

California Collaborative Fisheries Research Program  
Catch-and-Release, Hook-and-Line Surveys of Nearshore Fishes  
Inside and Outside of California Marine Protected Areas  
SOP Document

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## **Abstract**

Moss Landing Marine Laboratories (MLML) and Cal Poly San Luis Obispo (CP) worked with central California fishing communities to develop monitoring protocols for the collection of baseline information for California Marine Protected Areas (MPAs) utilizing standardized hook-and-line, catch-and-release techniques. The program began in 2007 by surveying the Año Nuevo, Point Lobos, Piedras Blancas, and Point Buchon MPAs, and in corresponding reference sites. In addition, surveys were conducted in the proposed Point Reyes and North and Southeast Farallon Islands MPAs, and near Bolinas/ Duxbury Reef to establish standardized protocols. Within these areas, we used a stratified random sampling design to determine sampling locations. At each location, volunteer anglers fished with standardized gear for a specified amount of time. Caught fishes were identified to species, measured, tagged with external T-bar anchor tags, and released at the location of capture. From 2007 to 2016, groups on the central California coast have worked with a total of 15 Commercial Passenger Fishing Vessel (CPFV) captains and 896 volunteer anglers, and caught a total of 83,110 fishes from 63 different species. Due to the success of CCFRP in monitoring central California MPAs, the program expanded statewide in 2017. The program now includes partners from Humboldt State University (HSU), Bodega Marine Laboratory (BML), MLML, CP, UC Santa Barbara (UCSB), and Scripps Institution of Oceanography (SIO). In combination with the MLML and CP databases dating back to 2007, we have now caught and released 136,205 fishes from 86 different species (51,661 of which were tagged prior to release) on 482 sampling trips inside and outside 16 MPAs. We have partnered with 29 CPFVs and 47 skippers, and welcomed over 1,430 individual anglers in 12 seasons (2007-2018).

## **Project Objectives**

- Develop and utilize rigorous scientific protocols to monitor central California marine protected areas (MPAs).
- Create a sampling design that can be replicated and applied to collect data for state and federal stock assessments.
- Engage the fishing community in the monitoring of MPAs.
- Evaluate differences between MPAs and reference sites at the time of closure.
- Generate baseline data for future evaluation of changes in species composition, size, and relative abundance of fishes associated with shallow (10-50 m) rock habitats inside and outside MPAs.

## Study Area

From 2007 to 2016, CA Collaborative Fisheries Research Program scientists and fishers conducted hook-and-line surveys within four Central California Coast State Marine Reserves (Año Nuevo, Point Lobos, Piedras Blancas, and Point Buchon; SMRs), along with nearby reference sites ([Figure 1](#)). Reference sites were based on the criteria that they shared similar size, habitat, and oceanographic conditions with the nearby MPAs.

Within the boundaries of each MPA and reference site, 500 m x 500 m grid cells were created and used to randomly select sampling locations. The grid cells were positioned in nearshore rocky habitats, in water less than 40 meters deep (to limit fishing mortality from barotrauma), in areas that had been identified by fishermen as having suitable habitat for nearshore fishes. A total of 22 grid cells in Año Nuevo ([Figure 2a](#)), 17 cells in Point Lobos ([Figure 2b](#)), 57 cells in Piedras Blancas ([Figure 2c](#)), and 22 cells in Point Buchon ([Figure 2d](#)) were generated. On a given survey day, four of these cells are selected at random and sampled.

In 2008 and 2009, surveys were also completed in proposed North Central Coast SMRs (Point Reyes, and North and Southeast Farallon Islands) and near Bolinas/ Duxbury Reef ([Figures 1](#) and [3](#)). These surveys utilized the CCFRP hook-and-line survey protocols with the exception that sampling was not completed within 500 m x 500 m grid cells. These trips provided an opportunity to evaluate the areas in order to locate optimal fishing areas and create grid cells for future surveys. Duxbury Reef, an open area, will serve as a project reference area because this area has been surveyed since 2005. Data for these trips are included in the CCFRP Hook-and-Line Database.

In 2017, CCFRP expanded statewide to include the north, north central, central, and south MPA monitoring regions. As a statewide program, CCFRP partners with 6 institutions that now survey 16 areas (Table 1, Figures 2, 4, 5, 6, 7, 8). Grid cells within each MPA and reference location were selected using the same criteria as above.

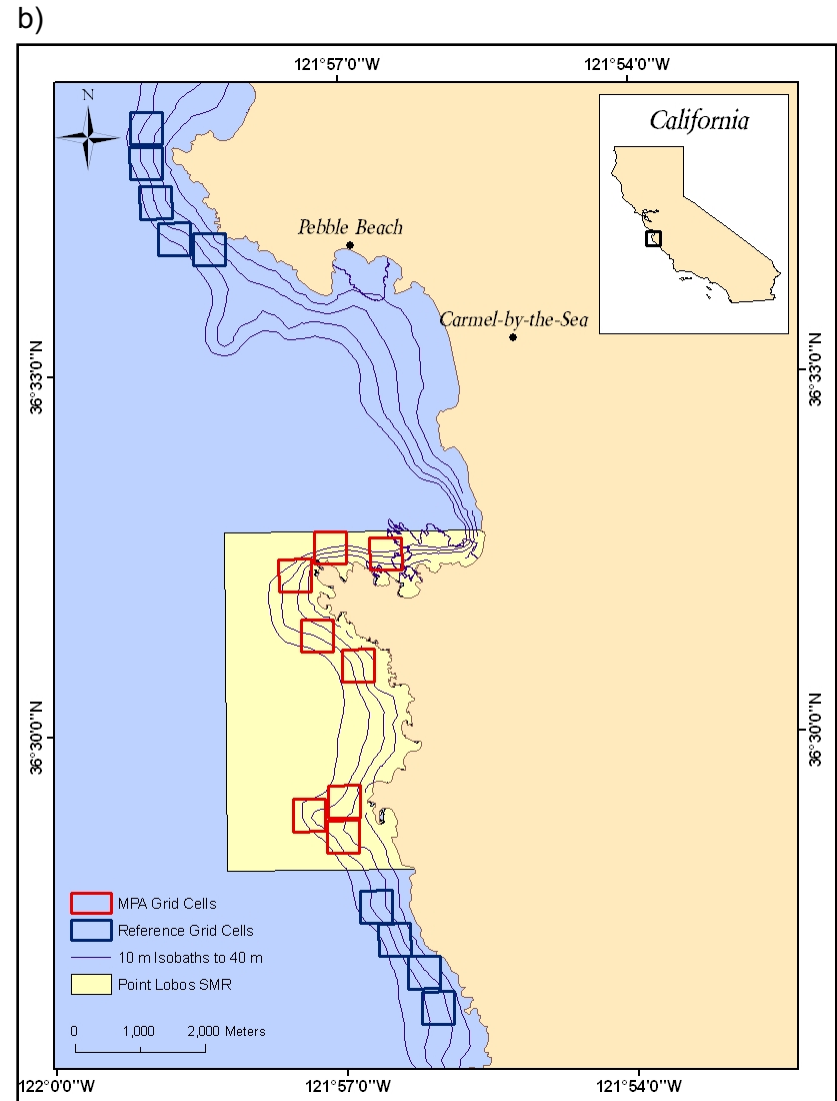
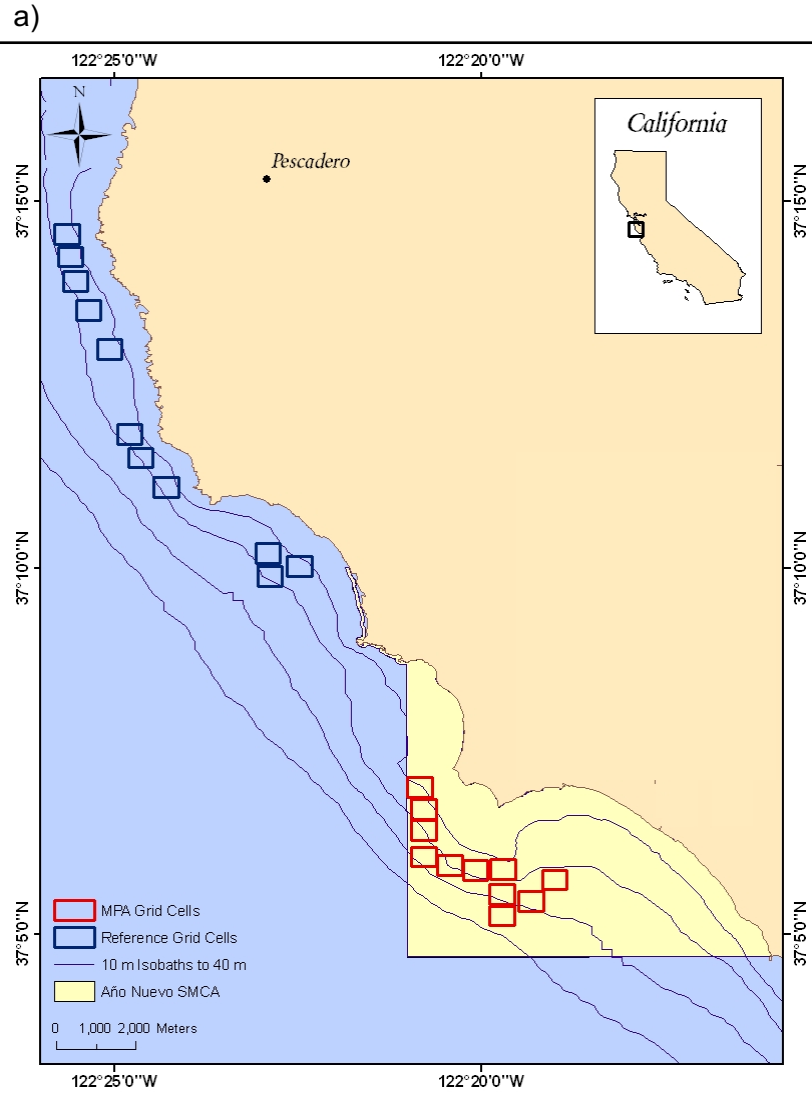
Table 1. Marine protected areas (MPAs) and reference areas (REF) surveyed by CCFRP partner institutions, separated by MPA monitoring region

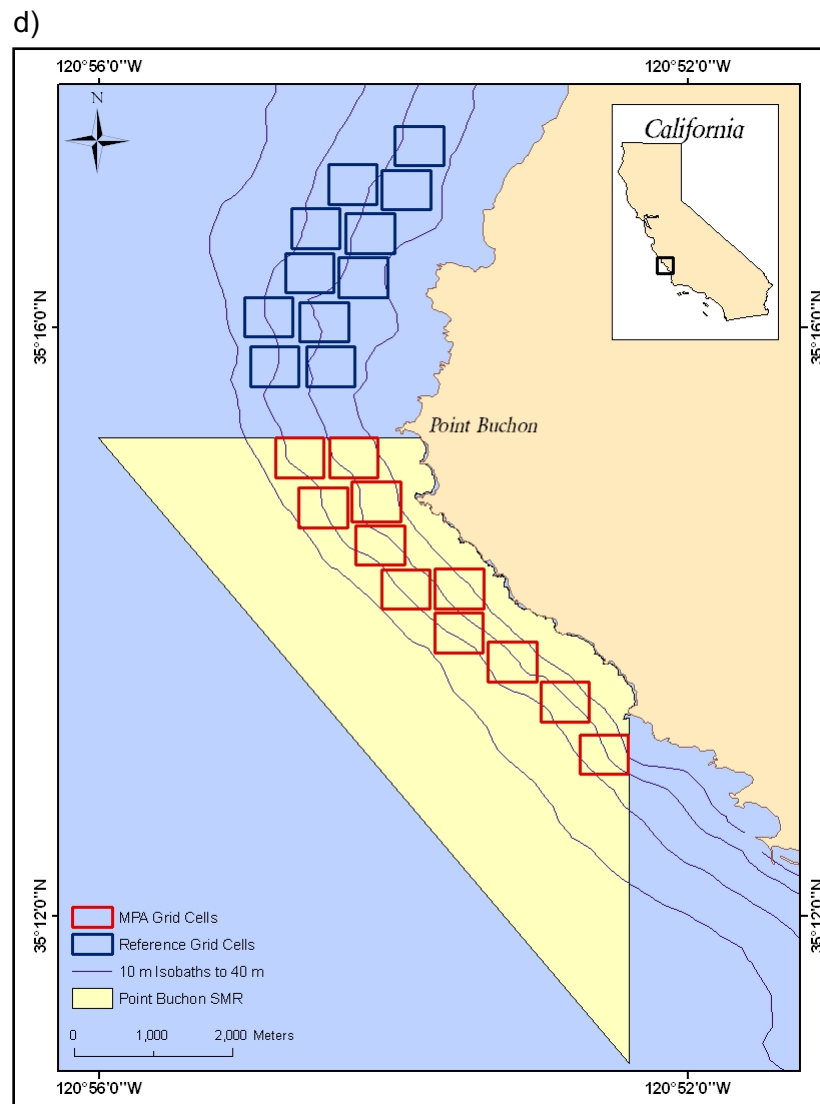
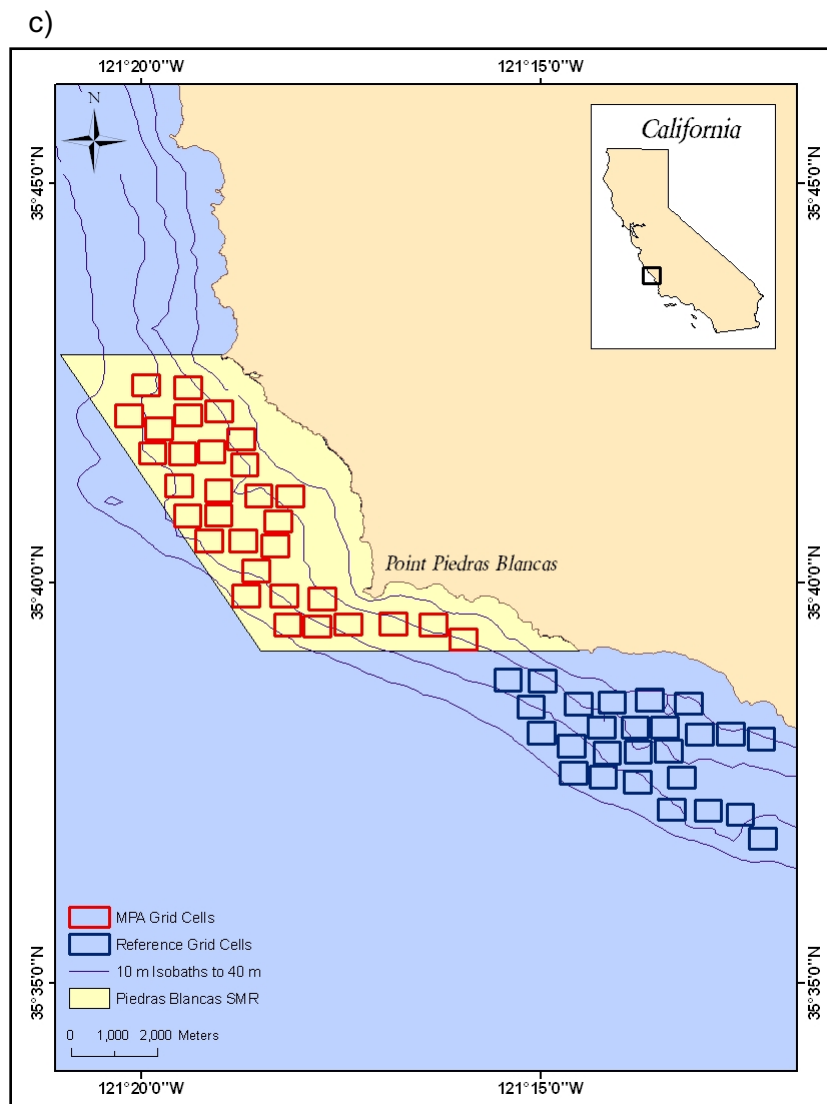
<b>Region</b>	<b>Academic Institution</b>	<b>Marine Protected Area (MPA)/ Reference Sites</b>	<b># of Grid Cells</b>	<b>Figure</b>
North	Humboldt State University	South Cape Mendocino SMR/REF	77	4a
		Ten Mile SMR/REF	35	4b
		Trinidad REF	11	4c
North Central	Bodega Marine Laboratory	Bodega Head SMR/REF	27	5a
		Stewart's Point SMR/SMCA/REF	20	5b
Central	Moss Landing Marine Laboratories	SE Farallon Islands SMR/REF	22	6
		Año Nuevo SMR/REF	22	2a
		Point Lobos SMR/REF	17	2b
	Cal Poly, San Luis Obispo	Piedras Blancas SMR/REF	57	2c
		Point Buchon SMR/REF	22	2d
South	UC Santa Barbara	Point Conception SMR/REF	23	7a
		Carrington Point SMR/REF	38	7b
		Anacapa Island SMR/SMCA/REF	17	7c
	Scripps Institution of Oceanography	Laguna Beach SMR/REF	5	8a
		Swami's SMCA/REF	19	8b
	South La Jolla SMR/REF	20	8c	



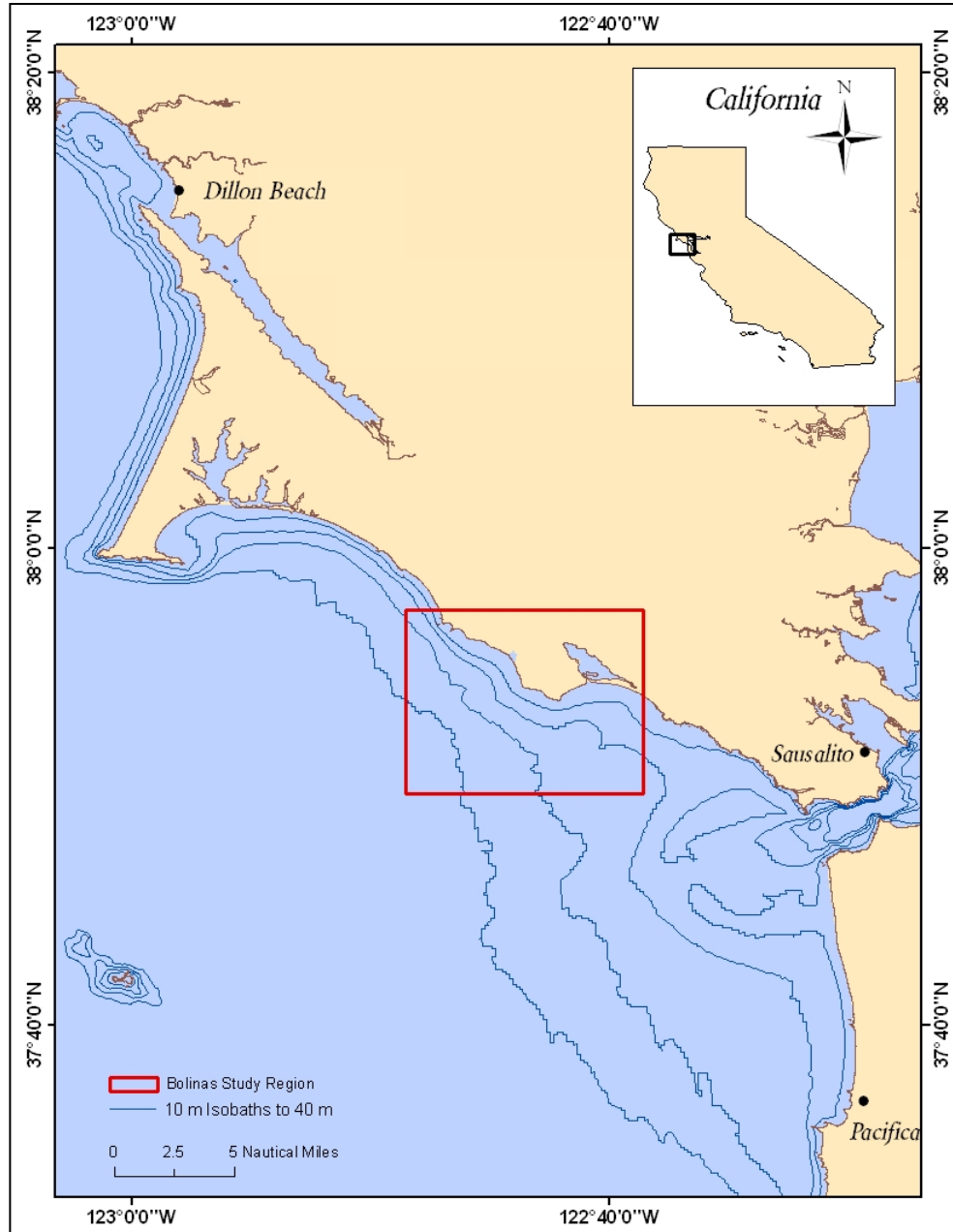
**Figure 1.** Map of the Central Coast and North Central Coast State Marine Conservation Area (SMCA) and State Marine Reserves (SMRs) surveyed by the California Collaborative Fisheries Research Program hook-and-line project.





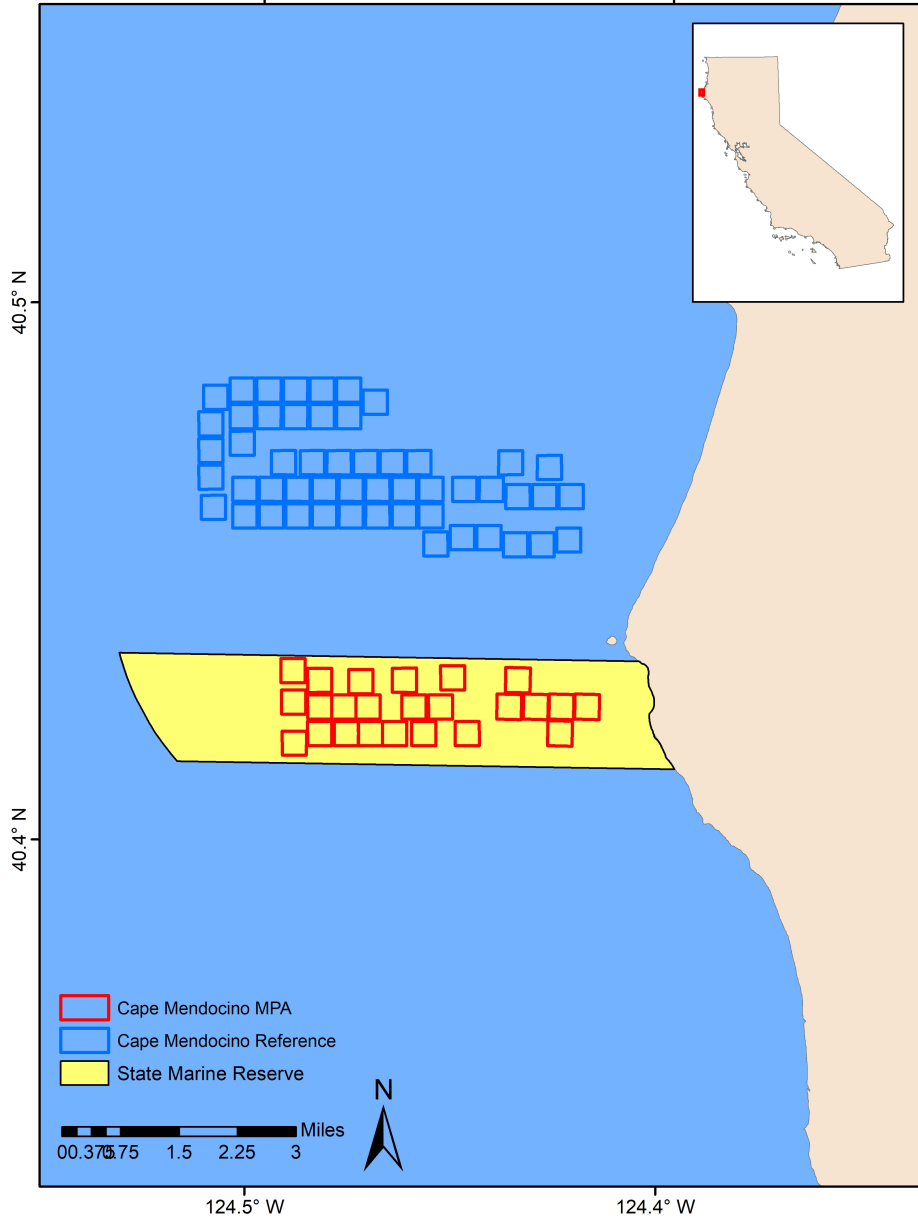


**Figure 2.** The 500 m x 500 m survey grid cells, which delineate the marine protected areas and corresponding reference sites, for a) the Año Nuevo State Marine Reserve/REF, b) the Point Lobos State Marine Reserve/REF, c) the Piedras Blancas State Marine Reserve/REF, and d) the Point Buchon State Marine Reserve/REF.

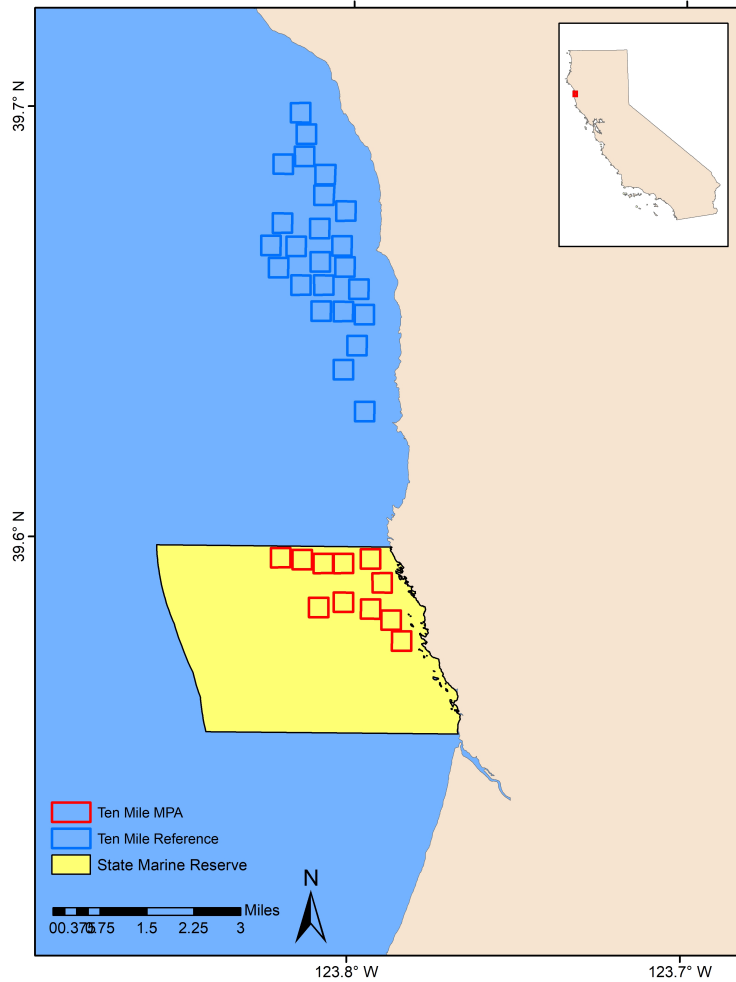


**Figure 3.** Map of the California Collaborative Fisheries Research Program hook-and-line project Bolinas/ Duxbury Reef survey area.

