



United States Department of the Interior

FISH AND WILDLIFE SERVICE

FREQUENTLY ASKED QUESTIONS ABOUT SEA TURTLE ACTIVITIES REGULATED BY THE U.S. FISH AND WILDLIFE SERVICE UNDER THE ENDANGERED SPECIES ACT

March 12, 2013

What activities are prohibited?

Take, import and export, interstate commerce, and possession or transport of unlawfully-acquired specimens. Under the Endangered Species Act (ESA), the term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Take can be direct or indirect. Direct take of sea turtles for research or conservation purposes includes, but is not limited to, the following activities: marking nests, picking up hatchlings, excavating nests, rescuing stranded turtles, collecting eggs or carcasses, tagging adults or hatchlings, and other similar activities that directly involve sea turtles.

Incidental take of sea turtles may occur even when an activity does not purposefully involve a sea turtle. Incidental take can occur due to beach armoring, artificial lighting, beach nourishment, vehicular traffic, or any coastal activity that might interfere with nesting adults, nests, or emergent hatchlings. Additional information about incidental take and incidental take authorizations is available at <http://www.fws.gov/endangered/what-we-do/hcp-overview.html>. If incidental take is possible, you should consult the appropriate U.S. Fish and Wildlife Service (Service) field office for your area (<http://www.fws.gov/endangered/regions/index.html>).

The following frequently asked questions address only direct forms of take related to sea turtle research and conservation activities.

Who else regulates activities affecting sea turtle?

States, via their section 6 cooperative agreements with the Service, may conduct their own conservation programs for federally listed species. State authority is limited for endangered species as detailed elsewhere in this document.

NOAA National Marine Fisheries Service (NMFS) shares ESA authority with the Service for sea turtles. Pursuant to a joint memorandum of understanding, the Service has jurisdiction over sea turtles on land (terrestrial habitat) and NMFS has jurisdiction over sea turtles in their marine habitats.

The Service's Division of Management Authority, Branch of Permits, located in our headquarters office, has authority for Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) import and export permits.

Do I need a permit?

A scientific permit is needed if any form of direct take may occur. As a part of their respective conservation programs, the States and the Service authorize take of sea turtles when it is determined that the activities are likely to result in a conservation benefit to the species. Many of the direct take activities listed above are routinely permitted if they promote species conservation, but a permit must be issued for the specific activities before they may occur. You may take sea turtles only as specifically described and authorized by a permit if you are the permittee, are named as an assistant or co-permittee on the permit, or are assisting under the direct, on-site supervision of a permittee or co-permittee.

What is the process for obtaining a permit if an investigator wants to conduct scientific research on captive sea turtles or sea turtles in their terrestrial habitat?

An investigator wanting to conduct scientific research on captive sea turtles or sea turtles on the nesting beach must consider whether to obtain a Service and/or State permit. A Service permit may be required for endangered species where State authority may be restricted as described below.

State applications will be made in accordance with their procedures. An application for a Service permit requires all applicable information described at 50 CFR Parts 17.22(a)(1) and 17.32(a)(1). Generally, the Service requires a complete and signed application form, 3-200-55 (available at <http://www.fws.gov/endangered/permits/how-to-apply.html>), a project description, and documentation demonstrating the sea turtle experience or expertise of the applicants and any assistants.

The Service must advertise the availability of permit applications for endangered species. These will appear in the *Federal Register* for a 30-day comment period. Plan ahead to allow time for the Service to conduct its intra-agency review, preparation of a public notice and its clearance for publication, and for preparation of any permit instruments.

The following information should be included with research permit application submissions:

- a. For research on captive or rehabilitating turtles, a letter from the veterinarian who is or will be caring for the turtle(s) stating that the research activity will not compromise the health of the turtle and its' survival in the wild.
- b. For research on captive turtles or turtles on the nesting beach, a proposal that identifies the benefit of the research to the conservation of the species in the wild, including specific Recovery Actions identified in the species' Recovery Plan.

Under the ESA, is there a difference between live animals versus remains or biological samples?

No. Under the ESA, eggs, carcasses, remains, products, parts, tissue samples, or similar artifacts – even when incorporated into manufactured products – are protected and regulated to the same extent as a living animal. For example, you would need a State or Federal permit regardless of whether you are simply collecting egg shell fragments or are capturing a live sea turtle for tagging.

What activities are not prohibited?

The ESA does not prohibit possession and transport of sea turtles that have been lawfully acquired if the activity does not cause take, no commercial interstate transaction (including barter) occurs, and no import or export occurs. Lawfully acquired sea turtles include those that were captured under State or Federal authorization, or that were received (in a non-commercial transaction) from someone else who holds a capture permit.

Normal animal husbandry of captive specimens, when it meets or exceeds requirements of the Animal Welfare Act, is not considered to be take (50 CFR 17.3). Because the Animal Welfare Act addresses only mammals, the Service has had to rely on its experience consulting with facilities that hold captive sea turtles in order to advise them on healthful and humane measures that would meet the intent of our regulations. These measures are compiled in the Standard Permit Conditions for Care and Maintenance of Captive Sea Turtles which the Service incorporates into our sea turtle permits.

What are the differences between threatened and endangered sea turtles?

States have full authority for management of threatened species, but those authorities are limited for endangered species. States are not able to authorize take of endangered species that would result in death or permanent disabling of wildlife, removal from the State where the taking occurred, introduction of the specimen or any progeny into an area beyond the historic range of the species, or holding in captivity for a period of more than 45 consecutive days (unless such holding is necessary to aid sick or injured sea turtles).

Do I need both State and Service permits?

Any activity that exceeds the limits of State authority for an endangered species will require a Federal permit in addition to the State permit. Examples include the sacrifice or euthanasia of sea turtles or capture of live sea turtles that may be transported out of the State where collected.

Are sea turtles bred in captivity?

No. Captive breeding is not considered necessary or desirable to promote sea turtle conservation.

