: 5.2-8.5 ft, 220-255 lbs
BODY: Slender body with long narrow, white-tipped beak. Bi-color background, distinct cape is narrow at face, dips deeply forward of dorsal fin. Small spots develop with age. Dorsal fin is tall and slender.
DIET: Squid and schooling fish.
HABITAT: Pelagic; deep waters seaward of shelf edge, tropical to warm-temperate waters.

COMMON DOLPHIN
Delphinus delphis

SIZE: 7.5-8.5 ft, 155-245 lbs
BODY: Slender body, with long pointed beak. Black back and cape form V-shaped saddle, hourglass pattern on sides: tan patch forward and gray patch aft. Black beak and eye ring, line from jaw to flipper.
DIET: Variety of fish and squid.
HABITAT: Pelagic; subtropical to temperate waters >100 fathoms.

STRIPED DOLPHIN
Stenella coeruleoalba

SIZE: 7-8 ft, 200-330 lbs
BODY: Slender body with narrow pale tail stock, moderately long dark beak. Bold light blaze from shoulder to dorsal fin, black stripe from eye to anus. Dorsal fin is tall and dark.
DIET: Deepwater squid, fish, and shrimp.
HABITAT: Pelagic; deep waters of continental shelf edge and slope. Associated with Gulf Stream north wall.

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Illustrations By Garth Mix 2006

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Sea Turtle Handling and Resuscitation Requirements

NOAA FISHERIES

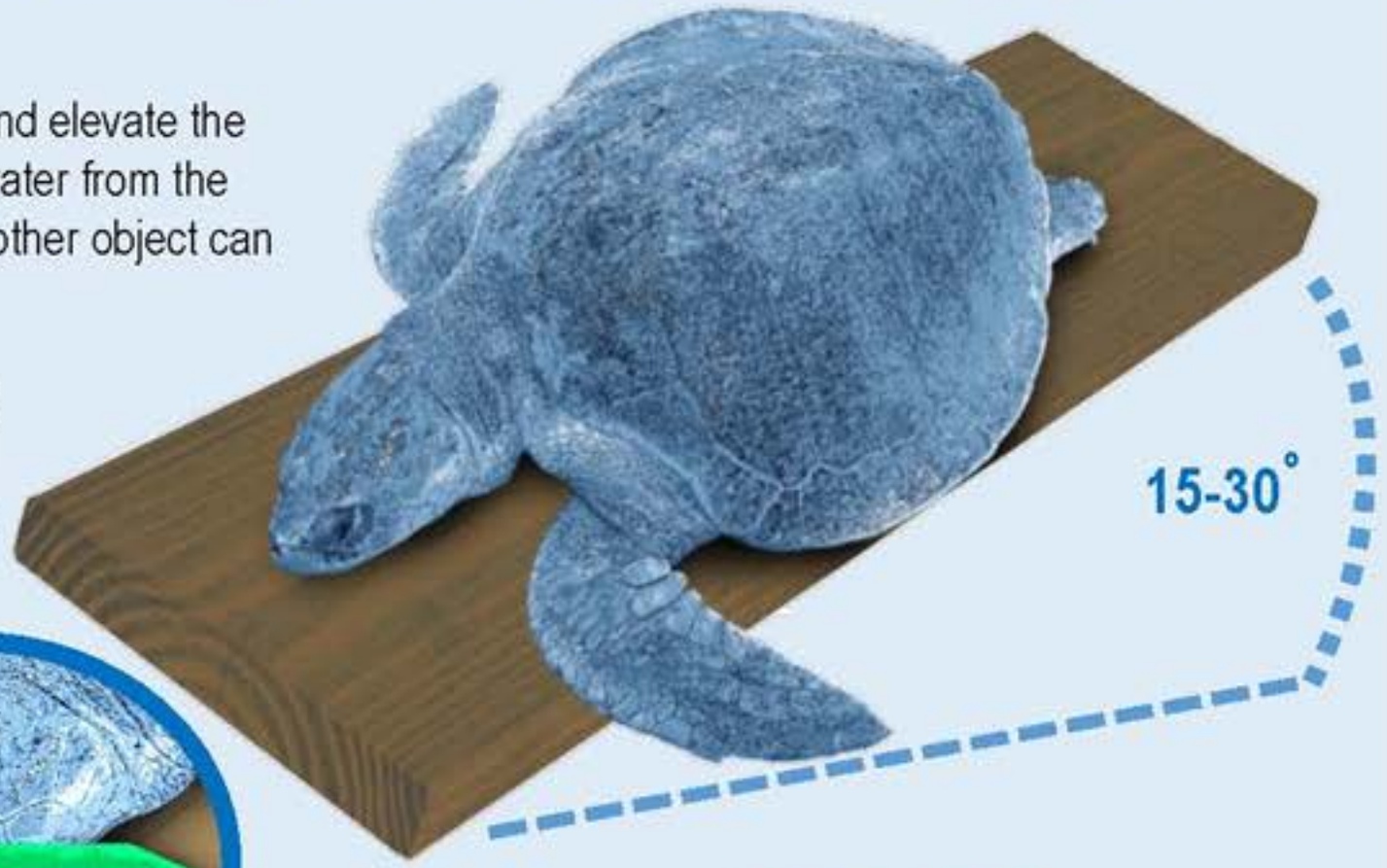
Per federal regulations at 50 CFR 223.206(d)(1):

Any sea turtle taken incidentally during fishing must be handled with care to prevent injury, evaluated to make sure it is active, and safely returned to the water.

Unresponsive turtles could still be alive and resuscitation must be attempted.

- Turtles that are unresponsive after capture may survive if allowed to recover.
- Sea turtles should only be considered dead if the muscles are stiff (rigor mortis), their body becomes bloated with gas, or the skin is detaching.

Resuscitation of unresponsive or inactive sea turtles must be attempted using the following procedures:



1. **Elevate Tail End:** Place the turtle right side up and elevate the hindquarters at least 6" (~15 - 30˚) to help drain water from the lungs. A board, tire, boat cushion, coiled rope, or other object can be used for elevation.

2. **Rock Gently**: Occasionally rock the turtle gently side to side by holding the outer edge of the shell and lifting one side about 3", then alternate to the other side.

3. **Check Eye Reflex:** Periodically, gently touch the corner of the eye or eyelid to see if the eyelid moves. This reflex will return as the turtle recovers.

4. **Keep Cool and Moist:** In warm weather (over 75˚F), keep the turtle shaded and moist. Place a water-soaked towel over the head, shell, and flippers or regularly wet the turtle with seawater to keep the turtle cool and moist. Never put the turtle into a container with water.

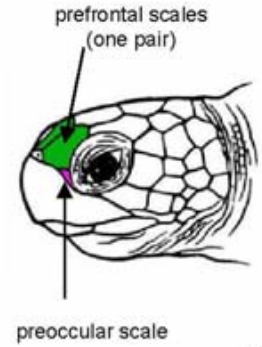
5. **Release Active Turtle Carefully:** Release active, resuscitated turtles as close to the water as possible. When doing so make sure fishing gear is not in use, the engine is in neutral, and avoid areas where the turtle may be recaptured or injured by other vessels.

6. **Give Them Time:** Attempt resuscitation for at least 4 hours. If there are no signs of life after 24 hours on deck, or if the muscles are stiff and/or the flesh has begun to rot, consider the turtle dead and return it to the water in the same manner (unless a NMFS observer retains the carcass).

Do not put the turtle on its back or pump the bottom shell (plastron) or try to force water out, as this is dangerous to the turtle.

Need assistance with a sea turtle or marine mammal in distress? *Call 844-SEA-TRTL (844-732-8785)*

Sea Turtle Identification Key



Hard carapace (shell) with large scutes (shell plates)

Leathery, no scutes; Longitudinal dorsal ridges

Two pairs prefrontal scales

One pair prefrontal scales; serrated lower jaw

Usually 5 or more costal (lateral) scutes; first costal scute touches nuchal

Usually 4 costal (lateral) scutes; first costal scute does not touch nuchal

Usually 4 costal (lateral) scutes; first costal scute does not touch nuchal; usuallly 4 inframarginal scutes without pores

Usually 4 inframarginal scutes with pores

Usually 3 inframarginal scutes without pores

Usually 4 inframarginal scutes without pores

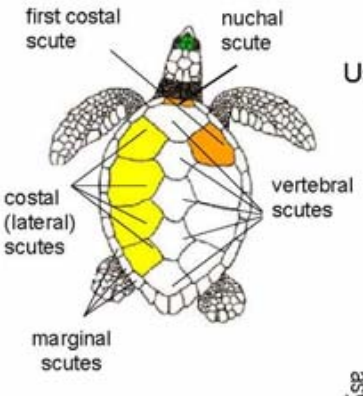
Usually 6 or more costal scutes

Usually 5 costal scutes

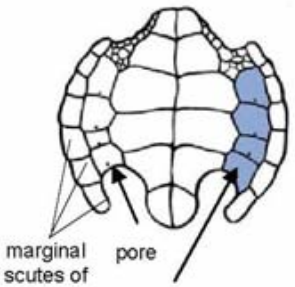
Preocular scales

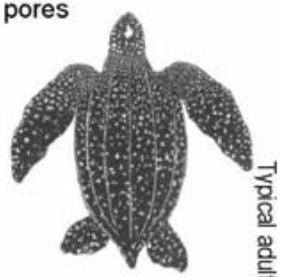
No preocular scales

Dorsal View (Carapace)



Ventral View (Plastron)





Typical adult colors are described here; colors may differ, particularly in hatchlings and juveniles

Leatherback *Dermochelys coriacea*

Carapace: dark gray/black with white spots; Plastron: white with dark blotches

Green *Chelonia mydas*

Carapace: brown with radiating streaks; Plastron: white to yellow

Black *Chelonia mydas*

Carapace: black or gray with black markings; Plastron: gray

Flatback *Natator depressus*

Carapace: olive gray; carapace has upturned edges on adults; Plastron: yellow

Hawksbill *Eretmochelys imbricata*

Carapace: tan, brown and black with random streaks; overlapping scutes; Plastron: cream with dark blotches

Loggerhead *Caretta caretta*

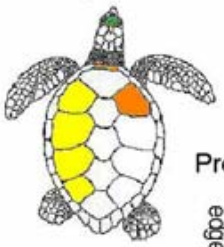
Carapace: red brown/dark brown; first costal scute is very small; Plastron: yellow/orange

Kemp's Ridley *Lepidochelys kempii*

Carapace: gray to light olive green; round; Plastron: white/yellow

Olive Ridley *Lepidochelys olivacea*

Carapace: gray to olive green; number of costal scutes may be asymmetrical; Plastron: white/yellow



SEA TURTLE LIFE HISTORY FORM

01/2013

CAPTURE INFORMATION

TRIP ☐☐☐☐☐☐ **YEAR 20**☐☐ **MONTH**☐☐ **DAY**☐☐

SET/HAUL/TOW ☐☐☐ **SPECIMEN NUMBER BY TRIP** ☐☐☐ **EXPERIMENTAL Y / N?** (if Y, note project name in comments)

GEAR TYPE: ☐**Longline** ☐**Gill Net** _____ ☐**Trawl**_____ (note time in comments)

GEAR DEPTH: ☐**Surface** ☐**Midwater** ☐**Bottom** ☐ **Other** _____

TARGET CATCH: _____ **TIME (24 hr)** ☐☐☐☐ **WATER TEMP (°F)** ☐☐.☐

LATITUDE☐☐**deg**☐☐.☐**min N / S** **LONGITUDE**☐☐☐**deg**☐☐.☐**min E / W**

Did turtle slide out/escape from gear? Y / N **Was turtle brought on board? Y / N**

IDENTIFICATION (see back) **Number of Photos Taken?** ☐☐

SPECIES: ☐**Leatherback** ☐**Loggerhead** ☐**Kemp's ridley** ☐**Green** ☐**Hawksbill** ☐**Olive ridley** ☐**Unidentified Hardshell** ☐**Unknown**

CONDITION OF TURTLE AT CAPTURE ☐ **Injured** ☐ **Uninjured** ☐ **Unknown**

(Please check injury status above as well as condition below; complete condition evaluation on p. 2 for any not coded "alive")

☐**Previously dead** ☐**Fresh dead/comatose/unresponsive** **Attempted resuscitation: Hindquarters Elevated? Y / N**

☐**Alive** ☐**Unknown (describe)** ☐**Other (describe)** **Rocked? Y / N**

IF GEAR IS A FORM OF HOOK AND LINE, COMPLETE THIS SECTION, AS APPLICABLE:

HOOK TYPE ☐ **"J"** ☐ **Circle** ☐**other (describe)** _____ **SIZE** ☐☐**/0**

MANUFACTURER/STYLE NO. _____ **DEGREE OFFSET** ☐☐°

BAIT ☐**Squid** ☐**Mackerel** ☐**Sardine** ☐**Unknown** ☐**Other (describe)**_____**SIZE**_____

Caught on hook timer? Y / N **If yes, fill in time elapsed** ☐☐ ☐☐

Is a light stick on hook? Y / N / U / Not Applicable If No, number of gangions to next light stick ☐☐

Light stick type (circle) : Chemical / LED

Light stick color (circle)? **W**hite, Pin**k**, **B**lue, **G**reen, Bl**a**ck, **R**ed, **Y**ellow, **P**urple, **O**ther, **U**nknown

Number of gangions to next float ☐☐

HOOK LOCATION (See Appendix in manual for descriptive figures)

(circle specific location; check box if specifics are not known; annotate drawing on reverse to indicate location as needed):

☐ **Not Hooked** ☐ **Not Known if Hooked** ☐**Hooked, but location totally Unknown** ☐**Holding bait/hook**

Internal: ☐ **Unknown, internal**

☐ **Swallowed (Esophagus)** **Hook visible?** **Visible to insertion point / Partial hook / Not visible**

☐ **Beak/ Mouth (Circle one)** **Jaw Location (Check one)** ☐**upper** ☐**lower** ☐**side (mouth only)**

Check one for mouth: ☐ **tongue** ☐ **glottis** ☐ **roof of mouth** ☐ **jaw joint** ☐**other (describe)**

External: ☐**Unknown, external** ☐**Beak/Head/Neck** ☐**Carapace/Plastron**

☐**Front Flipper/Shoulder/Armpit** ☐**Rear Flipper/Groin/Tail**

Was hook recovered from this animal? Y / N / Unknown / Not Applicable

---

Was animal entangled in gear? At capture? Y / N / Unknown **At Release? Y / N / Unknown**

How much gear (linear feet) was left on turtle when released? ☐☐☐.☐ **ft. (estimated/measured)**

BIOLOGICAL INFORMATION

Estimated carapace length (notch-to-tip straight line): ☐☐.☐ **ft (needed only if turtle is not boated & measured)**

DIMENSIONS (cm)	**Curved (measuring tape) Standard Measurements**	**Straight Line (calipers) Standard Measurements**	**Straight Line (calipers)**
Carapace Length	☐☐☐.☐ **notch-to-tip**	☐☐☐.☐ **notch-to-tip**	☐☐☐.☐ **notch-to-notch**
Carapace Width	☐☐☐.☐	☐☐☐.☐	

TAGS (identify address on each tag in the comments section)

Flipper Tag Number	**Metal (1) or Plastic (2)**	**Position (Flipper) LF, RF, LR, RR**	**Already Present (1) or Applied by Observer (2)**	**Were Tags Removed?**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**
☐☐☐☐☐☐	☐	☐☐	☐	**Y / N**

PIT Tag ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ **Position (Flipper)** ☐☐ ☐ **Scanned? Y / N**

Living Tag (describe)_____ **Other Tags (describe)** _____

(Put PIT tag label here) If you have the option of Decimal or Hexidecimal sequence, choose DECIMAL

BIOPSY SAMPLES TAKEN? **Y** (itemize below) **/ N** / **U**nsuccessful

---

RELEASE INFORMATION

LATITUDE ☐☐**deg**☐☐.☐**min N / S** **LONGITUDE** ☐☐☐**deg**☐☐.☐**min E / W**

TIME (24 hr) ☐☐☐☐ **WATER TEMP (°F)** ☐☐.☐

DATE, if different from capture: YEAR 20☐☐ **MONTH**☐☐ **DAY**☐☐

FINAL DISPOSITION

☐ **Discarded Dead/Comatose/Unresponsive Carcass** **Marked? Y / N**

☐ **Salvaged Carcass/Parts** ☐ **Released Alive** ☐ **Taken to Holding Facility** ☐ **Unknown (explain)**

ADDITIONAL COMMENTS (list all biological samples collected; describe/sketch anomalies):

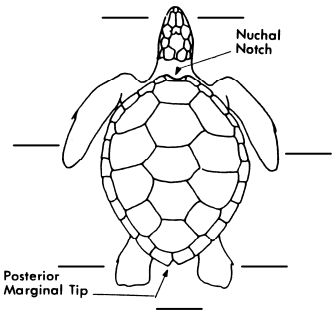
_____

_____

_____

_____

_____



IDENTIFICATION CRITERIA

Number of:

Left Lateral Scutes	☐	**Overlapping Scutes?**	**Y / N / U**
Right Lateral Scutes	☐	**Inframarginal Pores?**	**Y / N / U**
Vertebral Scutes	☐	**1 Pair Prefrontal Scales?**	**Y / N / U**
L. Inframarginal Scutes	☐	**Lacks Bony Shell?**	**Y / N**
R. Inframarginal Scutes	☐	**Does Nuchal Scute Touch 1st Lateral Scute?**	**Y / N / U**

CONDITION EVALUATION FOR TURTLES NOT CODED "ALIVE"

Mark each line on diagram above with a 'Y'to indicate positive reflex/response, and 'N' for no response.

Rigor Mortis	**Y / N / U**
Rotting Flesh	**Y / N / U**
Foul Smell	**Y / N / U**

Dorsal Coloration ☐**Black** ☐ **Orange/Red-Brown** ☐**Brown** ☐**Gray-Green** ☐ **Other**_____

PROTECTED RESOURCES FORM

The protected resources form is to be used to log the capture of **SAWFISH, MANTAS, STURGEON and SEABIRDS.** Photographs should be taken of all captures. If the information does not apply to your trip, for example hook information on a gillnet trip, the section should be left blank. It is very important to complete the form in its entirety. **Write legibly** in both the log book and on the forms themselves. A copy of the protected resources forms and photos are to be uploaded into your Google Drive observer folder as soon as possible after the vessel reaches port (Original Forms are to be kept with the trip at all times!!!). **DO NOT MAIL FORMS, PHOTOS, AND/OR BIOPSIES DIRECTLY TO THE MIAMI LABORATORY**.

It is pertinent that all information collected on the protected resources capture report is as **accurate** and **detailed** as possible. **Detailed information should also be logged in your logbooks**.

TRIP NUMBER: Enter Trip Number provided by Observer Coordinator.

DATE: Record the month, day and year when captured occurred (mm/dd/yyyy).
Example: 01/01/2020.

SET/TOW: Record the set or tow number during the trip when capture occurred. If the capture was not associated (non-station) with a set or tow then enter 999.

STATION/NON-STATION: Check station if the specimen was captured during a sampled set or tow. All others should be considered non-station.

SPECIMEN NUMBER: Record a three digit consecutive number for captured specimens. Specimen numbers begin with 001 for each species and continue sequentially throughout the trip.

SPECIES IDENTIFICATION: Place a check in the appropriate box next to the specimen captured and reference the species (if known) in the space provided. If you are unable to identify the species record it on the data sheet as “Unknown”.

TIME: Record the local time (24 hour clock NOT hundredths of an hour) when the animal was first seen as captured.

WATER DEPTH: Record the water depth in feet.

PHOTOS Y/N: Indicate Y or N. Photos should be taken of all protected species.

NUMBER OF PHOTOS TAKEN?: Record the number of photos taken. Always photograph the specimen if possible. Take at least one picture illustrating the location of gear attachment. This should never be left blank, it is asking for quantity. So if no photos were taken you should place a zero in the boxes provided.

LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the set begin time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml.

TARGET SPECIES: List all species being targeted for the set with associated 3-letter abbreviation (SEE SPECIES CODE LIST).

GEAR TYPE: Indicate which gear is being fished. If gear is something other than the listed types, write the gear type in the comments section.

GEAR DEPTH: Indicate whether the gear was being fished at the surface, mid-water, on the bottom, or other. If other, reference the depth in the comment section.

TRAWL NET POSITION: Enter net position at time of capture. For captures in a try net or non-station captures, enter 9 (default code).

NET TYPE ANIMAL CAPTURED IN: Check the appropriate answer to describe the type of net the specimen was captured in.

NET MODIFICATIONS: Check the appropriate answer to explain all net modifications present.

GILLNET NET MATERIAL: Check either monofilament or multifilament gillnet gear.

STRETCHED MESH SIZE: Record the stretched mesh size, in inches, of the net.

TWINE SIZE: Record the twine size used in the net. This information can be obtained from the Captain.

NET LENGTH: Record the gillnet length in feet.

NET DEPTH: Record the gillnet depth in feet.

HOOK TYPE: Check “J” or Circle. If hook type is neither, select Other (describe).

HOOK SIZE: Write in size of hook (e.g., 9/0, 18/0).

MANUFACTURER/STYLE NO.: Write in the manufacturer and style number (e.g., Mustad #39968D).

DEGREE OFFSET: Write in the degree offset of hook (e.g., 0°, 5°, 10°).

BAIT: Check all that apply: Squid, Mackerel, Sardine, Unknown or Other (describe). Enter the size of bait used.

WAS HOOK REMOVED FROM THIS ANIMAL?: Circle Yes, No, Unknown, or Not Applicable. If specimen was 'Not Hooked', or 'Not known if hooked' then mark 'Not Applicable'. This question should always be answered, for gillnet trips please circle "Not Applicable".