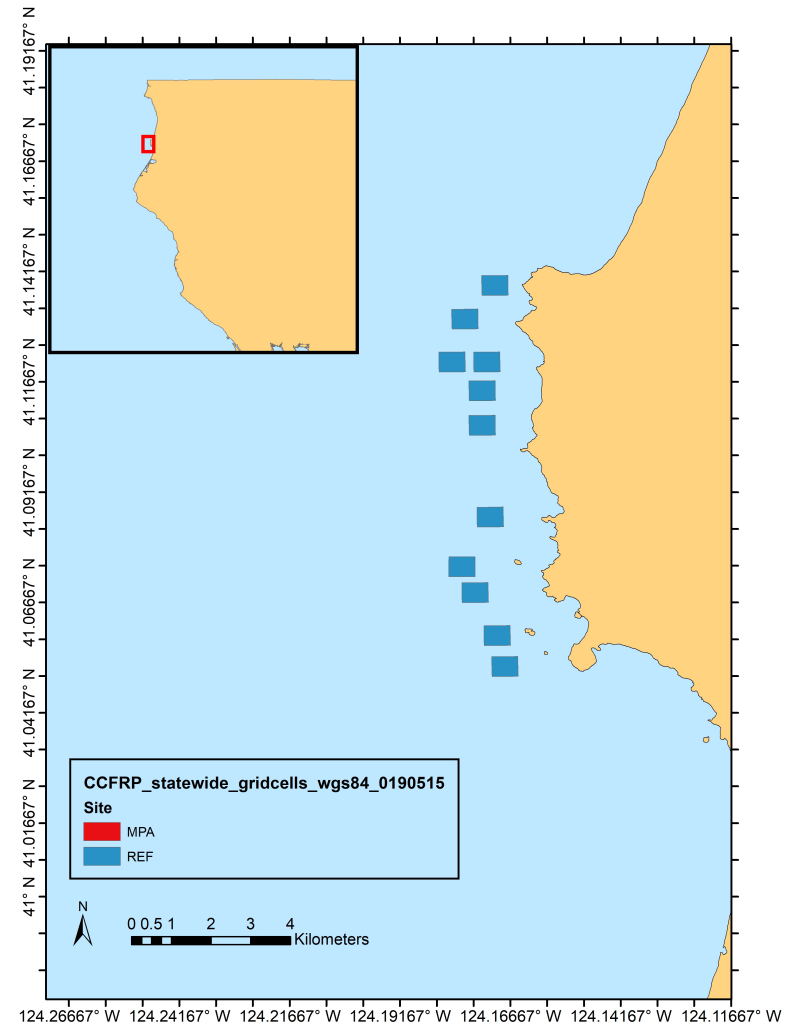
a)



b)

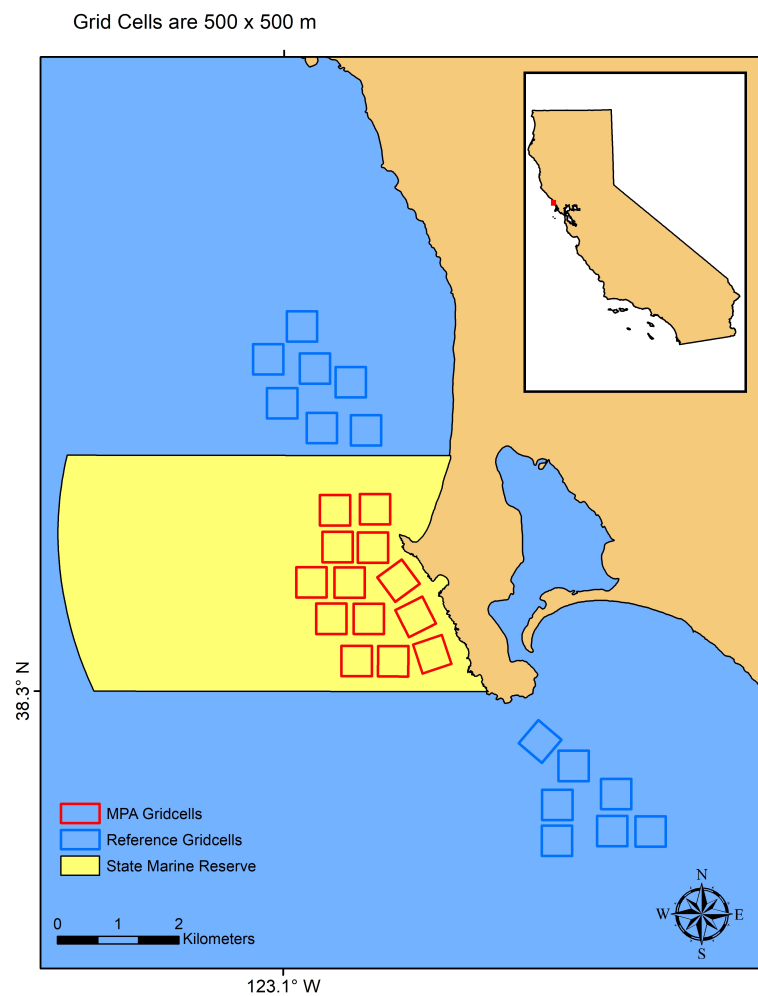


c)

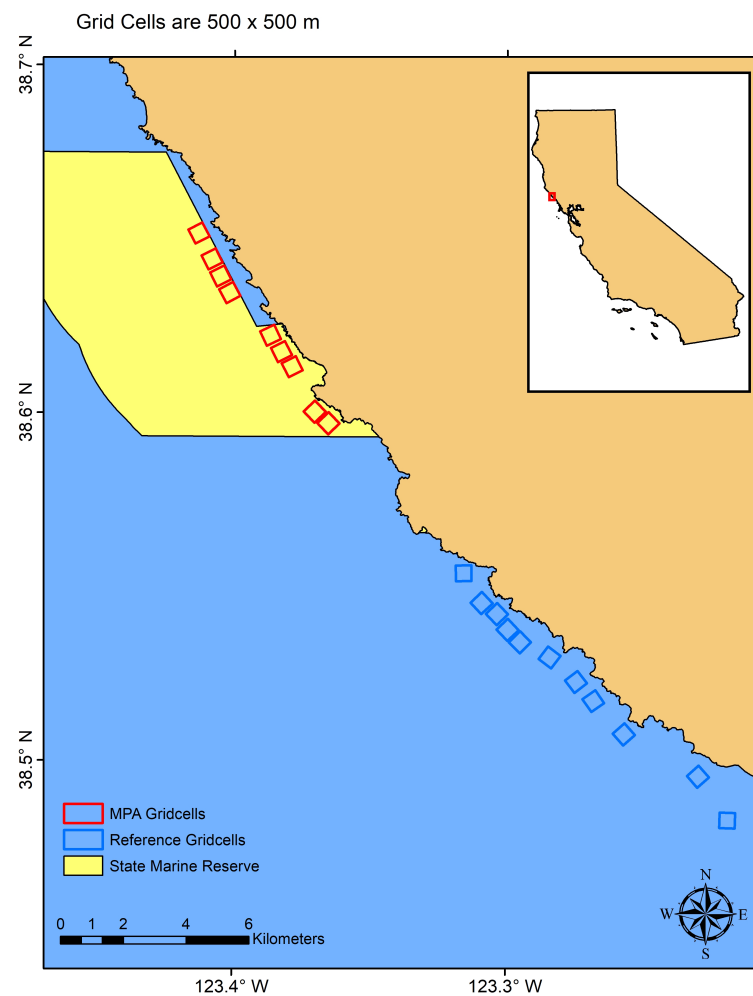


**Figure 4.** The 500 m x 500 m survey grid cells, which delineate the marine protected areas and corresponding reference sites, for a) the South Cape Mendocino State Marine Reserve/REF, and b) the Ten Mile State Marine Reserve/REF. c) Trinidad contains grid cells in REF areas only.

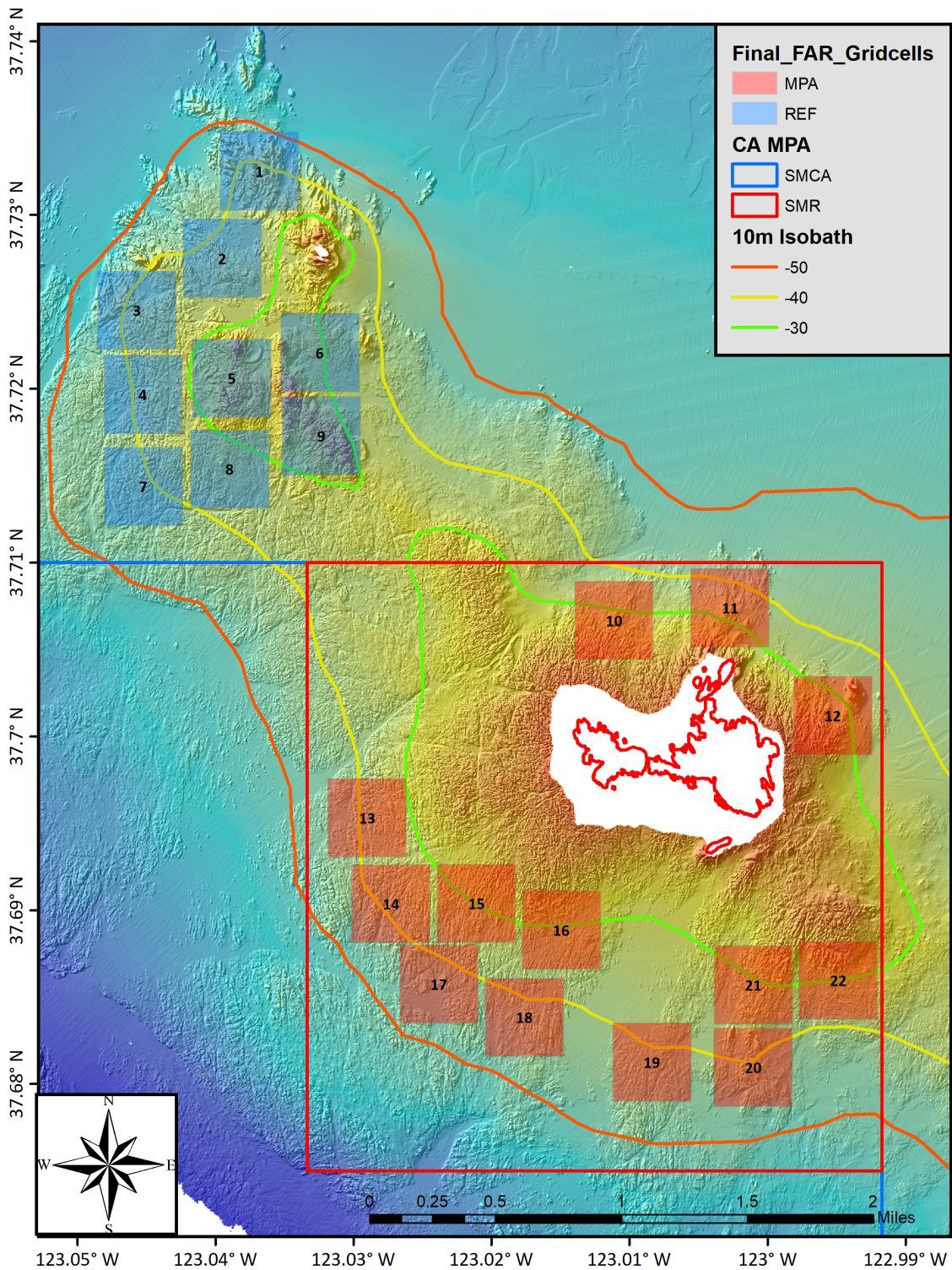
a)



b)

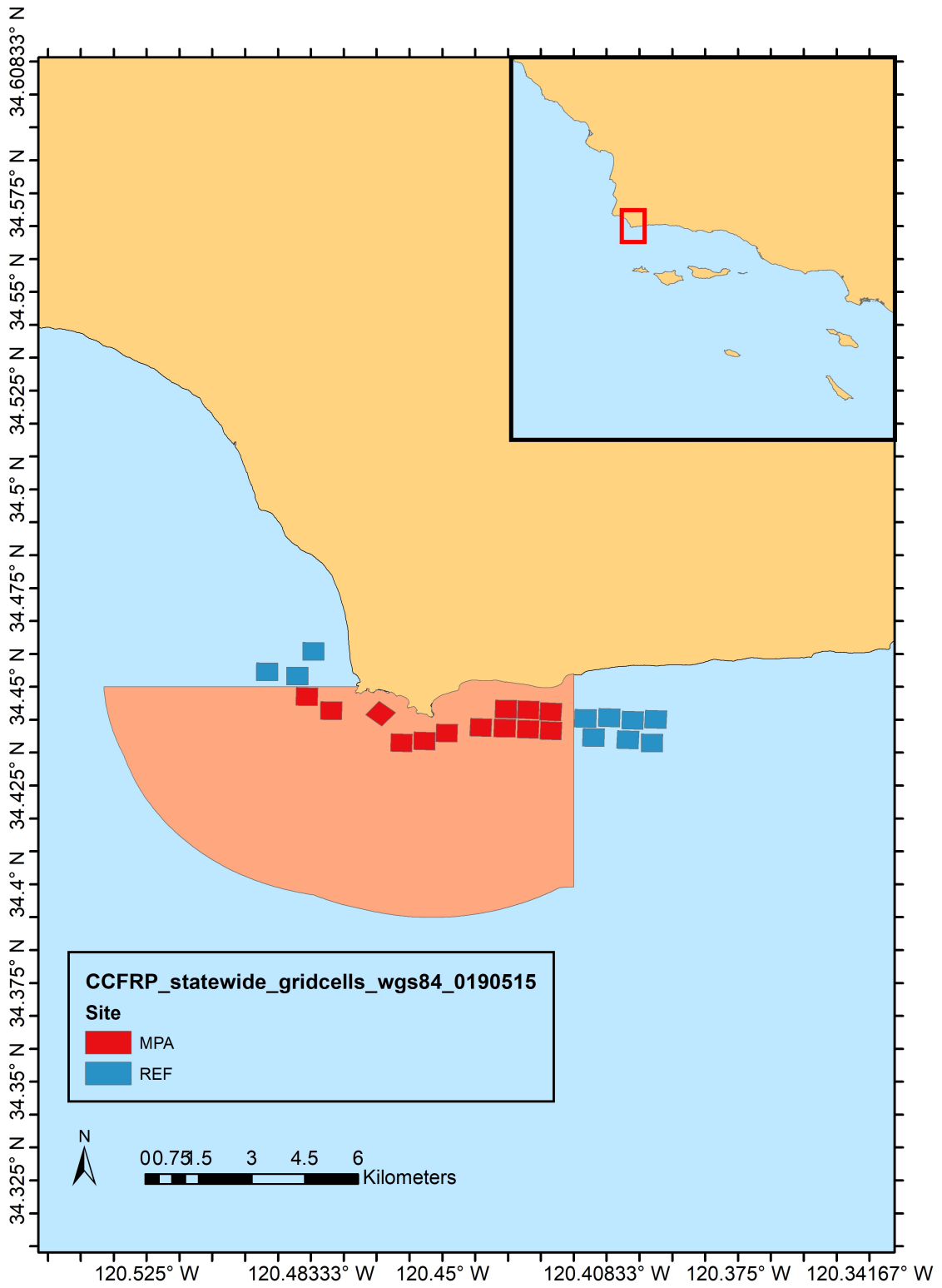


**Figure 5.** The 500 m x 500 m survey grid cells, which delineate the marine protected areas and corresponding reference sites, for a) the Bodega Head State Marine Reserve/REF, and b) the Stewart's Point State Marine Reserve and State Marine Conservation Area/REF



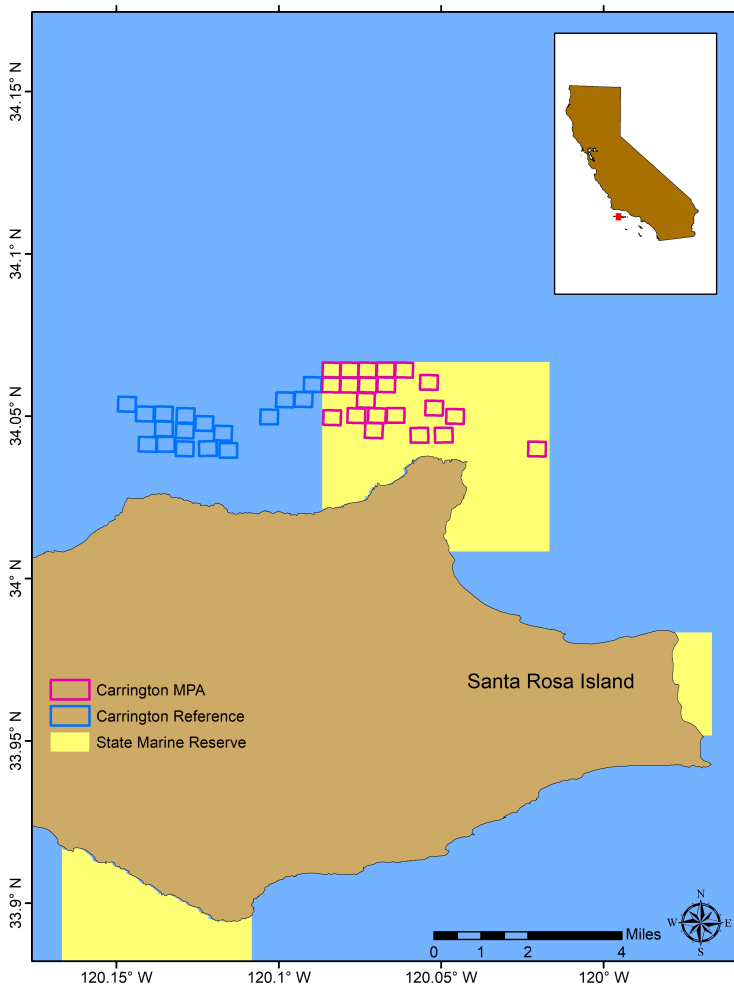
**Figure 6.** The 500 m x 500 m survey grid cells, which delineate the marine protected areas and corresponding reference sites, for the SE Farallon Islands State Marine Reserve/REF

a)

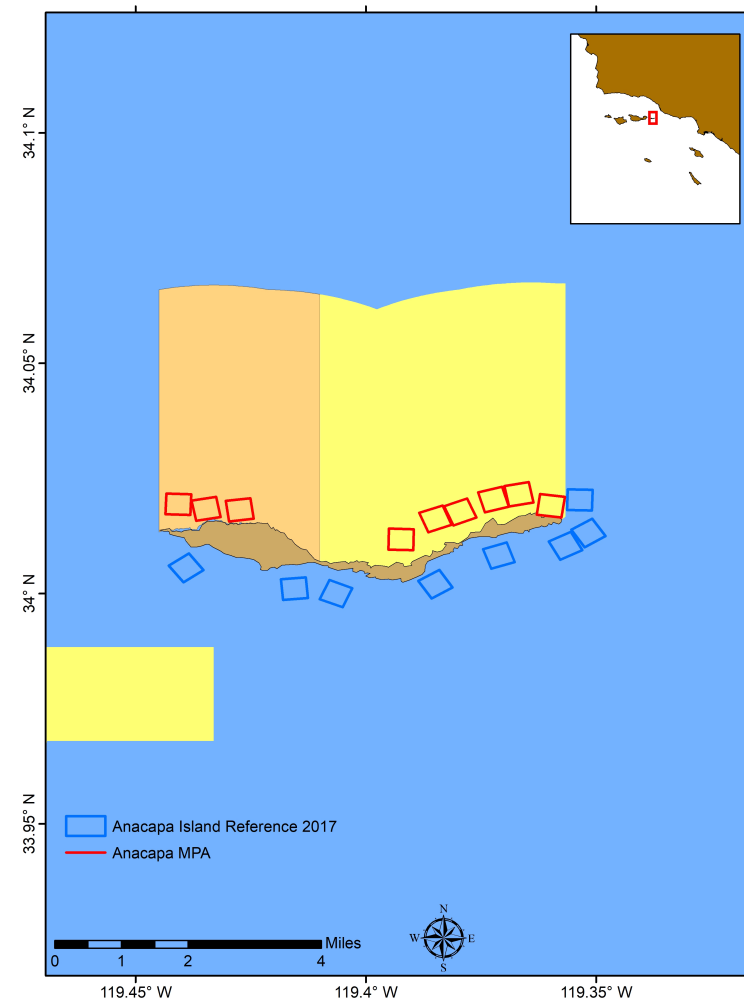




b)



c)

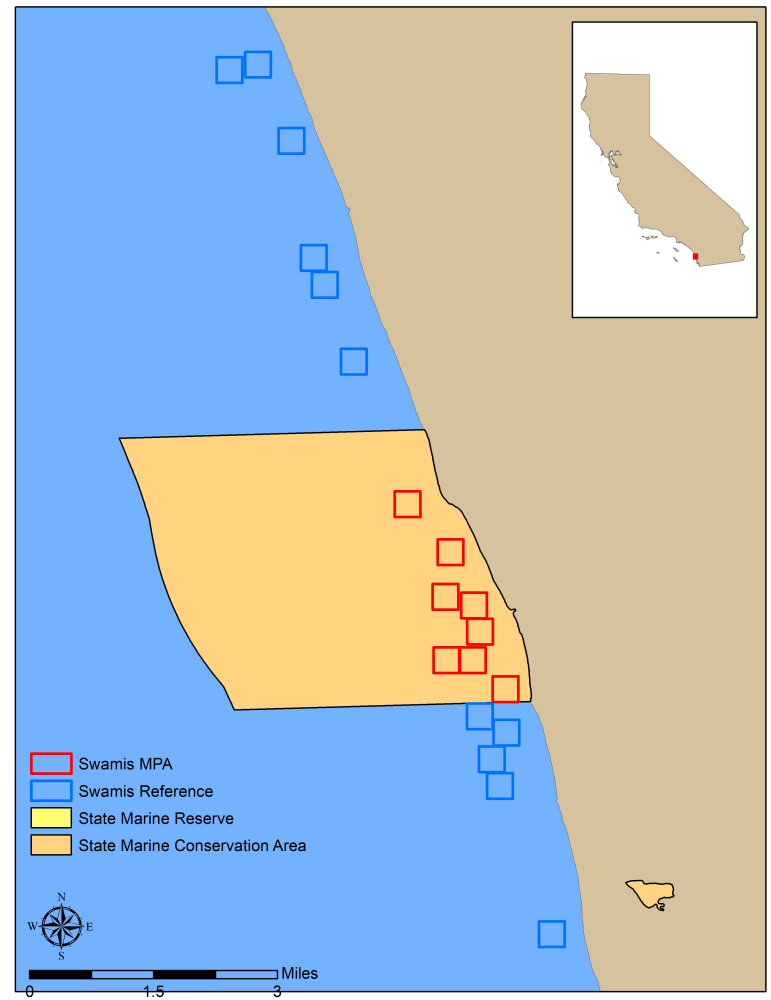


**Figure 7.** The 500 m x 500 m survey grid cells, which delineate the marine protected areas and corresponding reference sites, for a) Point Conception State Marine Reserve/REF, b) the Carrington Point State Marine Reserve/REF, and c) the Anacapa Island State Marine Reserve and State Marine Conservation Area/REF

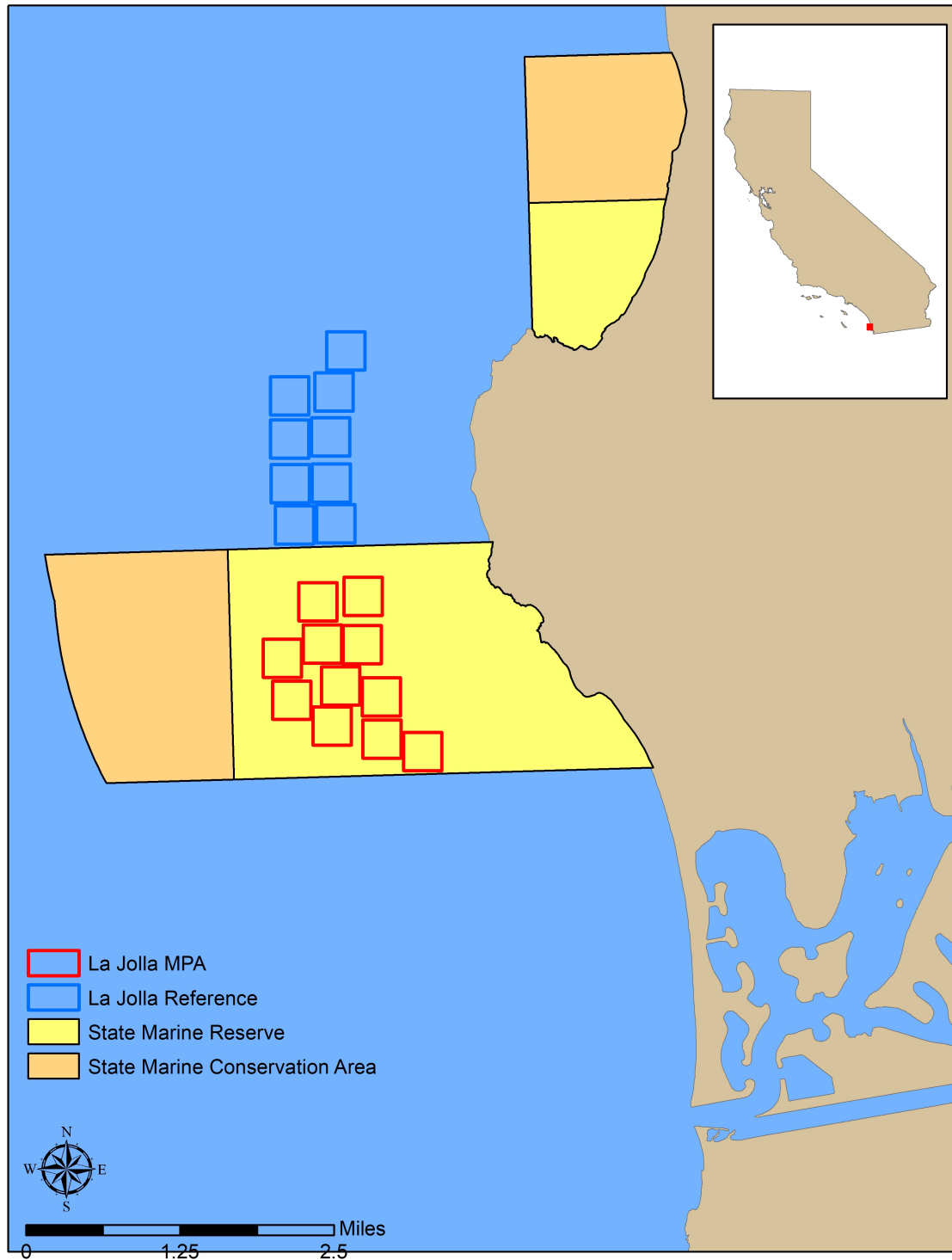
a)



b)



c)



**Figure 8.** The 500 m x 500 m survey grid cells, which delineate the marine protected areas and corresponding reference sites, for a) the Laguna Beach State Marine Reserve/REF, b) the Swami's State Marine Conservation Area/REF, and c) the South La Jolla State Marine Reserve/REF

## Database Information

**Publish Date:** 16 May 2019

**Data Format:** The database was created in Microsoft Office Access 2003 and updated to v2010 in February 2014.

**Time Standard:** Pacific Standard Time

**Time Period:** August 2007 – October 2018

**Status:** The database and metadata are complete.

**Updates:** The database and metadata will be updated with each additional year of data

**Access Restrictions:** Contact Rick Starr and Dean Wendt before these data are used for publication.

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**Key Words:** collaborative research, monitoring, marine protected areas, central California, nearshore fishes, baseline data, fisheries, resource management

Databases are updated annually and can be downloaded from:

<http://islandora.mlml.calstate.edu/islandora/object/islandora%3A18032>

## Database Tables

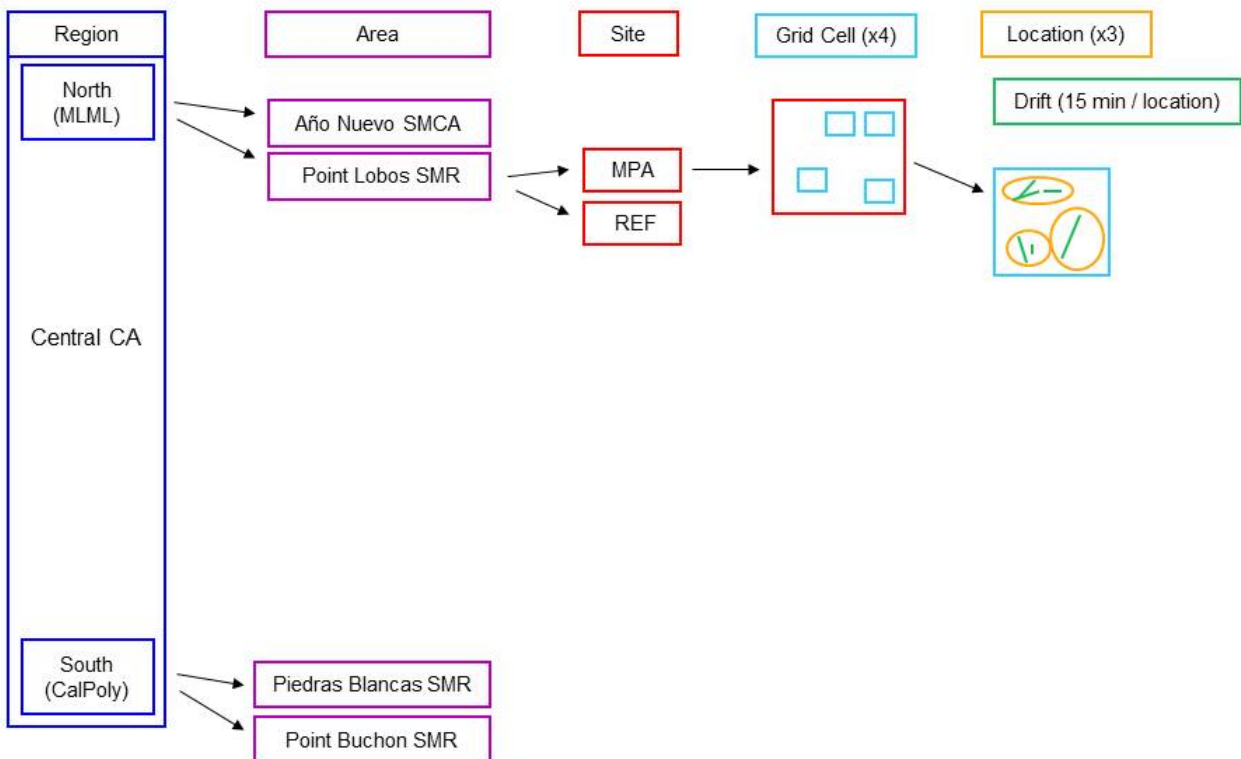
The Microsoft Office Access database consists of six tables:

- **1-Trip Information:** Provides information about each completed sampling trip
- **2-Angler Information:** Provides information about all of the volunteer anglers who have participated in this study
- **3-Drift Information:** Provides information about all of the completed survey drifts.
- **4-Caught Fishes:** Provides information about each fish that was caught during the study and associated data.
- **Fish Species:** Provides the fish species codes used in the database and their corresponding common and scientific names.
- **Grid Cell Locations:** Provides GPS coordinates for all of the 500 m x 500 m grid cells that were created for this study.
- **Monitoring Areas:** Provides information about the abbreviations used for each MPA, the MPA designation (SMR, SMCA, etc.), and which institution surveys it

## Explanations

### 1. Location Terminology

The sampling was broken down into fourteen “Areas”. In the north coast, there are 3 areas sampled by HSU: South Cape Mendocino (CM), Ten Mile (TM), and Trinidad (TR). In the north central coast, there are three areas: Bodega Head (BH) and Stewart’s Point (SP), which are sampled by BML, and the SE Farallon Islands (FN), which is sampled by MLML. In the central coast, there are four areas: Año Nuevo (AN) and Point Lobos, which are sampled by MLML, and Piedras Blancas (BL) and Point Buchon (PB), which are sampled by CP. In the south coast, there are six areas: Point Conception (PC), Carrington Point (CP) and Anacapa Island (AI), which are sampled by UCSB, and Laguna Beach (LB), Swami’s (SW), and South La Jolla (LJ), which are sampled by SIO. Within each area, there are two different “Sites:” within the marine protected area (MPA) and in the corresponding reference site (REF). Within these sites are 500m x 500m “Grid Cells,” which delineate the sampling boundaries. In each of the grid cells, non-overlapping, 15-minute drifts are completed in three discrete “locations” within the grid cell (Figure 4). If this is not possible (due to uncontrollable factors such as strong current or high fish abundance), multiple drifts summing to 15 minutes are completed in each location (for a total of 30-45 minutes per grid cell). There are no grid cell delineations for Point Reyes or for Bolinas/ Duxbury Reef.