Who are those turtle patrol volunteers and under whose authority do they operate?

States with nesting sea turtle populations authorize volunteers to monitor nesting activity and assist with management activities. Turtle patrol volunteers typically do not hold Federal permits, although the Service often cooperates with and advises the volunteers.

What authorizations do I need to hold a sea turtle in a rehabilitation facility or educational display facility?

A permit is not usually required to receive and hold a lawfully acquired sea turtle in captivity.

A permit from the State or the Service is needed to capture or remove sea turtles from the wild. That permit may allow retention of specimens in captivity and, if so, sea turtles may be transferred by the permittee to a facility for holding in accordance with their authorization.

States may issue permits for capture and retention of sea turtles under the auspices of their ESA section 6 agreements with the Service. However, a Service permit will be needed for endangered species in the following circumstances:

1. The death or permanent disabling of a sea turtle;
2. The removal of a sea turtle from that State; or
3. The holding of a sea turtle in captivity for a period of more than 45 consecutive days.

NOTE: Under the Emergency provisions of their section 6 cooperative agreements with the Service, States can authorize holding endangered sea turtles for more than 45 consecutive days if such holding is necessary to aid sick or injured turtles.

If the original permit for taking a sea turtle from the wild allows for it, the specimen may be transferred between the original holding facility to others, even out of State, without additional authority from the Service. Note that both parties of a transfer should generate and maintain documentation to demonstrate that a sea turtle has been taken and possessed lawfully. Copies of applicable permits should be enclosed with shipments of sea turtles.

Interstate transfers, for ESA purposes, are considered commercial if there is an exchange of money, goods, or services in return for ownership or control of the sea turtle. Regardless of anything stated above, any interstate commerce of a threatened or endangered species will require a permit from the Service. States do not have authority for interstate commerce. Note, however, that the Service has not issued any interstate commerce permits for sea turtles. Interstate commerce permits have to satisfy the same conservation purposes as a research and recovery permit. At this time, we are not aware of any factors that would lead us to believe that interstate commerce of sea turtles would benefit their conservation.

What conditions will be required of facilities wishing to apply for a permit to hold a sea turtle?

The Service's Standard Permit Conditions will be required for all Service permittees to ensure the best care of a turtle. Even if your facility does not require a permit, we recommend following

the Standard Permit Conditions to ensure that you avoid take (see above, “What activities are not prohibited?”).

What is the process for holding threatened loggerhead hatchlings or threatened green turtle hatchlings for public display?

If threatened loggerheads or threatened green turtles, proposed for public display, are obtained as hatchlings, the facility must obtain a State permit (or a Federal permit only if the State where the turtle is located does not issue sea turtle permits). A “Hatchling Plan” must be submitted with the permit application submissions for Service permits. State permits may have additional requirements. The “Hatchling Plan” must include the following information:

- a. A description of the collection method. It is recommended that only those hatchlings that would not have made it out of the nest (i.e., “the stragglers”) be collected. These hatchlings are usually found when the nest is excavated 3 days after an emergence is observed in order to assess hatching and emerging success. Manipulating nests and/or hatchlings to obtain hatchlings for public display is not allowed as it interferes with the “frenzy” period. This period is critical for hatchlings to move from their nest to the surf and through the surf zone and continue swimming away from land for approximately 20 to 30 hours (Carr 1982, Wyneken and Salmon 1992, Witherington 2002).
- b. A justification that identifies the benefit of taking hatchlings from the wild for public display to the conservation of the species in the wild, including specific Recovery Actions identified in the species’ Recovery Plan. The permit application should include a justification for the minimum number of hatchlings needed to achieve the specific Recovery Actions.
- c. Information on the quantity and type of food that will be fed to the hatchling(s) for the entire time the hatchling(s) will be kept in captivity. The diet must be reviewed and approved by the facility veterinarian.
- d. Information on the tank(s) and location at the facility where the hatchling(s) will be housed for the entire duration.
- e. A written plan for the release of the hatchlings that is coordinated with the Service and/or State agency. The timing and location of the release will be based on the best scientific information for that size class by State. Include information on the diet that will be given to the turtle(s) to ensure sufficient foraging capabilities upon release.
- f. A commitment to provide periodic reports on the turtle(s). At a minimum, annual reporting (quarterly reporting may be required) on the current weight, straight carapace length, and condition of each hatchling must be emailed to the Service and/or State agency as appropriate.

NOTE: The requirement for a “Hatchling Plan” does not apply to hatchlings or post-hatchlings that are washed back during storm events and most often are released shortly thereafter.

What is the process for obtaining sea turtle parts from another facility (in or out-of-State) for research or educational purposes?

Just as for the transfer of a live specimen, if the original permit for taking sea turtles allows for it, specimens may be transferred between the current holder to others, even out of State, without additional authority from the Service. Note that both parties of a transfer should generate and maintain documentation to demonstrate that sea turtle specimens have been taken and possessed lawfully. Copies of applicable permits should be enclosed with shipments of sea turtle specimens.

Specimens to be transferred may not be sold or offered for sale in interstate commerce. This includes bartering goods or services in exchange for specimens.

Often, specimens have been in collections for many years and their origin may be uncertain. As much as can be known about when, where, and by whom such specimens came into possession should be gathered and retained with such specimens.

The States or the Service will provide technical guidance for specific situations where the origins of a specimen are in doubt.

What is the process if a sick or injured sea turtle is found?

Upon locating a sick or injured sea turtle, initial notification must be made immediately to the appropriate State Sea Turtle Stranding and Salvage Network coordinator (<http://www.sefsc.noaa.gov/species/turtles/strandings.htm>). The coordinator will specify appropriate authorized facilities to receive sea turtles for treatment or rehabilitation.