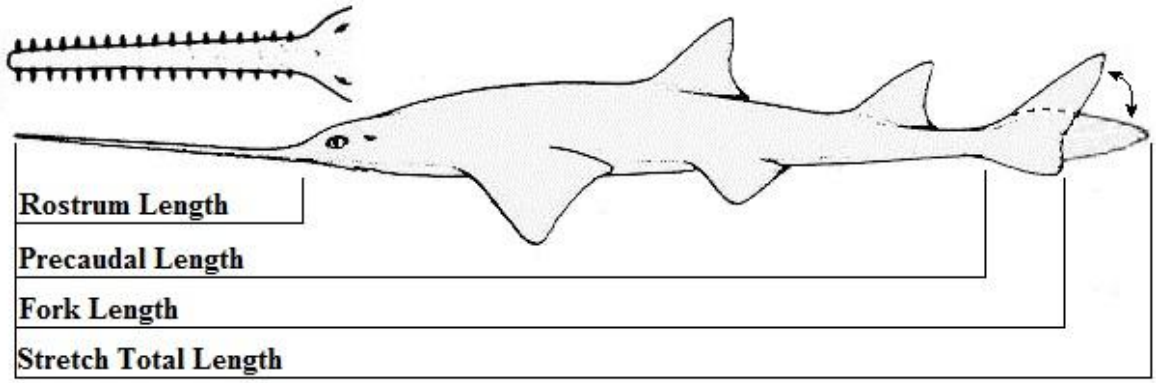
WAS ANIMAL ENTANGLED IN GEAR AT CAPTURE?: These should always be answered. Circle Yes, No, or Unknown. An animal that is hooked but not fouled by mono is not considered entangled.

AT RELEASE?: Circle Yes, No, or Unknown.

HOW MUCH GEAR (LINEAR FEET) WAS LEFT ON THE ANIMAL WHEN RELEASED?: Estimate or measure the amount of gear line left on specimen when released. Record a zero if all line is removed.

BIOLOGICAL INFORMATION

SAWFISH



EST. TOTAL LENGTH/DISC WIDTH: Record size estimate in centimeters if animal not boarded.

EST. LENGTH OF ROSTRUM: Record estimated length of saw in centimeters if animal not boarded.

If the animal is boated:

SEX: Circle Male, Female or Unknown

PRECAUDAL LENGTH: Record straight line measurement in centimeters.

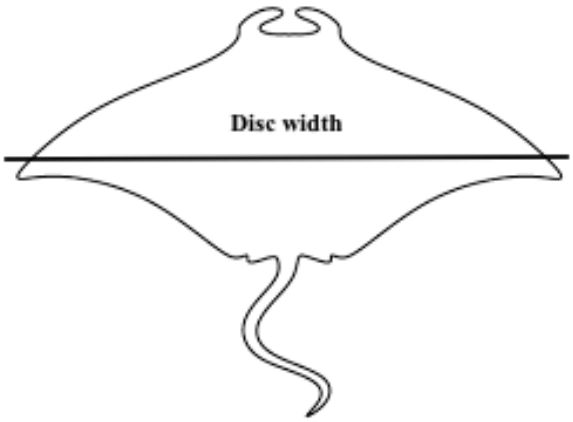
FORK LENGTH: Record straight line measurement in centimeters.

LENGTH (TOTAL/DISC WIDTH): Stretch the caudal fin down to the vertical (see diagram), record straight line measurement in centimeters.

ROSTRUM LENGTH: Record straight line measurement in centimeters.

ROSTRAL TEETH: Count and record the number of teeth on either side of the saw.

MANTAS



EST. TOTAL LENGTH/DISC WIDTH: Record size estimate in centimeters if animal not boarded.

EST. LENGTH OF ROSTRUM: Skip.

If the animal is boated:

SEX: Circle Male, Female or Unknown

PRECAUDAL LENGTH: Skip.

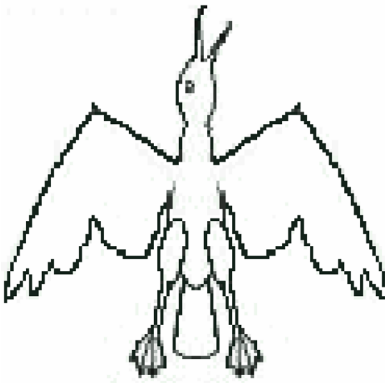
FORK LENGTH: Skip.

LENGTH (TOTAL/DISC WIDTH): Record the total disc width in centimeters as a straight line.

ROSTRUM LENGTH: Skip.

ROSTRAL TEETH: Skip.

SEABIRDS



EST. TOTAL LENGTH/DISC WIDTH: Record size estimate in centimeters if animal not boarded.

EST. LENGTH OF ROSTRUM: Skip.

If the animal is boated:

SEX: Circle Male, Female or Unknown

PRECAUDAL LENGTH: Skip.

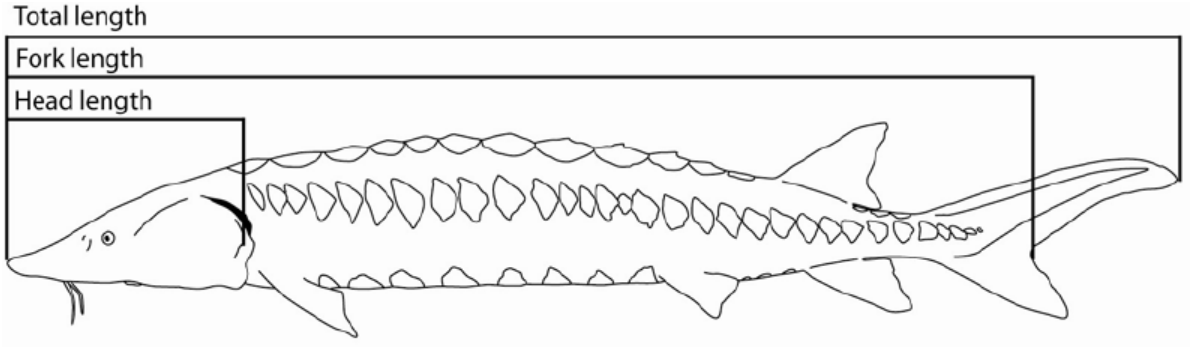
FORK LENGTH: Skip.

LENGTH (TOTAL/DISC WIDTH): Record total length from beak tip to mid-tail tip in centimeters.

ROSTRUM LENGTH: Skip.

ROSTRAL TEETH: Skip.

STURGEON



EST. TOTAL LENGTH/DISC WIDTH: Record size estimate in centimeters if animal not boarded.

EST. LENGTH OF ROSTRUM: Skip.

If the animal is boated:

SEX: Circle Male, Female or Unknown

PRECAUDAL LENGTH: Skip.

FORK LENGTH: Record straight line measurement in centimeters.

LENGTH (TOTAL/DISC WIDTH): Stretch the caudal fin down to the vertical (see diagram), record straight line measurement in centimeters.

ROSTRUM LENGTH: Skip.

ROSTRAL TEETH: Skip.

TAG ID NUMBERS

WAS THIS ANIMAL PIT SCANNED? Circle Yes or No, and if a PIT tag is found, record the number in the boxes provided. **Note:** PIT tags in sawfish and sturgeon are usually inserted at the base of the first dorsal fin. Sturgeon may actually have two PIT tags. Mantas may have a PIT tag.

There is space provided for 4 tags. Record the tag number and color. Note the location of the tag. If there is a tag in both fins record both numbers and colors. Additional information can be added below in the comments section. **Do not apply any PIT tags to the animal in this section.**

RELEASE INFORMATION

Latitude/Longitude, Time and Date are **NOT** always the same information referenced for time of capture. Be as detailed as possible.

TIME: Record the local time (24 hour clock NOT hundredths of an hour) when specimen was released.

DATE: Record the month, day and year when captured occurred (mm/dd/yyyy).
Example: 01/01/2020.

LATITUDE/LONGITUDE: Record latitude and longitude in degrees and to the hundredth of a minute in the appropriate boxes (DDº MM.mmm) when the set begin time is recorded. NOTE: If you can only get LORAN, then record both TD's (letters) and LORAN chains. These values need to be converted into latitude/longitude prior to data entry using https://fish.nefsc.noaa.gov/loranconv/latlonarea.shtml.

FINAL DISPOSITION: Record the final disposition (fate) of the specimen at time of release by checking the appropriate box.

Discarded Dead/Unresponsive Carcass
Released Alive
Unknown (explain)

BIOLOGICAL SAMPLES: Check the appropriate boxes for any samples that you take from the animal – *see the following sections for samples needed by species.*

ADDITIONAL COMMENTS: Use this area to record any and all comments. Describe the interaction with as much detail as possible. Record information on any tags that you apply to the animal (you may be issued spaghetti or PAT (satellite) tags).

DO NOT PIT TAG SAWFISH, MANTAS OR STURGEON, JUST SCAN FOR EXISTING TAGS!

Observer sampling protocol for sawfish

If boated alive:

- Secure the rostrum with help from the crew. Live sawfish are **DANGEROUS**
- Scan for PIT tags
    - Around the base of the dorsal fins
- Check for external tags
    - Around the base of the dorsal fins
- Take a precaudal length, a fork length, stretched total length and rostrum length measurement in centimeters
    - Straight line measurements
- Count the rostral teeth on either side of the saw
- Check the sex of the sawfish
- Remove small (0.5 cm) portion of caudal or anal fin for genetic sample
    - Store in a plastic bag, on ice or frozen if possible
    - Can be stored in ethanol
- Tag with spaghetti and PAT (satellite) tags when available
- Release sawfish with vessel out of gear

If boated dead

- Scan for PIT tags
    - Around the base of the dorsal fins
- Check for external tags
    - Around the base of the dorsal fins
- Take a precaudal length, a fork length, stretched total length and rostrum length measurement in centimeters
    - Straight line measurements
- Count the rostral teeth on either side of the saw
- Check the sex of the sawfish
- Remove small (0.5 cm) portion of caudal or anal fin for genetic sample
    - Store in a plastic bag, on ice or frozen if possible
    - Can be stored in ethanol
- Remove gonads, stomach, vertebrae (about 6-10 inches), the rostrum and all fins
    - Store in plastic bag, on ice or frozen
- Discard the remaining carcass

Send all samples to Panama City Observer Program.

Observer sampling protocol for mantas

If boated alive:

- Take a disc width measurement in centimeters
    - Straight line measurements
- Photograph the underside
- Scan for PIT tags
- Record the sex
- Remove small (0.5 cm) portion of tissue for genetic sample – either as a fin clip from the dorsal fin, or a muscle plug from the dorsal surface of a wing.
    - Store in a plastic bag, on ice or frozen if possible
    - Can be stored in ethanol
- Release manta

If boated dead

- Take a disc width measurement in centimeters
    - Straight line measurements
- Photograph the underside
- Scan for PIT tags
- Record the sex
- Remove small (0.5 cm) portion of tissue for genetic sample – either as a fin clip from the dorsal fin, or a muscle plug from the dorsal surface of a wing.
    - Store in a plastic bag, on ice or frozen if possible
    - Can be stored in ethanol
- Remove gonads, stomach, portion of vertebrae
    - Store in plastic bag, on ice or frozen
- Discard the remaining carcass

Send all samples to Panama City Observer Program.

Observer sampling protocol for Atlantic and Gulf sturgeon

If captured alive:

- Scan for PIT tags
  - Under dorsal fin, both sides
- Check for external tags
  - Under side of pectoral fins
- Take a fork length (FL) measurement in centimeters
  - Indicate whether measurement is straight line or curved
- Remove small (0.5 cm) portion of caudal or anal fin for genetic sample
  - Store in a plastic bag, on ice or frozen if possible
  - Can be stored in ethanol
- Remove 2 cm portion of 2nd marginal fin ray from left pectoral fin (see protocol)
  - Store dry in plastic bag or envelope
- Release sturgeon

If captured dead

- Scan for PIT tags
  - Under dorsal fin, both sides
- Check for external tags
  - Under side of pectoral fins
- Take a fork length (FL) measurement in centimeters
  - Indicate whether measurement is straight line or curved
- Remove pectoral fin
  - Store dry in plastic bag or envelope
- Remove gonads
  - Store in plastic bag, on ice or frozen
- Discard the remaining carcass

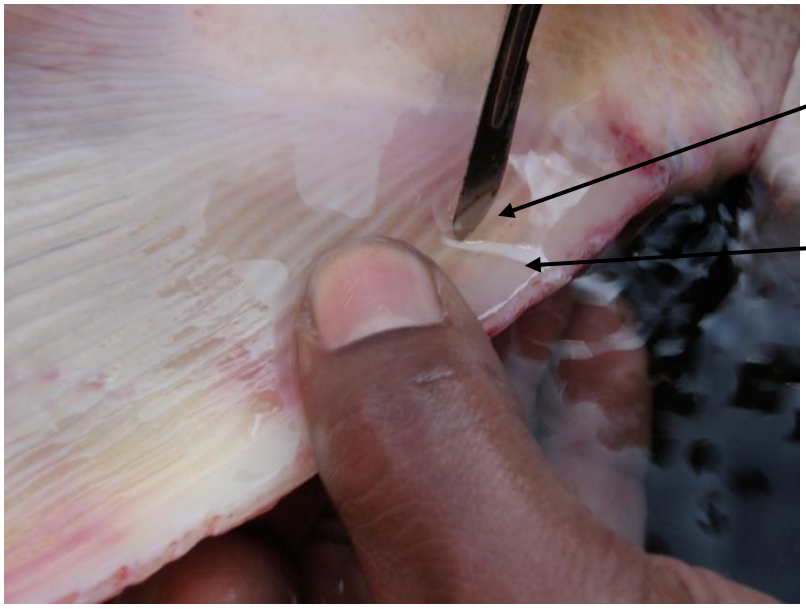
Send all samples to Panama City Observer Program.

Protocol for LIVE sturgeon

Removal of the second marginal fin ray from the pectoral fin of Gulf and Atlantic sturgeon:

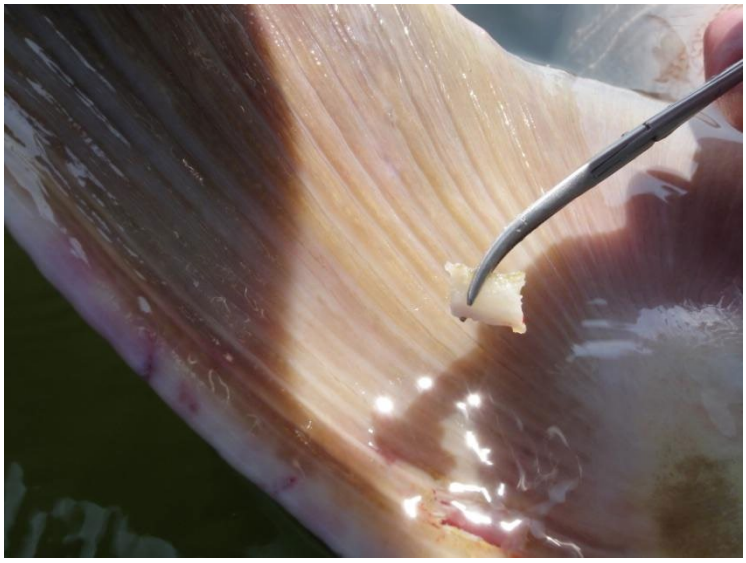
Tools:
Scalpel w/ size 10 blade
Wire Cutters
Forceps

With ventral side up, make a 2 cm incision (parallel to the fin ray) between the 2nd marginal fin ray and the "spine" or 1st marginal fin ray of the pectoral fin. This should be done approximately 2 cm from the base of the pectoral fin.



Make similar incision between the 2nd and 3rd marginal fin rays.

Use forceps to hold the now separated fin ray, then use wire cutters to snip each end of the cut.



Use forceps to completely remove fin ray. Place in labeled plastic bag and store on ice.

The finished product should look like this, or with even a smaller removal.

Endangered Sawfish Handling, Release, and Reporting Procedures

for Individuals with Permitted Incidental Sawfish Take (commercial fishermen, non-targeted researchers, etc.)

An Endangered Species:

- Smalltooth sawfish are listed as endangered under the Endangered Species Act (ESA)
- Federal law prohibits injuring or harming sawfish
- Captured sawfish should be released immediately

Materials Needed:

- Measuring tape
- Net pick or boat hook
- Knife, line cutter, scissors
- Ropes
- Water quality meter (if available)
- Datasheets
- GPS
- Camera
- PIT reader (if available)

Reporting:

Adam Brame
Sawfish Recovery Coordinator
727-209-5958
Adam.Brame@noaa.gov

1-844-4SAWFISH

General Handling and Release Guidelines

- Work quickly to free and release the sawfish as soon as possible
- Keep sawfish in the water as much as possible, especially the gills
- Keep sawfish wet if it must be removed from the water
- Never remove the rostrum (saw)
- Do not stand or sit next to the rostrum
- Tie rope around tip of saw or tail only if needed to control sawfish for safety

Line Gear (longline, rod and reel, etc.) Specifics

- Keep the sawfish, especially the gills, in the water as much as possible
- Use line-cutting poles, long-handled dehookers, and/or boat hooks to remove line or gear
- Do not attempt to remove the hook, just cut the line as close to the hook as possible
- If line is tangled around the body or saw, untangle and remove as much of the line from around the sawfish as possible and then cut the line close to the hook

Net Gear (trawls, gillnets, etc.) Specifics

- Keep sawfish wet and in the net until ready for release
- Use line-cutting pole, scissors, and/or knife to cut free any net tangled around the saw by cutting the mesh along the length of the saw
- Once the mesh is cut, work it free with a boat hook or line-cutting pole

Data Recording

Please record as much information as you can quickly and safely including:

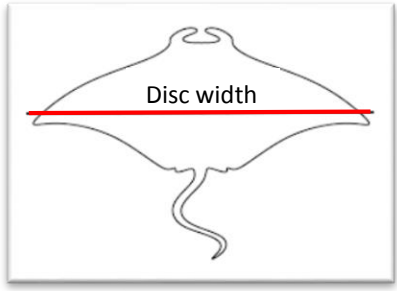
- Date and time
- Latitude and longitude (or detailed location description)
- Habitat description (water depth, temperature, salinity, dissolved oxygen)
- Photographs (in/on gear, body, rostrum)
- Markings, scars, wounds
- Tag number and type if applicable
- Lengths (saw and total, estimate if necessary)
- Sex
- Release condition including any remaining gear

Mobula Ray Identification Guide For Fisheries Observers

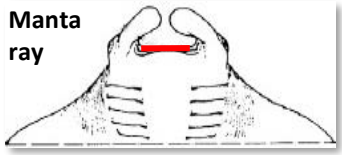
Purpose: This guide is intended to assist fishery observers in the visual identification of the giant manta ray and several devil ray species that occur in the Southeast and Mid-Atlantic.

General Observations: The size, coloring patterns, and a few morphological differences can be used to distinguish between species.

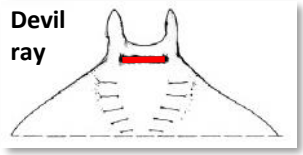
- Giant manta rays are larger than devil rays. Measurements should be taken by estimating the distance over their wingspan ["Disc Width" (DW)].



- Giant manta rays have a terminal mouth (i.e., mouth points straight forward, in front of the head); Devil rays have a sub-terminal mouth (i.e., mouth beneath the head).



Terminal mouth



Sub-terminal mouth

Mobula birostris

Common Names: Giant Manta Ray, Oceanic Manta Ray

Status: U.S.: Listed as *Threatened* under Endangered Species Act.

Size: Up to 700 cm DW; appx. 200 cm DW at birth.

Dorsal Coloration: Black with distinct white patches creating a T-shaped shoulder pattern.

Ventral Coloration: White with dark spots; spots rarely found between gill slits. Dark shading along the posterior edges of the pectoral fins.


Photo credit: Joshua Stewart

Mobula mobular

Common Names: Giant Devil Ray, Spinetail Devil Ray

Status: U.S.: Not listed. International Union for Conservation of Nature (IUCN): *Endangered*

Size: Up to 520 cm DW

Dorsal Coloration: Predominantly dark gray; with a black (crescent shape) stripe that runs from side to side on upper shoulders. White tip on the dorsal fin.

Ventral Coloration: White.


Photo credit: Guy Stevens/Manta Trust

Mobula tarapacana

Common Names: Chilean Devil Ray, Sicklefin Devil Ray, Box Ray

Status: U.S.: Not listed. IUCN: *Vulnerable*

Size: Up to 340 cm DW

Dorsal Coloration: Golden brown to olive green.

Ventral Coloration: Predominately white with gray shading along the posterior margin of pectoral fins.


Photo credit: www.tomburd.co.uk

Mobula hypostoma

Common Names: Atlantic Devil Ray, Lesser Devil Ray

Status: U.S.: Not listed. IUCN: *Data Deficient*

Size: Up to 120 cm DW

Dorsal Coloration: Variable, brown, gray to black. Sometimes have a dark gray/black stripe that runs from side to side on the "neck" right behind the eyes.

Ventral Coloration: White.


Photo credit: Kim Basso-Hall/Mote Marine Laboratory

Southeast Shrimp Fisheries Giant Manta Ray Release Guidelines

The guidelines presented here describe procedures for releasing a large ray from a shrimp trawl. Under these procedures, the trawl is retrieved in a normal manner and the ray is not brought onboard the vessel. The objective is to bring portions of the net tail and body out of the water in order to maneuver the captured ray towards and out the mouth of the net.

The capture of a manta ray during a tow often provides cues to the crew that should trigger net haulback. Once caught, large rays create an increase in the overall drag associated with the trawl. In some instances, the increase in drag, along with the rays thrashing against the trawl webbing, can provide noticeable cues. These cues can include an irregular "jerking" motion of the trawl cable above the water, a decrease in engine RPMs associated with an engine "lugging" sound, and a decrease in vessel speed. If the vessel is rigged for side trawling with outriggers, the vessel may veer off course and in the direction of the net that has captured the ray.


Photo: Josh Stewart

Step 1: The haulback of all nets should proceed as usual. Bring doors to the block.

Step 2: Position the vessel so that the manta/trawl is on the windward/upwind side of the boat. Reduce speed or take the engine out of gear if possible. This will reduce drag on the animal, allowing it to move towards the mouth of the net in subsequent steps.

Step 3: Retrieve the bag and dump the catch as usual.