**Figure 9.** Sampling terminology used in reference to the different levels of location within the study.

### 2. Measurement Units and Descriptions

- Added or Subtracted (+/-) Fishing Time:** Added or subtracted fishing time in both the **Angler Information** and **Drift Information** tables is listed in fractions of a day (i.e., the number of minutes not fishing or fishing for extra time/60/24). A blank in the *Angler Off Time* for a specific year in the **Angler Information** table indicates that no data exist for that angler

(angler off time wasn't tallied by individual) or the angler did not participate on any fishing trips that year.

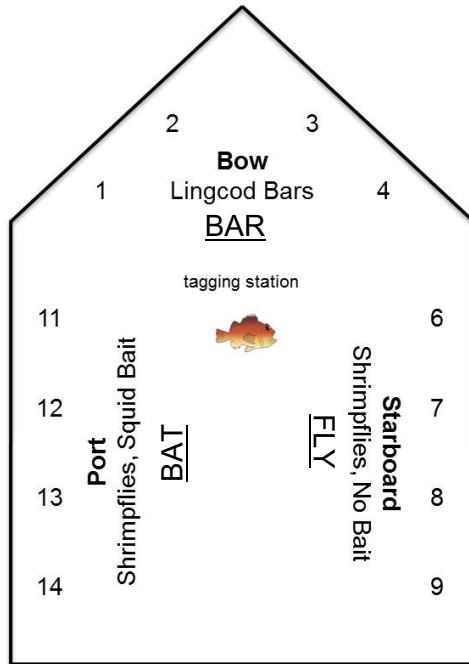
- b. *Bottom Depth*: Reported by the vessel captain at the start and end of a drift and when the captain announces it as fishes are being caught, are measured in feet (ft).
- c. *Drift Length*: The straight-line distance between the start and end points of the drift, is measured in meters (m).
- d. *Fish Length*: Reported as Total Length which are measured to the nearest centimeter on boards (MLML uses wooden V-boards, Cal Poly utilizes flat, plastic boards).
- e. *Latitude and Longitude*: Values are listed in decimal degrees (DD). If data are taken in degrees and minutes (min), they are converted to DD but not vice versa.
- f. *NOAA Wave Height and Mean Wave Direction*: Measured in meters (m) and NOAA mean wave direction is measured in degrees.
  - Values were taken from the NOAA National Data Buoy Center website ([www.ndbc.noaa.gov](http://www.ndbc.noaa.gov)).
    - Data for the trips in Point Reyes, North and South East Farallon Islands, and Bolinas/Duxbury Reef are taken from the San Francisco, 3-meter discus buoy at station 46026. The buoy is located at 37°45'32" N, 122°50'0" W in water that is 52 m deep. [There were no wave height or direction data in 2008 for the Point Reyes buoy.]
    - Data for the Año Nuevo trips are taken from a 3-meter discus buoy at station 46012, which is 24 nautical miles South Southwest of San Francisco, CA. The buoy is located at 37°21'39"N, 122°52'53"W and is in water that is 213 m deep. This buoy was offline from May 8 to December 31, 2013 therefore all data for AN 2013 are absent.
    - Data for the Point Lobos trips are taken from a 3-meter discus buoy at station 46042, which is 27 nautical miles West of Monterey Bay, CA. The buoy is located at 36°45'11"N, 122°25'21"W and is in water that is 2115 m deep.
    - Data for the trips in Piedras Blancas are taken from a 3-meter discus buoy at station 46028 at Cape San Martin. It is located in water that is 1158 m deep at 35°44'29" N, 121°53'3" W.
    - Data for the trips in Point Buchon are taken from a waverider buoy at station 46215, in Diablo Canyon, CA. The buoy is at 35°12'30"N, 120°51'36"W at sea level in water that is 23 m deep.
  - Measurements of both wave height and mean wave direction are recorded once an hour at each buoy station. If a survey drift occurred anywhere from the top of the hour (HH:00:00) to the half hour (HH:30:00) values from the hour (HH) were assigned to that drift (e.g., if a drift occurred at 7:28:24 NOAA buoy values from 7:00:00 were used). If a drift occurred after the half hour (HH:30:01) to the top of the next hour (HH:59:59) values from the subsequent hour were assigned to that drift (e.g., if a drift occurred at 7:45:59 NOAA values from 8:00:00 were used).
- g. *Observed Swell Height*: As observed by the data recorder, measured in feet (ft).
- h. *Observed Wind Speed*: As observed by the data recorder, measured in knots (kt).
- i. *Secchi Depth*: Measured in meters (m). Readings are taken once in each grid cell and all drifts within that grid cell (on that day) are assigned the single Secchi depth reading. Data vary as to when the measurements are taken (before, during, or after).
- j. *Sex of the Fish*: Designated as M (male) or F (female) if the sex is evident externally. Normally done for Lingcod and Kelp Greenling only for the purposes of this study.
- k. *Surface Water Temperature (Vessel)*: Localized surface water temperature (SWT), as reported by the vessel captain, is measured in degrees Fahrenheit (°F). In 2009, the F/V *Caroline* (Point Lobos surveys) SWT readings are likely 4 degrees higher than the true values.

- l. Surface and Depth Temperature (Instrument):* Readings are taken at the surface or at depth from a scientific instrument
- Seabird Temperature Sensor for Point Reyes, Farallon Islands, Duxbury Reef, Año Nuevo, and Point Lobos through 2009. The sensor was lowered to the seafloor or to the length of the rope. In order to standardize the measurements between grid cells, the temperature reading at 2.3 psi was considered the surface temperature for all of the recordings, and the temperature reading at 10 psi for Año Nuevo and 20 psi for Point Lobos were considered the temperature at depth. In 2008 and 2009, the Seabird was lowered to 10 feet above the seafloor. The temperature at this depth was considered the temperature at depth and the temperature reading at 2.3 psi was used for the surface temperature reading. In all years, the readings on the descent of the instrument were used, as opposed to the ascent. In 2008 and 2009, the Seabird CTD was lowered to the seafloor or to 22.5 m (the length of the rope). The temperature reading at 2.3 psi was considered the surface temperature in 2008 and at 1 m in 2009. The temperature at depth was the temperature reading at 17.5 m, a common depth among all readings.
  - Seabird CTD for Piedras Blancas and Point Buchon were lowered concurrently with the Secchi disk.
- m. Time:* Listed in the form: HH:MM:SS (AM/PM), Pacific Standard Time.

### **3. Codes used in the Database**

- a. Gear Type* ([Figure 5](#))
- **BAR:** Anglers on the bow of the vessel using hard tackle (Lingcod bars) with a shrimp fly “teaser” (a smaller lure used in addition to the main tackle to entice and catch fish) as terminal tackle ([Figure 6](#)). The lingcod bars are a variety of colors and shapes (excluding long bars) and weigh 4, 6, 7, 8, or 10 ounces. The deckhand determines the weight of the bar used during a given drift. He/she is instructed to use the lightest bar that would get to the ocean bottom quickly and would be heavy enough to counteract the localized current (this protocol was not always maintained by the deckhands). The shrimp fly teaser is either red or white and all hooks are single and barbless.
  - **FLY:** Anglers on the starboard side of the vessel using shrimp flies (2 hooks per rig) without bait as terminal tackle. The shrimp flies are either red or white, size 4/0, and single hooks with the barbs crimped down, or barbless ([Figure 6](#)).
  - **BAT:** Anglers on the port side of the vessel using shrimp flies (2 hooks per rig) with bait as terminal tackle. The shrimp flies are either red or white, size 4/0, and single hooks with the barbs crimped down, or barbless ([Figure 6](#)). The bait was defrosted frozen squid (mantle strips only) cut into pieces 2-4 inches long.
  - **SBT:** Swim baits (used by HSU, UCSB, and SIO only)
  - **DPR:** Dropper loops with squid bait (used by UCSB and SIO only)
- b. Species Codes:* Each caught fish species is assigned a unique, 3 letter (capitalized) code (e.g., “BLU” is the code for Blue Rockfish, *Sebastes mystinus*).
- “MKL” indicates that the fish was in the family Scombridae, but that it could not be identified to lower taxonomic levels; “SMT” indicates that it is in the family Atherinopsidae, but the genus and/or species are unknown; and the code “OYT” is used when the science crew could not distinguish between an Olive (*Sebastes serranoides*) and Yellowtail Rockfish (*S. flavidus*).

- c. *Drift ID*: Unique identifier for each completed drift in a survey.
- It is made up of 5 parts:
    - Area: Año Nuevo (AN), Point Lobos (PL), Piedras Blancas (BL), Point Buchon (PB), etc.
    - Site: MPA (M) or Reference (R)
    - Date: MMDDYY
    - Grid Cell: XX
    - Drift: XX
  - For example, the first drift in Grid Cell 16 in Point Lobos (which is a reference site) on the 6 August 2007 would be: (PL)(R)(080607)(16)(01) entered as: PLR0806071601.



**Figure 5.** Central Coast example of the placement of anglers on the vessel by gear type and their associated station numbers. Angler station numbers, placement, and associated gear types will vary by region.



**Figure 6.** Gear types used in this study. Note that not all gear types are used in all locations. Left to Right: Lingcod bars in various sizes, shrimp flies (unbaited and baited with squid mantle), swimbaits, and dropper loops (baited with squid mantle)



- d. *ID-Cell per Trip*: Groups all drifts that are completed in a given cell on a particular day (e.g., the *Drift ID* without the *Drift number*).
- It is made up of 4 parts:
    - Area: Año Nuevo (AN), Point Lobos (PL), Piedras Blancas (BL), Point Buchon (PB), etc.
    - Site: MPA (M) or Reference (R)
    - Date: MMDDYY
    - Grid Cell: XX
  - For example, all drifts in Cell 16 in Point Lobos (which is a reference site) on 6 August 2007 would be: (PL)(R)(080607)(16) entered as: PLR08060716.

e. *Cloud Cover*

- 0: Blue sky to <25%, low cloud cover
- 1: 25-75%, moderate cloud cover
- 2: >75%, high cloud cover
- 3: Foggy

f. *Relief*

- 1: Flat (< 1 m local relief on the echosounder or map)
- 2: Moderate relief (1-3 m local relief on the echosounder or map)
- 3: High relief (> 3 m local relief on the echosounder or map)

g. *Fish Conditions*

Condition	Description
0	"Good condition". No visible conditions relating to those defined as 1-8.
1	Crystallized eyes (damage due to barotrauma)
2	Vented (swim bladder) with a hypodermic needle.
3	Signs of recent predation by marine mammal or fish, but was not a mortality.
4	Signs of hook damage (including eye damage) or body cuts/scale loss, but was not a mortality.
5	Released using a fish descending device.
6	Floating (did not swim down) upon release, but mortality was uncertain.
7	Mortality due to mammal or fish predation.
8	Mortality due to causes other than mammal or fish predation (e.g., mortality due to barotrauma, handling injuries, consumption by bird).

h. *Trip IDs*: Unique identifier for each survey trip that is completed.

- *Trip IDs* are:
  - Area: Año Nuevo (AN), Point Lobos (PL), Piedras Blancas (BL), Point Buchon (PB), etc.
  - The letter "T"
  - Sequential trip number: XX
  - Underscore: \_
  - Year: XX
- For example, the first trip in Point Lobos in 2018 would have a Trip ID: PLT01\_18.

i. *Initials*: First and last name initials of the science crew, for identification purposes.

**Glossary of Database Fields (sorted by table, order of fields within database subject to change)**

Table	Field	Description
<b>Angler Information</b>	<i>Angler ID</i>	The unique code given to each volunteer angler. Angler A000 represents an “unknown angler,” which is used when it is uncertain who caught a particular fish. A020 is used when a science crew member associated with MLML is fishing at a given station, and A175 for a science crew member associated with CalPoly. Starting in 2010, CalPoly anglers were given the letter “C” as a prefix (e.g. C001). *Note that personal angler information is excluded from public databases
<b>Angler Information</b>	<i>Year Total (+/-) Fishing Time (days)</i>	The cumulative amount of added or subtracted fishing time for the volunteer angler. Added time may be the result of fishing before the drift commenced and subtracted time may be the result of a gear hang up which precluded the angler from fishing for a portion of the drift. Added or subtracted fishing time is in minutes.
<b>Angler Information</b>	<i># Volunteer Days XXXX</i>	The total number of days that a volunteer angler volunteered for this study. There is a separate column for each year of the project.
<b>Angler Information</b>	<i>Dates Fished XXXX</i>	The specific dates that a volunteer angler volunteered. It is entered as: Month (date(s)) (e.g., August (18,19), September (24,25,26), October (19,20)). There is a separate column for each year of the project.
<b>Caught Fishes</b>	<i>Fish ID</i>	The unique, sequential auto number given to each caught fish that is entered in the database.
<b>Caught Fishes</b>	<i>Tag ID</i>	The number printed on the tag attached to the fish. In Piedras Blancas and Point Buchon, tag numbers are not unique for each color set of tags. For this reason, <i>Tag IDs</i> in these areas are listed as the tag number, followed by the first letter of the color of tag (e.g., 04238O). Color abbreviations are O for Orange, Y for Yellow, or W for White. Tag numbers are 5 digits, including leading zeros when necessary. Automatic database check does not allow duplicate tag numbers.
<b>Caught Fishes</b>	<i>Drift ID</i>	The unique identifier for the drift during which the fish was caught. The Drift ID is made up of 5 parts: Area (XX), Site (M or R), Date (MMDDYY); Grid Cell (XX); and Drift (XX). For example, the first drift in Cell 16 in Point Lobos, reference site on the 6th of August 2008 would be: (PL)(R)(080608)(16)(01) entered as: PLR0806081601

Table	Field	Description
<b>Caught Fishes</b>	<i>Species Code</i>	The unique, 3 letter (capitalized) code that identifies the species of the fish.
<b>Caught Fishes</b>	<i>Length (cm)</i>	The total length, measured to the nearest centimeter (cm), of the caught fish.
<b>Caught Fishes</b>	<i>Gear Type</i>	The type of terminal tackle (BAR, FLY, BAT, SBT, or DPR) used to catch the fish.
<b>Caught Fishes</b>	<i>Station #</i>	The fishing station (the location where an angler fished) from which the fish was caught. For Central Coast, stations are numbered 1-4, 6-9, and 11-14.
<b>Caught Fishes</b>	<i>Angler ID</i>	Unique code comprising of a capital letter and three numbers of the angler who caught the fish.
<b>Caught Fishes</b>	<i>Depth Released (ft)</i>	The bottom depth, measured in feet (ft), at the location at which the fish, was released.
<b>Caught Fishes</b>	<i>Lat Released (DD)</i>	The latitude, in decimal degrees (DD), where the fish was released.
<b>Caught Fishes</b>	<i>Lon Released (DD)</i>	The longitude, in decimal degrees (DD), where the fish was released.
<b>Caught Fishes</b>	<i>Lat Released (Degrees)</i>	The degrees of latitude where the fish was released.
<b>Caught Fishes</b>	<i>Lat Released (min)</i>	The decimal minutes of latitude where the fish was released.
<b>Caught Fishes</b>	<i>Lon Released (Degrees)</i>	The degrees of longitude where the fish was released.
<b>Caught Fishes</b>	<i>Lon Released (min)</i>	The decimal minutes of longitude where the fish was released.
<b>Caught Fishes</b>	<i>Sex</i>	Sex is designated as either M (male) or F (female).
<b>Caught Fishes</b>	<i>Condition 0</i>	Indicates the fish was in "good condition" and was not experiencing a code laid out in conditions 1-8.
<b>Caught Fishes</b>	<i>Condition 1</i>	Indicates that the fish had eye damage due to barotrauma resulting in crystallized eyes.
<b>Caught Fishes</b>	<i>Condition 2</i>	Indicates that the fish was vented (via swim bladder) with a hypodermic needle.
<b>Caught Fishes</b>	<i>Condition 3</i>	Indicates that the fish showed recent signs of marine mammal or fish predation, but was not a mortality.
<b>Caught Fishes</b>	<i>Condition 4</i>	Indicates that the fish showed signs of hook damage (including eye damage) or body cuts/scale loss, but was not a mortality.
<b>Caught Fishes</b>	<i>Condition 5</i>	Indicates that the fish was released using a fish descending device.
<b>Caught Fishes</b>	<i>Condition 6</i>	Indicates that the fish was floating (did not swim down) upon release, but mortality was uncertain.
<b>Caught Fishes</b>	<i>Condition 7</i>	Indicates that the fish was a mortality due to mammal or fish predation.

Table	Field	Description
<b>Caught Fishes</b>	<i>Condition 8</i>	Indicates that the fish was a mortality due to causes other than mammal or fish predation (e.g., mortality due to barotrauma, being on the boat too long, handling injuries, being eaten by a bird).
<b>Caught Fishes</b>	<i>All Conditions</i>	A list of all the recorded conditions of the fish (e.g., 4,1,5,). If the fish does not exhibit conditions, the number zero (0) is entered. If the datasheet is blank, it is left blank in the database.
<b>Caught Fishes</b>	<i>Retained</i>	Indicates whether or not the fish was retained. A note may exist in <i>Comments</i> referencing the particular student's project/organization for which it was collected.
<b>Caught Fishes</b>	<i>Recapture</i>	Indicates whether or not the fish was a recapture (a fish that was caught and tagged previously during a CCFRP survey). The <i>Tag ID</i> of the tag already in the fish is recorded in the <i>Comments</i> section of <b>Caught Fishes</b> table.
<b>Caught Fishes</b>	<i>Comments</i>	Additional information about a fish. Notes are made about the state of the fish. If the fish was a recapture, its tag number is entered in this section.
<b>Drift Information</b>	<i>Drift ID</i>	The unique label for each drift completed during this study. Drift IDs are: Area (XX), MPA or REF (M/R), date (XXXXXX), grid cell (XX), Drift Number (XX)
<b>Drift Information</b>	<i>Trip ID</i>	The trip during which a drift was completed. <i>Trip IDs</i> are: Area (XX), T, sequential trip number (XX), underscore (_), and year (XX). For example, the first trip in Point Lobos in 2007 would have a Trip ID PLT01_07.
<b>Drift Information</b>	<i>Cell ID</i>	The cell in which a drift is completed using the two-letter area indicator and two numerical digit <i>Cell ID</i> . Some of the drifts were completed outside any of the designated grid cells. RR indicates that the drift took place somewhere in the reference area. MM indicates that the drift took place in the MPA area, MN indicates that the drift was in the new portion of the Point Lobos MPA and MO in the old portion. The <i>Cell ID</i> for Point Reyes is PRXX, North and South East Farallon Islands is FNXX, and Duxbury Reef is designated DRXX.
<b>Drift Information</b>	<i>ID-Cell per Trip</i>	Groups together all drifts that are completed in a given cell during a specific trip, written as the <i>Drift ID</i> without the drift number included.
<b>Drift Information</b>	<i>Drift</i>	The sequential number of the drift.
<b>Drift Information</b>	<i>Start Time</i>	The time at which the drift commenced. The time is entered in 24 hour format, but displayed as: HH:MM:SS (AM/PM).
<b>Drift Information</b>	<i>End Time</i>	The time at which the drift ended. The time is entered in 24 hour format, but displayed as: HH:MM:SS (AM/PM).
<b>Drift Information</b>	<i>Drift Time_hrs</i>	A calculated field of the total drift time, in hours.

Table	Field	Description
<b>Drift Information</b>	<i>BAR/FLY/BAT/SBT/DPR (+/- mins) Fishing Time</i>	The amount of time during a drift that anglers fishing with a particular gear type (e.g. BAR, FLY, BAT, SBT, DPR) were not fishing due to various reasons (e.g., hung up gear) or were fishing for extra time (e.g., started before the drift commenced). Added or subtracted fishing time is in minutes (as noted on fieldwork datasheets). If time was subtracted it was entered with a "-" before the number. Enter 0 if gear type is not used.
<b>Drift Information</b>	<i>Total off time (hrs)</i>	A calculated field of the sum of the BAR, FLY, BAT, SBT, DPR off times. Multiplied by 24 to convert the angler off time to hours. Each gear type must have a value for the calculation to work.
<b>Drift Information</b>	<i>total adjusted angler hrs</i>	A calculated field with the equation: drift time*# anglers-Total off time. Used to calculate CPUE by species and for the drift.
<b>Drift Information</b>	<i># of BAR/FLY/BAT/SBT/DPR Fishers</i>	Numbers of anglers fishing each gear type; if a region does not fish with a particular gear type, 0 should be entered in the field.
<b>Drift Information</b>	<i>Total # Anglers Fishing</i>	Total number of anglers fishing for all gear types during a drift.
<b>Drift Information</b>	<i>Start Lat (DD)</i>	Latitude, in decimal degrees (DD), where the drift began.
<b>Drift Information</b>	<i>Start Lon (DD)</i>	Longitude, in decimal degrees (DD), where the drift began.
<b>Drift Information</b>	<i>End Lat (DD)</i>	Latitude, in decimal degrees (DD), where the drift ended.
<b>Drift Information</b>	<i>End Lon (DD)</i>	Longitude, in decimal degrees (DD), where the drift ended.
<b>Drift Information</b>	<i>Drift Length (m)</i>	The straight-line distance between the start and end location of the drift, measured in meters (m).
<b>Drift Information</b>	<i>Recorder</i>	The initials of the person (s) recording information on the data sheets during a drift. The names associated with all initials are listed in <a href="#">Codes used in the Database</a> .
<b>Drift Information</b>	<i>Tag Crew</i>	The initials of the person(s) tagging and processing fishes during a drift. The names associated with all initials are listed in <a href="#">Codes used in the Database</a> .
<b>Drift Information</b>	<i>Surface T (instrument, C)</i>	The surface temperature reading from a Seabird temperature sensor, a CTD, or hand held meat thermometer taken in the grid cell in which the drift occurred.
<b>Drift Information</b>	<i>Depth T (instrument, C)</i>	The temperature reading taken at depth from a Seabird temperature sensor (PR, FN, DR, AN, PL) or a CTD (BL, PB) taken in the grid cell in which the drift occurred.
<b>Drift Information</b>	<i>SWT (Vessel, F)</i>	The localized surface water temperature, measured in degrees Fahrenheit (°F), as reported by the vessel captain during a drift.

Table	Field	Description
<b>Drift Information</b>	<i>Relief (1-3)</i>	The degree of sea floor relief at the location of a drift as reported by the vessel captain. The values are coded 1-3 (descriptions of these codes are in <a href="#">Codes used in the Database</a> ).
<b>Drift Information</b>	<i>Start Depth (ft)</i>	The bottom depth, measured in feet (ft), as reported by the vessel captain at the start of a drift.
<b>Drift Information</b>	<i>End Depth (ft)</i>	The bottom depth, measured in feet (ft), as reported by the vessel captain at the end of a drift.
<b>Drift Information</b>	<i>Lingcod Bar Weight (oz)</i>	Weight (oz) of the Lingcod bars (hard tackle) used during a drift.
<b>Drift Information</b>	<i>Lead Weight (oz)</i>	The weight of the lead sinkers used with the shrimp fly terminal tackle (bait and no bait) used during a drift.
<b>Drift Information</b>	<i>SBT Head Weight (oz)</i>	The weight of swimbait (SBT) heads used with the swimbait gear type during a drift.
<b>Drift Information</b>	<i># Seals</i>	The number of harbor seals observed during a drift.
<b>Drift Information</b>	<i># Sea Lions</i>	The number of sea lions observed during a drift.
<b>Drift Information</b>	<i>Total Fishes Caught</i>	The total number of fishes caught during a drift.
<b>Drift Information</b>	<i>Cloud Cover (0-3)</i>	The amount of cloud cover at the location of a drift. Values are coded 0-3 and descriptions are in <a href="#">Codes used in the Database</a> .
<b>Drift Information</b>	<i>Obs Wind Speed (kt)</i>	The wind speed, measured in knots (kt), observed by the data recorder during a drift. When entered into the database the values are averaged (e.g., if the wind speed is listed as being "0-5 kts" or ">5 kts", a value of 2.5 is entered).
<b>Drift Information</b>	<i>Obs Wind Direction</i>	The wind direction observed by the data recorder during a drift (e.g., N, NW, E).
<b>Drift Information</b>	<i>Obs Swell Height (ft)</i>	The swell height, measured in feet (ft), observed by the data recorder during a drift. When entered into the database the values are averaged (e.g., if the swell height is listed as being "6-10 ft", 8 is entered into the database).
<b>Drift Information</b>	<i>NOAA Wave Height (m)</i>	NOAA wave height information, measured in meters (m), at the buoy nearest the location where and at the time a drift was completed. Values were taken from the NOAA National Data Buoy Center ( <a href="http://www.ndbc.noaa.gov/">www.ndbc.noaa.gov/</a> ).
<b>Drift Information</b>	<i>NOAA Mean Wave Direction (degrees)</i>	NOAA mean wave direction information, measured in degrees, at the buoy nearest the location where and at the time a drift was completed. Values were taken from the NOAA National Data Buoy Center ( <a href="http://www.ndbc.noaa.gov/">www.ndbc.noaa.gov/</a> ).