LITERATURE CITED

- Carr, A. 1982. Notes on the behavioral ecology of sea turtles. Pages 19-26 in Bjorndal, K.A. (editor). *Biology and Conservation of Sea Turtles*. Smithsonian Institution Press, Washington, DC.
- Witherington, B.E. 2002. Ecology of neonate loggerhead turtles inhabiting lines of downwelling near a Gulf Stream front. *Marine Biology* 140:843-853.
- Wyneken, J. and M. Salmon. 1992. Frenzy and post frenzy activity in loggerhead, green, leatherback hatchling sea turtles. *Copeia* 1992(2):478-484.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

STANDARD PERMIT CONDITIONS FOR CARE AND MAINTENANCE OF CAPTIVE SEA TURTLES

February 13, 2013

The following conditions must be met for all species of sea turtles held in captivity in the United States under the authority of a U.S. Fish and Wildlife Service (Service) permit issued in accordance with section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended. Conditions are also included for the transport, rehabilitation, and disposition of sea turtles.

The individual/institution to whom a Service permit has been issued must notify the appropriate Service Field Office or Regional Office (<http://www.fws.gov/endangered/regions/index.html>) that issued the permit in writing of any inability to meet or maintain these conditions within 60 days. This notification must include a description of all shortcomings and emergency provisions, back-up systems, and filtration if not previously submitted. ***Failure to do so maybe considered a violation of the Service permit.***

TYPES OF CAPTIVE MAINTENANCE

Education

Depending upon the display capabilities of a facility and proper justification (specific benefit to the conservation of the species in the wild), threatened loggerhead turtles (*Caretta caretta*) and/or threatened green turtles (*Chelonia mydas*) may be displayed for educational purposes by a facility that is primarily educational in nature. Education facilities include those open to the general public at least 5 days a week and receive no less than an average of 100 visitors per week. Public encounters (e.g., feeding, touching, swimming, etc.) with turtles is not allowed. Note: Limited interactive programs may be permitted if specifically reviewed and approved by the Service.

Educational Display of Captive Turtles:

1. Turtles on display must be accompanied by interpretive signage or other interactive methods of communications such as live lectures, displays, and self-guided audio tours. These displays must include the following: species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., incidental capture in fisheries, boat strikes, ingestion of debris, ocean dumping, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beachfront lighting, etc.).
2. For any rehabilitating turtle proposed for public display, the veterinarian responsible for the care of the animal must deem that the turtle is stable and the additional stress associated with

public display will not affect the turtle's health. The release of the turtle must not be delayed or expedited to facilitate the public display.

3. It is the responsibility of the individual/institution to which a permit is issued to ensure that their facility has the necessary tank space to accommodate the sea turtles until it is ready for release. Turtles obtained as hatchlings should not need to be moved to another facility because of inadequate tank space.
4. Any facility holding sea turtles for educational display must also meet all conditions that follow under *Care and Maintenance Requirements*.

Educational Tours of Captive Turtles:

1. Tours must only be conducted during hours when the turtles would normally be exposed to light. The light exposure can be modified for seasonal photoperiods but must have consecutive hours of darkness as found in the natural environment during that period.
2. Educational topics must include species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., incidental capture in fisheries, boat strikes, ingestion of debris, ocean dumping, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beachfront lighting, etc.).
3. Each tour must have at least one staff/volunteer present at the time of the tour for every 15 guests. More staff/volunteers may be needed as appropriate to ensure guests are not in contact with the tank or medical equipment.
4. Visitors must be given clear instructions to minimize disturbance and stress to turtles, including no touching of turtles or their tanks, minimal noise, and no flash photography.
5. Tanks must be half covered or have a hiding spot for turtles to decrease stress from tours.
6. The following information must be included in the annual report – number of tours; number of people, dates, and times of the tours; medical condition of each turtle involved in the tours; and the release date of the turtles.

Additional Requirements for Educational Tours of Rehabilitating Turtles:

Educational tours and the display of rehabilitating animals are not authorized for turtles in critical care. The veterinarian responsible for the care of a turtle must deem that the turtle is stable and that the tours will not affect the turtle's health. The release of the turtle must not be delayed to facilitate the tours. To conduct tours, facilities must meet the following conditions:

1. The timing of the tour must not interfere with the treatment and care of the turtle.

2. Tours may be conducted while a turtle is in treatment if the veterinarian responsible for the care of the turtle approves, and guests are kept at a far enough distance from the turtle and staff working with the turtle so as to minimize the potential for additional stress and not interfere with treatment.

Research

Unless a specific exception is granted because of research conditions, anyone holding turtles for scientific research must follow all conditions listed below under *Care and Maintenance Requirements*. The release of rehabilitated turtles must not be delayed to obtain permits or to facilitate a research project unless authorized in a Service permit.

Rehabilitation

Any facility holding sea turtles for rehabilitation must meet all conditions listed below under *Care and Maintenance Requirements*. All facilities conducting rehabilitation must obtain a Service and/or State permit for euthanasia or have access to a veterinarian that has a Service and/or State permit for euthanasia. Note: Euthanasia of endangered turtles may only be authorized by the Service.

Transport:

1. Sea turtles must be transported in a climate-controlled environment, protected from extremes of heat and cold, and kept moist. In general, the best range of temperatures for transport is between 21°C and 27°C (70°F and 80°F; see additional conditions for cold-stunned turtles below). If a turtle is transported at temperatures greater than or equal to 23.9°C (75°F), it must be cooled by keeping a wet towel on the carapace and by periodically applying water. Water and wet towels must not be used when transporting turtles at temperatures less than 23.9°C (75°F) or at any time they are exposed to an air-conditioned environment (exception: open wounds must be kept moist with clean freshwater regardless of temperature). At temperatures less than 23.9°C (75°F), juvenile turtles (less than 30 cm straight carapace length) may be kept from drying out during transport by applying a thin layer of a water-based, water soluble, non-petroleum lubricant (e.g., K-Y Jelly) to the carapace and all the soft tissues (except the eyes and any open wounds). Larger turtles (≥ 30 cm straight carapace length) do not need a lubricant because they are less likely to dry out due to their low surface to volume ratio: use of a lubricant should be avoided to minimize handling injuries. If transport is longer than 45 minutes, ophthalmic gel may be used to maintain moisture in the turtle's eyes to avoid eye damage.
2. During transport, housing, and/or subsequent treatment, cold-stunned turtles must be exposed to gradually rising air and water temperatures over many days, and not exposed to temperatures that would thermally shock them.
3. Turtles must be placed in closed containers with sufficient holes for adequate ventilation during transport. Turtles must not be transported in water. The containers housing turtles during transport must be padded and must not contain any material that could be accidentally