Step 4: Using a whip/lifting line positioned forward of the TED, raise sections of trawl netting out of the water as high as possible, causing the animal to slide toward the trawl mouth.

- It may require several lifts/whips, moving forward in the trawl body with each lift, to move the animal toward the trawl mouth.
- If the animal stops moving at any point, try lowering the trawl doors to the water. This will increase the angle of the whip line lifting point relative to the trawl mouth and help move the animal toward the trawl mouth.


Photo: NMFS Galveston Lab

Step 5: If the animal does not move after repetitive lifts are attempted, it may be necessary to cut portions of the trawl net webbing that appear to be under tension near or around the animal. Bring those areas of the trawl as close to the vessel as possible and make necessary cuts to relieve tension. Take care to avoid cutting the animal.

Step 6: Once released from the trawl, monitor the animal's direction of movement. The ray may remain at the surface while it regains mobility. Take care to maneuver the vessel away from the animal while it is recovering.

Step 7: Report the incident to Calusa Horn, NMFS Southeast Giant Manta Ray Recovery Coordinator, at 727-824-5312, or via email Calusa.Horn@noaa.gov.

Observer Know-How: Reporting Banded Seabirds

NOAA FISHERIES

National Observer Program and National Seabird Program

The NOAA Fisheries' **National Seabird Program** is a cross-disciplinary group of managers and scientists who work domestically and internationally to protect and conserve seabirds. The NSP works through representation on steering committees and working groups within and external to NOAA Fisheries, and through partnerships with other NOAA line offices, science centers, regional offices, regional fishery management councils, state partners, and various federal agencies.

NOAA Fisheries' **National Observer Program** provides coordination for regional programs covering fisheries of the Greater Atlantic, Southeast, West Coast, Pacific Islands, Northwest, and Alaska. Our eyes and ears on the water, observers and at-sea monitors are professionally trained biological technicians gathering firsthand data on what is caught and discarded by U.S. commercial fishing vessels to support a wide range of science, conservation, and management activities.

FOR MORE INFORMATION

Annette Henry
National Seabird Program
annette.henry@noaa.gov

Kenneth Keene
National Observer Program
kenneth.keene@noaa.gov

fisheries.noaa.gov/topic/fishery-observers

An Important Role in Conservation

The work of observers, including reporting banded seabirds, is critical to effective fisheries management and to safeguarding protected species. **Without trained observers, most fishery interactions involving banded birds would go unreported.**

Banded Black-footed Albatross seen at sea. Credit: NOAA Fisheries Pacific Islands Regional Office

Why are Birds Banded?

Scientists and resource managers band birds to track the fate of individuals within a population and, by extension, the population(s) they represent. The "recovery" or "recapture" rate of bands is low (0.1%-20% or 1 to 200 of every 1,000 birds banded), which makes **observer reports critical and the largest, most reliable source of band recoveries at sea.**

How are Birds Banded?

Birds are typically banded on the leg, with a metal United States Geological Survey (USGS) Bird Banding Lab ring that has an 8- or 9-digit number and contact information, e.g., www.reportband.gov followed by the band number. Some older bands have instructions, "WRITE LAUREL BIRD BAND MD 20708 USA" or "AVISE BIRD BAND WASH DC."

Occasionally observers find bands from other countries, or USGS bands paired with other bands or tags that allow the birds to be recognized from a distance or that serve as tracking devices that allow researchers to follow bird movements—observers should watch out for these auxiliary markers.

What is the Process for Reporting a Banded Bird?

Observers who find a banded bird (dead or alive; within or outside of their composition sample) **should note the band number, take photos, and save the carcass, if possible.** NOAA Fisheries staff submit observer data to USGS. Even if observers record part of a band number or only an auxiliary band, the nesting location and year can often be tracked down. Observers should submit any/all information they can, e.g., "red band with white letters, A1380 or A1880".

What Happens to the Data?

USGS reports the data back to the bird bander. The majority of carcasses collected by observers undergo a full necropsy (postmortem analysis) that provides age, reproductive status, overall body condition, stomach content, and contamination (e.g., ocean plastics) data—all vital information about the population-level, human-caused impacts to seabirds.

BY THE NUMBERS (2010-2020)

Total bands recovered **415**

Total species: **9**

Source: NOAA FIsheries, 2022

Top photo: Stomach contents of a Northern Fulmar. Credit: Oikonos

Bottom photo: USGS band. Credit: NOAA Fisheries Alaska Fisheries Science Center

SAWFISH, MANTAS, STURGEON, and SEABIRDS
PROTECTED RESOURCES CAPTURE REPORT
REPORT WITH IN 24 HOURS OF CAPTURE

Trip Number ☐☐☐☐☐☐ MO DY YR ___/___/___ **Set/Tow** ☐☐☐ ☐ **Station** ☐ **Non-Station** **Specimen # By Trip** ☐☐☐

Check type of specimen captured and reference species (if known) in space provided:

☐ Sawfish ___ ☐ Sturgeon ___
☐ Mantas ___ ☐ Seabirds ___

Observer ☐☐☐ **State** ☐☐ **Time (24 hr)** ☐☐☐☐ **Water Depth** ☐☐☐.☐ **ft.** **Photos Y/N** ☐ **Number** ☐☐

LATITUDE ☐☐ deg ☐☐.☐☐ min **LONGITUDE** ☐☐ deg ☐☐.☐☐ min

TARGET SPECIES: **List all targeted species for this set using 3-letter abbreviation from Species Code list.**

___ ___ ___ ___

Gear Type: ☐ Longline ☐ Gill Net ☐ Trawl ☐ Bandit Reel ☐ Handline ☐ Jug ☐ Fish Trap ☐ Purse Seine

Gear Depth: ☐ Surface ☐ Midwater ☐ Bottom ☐ Other ___

Trawl Net Position ☐ **Net Type Animal Captured In:** ☐ Try Net ☐ Standard Net **Net Modifications:** ☐ TED ☐ TED/BRD ☐ BRD ☐ None ☐ Unknown

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IF GEAR IS A FORM OF GILLNET, COMPLETE THIS SECTION, AS APPLICABLE: **Net Material:** ☐ Monofilament ☐ Multifilament

Stretched Mesh Size: ☐☐ in. **Twine Size:** ☐☐☐ **Net Length:** ☐☐☐☐ ft. **Net Depth:** ☐☐ ft.

IF GEAR IS A FORM OF HOOK AND LINE, COMPLETE THIS SECTION, AS APPLICABLE:

Hook Type: ☐ "J" ☐ Circle ☐ Other (describe) ___ **SIZE** ☐☐ /0

Manufacturer/Style No. ___ **DEGREE OFFSET** ☐☐ °

Bait: ☐ Squid ☐ Mackerel ☐ Sardine ☐ Unknown ☐ Other (describe) ___

Was hook removed from this animal? Y / N / Unknown / Not Applicable

Was animal entangled in gear? **At capture?** Y / N / Unknown **At Release?** Y / N / Unknown

How much gear (linear feet) was left on the animal when released? ☐☐☐.☐ **ft.** (estimated/measured)

BIOLOGICAL INFORMATION: **Est. Total Length/Disc Width:** ☐☐☐.☐ **cm** **Est. Length of Rostrum:** ☐☐☐.☐ **cm**

If boated: **Sex: M / F / Unknown** **Precaudal Length:** ☐☐☐.☐ **cm** **Fork Length:** ☐☐☐.☐ **cm**

Length (Total/Disc Width): ☐☐☐.☐ **cm** **Rostrum Length:** ☐☐☐.☐ **cm** **Rostral teeth:** L ☐☐ R ☐☐

TAG ID NUMBERS: **Was this animal PIT scanned? Y / N** **PIT #:** ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

___ ___ ___ ___

RELEASE INFORMATION: **TIME (24hr)** ☐☐☐☐ **DATE** ___/___/___ MO DY YR

LATITUDE ☐☐ deg ☐☐.☐☐ min **LONGITUDE** ☐☐ deg ☐☐.☐☐ min

FINAL DISPOSITION: ☐ Discarded Dead/Unresponsive Carcass ☐ Released Alive ☐ Unknown (explain)

BIOLOGICAL SAMPLES: ☐ Vertebrae ☐ Gonad ☐ Stomach ☐ Fin Clip/Tissue ☐ Fin Ray ☐ Pectoral Fin ☐ Rostrum

ADDITIONAL COMMENTS: **(list all other biological samples collected, visible tag scars and tags applied):**

___
___
___
___
___
___

PERMITS

This section contains the required permits for the sampling protocols dictated in this observer manual. NMFS approved observers no longer require an NOAA Highly Migratory Species (HMS) Exempted Fishing Permit (EFP) to collect samples from species managed by HMS (sharks, swordfish, tunas etc). This change was implemented in the Federal Register in August 2009:

> "(e) *Observers*. NMFS-sanctioned observers or biological technicians conducting activities within NMFS approved sea sampling and/or observer protocols are exempt from the requirement to obtain an EFP. For purposes of this section, NMFS sanctioned observers or biological technicians include NMFS employees, NMFS observers, observers who are employees of NMFS-contracted observer providers, and observers who are employees of NMFS-permitted observer providers."

[FR Doc. E9–20489 Filed 8–24–09; 8:45 am]

Any observer participating in the NOAA Fisheries Panama City Observer Programs should be carrying the following documents:

Full Federal Register document that includes the above text: FR Doc. E9–20489

Sea turtle permit: No. 24368

Sections from the Endangered Species Act – Section 7 Consultation Biological Opinion

If you do not have any of these documents contact your coordinator

OBS COORDINATOR – Alyssa Mathers	Office: 850-270-6014 Cell: 850-890-3853 Email: Alyssa.Mathers@noaa.gov
OBS COORDINATOR- Bradley Smith	Office: 850-270-7509 Cell: 850-381-1695 Email: Bradley.Smith@noaa.gov
ASST COORDINATOR – Samantha Faller	Office: 850-312-8933 Cell: 850-348-3176 Email: Samantha.Faller@noaa.gov
ASST COORDINATOR- Dana Jordan	Office: 850-270-8315 Cell: 850-866-5297 Email: Dana.Jordan@noaa.gov
OBS CHIEF – Scott Leach	Cell: 786-822-0509 Email: Scott.leach@noaa.gov

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 600

[Docket No. 071121736–91118–03]

RIN 0648–AR78

Magnuson-Stevens Act Provisions; Experimental Permitting Process, Exempted Fishing Permits, and Scientific Research Activity

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: NMFS issues new and revised definitions for certain regulatory terms, and procedural and technical changes to the regulations addressing scientific research activities, exempted fishing, and exempted educational activities under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This action is necessary to provide better administration of these activities and to revise the regulations consistent with the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA). NMFS intends to clarify the regulations, ensure necessary information to complete required analyses is requested and made available, and provide for expedited review of permit applications where possible.

DATES: Effective September 24, 2009.

ADDRESSES: Written comments regarding burden-hour estimates or other aspects of the collection-of-information requirements contained in this final rule may be sent to Alan Risenhoover, Director, Office of Sustainable Fisheries, 1315 East-West Highway, SSMC3, Silver Spring, MD 20910, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (Attn: NOAA Desk Officer), or email to *David__Rostker@omb.eop.gov*, or fax to (202) 395–7285.

Copies of the categorical exclusion (CE) prepared for this action are available from NMFS at the above address or by calling the Office of Sustainable Fisheries, NMFS, at 301–713–2341.

FOR FURTHER INFORMATION CONTACT: Jason Blackburn at 301–713–2341, or by e-mail at *jason.blackburn@noaa.gov*.

SUPPLEMENTARY INFORMATION:

Background and Need for Action

On January 12, 2007, the MSRA was enacted. Section 204 of the MSRA added a new Cooperative Research and Management Program section (section 318) to the MSA. Section 318(d) of the revised MSA requires that the Secretary, through NMFS, ''promulgate regulations that create an expedited, uniform, and regionally-based process to promote issuance, where practicable, of experimental fishing permits.'' Under the 1996 exempted fishing regulations, exempted and experimental fishing were treated synonymously as the terms had been used interchangeably in the regions. (March 15, 1996, 61 FR 10712 and May 28, 1996, 61 FR 26435) This rulemaking continues the practice of using the terms interchangeably.

A proposed rule with revisions and updates to the regulations addressing scientific research activities, exempted fishing, and exempted educational activities was published in the **Federal Register** on December 21, 2007 (72 FR 72657), with a comment period ending on March 20, 2008. An extension of the comment period was published on March 18, 2008 (73 FR 14428) that extended the comment period to April 4, 2008. The extension of the comment period for an additional 15 days was intended to ensure that NMFS provided adequate time for fishery management councils, stakeholders and members of the public to comment on the proposed revisions.

Comments and Responses

A total of 18 relevant comment letters were received from regional fishery management councils, environmental organizations, industry representatives, research institutions, and other members of the public. These comments are summarized below.

Compensation Fishing

Comment 1: Several commenters had questions about how compensation fishing can be authorized, including when it requires an EFP.

Response: Compensation fishing is authorized under section 402(e) of the MSA. Historically, the primary purpose of compensation fishing has been to compensate scientific research vessel owners or operators for participating in NMFS sponsored resource surveys. More recently, compensation fishing has also been authorized to compensate vessels participating in scientific research projects conducted by non-governmental institutions where additional fish, outside of the scope of the scientific research plan, are needed to fund the research. The amount of fish caught during scientific research activities must be limited to only that which is necessary to meet the needs of the research, i.e., the amount identified in the scientific research plan as the necessary sample size to support a robust analysis. Any additional fish needed to compensate vessels for their participation requires evaluation of the effects of this additional mortality on the affected stock(s), for example, to ensure that overfishing does not occur, consistent with National Standard (NS) 1, the NS1 Guidelines, and MSA section 303(a)(15). The following scenarios are provided to assist in determining whether or not compensation fishing requires an EFP: (1) For research projects where the additional mortality associated with the compensation fishing has already been evaluated in a Fishery Management Plan (FMP) or FMP action, which allocates a set amount of fish to a research set-aside (RSA) and includes analysis of the impacts of the action (such as the annual specifications process used for the Mid-Atlantic Council's fisheries), no further analysis is required, and the compensation fishing may not require an EFP, depending on whether exemptions from existing regulations would be requested (e.g., possession limits, seasonal closures, etc.); (2) for research projects where compensation fishing would be consistent with the regulations for the fishery, the compensation fishing would not require an EFP; and (3) for research projects where the additional mortality associated with the compensation fishing has not been evaluated, or where the proposed compensation fishing would require an exemption from a fishery regulation, such as fishing during a closed season or retaining catch in excess of allowable limits, the compensation fishing would require an EFP.

Comment 2: One commenter asked for clarification about whether a contract for compensation fishing can be used in lieu of an EFP outside of the RSA program.

Response: A contract entered into by NMFS to conduct compensation fishing does not exempt the participating vessel(s) from any fishing regulations. An EFP is always required for any fishing activity that would, or has the potential to, violate any fishing regulation (e.g., fishing during a closure or in excess of a possession limit), unless the fishing activity has been approved to be conducted in concert with a scientific research activity that was issued a scientific research permit or a letter of acknowledgment.

Comment 3: Two commenters suggested that creating a new compensation fishing permit would help to streamline the process by alleviating the lengthy EFP review process.

Response: Any permit issued by NMFS is a Federal action, and as such must comply with any and all applicable laws, including the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), and the National Environmental Policy Act (NEPA). Therefore, a separate permit for compensation fishing would require the same review process as an EFP, and would not streamline the process.

Comment 4: Two commenters suggested that NMFS should streamline issuance of an EFP for compensation fishing by issuing the EFP at the same time as the Letter of Acknowledgment (typically occurring when projects utilize multiple vessels to conduct scientific research and compensation fishing), or by combining the EFPs for the principle investigator (PI) and the vessels.

Response: The time frame involved in reviewing applications and issuing Letters of Acknowledgment and EFPs is very different, because issuing an EFP is a Federal action requiring compliance with other applicable laws, while providing a Letter of Acknowledgment does not trigger the same requirements. Issuing both at the same time would essentially delay the receipt of the Letter of Acknowledgment, thus potentially delaying the start of the scientific research. The decision to combine, or not combine, the EFPs for the PI and the vessels should be handled on a case-by-case basis by the Regional Administrator or Director. In the Mid-Atlantic RSA program, the vessels participating in a given project are often listed on one EFP, which is issued to the PI. Other programs and regions may find that a different approach works better under their particular circumstances. Vessels participating in a scientific research activity or compensation fishing should be identified in the Letter of Acknowledgment and/or EFP. It is the PI's responsibility to manage the project and to ensure that all aspects of the project are carried out in accordance with the scientific research plan and the EFP. No research or compensation fishing should occur until the PI has coordinated with the vessel and provided the vessel with a copy of the Letter of Acknowledgment and/or EFP.

Conservation Engineering

Comment 5: Many commenters raised concerns about how the two terms, ''conservation engineering'' and ''gear testing,'' appear to limit the types of cooperative research projects that would be allowed, or not allowed, particularly in light of the very restrictive ''gear testing'' definition. This caused particular concern for researchers who conduct catch rate comparisons as part of their research protocols. One commenter agreed that the distinction between ''conservation engineering'' and the ''testing of gear'' needs to be clarified.

Response: The definition of ''scientific research activity'' states that such activity does not include ''the testing of fishing gear.'' As a result, people have obtained EFPs for many projects that might otherwise be considered scientific research. In the proposed rule, NMFS intended the narrow definition of ''gear testing,'' coupled with the new definition of ''conservation engineering,'' to allow more projects to be considered scientific research activities that would not require an EFP because scientific research activities are outside of the scope of the MSA. Additionally, the proposed rule referred to testing modified gear as conservation engineering instead of ''gear testing.'' Due to the breadth of concerns raised about the definition of gear testing, and because the term is often used synonymously with conservation engineering, NMFS removed the definition of gear testing from the final rule. Therefore, as clarification, NMFS emphasizes that according to the MSA definition of fishing, scientific research activities are not fishing. Accordingly, conservation engineering activities that also meet the definition of scientific research activity are not fishing. Alternatively, conservation engineering activities that do not meet the definition of scientific research activity, but that do meet the definition of fishing are fishing, and must be conducted under an EFP if the activity would otherwise be prohibited by regulations under part 600.

Comment 6: Three commenters suggested that the phrase ''efficient harvest of target species'' in the definition of ''conservation engineering'' should be interpreted broadly to include projects that focus on environmental efficiency, such as testing methods to reduce fuel consumption and greenhouse gas emissions.

Response: This phrase comes directly from MSA section 404(c)(2). As such its intent is clearly fisheries conservation, and not other forms of environmental conservation, which are outside the scope of the MSA and these regulations. Fishermen will take steps to reduce fuel consumption and increase efficiency in the course of their normal business.

Comment 7: Two other commenters focused on the phrase ''efficient harvest of target species'' in the definition of ''conservation engineering.'' One suggested that the phrase should be revised so that it does not encourage increased catch efficiency, while the other suggested that conservation engineering work should focus on minimizing bycatch while maintaining or increasing target catches.

Response: ''Conservation engineering'' is defined in the regulations as relating to fisheries conservation and the research being conducted to minimize the unintended impacts of fishing. The phrase ''efficient harvest of target species'' needs to be considered in the context of ''conservation engineering,'' which includes ''the study of fish behavior and the development and testing of new gear technologies and fishing techniques that reduce collateral effects, such as minimizing bycatch and any adverse effects on EFH.'' This definition is intended to promote research that focuses on ways to harvest target species in a manner that conserves and reduces impacts on non-target species. The definition is not intended to promote research that focuses on catching more of the target species.

Comment 8: Another commenter was concerned that the phrase ''minimizing bycatch and any adverse affects on EFH'' in the definition of ''conservation engineering'' might be misconstrued as examples of ''collateral effects.''

Response: To alleviate possible misunderstandings, the reference to ''collateral effects'' has been removed from the definition, and the language of MSA section 404(c)(2) has been used verbatim.

Comment 9: One commenter raised concern that some activities that have typically required an EFP in the past may be reclassified as scientific research and would now receive a Letter of Acknowledgment and not have to go through the Council review process associated with EFP proposals.

Response: The new definition of ''conservation engineering'' and the associated revision of the definition of ''scientific research activity'' are provided to assist the Regional Administrator or Director in determining whether an activity is, or is not, scientific research. This determination is a matter of interpretation, and the changes to these definitions are provided for clarity. If an activity that would otherwise be considered fishing is determined to be

scientific research, then it is not regulated by the MSA.

Comment 10: One commenter inquired about whether or not ''conservation engineering'' includes the deployment of modified fishing gear under conditions similar to commercial fishing to assess the effectiveness of the modifications and to make comparisons to gear allowed under regulations.

Response: The expectation is that some conservation engineering projects will indeed need to conduct activities such as those described above in order to scientifically verify the effectiveness of the modified gear. It is very important that the amount of fish taken during such activities be kept to the minimum necessary to achieve a scientifically robust analysis while conserving the resource, and that any mortality is accounted for consistent with NS1, the NS1 Guidelines, and MSA section 303(a)(15), as well as other MSA provisions and other applicable laws, including the ESA. Any additional fish used as compensation for conducting the research must be caught either by fishing consistent with existing regulations or through compensation fishing, which must be approved by NMFS. The definition of conservation engineering has been revised to identify the activity as the development and assessment of fishing technologies and fishing techniques designed to conserve target and non-target species. The language of MSA section 404(c)(2) is then provided as an example of conservation engineering.

Comment 11: Two commenters inquired about what is meant by ''new'' gear technologies in the definition of ''conservation engineering.''

Response: To clarify this point, NMFS added additional language to the definition to indicate that conservation engineering may include the development and assessment of new gear technologies as well as the assessment of existing technologies applied in novel ways. An example would be assessing the ability of a bycatch reduction device (BRD), designed and proven in one fishery, to reduce bycatch in another fishery.

Comment 12: Two commenters suggested that NMFS should ensure that EFPs produce meaningful results and provide information that will advance fishery management, and that the regulations should include a list of requirements for EFPs similar to that provided for conservation engineering and scientific research activities. Another commenter suggested that we remove the requirement that these activities address a testable hypothesis, as this undercuts the validity of resource surveys, which do not test a hypothesis but instead make scientific observations.