Table	Field	Description
<b>Drift Information</b>	<i>Secchi Depth (m)</i>	The Secchi depth reading, measured in meters (m), taken in the grid cell in which the drift occurred. In each cell on each day a Secchi disk depth reading is taken. All drifts completed in a grid cell on a given day share a <i>Secchi Depth</i> value.
<b>Drift Information</b>	<i>Comments</i>	Additional information about a drift. Comments were listed regarding the weather and water condition and events that took place during the drift.
<b>Drift Information</b>	<i>Excluded drift comment</i>	A reason for excluding the drift from CPUE calculations. Out of grid cell is a common reason but other reasons exist.
<b>Fish Species</b>	<i>Species Code</i>	The unique, 3 letter (capitalized) identifying code for each species of fish that was caught during this study.
<b>Fish Species</b>	<i>Rockfish</i>	Indicates whether or not the fish is a Rockfish (in the genus <i>Sebastes</i> ).
<b>Fish Species</b>	<i>Common Name</i>	The common name of the fish. Common names are capitalized (e.g., Brown Rockfish).
<b>Fish Species</b>	<i>Genus</i>	The genus of the fish.
<b>Fish Species</b>	<i>Species</i>	The species name of the fish.
<b>Grid Cell Locations</b>	<i>Cell ID</i>	The cell in which a drift is completed, consisting of: Area (XX), Cell (XX). Some of the drifts were completed outside any of the designated grid cells (RR for reference area, MM for MPA). MN indicates that the drift was in the new portion of the Point Lobos MPA and MO in the old portion. The <i>Cell ID</i> for Point Reyes is PRXX, North and South East Farallon Islands is FNXX, and Duxbury Reef is designated DRXX.
<b>Grid Cell Locations</b>	<i>Area</i>	The area in which the grid cell is located: Año Nuevo (AN), Point Lobos (PL), Piedras Blancas (BL), Point Buchon (PB), etc.
<b>Grid Cell Locations</b>	<i>Site (MPA/ REF)</i>	The site in which the grid cell is located: Marine Protected Area (MPA) and Reference (REF).
<b>Grid Cell Locations</b>	<i>PL Old/New</i>	If the grid cell that is in the Point Lobos Marine Protected Area it is designated as either "OLD" or "NEW." "OLD" indicates the portion of the MPA that overlaps with the 1973 Point Lobos Ecological Reserve and "NEW" is the portion that does not overlap.
<b>Grid Cell Locations</b>	<i>Lat Center Point</i>	Latitude, in decimal degrees, of the center point of the grid cell.
<b>Grid Cell Locations</b>	<i>Lon Center Point</i>	Longitude, in decimal degrees, of the center point of the grid cell.
<b>Grid Cell Locations</b>	<i>Lat 1</i>	Latitude, in decimal degrees, of the northwest corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Lon 1</i>	Longitude, in decimal degrees, of the northwest corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Lat 2</i>	Latitude, in decimal degrees, of the northeast corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Lon 2</i>	Longitude, in decimal degrees, of the northeast corner of the grid cell.

Table	Field	Description
<b>Grid Cell Locations</b>	<i>Lat 3</i>	Latitude, in decimal degrees, of the southwest corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Lon 3</i>	Longitude, in decimal degrees, of the southwest corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Lat 4</i>	Latitude, in decimal degrees, of the southeast corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Lon 4</i>	Longitude, in decimal degrees, of the southeast corner of the grid cell.
<b>Grid Cell Locations</b>	<i>Cell Sampled YYYY</i>	Indicates whether a grid cell was sampled in a particular year. There is a separate column for each year of the study.
<b>Trip Information</b>	<i>Trip ID</i>	The unique identifier for each trip that was completed during this study. <i>Trip IDs</i> are: Area, T, sequential trip number_year. For example, the first trip in Point Lobos in 2007 would have a <i>Trip ID</i> : PLT01_07.
<b>Trip Information</b>	<i>Area</i>	The area in which sampling occurred during a trip. Sampling occurred in six areas: Año Nuevo (AN), Point Lobos (PL), Piedras Blancas (BL), Point Buchon (PB), etc.
<b>Trip Information</b>	<i>Site (MPA/ REF)</i>	The site in which sampling occurred during a trip. Within each area there are two different "sites:" Marine Protected Area (MPA) and Reference (REF).
<b>Trip Information</b>	<i>Month</i>	The month in which a trip occurred, in text (e.g., September).
<b>Trip Information</b>	<i>Day</i>	The two digit day on which a trip occurred (e.g., 06).
<b>Trip Information</b>	<i>Year</i>	The four digit year in which a trip occurred (e.g., 2014).
<b>Trip Information</b>	<i>Vessel</i>	The vessel on which a trip was taken.
<b>Trip Information</b>	<i>Captain</i>	The person who served as captain of the vessel of the trip.
<b>Trip Information</b>	<i>Deckhand</i>	The person(s) who served as deckhand of the vessel of the trip.
<b>Trip Information</b>	<i>#Volunteer Anglers</i>	The number of volunteer anglers that participated on a trip. This number counts only the anglers who fished that day (may be different from the number of anglers fishing during a given drift on that trip).
<b>Trip Information</b>	<i>Fishing tackle used</i>	This explains the color of shrimp flies, type of bait, and any pertinent information related to the terminal tackle used during a given trip. Some weights are included, but these data are covered in each drift in the <i>Lead Weight (oz)</i> and <i>Lingcod Bar Weight (oz)</i> fields in <b>Drift Information</b> .
<b>Trip Information</b>	<i>Comments</i>	Information about a trip including people that came out on the boat that did not fish (e.g., reporters, photographers, and people that assisted the science crew) and noteworthy events of the day.



## **Responsibilities of the Captain, Deckhand, and Science Crew**

### *Captain*

- Provide weights, bait, and fishing rods for the trip (sometimes this falls to the fishing shop if different from the captain). These items are not included in the charter rate for all regions.
- Ensure that we are not fishing outside of the grid cell boundaries.
- Within each of the four pre-selected grid cells, choose three discrete locations in which to fish.
- Before fishing commences, ask the anglers to get ready to fish. Then, announce the start and end of the drift.
- Inform a member of the science crew what the depth, surface water temperature, and relief are at the fishing locations.
- Notify a member of the science crew if you spot any seals or sea lions.
- Notify a member of the science crew if any anglers rotate stations.
- Let a member of the science crew know if an angler is not fishing for more than 30 seconds.

### *Deckhand*

- Rig fishing rods with the appropriate terminal tackle (Lingcod bar, shrimp fly with bait, shrimp fly without bait, swimbait, and/or dropper loops with bait). Ensure that there are enough rods for each station plus spares. If an angler prefers to use their own rod, rig their gear appropriately for the station from which they will fish.
- Make sure that half of the shrimp flies being used are red and the other half are white.
- Tell a member of the science crew what size Lingcod bars are being used, what size weight is being used for the shrimp fly stations, and/or what size weight is being used for the swim bait heads. If this changes, inform a member of the science crew.
- If an angler's gear gets hung up, give them a new rod, and attempt to get the snag out.
- Re-rig fishing rods with near gear if anglers break off.
- Let a member of the science crew know if an angler is not fishing for more than 30 seconds.
- Refill the station tubs and buckets with fresh sea water when they get dirty or have been on the boat for a long period of time.
- Help anglers get their fish off the hook and place it in their tub or, if the catch rate is slow, send the fish to the tagging station.
- If a fish is floating after it is released, notify a member of the science crew and, if possible, retrieve the fish with a net.
- Notify a member of the science crew if you spot any seals or sea lions.
- Notify a member of the science crew if any anglers rotate stations.
- At the end of the trip, remove the terminal tackle from the rods.

### *Lead Field Scientist*

- Check-in with the captain in the morning to introduce protocols (if new captain) and provide the day's pre-selected grid cells (and their coordinates) with charts. Remind them to ensure that we are not fishing outside of the grid cell boundaries or in the incorrect cell.
- Conduct a project briefing and organize volunteer anglers at the start of the trip
- Conduct a briefing with science crew members to go over the plan for the day, train any new staff, and answer any questions (i.e., explain which cells we'll be fishing in, which stations are unfilled, reminders about standardized protocols and descending devices, etc.)
- Conduct project debrief upon return to the dock (thank volunteers, thank captain/deckhand, remind people about parking validation (if applicable), discuss our various social media accounts, and pass off to volunteer coordinator for totals and prizes for the day)

*Volunteer Coordinator (if different from the Lead Field Scientist)*

- Serve as communications liaison between volunteer anglers and the program
- Schedule volunteer anglers 1-2 months prior to sampling
- Send reminder emails out to volunteers 1 week prior to sampling
- Fill any vacant fishing spots (due to cancellations, etc.) with volunteers off the wait list
- On the day of a sampling trip, sign-in volunteer anglers and provide waivers/surveys.
- Assign volunteer anglers to a station/gear type (based on experience and/or preference, if possible)
- Inform the deckhand if anglers choose to use their own fishing rod (to rig up gear appropriately).
- Announce catch totals and distribute prizes to volunteers at the end of the trip

*Science Crew Members*

- Set up the fishing and tagging stations.
- Take a Secchi disk and temperature reading in each grid cell.
- Help anglers get their fish off the hook and place it in their tub of fresh seawater or send the fish to the tagging station.
- Measure, selectively tag, and release caught fishes.
- Record data. Inform the captain when it is time to start and stop fishing, and when enough time has been spent in each location and grid cell.

## Administrative Tasks and Timing

### *January and February:*

- Merge individual databases from each region into a single statewide database (statewide coordinator)
- Begin data analyses (in preparation for angler workshops, presentations, etc.)
- Post volunteer stats (e.g., number fish caught per angler) and tag return information to website
- Distribute volunteer angler newsletter (ideally with announcement of volunteer angler workshop date)

### *March:*

- Conclude data analyses
- Plan/administer data workshop for volunteer anglers, agency contacts, community members, etc.

### *April:*

- Email [bid forms](#) to all participating CPFV captains (allow two weeks to return requested materials). The timing of this will depend on when each group plans to begin their season.
- Add additional personnel to collection permits, if necessary.
- Disseminate tag return flyers in preparation for the opening of rockfish season
- Upload previous year's data summaries and resources on website (pdf version of newsletters, volunteer angler data workshop presentations, etc.).

### *May:*

- Select and schedule charters for sampling season (based on bid price, documentation, past experience, ease to work with, availability, and CDFW background check); Timing will vary by group
- Post generic volunteer opportunities using [Recruiting Volunteers](#) (if applicable)
- Ensure all permits are up to date (CDFW, CA State Parks, etc.); renew as necessary
- Inventory all CCFRP supplies, noting quality of gear; order gear and supplies as necessary
- Procure volunteer angler prizes for the season.

### *June:*

- Finalize all CPFV paperwork
- Hold annual staff training workshop to review scientific protocols, tasks, etc.
- Coordinate schedules with other groups to try and arrange trip exchanges throughout the season

### *July:*

- Schedule volunteer anglers to participate on sampling trips; timing will vary by region
- Organize and stage gear for sampling season. Order last minute items as needed.

### *August/September/October:*

- Sample!
- Send in appropriate notifications prior to sampling (CDFW, CA State Parks, etc.)
- Contact wardens and parks staff to notify about dates inside MPA boundaries.
- Send reminder emails to scheduled volunteer anglers ~1 week prior to sampling (with info on port, vessel, what to bring, etc.)

- Email science crew with schedule reminder and trip logistics prior to each sampling week (e.g., meeting times, packing schedule, etc.); coordinate carpools.
- Initiate captain payment within 3 days of invoice receipt.
- Scan data sheets after each sampling week.
- Download waypoints from GPS as a backup every day.
- Post daily updates to social media
- Enter totals from each trip into the shared Google doc for the CDFW Groundfish Team Catch Report (submitted monthly)

*October/November:*

- Follow instructions on [Gear Maintenance Information](#).
- Compile 'best-of' photos from all locations for Facebook/web update.
- Begin entering and checking data.
- Create season summary for website.
- Send thank you letters to boat owners, captains, and deckhands.
- Update SOP, training, and outreach materials.

*December:*

- Conclude data entry/checking. Perform range checks, map drifts, etc. prior to sending QA/QC'd version to the statewide coordinator
- Submit annual reports of fishes caught to CDFW (depending on timing of permit cycle); check permit expiration dates and submit renewal/amendment requests as needed.
- Develop monthly Facebook posts to keep volunteers interested (e.g., thesis updates, fish facts).
- Begin thinking about deliverables for early next year (volunteer angler newsletter, angler workshop, etc.)

*Year-round:*

- Maintain website, Facebook page, Instagram account, and YouTube channel.
- Seek out various media communications opportunities.
- Maintain constant communication with lead field scientists, statewide coordinator, and PIs to ensure cohesiveness and forward momentum for the program.

## Captain Communications – Email examples

*Call for Bids* (April; forms due two weeks after announcement):

Dear CPFV Captain/Owner,

The [California Collaborative Fisheries Research Program](#) (CCFRP), a scientific program designed to collect information for fisheries management as well as the evaluation of MPA performance, is currently soliciting charter bids for the 2013 sampling season. Please review, complete, and return the attached bid form, if you are interested in participating. All bids and supplemental documentation (see 'Additional Required Documents') are due by the end of business on **Monday, April 22<sup>nd</sup>**. Selections will be made based on a combination of charter rates, availability, previous CCFRP experience, and knowledge of nearshore recreational fisheries in central California. Note: Multiple vessels are expected to be chartered this season, as CCFRP is a collaborative in nature. Please see the attached 'CCFRP Captain Information' document for additional programmatic information, and let us know if you have any questions or concerns.

### **Additional Required Documents**

Current U.S. Coast Guard Certificate of Inspection

Valid Certificate of Liability Insurance (Occurrence Limit: \$1,000,000)

Thanks and we look forward to hearing from you soon!

*Attached:* 2019 CPFV Bid Form (CCFRP).pdf, CCFRP Captain Information.pdf,

*Trip Reminders* (send 1-2 weeks before first sampling trip):

New Captains (discuss trip activities over the phone after receipt of email):

Hi Peter [Owner, Randy's Fishing],

Since we are preparing to conduct CCFRP sampling trips aboard F/V Chubasco on **Tuesday, September 18th** and **Wednesday, September 19th**, I wanted to get in touch with you to make sure that all of our bases are covered. As such, I have attached a document with some basic information for our CCFRP captains, including project objectives and individual responsibilities. Would you please forward this information to your captain? I will also call in a few days so that we may discuss some of these points, questions, and/or concerns over the phone. If you can provide me with a direct number to reach Captain Brian, that would also be greatly appreciated.

Additionally, I have attached the GPS coordinates that designate our **Point Lobos** sampling cells. Ideally, these would be entered into F/V Chubasco's navigation system before our first trip, but I can help get them entered on our steam out, if that is preferred. I would like to note that it is important that these coordinates be both entered and commonly referenced to ensure that all fishing takes place within our designated sampling cells. Doing so permits as much of the collected data to be used as possible. Also, I wanted to remind you that, as part of our agreement, the boat will be supplying enough rods for 12 anglers (plus spares), lead weights, and squid bait (we use mantle strips only).

Lastly, my mobile number is (XXX) XXX-XXXX. You can use this number to get in touch with me if there are any last-minute mechanical issues or changes in weather that may affect our sampling trip.

Thanks and I look forward to speaking with you tomorrow (and taking my first ever trip on your boat!)

Returning Captains (call if no response within 2 to 3 days of first trip):

CCFRP master SOP document

Hi Tom,

Hope all is well with you. We're really looking forward to working with you again this season!

Anyway, I have attached a document with some basic information for CCFRP captains, including project objectives and individual responsibilities. It hasn't changed much since last year, but if you could take a look at it, share it with any new deckhands (if applicable), and let me know if you have any questions, that would be great. Additionally, I have attached the GPS coordinates that designate our **Año Nuevo** sampling cells, in case you don't still/already have them entered into your system.

Also, I wanted to reconfirm that we are scheduled to charter your boat on **Thursday, September 6th** and **Friday, September 7th**. Just to remind you, as part of our agreement, the boat will be supplying enough rods for 12 anglers (plus a few spares), lead weights, and squid bait (mantle strips only).

Lastly, is (XXX) XXX-XXXX still the best number to reach you at on the morning of the trip (just in case)? My mobile number is (XXX) XXX-XXXX, in the event that you need to get in touch with me regarding last-minute mechanical issues or changes in weather that may affect our sampling trip.

*Attached:* CCFRP Captain Information (year).pdf; CCFRP Grid Cell Location Information (area).pdf

*Points to Discuss Over the Phone* (at least 2 to 3 days prior to first trip):

- Sampling protocols
  - Captain (fish in grid cells only, three 15-min drifts per; four cells; distinct locations selected by captain; keep <120 ft; announce start/stop times; report environmental/fishing data)
  - Deckhand (rig gear, remove snags, crimp barbs, careful fish handling – no holding by gills)
- Trip logistics
  - Meet at 5:30AM to load; anglers arrive 6AM; depart by 6:30AM
  - Return by 3PM; leave gear on boat for next day if possible
- Remind to enter GPS coordinates (provide first day's cell numbers)
- Boat provides rods, sinkers, and squid bait (mantle strips); nets (no gaffs)
- Verify contact information
- Captain discusses potential weather conditions with lead science crew, but must make the final call (based on experience)
- Ask for questions/concerns

## CPFV Information

### MLML:

- F/V Huli Cat; 2019 bid: \$1,700 per day
  - Pillar Point Harbor, Half Moon Bay
  - Tom Mattusch, Owner and Captain (tomattusch@comcast.net; cell: 650-619-0459)
  - Mike Cabanas or Donovan Ash, Deckhand
  - CF#582804
  
- F/V Tigerfish: 2019 bid: \$1,700 per day
  - Pillar Point Harbor, Half Moon Bay (his main slip is in Emeryville, but steams down for these trips)
  - Allen Chin, Owner and Captain (allenchin22@gmail.com; cell: 415-860-1688)
  - Tom Corso, Deckhand
  - CF#585944
  
- F/V Kahuna: 2019 bid: \$1,300 per day
  - Moss Landing Harbor, Moss Landing
  - Carol Jones, Owner (carol@kahunasportfishing.com; shop: 831-633-2564)
  - Brian Cutting, Captain
  - Josh Abbey or Matt Cutting, Deckhand
  - CF#545332
  
- F/V Sur Randy: 2019 bid: \$1,400 per day
  - Fisherman's Wharf, Monterey
  - J&M Sportfishing, Owner
  - Front desk contact: Katlyn Taylor (katlyn@discoverywhalewatch.com, info@jmsportfishing.com; shop: 831-372-7064)
  - Danny Frank or Rod Stoltz, Captain (changes constantly)
  - Kevin Klein, Andrew Zazeski, or Alfredo Chiappini, Deckhand (changes constantly)
  - CF#604145



## 2019 Bid for California Collaborative Fisheries Research Program (CCFRP) Charters

CCFRP combines the expertise and ideas of fishing community members and academic scientists to gather information for fisheries management and the evaluation of marine protected areas (MPAs). Through standardized hook-and-line surveys, we work together to catch, identify, measure, tag, and release nearshore fishes, which enables the collection of species composition, length, and catch rate data of economically valuable species found along the central California coast. Data collected during this project are and will continue to be used by resource managers to assess stock health and MPA performance.

\*\*\*edit for each season\*\*\* Since 2007, CCFRP has successfully completed over 244 days of hook-and-line surveys. Utilizing over 6,800 volunteer angler hours (from more than 700 individuals), we have processed more than 46,000 fish from 48 different species. Of those caught, over 33,000 have been tagged in order to gain information about movement patterns and growth.

Please refer to the [CCFRP Participant Handbook](#) for additional procedural information.

### Vessel Information

Name: \_\_\_\_\_ Length: \_\_\_\_\_ Gross Tonnage: \_\_\_\_\_  
Value: \$ \_\_\_\_\_ Year: \_\_\_\_\_ Material: \_\_\_\_\_ No. Pax: \_\_\_\_\_  
Owner: \_\_\_\_\_ Home Port: \_\_\_\_\_  
Captain (if different): \_\_\_\_\_ License #: \_\_\_\_\_  
Navigational Limits: \_\_\_\_\_ Crew Experience: \_\_\_\_\_  
Safety Equipment Onboard: \_\_\_\_\_

### Contact Information

Company: \_\_\_\_\_ Owner: \_\_\_\_\_  
Phone: (\_\_\_\_) \_\_\_\_\_ Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Fax: (\_\_\_\_) \_\_\_\_\_ Email: \_\_\_\_\_

*For consideration, a valid Certificate of Liability Insurance (with \$1,000,000 protection per occurrence) and current California Marine Survey or USCG Certificate of Inspection are required.*



## **Scheduling**

Please circle any/all dates that \_\_\_\_\_ (vessel name) is available for 2014 CCFRP charters (as of \_\_\_\_ / \_\_\_\_ / \_\_\_\_). Please note that sampling trips typically run from 6AM to approximately 3PM (Monterey) or 5PM (Half Moon Bay). Charters are weather-dependent and can be canceled based upon the discretion of the vessel captain and/or CCFRP lead scientist. Canceled trips will be rescheduled based on availability, which may result in a different vessel used for subsequent charters. Trips that are cut short for any reason will be paid based upon the amount of sampling conducted.

### **August 2014**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

### **September 2014**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

## **Rates**

**Single Day Charter: \$ \_\_\_\_\_ / day      Multi-Day Charter: \$ \_\_\_\_\_ / 3 days\***

\* The above pricing includes the cost of a deckhand, rod and reel rentals (with  $\geq$  30 lb test line), weights, squid bait, and fuel. CCFRP staff will provide terminal tackle. Selection of charters will be based on a combination of charter rates, availability, previous CCFRP experience, knowledge of nearshore recreational fisheries, and a California Department of Fish and Wildlife background check.

***Please return this form along with the required documents listed above to:***

Moss Landing Marine Laboratories  
c/o Fisheries and Conservation Biology Lab  
8272 Moss Landing Rd  
Moss Landing, CA 95039  
p: 831-771-4479  
e: [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu)

## Volunteer Coordinator Information

The volunteer coordinator is responsible for being the primary liaison between the volunteer anglers and the program. For some institutions, this is a separate role and in others, it is part of the lead field scientist's responsibilities. Below are duties for this role, utilizing MLML as an example. Note that not all details are applicable for each institution, and there are multiple ways to successfully accomplish the tasks of the volunteer coordinator.

*Managing the [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu) email (or other shared email account dedicated to volunteer communications)*

The [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu) email address should be set to forward to the CCFRP Volunteer Coordinator's MLML student account to avoid having to check two separate accounts on a regular basis (the ccfpr email account should be checked as frequently as one's student account). It is important to communicate with anglers using the ccfpr account, so that if there is discontinuity from year to year regarding who handles trips and volunteer communications, all emails will still be answered in a timely fashion.

- To forward emails from [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu) to your individual account, log into the ccfpr account (password in "CCFRP Logins and Passwords in Google Drive). Under settings, find the tab 'Forwarding and POP/IMAP' (next to 'Forwarding'), click 'Add a forwarding address'. After the email address is added, make sure to 'keep Moss Landing Marine Lab Mail's copy in the Inbox' (in the dropdown menu).
- Under the 'Accounts' tab in your individual email account, click 'Add another email address you own' under the 'Send Mail' section. This way, you can respond to emails from the Sea Grant account while logging into your individual account. However, Gmail defaults to your primary (first initial last name@mlml.calstate.edu) email address when responding (even to emails sent to the ccfpr group forwarded to your individual email), so be sure to drop down to 'ccfrp@mlml.calstate.edu' when responding to emails from anglers.
- Under the 'General' tab, you can create identical (or different, depending on your preferences) signatures, so you don't have to be copy and paste every time. Simply select the email address from the drop down in the 'Signature' section and customize it. A signature from CCFRP should look like the following:

Name  
Volunteer Coordinator, CA Collaborative Fisheries Research Program  
Graduate Student, Fisheries & Conservation Biology Lab

Moss Landing Marine Laboratories  
8272 Moss Landing Road | Moss Landing, CA 95039  
p: [\(831\) 771-4479](tel:8317714479) f: [\(831\) 632-4403](tel:8316324403)  
e: [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu)

- Note: There is a 'Canned responses' tab in Gmail. You can use this to quickly send responses to anglers that are commonly used (e.g., info for interested volunteers, scheduling confirmation, waiting list additions when trips are full, out-of-season replies). Be sure that names, dates, and/or locations are changed accordingly when being used. Also, the 'Undo send' tab is very useful to avoid occasional mistakes.

### *Recruiting Volunteers*

There are several volunteer websites and job boards at universities that we can post CCFRP volunteer opportunities. To this end, you can also post a position for a CCFRP Intern who spends the summer assisting in preparing for the sampling season, classifying photos, compiling outreach materials, and serving as science crew on sampling trips. Posting sites

have different user names, passwords, requirements for posts, and contact information which have been compiled and placed into an Excel. It is best to keep the contact information in the posting to the ccfrrp email account and the FCB Lab phone (831-771-4479). This way, if an interested volunteer sees a post, but doesn't respond until the following year, they can still get into contact with the correct person, even if the position has been passed on to someone else. Typically, we take on two unpaid interns per year. There are files for this position, including a description, application, interviewing questions, time sheets, performance reviews, and an exit survey. Please review "Managing Volunteers and Interns" before initiating contact.

### General Volunteer Posting

Experienced anglers needed for hook-and-line fishing project used to monitor marine protected areas (MPAs) along the central California coast!

[California Collaborative Fisheries Research Program](#) (CCFRP) volunteers aide local scientists in the collection of valuable data on economically important marine fish species by fishing onboard party boats out of Monterey and Half Moon Bay. Once caught, each fish is identified, measured, tagged, and released at their respective MPA or reference site. Data recorded from these fishing expeditions will be used by state regulators to evaluate the effectiveness of MPAs in the region.

CCFRP is a partnership of people and communities interested in fisheries sustainability. By combining the expertise and ideas of fishermen and scientists, we have successfully established protocols that can be used state-wide to gather biological information and monitor changes in local fish populations for management purposes.

Join us for a day on the water and some awesome fishing while contributing to our understanding of important marine populations!

Note: Volunteer anglers should have a fair amount of experience fishing in the marine environment. Volunteer anglers must be at least 16 years of age in order to participate. All participants must be able to spend extended periods of time (e.g., up to 10 hours per day) on a recreational fishing boat, in potentially rough waters. Please also note that there will be no individual take on these cruises, in accordance with our CA Dept. of Fish and Wildlife scientific collecting permits.

For more information, please contact:  
California Collaborative Fisheries Research Program  
Moss Landing Marine Labs/Fisheries and Conservation Biology Lab  
8272 Moss Landing Road  
Moss Landing, CA 95039  
p: 831-771-4479  
e: [ccfrp@mlml.calstat.edu](mailto:ccfrp@mlml.calstat.edu)  
w: [www.mlml.calstate.edu/ccfrp](http://www.mlml.calstate.edu/ccfrp)

## Craigslist.org Posts

Experienced anglers needed for hook-and-line fishing project used to monitor California marine protected areas (MPAs) along the central California coast! **In the months of August and September, California Collaborative Fisheries Research Program (CCFRP) volunteers aide local scientists in the collection of valuable data on economically important marine species by fishing onboard party boats out of Monterey and Half Moon Bay. Once caught, each fish is identified, measured, tagged, and released at their respective MPA or reference site. Data recorded from these fishing expeditions will eventually be used by state regulators to evaluate the effectiveness of MPAs in the region.**

**<br>**

**<b> About the Program</b>**

CCFRP is a partnership of people and communities interested in fisheries sustainability. By combining the expertise and ideas of fishermen and scientists, we have successfully established protocols that can be used state-wide to gather biological information and monitor changes in local fish populations for management purposes.

**<br>**

*Join us for a day on the water and some awesome fishing while contributing to our understanding of important marine populations!*

**<br>**

**Note:** Volunteer anglers should have a fair amount of experience fishing in the marine environment. Volunteer anglers must be at least 16 years of age in order to participate. All participants must be able to spend extended periods of time (8-10 hours per day) on a recreational fishing boat, in potentially rough waters. Please also note that there will be *no individual take* on these cruises, in accordance with CDFG scientific collecting permits.

**<br>**

For more information or to be added to our list of interested volunteers, contact:

**California Collaborative Fisheries Research Program**

Moss Landing Marine Laboratories

8272 Moss Landing Road | Moss Landing, CA 95039

p: (831) 771-4479 f: (831) 632-4403

e: [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu)

\*add CCFRP logo and tagging/fishing photos

### *Maintaining the Volunteer Angler Contact List*

Through various events and emails received from our website or online postings, we acquire contact information of people interested in volunteering with collaborative research projects. It is best to keep these contacts in a Google Doc so that email lists can quickly be created from the spreadsheet. It is simplest (and much more time efficient) to contact volunteers through email (keep this in mind when taking down contact information). Make sure to add this list of interested volunteers to your pre-season correspondences. After an email is sent to the members of our database, there will be bounce-backs from incorrect or invalid addresses. Update and label these in the Excel file and Access database as you go to prevent the same errors in the future. If the database you have is not the most current version, contact the statewide coordinator to make these changes official.