ingested. Hatchlings (sea turtles with a straight carapace length ≤ 4 cm) must be transported in a container with moist sand. Post-hatchlings (sea turtles with a straight carapace length > 4 cm and ≤ 6 cm for all species except leatherbacks) must be transported in a container with a damp towel or cloth at the bottom of the container. The containers must be secured during transport so they do not slide around or tip over. The Service permit must accompany turtles during transport.

CARE AND MAINTENANCE REQUIREMENTS

Facility Construction

Tank Size Requirements:

Holding tank sizes for turtles must be based upon the size of the largest specimen in the tank as described below. Use straight carapace measurements to determine the appropriate tank size.

Note: For a long-term, non-releasable turtle, the facility must have a tank or tanks of sufficient size to accommodate the turtle through all life stages. If a facility cannot hold the non-releasable turtle as it grows, it must provide the following information to the Service: (a) a letter from another facility that has agreed to permanently hold the turtle once it reaches a size that the facility can no longer accommodate, (b) a description of how the turtle will be transported to the other facility, and (c) tank size(s) of the facility where the turtle will be transported and remain.

1. Hatchlings and post-hatchlings (up to 6 centimeters straight carapace length) – for one hatchling, a tank or sub-section of a tank with a surface area of at least five times the shell length by two times the shell straight carapace width of the turtle plus a minimum water depth of 1 foot. The minimum tank width must be no less than two times the shell width. Hatchlings must be housed separately.
2. Turtles greater than 6 centimeters and up to 50 centimeters straight carapace length – for one turtle, a tank with a surface area of at least seven times the shell length by two times the shell straight carapace width of the turtle plus a minimum water depth of 2½ feet. For each additional turtle, increase the original surface area by 50%. The minimum tank width must be no less than two times the shell(s) width (i.e., for multiple turtles, the sum of the shell straight carapace widths must be multiplied by two to determine the minimum tank width).
3. Turtles greater than 50 centimeters and up to 65 centimeters straight carapace length – for one turtle, a tank with a surface area of at least seven times the shell length by two times the shell width of the turtle plus a minimum water depth of 3 feet. For each additional turtle, increase the original surface area by 50%. The minimum tank width must be no less than two times the shell(s) straight carapace width (i.e., for multiple turtles, the sum of the shell straight carapace widths must be multiplied by two to determine the minimum tank width).
4. Turtles with a straight carapace length greater than 65 centimeters – for one turtle, a tank with a surface area of at least nine times the shell length by two times the shell straight carapace width

of the turtle plus a minimum water depth of 4 feet. For each additional turtle, increase the original surface area by 100%. The minimum tank width must be no less than two times the shell(s) width (i.e., for multiple turtles, the sum of the shell straight carapace widths must be multiplied by two to determine the minimum tank width).

Exceptions:

- a. Sick or injured turtles may be held in a smaller isolation tank if determined by a veterinarian to facilitate treatments. Any turtles held for this purpose must be protected from desiccation and moved to an appropriate tank as soon as health allows.
- b. If necessary, healthy turtles may be held in a tank with dimensions less than those required for no more than 1 week every 3 months. The tank must be large enough to allow complete submergence and unimpeded turning.
- c. If necessary, hatchlings or post-hatchlings being held short term (to allow time to arrange safe release to the wild) may be held in a tank with dimensions less than those required above. They must be separated if aggression is observed between the hatchlings.

Tank Condition Requirements:

1. The inside surfaces of any holding tank must be non-abrasive, free of burrs or projections that could cause harm to turtles, and free of toxic heavy metals and organics, such as lead or copper paints. Any tank with painted surfaces must be free of biological hazardous material and must not be actively chipping or flaking. The tank must also be free of anything small enough to allow turtles access to bite or swallow. Use of non-finished concrete tanks must be avoided.
2. A holding tank must not contain any non-food items that may be ingested by a turtle or any items that would obstruct a turtle's ability to surface either to breathe or to float.
3. A holding tank must not contain entangling materials. Rock ledges or other habitat-mimicking items in the tank are encouraged to allow turtles to rest. However, these items must be constructed or placed in a manner that ensures a turtle cannot become tightly wedged or trapped underwater. Sea turtles must demonstrate the ability to maneuver safely around all tank items. Enrichment objects especially for resident/non-releasable turtles must be used for the quality of life and prevention of conditioning/pacing behavior. A tank must be designed to ensure the turtle stays within the tank at all times unless removed by facility personnel.
4. A holding tank must use railings/barriers to prevent the public from reaching into the tanks. If it is determined that public presence causes unnecessary stress, turtles must not be accessible to the public.

5. The drains or intakes of a holding tank must be constructed or securely shielded to prevent accidental entrapment. Inflows and drains must be placed to ensure appropriate water turnover and flow rates throughout all areas of the tank.
6. To help prevent the water temperature from becoming too warm ($> 30^{\circ}\text{C}/86^{\circ}\text{F}$), any outdoor holding tank must be at least 30% shaded. If water is recirculated, shading must be increased to at least 50% shaded.