Response: An EFP is a permit issued for an exemption from one or more fishery regulations. There are many reasons for requesting an EFP. Not all EFPs are issued for research purposes or to obtain information for fishery management purposes. The proposed rule included a discussion of conservation engineering and the distinctions between fishing activities that require an EFP and scientific research activities that do not, where a Letter of Acknowledgment is appropriate. Not all scientific research involves testing a hypothesis. Resource surveys by their nature record observations instead of testing a hypothesis. The MSA mandates in section 318(d) that the process be regionally-based. Councils can set research priorities for the fisheries that they manage. It is appropriate to leave the decision regarding the merits of each EFP proposal to the Regional Administrator or Director, with input from the relevant Council and the public obtained during the public comment process.

Comment 13: Three commenters suggested that the discussion about mortality associated with conservation engineering was characterized with unsupported statements and generalizations, and that in some cases the mortality has already been accounted for under the relevant FMP(s).

Response: The proposed rule preamble described conservation engineering and included a description of NMFS concerns about the impacts of conservation engineering activities and the associated mortality. Conservation engineering activities may catch substantial amounts of fish. For example, when conducting catch rate comparisons between experimental and control gear, projects often conduct multiple sets of tows to compare catches. The mortality associated with conservation engineering work needs to be properly accounted for and analyzed, consistent with NS1, the NS1 Guidelines, and MSA section 303(a)(15). If the activity is scientific research, then the activity is not regulated under the MSA, but the mortality should be analyzed under the relevant FMP(s) as scientific research mortality. If the activity is fishing and the fish are landed against the appropriate quota, then the mortality has already been analyzed as part of the FMP action that set the quota (this includes RSA programs). If the activity is fishing and is being conducted under an EFP, then the mortality should be analyzed as part of the EFP application if it has not already been analyzed elsewhere.

Scientific Research Activity

Comment 14: Several commenters raised concerns with various aspects of the definition of scientific research activity. Some comments focused on the distinction between scientific research and fishing. It was suggested in several comments that work done under an EFP is not considered to be scientific, that there is a perception that EFPs amount to a lower standard of research, and that EFPs are used as a ''catch all'' for projects that do not meet the specifics of the definition of scientific research.

Response: Scientific research is not regulated by the MSA, and as such it is exempt from fisheries regulations. A definition of scientific research activity is provided to clarify what activities would qualify for such an exemption. Fishing activities that do not meet the definition of scientific research activity, and are prohibited by fishery regulations, require an EFP to exempt the activity from the relevant regulations. The determination that an EFP is necessary does not denigrate the scientific nature of an activity; it simply indicates that some aspect of the activity requires an exemption.

Comment 15: Two commenters inquired about whether or not the fish caught during a research activity can be sold.

Response: Only fish that are caught during a scientific research activity that is within the scope of the scientific research plan may be sold. Under the MSA scientific research activity on board a scientific research vessel is not fishing. Therefore, the sale of fish caught and retained during a scientific research activity that is within the scope of the research plan is not fishing or commercial fishing as defined by the MSA, and the sale of such fish does not change the scientific activity to fishing. Alternatively, the retention and sale of fish exceeding the scope of the research plan is fishing and requires the appropriate permits.

Scientific Research Vessel

Comment 16: Eleven of the 18 commenters had a comment regarding the utilization of commercial fishing vessels as research platforms and many suggested that commercial fishing vessels should be specifically included in the definition of ''scientific research vessel.'' Many of the comments focused on the ownership or chartering of vessels and on the misconception that commercial fishing vessels can not be

utilized as scientific research vessels under the current regulations.

Response: There were no revisions to the definition of scientific research vessel in the proposed rule. Under current regulations, a commercial fishing vessel can be utilized as a scientific research vessel if: (1) The activities on board the vessel meet the definition of scientific research activity; and (2) the vessel is ''owned or chartered by, and controlled by, a ... U.S. Government agency ... U.S. state or territorial agency, university ... or scientific institution.'' To date, the evaluation of proposals and the types of vessels being utilized as research platforms has been handled on a case-by-case basis by the Regional Administrator or Director. In some cases, state agencies and scientific institutions conducting research on board commercial fishing vessels have been required to obtain an EFP, while in other cases universities conducting similar research have received a Letter of Acknowledgment. These types of situations have been misconstrued to mean that commercial fishing vessels can not be utilized as research platforms without obtaining an EFP, when in fact that is not the case. Often the more important qualifier is the level of accreditation and/or scientific standing of the scientific institution. NMFS recognizes the importance of having the ability to conduct scientific research on board commercial fishing vessels, both for convenience as well as for necessity of the research. Commercial fishing vessels have been, and may continue to be, utilized as scientific research platforms. The decision to recognize this activity under a Letter of Acknowledgment versus requiring that an EFP be obtained should remain under the purview of the Regional Administrator or Director, be determined on a case-by-case basis, and be based on the merits of the individual proposal and the institution(s) involved, i.e., whether the proposed activity meets the definition of scientific research activity, and whether the vessel meets the definition of scientific research vessel. Allowing the Regional Administrator or Director to make this determination meets the ''regionally-based'' mandate in MSA section 318(d). Language to this effect has been added to the definition of scientific research vessel that incorporates ''commercial fishing vessels'' and states that Letter of Acknowledgment versus EFP determinations should be made by the Regional Administrator or Director.

General Comments

Comment 17: Two commenters suggested the introduction of a new term and concept, a NMFS-approved scientific research plan. Under this concept, the scientific research plan would be the document that would be used to determine whether the proposed activity: (1) should be considered a scientific research activity and be recognized with a Letter of Acknowledgment; or (2) should not be considered a scientific research activity and therefore may require an EFP. Using this concept, if NMFS approves the scientific research plan as part of a grant proposal review or other approval process, then the proposal should be deemed a scientific research project, and no further review, approval, or permit should be required.

Response: The determination made by the Regional Administrator or Director, as to whether a project is a scientific research activity, is separate and distinct from the decisions made to fund a project. While funding approval indicates that the project has merit, it does not evaluate the project in the context of the relevant fishery regulations. To create a system to do both would require a major reworking of the existing programs and their processes, and the involvement of all the affected programs. This is beyond the scope of this rulemaking.

Comment 18: Five commenters raised concerns with the proposed exemption of projects funded by quota set-asides from the requirement to publish separate notices in the **Federal Register**, even though notice has already been published in the **Federal Register** as part of the annual specifications process for a program, such as the Mid-Atlantic RSA program. The primary concerns were that this exemption would effectively block a Council's ability to comment on these proposals, and that it may hinder the ability of other concerned parties to comment on the proposed activities.

Response: NMFS agrees that it is important to ensure that the Councils and the public have the ability to comment on all EFP proposals. Therefore, the exemption has been removed from the rule. In addition to NMFS publishing a notice in the **Federal Register** for EFP proposals, Councils may take public comments on EFP proposals at Council meetings, providing additional opportunities for public comment.

Comment 19: One commenter supported the proposed change to the regulations requiring that the Regional Administrator or Director withhold a Letter of Acknowledgment if they determined that the proposed research activity may require a permit or consultation under ESA, MMPA, or other applicable law, while another commenter was against this approach, indicating that it restricts the Regional Administrator or Director's ability to issue a Letter of Acknowledgment and that it would likely cause delays.

Response: To address these concerns, an alternate approach has been selected that allows the Regional Administrator or Director to provide the applicant with a Letter of Acknowledgment in these cases, but requires that they include text in the Letter of Acknowledgment informing the applicant that they may require a permit or consultation under other laws.

Comment 20: One commenter suggested that these regulations should clarify which activities are commercial fishing, and which are not, for purposes of the MMPA.

Response: Throughout the final rule, clarification has been provided as to when the various activities are fishing under the MSA. It is not appropriate for these regulations to address fishing as it relates to the MMPA.

Comment 21: Three commenters raised concerns about the proposed changes affecting the amount of additional information and the level of analysis required to be submitted with an EFP application. In particular, the level of NEPA analysis was felt to be excessive, potentially requiring an environmental assessment (EA) level of analysis for projects that would likely only require a CE. One commenter supported the development of broad-based analyses under NEPA and ESA that can apply to multiple projects.

Response: The proposed changes were intended to broaden the list of items that need to be considered when reviewing an application, to include items, such as EFH, that have been added to the MSA since the original regulations were published in 1996. The proposed changes were not intended to require EA-level analysis for every proposal prior to application. The agency supports proactive, up-front discussions to alleviate problems during the application and review process. EFP applicants are encouraged to contact the applicable NMFS regional office to discuss the proposed activity prior to submitting an application. Having this initial discussion benefits both parties. The agency becomes aware of the proposed activity and can provide the applicant with information about the relevant regulations and other information pertinent to its application, such as: if the proposed activity is likely

to meet the definition of scientific research activity and be eligible to receive a Letter of Acknowledgment, or if it requires an exemption from a fishery regulation, thus requiring an EFP; and any additional information that is needed for a complete application. This initial discussion also gives the applicant the chance to find out if any other laws may apply (e.g., ESA, MMPA, NEPA, etc.) and what level of NEPA analysis might be required. The agency also supports the combination of groups of associated projects, and their associated applications, analyses, etc., such as the projects funded through the Mid-Atlantic RSA program and the Northeast Cooperative Research Partners Program. The agency has streamlined the process for reviewing applications and combining analyses for these grouped projects. For example, the NEPA analysis for the Mid-Atlantic RSA projects is included as part of the EA for the annual specifications process for the respective FMP(s), thus alleviating the need for each project to do its own analysis. The agency is also open to considering the development of broad-based (umbrella) EFPs for groups of associated projects. This approach is currently being considered for the Cooperative Research Study Fleet in the Northeast region.

Comment 22: Two additional comments also focused on environmental analyses. One recommended that environmental analyses should be completed and made available to the public before the public comment period on an EFP application. The other suggested that collective and cumulative impacts of multiple concurrent EFPs must be evaluated.

Response: The **Federal Register** notice that is published for EFP applications provides a brief description of the proposed activities, and provides contact information for the NMFS staff involved in reviewing such proposals. The public may contact NMFS staff to request a copy of the environmental analyses submitted for the proposed project. Some regions also make their NEPA analyses available through their regional website. NMFS is concerned with the cumulative impacts of multiple concurrent EFP projects. There are NEPA staff located in each NMFS regional office and at NMFS Headquarters. They monitor and track NEPA-related activities under their purview, and perform appropriate analyses, such as cumulative impact analyses, in accordance with national and regional policies and procedures.

Comment 23: Several commenters raised concerns that the proposed rule did not meet Congress' intent in MSA section 318(d) to ''promulgate regulations that create an expedited, uniform, and regionally-based process to promote issuance, where practicable, of experimental fishing permits.'' Some comments asserted that there was little if any streamlining of the process. Other comments focused on a need for flexibility to address issues on a regional basis, while recognizing that the proposed rule did provide remedies to some existing regional problems. Most of the comments related to MSA language raised concerns that the proposed changes would actually make the EFP process more complex and burdensome.

Response: NMFS believes that the proposed rule does meet Congressional intent. Congress did not provide a definition of ''experimental fishing'' in the reauthorized MSA and NMFS regulations at § 600.10 have long interpreted ''experimental fishing'' and ''exempted fishing'' as synonymous. Therefore, the mandate in section 318(d) was viewed as direction to amend the existing regulations. The existing regulations, in conjunction with the revisions made herein, allow for regional flexibility while also maintaining national consistency. The regulations allow the Regional Administrator or Director to make determinations on a case-by-case basis when this is the best solution to address region and fishery specific issues. This meets the congressional mandate to have a ''uniform, and regionally-based process.'' Part of the concern raised about the additional complexity introduced in the proposed rule directly relates to the proposed definition of ''gear testing.'' The removal of the definition of gear testing, and the further clarification of conservation engineering, scientific research activity, scientific research vessel, and exempted fishing, provides additional clarification to address these concerns. Some conservation engineering projects will now be considered scientific research and will qualify for a Letter of Acknowledgment, thus simplifying and streamlining the review and issuance process for these projects. The process for obtaining EFPs is complex due to the need to comply with other applicable laws (e.g., ESA, MMPA, NEPA, etc.). Where the process becomes the most efficient is in the programs, like the Mid-Atlantic RSA and Northeast Cooperative Research Study Fleet, where the analyses can be performed for all the participating projects at the same time. NMFS encourages the Councils to work with the cooperative research community and NMFS to increase the use of these types of programs.

Comment 24: One commenter stated that the Councils were not adequately engaged in the preparation of the proposed rule.

Response: NMFS engaged the Councils as allowed under current authorities. NMFS conducted several conference calls with regional office and Council staff to discuss the draft proposed rule. NMFS also briefed the Council Chairs and Executive Directors on the proposed rule at the March 2008 Council Coordination Committee meeting.

Comment 25: One commenter was concerned that the time limit for EFPs specified in the proposed rule in § 600.745(b)(5) is limiting and unnecessary. The commenter indicated that the duration of the permit can be determined during the review of the proposal and can be handled on a case-by-case basis.

Response: The 1-year limit specified in the proposed rule is in the existing regulations, and was not revised in the proposed rule. The only proposed change to this section was the removal of the phrase ''unless revoked, suspended, or modified.'' The relevant paragraph now reads: ''Unless otherwise specified in the EFP or a superseding notice or regulation, an EFP is valid for no longer than 1 year. EFPs may be renewed following the application procedures in this section.'' Therefore, the Regional Administrator or Director continues to have the discretion to issue an EFP for more than 1 year.

Comment 26: One commenter stated that inclusion of terms and conditions in EFPs should not be discretionary.

Response: Section 600.745(b)(3)(v) allows the Regional Administrator or Director the discretion to attach terms and conditions to an EFP on a case-by-case basis, and does not mandate specific terms and conditions, thus allowing for a regionally-based process.

Comment 27: One commenter raised a concern that § 600.745(b)(3)(ii) could be interpreted to mean that NMFS may not have to consult with the Council(s). The commenter felt strongly that all EFP applications should be reviewed by the Council(s), and wanted to ensure that Council review will not be circumvented by the new regulations.

Response: Section 600.745(b)(3)(i) states, ''The Regional Administrator or Director also will forward copies of the application to the appropriate Council(s), the USCG, and the appropriate fishery management agencies of affected states ...'' This is a mandatory requirement to notify the appropriate Council(s) and other

agencies that an EFP application is under review and provides an opportunity for the Council(s) and agencies to review and provide comment on the application. Further, § 600.745(b)(3)(ii) states, ''If the application is complete and warrants additional consultation, the Regional Administrator or Director may consult with the appropriate Council(s) concerning the permit application during the period in which comments have been requested.'' This sentence was not revised in the proposed rule. Retaining this wording allows the Councils the flexibility to do their review during a Council meeting, and not necessarily during the comment period.

Comment 28: Two commenters raised issue with the language in § 600.745(b)(1) allowing the collection of a fee for issuance of an EFP.

Response: This language is in the existing regulations, and was not revised in the proposed rule. The language does not mandate that a fee will be charged, it simply allows a fee to be charged.

Comment 29: One commenter recommended that the proposed regulations at § 600.745(b)(1) be revised to clarify that EFPs will not be issued to authorize fishing activities that are inconsistent with the requirements of take reduction plans adopted under the MMPA. Another commenter requested that the regulations clarify when ESA consultation will be required.

Response: NMFS emphasizes that this rulemaking concerns regulations of general applicability. In the course of reviewing each EFP application, NMFS conducts the appropriate level of ESA and MMPA consultation, which require a fact-specific inquiry. Concerns about consistency with any relevant take reduction plans would be evaluated at that time.

Comment 30: One commenter raised a concern with the potential increased expense of particular terms and conditions that may be applied to EFPs under the authority of revised § 600.745(b)(3)(v). They point out that requiring observers, vessel monitoring systems, or other electronic devices as a condition of an EFP may add significant costs to a project, and that such costs should be incorporated into the grant or that compensation fishing should be authorized to help cover the additional expense.

Response: This regulation, which is only slightly modified from the existing requirements in § 600.745(b)(3)(v), was written to provide the Regional Administrator or Director with the flexibility to place specific terms and conditions within each EFP authorization on a case-by-case basis. NMFS realizes that these additional terms and conditions may increase the cost of conducting the project. When the Regional Administrator or Director requires additional terms and conditions they have made an informed decision that they are necessary.

Comment 31: One commenter raised concerns about the modification of projects issued EFPs. They recommended that any modifications should be clearly documented, and the public should be notified of any such changes.

Response: It is currently left up to the discretion of the Regional Administrator or Director as to whether any proposed modifications will be authorized, and to what extent a modification requires review and consultation. Minor modifications, such as the replacement of one vessel by another similar vessel, are handled as routine. In such circumstances, the principal investigator submits to NMFS information about the new vessel and any additional information required in the applicable region, such as the owner's or operator's signature agreeing to the conditions of the permit. NMFS then evaluates and documents the replacement based on regional policies, which include consideration of the vessel's history of prior fisheries violations, if any, and, in some regions, issuance of a new EFP listing the new vessel. The new vessel must carry the permit on board while conducting EFP activities. Other minor modifications, such as a slight change to the start and end date of a project, are typically handled by conducting an abbreviated review and possibly a consultation process (time and area changes may require ESA, MMPA and/or Habitat consultation), while significant modifications, such as gear changes, requests to enter an adjacent closed area, or substituting a vessel that is not equivalent to the vessel it replaces, are typically handled as a new application, with full review and consultation, as needed.

Comment 32: One commenter raised multiple concerns regarding the level of involvement that NMFS should have with applicants, the amount of assistance provided in the completion of EFP applications, and whether or not resubmissions of previously denied projects should be considered.

Response: NMFS will provide some level of assistance to EFP applicants, as resources and priorities allow. It is at the agency's discretion to decide how much assistance is appropriate given the nature of the situation. These situations are best handled on a case-by-case basis. All applications for EFPs should be considered, even those that are being resubmitted after being previously denied.

Comment 33: Three commenters raised questions regarding the new regulations added in § 600.745(e) concerning observers. The commenters inquired to whom the regulations applied, and what was meant by ''other programs.''

Response: This section was added to specifically address an agency need regarding its ability to place observers on fishing vessels to collect fish and/or data. It applies specifically to the NMFS observer programs, and to NMFS observers, staff, and contractors conducting activities in accordance with approved NMFS observer program sampling protocols. The reference to ''other programs'' in the preamble of the proposed rule means any other NMFS program besides the NMFS observer program (e.g., the NMFS study fleet program in the Northeast). This section of the regulations is not intended to apply to any other observer programs, such as those associated with any state agency, university, research institution, or industry group. Determining whether another institution requires an EFP shall be based upon the proposed activities and the regulations pertaining to scientific research and exempted fishing.

Changes from Proposed Rule

In § 600.10, the definition of ''Compensation fishing'' is revised to clarify when an EFP is required.

In § 600.10, the definition of ''Conservation engineering'' is revised to further describe the types and nature of the activities included, that the assessment of novel uses of existing devices is acceptable, and to clarify when this activity is, and is not, fishing, i.e., when an EFP or a Letter of Acknowledgment is appropriate.

In § 600.10, the definition of ''Gear testing'' is removed.

In § 600.10, the definition of ''Scientific research activity'' is revised. The phrase ''collateral fishing effects'' has been changed to read ''collateral effects of fishing.'' In addition, the description of when gear testing may or may not be considered scientific research is removed. In the proposed rule the phrase ''unless it meets the definition of conservation engineering'' was added following the phrase ''or the testing of fishing gear.'' Since conservation engineering was also added to the list of scientific research activity topics, this phrase is redundant and has been removed.

In § 600.10, the definition of ''Scientific research vessel'' is revised to clarify that a commercial fishing vessel can be utilized as a scientific research vessel.

In addition, the definitions for compensation fishing, conservation engineering, and scientific research activity in § 600.10 have been streamlined by moving text into the operative regulatory sections. For example, the regulatory language that relates to foreign fishing has been deleted from the definitions and placed in § 600.512(a) for scientific research, and the regulatory language that applies to domestic fishing has been deleted from the definitions and placed in § 600.745(a) for scientific research and § 600.745(b)(1) for exempted fishing.

In §§ 600.512(a) and 600.745(a), the factors that the Regional Administrator or Director should consider when making the determination of whether an activity constitutes scientific research or fishing have been outlined.

In §§ 600.512(a) and 600.745(a), text is added to instruct the Regional Administrator or Director to include text in the Letter of Acknowledgment informing the applicant that the proposed research activity may require a permit or consultation under other applicable laws. The proposed rule had instructed the Regional Administrator or Director not to issue the LOA until these other permits had been obtained. The new approach responds to the proposal as it pertains to fishing under the MSA while informing the applicant of potential issues under other applicable laws. In the same sections, the word ''cruise'' is replaced with the word ''activity.''

In addition, in §§ 600.512(a) and 600.745(a), language has been added to recommend that a copy of the Letter of Acknowledgment accompany any fish, or parts thereof, during any ex-vessel activities, such as transporting the fish or fish parts from the vessel to a laboratory. In §§ 600.745(b)(7) and 600.745(d)(7), language has been added to require that a copy of the EFP or exempted educational activities authorization accompany any fish, or parts thereof, during such activities.

In § 600.745(b)(3)(i), the text that was inserted to exempt research projects funded by quota set-asides from the requirement to publish a separate notice in the **Federal Register** is removed. This alleviates the concerns that were raised about the council review and public comment process for EFP proposals for these types of projects.

In the new § 600.745(b)(4), the requirement to sign the permit is retained, but the requirement to return a copy of the signed permit is removed. This requirement did not address a current problem, nor did it meet the intent of MSA section 318(d) to expedite the process.

In § 600.745(c)(1), ''and the appropriate Regional Administrator or Director'' is added so that the NMFS Science Center (fisheries scientists) and the NMFS Regional Office or Office of Sustainable Fisheries (fisheries managers) may receive a copy of a report derived from the research activity.

In § 600.745(c)(2), the requirement to submit a report is revised to set 6 months as the deadline for submission.