### *Announcing the CCFRP Sampling Schedule*

- Once sampling trips have been confirmed, it is time to schedule volunteer anglers. You can easily transfer email addresses from Excel (exported from Access) into a text file that can be inserted into your email 'BCC' field. Simply create a workbook with only the email address field. Then, 'Save as' a .csv or .txt file. Open this file using TextEdit or Notepad. Then, select all, copy, and paste into the 'BCC' field. Gmail will magically register these as individual email addresses, placing commas between them.
- Be sure to query out the volunteer anglers who have requested to no longer be contacted by CCFRP (check box in database)
- It is important to remember that there are anglers who do not have email addresses. There are only a few of them, so it would be best to call these volunteers before sending out an email to the remaining members of our database. If there is no answer, leave a message with trip dates and the lab's contact information.
- Be sure to include volunteer anglers that already exist in your database and any interested volunteers (from Google Doc you've been managing). Additionally, there should always be an option for people to remove themselves from our mailing list.
- MLML has announced the trip schedule to volunteers via email, but then required individuals to sign up for trips using a Google Form. Depending on your level of need and organization style, you can decide if a Google Form or email (or another option) is most appropriate.
- If you announce trips via email, below is one example of the type of information to include:

**SUBJECT: 2019 CA Collaborative Fisheries Research Program (CCFRP) Sampling Schedule**

Greetings Dedicated Volunteer Anglers,

It's that time again...time to help collect data for fisheries management and the monitoring of California MPAs through hook-and-line surveys!

First, let us take a moment to thank you for your continued support and participation in the [California Collaborative Fisheries Research Program](#) (CCFRP). With your help, we have successfully completed [twelve years of data collection](#) regarding species compositions, sizes, and catch rates of fishes in and around local marine protected areas (MPAs)...and, it is only with your help that we are able to enter into a seventh sampling season! If you are still interested in the participating, please take a look at the sampling dates below and let us know when you can make it. We'd love to get you out with us again in 2019!

## **CCFRP Sampling Dates** (subject to change)

### **Half Moon Bay** (Pillar Point Harbor)

August 6, 7, 8

September 10, 11, 12

### **Monterey** (Fisherman's Wharf)

August 13, 14, 15

September 17, 18, 19

Each individual trip date assumes a 6AM boarding time and returns to the dock around 3 PM (Monterey) or 4 PM (Half Moon Bay). However, return times are slightly variable and dependent upon conditions.

Please include your most up-to-date contact information and preferred volunteer date(s). If you plan to bring a friend along, please provide their name and contact information as well. We would be honored for you to join us and help make for another great year of data collection!

Reminder: Volunteer anglers should have a fair amount of experience fishing in the marine environment and be at least 16 years of age. All participants must be able to spend extended periods of time (e.g., 8 to 10 hours per day) on a recreational fishing boat, in potentially rough waters. Please note that there will be no individual take on these cruises, in accordance with our CA Dept. of Fish and Wildlife scientific collecting permits. Check out of [CCFRP Participant Handbook](#) for more information on protocols and responsibilities.

### **Name**

Volunteer Coordinator, CA Collaborative Fisheries Research Program  
Graduate Student, Fisheries & Conservation Biology Lab

Moss Landing Marine Laboratories

8272 Moss Landing Road | Moss Landing, CA 95039

p: [\(831\) 771-4479](tel:8317714479) f: [\(831\) 632-4403](tel:8316324403)

e: [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu)

If you are no longer interested in receiving CCFRP-related emails, please let us know and you will be removed from our list.

['Like' the California Collaborative Fisheries Research Program \(CCFRP\) on Facebook!](#)

- The above email should be sent when you have a few hours available afterwards to be near a computer. There are several emails that are immediately returned undeliverable due to email changes or email addresses that have been entered incorrectly. In your volunteer contact information Excel file, update the returned email addresses by highlighting them in RED so that you know they are not valid. Within a day, all of the invalid emails should have returned. At this time, you should call each of the 'bounced' volunteers in an attempt to update their contact information or remove them from our list. If the existing angler has a new email address or you are able to make the appropriate corrections, highlight the angler's name in yellow, as well as the changed information. This color coding makes it easy for someone entering data into Access to make the necessary changes. If an angler

no longer wants to be contacted or we cannot get ahold of them by phone after their email has been rejected, check *Do Not Contact* in the Access database **Angler Information** table.

- After all of this has been completed, it is nice to send an email to your institution's community (e.g., students, allfaculty, and staff). In this email, it is important to emphasize that no experience is necessary and that we can train them on the actual trip (something that is not really offered to non-affiliated volunteers).

#### *Scheduling Volunteer Anglers*

- For MLML: schedule twelve anglers per day (only 9 or 10 anglers on Point Lobos MPA days)
- Once a given trip is full, begin a waiting list with individuals to be called upon cancellations others.
- Note: Assign fishing stations as you go to avoid scheduling ten fly fishers and two experienced bar fishers (should be eight and four). Utilize the angler key as well as more experienced science crew for suggestions on who to (or not to) put on the bow. Long-time volunteers can also help in this and recommend people that they know.
- Keeping this schedule in a Google Doc is useful for staying organized and can be shared if multiple people are working to fill it in. MLML uses a color-coded system and different tabs for each sampling week.
- Make sure you record an angler's name, email, and phone number when scheduling them for a trip. Email is useful for trip reminders, and phone numbers are useful for contacting the angler last minute (i.e., no show at the dock, trip cancellation within 24 hours, etc.)

#### *Confirmation Email to Volunteer Anglers*

- After you've scheduled a volunteer angler for one or more trips, it's courteous to send them an email confirming their participation, typically within one week of finalizing your schedule
- Information to include: dates they are on the schedule, dates they are on the waitlist, location/vessel for those trips, message stating that additional trip logistics will be sent out 1 week prior to sampling, and a reminder that if they need to cancel, to let you know as soon as possible.

#### Reminder Email to Volunteer Anglers

To be sent out one week prior to sampling

#### **SUBJECT: CCFRP Trip Reminder - September 22<sup>nd</sup> out of Monterey**

This is a friendly reminder that you have signed up to fish with the California Collaborative Fisheries Research Program (CCFRP) on **September 22<sup>nd</sup> out of Fisherman's Wharf in Monterey**. Please let us know if you can no longer make any of your confirmed dates so that we may plan ahead and fill your slot with someone from our waiting list.

#### **TRIP INFORMATION**

Next week, we will be fishing on:

*F/V New Horizon*

This boat is located at:

Fisherman's Wharf (#1 Old Fisherman's Wharf | Monterey, CA 93940)

\* *F/V New Horizon* is located 2/3 of the way down Fisherman's Wharf, on the right. See attached maps for additional information.

## **DIRECTIONS**

### **FROM NORTH OF MONTEREY:**

Take Hwy-101 South to the Hwy-156 West exit, which runs into Hwy-1 South. Take the Del Monte/Pacific Grove exit off Hwy-1. Fisherman's Wharf is 1 1/2 miles on the right hand side of Del Monte Blvd.

### **FROM SOUTH OF MONTEREY:**

Take Hwy-101 North to Hwy-68 West-Monterey Peninsula. Hwy-68 West will lead you into Monterey. Follow the signs to Fisherman's Wharf.

There is a paid parking lot entrance from Washington Street, off of Del Monte Blvd/Lighthouse Ave.

If you park in the paid lot, please go to the shop after your trip to get parking validation (discounted your fee from \$15 to \$7/day).

## **WHAT TO BRING**

Please wear layers (everything from a hefty jacket down to a light t-shirt) for unpredictable weather. Closed-toed shoes are required and rubber boots are highly recommended as the decks will be covered with water...and tennis shoes tend to make for soggy feet. Weather can be unpredictable, so please prepare for both hot and cold temperatures. A hat, sunglasses and sun block will most likely prove to be useful. Snacks and water will be provided, but a sack lunch and sports bottle/cup are necessary. Note that you may choose to bring your own rod (spinning rods discouraged), but all tackle must be provided by the project in order to comply with standardized protocols and ensure scientifically-sound data collection. Please also plan to bring a bit of cash with you, in case you would like to show your gratitude to the deckhand(s) for a job well done.

***Please take seasickness medication prior to boarding if there is even a slight chance that you may start to feel queasy!*** We need happy, healthy anglers fishing for us. :)

Finally, if you haven't done so already (in 2019), please fill out and bring the following forms with you (see attached):

1. SJSU Volunteer Appointment Form
2. MLML Volunteer Liability Release

## **A FEW FRIENDLY REMINDERS**

Please note that there will be no individual take on these cruises, in accordance with CA Dept. of Fish and Wildlife scientific collecting permits. Also, this is a research cruise...so we must ask that alcoholic beverages not be consumed before or during fishing. Review the attached 'CCFRP Volunteer Handbook' for more detailed information on trip logistics, volunteer responsibilities, etc.

Finally, **please meet at the boat at 6 AM sharp.** If you are having trouble locating *F/V New Horizon*, just look for boats with lights on or call **(831) 204-8493** for further assistance. If you are running late or are suddenly unable to make a planned trip, please call the number previously listed. While we will do our best to accommodate special needs, we will not be able to wait long at the dock before heading out.



Also, please note that if weather prevents us from fishing, you will be notified as far in advance as possible. If you are questioning whether or not a trip will proceed before its designated departure, please feel free to call [\(831\) 771-4479](tel:8317714479) after 5 pm and listen to the recorded message for the latest update.

Thanks again and we look forward to seeing you on the boat!

### *Managing CCFRP Facebook page*

- In 2011, we developed a CCFRP Facebook page. Our Facebook page serves many purposes: outreach to people who haven't heard about our project, an avenue for us to keep dialogue going with our existing volunteers, and a place for people to see what great work we're doing in the form of photos and videos. It is VERY IMPORTANT to remember that we need to represent ourselves well in this format, as it is available to the general public and has the ability to be widely distributed. Above all, we want to demonstrate sound scientific research. Typically, we post links to news articles, blog posts, and videos related to CCFRP, fishing, and MPA news. During the fishing season, we post a photo with the number of species and fishes caught on a given trip as well as the angler who won that day's contest ([Figure 7](#)).
- There is no login for the CCFRP page, it is linked through a personal Facebook account. To edit the CCFRP Facebook page, you must be set as an Editor by the Administrator. Have the previous Volunteer Coordinator (or whoever was handling the Facebook page) add you as an editor.
- All institutions have at least 1 person who has access to edit the Facebook page. However, some groups have their own lab Facebook pages that they prefer to post to. If this is the case, please share those other labs' posts to the CCFRP page so followers can see both.
- Proof, proof, proof! It is important that all spelling, grammar, and facts posted to this page are accurate and that posts are generally well-written. These can be little things such as the capitalization of common names (e.g., Vermilion Rockfish) or correcting spelling errors. It is great to put a species scientific name after using the common name: Vermilion Rockfish (*Sebastes miniatus*). Remember that Facebook, unfortunately, will not allow italics though. Occasionally, post other things such as information about barotrauma, descenders, other research that the labs from each institutions conducts, thesis research, etc. Take everything that you post seriously but also make it fun!

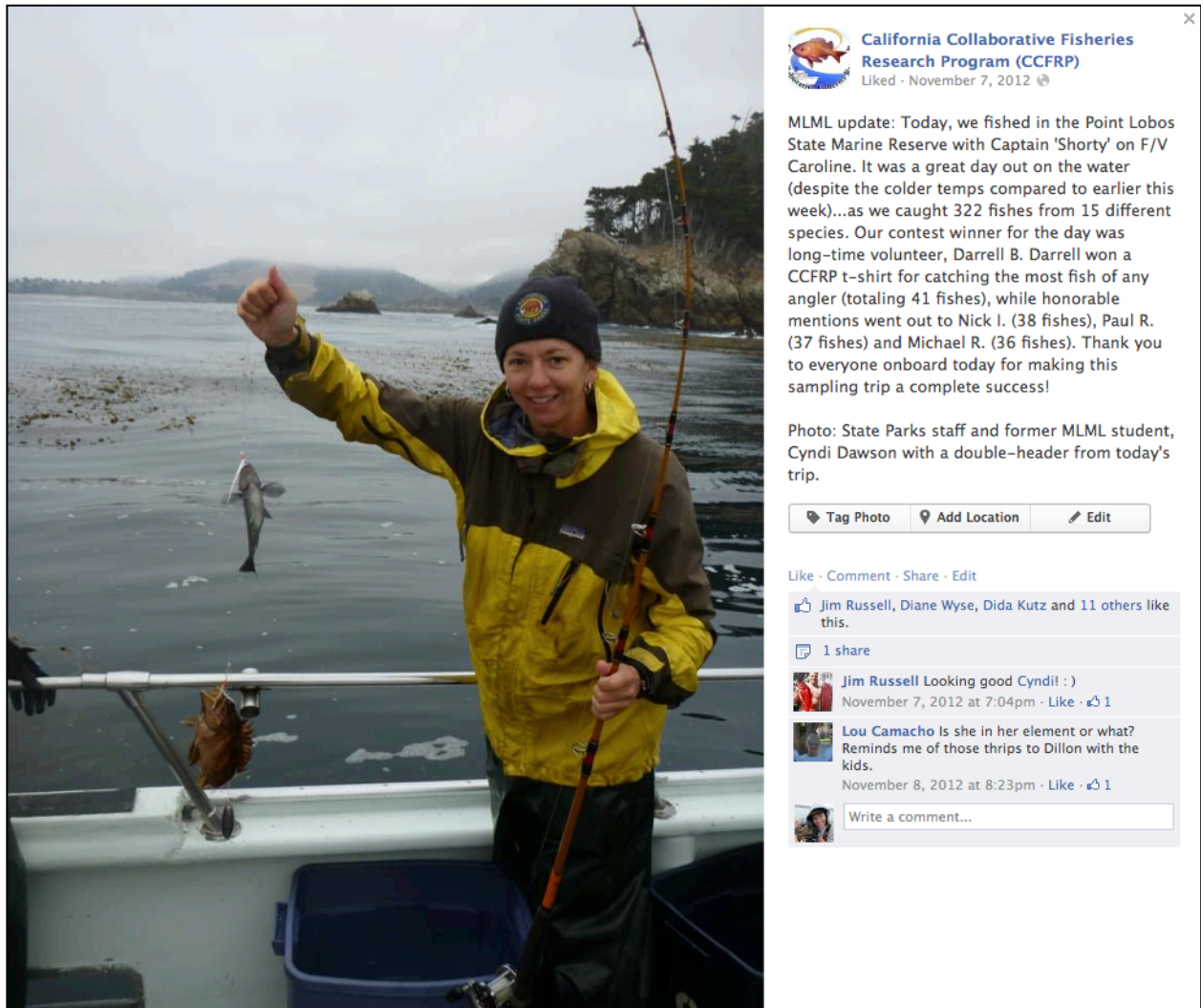


Figure 7. Example of Facebook post and photo.

## Selecting and Managing Interns

### *2-3 months before intern start date*

- Post the listing
  - Good places to post include: Craigslist, Idealist, VolunteerMatch, Facebook, job boards at your local community colleges and universities
- Review the applications
  - Once you have a decent number of applications, begin to sort through them and see which ones stand out. Discuss qualifications and prior experience requirements with the project lead to ensure choosing of correct intern(s) for the project.
  - Compile a list of those applicants you wish to speak with over the phone. For those applicants you are not interested in interviewing, hold off on sending them a “no” right away. You never know how the phone interviews will go and you may have to go back to your original pool and select someone else
- Schedule phone interviews with each applicant of interest.
- How to conduct the phone interviews
  - Important things to ask are:
    - What about this internship excites you?
    - How did you become interested in marine science?
    - What do you hope to gain from this *unpaid* internship?
    - How do you think your prior experiences have prepared you for this internship?
    - What is your availability (do you have to go back to school, etc.)?
    - Can you handle seasickness?
  - It is also important to give them an overview of the project and explain what the day in the life of a CCFRP intern looks like. Explain that it is a mix of both office and fieldwork and go into some detail about both. Be up front about the amount of work that is requested of them, but also stress the value of the experience and how fun field days can be. Also mention that there is the possibility to assist with other graduate student thesis projects in the lab as part of the internship, giving a background on some of the ongoing thesis projects in the FCB Lab. Address questions as necessary.

### *One month before intern start date*

- Bring candidates in for in-house interviews (if the phone interview went well, if necessary, etc). For some candidates, you may elect to skip straight to the in-person interview, or simply do phone/video interviews if the candidate is out of the area.
  - It is a good idea to have someone else on the project (the project lead, another science crew member, etc.) present during the interview to get a second opinion on the candidate. We want to ensure that this new intern will work well with the rest of the team, especially under stressful conditions.
  - Clarify any confusion with the potential intern and address any questions. If it's helpful, recap the conversation during the phone interview. Ask any follow-up questions at this time.
  - Take them on a brief tour of the lab (if you see fit) and let them know that you will be in contact shortly with the final verdict. Introduce the candidate to lab members if present during this time.
  - De-brief with the project lead/other science crew members and select interns for the field season (2 has proven to be a good number in the past).
- Sit down with the project lead and develop intern tasks.
  - It is easiest to compile a Google doc that can be shared with the interns, the volunteer coordinator, and the project lead. Continue to add to this list as new projects or tasks arise.
  - Prioritize tasks and create a timeline for completion. Assign tasks to specific interns.

- Discuss weekly schedule with interns
  - Be flexible with everyone's schedule but do set-up a strict day of the week/time for them to come in each week.
  - For example, Tuesdays and Thursdays for 8 hours each day. It is much easier for you if you coordinate the interns to come in on the same day(s) of the week. Even if they are working on separate projects, it's much more convenient to manage them together.
  - Be explicit that this schedule is for the "office work" portion of the internship and *will* change once the field season begins. Reiterate the structure of a field day and explain that it could be 2-4 days in a row.
  - Determine intern start date (prior to the annual statewide training, typically at MLML in June/July).

### *First Day of Internship*

- Give the interns a tour of the lab and the facilities.
- Introduce them to key people (for MLML: Rick Starr, Starr Lab students and techs, shop guys, Jocelyn Douglas, anyone else they might need to be in touch with for CCFRP related tasks).
- Introduction to the Google Doc
  - This will be their "go-to" when they are unsure of the tasks that need to be completed.
  - Go over the various tabs (e.g. items to complete, independent project ideas).
  - One of the most important things to show them is the "Intern Hours" tab. Since we have to report all of our volunteer hours at the end of the year, it is important to keep track of the hours they are working. When doing so, have them record the date, the task(s) they were working on and the number of hours they worked that day.
- Interns start on in-office tasks
  - Refer to the Google doc that you created.
  - Make sure they have the necessary materials and directions to complete their tasks.
- Mandatory statewide training session
  - Should be shortly after their first day.
  - Have interns help prepare for and attend this day-long training session.
  - Give them any necessary outreach materials that they should read beforehand to become familiar with the project and its goals.
  - Delegate them tasks to make the training session flow smoothly.

### *A Few Weeks Before First Sampling Day (End of July/Beginning of August)*

- Check the gear
  - Have interns conduct gear inventory and gear maintenance with the volunteer coordinator
  - Order and repair any necessary items in preparation for the sampling season
- Teach the interns how to compile the gear before a sampling trip. Show them the [Packing Checklist](#), where the items on the checklist live and whatever else is necessary to a sampling day.

### *Get them out on the boat!*

- Recommend that they get a pair of waterproof boots and find a pair of foulies in the lab that will fit them (make sure they don't belong to someone else on the project, first!).
- Be sure to discuss meeting times and the necessary items to bring (e.g. sunglasses, lunch, water, layers of clothing).

### *Clean-up After the First Day*

- After first day, teach them how to wash the gear properly and store it for the next sampling day (showing them the hose, where the soap is, how to wash the bins, tag boxes, foulies, gloves, tag guns, etc.).
- Put interns (or another science crew member) in charge of picking up the gear after its dry and storing it properly.

### *During the Field Season*

- The majority of intern time is now spent out on the boat/cleaning and maintaining gear.
- However, on off days, interns should continue tasks on the Google Doc to-do list.
  - As the season goes on, there will be lots of photos to catalogue and it is nice to take care of those before they pile up.
  - It's also convenient to make copies/scans of the data sheets and volunteer waivers as the season goes on (as opposed to at the very end). Keeping them separated in folders or binders is a good way to stay organized.
- Check in often with the interns
  - How is the work load? Is the experience productive for them? Are there any issues that need to be addressed? Do they have any concerns? Are there things that can/should be changed?
  - Do your best to maintain an open line of communication and try to make sure that both parties are benefitting from the internship.

### *At the End of the Season/Their Internship*

- At the end of the sampling season, if school or other priorities are not present, reevaluate the status of the intern and decide if they should and want to continue with the program.
- If they choose to stay with the program as an intern, have them continue to work on the intern task list or devise new tasks for them.
- It is also an option to shift them from a CCFRP intern to a Starr Lab intern where they are doing less CCFRP-related things (as the season winds down) and assisting more with other student thesis projects. It is important to discuss what the new position will entail and it is still beneficial to them.
- Upon completion of their internship, have each intern fill out an exit survey. Ensure that any academic credit procedures are properly taken care of and any loose ends are tied up.
- Make sure you know exactly where all the files the interns have been working on are saved and the best way to contact each individual (email and phone number) if those files cannot be found.

## Gear Ordering Information

### *Shrimp flies*

- ½ white; ½ red; hook size = 5/0; unit price = \$0.98
- VIP account set-up with P-Line: FARALLON FEATHER 2 HK 5/0 WHITE/WHITE and FARALLON FEATHER 2 HK 5/0 RED/YELLOW
- P-Line prefers if groups order flies in multiples of 12 (12 come in a box, and it's easier for their packaging team); for reference, MLML typically has about 200 of each color on hand at the beginning of the season (this is more than enough, but prevents you from having to reorder in the middle of the season)
- To order, contact Thomas Kanemoto (thomas.kanemoto@p-line.com), and remind him that you're part of CCFRP to get the VIP price.
- Fill out the VIP order form (lead field scientists have copies in their email)
- Pay via credit card (note that tax and shipping are not included in the above unit price)
- Each group is responsible for ordering their own flies

### *Lingcod bars / lead jigs*

- Variety of sizes and colors; rings attached
  - To try and minimize gear loss, MLML gives bar fishermen an "allotment" (4 per angler) for the day. If they lose all 4, the lead scientist can provide more, or make a decision to switch them out with a fly fisherman
  - For each trip, pack a variety of sizes (weather can change rapidly);
  - MLML approximate use per season:
    - 4 oz: 80-115
    - 6 oz: 80-100
    - 8 oz: 45-65 (used mostly in faster currents)
    - 10 oz: 15-30 (reserved for stormy days, shouldn't need)
- Ordering
  - Up until 2018, MLML purchased bars from Joe Denman, formerly King Tackle, ([joedenman357@yahoo.com](mailto:joedenman357@yahoo.com) or 805-438-4455); however, in 2018, he could not fulfill our order due to health complications. He has been with the program from the beginning so in future seasons, you can try and order through him or you can order through Brian Cutting (see below)
    - With Joe, he typically sends extra 'lead-heads' as give-aways; note: sizes are off (e.g., 7.2 oz = '7 oz' and 8.8 oz = '8 oz'); upon receipt of goods, mail checks to:  
Joe Denman  
PO Box 553  
Creston, CA 93432
    - Prices:
      - 4 oz: \$3.75 each
      - 6 oz: \$4.00 each
      - 8 oz: \$4.00 each
      - 10 oz: \$?.?? Each
    - Be sure to specify color schemes desired (e.g., fried egg, purple with countershading) otherwise we'll receive solid colored jigs which is not what we have used in the past.
  - In 2019, a number of groups ordered lingcod bars through Brian Cutting (captain of the Kahuna out of Moss Landing Harbor). He pours and paints jigs as a side hobby

(using recycled or donated lead), and gives our program a very fair price. Note that he does not prime or seal his jigs during the painting process, so it is recommended that you seal them upon receipt to prevent the paint from chipping

- Prices:
  - \$2 per jig for both 4oz and 6oz
  - He can make additional weights as well (price may vary)
- Be sure to specify color schemes desired
- He can ship to you (additional fee may apply) or you can pick up from the Kahuna shop in Moss Landing Harbor
- Hooks – 5/0 bronze jig/plain shank (Mustad O’Shaughnessy 9174-BR, 100 pack from BassPro)
- Split rings - 50 lb ISO line (minimum), size 7, silver (we recommend: Offshore Angler, 100lb test, 100 pack, from BassPro)

#### *Swimbait and Dropper Loops*

- Swimbait are used by HSU, UCSB, and SIO, and dropper loops are used by UCSB and SIO
- Contact the leads of these groups for ordering information for these gear types

#### *Fish processing*

- Gloves - Showa Atlas (blue grip) or thinner gardening gloves work well depending on preference (can be purchased at any supply store or on Amazon in bulk)
- Rite in the Rain All-Weather Paper; item #: 8511; Copier Paper, white, 8.5 x 11; 200 sheets per pack unit price = \$29.95  
J. L. Darling Corporation, 2614 Pacific Hwy E. Tacoma, WA 98424  
p: 253 922 5000; f: 253 922 5300  
[www.riteintherain.com](http://www.riteintherain.com)

#### *Descending devices*

- Hypodermic needles – item # 096 0068; Monojet hypodermic needle, 18GX1”, green, 100/box, AllegroMedical (800-861-3211); unit price = \$11.87 (shipping and handling = \$8.95)
- SeaQualizer – Seaqualizer.com, unit price = \$59.95 (plus S&H)

#### *Tagging supplies*

- Avery Dennison Mark III tagging guns #10651 (green); can buy in a 10 pack on Amazon for ~\$12 each; for a single tag gun, price is ~\$17
- Avery Dennison standard tagging gun replacement needles #08941 (packs of 4; \$14 per pack on Amazon)
- Tags
  - Hallprint tag specifications (for MLML tags, change info as appropriate)
    - TBA plastic t-bar standard anchor tag, in lots of 25
    - Color: yellow, numbered sequentially XXXXX to XXXXX
    - Exposed monofilament length: 15mm
    - Marker length: 50mm
    - ID number on proximal end (nearest to anchor)
    - Printing Line 1: INFO REWARD (GET LAT/LON)
    - Printing Line 2: MOSS LANDING MARINE LABS: 831-771-4479
    - Cost = \$0.77 per tag; MLML typically orders 2,000 at a time; price reduces to \$0.72 per tag for orders over 5,000 units (prices as of 2019)

- Shipping from Australia: \$80
- Order via email: Darren Evans, General Manager  
Hallprint Pty Ltd: 27 Commerce Crescent, Hindmarsh Valley SA 5211  
p: +61 8 8552 3149; f: +61 8 8552 2874  
e: [darrenevans@hallprint.com.au](mailto:darrenevans@hallprint.com.au)
- Pay via credit card or purchase order to: Hallprint Pty Ltd (Acct: 002 606 44)  
Commonwealth Bank of Australia (CTBAU2S)  
Corner Reservoir Road & Modbury Avenue (Branch: 065 150)  
Modbury, South Australia 5092

*CCFRP T-Bar Anchor (TBA) Tag Order History - MLML*

David Hall, Managing Director | HallPrint Pty Ltd

Darren Evans, General Manager | Hallprint Pty Ltd

Julie Langmead, Production Manager | Hall Print Pty Ltd

27 Commerce Crescent, Hindmarsh Valley, SA 5211

p: +61 8 8552 3149 f: +61 8 8552 2874 e: [hallprint@chariot.net.au](mailto:hallprint@chariot.net.au)

<b>Name</b>	<b>Reference No.</b>	<b>Color</b>	<b>Tag No. Range</b>
Jen Chiu	T9575	yellow	42000 - 43999
Jen Chiu	5556	yellow	38000 - 41999
Corina Marks	Starr052413	yellow	34500 - 37999
Cheryl Barnes	T7541	yellow	30500 - 34499
Kristen Green	T6894	yellow	27500 - 30499
Noelle Yochum	T6365	blue	21500 - 27499
Kristen Green	T6120	blue	18500 - 21499
Kristen Green	T6120	yellow	15500 - 18499
Rick Starr	T6088	blue	13100 - 15499
Rick Starr	T6088	yellow	12500 - 13099
Ashley Greenley	T5272	yellow	10100 - 12499
Ashley Greenley	T5272	white	0001 - 0100
Kristen Green	T5081	yellow	09000 - 09999
Kristen Green	T4209	white	08900 - 08999
Kristen Green	T4209	yellow	07000 - 08899
Rick Starr	T3895	white	05000 - 05999
Rick Starr	T3895	green	04000 - 04999
Rick Starr	T3895	orange	03000 - 03999
Rick Starr	T3895	purple	02000 - 02999 *
Rick Starr	T3895	blue	01000 - 01999 *
previous orders	TBA tags	???	01000 - 27499

\* tags not in database



**CCFRP-Related Inventory** (This is a general template for the types of gear required for executing a CCFRP field season. Items and quantities will vary for each region. For more items and current quantities, see FCB Inventory Google Doc or refer to your group's internal inventory document)

Gear/Supplies	Typical Season Needs	Final Inventory (2011)	# Ordered (2012)	Initial Inventory (2012)	Final Inventory (2012)	# Used (2012)	# Ordered (2013)	Final Inventory (2013)	# Used (2013)	Initial Inventory (2014)
<b>shrimp flies</b>										
white	400	235	400	635	200	435	500	350	350	855
red	400		400	400	215	185	500	400	315	727
loose teasers	?		0		47	-	-	0	-	50
tackle buddy	2		0		2	0	0	4	-	2
30 lb ISO line (spool)	1		0		2	0	0	2	-	2 (p)
	-	-	-		-	-	-	-	-	
<b>Lingcod bars (jigs)</b>										
4 oz	80 - 115	43	76	119	37	82	59	10	86	10
6 oz	80 - 100	25	92	117	38	79	58	52	44	52
8 oz	485 - 65	0	98	98	33	65	15	12	36	12
10 oz	0 - 5	40	0	40	38	2	0	86	-	77
bronze hooks, 5/0	300	36	300	336	129	171		40 (r)	-	58 (192r)
split rings (50 lb test)	100	16	200	216	40	160		?	-	39 (151a)
	-	-	-		-	-	-	-	-	
<b>tagging supplies**</b>										
tag guns (G = green; B = black)	2		1G		5G; 2B	-		1, 5 (b)	-	11G, 4B
tag gun needles	?		12G; 4B		28	-		5L, 16M	-	43
V-board	3		0		4	0	0	4	-	4
meter sticks (wooden, metric)							5	5	0	5
tags	2000	2006	4000		2329	1671	3500	2725	3104	2389
	-	-	-		-	-	-	-	-	
<b>fish processing**</b>										
gloves	?		5-7		9	-		9	-	29
isopropyl alcohol (16 oz)	0		2		2	0		1.5	-	2
isopropyl alcohol (32 oz)	6		8		4	4		1.5	-	3

Rite-in-the-Rain Paper	500		1600		800	800	800	200	1400	350
	-	-	-		-	-	-	-	-	
<b>Gear/Supplies</b>	Typical Season Needs	Final Inventory (2011)	# Ordered (2012)	Initial Inventory (2012)	Final Inventory (2012)	# Used (2012)	# Ordered (2013)	Initial Inventory (2013)	# Used (2013)	Initial Inventory (2014)
<b>scientific research banners</b>								4		3
<b>descending devices</b>										
venting needles (18 gauge)	?		100		325	-	0	32	-	74
venting needles (14 gauge)	?		0		120	-	0	85	-	180
weighted milk crate	1		0		1	0	0	2	-	2
Ace Calloway	2		0		13	0		4	-	8
SeaQualizer	3		7		3	4	3	4	-	4
100 lb Spectra (300 yd)			1		0	1	2	?	-	6
venting needles (20 gauge)	-	-	-		-	-	-	?	-	2

\* Includes use by RCA project.