Lighting

1. All the tanks in which sea turtles are housed must have enough lighting (sunlight and/or artificial lighting) to allow for easy viewing of the animals in all areas of the tank.
2. If artificial lighting is used as a primary light source, regular veterinary evaluation must address any lighting and/or dietary supplement needs based on clinical assessment and best available medical/husbandry information. Good quality full spectrum bulbs (UVA/UVB) (wavelength of UVB -280 nm to 320 nm) must be used to promote general health and avoid potential metabolic problems. If “diffusers” are used, care must be taken to ensure appropriate full spectrum exposure.
3. The photoperiod of captive sea turtles must be similar to a natural photoperiod and mimic the summer and winter season daylight hours. Tanks must not be artificially illuminated to provide a photoperiod of more than 14 hours per 24-hour period to represent the natural seasonal photoperiods.
4. Dark/shaded areas must be provided to allow turtles a choice. Artificial light must not be excessive so as to cause sensitivity.
5. Lights above the top of the tank must have shield guards to prevent accidental breakage.

Water Quality

Good water quality is essential to the health of sea turtles in captivity. Facilities must have written procedures for monitoring and maintaining water quality in all enclosures. At a minimum the following specific parameters must be met:

1. The salinity must be maintained between 20 ppt and 35 ppt. If necessary, sea turtles may be maintained in more or less saline water for up to 24 hours per week. Sick or injured sea turtles may be kept at salinities below 20 ppt or above 35 ppt as prescribed by a veterinarian.
2. Water pH must be maintained between 7.2 and 8.5.
3. Water temperature must be maintained between 20°C and 30°C (68°F and 86°F). High and low extremes may induce disease (particularly fungal), injury, or even death and must be

avoided. However, rehabilitation of cold-stunned turtles may require that turtles be placed in waters below 20°C (68°F) to allow them to warm gradually.

4. Chlorine can be used to treat the water to reduce bacterial and algae growth, but levels must be kept below 1.0 part per million (ppm). Chlorine levels greater than 1.0 ppm may cause irritation to turtle eyes. No other chemical may be used to treat water in a tank housing sea turtles if the chemical is not safely ingestible by turtles at the dilution that would be needed for effective treatment.
5. Coliform bacteria must not exceed 1,000 MPN (most probable number) per 100 ml of water. Steps must be taken to prevent the conditions in which coliform bacteria proliferate. Testing for coliforms is a simple, cheap, preventative/proactive measure; it is recommended testing be conducted monthly on all systems. The steps to prevent coliform proliferation include adequate filtration (removing suspended material and larger pieces of feces and leftover food) and the use of an appropriate sanitizing chemical such as chlorine, or a high turnover rate with fresh, uncontaminated seawater. The Service reserves the right to request total coliform counts monthly or more frequently if conditions warrant it.
6. If ozone is used for water treatment, the oxidation-reduction potential must be monitored and maintained below 400 millivolts (mV) if possible to reduce the potential for irritation.
7. The water must be clear enough to allow easy viewing of sea turtles in any part of the tank to assess health and activity.
8. Facilities holding turtles for rehabilitation must have tanks that maintain water quality by filtration or flow through. Tanks that require complete or near complete water changes as the sole means of maintaining water quality, such that the water level is dropped to the point where the turtle is sitting on the tank floor (“dump and fill”), may only be used for rehabilitation on a “temporary” (defined as an event where the turtle is expected to be medically cleared and ready for release within a 45-day period) or on an “emergency” (defined as an acute mass stranding event or an equipment-related failure at the facility such as power outages) basis as these conditions are not acceptable for long-term rehabilitation due to the additional stress caused by frequent maintenance.

The ultimate goal for a rehabilitating turtle is a return to and survival in the wild. The additional husbandry needs for a rehabilitating turtle in a “dump and fill” tank may unnecessarily acclimate a turtle to captivity. Therefore, if a turtle held in a “dump and fill” tank is not medically cleared within 45 days; the facility must contact the Service on a case-by-case basis to determine the appropriate course of action for the turtle.

9. Facilities that use “dump and fill” tanks for rehabilitation on a “temporary” or “emergency” basis must:

- a. Ensure there are available tanks nearby so that a turtle can be quickly moved to a clean tank while the dirty tank is dumped, cleaned, and filled. This prevents the turtle from being out of the water for very long and reduces handling;
 - b. Remove food that is uneaten. If food must be left unattended, it is recommended that the uneaten food be removed within an hour unless it is live prey; and
 - c. Evaluate the turtle skin and shell daily for any abnormalities or worsening of the turtle's condition.
10. Facilities that are expected to hold turtles longer than 45 days with preexisting "dump and fill" tanks for rehabilitating turtles must contact the Service for additional husbandry conditions to reduce stress to the animals during water changes, as well as provide a projected timeline (not to exceed 1 year) for the retrofit of these tanks.
 11. Any flow-through seawater system must be maintained to facilitate sufficient turnover of seawater. At a minimum, any flow-through system must have a filtration system on intake. For closed or semi-open systems, filtration must be incorporated into the system to ensure appropriate water quality of recirculated water. Filtration and flow through systems must be able to maintain the minimum water quality parameters.
 12. The facility must have the ability to (1) monitor and operate within the parameters described in this document, (2) correct any situation in which the parameters are not met, and (3) properly care for the sea turtles while corrective measures are being taken.
 13. Water disposal must be in accordance with all applicable local, State, and Federal laws.
 14. Treatment or pre-filtration of fresh seawater is recommended to remove infectious cercariae (parasitic larva of a trematode worm).
 15. Facilities that make sea water must ensure that the appropriate variety of salt (without anticaking agents) is used to make and maintain the water quality standards for marine life.

Water Quantity

1. Any facility housing sea turtles must have the ability to provide adequate water quantity under normal and emergency conditions to allow complete submergence and unimpeded turning. In an emergency, sea turtles may be kept out of water for a maximum of 4 hours per week. During this time, they must be kept moist and protected from sun, heat, temperature extremes, and physical damage. This situation should occur only very rarely, if ever. Treatment of seriously ill or injured sea turtles may require they be out of water for more than 4 hours per week (e.g., during anesthesia, when administering fluids, or to ensure they do not drown if too weak to surface to breathe).