In § 600.745(e), the phrase NMFS-approved observer protocols is revised to read ''NMFS-approved sea sampling and/or observer protocols.''

The Paperwork Reduction Act public reporting burden-hour estimates have been revised based on updated estimates from the NMFS regional offices.

Classification

The NMFS Assistant Administrator has determined that this rule is consistent with the provisions of sections 318(d), 402(e), and 305(d) of the MSA, other provisions of the MSA, and other applicable law.

This final rule has been determined to be not significant for purposes of Executive Order 12866.

The Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration that this rule would not have a significant economic impact on a substantial number of small entities.

This rule provides clarifications of current regulations and information requirements, as well as other administrative requirements regarding scientific research, exempted fishing, and exempted educational activities. The rule serves only to define terms, clarify distinctions among scientific research activity, exempted fishing, and exempted educational activities, and standardize procedures for applying for and issuing EFPs and authorizations for exempted educational activities as allowed under EFPs.

As a result, a final regulatory flexibility analysis is not required and none has been prepared.

This rule contains a collection-of-information requirement subject to review and approval by OMB under the Paperwork Reduction Act (PRA), which has been approved by OMB under Control Number 0648–0309. The public reporting burden for this collection of information is estimated: (1) To average 113 hours per response to send NMFS a copy of a scientific research plan and to average 3 hours per response to provide a copy of the cruise report or research publication; (2) to average 95 hours per response to complete an application for an EFP and to average 3 hours per response or authorization for an exempted educational activity; and (3) to average 47 hours per response to provide a report at the conclusion of exempted fishing and to average 2 hours per response to provide a report at the conclusion of exempted educational activities, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection information. Send comments regarding this burden estimate, or any other aspect of this data collection, including suggestions for reducing the burden, to the Office of Sustainable Fisheries at the **ADDRESSES** above, and email to *David__Rostker@omb.eop.gov*, or fax to (202) 395–7285. Notwithstanding any other provision of the law, no person is required to respond to, and no person shall be subject to penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB control number.

List of Subjects in 50 CFR Part 600

Fisheries, Fishing.

Dated: August 19, 2009.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

■ For the reasons stated in the preamble, NMFS amends 50 CFR part 600 as follows:

PART 600—MAGNUSON-STEVENS ACT PROVISIONS

■ 1. The authority citation for part 600 continues to read as follows:

Authority: 16 U.S.C. 971 *et seq.* and 1801 *et seq.*

■ 2. In § 600.10, definitions for ''Exempted educational activity'', ''Exempted or experimental fishing'', ''Region'', ''Regional Administrator'', ''Science and Research Director'', ''Scientific research activity'', and ''Scientific research vessel'' are revised, and definitions for ''Compensation fishing'' and ''Conservation engineering'' are added, in alphabetical order, to read as follows:

§ 600.10 Definitions.

* * * * *

Compensation fishing means fishing conducted for the purpose of recovering costs associated with resource surveys and scientific studies that support the

management of a fishery, or to provide incentive for participation in such studies. Compensation fishing may include fishing during or subsequent to such surveys or studies.

* * * * *

Conservation engineering means the development and assessment of fishing technologies and fishing techniques designed to conserve target and non-target species, and may include the study of fish behavior and the development and testing of new gear technologies and fishing techniques to minimize bycatch and any adverse effects on essential fish habitat and promote efficient harvest of target species. Conservation engineering may include the assessment of existing fishing technologies applied in novel ways. An example would be assessing the ability of a bycatch reduction device (BRD), designed and proven in one fishery, to reduce bycatch in another fishery. Conservation engineering meeting the definition of scientific research activity is not fishing.

* * * * *

Exempted educational activity means an activity that would otherwise be considered fishing, conducted by an educational institution accredited by a recognized national or international accreditation body, of limited scope and duration, that is otherwise prohibited by this chapter VI, but that is authorized by the appropriate Regional Administrator or Director for educational purposes, i.e., the instruction of an individual or group, and authorized capture of only the amount of fish necessary to demonstrate the lesson.

Exempted or experimental fishing means fishing from a vessel of the United States that involves activities otherwise prohibited by this chapter VI, but that are authorized under an exempted fishing permit (EFP). The regulations in § 600.745 refer exclusively to exempted fishing. References elsewhere in this chapter to experimental fishing mean exempted fishing under this part.

* * * * *

Region means one of six NMFS Regional Offices responsible for administering the management and development of marine resources in the United States in their respective geographical areas of responsibility.

Regional Administrator means the Administrator of one of the six NMFS Regions.

* * * * *

Science and Research Director means the Director of one of the six NMFS Fisheries Science Centers described in Table 1 of § 600.502, or a designee, also known as a Center Director.

* * * * *

Scientific research activity is, for the purposes of this part, an activity in furtherance of a scientific fishery investigation or study that would meet the definition of fishing under the Magnuson-Stevens Act, but for the exemption applicable to scientific research activity conducted from a scientific research vessel. Scientific research activity includes, but is not limited to, sampling, collecting, observing, or surveying the fish or fishery resources within the EEZ, at sea, on board scientific research vessels, to increase scientific knowledge of the fishery resources or their environment, and to test a hypothesis as part of a planned, directed investigation or study conducted according to methodologies generally accepted as appropriate for scientific research. At-sea scientific fishery investigations address one or more topics involving taxonomy, biology, physiology, behavior, disease, aging, growth, mortality, migration, recruitment, distribution, abundance, ecology, stock structure, bycatch or other collateral effects of fishing, conservation engineering, and catch estimation of fish species considered to be a component of the fishery resources within the EEZ. Scientific research activity does not include the collection and retention of fish outside the scope of the applicable research plan, or the testing of fishing gear. Data collection designed to capture and land quantities of fish for product development, market research, and/or public display are not scientific research activities. For foreign vessels, such data collection activities are considered scientific research if they are carried out in full cooperation with the United States.

* * * * *

Scientific research vessel means a vessel owned or chartered by, and controlled by, a foreign government agency, U.S. Government agency (including NOAA or institutions designated as federally funded research and development centers), U.S. state or territorial agency, university (or other educational institution accredited by a recognized national or international accreditation body), international treaty organization, or scientific institution. In order for a domestic commercial fishing vessel to meet this definition, it must be under the control of a qualifying agency or institution, and operate in accordance with a scientific research plan, for the duration of the scientific research activity. In order for a vessel that is owned or chartered and controlled by a foreign government to meet this definition, the vessel must have scientific research as its exclusive mission during the scientific activity in question, and the vessel operations must be conducted in accordance with a scientific research plan.

* * * * *

■ 3. In § 600.512, paragraph (a) is revised to read as follows:

§ 600.512 Scientific research.

(a) *Scientific research activity.* Persons planning to conduct scientific research activities on board a scientific research vessel in the EEZ that may be confused with fishing are encouraged to submit to the appropriate Regional Administrator or Director, 60 days or as soon as practicable prior to its start, a scientific research plan for each scientific activity. The Regional Administrator or Director will acknowledge notification of scientific research activity by issuing to the operator or master of that vessel, or to the sponsoring institution, a Letter of Acknowledgment. This Letter of Acknowledgment is separate and distinct from any permit or consultation required under the MMPA, the ESA, or any other applicable law. The Regional Administrator or Director will include text in the Letter of Acknowledgment informing the applicant that such permits may be required and should be obtained from the agency prior to embarking on the activity. If the Regional Administrator or Director, after review of a research plan, determines that it does not constitute scientific research activity but rather fishing, the Regional Administrator or Director will inform the applicant as soon as practicable and in writing. In making this determination, the Regional Administrator, Director, or designee shall consider: the merits of the individual proposal and the institution(s) involved; whether the proposed activity meets the definition of scientific research activity; and whether the vessel meets all the requirements for a scientific research vessel. Foreign vessels that qualify as scientific research vessels and which are engaged in a scientific research activity may only engage in compensation fishing during the scientific research cruise and in accordance with the applicable scientific research plan. The Regional Administrator or Director may also make recommendations to revise the research plan to ensure the activity will be considered to be a scientific research activity. The Regional Administrator or Director may designate a Science and Research Director, or the Assistant

Regional Administrator for Sustainable Fisheries, to receive scientific research plans and issue Letters of Acknowledgment. In order to facilitate identification of the activity as scientific research, persons conducting scientific research activities are advised to carry a copy of the scientific research plan and the Letter of Acknowledgment on board the scientific research vessel and to make it available for inspection upon the request of any authorized officer. It is recommended that for any scientific research activity, any fish, or parts thereof, retained pursuant to such activity be accompanied, during any ex-vessel activities, by a copy of the Letter of Acknowledgment. Activities conducted in accordance with a scientific research plan acknowledged by such a Letter of Acknowledgment are presumed to be scientific research activities. An authorized officer may overcome this presumption by showing that an activity does not fit the definition of scientific research activity or is outside the scope of the scientific research plan.

* * * * *

■ 4. In § 600.745:

A. Redesignate paragraphs (b)(3)(v)(C) through (H) as paragraphs (b)(3)(v)(D) through (I), respectively.

B. Redesignate paragraphs (b)(4) through (8) as paragraphs (b)(5) through (9), respectively.

C. Redesignate paragraphs (d)(3)(ii)(B) through (F) as paragraphs (d)(3)(ii)(C) through (G), respectively.

D. Add paragraphs (b)(3)(v)(C), (b)(4), (d)(3)(ii)(B), and (e).

E. Revise paragraphs (a), (b)(1), (b)(2)(v), (b)(3)(i) introductory text, (b)(3)(i)(C), (b)(3)(ii), (b)(3)(iii) introductory text, (b)(3)(iii)(B), (b)(3)(iii)(C), (b)(3)(v) introductory text, (b)(3)(v)(F), (b)(3)(v)(G), (b)(5), (b)(7), (c), (d)(1), (d)(2)(vii), (d)(3)(ii) introductory text, (d)(3)(ii)(E), (d)(3)(iii), and (d)(7).

The revisions and additions read as follows:

§ 600.745 Scientific research activity, exempted fishing, and exempted educational activity.

(a) *Scientific research activity.* Nothing in this part is intended to inhibit or prevent any scientific research activity conducted by a scientific research vessel. Persons planning to conduct scientific research activities on board a scientific research vessel in the EEZ are encouraged to submit to the appropriate Regional Administrator or Director, 60 days or as soon as practicable prior to its start, a scientific research plan for each scientific activity. The Regional Administrator or Director will acknowledge notification of scientific research activity by issuing to the operator or master of that vessel, or to the sponsoring institution, a Letter of Acknowledgment. This Letter of Acknowledgment is separate and distinct from any permit or consultation required by the MMPA, the ESA, or any other applicable law. The Regional Administrator or Director will include text in the Letter of Acknowledgment informing the applicant that such a permit may be required and should be obtained from the agency prior to embarking on the activity. If the Regional Administrator or Director, after review of a research plan, determines that it does not constitute scientific research but rather fishing, the Regional Administrator or Director will inform the applicant as soon as practicable and in writing. In making this determination, the Regional Administrator, Director, or designee shall consider: the merits of the individual proposal and the institution(s) involved; whether the proposed activity meets the definition of scientific research activity; and whether the vessel meets all the requirements for a scientific research vessel. The Regional Administrator or Director may also make recommendations to revise the research plan to ensure the activity will be considered to be scientific research activity or recommend the applicant request an EFP. The Regional Administrator or Director may designate a Science and Research Director, or the Assistant Regional Administrator for Sustainable Fisheries, to receive scientific research plans and issue Letters of Acknowledgment. In order to facilitate identification of the activity as scientific research, persons conducting scientific research activities are advised to carry a copy of the scientific research plan and the Letter of Acknowledgment on board the scientific research vessel and to make it available for inspection upon the request of any authorized officer. It is recommended that for any scientific research activity, any fish, or parts thereof, retained pursuant to such activity be accompanied, during any ex-vessel activities, by a copy of the Letter of Acknowledgment. Activity conducted in accordance with a scientific research plan acknowledged by such a Letter of Acknowledgment is presumed to be scientific research activity. An authorized officer may overcome this presumption by showing that an activity does not fit the definition of scientific research activity or is outside the scope of the scientific research plan.

(b) * * *

(1) *General.* A NMFS Regional Administrator or Director may authorize, for limited testing, public display, data collection, exploratory fishing, compensation fishing, conservation engineering, health and safety surveys, environmental cleanup, and/or hazard removal purposes, the target or incidental harvest of species managed under an FMP or fishery regulations that would otherwise be prohibited. Exempted fishing may not be conducted unless authorized by an EFP issued by a Regional Administrator or Director in accordance with the criteria and procedures specified in this section. Compensation fishing must be conducted under an EFP if the activity would otherwise be prohibited by applicable regulations unless the activity is specifically authorized under an FMP or a scientific research permit. Conservation engineering that does not meet the definition of scientific research activity, but does meet the definition of fishing must be conducted under an EFP if the activity would otherwise be prohibited by applicable regulations. Data collection designed to capture and land quantities of fish for product development, market research, and/or public display must be permitted under exempted fishing procedures. An EFP exempts a vessel only from those regulations specified in the EFP. All other applicable regulations remain in effect. The Regional Administrator or Director may charge a fee to recover the administrative expenses of issuing an EFP. The amount of the fee will be calculated, at least annually, in accordance with procedures of the NOAA Handbook for determining administrative costs of each special product or service; the fee may not exceed such costs. Persons may contact the appropriate Regional Administrator or Director to determine the applicable fee.

(2) * * *

(v) The species (target and incidental) expected to be harvested under the EFP, the amount(s) of such harvest necessary to conduct the exempted fishing, the arrangements for disposition of all regulated species harvested under the EFP, and any anticipated impacts on the environment, including impacts on fisheries, marine mammals, threatened or endangered species, and EFH.

* * * * *

(3) * * *

(i) The Regional Administrator or Director, as appropriate, will review each application and will make a preliminary determination whether the application contains all of the required information and constitutes an activity appropriate for further consideration. If the Regional Administrator or Director finds that any application does not

warrant further consideration, both the applicant and the affected Council(s) will be notified in writing of the reasons for the decision. If the Regional Administrator or Director determines that any application warrants further consideration, notification of receipt of the application will be published in the **Federal Register** with a brief description of the proposal. Interested persons will be given a 15- to 45-day opportunity to comment on the notice of receipt of the EFP application. In addition, comments may be requested during public testimony at a Council meeting. If the Council intends to take comments on EFP applications at a Council meeting, it must include a statement to this effect in the Council meeting notice and meeting agenda. Multiple applications for EFPs may be published in the same **Federal Register** document and may be discussed under a single Council agenda item. The notification may establish a cut-off date for receipt of additional applications to participate in the same, or a similar, exempted fishing activity. The Regional Administrator or Director will also forward copies of the application to the Council(s), the U.S. Coast Guard, and the appropriate fishery management agencies of affected states, accompanied by the following information:

* * * * *

(C) Biological information relevant to the proposal, including appropriate statements of environmental impacts, including impacts on fisheries, marine mammals, threatened or endangered species, and EFH.

(ii) If the application is complete and warrants additional consultation, the Regional Administrator or Director may consult with the appropriate Council(s) concerning the permit application during the period in which comments have been requested. The Council(s) or the Regional Administrator or Director shall notify the applicant in advance of any public meeting at which the application will be considered, and offer the applicant the opportunity to appear in support of the application.

(iii) As soon as practicable after receiving a complete application, including all required analyses and consultations (e.g., NEPA, EFH, ESA and MMPA), and having received responses from the public, the agencies identified in paragraph (b)(3)(i) of this section, and/or after the consultation, if any, described in paragraph (b)(3)(ii) of this section, the Regional Administrator or Director shall issue the EFP or notify the applicant in writing of the decision to deny the EFP and the reasons for the denial. Grounds for denial of an EFP include, but are not limited to, the following:

* * * * *

(B) According to the best scientific information available, the harvest to be conducted under the permit would detrimentally affect the well-being of the stock of any regulated species of fish, marine mammal, threatened or endangered species, or EFH; or

(C) Issuance of the EFP would have economic allocation as its sole purpose (other than compensation fishing); or

* * * * *

(v) The Regional Administrator or Director should attach, as applicable, terms and conditions to the EFP, consistent with the purpose of the exempted fishing and as otherwise necessary for the conservation and management of the fishery resources and the marine environment, including, but not limited to:

* * * * *

(C) A citation of the regulations from which the vessel is exempted.

* * * * *

(F) Whether observers, a vessel monitoring system, or other electronic equipment must be carried on board vessels operating under the EFP, and any necessary conditions, such as predeployment notification requirements.

(G) Data reporting requirements necessary to document the activities, including catches and incidental catches, and to determine compliance with the terms and conditions of the EFP and established time frames and formats for submission of the data to NMFS.

* * * * *

(4) *Acknowledging permit conditions.* Upon receipt of an EFP, the permit holder must date and sign the permit, and retain the permit on board the vessel(s). The permit is not valid until signed by the permit holder. In signing the permit, the permit holder:

(i) Agrees to abide by all terms and conditions set forth in the permit, and all restrictions and relevant regulations; and

(ii) Acknowledges that the authority to conduct certain activities specified in the permit is conditional and subject to authorization and revocation by the Regional Administrator or Director.

(5) *Duration.* Unless otherwise specified in the EFP or a superseding notice or regulation, an EFP is valid for no longer than 1 year. EFPs may be renewed following the application procedures in this section.

* * * * *

(7) *Inspection.* Any EFP issued under this section must be carried on board the vessel(s) for which it was issued. The EFP must be presented for inspection upon request of any authorized officer. Any fish, or parts thereof, retained pursuant to an EFP issued under this paragraph must be accompanied, during any ex-vessel activities, by a copy of the EFP.

* * * * *

(c) *Reports.* (1) NMFS requests that persons conducting scientific research activities from scientific research vessels submit a copy of any report or other publication created as a result of the activity, including the amount, composition, and disposition of their catch, to the appropriate Science and Research Director and Regional Administrator or Director.

(2) Upon completion of the activities of the EFP, or periodically as required by the terms and conditions of the EFP, persons fishing under an EFP must submit a report of their catches and any other information required, to the appropriate Regional Administrator or Director, in the manner and within the time frame specified in the EFP, but no later than 6 months after concluding the exempted fishing activity. Persons conducting EFP activities are also requested to submit a copy of any publication prepared as a result of the EFP activity.

(d) * * *

(1) *General.* A NMFS Regional Administrator or Director may authorize, for educational purposes, the target or incidental harvest of species managed under an FMP or fishery regulations that would otherwise be prohibited. The trade, barter or sale of fish taken under this authorization is prohibited. The decision of a Regional Administrator or Director to grant or deny an exempted educational activity authorization is the final action of NMFS. Exempted educational activities may not be conducted unless authorized in writing by a Regional Administrator or Director in accordance with the criteria and procedures specified in this section. Such authorization will be issued without charge.

(2) * * *

(vii) The species and amounts expected to be caught during the exempted educational activity, and any anticipated impacts on the environment, including impacts on fisheries, marine mammals, threatened or endangered species, and EFH.

* * * * *

(3) * * *

(ii) The Regional Administrator or Director should attach, as applicable, terms and conditions to the authorization, consistent with the

purpose of the exempted educational activity and as otherwise necessary for the conservation and management of the fishery resources and the marine environment, including, but not limited to:

* * * * *

(B) A citation of the regulations from which the vessel is being exempted.

* * * * *

(E) Data reporting requirements necessary to document the activities and to determine compliance with the terms and conditions of the exempted educational activity.

* * * * *

(iii) The authorization will specify the scope of the authorized activity and will include, at a minimum, the duration, vessel(s), persons, species, and gear involved in the activity, as well as any additional terms and conditions specified under paragraph (d)(3)(ii) of this section.

* * * * *

(7) *Inspection.* Any authorization issued under this paragraph (d) must be carried on board the vessel(s) for which it was issued, or be in the possession of at least one of the persons identified in the authorization, who must be present while the exempted educational activity is being conducted. The authorization must be presented for inspection upon request of any authorized officer. Activities that meet the definition of ''fishing,'' despite an educational purpose, are fishing. An authorization may allow covered fishing activities; however, fishing activities conducted outside the scope of an authorization for exempted educational activities are illegal. Any fish, or parts thereof, retained pursuant to an authorization issued under this paragraph must be accompanied, during any ex-vessel activities, by a copy of the authorization.

(e) *Observers.* NMFS-sanctioned observers or biological technicians conducting activities within NMFS-approved sea sampling and/or observer protocols are exempt from the requirement to obtain an EFP. For purposes of this section, NMFS-sanctioned observers or biological technicians include NMFS employees, NMFS observers, observers who are employees of NMFS-contracted observer providers, and observers who are employees of NMFS-permitted observer providers.

[FR Doc. E9–20489 Filed 8–24–09; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 660

[Docket No. 090324366–9371–01]

RIN 0648–XQ50

Fisheries Off West Coast States; Modifications of the West Coast Commercial and Recreational Salmon Fisheries; Inseason Actions #1, #2, and #3

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Modification of fishing seasons, gear restrictions, and landing and possession limits; request for comments.

SUMMARY: NOAA Fisheries announces three inseason actions in the ocean salmon fisheries. Inseason action #1 modified the commercial fishery in the area from Cape Falcon, Oregon to Humbug Mountain, Oregon, and from Humbug Mountain, Oregon to the Oregon/California Border. Inseason action #2 modified the recreational fishery in the area from Cape Falcon, Oregon to Humbug Mountain, Oregon. Inseason action #3 modified the commercial fishery in the area from U.S./Canada Border to Cape Falcon, Oregon.

DATES: Inseason actions #1 and #2 were effective on March 15, 2009, until replaced by the 2009 management measures, May 1, 2009. Inseason action #3 was effective on July 18, 2009 and remains in effect until the closing date or attainment of the subarea quotas, whichever was first, as announced in the 2009 annual management measures or through additional inseason action. Comments will be accepted through September 9, 2009.