\*\* Refer to [CCFRP checklist](#) for additional needs.

Inventory codes:

a=attached

B=black

b=broken

G=green

L=large

M=medium

p=partial unit

r=rusted

**Packing Checklist (one example, available to print from an Excel Spreadsheet in shared Dropbox)**

**2019 CCFRP HOOK-AND-LINE CHECKLIST**

1	2	TAG BOX (2)	DRY BOX	ACCORDIAN BINDER (DRY BOX)
		safety glasses	data collection clipboard	volunteer schedule w/ contact info
		tagging guns (2)	25 data sheets	volunteer sign in sheet (5)
		tag gun needles (4 extra)	3-5 mechanical pencils (loaded)	volunteer waiver forms (50 each)
		venting needles (5 small; 5 large)	GPS unit (#8)	data sheets (150; Rite-in-the Rain paper)
		plunger (to clear venting needles)	logbook	copy of scientific collecting permits
		knife (tag box #1 only)	thermometer	copy of DFG notification forms
		file	extra disposable AA batteries	scratch paper
		needlenose pliers (short and long)	tags (1 box)	grid cell maps (logbook; captain copies)
		measuring tape	pencil case	laminated tag return flyers (3)
		numbered binder clips (1-4, 6-9, 11-14)	pens and sharpies	<b>OTHER</b>
		zipties	regular pencils/sharpener	5-gallon buckets (6)
		screwdriver (Phillips and flathead)	mechanical pencils	tubs (1-4, 6-9, 11-14; one extra; in order)
		bungee cords (3)	name tags	bag of dissecting supplies (if applicable)
		scissors	scissors, calculator	rope and twine
		dikes	white out, tape, erasers, pencil lead	tagging boards
			lighter	Ace Calloway descending device
		<b>TACKLE BIN</b>	clip boards (3)	SeaQualizer rod (2+)
		box of tags	gloves	extended hand net
		camera	camera + extra battery	weighted milk crate
		shrimp flies (100 red, 100 white)	battery charger (HMB only)	foulies and extra pairs of boots
		jigs / Lingcod bars (20 per size)	GPS guide and cords (HMB only)	scientific research banners (2)
		spare flies, hooks, split ring, ring splitter	first aid kit (fully supplied)	water bucket (with line attached)
		> 25 lb test ISO line	anti-sea sickness bands	staff snacks*
		tackle buddy (2)	hand sanitizer	reusable bags for groceries (HMB only)
		sunscreen	extra batteries (disposable, rechargeable)	<b>VOLUNTEER SUPPLIES</b>
		euthanasia club	rags, steel wool and oil (HMB only)	5-gal water jug (w/ filtered water and ice)
		extra isopropyl alcohol (32 oz)	zipties	reusable, plastic cups (12-15; clean)
		fin clip blotter paper and envelopes	ziplock bags (various sizes)	pastries (cooler bag)*
		extra SeaQualizer (1-2)	tape (masking, duct, electrical)	cookies (one package per day)*
		<b>SMALL GRAY BIN</b>	flashlight (waterproof)	gingerale (for sea sickness)
		Miller and Lea 1972 (Fish Bull. 157)	extra datasheets	Prizes and giveaways
		Eschmeyer et al. 1983 (P. Coast Fishes)	rubberbands	CDFW gear (hats, stress balls, patches)
		CDFW rockfish ID pamphlet	extra venting needles	CCFRP t-shirts and hats
		participant guest book	bags and labels (for retained fishes)	lead-head jigs/swim baits
		Bring that Rockfish Down' pamphlets	extra tag guns	stickers
		CDFW regulations	back-up GPS (Yellow)	gift certificates (if applicable)
		volunteer informational binder		

\*Will be purchased in Half Moon Bay

## **Gear Maintenance Information Checklist**

### *1. Field Equipment (to be completed before start of each sampling season, after each week of sampling, and at the end of each sampling season)*

- Thoroughly rinse SeaQualizer units, nets, tackle buddies (plus open shrimp flies), & binder clips.
- Clean all gear (e.g., foulies, boots, bins, tag boards, descending devices, lines, inside of tag boxes) with environmentally-friendly dish soap and OxiClean (located along with scrubbing brushes in the warehouse). It is important that everything is entirely dry before it is stacked and put away to avoid mold or plastic buckets and bins that stick together.
  - Note: DO NOT leave materials drying in the corp yard for more than 24 to 36 hours. This will keep items clean and reduce risk of loss.
- Remove all gear from boxes (bars, flies, etc.), rinse with fresh water, and dry well. Organize by weight and put back in correctly labeled boxes. Rinse and dry loose shrimp flies (in bin and on tackle buddy).
- Rinse temperature sensor (careful not to wet the digital portion) and cameras with fresh water. Note: cameras should be soaked in fresh water during the steam back from the last grid cell of any given day.
- Machine wash all gloves. Make sure that they are entirely dry before packing up again. Replace any old/gross gloves.
- Use steel wool to remove rust from all tools and metal parts of tag boxes; apply lubricant (e.g., Ace Household Oil or WD-40) using an old rag.
- Remove needles from tagging guns (by simply flipping the external switch). Clean all parts of the guns and needles thoroughly. Use steel wool to get rust off. Sharpen only the tips of the needles using a wet stone (be careful not to sharpen the groove itself). Throw away any guns that are no longer working (after saving any parts that we may still be able to use). Replace tag gun needles as needed.
- Sand measuring boards and apply a coat of vegetable oil. Replace meter sticks, if necessary. Re-seal entire tag board as needed.
- Check descending device set ups to ensure proper working order. Replace/retie as needed.
- Take extra batteries out of the dry box, charge, and replace in the lab for people to use. Recycle batteries that no longer hold a charge.
- Take GPS units out of their cases and clean them off using a standard cleaning spray and rag (spray onto the rag, not directly onto the GPS unit), clean the cases, and replace onto GPS units. Relabel GPS units, if necessary. Remove batteries, if last trip of the week or season (to avoid draining).
- Replace any rusty binder clips and unusable venting needles.
- Refill/replenish supplies according to packing checklist.

### *2. Inventory*

- Order all necessary gear/tags and enter values into the pre-existing Excel file accordingly.
- Conduct a pre- and post- season inventory. Add a column to the same Excel spreadsheet and label it as pre- or post- season inventory for the year in question.

### *3. Logbook and Datasheets*

- Copy/scan data sheets and logbook pages (double-sided) after each week. Ensure that hole-punch location does not overlap with data (i.e. punch the bottom of the datasheet that explains condition codes).
- Organize original data sheets into a binder, by area and date. Ensure back-up copies are easily accessible (shared folders, emailed, etc).

## Statewide CCFRP Science Crew Training

This event is held annually and science crew members from all groups are encouraged to attend. This is particularly important for new science crew members, and it's vital that lead field scientists rally their groups' participation. In past years, this has been an all-day event held at Moss Landing Marine Labs prior to the beginning of the sampling season (~June). Previous versions of training PowerPoints can be found on the shared Dropbox.

### *Timeline*

- 9AM-9:30AM: Introductions
- 9:30AM-11:30AM: Background Information (MPAs and CCFRP), sampling design, summary totals from previous seasons, standardized protocols, walk through logistics of a typical sampling trip
- 11:30AM-11:35AM: 5-Minute Break
- 11:35AM-12:30PM: Species Identification section (go over basic fish/rockfish anatomy, describe commonly caught species and ways to visually identify them/tell them apart); the species id section should just be an introduction and each lead is responsible to conduct more in-depth species id training with their crews (because common species vary so widely throughout the state)
- 12:30PM-1:30PM: Lunch on the MLML Deck
- 1:30PM-2:30PM: Wrap up any unfinished sections from the morning session (this may include data taking, database management, outreach, etc.)
- 2:30PM-5:00PM: Practical Session (split into groups and rotate through stations)
  - Fish tagging / data recording / GPS uses /simulating a drift / running fish
  - Descending / netting techniques
  - Knot tying
- 5PM: Wrap Up and Adjourn (happy hour at Ray's if people are interested)

### *Practical Supplies to have on hand*

- Rigged fishing rod, extra monofilament line, and tackle (shrimp flies, jigs)
- SeaQuallizer, Ace Calloway and weighted milk crate descending devices
- Tagging V-board, tagging gun (with tags)
- Buckets and bins to simulate boat set-up
- Defrosted rockfishes (qty. 6-10)
- Venting needles
- Gloves
- Isopropyl alcohol
- Data sheets (plus clipboard and pencils)
- GPS unit

## Sampling Trip Set Up, Briefing, Etc.

### *Week prior to first trip:*

- Review and complete all applicable tasks in [Gear Maintenance Information](#)
- If you have a field cell number (Google Voice number), ensure that it is set-up and being forwarded to your cell phone
- Lead field scientist notifies CDFW of sampling activities through online portal (lead field scientists/entity administrators of the permit have access) *and* emails *Notification of Intent to Collect* form to CDFW (do both while the system is still new so ensure the Department receives the notification); CDFW requests notification 36 hours - 14 days in advance of sampling.
- If you have contact information, notify wardens and parks staff if collecting inside MPA boundaries.
- Ensure all science crew have filled out all forms and waivers (extra copies will come on board the vessel):
  - *SJSU University Foundation Volunteer Appointment Form*
  - *MLML Volunteer Agreement/Informed Consent & Release Agreement*

### *One to three day(s) prior to first trip:*

- Science crew members and/or program interns gather and organize all items on [Packing Checklist](#); a different person should check that gear was prepped correctly; load into state vehicle
- If staying in HMB, purchase staff lunch supplies and snacks for the week.
- Volunteer coordinator checks the weather forecast and confirms the status of the trip with captain/shop
- Volunteer coordinator records outgoing voicemail message (831-771-4479) appropriate for the following CCFRP trip with updated weather information:
  - Dial: 408 – 924-6800 [Preceded by 7-1 if dialing within MLML]
  - Press '\*'; enter 14479
  - Enter passcode (in Google Doc) and then #; press '4' for User Options; press '1' to Change Greeting; Press 1 to record message; press '#'; if satisfied, press '9' to exit.
  - **Example:** You've reached the Fisheries and Conservation Lab at Moss Landing Marine Laboratories. We are unable to reach the phone at this time, but please leave a detailed message and we will get back to you as soon as possible. If you are calling to inquire about our California Collaborative Fisheries Research Program trip scheduled for **Monday, August 12<sup>th</sup>** aboard **F/V New Horizon**, we are still confirmed to go, with winds of **5 to 10 knots in the morning and 10 to 15 knots in the afternoon**. If you have already been confirmed to participate, please meet at **J&M Sportfishing on Monterey Fisherman's Wharf** at 6 AM sharp. Please also remember to bring a lunch, layers of clothing, sunscreen, sunglasses, and waterproof footwear. If there is any possibility that you may become seasick, please take the appropriate medications prior to boarding. If, for some reason, you are no longer able to make this trip, please call our field cell phone at (831) 204-8493 as soon as possible so that we may find a replacement. If you have not been confirmed to participate in this trip, please email [ccfrp@mlml.calstate.edu](mailto:ccfrp@mlml.calstate.edu) and we will do our best to accommodate you either on this trip or on another one sometime this season. Thank you and have a nice day!
- Volunteer coordinator purchases breakfast snacks (e.g., bagels and cream cheese, pastries), cookies (one package per day), and staff snacks (e.g., crackers and hummus, chips, grapes) for next week's trips.

### *Arrival [5:30 AM (first day) or 5:45 AM (additional days)]:*

- Lead field scientist checks in with shop, captain, and/or deckhand.
- Science crew unloads van; loads boat (must obtain permission to board first).

*Pre-departure (5:45 AM to 6:15 AM):*

- Science crew sets up information table (e.g., volunteer binder, ID books, CDFW rockfish ID chart, 'Bring that Rockfish Down' pamphlet, guestbook w/ pens), snacks, water/cups, angler bins, and research banners (prior to CCFRP briefing).
- Volunteer coordinator greets volunteers, makes sure sign in sheets are completed [anglers only on CCFRP sign-in sheet; boat manifest - goes to captain/shop].
- Volunteer coordinator collects necessary paperwork (volunteers must fill out waivers once per calendar year; check for completion; paperclip and put in accordion binder), informs deckhand of anglers using personal rods, and lets lead scientist know when everyone is present.
- Lead field scientist finds out if the captain would like to give his/her safety briefing before or after CCFRP briefing and which side of the boat (s)he would like descending devices set up.
- Science crew should place descending device on the specified side, leaving the walkway clear; lines should be unraveled and recoiled on the deck before each trip, and tied down. If possible, avoid tying off on the stern (we have had instances of the rope or devices getting caught in the prop). Be sure to tie the correct end of the ropes to a railing or cleat.
- Lead field scientist discusses protocols with deckhand, confirms that there are at least 16 to 20 rods onboard, and ensures that the boat has supplied weights (at least 8 and 10 oz) and squid bait (to be cut into mantle strips); lead field scientist informs deckhand that all weights need to be the same on the stern and that shrimp fly colors should be roughly half white and half red; deckhand should notify lead science crew of changes to sinker weights, etc.
- Science crew sets up numbered bins near fishing stations. Wait to fill the bins until near the sampling site.
- Science crew zip-ties the "Scientific Research" signs to the railings before the boat starts moving (the wind makes it extremely difficult).

*CCFRP briefing - lead field sci. (6:15AM to 6:30AM):*

- thank both new and returning volunteers for getting up early and participating
- introductions and responsibilities
  - lead field sci. - scientific administration (e.g., protocols, staff, data collection)
  - captain - personnel safety (must confer with lead field sci. when inclement weather conditions prompt potential cancellations); announces start/stop fishing times, selects locations; ensures that drifts stay within cell and that fish are present
  - deckhand - rigging gear; crimping barbs; releasing snags; general assistance
  - science crew - ensuring program protocols are adhered to; processing fish; recording data; answering questions (when appropriate)
- brief CCFRP overview
  - Rick Starr developed project in 2007 with co-P.I. Dean Wendt (CalPoly); 12<sup>th</sup> season together, we have been conducting standardized hook-and-line surveys in and around central coast MPAs (since their inception)
  - data collected (e.g., species compositions, lengths, catch rates, growth and movement); provide information of fisheries management and an evaluation of MPA performance
  - Last year, we have officially expanded statewide and have 6 institutions conducting surveys along the coast from Humboldt to San Diego
- to ensure scientifically sound data, protocols must be strictly adhered to
- overview of CCFRP protocols
  - setup [e.g., fishing stations (TBD by vol. coordinator), tagging station, descenders]
  - four grid cells (500 x 500 m), three 15-minute drifts per cell (anglers can take breaks in between or ask for replacement at any time)
  - what anglers can do to help:

- for catch rate calculations, anglers should stand near their stations when captain says 'get ready', drop in the water right after (s)he announces the start of fishing, and reel up as soon as drift is complete; let science crew know when snagged (for immediate rod replacement) and when you have not fished the entire drift or have surpassed the allotted fishing time
  - if using personal rod and a replacement is not immediately available, use a boat rod; do not personally rig up gear during any drift (continuous fishing)
  - let line drop to the bottom and immediately reel up a 5 to 10 cranks to reduce gear loss
  - let us know when you have a fish on the line so that we can be ready to remove it from the hook (or if we are busy, place the fish in your designated bin) and when a fish has been in your bucket for more than two minutes (to reduce handling time and increase survivorship)
  - reel up slowly and don't set the hook too vigorously
  - hold your sinker when science crew is removing fish from hook (reduces mouth damage); check your barbs and crimp or let us know if not flush
  - call for a net with large fish/Lingcod to reduce loss/further hook damage
  - ensure that fish are going into correct bin and that science crew are 100% sure of proper angler number (they should be confirming upon removal)
  - ask questions (to science crew, captain and/or deckhand); have fun!
- captain's safety briefing (if not first)
  - notify volunteers of snacks, water, informational binder (with species info, protocol details, reports), and encourage guestbook entries
  - announce plan for the day (e.g., area and site visited)
  - announce time to destination; tell everyone to find a seat and relax
  - -NMFS Collections: Collaborating with NMFS to collect otoliths and fin clips from a subset of specific species (Gopher, Black and Yellow, Brown, Quillback) in REF only. Very little age and growth data for stock assessments from these species, in conjunction with a fisheries-independent project like ours.

*Travel to sampling site:*

- Lead field scientist informs captain of the day's sampling grid cells and coordinates (assist in entering coordinates into computer)
- Volunteer coordinator assigns angler stations (write on sign-in sheet; describe locations).
  - Use tentative stations assigned (but not announced) when scheduling as guide; anglers may make requests - try to accommodate as much as possible; place couples/groups at adjacent stations; rotate anglers with multiple days between bait and no bait; only experienced bar fishers on bow; science crew/MLML students at no bait.
  - Ask anglers if they brought their own rod(s), ensure compliance with specifications, and inform deckhand of which gear is to be rigged up.
- Lead field scientist distributes Lingcod bars (4 per bow angler; they get to choose color), partially fills out logbook, and assigns duties/station rotations, if science crew is fishing.
- Science crew sets up tagging station (after bait is cut) and fills buckets during last 15-20 minutes of transport.
- Lead field scientist checks SeaQualizer setting (never to be set deeper than 50 ft).
- Science crew conducts volunteer outreach (e.g., talk with anglers, ask/answer questions).
- Lead field scientist briefs science crew on the day (reviews protocols, plan for the day, etc.)

*Throughout sampling trip:*

- All science crew should ensure that they can **positively** identify all fish brought onboard.



- If there are any questions, they should seek more experienced personnel to avoid misidentifications.
- Any fish being sacrificed should be euthanized according to IACUC protocols.
  - Any retained fishes that have been tagged should be noted on the data sheet as such.
  - All retained fishes should be kept in clearly labeled bags or coolers and placed on ice.
- Any science crew member that is fishing must circle the boat to complete any necessary tasks upon reeling up
- Take notice of anglers who are snagged or who take breaks to get sick, use the bathroom, etc. and anglers who are fishing before or after time is called. We need to make sure we are logging the correct amount of fishing time by angler.
- Data recorder:
  - Have reference GPS (displaying grid cell boundaries and the boat's location) in hand to ensure that drifts take place only within the pre-determined grid cells and that captain is selecting three discrete locations.
  - Take waypoints at least every five fishes (boxes that are grayed out on the data sheet denote the minimum required waypoints). Note GPS number on every datasheet (if lab has multiple GPS units).
  - Make sure that all datasheet header information and comments (except for angler over/under times) are transferred to the following page, when multiple sheets are required on a single drift; record station switches on every sheet.
  - Double check every data sheet before handing over clipboard to the next recorder.
- Fish runners:
  - Regularly check angler bins for water clarity and temperature, changing water as necessary (never during a drift); fill at least 2/3, but not so much that bins bulge/break
  - **Continuously** circle the boat to check for fish in bins, even when slow; runners are responsible for determining whether or not the number of fish on the boat requires more than 5 minutes of processing time; if so, inform data recorder to call time (once processing is caught up, the drift can proceed).
  - Continue to check for anglers over/under fishing; circle the boat at beginning and end of each drift to ensure that everyone is fishing only between start/stop times; look for snags and replace rod as soon as possible; attempt to remove snag or call for deckhand.
  - Check for uncrimped barbs and crimp so that they are flush with shank.
- Tagger:
  - Fish under 24 cm, in bad condition (e.g., crystallized eyes, stomach out of mouth, bleeding, having undergone predation), or dropped on the deck should not be tagged. Fishes experiencing these conditions should be descended
  - Venting will only take place on drifts with high catch rates, to reduce deck time (otherwise, fish experiencing barotrauma shall be descended only).

*Travel back to harbor:*

- Science crew gathers all used tag guns (caps on), hypodermic needles (caps on), measuring tapes, knives, sharpeners, bungee cords, scissors, binder clips, and gloves; place in bucket or bag to be rinsed upon return to lab/hotel. Reorganize items in dry box.
- Volunteer coordinator places digital camera(s) in fresh water bucket for trip back. Make sure the camera is in the "locked" position before doing so.
- Science crew stacks and organizes all angler bins, buckets, tag boards, etc.; collect gear from anglers
- Volunteer coordinator offers cookies to captain, deckhand, anglers, and science crew.
- Lead field scientist verifies completion of all data sheets and logbook entries.
- Science crew member obtains daily fish count guesses from all participants (no duplicates).

- Volunteer coordinator tallies number of species and total fishes caught in logbook (following CDFW Groundfish Team catch report template).
- Volunteer coordinator records winner(s) of volunteer angler contest (no science crew) in logbook.
  - Contests should vary each day (e.g. closest guess, smallest fish, largest fish, largest rockfish, unusual catch, most \_\_\_\_\_ fish, etc.).
  - Prizes include any combination of items: hat, t-shirt, lead head jig, shrimpflies, reusable bags, stickers, etc.
- If last day on boat, science crew removes scientific research banner; cuts all shrimp flies off of rods (at line, not loop) and neatly wraps around tackle buddy (only one per slot; hooks embedded into plastic).
- Science crew conducts volunteer outreach (e.g., talk with anglers, ask/answer questions) and encourages guestbook entries.

*Upon return to dock:*

- Lead field scientist thanks everyone for participating and encourages people to like us on Facebook, follow us on Instagram and YouTube, and look out for tag returns.
- Volunteer coordinator provides total number of fishes and species caught, announces angler contest winners, and awards prizes.
- Lead field scientist reminds anglers about parking validation (if applicable).
- Lead field scientist recommends showing appreciation to deckhand in the way of gratuity (if appropriate).
- Science crew brings used gear back to lab/hotel for thorough fresh water rinse.
- Volunteer coordinator brings digital camera(s) and logbook back to write Facebook post.
- Lead field scientist checks in with shore contact, inventories consumable supplies (e.g., data sheets, Lingcod bars, tags, alcohol), and makes a list of items to replenish for following trip.

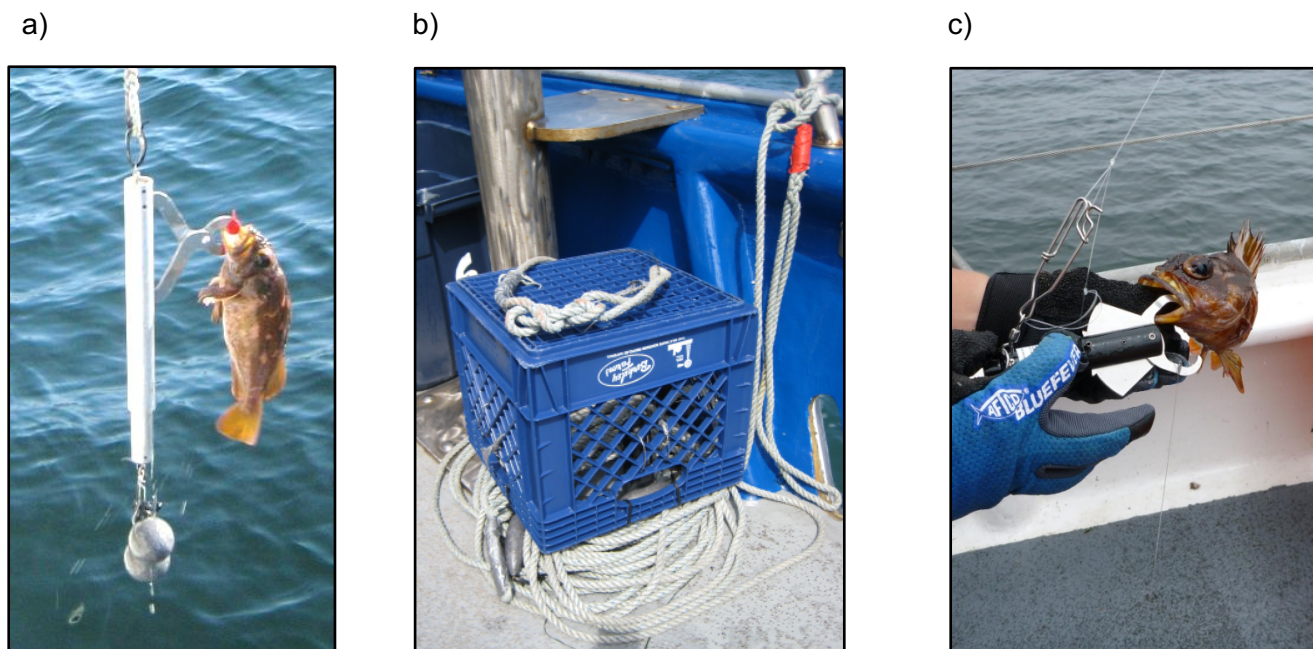
*Post-trip:*

- Science crew packs up gear, if last day on particular boat (secure in cabin, if not).
  - Remember nets, research banners, SeaQualizer rods.
  - Follow protocols outlined in [Gear Maintenance Information](#) for cleanup.
- Volunteer coordinator writes post (and proofreads!) for Facebook page including:
  - Fishing location, number of fishes/species caught, contest winners (and why).
  - First name and last initial of volunteers mentioned or in photos. Tag all science crew and volunteers in photos (if Facebook friends).
  - Mention somewhere that this project is **catch and release!**
  - Include both common (capitalized - e.g., Black-and-Yellow Rockfish) and scientific names of fishes listed and/or photographed.
- Volunteer coordinator re-records FCB Lab voicemail message, reviews next day's trip schedule, and calls waiting list volunteers as needed.