2. If sea turtle tanks are regularly drained and cleaned, adequate holding tanks must be available to house the turtles safely during this time.

Food and Feeding

1. Without exception, the food fed to sea turtles must always be of human quality or comparable quality of food that is reflective of their diet in the wild. Food must either be fresh, flash frozen and glazed, or frozen in some other manner that ensures the quality of the food. Any frozen food must be completely thawed in cool air, preferably, or cool water, prior to feeding and used entirely or discarded. Under no circumstances may food be refrozen. If the quality of the food is questionable, it cannot be used as food for sea turtles. This does not prohibit commercially prepared diets (e.g., dry, pelletized, floating or sinking formations), but they must be fresh or stored frozen to maintain nutritional value and to prevent deterioration or microbial growth.

Reasonable efforts must be made by the holding facility to develop proper diets for sea turtles. Feeding of oily or fatty fish can lead to obesity and cause fatty degeneration of the liver in sea turtles and must be minimized. Also, the quantity of food must be rigidly controlled so turtles do not become obese. It is the responsibility of the holding facility to ensure and justify the adequacy of its feeding regimen for each species and size class. Turtles must be weighed and measured monthly (4-6 times a year for non-releaseable turtles) to ensure they are not overfed. See Whitaker and Krum (1999) for additional information on feeding recommendations.

2. Hand feeding of turtles that will eventually be released is prohibited except when absolutely necessary for rehabilitation. In the latter case, the turtle must be allowed to feed on its own as soon as possible. The use of bottom feeders or other tools mimicking the natural feeding environment is encouraged.
3. Food for groups must be broadcast around the tank to avoid competition and possible injury. Special precautions and vigilant oversight are required when using broadcast feeding for large numbers of turtles.
4. Prior to release, turtles of species that routinely feed on live prey in the wild must be provided with and observed capturing live food prior to release to ensure sufficient foraging capabilities. Live prey that is an immediate host for parasites such as snails must be avoided.

Behavior and Intermixing

1. Some species of sea turtles, especially loggerheads and Kemp's ridleys, may be very aggressive toward their own and other species, particularly while feeding. Whenever the situation dictates that sea turtles be placed together, they must be closely observed until it is established that they display no aggressive behavior that might result in injury or death. Turtles must be separated at the first sign of aggression. Tank dividers can be used. Small

sea turtles must not be housed with larger turtles, especially of another species, as larger animals can injure or kill smaller animals.

2. Male and female adult turtles must be separated to prevent captive breeding. The approximately adult sizes are as follows: loggerhead turtle straight carapace length ≥ 80 cm, green turtle straight carapace length ≥ 83 cm, Kemp's Ridley turtle (*Lepidochelys kempii*) straight carapace length ≥ 58 cm, hawksbill turtle straight carapace length ≥ 71 cm.
3. Turtles on exhibit may be housed with other species that are present in their natural environment. The other species housed with a turtle must be reviewed and approved by the Service. NOTE: In some cases, the permanent injury of a turtle or the size of a turtle may restrict the species that will be authorized for inclusion in the exhibit with a turtle.

Intermixing of Wild and Captive Stock:

1. Existing captive sea turtles must not be exposed to seawater in which newly wild-caught or live-stranded sea turtles are kept without an adequate period of quarantine to prevent disease or parasite transmission. The quarantine period must be at least 60 days.
2. Rehabilitation facilities must provide separate tanks or a tank with a separation for long-term and temporary captive turtles, not only in the physical plant but in seawater maintenance and treatment systems. This will prevent injury due to aggressive behaviors, or sickness or death through transfer of pathogens or parasites.
3. If a female deposits eggs in an exhibit or shows signs of stress in an attempt to leave the exhibit, the facility must contact the Service that issued the permit under which the turtle is being held within 24 hours to discuss the best course of action for the eggs and/or female.

Fibropapillomatosis:

Fibropapillomatosis (FP) is an infectious disease and the preponderance of scientific evidence supports that a herpesvirus is the causative agent. The high incidence of FP in green turtles in Florida waters is of special concern. Turtles with FP must be isolated from turtles that are not known to have the disease. FP growths are highly vascular when large and appear to be extremely sensitive due to the presence of nerve bundles, especially around the eyes. Facilities that admit turtles with FP must have the capacity for strict biosecurity, including disinfection of equipment, separate water handling systems, and education of staff and caregivers on biosecurity measures. Only experienced veterinary personnel should be treating these individuals.

Veterinary Care

Any facilities holding sea turtles in captivity must have access to a veterinarian who:

1. Has an active veterinary license in the United States (means a person who has graduated from a veterinary school accredited by the American Veterinary Medical Association Council on Education, or has a certificate issued by the American Veterinary Graduates Association's Education Commission for Foreign Veterinary Graduates).
2. Will be on-call 24-hours a day or identify at least one backup veterinarian or have a contingency plan for when the attending veterinarian is not available.
3. Has documented 1-year clinical experience working with sea turtles and clear demonstration of clinical proficiency or have a written consulting agreement with an experienced sea turtle veterinarian, which assures availability of consultation when needed.
4. Has access to a list of veterinarians with experience working with sea turtles to contact for assistance.

A properly permitted facility may receive for treatment or rehabilitation any sea turtle that is sick or injured. Upon receiving a sick or injured sea turtle, the attending veterinarian is to examine the turtle within 24 hours. If this is not possible, the Service must be contacted to make alternative arrangements, which could include consulting an approved veterinarian at a remote location.