ADDRESSES: You may submit comments, identified by 0648–XQ50, by any one of the following methods:

- Electronic Submissions: Submit all electronic public comments via the Federal eRulemaking Portal *http://www.regulations.gov*
- Fax: 206–526–6736, Attn: Peggy Busby
- Mail: 7600 Sand Point Way NE, Building 1, Seattle, WA, 98115

Instructions: All comments received are a part of the public record and will generally be posted to *http://www.regulations.gov* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

NMFS will accept anonymous comments (enter N/A in the required fields, if you wish to remain anonymous). You may submit attachments to electronic comments in Microsoft Word, Excel, WordPerfect, or Adobe PDF file formats only.

FOR FURTHER INFORMATION CONTACT: Peggy Busby, by phone at 206–526–4323.

SUPPLEMENTARY INFORMATION: In the 2008 annual management measures for ocean salmon fisheries (73 FR 23971, May 1, 2008), NMFS announced the commercial and recreational fisheries in the area from the U.S./Canada Border to the U.S./Mexico Border.

On March 10, 2009, the Regional Administrator (RA) consulted with representatives of the Pacific Fishery Management Council (Council), Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, and California Department of Fish and Game. Information related to catch to date, Chinook and coho catch rates, and possible impacts to Sacramento Fall Chinook were discussed. These inseason actions were taken because these fisheries were to occur in the impact area for Sacramento Fall Chinook. Preliminary projections suggested this stock was at risk of not meeting its escapement goal in 2009 and therefore consistent with the Magnuson-Stevens Act, all fisheries that impact the stock were potentially to remain closed until the 2009 management measures became effective on May 1, 2009. By moving the opening dates of these fisheries NMFS and the Council would have more time to evaluate the impacts of these fisheries on the Sacramento River fall Chinook stock.

As a result, on March 10, 2009, the states recommended, and the RA concurred that inseason actions #1 and #2 would cancel the previously scheduled March 15, 2009, fishery opening date for the (a) commercial fishery in the area from Cape Falcon, Oregon to Humbug Mountain, Oregon, and from Humbug Mountain, Oregon to the Oregon/California Border and (b) the recreational fishery in the area from Cape Falcon, Oregon, to Humbug Mountain, Oregon. Modification in quota and/or fishing seasons is authorized by regulations at 50 CFR 660.409(b)(1)(I).

In the 2009 annual management measures for ocean salmon fisheries (74 FR 20610, May 5, 2009), NMFS announced the commercial and

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

September 23, 2021

Lisa Desfosse, Ph.D.
NMFS Southeast Fisheries Science Center
3209 Frederic Street
Pascagoula, MS 39567

Dear Dr. Desfosse:

The National Marine Fisheries Service (NMFS) has issued Permit No. 24368 to the NMFS Southeast Fisheries Science Center for research activities on sea turtles. Upon issuance of this permit, please be aware that Permit No. 19627-02 is no longer valid.

This permit is effective upon your signature and is valid through September 30, 2031. To use your permit:

1. Read the permit, including attachments. If you have questions, email your permit analyst – Amy Hapeman (amy.hapeman@noaa.gov) or Erin Markin, Ph.D., (erin.markin@noaa.gov) before signing the permit.
2. Sign and date the signature page.
3. Keep the original signature page with your permit.
4. Return a copy of the signature page to our office by email to your permit analyst.
5. Provide a copy of this letter and the permit to each Co-Investigator.

Please note the following guidance for specific areas and activities:

Import/Export: The import and export of species, or parts of species, listed on the Appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) requires a CITES Permit. For further information please contact the U.S. Fish and Wildlife Service (USFWS), Division of Management Authority, Branch of Permits, MS: IA, 5275 Leesburg Pike, Falls Church, VA 22041-3803 (1-800-358-2104).

All samples imported or exported must be declared and cleared through a USFWS port designated for wildlife (50 CFR 14.12) and a Wildlife Declaration Form 3-177 must be filed with the USFWS inspector at the time of import or export. Contact the appropriate port for details about how to declare and clear your shipment *prior* to shipping your samples. The list of designated ports and Form 3-177 may be obtained from: https://www.fws.gov/le/designated-ports.html.

Data Sharing: We recommend that you:

- Share photos and videos with researchers who maintain catalogs or databases for the subject species for population monitoring, such as Ocean Biogeographic Information System Spatial Ecological Analysis of Megavertebrate Populations (OBIS-SEAMAP); see here for more information or contact Patrick Halpin, Ph.D., phalpin@duke.edu; and
- Share telemetry data with the research community in a database such as the Animal Telemetry Network (https://ioos.noaa.gov/project/atn/). Contact Bill Woodward, U.S. Animal Telemetry Network Coordinator at bill.woodward@noaa.gov.

Data and/or sample sharing requirements for protected species may be added at the discretion of the Permits and Conservation Division as data needs are identified.

Activities including handling or close proximity to animals: To minimize disease transmission, we recommend these routine practices be followed:

- All personnel should refer to local, State, and national requirements and public health guidance for their activities.
- All personnel should wear appropriate personal protective equipment (PPE) when working with live or dead animals or when performing close-contact activities (e.g., health assessments or salvage).
- Work clothes, including footwear and dedicated PPE, should be worn only at work.
- Indirect contact between pets kept at home and wild animals should not occur including contact via footwear, equipment, and clothes.
- Individuals who are ill should not work with live animals until cleared by their health care provider.

For more information see the Centers for Disease Control and Prevention www.cdc.gov, the United States Department of Agriculture https://www.usda.gov, the World Organization for Animal Health https://www.oie.int, the American Veterinary Medical Association www.avma.org, and the World Health Organization www.who.int.

Please keep your contact information current in our online database (https://apps.nmfs.noaa.gov). You will receive automated email reminders of due dates for annual reports and a notice prior to expiration of your permit.

Sincerely,

SLOAN.AMY.C.1365868545

Digitally signed by SLOAN.AMY.C.1365868545
Date: 2021.09.23 10:44:16 -04'00'

Jolie Harrison
Chief, Permits and Conservation Division
Office of Protected Resources

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

Permit No. 24368
Expiration Date: September 30, 2031
Reports Due: January 31st, annually

PERMIT TO TAKE PROTECTED SPECIES[1] FOR SCIENTIFIC PURPOSES

I. Authorization

This permit is issued to the NMFS Southeast Fisheries Center, 3209 Frederic Street, Pascagoula, MS 39567 (hereinafter "Permit Holder;" Responsible Party: Lisa Desfosse, Ph.D.), pursuant to the provisions of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.) and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR Parts 222-226).

II. Abstract

The objective of the permitted activity, as described in the application, is to better understand movement and migration, habitat use, genetics, and population dynamics of the sea turtle species that interact with commercial fisheries and other human activities in the Atlantic Ocean. This permit does not authorize the creation and use of cell lines.

III. Terms and Conditions

The activities authorized herein must occur by the means, in the areas, and for the purposes set forth in the permit application, and as limited by the Terms and Conditions specified in this permit, including appendices and attachments. Permit noncompliance constitutes a violation and is grounds for permit modification, suspension, or revocation, and for enforcement action.

A. Duration of Permit

1. Personnel listed in Condition C.1 of this permit (hereinafter "Researchers") may conduct activities authorized by this permit through September 30, 2031. This permit may be extended by the Director, National Marine Fisheries Service (NMFS) Office of Protected Resources or the Chief, Permits and Conservation Division (hereinafter "Permits Division"), pursuant to applicable regulations and the requirements of the ESA.

2. Researchers must immediately stop permitted activities and the Permit Holder or Principal Investigator must contact the Chief, Permits Division for written permission to resume:

[1] "Protected species" include species listed as threatened or endangered under the ESA, and marine mammals.

a. If serious injury or mortality[2] of protected species occurs.

b. If authorized take[3] is exceeded in any of the following ways:

i. More animals are taken than allowed in Tables A1-A6 of Appendix A.

ii. Animals are taken in a manner not authorized by this permit.

iii. Protected species other than those authorized by this permit are taken.

c. Following incident reporting requirements at Condition E.2.

B. Number and Kinds of Protected Species, Locations and Manner of Taking

1. The tables in Appendix A outline the authorized species and distinct population segment (DPS); number of animals to be taken; number of animals from which parts may be received, imported and exported; and the manner of take, locations, and time period.

2. Researchers working under this permit may collect images (e.g., photographs, video) and audio recordings in addition to the photo-identification or behavioral photo-documentation authorized in Appendix A as needed to document the permitted activities, provided the collection of such images or recordings does not result in takes.

3. The Permit Holder may use visual images and audio recordings collected under this permit, including those authorized in Tables A1 – A6 of Appendix A, in printed materials (including commercial or scientific publications) and presentations provided the images and recordings are accompanied by a statement indicating that the activity was conducted pursuant to NMFS ESA Permit No. 24368. This statement must accompany the images and recordings in all subsequent uses or sales.

4. The Chief, Permits Division may grant written approval for personnel performing activities not essential to achieving the research objectives (e.g., a documentary film crew) to be present, provided:

[2] This permit does not allow for unintentional serious injury and mortality caused by the presence or actions of researchers. This includes, but is not limited to: deaths resulting from infections related to sampling procedures or invasive tagging; and deaths or injuries sustained by animals during handling.
[3] Under the ESA, a take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to do any of the preceding.

a. The Permit Holder submits a request to the Permits Division specifying the purpose and nature of the activity, location, approximate dates, and number and roles of individuals for which permission is sought.

b. Non-essential personnel/activities will not influence the conduct of permitted activities or result in takes of protected species.

c. Persons authorized to accompany the Researchers for the purpose of such non-essential activities will not be allowed to participate in the permitted activities.

d. The Permit Holder and Researchers do not require compensation from the individuals in return for allowing them to accompany Researchers.

5. Researchers must comply with the following conditions related to the manner of taking:

a. Turtles Captured Under Another Legal Authority Prior to Research Activities: The Permit Holder must maintain records demonstrating that sea turtles obtained from other sources were taken legally (e.g., an incidental take statement [ITS] of an ESA Section 7 biological opinion with a "no jeopardy" conclusion or an ESA Section 10 permit) before research may occur.

b. Handling Compromised Turtles

i. Researchers must have an experienced sea turtle veterinarian on call for emergencies, and a permitted rehabilitation facility(ies) identified for areas outside of Florida, should veterinary care be required on shore to treat a compromised turtle. Compromised turtles include animals that are stranded, obviously weak, lethargic, positively buoyant, emaciated, or that have severe injuries or other debilitating abnormalities. Prior to conducting research, notify both the veterinarian, and facility for areas outside of Florida, of the dates and times of the research to ensure their availability. If care at a rehabilitation facility is required in Florida, contact the Florida Fish and Wildlife Conservation Commission (FFWCC) via text/email at seaturtlestranding@myfwc.com or via phone at (888)404-3922 for assistance.

ii. Strandings are defined as turtles that wash ashore, dead or alive, or are found floating dead or alive (if alive, generally in a weakened condition). If researchers encounter a stranded sea turtle that they have not captured or handled during permitted research activities (e.g. the researcher encounters a floating dead or injured turtle while en route to their research site), they must immediately report

the stranding to the appropriate regional or state stranding hotline number and follow instructions on what to do with the animal. See here for contact information: https://www.fisheries.noaa.gov/report. Researchers working in an area where real-time contact is not possible, or is uncertain, must work with the appropriate regional or state stranding coordinating entity to establish a stranded turtle protocol before going into the field. The collection or handling of a stranded sea turtle, outside of permitted research activities, is not considered a 'take' under this permit and should not be included in the permit annual report.

iii. If an animal exhibits any major abnormality (including weakness, lethargy, or unresponsiveness) or is severely injured during handling, or is found to be severely injured or otherwise compromised upon capture, Researchers must forego or cease activities that will further stress the animal (erring on the side of caution) and contact the on-call veterinarian as soon as possible. In this case, Researchers must count and report the animal as a 'take' under this permit.

In such cases, Researchers must implement one of the following options (in order of preference):

a. For areas outside of Florida: Contact and follow the instructions of the on-call veterinarian, and, if necessary, immediately transfer the animal to the veterinarian or to a permitted rehabilitation facility to receive veterinary care.

When working in Florida: Contact and follow the instructions of the on-call veterinarian. If care at a rehabilitation facility is needed, contact Florida Fish and Wildlife Conservation Commission (FFWCC) via text/email at seaturtlestranding@myfwc.com or via phone at (888)404-3922.

b. For areas outside of Florida: If the on-call veterinarian and the permitted rehabilitation facility cannot be reached, Researchers should err on the side of caution and bring the animal to shore for medical evaluation and rehabilitation, at a permitted rehabilitation facility, as soon as possible.

When working in Florida: If the on-call veterinarian and the FFWCC cannot be reached, Researchers should err on the side of caution and bring the animal to shore for medical evaluation and rehabilitation, at a permitted rehabilitation facility, as soon as possible. Notify the

FFWCC via text/email at seaturtlestranding@myfwc.com or via phone at (888)404-3922, of the incident including the name of the facility receiving the animal once back on shore.

c. If the animal cannot be taken to a permitted rehabilitation facility due to logistical or safety constraints, allow it to recuperate as directed by the veterinarian (if successfully contacted), or as conditions dictate, and return the animal to the water. When working in Florida waters, notify the FFWCC via text/email at seaturtlestranding@myfwc.com or via phone at (888)404-3922, of the incident.

d. If the animal is taken to rehabilitation, the Permit Holder is responsible for providing all requested information pertaining to the capture, following the status of the sea turtle, and reporting the final disposition (death, permanent injury, recovery and return to wild, etc.) of the animal to the NMFS Permits Division. Upon transfer, the possession and care of the turtle falls under the authority of the permitted rehabilitation facility.

iv. Unresponsive animals: Use the following resuscitation techniques on any turtles that are unresponsive or exhibit severe weakness or lethargy following in-water capture. Resuscitation must be attempted unless the turtle is determined to be deceased based on rigor mortis, decomposition, or confirmation of cardiac arrest by Doppler, ECG, or ultrasonography.

a. Place the turtle on its plastron so that the turtle is right side up, and elevate its hindquarters at least 6 inches. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Contact the on-call veterinarian immediately for additional instructions.

b. While it is elevated, periodically rock the turtle gently left to right and right to left by holding the outer edge of the carapace and lifting one side about 3 inches then alternate to the other side.

c. Keep sea turtles being resuscitated shaded and damp or moist. A water-soaked towel placed over the head, carapace, and flippers is the most effective method to keep a turtle moist. DO NOT place a turtle into a container holding water.

d. Continue resuscitation until recovery or confirmation of death by onset of rigor mortis, decomposition, or cardiac arrest.

e. Bring live turtles to shore for medical evaluation at a permitted rehabilitation facility at the direction of FFWCC when in Florida as soon as possible. If the animal cannot be taken to a rehabilitation facility due to logistical or safety constraints, allow it to recuperate as directed by the veterinarian (if successfully contacted), or as conditions dictate, and return the animal to the water. Return all dead turtles to shore for necropsy to be performed by your on-call veterinarian or the permitted rehabilitation facility. When working in Florida waters, notify the FFWCC of all events and prior to conducting any necropsy via text/email at seaturtlestranding@myfwc.com or via phone at (888)404-3922.

5. Submit an incident report (see Conditions A.2 and E.2) if an animal becomes compromised or dies during any research activities.

c. General Handling and Release Requirements

i. Use care when handling live animals to minimize injury.

ii. While holding sea turtles out of water, Researchers must:

A. Protect sea turtles from temperature extremes (ideal air temperature range is between 70°F (21.1°C) and 80°F (26.7°C);

B. Provide adequate airflow;

C. Keep sea turtles moist when the temperature is ≥75°F (23.9°C);

D. Prevent sea turtles from sustaining any injuries; and

E. Keep the area surrounding the turtle free of materials that could be accidentally ingested or harm the turtle.

iii. Exercise extra care when handling, sampling and releasing leatherback sea turtles. Leatherback sea turtles have more friable skin and softer bones and are more susceptible to external trauma. Researchers must:

A. Only board leatherbacks if they can be safely brought on board the vessel,

B. Handle and support leatherbacks from underneath, and

C. Not turn leatherbacks on their backs.

iv. To prevent injury during release, lower sea turtles as close to the water's surface as possible.

v. For research activities occurring aboard commercial fishing vessels or in conjunction with other NMFS research, Researchers must carefully observe newly released turtles and record observations on the turtle's ability to swim and dive in a normal manner.

d. Handling, Measuring, Weighing, and Marking

i. Refer to Attachment 1 for more information on the requirements for handling and sampling sea turtles.

ii. Clean and disinfect all equipment (tagging equipment, tape measures, etc.) and surfaces that come in contact with sea turtles between the processing of each turtle.

iii. *Turtles with Fibropapillomas (FP)*

A. Maintain a designated set of instruments for use on turtles with FP. Items that come into contact with turtles with FP tumors must not be used on turtles without tumors.

B. Exercise all measures possible to minimize exposure and cross-contamination between affected turtles and those without apparent disease, including use of disposable gloves and thorough disinfection of equipment and surfaces.

C. Appropriate disinfectants include 70% isopropyl alcohol, 10% bleach, and other virucidal solutions with proven efficacy against herpesviruses.

iv. *Flipper and Passive Integrated Transponder (PIT) Tagging*

A. Examine turtles for existing flipper and PIT tags before attaching or inserting new ones. Researchers must check all flippers.

B. If Researchers find existing tags, record all tag identification numbers and promptly report them to the Cooperative Marine Turtle Tagging Program (CMTTP) at the Archie Carr Center for Sea Turtle Research (ACCSTR): http://accstr.ufl.edu/resources/report-a-tag/ or by email: accstr@ufl.edu. Researchers must have PIT tag readers capable of reading 125, 128, 134.2, and 400 kHz tags.

C. Clean and disinfect:

1. Flipper tags before use (i.e., no contamination, minimal handling).

2. Flipper and PIT tag applicators, including the tag injector handle, between turtles.

3. The application site before the tag pierces the animal's skin.

v. *Flipper Tagging*

A. Do not apply more than one tag per flipper for a total of no more than two flipper tags (includes existing flipper tags) per turtle.

B. Researchers must clean the flipper tag application site and then scrub it with a medical disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% percent alcohol before the applicator pierces the animal's skin.

C. Do not flipper tag animals less than 30 cm straight carapace length (SCL), nuchal notch to pygal tip.

D. Only use Standard 681 tags.

vi. *PIT Tagging*

A. Use a new, sterile needle for each PIT tag application.

B. Clean the application site and then scrub it with two replicates of a medical disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% alcohol (disinfectant/alcohol/disinfectant/alcohol) before the applicator pierces the animal's skin. Disinfect the injector

handle between animals if it has been exposed to fluids from another animal.

C. Do not apply a PIT tag to turtles <20 cm SCL.

D. For turtles 20-30 cm SCL:

1. Only Researchers with specialized experience may PIT tag turtles of this size.

2. Only use 10 mm PIT tags and a 16-gauge injector needle.

3. Researchers must insert the PIT tag into the thickest part of the triceps superficialis muscle. The tag must occupy no more than an estimated 20% of the muscle's total volume and length. To determine eligibility, pinch the muscle forward and assess the tag size relative to the muscle size.

4. Researchers may use alternative sites provided the muscle has sufficient mass to accommodate the PIT tag (≤20%) and PIT tagging poses minimal risk of injury to vital structures or other anatomical features.

vii. *Marking the Carapace*

A. Use non-toxic paints or markers that do not generate heat or contain xylene or toluene.

B. Make markings easily legible using the least amount of paint or marker necessary to re-identify the animal.

e. Tissue Sampling

i. Use a new sterile biopsy punch on each turtle.

ii. Turtles brought on-board the vessel for sampling:

A. Only tissue sample from the limbs, neck, carapace, or shoulder region as described in the application. Researchers must avoid sensitive areas.

B. Use aseptic techniques at all times. At a minimum, thoroughly swab the tissue surface with a medical

disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% alcohol before sampling. Researchers may use two applications of alcohol if disinfectants may interfere with analyses. Keep the procedure area and your hands clean.

iii. Turtles not boarded for sampling:

A. Sample turtles using a pole-biopsy or for leatherbacks via shallow carapacial scrapes in the location most safely and easily accessed.

B. Researchers may sample from anywhere on the limbs or neck, avoiding the head.

iv. If Researchers can easily determine (through markings, tag number, etc.) that a sea turtle has been recaptured and has been already sampled, Researchers may not sample turtles more than two times during the same permit year.

f. Holding: Researchers must not hold an animal for longer than 1 hour from the time of removal from the fishing gear to release.

6. The Permit Holder must comply with the following conditions for biological samples[4] acquired[5] or possessed under authority of this permit.

a. The Permit Holder is ultimately responsible for compliance with this permit and applicable regulations related to the samples unless the samples are permanently transferred per Condition B.6.d.

b. Samples must be maintained according to accepted curatorial standards and must be labeled with a unique identifier (e.g., alphanumeric code) that is connected to on-site records with information identifying the following:

i. Species and, where known, age and sex;

ii. Date of collection, acquisition, or import;

iii. Type of sample (e.g., skin, carcass);

iv. Origin (i.e., where collected or imported from); and

v. Legal authorization for original sample collection or import.

[4] Biological samples include, but are not limited to: carcasses (whole or parts); and any tissues, fluids, or other specimens from live or dead protected species; except feces, urine, and spew collected from the water or ground.
[5] Authorized methods of sample acquisition are specified in Appendix A.

c. For temporary transfers:

i. The Permit Holder may designate Authorized Recipients (ARs) for analysis and curation of samples related to the permit objectives. The Permit Holder must maintain a record of the transfer including the following:

1. Name and affiliation of the AR;

2. Address of the AR;

3. Types of samples sent (species, tissue type);

4. Type of analysis; and

5. Whether samples will be consumed in analysis, returned to the Permit Holder, curated, or destroyed.

ii. The Permit Holder must provide a written copy of the AR designation and the permit per Condition D.3 when transferring samples to the AR (contact your permit analyst for an example letter).

iii. Samples remain in the legal custody of the Permit Holder while in the possession of ARs. The Permit Holder remains responsible for the samples, including any reporting requirements.

d. For permanent transfers: If the Permit Holder wishes to permanently transfer sea turtle samples (i.e., relinquish custody), all subsequent recipients must maintain a copy of this permit to document the legal collection of the samples.

e. Samples cannot be bought or sold. This does not apply to reimbursement associated with actual costs (e.g., shipment or transport costs).

f. After meeting the permitted objectives, the Permit Holder may continue to possess and use biological samples acquired under this permit, including after permit expiration, without additional written authorization. The samples must be maintained as specified in the permit and a copy of the permit must be kept with the samples forever.