## Science Crew Protocols and Helpful Hints

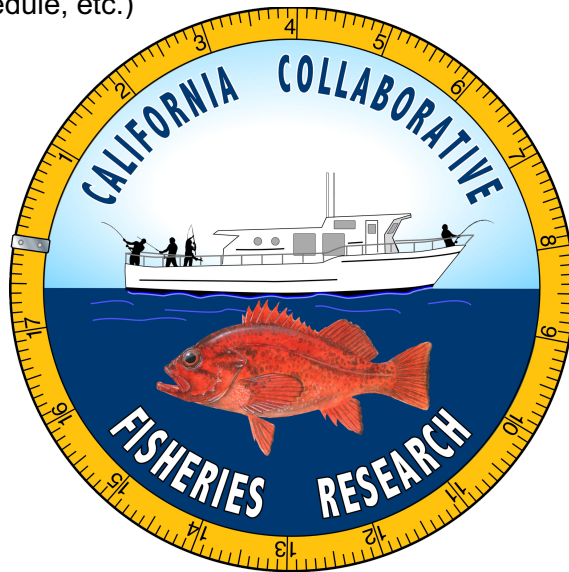
1. *CCFRP Handbook*: Please read through the CCFRP Volunteer Handbook.
2. *Species Identification*: Make sure you are familiar with and able to identify the various fish species you will most likely come into contact with while sampling with CCFRP. You may wish to refer to the *CCFRP Species Fact Sheet* for visuals as well as some more in-depth information.
3. *Trip Information*:
  - a. What to Wear: If you do not own a pair of rubber boots or foul weather gear, CCFRP may have items for you to borrow (check with your program coordinator). Most science crewmembers choose to store their boots and foulies in a bin onboard the boat for the duration of the sampling week.
    - i. Weather can be unpredictable, so please prepare for both hot and cold temperatures. Dress in layers (everything from a hefty jacket down to a light t-shirt) for unpredictable weather.
    - ii. Closed-toed shoes are required and rubber boots are highly recommended.
    - iii. A hat, sunglasses, and sun block will most likely prove to be useful. Eye protection is key to avoid disaster by spines, hooks, etc.
    - iv. Gloves. These help protect the fish (from scale loss, etc.) and protect you (rockfish have venomous spines, so be careful!). You may also want to put a little duct tape on the tips of your thumb, pointer, and middle fingers to protect from rockfish spines.
  - b. When to Arrive: Volunteer anglers are asked to arrive at the dock at 6am. Science crew members should arrive even earlier in order to help load, unload, set up and/or welcome volunteers. Check with the CCFRP group coordinator, but **5:30-5:45am** is usually a good arrival time to aim for.
  - c. Seasickness: If you are not familiar with marine boating and/or if there is even the slightest chance you will get sick, PLEASE take seasickness medication. If this is your first time aboard a marine vessel, we recommend you take a dose of seasickness medication the night before as well as the morning of a trip.
    - i. Popular oral anti-nausea drugs are Dramamine, Bonine, or Marezine. There are also seasickness patches and wristbands that some find useful (available over-the-counter at most pharmacies). Often, different remedies work better for different people.
    - ii. Ginger is a popular homeopathic solution. Sipping ginger ale, for example, is often helpful. Pharmacies also sell ginger gum alongside other motion sickness medications.
    - iii. There are also prescription medications, patches, etc. for extreme cases (ask your doctor). These are usually recommended for trips lasting greater than three days, however.
4. *Sampling Protocols*: There are many protocols and helpful hints regarding sampling and being on the boat that you simply won't learn until you are onboard the boat. There is, however, some important information that you may want to keep in mind before you're out on the water.
  - a. Processing and/or Running Fish: Generally, the rule is to process the fish that has been on the boat the longest. Priority should be given to fishes with barotrauma/other injuries. PLEASE, take care not to drop fishes. This traumatizes them even further and has the potential to cause external and/or internal damage.
    - i. **ROCKFISH**:
      1. **Barotrauma**: Rockfish have an organ used for buoyancy, called the swim or gas bladder. This organ may drastically expand or rupture with the expansion of gases within the organ. The gases expand with the decrease of water pressure on the gases when the fish is brought to the surface. Injuries that occur to the fish because of this change in water pressure are referred to as **barotrauma**, and rockfish are particularly susceptible to barotrauma injuries during capture. Signs of barotrauma include anal protrusions, stomach protruding into or out of the mouth, and eyes bulging and/or crystalized. With proper handling, procedures that release the expanded gases from the swim bladder

- (venting or descending, recompress the fish to depth) increase survivorship for fishes caught in shallower depths.
2. Handling: Rockfish are spiny and scaled. In order to protect yourself and the fish, proper handling is very important. Make sure you are wearing gloves. The best way to carry rockfish is (a) by the lower lip, or (b) with the palm of your hand cupping the head and your fingers pinching the opercula. If you notice a lot of scale loss, you are most likely handling the fish too roughly. Be firm, yet gentle.
  3. Venting: Do NOT attempt to vent a fish until a more seasoned member of the science crew has shown you the proper method (body morphologies of each species varies and inexperienced science crew could risk puncturing a vital organ instead of the swim bladder). Venting is the process of using a hollow needle to pierce the swim bladder and relieve air pressure. Remember that if you have time, it's always better to descend the fish as opposed to venting.
  4. Descending: A great way to relieve the pressure on the swim bladder is to bring the fish back down to depth using a descending device. Use your best judgment to determine which fishes need to be descended, but as a rule, descend all fish showing signs of barotrauma. When setting up in the morning, it is your job to untangle the line, place them on one side of the boat, and tie off securely to a railing or cleat.
    - a. *Ace Calloway*: This device is used to descend one (or two) fish at a time. There is a small clamp that attaches to the fishes lower lip ([Figure 8](#)). When the weight on the bottom of the Ace hits the seafloor, the clamp opens and the fish swims away at depth. The line is generally not long enough to reach the seafloor, so you need to wrench the line a few times to ensure that the clamp gives way when you run out of rope. A good method is forcefully pulling the line up like you would to start a lawnmower: repeat a few times before pulling up the rest of the line.
    - b. *Milk Crate*: The crate can be used to descend multiple fishes at once, the downside is it's really heavy to pull out of the water. The fish(es) are placed on the bed of the crate, which is then quickly flipped over and thrown, open-faced, toward the water ([Figure 8](#)). The weights take the crate down to the seafloor (or as close to it as the length of the rope allows), allowing the fish or fishes to swim away at depth. Please use the descender on smaller fish (think 25 cm or less) and fish with hook damage near the mouth.
    - c. *SeaQualizer*: This device is a similar setup to the Ace Calloway whereby a clamp is attached to the lower lip, but it is rigged to a fishing rod. Once clamped shut, it will not open until it has reached the depth of the setting where a hydrostatic release opens the clamp ([Figure 8](#)). Make sure the setting on the device is properly set (typically keeping it at 50ft) and that we are fishing in water deeper than that otherwise it will not release.
  - ii. LINGCOD: Lingcod do not have scales and do not suffer barotrauma. They do, however, have a mouthful of nasty teeth, so handling Lingcod can be tricky. If they're small enough, you can simply grip Lingcod with both hands around the mouth, however, more often than not you will need to hold them under the gill cover. Please be careful to only grip the gill cover and not touch the bright red, feather like gills.
  - iii. GREENLINGS & CABEZON: Greenlings & Cabezon do not suffer barotrauma. They are also scaleless, toothless and spineless, so you can carry them either around their core or by the lower lip, whichever you are more comfortable with. They can, however, be a bit more slippery so be sure to hold on tight!



**Figure 8.** Devices used to descend, or force a fish back down to depth to relieve the expanded air in the swim bladder. Methods include: (a) Ace Calloway or Blacktip fish release, (b) weighted milk crate, (c) SeaQualizer.

Note: These pages are printed on waterproof paper and bound into a notebook. This is an example of MLML's logbook...edit information as appropriate (grid cells, charts, science crew schedule, etc.)



## 2019 MLML CCFRP Hook-and-Line Logbook Año Nuevo SMR/REF & Point Lobos SMR/REF

Lead Field Scientist/Statewide Coordinator: Jen Chiu

Co-Volunteer Coordinator: Ryan Fields

Co-Volunteer Coordinator: Jackie Mohay

Science Crew Member: Bonnie Brown

Science Crew Member: Katie Cieri

Science Crew Member: Rachel Brooks

Science Crew Member: Kinsey Matthews

Science Crew Member: Jake Todd

Science Crew Member: Sara Worden

Science Crew Member: Chenchen Shen

Science Crew Member: Nina Kogut

Principal Investigator: Rick Starr

Principal Investigator: Scott Hamilton

2019 CCFRP Randomly Selected Grid Cells

Week 1 - Año Nuevo SMR/REF - Huli Cat					
Tuesday, Aug. 6 MPA		Wednesday, Aug. 7 REF		Thursday, Aug. 8 REF/MPA	
primary	alternate	primary	alternate	primary	alternate
21	19	10	7	21	17
17	16	8	6	18	12
14	15	5	3	10	8
12	13	2	1	5	2

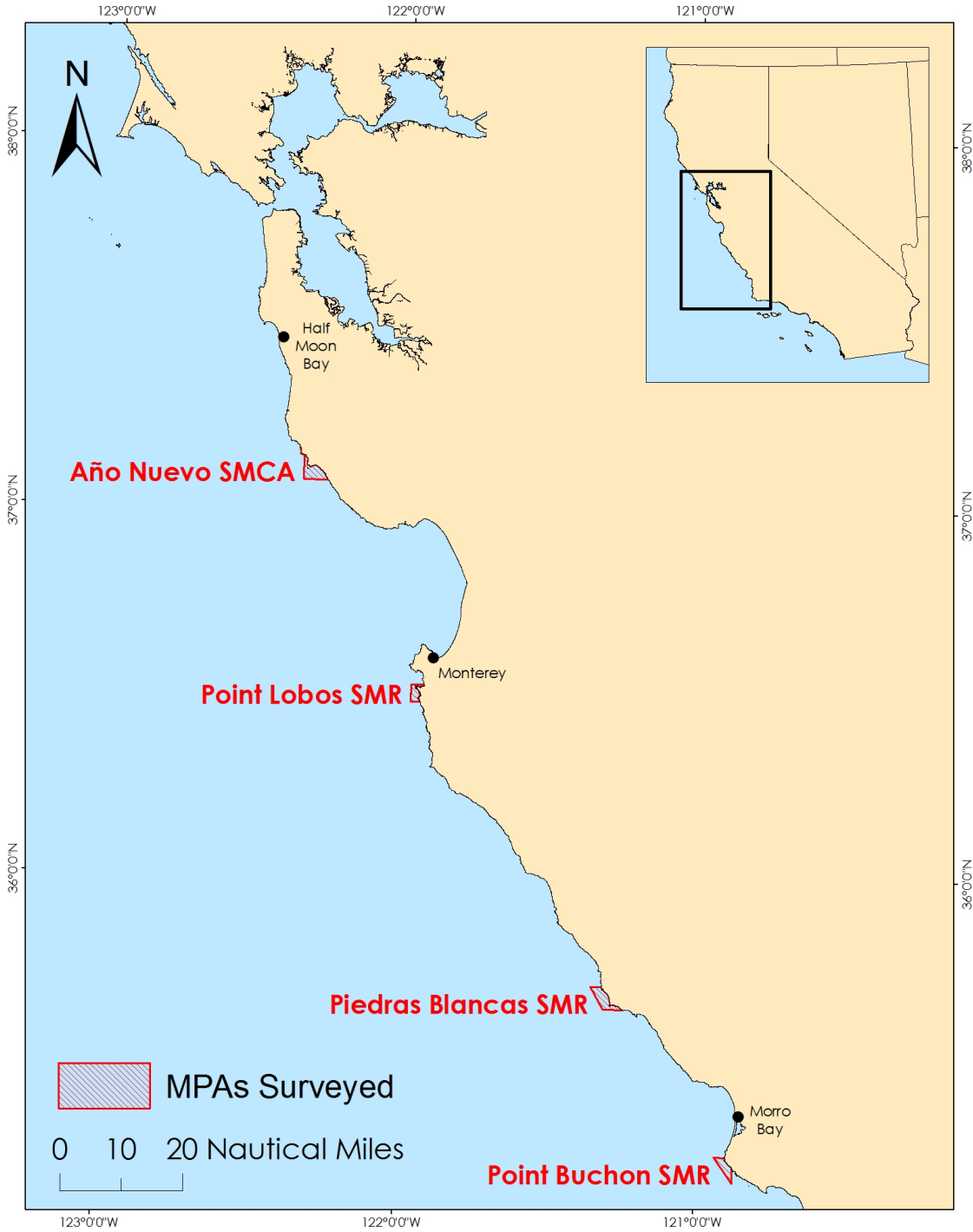
Week 2 - Point Lobos SMR/REF - Kahuna					
Monday, Aug. 12 REF		Tuesday, Aug. 13 MPA		Wednesday, Aug. 14 REF/MPA	
primary	alternate	primary	alternate	primary	alternate
15	17	11	13	10	9
14	5	9	12	7	8
4	2	8	10	5	15
3	1	6	7	4	2

Week 3 - Año Nuevo SMR/REF - Tigerfish					
Tuesday, Sept. 10 REF/MPA		Wednesday, Sept. 11 MPA		Thursday, Sept. 12 REF	
primary	alternate	primary	alternate	primary	alternate
19	18	20	22	10	9
13	14	19	17	6	8
3	5	18	15	4	7
2	1	12	13	1	3

Week 4 - Point Lobos SMR/REF - New Horizon					
Tuesday, Sept. 17 REF		Wednesday, Sept. 18 MPA		Thursday, Sept. 19 REF/MPA	
primary	alternate	primary	alternate	primary	alternate
17	16	12	13	2	15
15	3	11	10	13	8
14	2	8	9	6	7
5	1	7	6	1	17

California Collaborative Fisheries Research Program (CCFRP)

Central California Sampling Areas



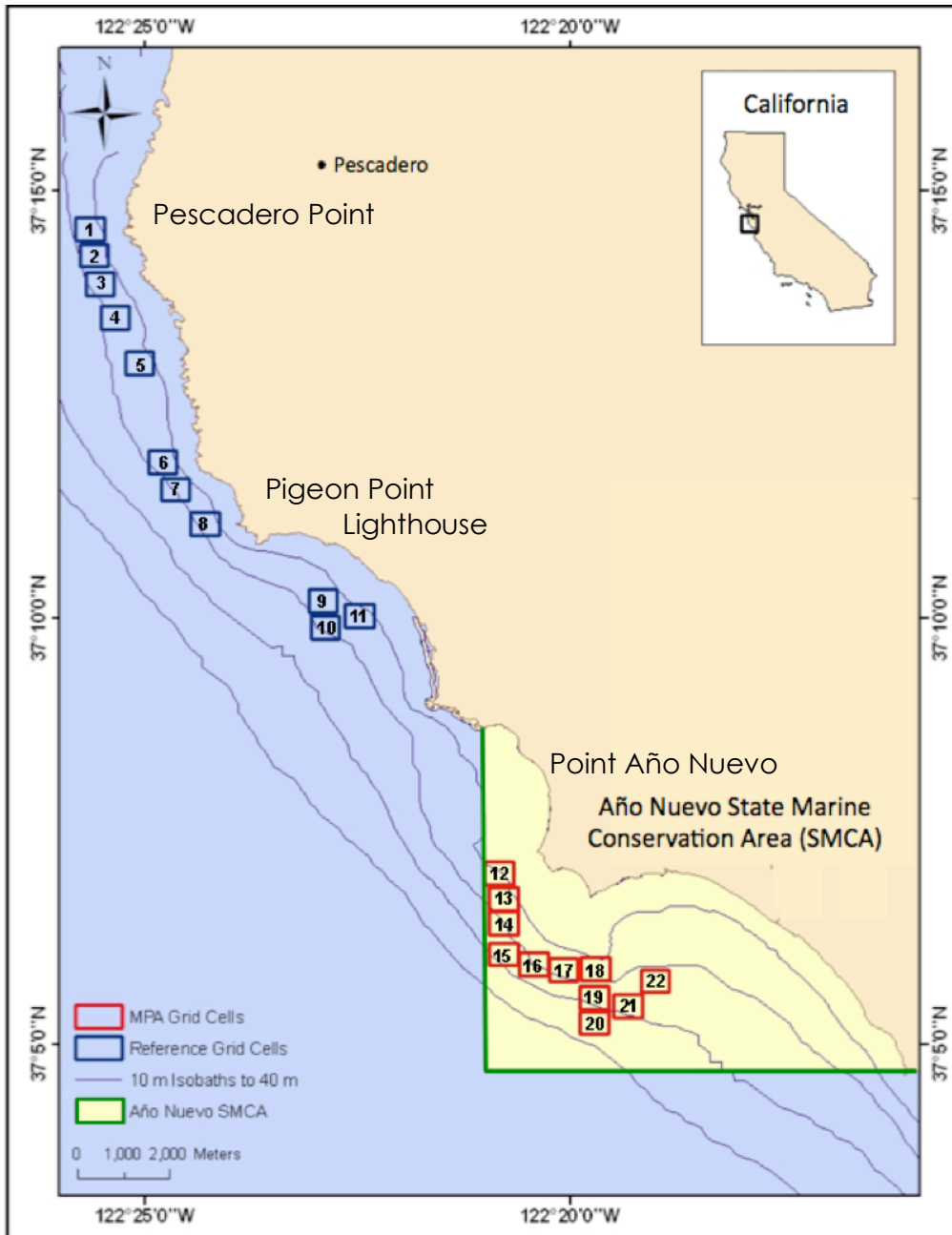


### Año Nuevo SMR/REF Grid Cell Coordinates

Decimal Degrees											
Cell ID	Site	Lat Center	Long Center	Lat 1	Long 1	Lat 2	Long 2	Lat 3	Long 3	Lat 4	Long 4
AN01	REF	37.243	-122.427	37.245	-122.430	37.245	-122.424	37.240	-122.430	37.240	-122.424
AN02	REF	37.237	-122.427	37.240	-122.429	37.240	-122.424	37.235	-122.429	37.235	-122.424
AN03	REF	37.232	-122.425	37.234	-122.428	37.234	-122.423	37.230	-122.428	37.230	-122.423
AN04	REF	37.225	-122.422	37.227	-122.425	37.227	-122.420	37.223	-122.425	37.223	-122.420
AN05	REF	37.216	-122.418	37.218	-122.420	37.218	-122.415	37.214	-122.420	37.214	-122.415
AN06	REF	37.197	-122.413	37.199	-122.416	37.199	-122.410	37.195	-122.416	37.195	-122.410
AN07	REF	37.192	-122.411	37.194	-122.413	37.194	-122.408	37.189	-122.413	37.189	-122.408
AN08	REF	37.185	-122.405	37.187	-122.408	37.187	-122.402	37.183	-122.408	37.183	-122.402
AN09	REF	37.170	-122.382	37.172	-122.384	37.172	-122.379	37.168	-122.384	37.168	-122.379
AN10	REF	37.165	-122.381	37.167	-122.384	37.167	-122.378	37.163	-122.384	37.163	-122.378
AN11	REF	37.167	-122.375	37.169	-122.377	37.169	-122.372	37.165	-122.377	37.165	-122.372
AN12	MPA	37.117	-122.347	37.119	-122.350	37.119	-122.344	37.115	-122.350	37.115	-122.344
AN13	MPA	37.112	-122.346	37.114	-122.349	37.114	-122.344	37.109	-122.349	37.109	-122.344
AN14	MPA	37.107	-122.346	37.109	-122.349	37.109	-122.344	37.105	-122.349	37.105	-122.344
AN15	MPA	37.101	-122.346	37.103	-122.349	37.103	-122.344	37.099	-122.349	37.099	-122.344
AN16	MPA	37.099	-122.340	37.101	-122.343	37.101	-122.338	37.097	-122.343	37.097	-122.338
AN17	MPA	37.098	-122.335	37.100	-122.337	37.100	-122.332	37.096	-122.337	37.096	-122.332
AN18	MPA	37.098	-122.328	37.100	-122.331	37.100	-122.326	37.096	-122.331	37.096	-122.326
AN19	MPA	37.092	-122.329	37.095	-122.331	37.095	-122.326	37.090	-122.331	37.090	-122.326
AN20	MPA	37.088	-122.329	37.090	-122.331	37.090	-122.326	37.085	-122.331	37.085	-122.326
AN21	MPA	37.091	-122.322	37.093	-122.325	37.093	-122.319	37.089	-122.325	37.089	-122.319
AN22	MPA	37.096	-122.317	37.098	-122.319	37.098	-122.314	37.093	-122.319	37.093	-122.314

Decimal Minutes (Lat: 37 degrees, Long: -122 degrees)											
Cell ID	Site	Lat Center	Long Center	Lat 1	Long 1	Lat 2	Long 2	Lat 3	Long 3	Lat 4	Long 4
AN01	REF	14.550	-25.635	14.685	-25.801	14.685	-25.469	14.415	-25.801	14.415	-25.469
AN02	REF	14.240	-25.590	14.375	-25.756	14.375	-25.424	14.105	-25.756	14.105	-25.424
AN03	REF	13.905	-25.520	14.040	-25.686	14.040	-25.354	13.770	-25.686	13.770	-25.354
AN04	REF	13.515	-25.345	13.650	-25.511	13.650	-25.179	13.380	-25.511	13.380	-25.179
AN05	REF	12.975	-25.060	13.110	-25.226	13.110	-24.894	12.840	-25.226	12.840	-24.894
AN06	REF	11.815	-24.780	11.950	-24.946	11.950	-24.614	11.680	-24.946	11.680	-24.614
AN07	REF	11.500	-24.630	11.635	-24.796	11.635	-24.464	11.365	-24.796	11.365	-24.464
AN08	REF	11.100	-24.285	11.235	-24.451	11.235	-24.119	10.965	-24.451	10.965	-24.119
AN09	REF	10.195	-22.900	10.330	-23.066	10.330	-22.734	10.060	-23.066	10.060	-22.734
AN10	REF	9.885	-22.870	10.020	-23.036	10.020	-22.704	9.750	-23.036	9.750	-22.704
AN11	REF	10.015	-22.470	10.150	-22.636	10.150	-22.304	9.880	-22.636	9.880	-22.304
AN12	MPA	7.005	-20.835	7.140	-21.001	7.140	-20.669	6.870	-21.001	6.870	-20.669
AN13	MPA	6.700	-20.780	6.835	-20.946	6.835	-20.614	6.565	-20.946	6.565	-20.614
AN14	MPA	6.415	-20.780	6.550	-20.946	6.550	-20.614	6.280	-20.946	6.280	-20.614
AN15	MPA	6.057	-20.780	6.192	-20.946	6.192	-20.614	5.922	-20.946	5.922	-20.614
AN16	MPA	5.945	-20.425	6.080	-20.591	6.080	-20.259	5.810	-20.591	5.810	-20.259
AN17	MPA	5.875	-20.075	6.010	-20.241	6.010	-19.909	5.740	-20.241	5.740	-19.909
AN18	MPA	5.880	-19.700	6.015	-19.866	6.015	-19.534	5.745	-19.866	5.745	-19.534
AN19	MPA	5.540	-19.715	5.675	-19.881	5.675	-19.549	5.405	-19.881	5.405	-19.549
AN20	MPA	5.250	-19.715	5.385	-19.881	5.385	-19.549	5.115	-19.881	5.115	-19.549
AN21	MPA	5.445	-19.320	5.580	-19.486	5.580	-19.154	5.310	-19.486	5.310	-19.154
AN22	MPA	5.742	-19.000	5.877	-19.166	5.877	-18.834	5.607	-19.166	5.607	-18.834

### Año Nuevo SMR/REF Grid Cell Locations

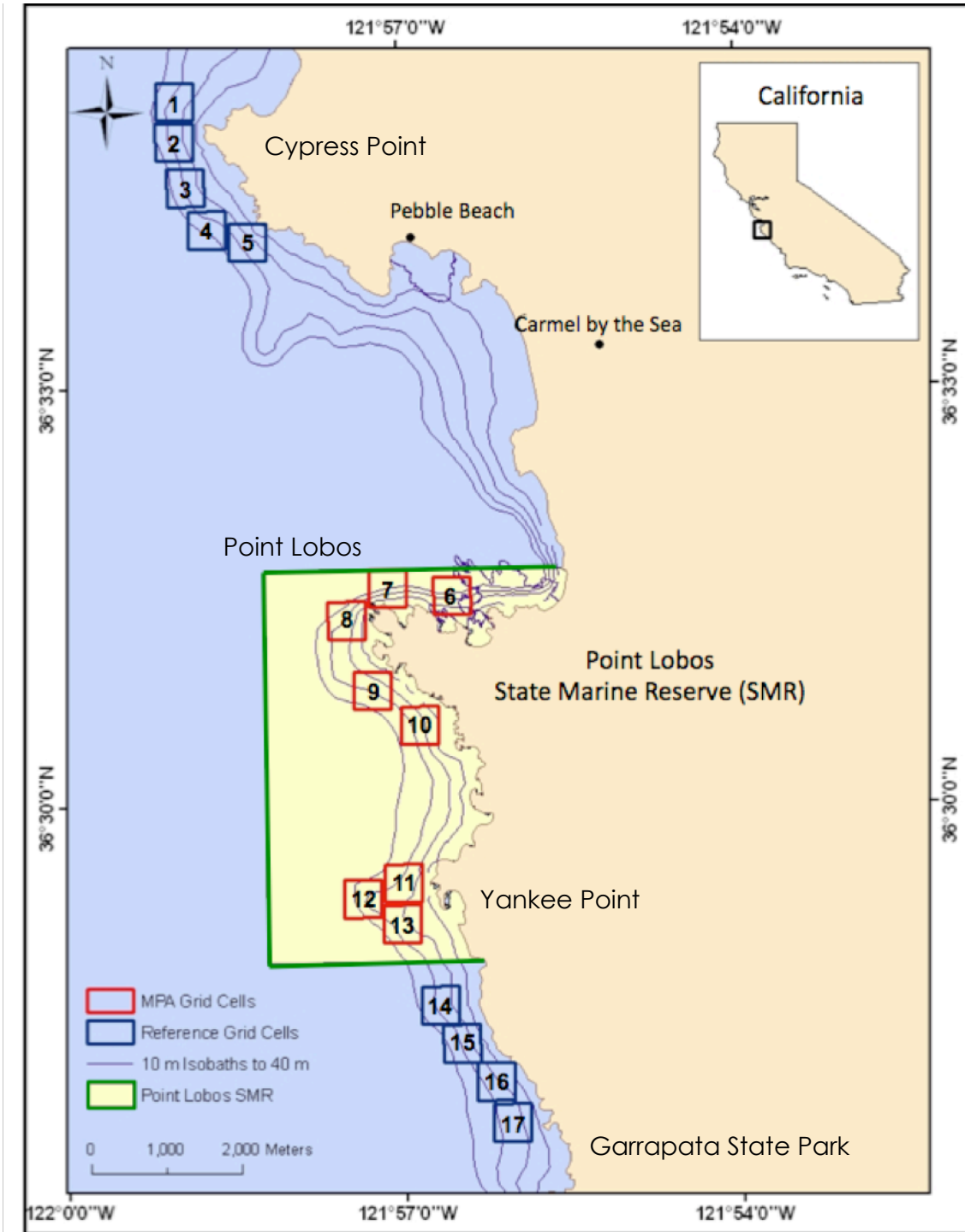


### Point Lobos SMR/REF Grid Cell Coordinates

Decimal Degrees											
Cell ID	Site	Lat Center	Long Center	Lat 1	Long 1	Lat 2	Long 2	Lat 3	Long 3	Lat 4	Long 4
PL01	REF	36.585	-121.983	36.587	-121.986	36.587	-121.980	36.582	-121.986	36.582	-121.980
PL02	REF	36.580	-121.983	36.582	-121.986	36.582	-121.980	36.577	-121.986	36.577	-121.980
PL03	REF	36.574	-121.982	36.576	-121.984	36.576	-121.979	36.572	-121.984	36.572	-121.979
PL04	REF	36.569	-121.978	36.571	-121.981	36.571	-121.976	36.567	-121.981	36.567	-121.976
PL05	REF	36.568	-121.972	36.570	-121.975	36.570	-121.970	36.565	-121.975	36.565	-121.970
PL06	MPA-OLD	36.525	-121.943	36.527	-121.945	36.527	-121.940	36.523	-121.945	36.523	-121.940
PL07	MPA-OLD	36.526	-121.952	36.528	-121.955	36.528	-121.949	36.524	-121.955	36.524	-121.949
PL08	MPA-OLD	36.522	-121.958	36.524	-121.961	36.524	-121.955	36.520	-121.961	36.520	-121.955
PL09	MPA-OLD	36.514	-121.955	36.516	-121.957	36.516	-121.952	36.512	-121.957	36.512	-121.952
PL10	MPA-OLD	36.510	-121.948	36.512	-121.950	36.512	-121.945	36.507	-121.950	36.507	-121.945
PL11	MPA-NEW	36.491	-121.950	36.493	-121.953	36.493	-121.947	36.488	-121.953	36.488	-121.947
PL12	MPA-NEW	36.489	-121.956	36.491	-121.959	36.491	-121.953	36.487	-121.959	36.487	-121.953
PL13	MPA-NEW	36.486	-121.950	36.488	-121.953	36.488	-121.948	36.484	-121.953	36.484	-121.948
PL14	REF	36.476	-121.945	36.478	-121.948	36.478	-121.942	36.474	-121.948	36.474	-121.942
PL15	REF	36.471	-121.942	36.474	-121.945	36.474	-121.939	36.469	-121.945	36.469	-121.939
PL16	REF	36.467	-121.937	36.469	-121.940	36.469	-121.934	36.465	-121.940	36.465	-121.934
PL17	REF	36.462	-121.934	36.464	-121.937	36.464	-121.932	36.460	-121.937	36.460	-121.932