The diagnosis of disease, surgical intervention, and the prescription of medications must be carried out only by a qualified veterinarian. Measures must be taken to preserve the health of captive sea turtles and to prevent injury or spread of disease. Injured or diseased sea turtles must receive appropriate medical care under the supervision of a qualified veterinarian in a method that prevents cross-contamination to other animals. Injured or diseased animals should be physically separated with their own clean seawater source, and all reasonable efforts made to avoid cross-contamination to unaffected animals.

Health records must be kept for each animal. These should include all examination and clinical data, as well as an assessment of the findings. For guidance on veterinary care, see Leong *et al.* (1989), Campbell (1996), and Whitaker and Krum (1999).

Biological Samples for Diagnostics and Health Assessments of Turtles Associated with a Law Enforcement Case or Litigation

1. Samples must remain in the legal custody of the facility holding the Service permit.
2. Only samples specifically taken for diagnostic tests may be sent to laboratories to assist in health assessments.
3. The transfer of biological samples from the facility to any location or individual other than those identified in the facility's permit requires written approval from the Service.

4. Sea turtles may be transported off-site for specific tests such as Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) scans to assist diagnosis for health assessments provided it is a test prescribed by the qualified veterinarian treating the turtle, and the laboratory is listed in the facility's permit.

Euthanasia

All facilities conducting rehabilitation must obtain a Service and/or State permit for euthanasia or have access to a veterinarian that has a Service and/or State permit for euthanasia. Euthanasia is authorized only if, in the judgment of a veterinarian, a turtle's recuperation is unlikely, if an illness or injury is terminal or untreatable, if an illness is communicable and likely to pose a threat to wild populations or captive turtles, or if a turtle's wounds would preclude survival in the wild or a self-maintaining life in captivity. Note: Euthanasia of endangered turtles may only be authorized by the Service.

Release

The final determination of an individual's fitness for survival in the wild will be made with input from the facility's veterinarian, animal care personnel, and other persons with sea turtle expertise, as necessary. The attending veterinarian must perform a hands-on physical examination of the turtle prior to the release determination. The attending veterinarian must review the turtle's complete history including all stranding information, last treatment, and diagnostic test results. When a facility's veterinarian has determined that the turtle has recovered sufficiently from its illness or injury and is ready for release, the principal permit holder, or a designee, must contact the Service that issued the permit under which the turtle is being held within 24 hours to discuss the appropriate time and site for the release. The site for release must be determined based on the latest scientific information on turtle movements and regional knowledge. ***Failure to notify the permitting agency of the releasable status of a turtle or the unnecessary retention of turtles in captivity following medical clearance may be considered a violation of the Service permit and could result in the permit being suspended. Unless there are additional complications, turtles are expected to be released within 2 weeks of medical clearance.***

Non-releasable Turtles: Non-releasable turtles are defined as turtles (bycaught, stranded, or congenitally deformed) that have been rehabilitated, but which have permanent handicapping injuries or defects that preclude their potential survival in the wild. Many injuries, when healed, will not hamper a turtle's existence in the wild. For example, the loss of a flipper does not prevent a turtle from being able to survive in the wild. Flipper damage is not an unusual occurrence and is often documented in nesting turtles on the beach. Examples of conditions that result in declaration of non-releasable status include blindness in both eyes, loss of more than 75% of three or four flippers, or abnormal buoyancy that prevents normal foraging behavior.

Release of Cold-stunned Turtles: The criteria for determining whether turtles that were cold stunned **with no other medical conditions** can be released must be based on behavior and activity of the turtle. If a turtle is alert, swimming strongly, not on medication(s), and otherwise

behaving normally, it must be released as soon as possible in the vicinity of where it was found cold stunned. The ideal release water temperature is approximately 18°C (65°F) and above; however, circumstances may necessitate a release at a lower water temperature. Turtles have been reported to cold stun in water that is approximately 10°C (50°F) (Schwartz 1976). If a turtle has been cleared for release, but the water temperatures in the capture location are still too low, the Service must be contacted to coordinate the release timing and location. Prior to release, turtles must be held in water temperatures that are gradually adjusted to mimic those found in the natural environment so the turtle does not have a shock response upon entering a cooler or warmer natural water temperature.

Release of FP Turtles: Turtles with FP can be released when a facility's veterinarian has determined that the turtle has recovered sufficiently from its illness or injury and is ready for release. The principal permit holder, or a designee, must contact the Service that issued the permit under which the turtle is being held within 24 hours to discuss the appropriate timing and site for the release. The site for release must be determined based on the latest scientific information on turtle movements and regional knowledge regarding prevalence of FP.

All sea turtles must be measured and weighed prior to release following the protocols listed at http://acctr.ufl.edu/cmttp_tag_&_measure_protocols.html. The release protocol or procedure and the release location must be approved in advance by the Service.

External Flipper Tags and Passive Integrated Transponder (PIT) Tags: Flipper and PIT tags must be inserted prior to release only under the following conditions:

1. The turtle is size appropriate for receiving a flipper and/or PIT tag.
2. Tagging does not delay the release of the turtle.
3. The turtle is tagged by animal care staff that has demonstrated tagging expertise and is specifically permitted by the Service to conduct this activity.
4. The turtle is tagged following the protocols listed at http://acctr.ufl.edu/cmttp_tag_&_measure_protocols.html.

Satellite Transmitters: An investigator or facility wanting to attach a satellite transmitter to a sea turtle due for release must first obtain a modification to their Service permit. Each request must be reviewed on a case-by-case basis by the Service. These requests can be submitted prior to obtaining the turtles with appropriate parameters to support the proposal as described below.

The release of a turtle must not be delayed to obtain permits or to facilitate the attachment of a satellite transmitter. Failure to obtain a Service permit modification is considered a violation of the original Service permit.