C. Qualifications, Responsibilities, and Designation of Personnel

1. At the discretion of the Permit Holder, the following Researchers may participate in the conduct of the permitted activities in accordance with their qualifications and the limitations specified herein:

a. Principal Investigator – Elizabeth Scott-Denton - Train and oversee all procedures; perform all non-invasive procedures.

b. Co-Investigators

Judith Gocke - Train and oversee all procedures; perform all non-invasive procedures.

Lisa Belskis – Supervise and perform all procedures.

c. Research Assistants – personnel identified by the Permit Holder or Principal Investigator and qualified to act pursuant to Conditions C.2, C.3, and C.4 of this permit.

2. Individuals conducting permitted activities must possess qualifications commensurate with their roles and responsibilities. The roles and responsibilities of personnel operating under this permit are as follows:

a. The Permit Holder is ultimately responsible for activities of individuals operating under the authority of this permit. Where the Permit Holder is an institution/facility, the Responsible Party is the person at the institution/facility who is responsible for the supervision of the Principal Investigator.

b. The Principal Investigator (PI) is the individual primarily responsible for the taking, import, export and related activities conducted under the permit. This includes coordination of field activities of all personnel working under the permit. The PI must be on site during activities conducted under this permit unless a Co-Investigator named in Condition C.1 is present to act in place of the PI.

c. Co-Investigators (CIs) are individuals who are qualified to conduct activities authorized by the permit, for the objectives described in the application, without the on-site supervision of the PI. CIs assume the role and responsibility of the PI in the PI's absence.

d. Research Assistants (RAs) are individuals who work under the direct and on-site supervision of the PI or a CI. RAs cannot conduct permitted activities in the absence of the PI or a CI.

3. Personnel involved in permitted activities must be reasonable in number and essential to conduct of the permitted activities. Essential personnel are limited to:

a. Individuals who perform a function directly supportive of and necessary to the permitted activity (including operation of vessels or aircraft essential to conduct of the activity),

b. Individuals included as backup for those personnel essential to the conduct of the permitted activity, and

c. Individuals included for training purposes.

4. Persons who require state or Federal licenses or authorizations (e.g., veterinarians) to conduct activities under the permit must be duly licensed/authorized and follow all applicable requirements when undertaking such activities.

5. Permitted activities may be conducted aboard vessels or aircraft, or in cooperation with individuals or organizations, engaged in commercial activities, provided the commercial activities are not conducted simultaneously with the permitted activities, except as specifically provided for in an Incidental Take Statement or Incidental Take Permit for the specific commercial activity.

6. The Permit Holder cannot require or receive direct or indirect compensation from a person approved to act as PI, CI, or RA under this permit in return for requesting such approval from the Permits Division.

7. The Permit Holder or PI may designate additional CIs without prior approval from the Chief, Permits Division provided:

a. A copy of the letter designating the individual and specifying their duties under the permit is forwarded to the Permits Division by facsimile or email on the day of designation.

b. The copy of the letter is accompanied by a summary of the individual's qualifications to conduct and supervise the permitted activities.

c. The Permit Holder acknowledges that the designation is subject to review and revocation by the Chief, Permits Division.

8. The Responsible Party may request a change of PI by submitting a request to the Chief, Permits Division that includes a description of the individual's qualifications to conduct and oversee the activities authorized under this permit.

9. Submit requests to add CIs or change the PI by one of the following:

a. The APPS system at https://apps.nmfs.noaa.gov;

b. An email attachment to the permit analyst for this permit; or

c. A hard copy mailed or faxed to the Chief, Permits Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910; phone (301)427-8401; fax (301)713-0376.

D. Possession of Permit

1. This permit cannot be transferred or assigned to any other person.

2. The Permit Holder and persons operating under the authority of this permit must possess a copy of this permit when:

a. Engaged in a permitted activity.

b. A protected species is in transit incidental to a permitted activity.

c. A protected species taken or imported under the permit is in the possession of such persons.

3. A duplicate copy of this permit must accompany or be attached to the container, package, enclosure, or other means of containment in which a protected species or protected species part is placed for purposes of storage, transit, supervision or care.

E. Reporting

1. The Permit Holder must submit incident and annual reports containing the information and in the format specified by the Permits Division.

a. Reports must be submitted to the Permits Division by one of the following:

i. The APPS system at https://apps.nmfs.noaa.gov;

ii. An email attachment to the permit analyst for this permit; or

iii. A hard copy mailed or faxed to the Chief, Permits Division.

b. You must contact your permit analyst for a reporting form if you do not submit reports through the APPS.

c. Additional information on reports can be found at https://www.fisheries.noaa.gov/national/reports-protected-species-permits.

2. Incident Reporting

a. If a serious injury or mortality occurs during handling, or authorized takes have been exceeded as specified in Condition A.2, the Permit Holder must:

i. Contact the Permits Division by phone (301-427-8401) as soon as possible, but no later than 2 business days of the incident;

ii. Submit a written report within 2 weeks of the incident as specified below; and

iii. Receive approval from the Permits Division before resuming work. The Permits Division may grant authorization to resume permitted activities based on review of the incident report and in consideration of the Terms and Conditions of this permit.

b. The incident report must include 1) a complete description of the events, and 2) identification of steps that will be taken to reduce the potential for additional serious injury and research-related mortality or exceeding authorized take.

3. Annual reports describing activities conducted during the previous permit year (from January 1st to December 31st) must:

a. Be submitted by January 31st each year for which the permit is valid, and

b. Include a tabular accounting of takes and a narrative description of activities and their effects.

4. A joint annual/final report including a discussion of whether the objectives were achieved must be submitted by October 31, 2031, or, if the research concludes prior to permit expiration, within 30 days of completion of the research.

5. Research results must be published or otherwise made available to the scientific community in a reasonable period of time. Copies of technical reports, conference abstracts, papers, or publications resulting from permitted research must be submitted the Permits Division upon request.

F. Notification and Coordination

1. NMFS Regional Offices are responsible for ensuring coordination of the timing and location of all research activities in their areas to minimize unnecessary duplication, harassment, or other adverse impacts from multiple researchers.

2. The Permit Holder must ensure written notification of planned field work for each project is provided to the NMFS Regional Offices listed below at least two weeks prior to initiation of each field trip/season.

   a. Notification must include the following:

      i. Locations of the intended field study and/or survey routes;

      ii. Estimated dates of activities; and

      iii. Number and roles of participants (for example: PI, CI, boat driver, animal restrainer, Research Assistant "in training").

   b. Notification must be sent to the following Assistant Regional Administrators for Protected Resources as applicable to the location of your activity:

      For activities in NC, SC, GA, FL, AL, MS, LA, TX, PR, and USVI:
      Southeast Region, NMFS, 263 13th Ave South, St. Petersburg, FL 33701;
      Email (*preferred*): nmfs.ser.research.notification@noaa.gov; and

      For activities in ME, VT, NH, MA, NY, CT, NJ, DE, RI, MD, and VA:
      Greater Atlantic Region, NMFS, 55 Great Republic Drive, Gloucester, MA 01930; phone (978)281-9328; fax (978)281-9394
      Email (*preferred*): NMFS.GAR.permit.notification@noaa.gov

3. Researchers must coordinate their activities with other permitted researchers to avoid unnecessary disturbance of animals or duplication of efforts. Contact the applicable Regional Offices listed above for information about coordinating with other Permit Holders.

G. Observers and Inspections

1. NMFS may review activities conducted under this permit. At the request of NMFS, the Permit Holder must cooperate with any such review by:

   a. Allowing an employee of NOAA or other person designated by the Director, NMFS Office of Protected Resources to observe and document permitted activities; and

   b. Providing all documents or other information relating to the permitted activities.

H. Modification, Suspension, and Revocation

1. Permits are subject to suspension, revocation, modification, and denial in accordance with the provisions of subpart D [Permit Sanctions and Denials] of 15 CFR Part 904.

2. The Director, NMFS Office of Protected Resources may modify, suspend, or revoke this permit in whole or in part:

   a. In order to make the permit consistent with a change made after the date of permit issuance with respect to applicable regulations prescribed under Section 4 of the ESA;

   b. In a case in which a violation of the terms and conditions of the permit is found;

   c. In response to a written request[6] from the Permit Holder;

   d. If NMFS determines that the application or other information pertaining to the permitted activities (including, but not limited to, reports pursuant to Section E of this permit and information provided to NOAA personnel pursuant to Section G of this permit) includes false information; and

   e. If NMFS determines that the authorized activities will operate to the disadvantage of threatened or endangered species or are otherwise no longer consistent with the purposes and policy in Section 2 of the ESA.

3. Issuance of this permit does not guarantee or imply that NMFS will issue or approve subsequent permits or modifications for the same or similar activities requested by the Permit Holder, including those of a continuing nature.

I. Penalties and Permit Sanctions

1. A person who violates a provision of this permit, the ESA, or the regulations at 50 CFR Parts 222-226 is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the ESA, and 15 CFR Part 904.

2. The NMFS Office of Protected Resources shall be the sole arbiter of whether a given activity is within the scope and bounds of the authorization granted in this permit.

[6] The Permit Holder may request changes to the permit related to: the objectives or purposes of the permitted activities; the species or number of animals taken; and the location, time, or manner of taking or importing protected species. Such requests must be submitted in writing to the Permits Division in the format specified in the application instructions.

a. The Permit Holder must contact the Permits Division for verification before conducting the activity if they are unsure whether an activity is within the scope of the permit.

b. Failure to verify, where the NMFS Office of Protected Resources subsequently determines that an activity was outside the scope of the permit, may be used as evidence of a violation of the permit, the ESA, and applicable regulations in any enforcement actions.

J. Acceptance of Permit

1. In signing this permit, the Permit Holder:

a. Agrees to abide by all terms and conditions set forth in the permit, all restrictions and relevant regulations under 50 CFR Parts 222-226, and all restrictions and requirements under the ESA;

b. Acknowledges that the authority to conduct certain activities specified in the permit is conditional and subject to authorization by the Office Director; and

c. Acknowledges that this permit does not relieve the Permit Holder of the responsibility to obtain any other permits, or comply with any other Federal, State, local, or international laws or regulations.

DAMON RANDALL.KIMBERLY.B.1365821093

Digitally signed by DAMON RANDALL.KIMBERLY.B.1365821093
Date: 2021.09.22 10:24:45 -04'00'

Kimberly Damon-Randall
Director, Office of Protected Resources
National Marine Fisheries Service

Date Issued

Lisa Desfosse
Deputy Director of Science and Operations
NMFS Southeast Fisheries Science Center
Responsible Party

Date Effective

Appendix A: Tables Specifying the Kinds of Protected Species, Locations, and Manner of Taking

Table A1. Annual authorized take of sea turtles of all life stages except hatchlings in the Commercial Shrimp Trawl Fishery in the Atlantic Ocean Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each fishery. The number of takes authorized is contingent upon the ITS for the fishery. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures
1	Turtle, green sea	North Atlantic DPS (Threatened)	76	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Photograph/Video; Sample, skin biopsy; Weigh
2	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	278	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
3	Turtle, Kemp's ridley sea	Range-wide (Endangered)	200	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
4	Turtle, hawksbill sea	Range-wide (Endangered)	3	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
5	Turtle, leatherback sea	Range-wide (Endangered)	3	Capture under other authority	Import; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
7	Turtle, green sea	North Atlantic DPS (Threatened)	5	Capture under other authority	Import; Salvage (carcass, tissue, parts)
8	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	6	Capture under other authority	Import; Salvage (carcass, tissue, parts)
9	Turtle, Kemp's ridley sea	Range-wide (Endangered)	10	Capture under other authority	Import; Salvage (carcass, tissue, parts)
10	Turtle, hawksbill sea	Range-wide (Endangered)	3	Capture under other authority	Import; Salvage (carcass, tissue, parts)

Table A1. Annual authorized take of sea turtles of all life stages except hatchlings in the Commercial Shrimp Trawl Fishery in the Atlantic Ocean Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each fishery. The number of takes authorized is contingent upon the ITS for the fishery. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures
11	Turtle, leatherback sea	Range-wide (Endangered)	3	Capture under other authority	Import; Salvage (carcass, tissue, parts)

Table A2. Annual authorized take of sea turtles of all life stages except hatchlings in the Oil/Gas Platform Removal Observer Program in the Atlantic Ocean Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each program. The number of takes authorized is contingent upon the ITS for the program. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures
1	Turtle, green sea	North Atlantic DPS (Threatened)	2	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Salvage (carcass, tissue, parts); Sample, skin biopsy; Weigh
2	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	10	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Salvage (carcass, tissue, parts); Sample, skin biopsy; Weigh
3	Turtle, Kemp's ridley sea	Range-wide (Endangered)	2	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Salvage (carcass, tissue, parts); Sample, skin biopsy; Weigh
4	Turtle, hawksbill sea	Range-wide (Endangered)	2	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Salvage (carcass, tissue, parts); Sample, skin biopsy; Weigh
5	Turtle, leatherback sea	Range-wide (Endangered)	2	Capture under other authority	Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Salvage (carcass, tissue, parts); Sample, skin biopsy; Weigh

Table A3. Annual authorized take of sea turtles of all life stages except hatchlings in the Directed Shark Bottom Longline Fishery and Coastal Gillnet Fishery in the Atlantic Ocean Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each fishery. The number of takes authorized is contingent upon the ITS for the fishery. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures
1	Turtle, green sea	North Atlantic DPS (Threatened)	10	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
2	Turtle, green sea	North Atlantic DPS (Threatened)	12	Capture under other authority	Import; Salvage (carcass, tissue, parts)
3	Turtle, hawksbill sea	Range-wide (Endangered)	3	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
4	Turtle, hawksbill sea	Range-wide (Endangered)	3	Capture under other authority	Import; Salvage (carcass, tissue, parts)
5	Turtle, Kemp's ridley sea	Range-wide (Endangered)	5	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
6	Turtle, Kemp's ridley sea	Range-wide (Endangered)	5	Capture under other authority	Import; Salvage (carcass, tissue, parts)
7	Turtle, leatherback sea	Range-wide (Endangered)	3	Capture under other authority	Import; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
8	Turtle, leatherback sea	Range-wide (Endangered)	3	Capture under other authority	Import; Salvage (carcass, tissue, parts)
9	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	17	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
10	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	22	Capture under other authority	Import; Salvage (carcass, tissue, parts)

Table A4. Annual authorized take of sea turtles of all life stages except hatchlings in the Pelagic Longline Fishery in the Atlantic Ocean Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each fishery. The number of takes authorized is contingent upon the ITS for the fishery. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures	Details
1	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	61	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
2	Turtle, leatherback sea	Range-wide (Endangered)	56	Capture under other authority	Import; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
3	Turtle, unidentified sea	NA (Endangered/ Threatened)	12	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	Green, Kemp's ridley, hawksbill, olive ridley, or unknown/hybrid
4	Turtle, leatherback sea	Range-wide (Endangered)	16	Capture under other authority	Import; Salvage (carcass, tissue, parts)	
5	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	16	Capture under other authority	Import; Salvage (carcass, tissue, parts)	
6	Turtle, unidentified sea	NA (Endangered/ Threatened)	3	Capture under other authority	Import; Salvage (carcass, tissue, parts)	Green, Kemp's ridley, hawksbill, olive ridley, or unknown/hybrid

Table A5. Annual authorized take of sea turtles of all life stages except hatchlings in the Directed Reef Fish Fishery (Bottom Longline and Vertical Line Gear) in the Atlantic Ocean Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each fishery. The number of takes authorized is contingent upon the ITS for the fishery. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures
1	Turtle, green sea	North Atlantic DPS (Threatened)	3	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
2	Turtle, green sea	North Atlantic DPS (Threatened)	3	Capture under other authority	Salvage (carcass, tissue, parts)
3	Turtle, hawksbill sea	Range-wide (Endangered)	3	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
4	Turtle, hawksbill sea	Range-wide (Endangered)	3	Capture under other authority	Salvage (carcass, tissue, parts)
5	Turtle, Kemp's ridley sea	Range-wide (Endangered)	3	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
6	Turtle, Kemp's ridley sea	Range-wide (Endangered)	3	Capture under other authority	Salvage (carcass, tissue, parts)
7	Turtle, leatherback sea	Range-wide (Endangered)	3	Capture under other authority	Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
8	Turtle, leatherback sea	Range-wide (Endangered)	3	Capture under other authority	Salvage (carcass, tissue, parts)
9	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	24	Capture under other authority	Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh
10	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	12	Capture under other authority	Salvage (carcass, tissue, parts)

Table A6. Annual authorized take of sea turtles of all life stages except hatchlings in Miscellaneous Fisheries and Other Activities in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Capture is not authorized. Sea turtles must be obtained legally via ITSs in Section 7 biological opinions or Section 10(a)(1)(B) permits for each fishery. The number of takes authorized is contingent upon the ITS for the fishery. If the ITS increases, and only if a no jeopardy conclusion was made on the new consultation, Researchers may take additional turtles up to the amount of the new ITS but not to exceed the limits of this permit. If the ITS decreases, Researchers may take only the number authorized in the lower ITS.

Line	Species	Listing Unit	No. Turtles	Collect Method	Procedures	Details
1	Turtle, green sea	North Atlantic DPS (Threatened)	20	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
2	Turtle, loggerhead sea	Northwest Atlantic DPS (Threatened)	100	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
3	Turtle, Kemp's ridley sea	Range-wide (Endangered)	50	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
4	Turtle, hawksbill sea	Range-wide (Endangered)	20	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
5	Turtle, leatherback sea	Range-wide (Endangered)	50	Capture under other authority	Import; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
6	Turtle, olive ridley sea	Range-wide (Threatened)	20	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	
7	Turtle, unidentified sea	NA (Endangered/ Threatened)	5	Capture under other authority	Import; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, skin biopsy; Weigh	Unidentified hardshell or hybrid
8	Turtle, unidentified sea	NA (Endangered/ Threatened)	50	Capture under other authority	Import; Salvage (carcass, tissue, parts)	All species combined

Appendix B: NMFS-Approved Personnel for Permit No. 24368.

Table B1. Biological samples authorized for collection or acquisition in Tables A1 – A6 of Appendix A may be transferred to the following Authorized Recipients for the specified disposition, consistent with Condition B.6 of the permit:

Authorized Recipient	Sample Type	Disposition
NMFS Southwest Fisheries Science Center National Sea Turtle Genetics Laboratory La Jolla, California	Skin samples	Curation

Attachment 1: Requirements for Handling and Sampling Sea Turtles

Conditions have been included in the permit for research procedures that involve the handling and sampling of sea turtles. These conditions include requirements provided by a suite of expert veterinarians to minimize and mitigate potential impacts to the study animals. This attachment is being provided to help you understand the permit requirements and standard veterinary protocols for sea turtles.

I. Permit requirements for antiseptic practices and research techniques

Measures required to minimize risk of infection and cross-contamination between individuals generally fall under the categories of clean, aseptic, and sterile techniques. Clean technique applies to noninvasive procedures that result in contact with skin or mucous membranes. Aseptic technique is used for brief, invasive procedures that result in any degree of internal contact, e.g. drawing blood. Sterile technique applies to longer invasive procedures, such as laparoscopy or surgery. Reusable instruments for procedures requiring aseptic or sterile technique should be sterilized by standard autoclave or cold sterilization procedures. Instruments that do not have internal contact, e.g. tagging pliers and PIT tag applicators, should be disinfected using a broadcidal solution and the product-recommended contact time between individuals.

Clean technique:

1. Routine hand washing or use of non-sterile disposable gloves.
2. Cleaning and disinfection of equipment between individuals.

Aseptic technique:

1. Disinfection of hands or use of new non-sterile disposable gloves (preferred)
2. Disinfection of the turtle's skin using a surgical scrub (e.g. betadine scrub or chlorhexidine gluconate)† followed by application of 70% alcohol (isopropyl or ethanol) (minimum requirement).*
3. Clean work area.
4. Use of sterile instruments or new disposable items (e.g. needles and punch biopsies) between individuals.

† Alcohol alone may be used in lieu of surgical scrub if necessary to avoid interference with research objectives, e.g. isotopic analysis.

* Multiple applications and scrubbing should be used to achieve thorough cleansing of the procedure site as necessary. A minimum of two alternating applications of surgical scrub and alcohol are to be used for PIT tag application sites and drilling into the carapace, due to potential increased risk of infection.

Sterile technique:

1. To be conducted in accordance with approved veterinary protocol that considers analgesia/anesthesia, use of antimicrobials, anticipated risks and response measures, and exclusionary criteria for animal candidacy.

2. Direct veterinary attendance
3. Disinfection of hands and use of sterile disposable gloves
4. Dedicated site (surgery room) or work area modified to reduce contamination
5. Surgical preparation of skin
6. Sterile instruments

Research Procedure	Required Technique
Handling, gastric lavage, and cloacal lavage	Clean technique
Tissue sampling (biopsy punch or comparable)	Aseptic technique
Blood sampling	Aseptic technique
PIT tagging	Aseptic technique; 2 applications of surgical scrub and alcohol
Flipper tagging	Aseptic technique
Carapace drilling for instrument attachment or bone biopsy	Aseptic technique; 2 applications of surgical scrub and alcohol
Bone biopsy (other than carapace)	Sterile
Laparoscopy (+/- biopsy)	Sterile
Large skin, muscle, fat biopsy, other tissue biopsy	Sterile

II. Minimum requirements for pain management and field techniques

Procedures used for sea turtle research include those anticipated to cause short term pain or distress, such as tagging, as well more invasive procedures where relatively longer periods of pain or discomfort may result. The minimum requirements below consider animal welfare and relative benefits and risks of different modes of pain management under field and laboratory conditions. Additional measures are encouraged whenever possible, including sedation or anesthesia for invasive procedures, e.g. laparoscopy, when release does not immediately follow the procedure and full recovery can be assessed. For skin biopsies, local anesthesia should be considered if feasible and if it will not interfere with the intended analyses, especially if more than 2 biopsies will be collected from the sample turtle. Any protocols that do not include the minimum requirements below, e.g., omission of a systemic analgesic, must be approved by a consulting veterinarian with due consideration of pain management.

Research Procedure	Minimum Requirement
Tissue sampling (biopsy punch or comparable)	None
Blood sampling	None
Flipper tagging	None
Carapace drilling for instrument attachment	Local[1] and/or systemic analgesic
Bone biopsy (other than carapace)	Local anesthetic and systemic analgesic
Laparoscopy	Local anesthetic and systemic analgesic
Laparoscopy biopsy	Local anesthetic, sedation, and systemic

Research Procedure	Minimum Requirement
	analgesic
Large skin, muscle, fat biopsy, other tissue biopsy	Local anesthetic and systemic analgesic

[1]Local anesthetic may be administered by immediate application to the wound following drilling (i.e,, "splash block").

Endangered Species Act - Section 7 Consultation
Biological Opinion

Action Agency: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Highly Migratory Species Division

Activity: Continued Authorization of the Atlantic Shark Fisheries via the Consolidated HMS Fishery Management Plan as Amended by Amendments 3 and 4 and the Federal Authorization of a Smoothhound Fishery (F/SER/2011/06520)

Consulting Agency: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Protected Resources Division

Approved by: _____
Roy E. Crabtree, Ph.D., Regional Administrator

Date Issued: DEC 12 2012

of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the RPMs and terms and conditions of the ITS.

Section 7(b)(4)(c) of the ESA specifies that to provide an ITS for an endangered or threatened species of marine mammal, the taking must be authorized under Section 101(a)(5) of the MMPA. Since no incidental take of listed marine mammals is expected or has been authorized under Section 101(a)(5) of the MMPA, no statement on incidental take of protected marine mammals is provided and no take is authorized. Nevertheless, F/SER2 must immediately notify (within 24 hours, if communication is possible) NMFS' Office of Protected Resources should a take of a listed marine mammal occur.

9.1 Anticipated Incidental Take

NMFS anticipates the following incidental takes of sea turtles, smalltooth sawfish, and Atlantic sturgeon may occur in the future because of the authorization of a federal smoothhound fishery and the continued authorization of the other Atlantic shark fisheries.

The incidental taking of North Atlantic right, humpback, or fin whales is not being authorized under this biological opinion at this time. According to Section 7 of the ESA, incidental taking of marine mammals must first be authorized under Section 101(a)(5)(E) of the MMPA, before such take is included in the ITS of a biological opinion. Therefore, NMFS SF/1 must acquire a take authorization under the MMPA for the expected takes of whales described in this opinion, after which the terms of that permit will be amended to this ITS.

The level of takes occurring annually is highly variable and influenced by sea temperatures, species abundances, and other factors that cannot be predicted. Because of this variability, it is unlikely that all species evaluated in this opinion will be consistently impacted year after year. For example, some years may have no observed interactions and thus no estimated captures. As a result, monitoring fisheries using 1-year estimated take levels is largely impractical. Since Amendment 3 brings the smoothhound fishery under federal management to collect data on the fishery, while continuing to authorize the other Atlantic shark fisheries as they currently operate, we do not believe drastic changes in the fishery are likely to occur in the near future. Any change in the management of the fishery would be a federal action potentially requiring ESA Section 7 review. For these reasons, and based on our experience monitoring fisheries, we believe a 3-year time period is appropriate for meaningful monitoring. The triennial takes are set as 3-year running sums (total for any 3-year period) and not for static 3-year periods (i.e., 2012-2014, 2013-2015, 2014-2016, and so on, as opposed to 2012-2014, 2015-2018, 2019-2022, etc.). This approach will allow us to reduce the likelihood of requiring reinitiation unnecessarily because of inherent variability in take levels, but still allow for an accurate assessment of how the smoothhound and Atlantic shark fisheries are performing versus our expectations. Table 9.1 displays our 3-year take estimates.

Table 9.1 Anticipated Future Take Over 3 Years

Sea Turtles	Non-Lethal Take	Lethal Take	Total Estimated Take
Loggerhead	48	78	126
Green	24	33	57
Leatherback	9	9	18
Kemp's ridley	15	21	36
Hawksbill	9	9	18
Marine Fish	**Non-Lethal Take**	**Lethal Take**	**Total Estimated Take**
Smalltooth sawfish	25	7	32
Atlantic sturgeon	GOM DPS = 27	GOM DPS = 9	GOM DPS = 36
	NYB DPS = 129	NYB DPS = 30	NYB DPS = 159
	CB DPS = 36	CB DPS = 9	CB DPS = 45
	SA DPS = 51	SA DPS = 12	SA DPS = 63
	Carolina DPS = 12	Carolina DPS = 6	Carolina DPS = 18
	All DPSs = 255	All DPSs = 66	All DPSs = 321
GOM = Gulf of Maine, NYB = New York Bight, CB = Chesapeake Bay, and SA = South Atlantic.			

9.2 Effect of the Take

NMFS has determined the level of anticipated take specified in Section 9.1 is not likely to jeopardize the continued existence of Atlantic sturgeon, smalltooth sawfish, or any species of ESA-listed sea turtle.

9.3 Reasonable and Prudent Measures (RPMs)

Section 7(b)(4) of the ESA requires NMFS to issue to any agency whose proposed action is found to comply with Section 7(a)(2) of the ESA, but may incidentally take individuals of listed species, a statement specifying the impact of that taking. It also states that RPMs necessary to minimize the impacts from the agency action, and terms and conditions to implement those measures, must be provided and followed. Only incidental taking that complies with the specified terms and conditions is authorized.

The RPMs and terms and conditions are required, per 50 CFR 402.14 (i)(1)(ii) and (iv), to document the incidental take by the proposed action and to minimize the impact of that take on ESA-listed species. These measures and terms and conditions are non-discretionary, and must be implemented by NMFS for the protection of Section 7(o)(2) to apply. NMFS has a continuing duty to regulate the activity covered by this ITS. If it fails to adhere to the terms and conditions of the ITS through enforceable terms, and/or fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse. To monitor the impact of the incidental take, F/SF1 must report the progress of the action and its impact on the species to F/SER3 as specified in the ITS [50 CFR 402.14(i)(3)].

We have determined that the following RPMs are necessary and appropriate to minimize the impacts of future takes of sea turtles, smalltooth sawfish, and Atlantic sturgeon by the smoothhound and Atlantic shark fisheries and to monitor levels of incidental take.

1. Minimize Potential Effects to Sea Turtles, Smalltooth Sawfish, Atlantic Sturgeon and Marine Mammals:

   Sea Turtle. Smalltooth Sawfish, and Atlantic Sturgeon Handling Requirements
   Most, if not all, sea turtles, smalltooth sawfish, and Atlantic sturgeon released after entanglement and/or forced submergence events have experienced some degree of physiological injury. Experience with other gear types (i.e., hook-and-line) has shown that the ultimate severity of these events is dependent not only upon actual interaction (i.e., physical trauma from entanglement/forced submergence), but the amount of gear remaining on the animal at the time of release. The manner of handling an animal also greatly affects its chance of recovery. Therefore, the experience, ability, and willingness of fishermen to remove gear are crucial to the survival of sea turtles, smalltooth sawfish, and Atlantic sturgeon following release. F/SF1 shall ensure that smoothhound fishermen and fishermen in the other Atlantic shark fisheries receive outreach materials describing how captured sea turtles, smalltooth sawfish, and Atlantic sturgeon should be handled to minimize adverse effects from incidental take and reduce mortality.

   Adherence to Marine Mammal Take Reduction Plan (TRP) Requirements
   The smoothhound fishery will be subject to the applicable regulations for the Harbor Porpoise, Bottlenose Dolphin, and Atlantic Large Whale TRPs (50 CFR 229 Subpart C). Adhering to the measures prescribed in these TRPs is essential to ensure smoothhound fishery does not interact with marine mammals. For this reason, F/SF1 must ensure that all permitted commercial smoothhound fishermen are aware of their obligations under these TRPs.

   Soak Time Restrictions or Net Check Requirements
   Research indicates that the mortality of Atlantic sturgeon may be closely related to soak time. The mortality rates of Atlantic sturgeon incidentally caught in gillnets soaking longer than 24 hours are substantially higher that in nets soaking less than 24 hours. To improve the survival rate of incidentally taken Atlantic sturgeon, F/SF1 must ensure that animals are not being retained in smoothhound or Atlantic shark gillnets longer than 24 hours.

2. Monitoring the Frequency and Magnitude of Incidental Take:
   The jeopardy analyses for large whales, sea turtles, smalltooth sawfish, and Atlantic sturgeon are based on the assumptions that the frequency and magnitude of adverse effects that occurred in the past will continue into the future. If our estimates regarding the frequency and magnitude of incidental take prove to be an underestimate, we risk having misjudged the potential adverse effects to these species. Thus, it is imperative that we monitor and track the level of take occurring specific to the proposed action. Therefore, NMFS must ensure that monitoring and reporting of any sea turtle, smalltooth sawfish, and Atlantic sturgeon bycatch: (1) detect any adverse effects resulting from the

proposed action; (2) assess the actual level of incidental take in comparison with the anticipated incidental take documented in this opinion; and (3) detect when the level of anticipated take is exceeded.

9.4 Terms and Conditions

To be exempt from take prohibitions established by Section 9 of the ESA, F/SF1 must comply with the following terms and conditions, which implement the RPMs described above. These terms and conditions are mandatory.

The following terms and conditions implement RPM No. 1.

1. Upon initial permit issuance, F/SF1 must distribute outreach information to all commercial smoothhound and Atlantic shark fishermen regarding the sea turtle handling and resuscitation requirements that fishermen must undertake, as stated in 50 CFR 223.206(d)(1-3). This outreach information must remind fishermen that disentanglement of sea turtles from gillnet gear takes priority over transferring catch to vessels. Simply cutting lines and leaving entangled gear on sea turtles is strongly discouraged. If a sea turtle is cut loose with the netting attached, the flipper may eventually become occluded, necrotic, and infected, and this could lead to mortality.

2. Prior to or in conjunction with issuing any smoothhound permits, F/SF1 must distribute outreach information to all commercial smoothhound and Atlantic shark fishermen explaining the permitees' obligations under the applicable take reduction plans.

3. By March 31 of each year, F/SF1 must provide SER with information described at 50 CFR 229.4(b) for all permitted smoothhound and Atlantic shark gillnet fishermen so they can be integrated into the Marine Mammal Authorization Program (MMAP). This information is required to ensure that each permitted smoothhound fisher receives an MMAP certificate and updates annually.

4. F/SF1 must require all Atlantic shark and smoothhound gillnet fishermen to either check their gear every 0.5 to 2.0 hours, or F/SF1 must require all Atlantic shark and smoothhound gillnet fishermen soak their gear no longer than 24 hours. F/SF1 may select some combination of these requirements (i.e., soak times and net check requirements) after collaborating with F/SER3. Soak time is considered to be the time between the gear first entering the water and the time when it is first removed. These requirements will ensure that any incidentally taken ESA-listed species are detected and released in a timely manner, reducing the likelihood of mortality. F/SF1 must have these requirements in place no later than December 31, 2014.

5. F/SF1, in cooperation with F/SER3, must remind Atlantic shark and smoothhound fishermen to take the following actions to safely handle and release an incidentally caught smalltooth sawfish:

   a) Leave the sawfish, especially the gills, in the water as much as possible.

   b) Do not remove the saw (rostrum) or injure the animal in any way.

c) Remove as much fishing gear as safely possible from the body of the animal.

d) If it can be done safely, untangle any line wrapped around the saw.

e) Use extreme caution when handling and releasing sawfish as the saw can thrash violently from side to side.

6. F/SF1 must remind Atlantic shark and smoothhound fishermen to take the following actions to safely handle and release an incidentally caught Atlantic sturgeon:

   a) Fish should be handled rapidly, but with care and kept underwater to the maximum extent possible during handling.

   b) If the fish has air in its bladder, efforts must be made to return the fish to neutral buoyancy prior to and during release. Air must be released by gently applying pressure to the stomach of the animal, moving from the tail toward the head.

   c) Before releasing the animal it should be held underwater, gently moving the tail fin back and forth to aid water passage over the gills.

   d) The fish should be released when it shows signs of increased activity and is able to swim away under its own power.

   e) The fish should be watched to make sure it stays underwater and does not float to the surface. If it does resurface, make one additional attempt to recapture the animal and repeat steps a-d above. If the animal is dead, collect tissue samples and recover and process the carcasses as described in Term and Condition 8(c).

The following terms and conditions implement RPM No. 2

7. F/SF1 must collaborate with the appropriate observer program (i.e., NEFOP, CSFOP, and/or SGOP) to ensure the appropriate observer data logs are used to collect data on the smoothhound and Atlantic shark fisheries and the appropriate observer data collection protocols are followed.

8. NMFS must ensure that observers are prepared and trained to correctly and safely tag and/or collect samples from incidentally taken sea turtles, smalltooth sawfish, and Atlantic sturgeon.

   a) *Sea Turtles*: For incidentally taken sea turtles, observers must collect tissue samples for genetic analysis. This opinion serves as the permitting authority for taking associated with handling, identifying, measuring, weighing, photographing, flipper tagging, passive integrated transponder (PIT) tagging, skin biopsying and releasing incidentally taken sea turtles (without the need for an ESA Section 10 permit). Samples collected must be analyzed to determine the genetic identity of individual sea turtles caught in the fishery.

   b) *Smalltooth Sawfish*: For incidentally taken smalltooth sawfish, observers must be trained to tag smalltooth sawfish. All dead carcasses of smalltooth sawfish must be placed on ice and transferred to the SEFSC, attention Dr. John Carlson (National Marine Fisheries Service, Panama City Laboratory, 3500 Delwood Beach Rd, Panama City, FL, 32408).

   c) *Atlantic Sturgeon*: For incidentally taken Atlantic sturgeon, observers must be trained to tag them, take a tissue sample, and scan them for PIT tags. Observers must also collect a

tissue sample from any Atlantic sturgeon handled onboard an Atlantic shark or smoothhound vessel. Tissue samples should be a small (1.0 cm^2) fin clip collected from soft pelvic fin tissue using a pair of sharp scissors. Tissue samples should be preserved in individually labeled vials containing either alcohol (70 to 100 percent) or SDS-UREA. A total length measurement or estimate, time and location (i.e., lat./long. and approximate water depth) of capture, circumstances of capture, and status (i.e., dead, alive, injured) upon return to the water should accompany the tissue sample. Keep the tissue sample out of direct sun, but refrigeration is not necessary. For dead animals, once the tissue samples noted above have been collected, the remaining specimen(s) or body parts of dead Atlantic sturgeon must be preserved (iced or refrigerated) until sampling and disposal procedures are discussed with NMFS. Contact Kelly Shotts (Kelly.Shotts@noaa.gov or (727) 551-5603) for instructions on submitting the tissue samples and dead carcasses to NMFS. Send samples and supporting data within one month of the date the sample is taken.

9. F/SF1, in collaboration with the NEFSC/NER and SEFSC/SER, must develop a standardized protocol for determining which trips, and how much effort, were directed toward smoothhound. Since this is a fishery new to federal management, these protocols should be developed such that the true fishing effort can be ascribed to the fishery to avoid double reporting or underreporting of effort. This is necessary to better determine directed fishing effort levels in the smoothhound fishery and any effort shifts that may occur. This will improve NMFS' ability to monitor incidental takes of ESA-listed species and more accurately determine to what extent directed smoothhound fishing is taking listed species.

10. Prior to requiring the use of smoothhound permit, F/SF1 must work with the appropriate observer program (i.e., NEFOP, CSFOP, SGOP) to ensure observer coverage of the smoothhound fishery is sufficient for monitoring take of ESA-listed species. NMFS (2004d) recommends a level of observer coverage equal to that which provides estimates of a protected species interaction with an expected coefficient of variation of 30%. Since ESA-listed species are relatively rare, achieving bycatch estimates with CVs of 30 percent or less may not be feasible in certain cases. If F/SF1, in conjunction with the appropriate observer program, determines achieving CVs less than 30 percent are not possible, NMFS must determine and implement the number of trips and sets that should be observed to be confident that take is as extremely rare as estimated.

11. F/SF1, in collaboration with the appropriate Science Center (i.e., NEFSC, SEFSC) must collect and monitor observer reports from Atlantic shark and smoothhound trips having sea turtle, smalltooth sawfish, marine mammal, or Atlantic sturgeon interactions. F/SF1 must submit an annual report detailing these interactions to F/SER3; the information below must also be included. The required information may be included in a single report.

    a) Information Required for Species Interactions:

        i) *Sea Turtle Reports*: must include all information specified on the SEFSC sea turtle life history form for any sea turtle captured.

        ii) *Smalltooth Sawfish Reports*: must include a total length measurement or estimate, time and location (i.e., lat./long. and approximate water depth) of capture,

circumstances of capture (e.g., position of sawfish in the trawl net), and status (i.e., dead, alive, injured) upon return to the water must be reported to the extent possible

iii) *Atlantic Sturgeon Reports*: must include a total length measurement or estimate, weight measurement or estimate, sex (if discernible), time and location (i.e., lat./long. and approximate water depth) of capture, were the fish tagged and if so what type of tag was used, and status (i.e., dead, alive, injured) upon return to the water should be reported.

b) Information Required on Fishery Operations

i) *Gillnet Gear*: type of gear used (e.g., drift, sink, strike), set date, net length (ft), net depth (ft), minimum stretched mesh size (in), soak time (hrs), trip length, number of sets per trip, whether tie-downs were used, and length of tie-down if used.

ii) *Bottom Longline Gear*: mainline length (ft), depth fished (ft), number of sets, number of lines per set, number of hooks fished per set, hook type (e.g., circle or j-hook), soak time (hrs), and bait used.

c) Reports must also estimate the total take in the fishery based on effort and the observed takes. If the estimated take of sea turtles, smalltooth sawfish, or Atlantic sturgeon is unusually high, the report should include an analysis of the possible reasons for the higher than expected level of take and whether or not this level of take represents new information that requires a reinitiation of this consultation.

d) These reports must be forwarded to the NMFS Assistant Regional Administrator for Protected Resources, Southeast Regional Office, Protected Resources Division, 263 1^{3th} Avenue South, St. Petersburg, Florida 33701-5505.

e) In addition to the annual report, F/SF1 must also report the incidental take of any protected species by smoothhound and Atlantic shark fishermen within 24 hrs to takereport.nmfsser@noaa.gov. To improve the timeliness of reporting, the NEFSC/SEFSC or the observer program that documented an incidental take by smoothhound and Atlantic shark fishermen may submit a notification to the email address above on behalf of F/SF1. When reporting takes this way please ensure the message indicates incidental take was authorized via this biological opinion and include the opinion title, date of issuance, and consultation number (F/SER/2011/06520) to expedite processing of the report.

12. F/SF1, in collaboration with the NEFSC/NER and SEFSC/SER, must monitor the entanglements of large whales in gillnet gear. Based on the target species, and when and where the entanglement occurred, SF1 must determine if Atlantic shark or smoothhound gillnet gear may have been cause and whether consultation should be reinitiated. Since large whales can travel long distances after an entanglement occurs it is not always clear which gear/fishery cause the entanglements. This T/C will ensure any entanglements potentially associated with the proposed action are monitored and consultation potentially reinitiated if the adverse affects to large whales from the proposed action appear greater than anticipated.

Simon Gulak - NOAA Affiliate < simon.gulak@noaa.gov>

sampling undersize fish by NMFS observers

John McGovern - NOAA Federal < john.mcgovern@noaa.gov> Tue, Aug 20, 2013 at 11:15 AM
To: James Nance - NOAA Federal <james.m.nance@noaa.gov>
Cc: John Carlson <john.carlson@noaa.gov>, Simon Gulak <simon.gulak@noaa.gov>, Jennifer Potts - NOAA Federal <Jennifer.Potts@noaa.gov>, Elizabeth Scott-Denton - NOAA Federal <elizabeth.scott-denton@noaa.gov>

Hi Jim and John:

I asked Steve Branstetter about this and he indicated the regulations exempt NMFS observers from having to have an EFP. I have pasted the regulations below from Section 600.745.

Jack

(e) *Observers* . NMFS-sanctioned observers or biological technicians conducting activities within NMFS-approved sea sampling and/or observer protocols are exempt from the requirement to obtain an EFP. For purposes of this section, NMFS-sanctioned observers or biological technicians include NMFS employees, NMFS observers, observers who are employees of NMFS-contracted observer providers, and observers who are employees of NMFS-permitted observer providers.

On Tue, Aug 20, 2013 at 11:39 AM, James Nance - NOAA Federal <james.m.nance@noaa.gov> wrote:

> John: I think we sample undersized species (I have cc'ed Liz to make sure). Each of the observers have a scientific sampling permit - so they should be covered for this scientific data collection.
>
> On Tue, Aug 20, 2013 at 10:17 AM, John Carlson <john.carlson@noaa.gov> wrote:
>
> > Hi Jack
> >
> > I hope all has been well. I have a question regarding observer sampling of undersize snapper and grouper or sampling these species out of season. Jennifer Potts and I were recently awarded a MARFIN grant to begin observer coverage of the longline and vertical line snapper-grouper fishery in the SA (I've attached a copy of the proposal). as you know, for life history matrices and ultimately as inputs to stock assessments it is beneficial to have biological samples from all ages classes. In general, observers only sample the catch (not undersize that are discarded) but we would like to begin to sample those individuals.
> >
> > My question is do we need a special permit for this or are observers permitted under regulations in the MSRA or elsewhere? I've cc'd Jim Nance as this email as well as he may know from his work in the snapper grouper fishery in the GOM
> >
> > thank you for any help
> >
> > John
> >
> > ---
> > John K. Carlson, Ph.D.
> > NOAA Fisheries Service
> > Southeast Fisheries Science Center
> > 3500 Delwood Beach Rd.
> > Panama City, FL 32408
> > 850-234-6541 ext 221

john.carlson@noaa.gov