The following information must be included with satellite transmitter permit application submissions:

1. A letter from the veterinarian caring for the turtle stating that the attachment of the satellite transmitter will not compromise the health of the turtle and its' survival in the wild.
2. A proposal that identifies the benefit to the conservation of the species in the wild including specific Recovery Actions identified in the species' Recovery Plan.
3. A compilation of information for all satellite tagged rehabilitated turtles already released by the facility within the State waters for the species proposed to be tagged. Include the identification of the turtles, date(s) released, information obtained from the previous tagging event(s), and information needs/gaps expected to be gained from the proposed tagging.
4. The species, size, and weight of the turtle that is being proposed for satellite tagging.
5. The size and weight of the transmitter proposed for the turtle.
6. The method of attachment.
7. Information about the individual who will be performing the attachment, including their contact information and a history of their sea turtle transmitter attachment experience.

NOTE: This information will be used to evaluate the benefit to the conservation of the species in the wild with respect to the additional energy cost to that specific animal as a result of the drag of the transmitter.

Necropsy and Disposal of Carcasses

1. Necropsies must be performed on any turtles that die at a captive facility. Necropsies must be performed by or in consultation with a veterinarian, veterinary diagnostic clinic, qualified pathologist of a college or university, or qualified State/Federal resources agency staff. For guidance on conducting necropsies, see Wolke and George (1981), Rainey (1994), and Wyneken (2001).
2. The following documents must be sent to the Service that issued the permit(s):
 - a. The Sea Turtle Stranding and Salvage Network - Gross Necropsy report (<http://www.seaturtle.org/groups/ncwrc/STSSN.necropsy.pdf>), and
 - b. A copy of any necropsy report that includes the results of pathological, histological, microbiological, virological, and parasitological studies.

Following necropsy, the carcass of any sea turtle that dies while in the custody of a Service or State permitted/authorized facility must be completely destroyed (in accordance with State and local laws) or, subject to the approval of the Service, be offered to a museum, university, or other educational or research facility. Under NO circumstances may a dead sea turtle, or any part thereof,

be salvaged for any purpose other than Service or State-approved education and/or research activities.

Conclusion

Inspection:

In order to ensure that facilities holding live sea turtles for rehabilitation, education, and/or research are maintaining the requirements for care and maintenance, and are in compliance with all applicable laws, rules, and guidelines, all facilities are subject to inspection at any time by Service or State personnel. Facilities may be asked to provide a current coliform bacteria count and water quality data upon inspection. Facilities will be provided with a copy of the report generated from the inspection. If the facility does not meet the requirements of their permit, which include the above *Care and Maintenance Requirements*, it will be considered a violation of the Service permit and could result in the permit being suspended.

Reporting:

Quarterly reports (Quarterly Report: Appendix A) of the number and species of sea turtles taken to a permitted rehabilitation facility for treatment, and their diagnosis must be emailed to the Service at seaturtle@fws.gov. Information must be emailed on the following dates (April 15, July 15, and October 15) each year.

In addition, an annual report must be submitted no later than January 30 of each year and must include the following:

- i. A January through December summary of the number and species of sea turtles taken to the permitted rehabilitation facility for treatment, their diagnosis and current disposition (including those that died, were transferred, or were released).
- ii. An account of euthanized specimens along with a description of the circumstances of their capture and reasons for euthanasia.
- iii. Evaluations of all non-releasable (resident) turtles (Non-Releasable Turtle Report: Appendix B) and current information regarding the care of the turtles including the size and weight.
- iv. A list of veterinarians and animal care staff that worked under the Service permit along with a summary of their sea turtle experience.
- v. A summary of the number and species of sea turtles in the facility that was collected prior to listing under the Endangered Species Act. Include information confirming that adult male and adult female turtles are maintained separately.

For Service permits, annual reports must be submitted to the office of the Service's National Sea Turtle Coordinator, 7915 Baymeadows Way, Suite 200, Jacksonville, Florida 32256-7517.

LITERATURE CITED

- Campbell, T.W. 1996. Sea Turtle Rehabilitation. Pages 427-436 *in* Mader, D.R. (editor). Reptile Medicine and Surgery. W.B. Saunders Company, Philadelphia, PA.
- Leong, J.K., D.L. Smith, D.B. Revera, Lt. J.C. Clary III, D.H. Lewis, J.L. Scott, and A.R. DiNuzzo. 1989. Health care and diseases of captive-reared loggerhead and Kemp's ridley sea turtles. Pages 178-201 *in* Caillouet, Jr., C.W. and A.M. Landry, Jr. (editors). Proceedings of the First International Symposium on Kemp's Ridley Sea Turtle Biology, Conservation and Management. October 1-4, 1985, Galveston, TX. (<http://galveston.ssp.nmfs.gov/publications/pdf/875.pdf>).
- Rainey, W.E. 1994. Guide to sea turtle visceral anatomy. NOAA Technical Memorandum NMFS-SEFSC-82. 82 pages. (http://www.sefsc.noaa.gov/turtles/TM_82_Rainey.pdf).
- Schwartz, F. 1976. Behavioral and tolerance responses to cold water temperatures by three species of sea turtles (Reptilia, Cheloniidae) in North Carolina. Florida Marine Research Publications Number 33:16-18.
- Whitaker, B.R. and H. Krum. 1999. Medical management of sea turtles in aquaria. Pages 217-231 *in* Fowler, M.E. and R.E. Miller (editors). Zoo and Wild Animal Medicine: Current Therapy (4th edition). W.B. Saunders Company, Philadelphia, PA.
- Wolke, R.E. and A. George. 1981. Sea turtle necropsy manual. NOAA Technical Memorandum NMFS-SEFC-24. 20 pages. (http://www.sefsc.noaa.gov/turtles/TM_24_Wolke_George.pdf).
- Wyneken, J. 2001. The anatomy of sea turtles. NOAA Technical Memorandum NMFS-SEFSC-470. 172 pages. (http://www.sefsc.noaa.gov/turtles/TM_470_Wyneken.pdf).
- Wyneken, J. and M. Salmon. 1992. Frenzy and post frenzy activity in loggerhead, green, leatherback hatchling sea turtles. *Copeia* 1992(2):478-484.