Decimal Minutes (Lat: 36 degrees, Long: -121 degrees)											
Cell ID	Site	Lat Center	Long Center	Lat 1	Long 1	Lat 2	Long 2	Lat 3	Long 3	Lat 4	Long 4
PL01	REF	35.070	-58.985	35.205	-59.151	35.205	-58.819	34.936	-59.151	34.936	-58.819
PL02	REF	34.777	-58.990	34.911	-59.156	34.911	-58.824	34.642	-59.156	34.642	-58.824
PL03	REF	34.450	-58.893	34.585	-59.059	34.585	-58.727	34.316	-59.059	34.316	-58.727
PL04	REF	34.144	-58.707	34.279	-58.873	34.279	-58.542	34.009	-58.873	34.009	-58.542
PL05	REF	34.055	-58.344	34.190	-58.510	34.190	-58.178	33.921	-58.510	33.921	-58.178
PL06	MPA-OLD	31.504	-56.554	31.639	-56.720	31.639	-56.388	31.369	-56.720	31.369	-56.388
PL07	MPA-OLD	31.559	-57.129	31.694	-57.295	31.694	-56.963	31.424	-57.295	31.424	-56.963
PL08	MPA-OLD	31.332	-57.495	31.467	-57.661	31.467	-57.329	31.197	-57.661	31.197	-57.329
PL09	MPA-OLD	30.828	-57.274	30.963	-57.440	30.963	-57.108	30.693	-57.440	30.693	-57.108
PL10	MPA-OLD	30.576	-56.850	30.711	-57.016	30.711	-56.684	30.441	-57.016	30.441	-56.684
PL11	MPA-NEW	29.443	-57.014	29.578	-57.180	29.578	-56.848	29.308	-57.180	29.308	-56.848
PL12	MPA-NEW	29.333	-57.373	29.468	-57.539	29.468	-57.207	29.198	-57.539	29.198	-57.207
PL13	MPA-NEW	29.152	-57.025	29.287	-57.191	29.287	-56.859	29.017	-57.191	29.017	-56.859
PL14	REF	28.564	-56.695	28.699	-56.861	28.699	-56.529	28.429	-56.861	28.429	-56.529
PL15	REF	28.288	-56.506	28.423	-56.672	28.423	-56.340	28.153	-56.672	28.153	-56.340
PL16	REF	28.013	-56.205	28.148	-56.371	28.148	-56.039	27.878	-56.371	27.878	-56.039
PL17	REF	27.718	-56.064	27.853	-56.230	27.853	-55.898	27.583	-56.230	27.583	-55.898

### Point Lobos SMR/REF Grid Cell Locations



**2019 CCFRP Science Crew Schedule - August**

Date	Day	Port	MPA	Site	Fishing Vessel	Last Name	First Name	Field Assignment	Prep	Check	Load	Clean	Process
<b>Week 1</b>													
6-Aug	Tue	HMB	AN	MPA	Huli Cat	Chiu	Jen	miscellaneous coordination tasks		2-Aug	5-Aug		
6-Aug	Tue	HMB	AN	MPA	Huli Cat	Fields	Ryan	field data summary					
6-Aug	Tue	HMB	AN	MPA	Huli Cat	Brown	Bonnie	GPS Maintenance	2-Aug				
6-Aug	Tue	HMB	AN	MPA	Huli Cat	Cieri	Katie	social media					
6-Aug	Tue	HMB	AN	MPA	Huli Cat	Mohay	Jackie	volunteer communications and logistics					
6-Aug	Wed	HMB	AN	MPA	Huli Cat	Brooks	Rachel	clean and maintain gear	2-Aug				
6-Aug	Tue	HMB	AN	MPA	Huli Cat	Starr	Rick	assist where needed					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Chiu	Jen	miscellaneous coordination tasks					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Fields	Ryan	social media					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Brown	Bonnie	GPS Maintenance					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Cieri	Katie	clean and maintain gear					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Mohay	Jackie	volunteer communications and logistics					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Brooks	Rachel	field data summary					
7-Aug	Wed	HMB	AN	REF	Huli Cat	Starr	Rick	assist where needed					
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Chiu	Jen	miscellaneous coordination tasks				9-Aug	9-Aug
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Fields	Ryan	clean and maintain gear				9-Aug	9-Aug
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Brown	Bonnie	GPS Maintenance				9-Aug	9-Aug
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Cieri	Katie	field data summary					
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Mohay	Jackie	volunteer communications and logistics				9-Aug	9-Aug
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Brooks	Rachel	social media				9-Aug	9-Aug
8-Aug	Thu	HMB	AN	R/M	Huli Cat	Starr	Rick	assist where needed					
<b>Week 2</b>													
12-Aug	Mon	ML	PL	REF	Kahuna	Chiu	Jen	miscellaneous coordination tasks	9-Aug		9-Aug		12-Aug
12-Aug	Mon	ML	PL	REF	Kahuna	Fields	Ryan	clean and maintain gear		9-Aug	9-Aug		12-Aug
12-Aug	Mon	ML	PL	REF	Kahuna	Brown	Bonnie	GPS Maintenance					12-Aug
12-Aug	Mon	ML	PL	REF	Kahuna	Mohay	Jackie	volunteer communications and logistics	9-Aug		9-Aug		12-Aug
12-Aug	Mon	ML	PL	REF	Kahuna	Cieri	Katie	social media					12-Aug
12-Aug	Mon	ML	PL	REF	Kahuna	Brooks	Rachel	field data summary					12-Aug
13-Aug	Tue	ML	PL	MPA	Kahuna	Chiu	Jen	miscellaneous coordination tasks					
13-Aug	Tue	ML	PL	MPA	Kahuna	Fields	Ryan	field data summary					
13-Aug	Tue	ML	PL	MPA	Kahuna	Brown	Bonnie	GPS Maintenance / social media					
13-Aug	Tue	ML	PL	MPA	Kahuna	Mohay	Jackie	volunteer communications and logistics					
13-Aug	Tue	ML	PL	MPA	Kahuna	Cieri	Katie	clean and maintain gear					
13-Aug	Tue	ML	PL	MPA	Kahuna	Matthews	Kinsey	social media (shadow Bonnie)					
14-Aug	Wed	ML	PL	R/M	Kahuna	Chiu	Jen	miscellaneous coordination tasks					
14-Aug	Wed	ML	PL	R/M	Kahuna	Brown	Bonnie	GPS Maintenance				15-Aug	
14-Aug	Wed	ML	PL	R/M	Kahuna	Mohay	Jackie	volunteer communications and logistics				15-Aug	
14-Aug	Wed	ML	PL	R/M	Kahuna	Cieri	Katie	social media (with Jake)					
14-Aug	Wed	ML	PL	R/M	Kahuna	Matthews	Kinsey	field data summary				15-Aug	
14-Aug	Wed	ML	PL	R/M	Kahuna	Todd	Jake	social media (shadow Katie)				15-Aug	

Port: HMB = Half Moon Bay MRY = Monterey ML = Moss Landing  
 MPA: ANO = Año Nuevo SMR/REF PL = Point Lobos SMR/REF

**2019 CCFRP Science Crew Schedule - September**

Date	Day	Port	MPA	Site	Fishing Vessel	Last Name	First Name	Field Assignment	Prep	Check	Load	Clean	Process
<b>Week 3</b>													
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Chiu	Jen	miscellaneous coordination tasks					
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Fields	Ryan	clean and maintain gear		9-Sep	9-Sep		
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Brown	Bonnie	GPS Maintenance					
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Mohay	Jackie	volunteer communications and logistics					
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Cieri	Katie	social media	9-Sep		9-Sep		
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Brooks	Rachel	field data summary	9-Sep		9-Sep		
10-Sep	Tue	HMB	ANO	R/M	Tigerfish	Worden	Sara	assist where needed					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Chiu	Jen	miscellaneous coordination tasks					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Fields	Ryan	social media					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Brown	Bonnie	GPS Maintenance					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Mohay	Jackie	volunteer communications and logistics					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Cieri	Katie	field data summary					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Brooks	Rachel	clean and maintain gear					
11-Sep	Wed	HMB	ANO	MPA	Tigerfish	Worden	Sara	assist where needed					
12-Sep	Thu	HMB	ANO	REF	Tigerfish	Chiu	Jen	miscellaneous coordination tasks				13-Sep	13-Sep
12-Sep	Thu	HMB	ANO	REF	Tigerfish	Fields	Ryan	field data summary				13-Sep	13-Sep
12-Sep	Thu	HMB	ANO	REF	Tigerfish	Brown	Bonnie	GPS Maintenance /social media				13-Sep	13-Sep
12-Sep	Thu	HMB	ANO	REF	Tigerfish	Mohay	Jackie	volunteer communications and logistics				13-Sep	13-Sep
12-Sep	Thu	HMB	ANO	REF	Tigerfish	Worden	Sara	assist where needed					
12-Sep	Thu	HMB	ANO	REF	Tigerfish	Shen	Chenchen	assist where needed					
<b>Week 4</b>													
17-Sep	Tue	MRY	PL	REF	New Horizon	Chiu	Jen	miscellaneous coordination tasks					17-Sep
17-Sep	Tue	MRY	PL	REF	New Horizon	Fields	Ryan	clean and maintain gear					17-Sep
17-Sep	Tue	MRY	PL	REF	New Horizon	Brown	Bonnie	GPS Maintenance					17-Sep
17-Sep	Tue	MRY	PL	REF	New Horizon	Mohay	Jackie	volunteer communications and logistics					17-Sep
17-Sep	Tue	MRY	PL	REF	New Horizon	Cieri	Katie	social media					17-Sep
17-Sep	Tue	MRY	PL	REF	New Horizon	Brooks	Rachel	field data summary					17-Sep
17-Sep	Tue	MRY	PL	REF	New Horizon	Worden	Sara	assist where needed					
17-Sep	Tue	MRY	PL	REF	New Horizon	Kogut	Nina	Coming on as an observer (CDFW)					
18-Sep	Wed	MRY	PL	MPA	New Horizon	Chiu	Jen	miscellaneous coordination tasks					
18-Sep	Wed	MRY	PL	MPA	New Horizon	Fields	Ryan	assist where needed					
18-Sep	Wed	MRY	PL	MPA	New Horizon	Brown	Bonnie	GPS Maintenance	16-Sep		16-Sep		
18-Sep	Wed	MRY	PL	MPA	New Horizon	Mohay	Jackie	volunteer communications and logistics					
18-Sep	Wed	MRY	PL	MPA	New Horizon	Cieri	Katie	social media		16-Sep	16-Sep		
18-Sep	Wed	MRY	PL	MPA	New Horizon	Brooks	Rachel	clean and maintain gear					
18-Sep	Wed	MRY	PL	MPA	New Horizon	Matthews	Kinsey	field data summary	16-Sep		16-Sep		
18-Sep	Wed	MRY	PL	MPA	New Horizon	Todd	Jake	field data summary	16-Sep		16-Sep		
19-Sep	Thu	MRY	PL	R/M	New Horizon	Chiu	Jen	miscellaneous coordination tasks				20-Sep	
19-Sep	Thu	MRY	PL	R/M	New Horizon	Fields	Ryan	field data summary				20-Sep	
19-Sep	Thu	MRY	PL	R/M	New Horizon	Brown	Bonnie	GPS Maintenance /social media				20-Sep	
19-Sep	Thu	MRY	PL	R/M	New Horizon	Mohay	Jackie	volunteer communications and logistics				20-Sep	
19-Sep	Thu	MRY	PL	R/M	New Horizon	Worden	Sara	assist where needed				20-Sep	
19-Sep	Thu	MRY	PL	R/M	New Horizon	Shen	Chenchen	assist where needed				20-Sep	

Port: HMB = Half Moon Bay MRY = Monterey ML = Moss Landing

MPA: ANO = Año Nuevo SMR/REF PL = Point Lobos SMR/REF

Entry 1

Date:	Fishing Vessel:			
Area:	Captain:			
Site:	Deckhand:			
Science Crew (First and Last Names):	No. Volunteers (No. Anglers): ( )			
1)	Angler Contest Winner(s):			
2)	1. _____			
3)	Why? _____			
4)	2. _____			
5)	Why? _____			
6)	3. _____			
7)	Why? _____			
8)				
Start of Fishing Day:	Grid Cells Sampled: 1st 2nd 3rd 4th			
End of Fishing Day:	No. Grid Cells ; No. Drifts: ;			
Bait/Gear Used:	No. Data Sheets:			
1) LCD bar + shrimpfly teaser	No. Fishes Retained: _____			
2) red/white shrimpfly, no bait	Species: _____			
3) red/white shrimpfly + squid bait (mantle strips only)	Student: _____			
	4 oz	6 oz	8 oz	10 oz
Beginning No. Bars:				
End No. Bars:				
Total No. Lost:				
Station Rotations (Angler Name, Grid Cell No):				
Trip Comments (e.g., weather, interesting catches, angler issues, tag returns):				
<p style="text-align: right;">Total No. Species Caught: _____</p> <p style="text-align: right;">Total No. Fishes Caught: _____</p> <p style="text-align: right;">Total No. Fishes Tagged: _____</p>				

Entry 1 (cont'd): Fish Summary Information

Species	Tally				Total		
	<20 Fathoms	>20 Fathoms	Tag	Sac	Caught	Tag	Sac
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
<b>Total</b>							



Entry 1 (cont'd)

First Grid Cell:	No. Drifts Completed:	Total Fishing Time: min sec
------------------	-----------------------	-----------------------------

Drift No.	1	2	3	4	5
Total Time	: :	: :	: :	: :	: :

Station Rotations:
Cell Comments:
#BAR Anglers ___ #Fly Anglers ___ #BAT Anglers ___

Second Grid Cell:	No. Drifts Completed:	Total Fishing Time: min sec
-------------------	-----------------------	-----------------------------

Drift No.	1	2	3	4	5
Total Time	: :	: :	: :	: :	: :

Station Rotations:
Cell Comments:
#BAR Anglers ___ #Fly Anglers ___ #BAT Anglers ___

Entry 1 (cont'd)

Third Grid Cell:	No. Drifts Completed:	Total Fishing Time: min sec
------------------	-----------------------	-----------------------------

Drift No.	1	2	3	4	5
Total Time	: :	: :	: :	: :	: :

Station Rotations:
Cell Comments:
#BAR Anglers ___ #Fly Anglers ___ #BAT Anglers ___

Fourth Grid Cell:	No. Drifts Completed:	Total Fishing Time: min sec
-------------------	-----------------------	-----------------------------

Drift No.	1	2	3	4	5
Total Time	: :	: :	: :	: :	: :

Station Rotations:
Cell Comments:
#BAR Anglers ___ #Fly Anglers ___ #BAT Anglers ___

**Example Datasheet** (available for printing from Excel in the shared CCFRP Dropbox...edit as appropriate for your region)

California Collaborative Fisheries Research Program (Hook-and-Line) Year: \_\_\_\_\_ Page: \_\_\_\_\_ of \_\_\_\_\_  
 Location: \_\_\_\_\_ Vessel: \_\_\_\_\_ Date: \_\_\_\_\_ Area: \_\_\_\_\_ Site (circle one): MPA / REF Grid #: \_\_\_\_\_ Drift #: \_\_\_\_\_  
 Start Time: \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_ End Time: \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_ Start/End Depth: \_\_\_\_\_ / \_\_\_\_\_ ft Start Lat/Long: \_\_\_\_\_° \_\_\_\_\_' / \_\_\_\_\_° \_\_\_\_\_'  
 No. of Anglers: \_\_\_\_\_ Recorder: \_\_\_\_\_ Tag Crew: \_\_\_\_\_ Sur. Water Temp (°F): \_\_\_\_\_ End Lat/Long: \_\_\_\_\_° \_\_\_\_\_' / \_\_\_\_\_° \_\_\_\_\_'  
 Cloud Cover: \_\_\_\_\_ Relief: \_\_\_\_\_ No. Seals/Sea Lions: \_\_\_\_\_ / \_\_\_\_\_ Wind Speed/Direction: \_\_\_\_\_ Swell Height/Direction: \_\_\_\_\_ Weights/Bars: \_\_\_\_\_ / \_\_\_\_\_ oz

	Species	Stn #	Tag ID	TL (cm)	Sex	Cond.	Depth (ft)	Lat: °	Long: °	WP #	Comments
1											
2											
3											
4											
5											
6											
...											
20											

**Comments** (e.g., anglers under/over time; station rotations; GPS unit #; jelly presence (species and number); kelp; red tide; rewrite each page, except angler over/under times):

**Stations:** 1-4 (bow) = Lingcod bars (with shrimp fly teaser); 6-9 (starboard) = shrimp flies without bait; 11-14 (port) = shrimp flies with squid mantle strips only  
**Cloud Cover:** 0 = blue skies (< 25% cloud cover); 1 = moderate cloud cover (25-75%); 2 = high cloud cover (> 75%); 3 = foggy **Relief Codes:** 1 = flat (< 1 m); 2 = moderate (1-3 m); 3 = high (> 3 m)  
**Condition Codes:** 1 = crystallized eyes; 2 = vented; 3 = marine mammal or fish predation (no mortality); 4 = hook damage or body cuts/scale loss; 5 = released with a descending device; 6 = floater (mortality uncertain); 7 = mortality from mammal or fish predation; 8 = mortality caused by bird predation, capture/handling stress, or any cause other than mammal/fish predation; 0 = good condition (no other code applies)

Record way point (WP) and GPS coordinates for every fish possible (minimum req'd = once every five fish).

**DO NOT TAG** if: < 24 cm; crystallized eyes; hook damage; dropped on deck; severe barotrauma; tag gun misfires

## Comments About Data Collection

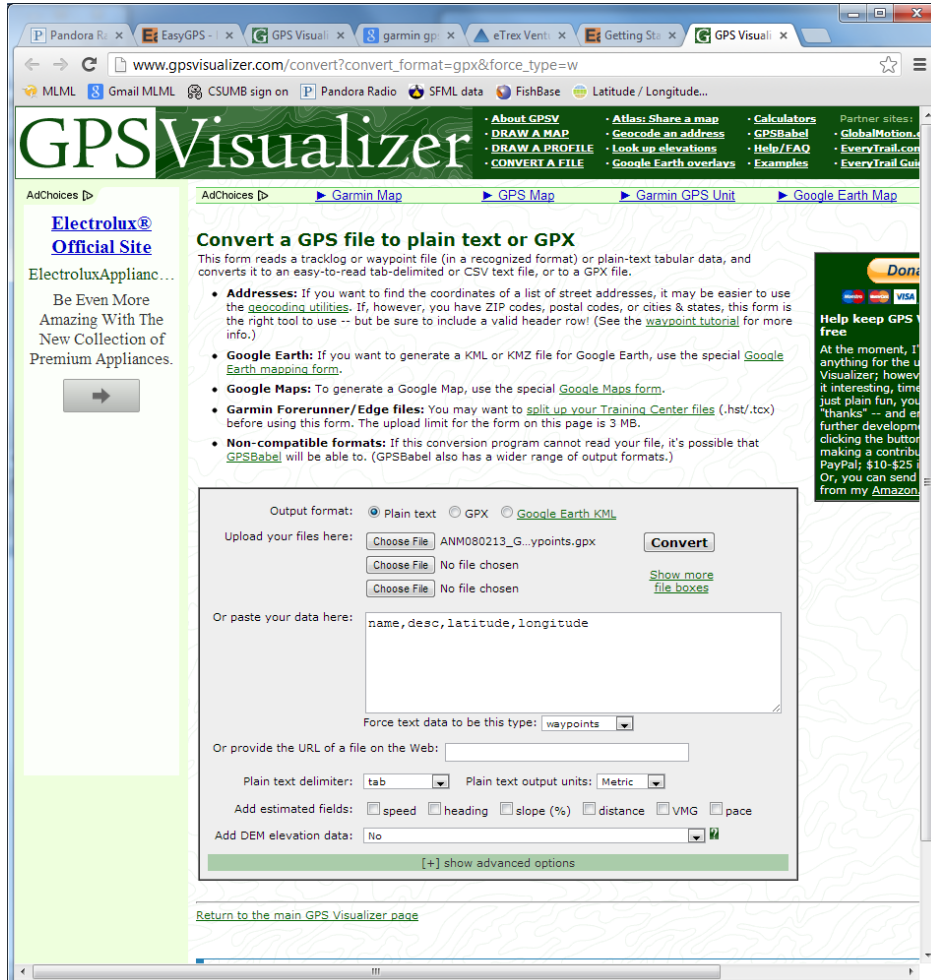
- Fully cross out incorrect numbers or comments and rewrite. Do not attempt to write over the mistake. Use the comments section of the datasheet if needed, just specify what the value is (e.g. length=26).
- If you are unsure of species identification (and other science crew are not able to come to a consensus), take a photo(s), record the time, and indicate that you are unsure on the datasheet. Verify the photo when you get back to the lab and correct the datasheet. Don't guess or simply describe the fish in the "species" field (e.g., calling a fish "red" instead of its appropriate common name or fish description).
- Make sure all of the heading info (GPS points, weather condition, start/end times, etc.) on each datasheet is completely filled out.
- Write angler +/- times on one datasheet only (if the drift runs for multiple pages, only write the angler +/- times on the page that it occurs to avoid confusion).
- Any other comments should be copied on all pages of a drift (e.g., Angler #6=Jen C., or jellies).
- Take GPS points as often as possible (at a minimum, every 5 fish) and record the waypoint number.
- Avoid using species codes (GPR, CPR, etc.) in the species field on the datasheet...it's too confusing when codes are similar and handwriting is not great.
- Ideally, anglers will be assigned to one fishing station/gear type for the entire day. However, if anglers want to switch gear types throughout the day, ensure that it is documented on your datasheets and/or in the logbook. If two or more people are splitting a station, be sure to write that information in the logbook/datasheets. It is usually easiest (from a data entry perspective) to switch after a cell is complete, but each lead will have a system that works for them.
- Code 0 should be reserved for fishes that don't exhibit conditions pertaining to other codes.
- Make sure to write down all condition codes (in the order that they occur). Writing the codes in order is important to reference back the sequence of events (e.g., vented, floated, descended).
- If a tag is cut or misfired, clearly cross out the number and/or make a note in the comments section. If you make a mistake, cross out the number and write it again instead of trying to correct the existing one. Tag numbers can be written in the comments section if there is little room in the crossed out box in the datasheet.
- At the end of the drift, glance through the tag numbers. Do they make sense? Did you use a consecutive string of tags? If so, are all of the tag numbers in order? Be aware of when you use singles (it may also help to write a comment that it's a single tag).
- At the end of your cell, go through all of the data sheets and double check everything. Is everything filled out? Values make sense? Writing legible? Mistakes properly crossed out?
- For recording sex, write M (Male) or F (Female) clearly for appropriate species.
- Specify "scale loss" or "hook damage" when using code 4. If it is "hook damage", specify where it is located. You can use "SL" or "HD" for shorthand.
- If the angler is unknown, note it in the comments of that fish instead of guessing which station it came from. You can write down the gear type if you know what side of the boat it came from, but only do this if you're certain.
- If there are 21 or more fish per drift, you must start a new page and fill in the heading completely. Even if there is only one fish on the subsequent page, do not try to fit it onto the first page. Data in the header and comments section can be copied after the drift is over but it is important to add a page number so the sequence of pages is noted in case a third (or more) sheets are used in a single drift.
- Condition code 6 refers to a fish that is floating but we lose track of it or floats away. Mark code 6 until we update the status or are no longer able to locate the fish. If we observe the

mortality, condition code 6 is replaced with code 7 or 8. If the fish is floating and we retrieve it and descend it, code 6 is crossed out, floater goes into the comments box, and condition code 5 is entered into the condition codes box.

- Code 8 is for any mortality that occurs for reasons other than natural causes (e.g., barotrauma, birds).

## How to Export GPS Waypoints from the Garmin GPS Map 78

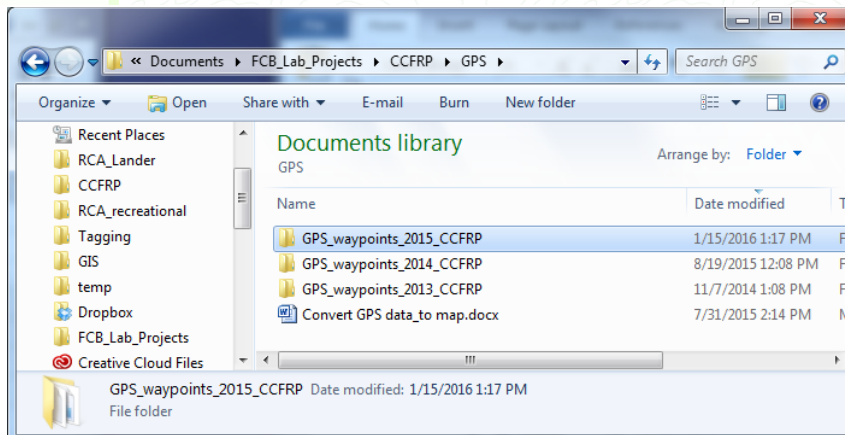
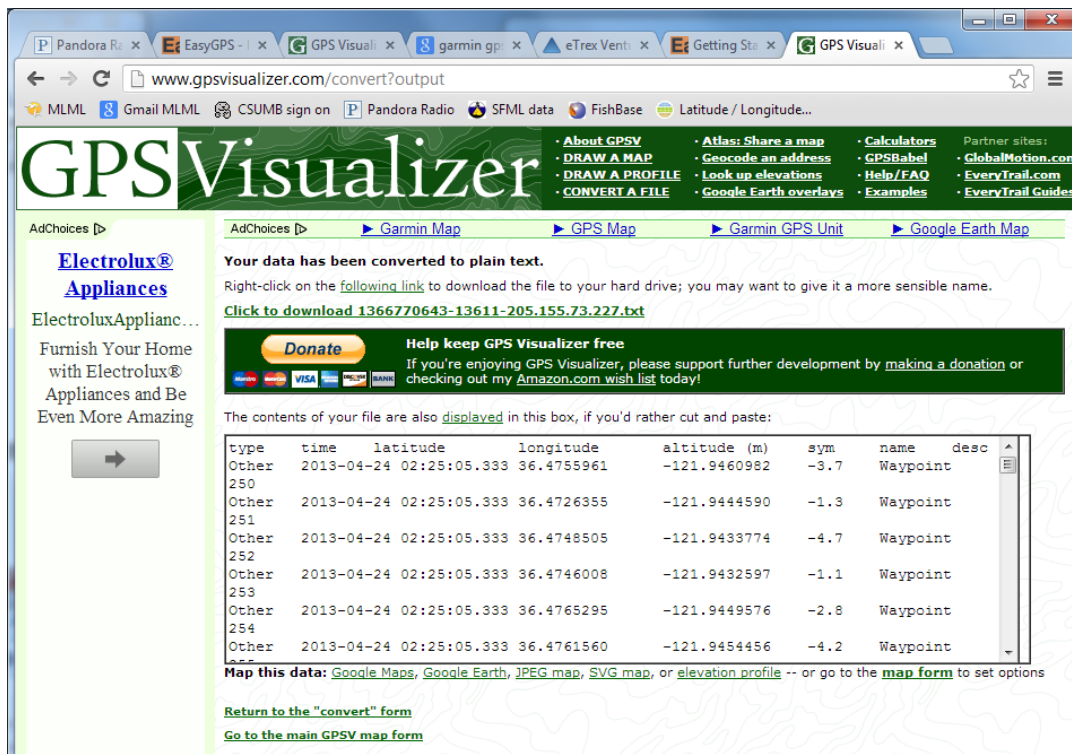
1. Convert the .gpx file to a text file:  
Go to [http://www.gpsvisualizer.com/convert?convert\\_format=gpx&force\\_type=w](http://www.gpsvisualizer.com/convert?convert_format=gpx&force_type=w)
2. Choose your .gpx file and convert it to Plain text



3. Click Convert

Note: We typically wait till the end of the season and convert all .gpx files at once. This provides us with a single .TXT file to use in the following steps

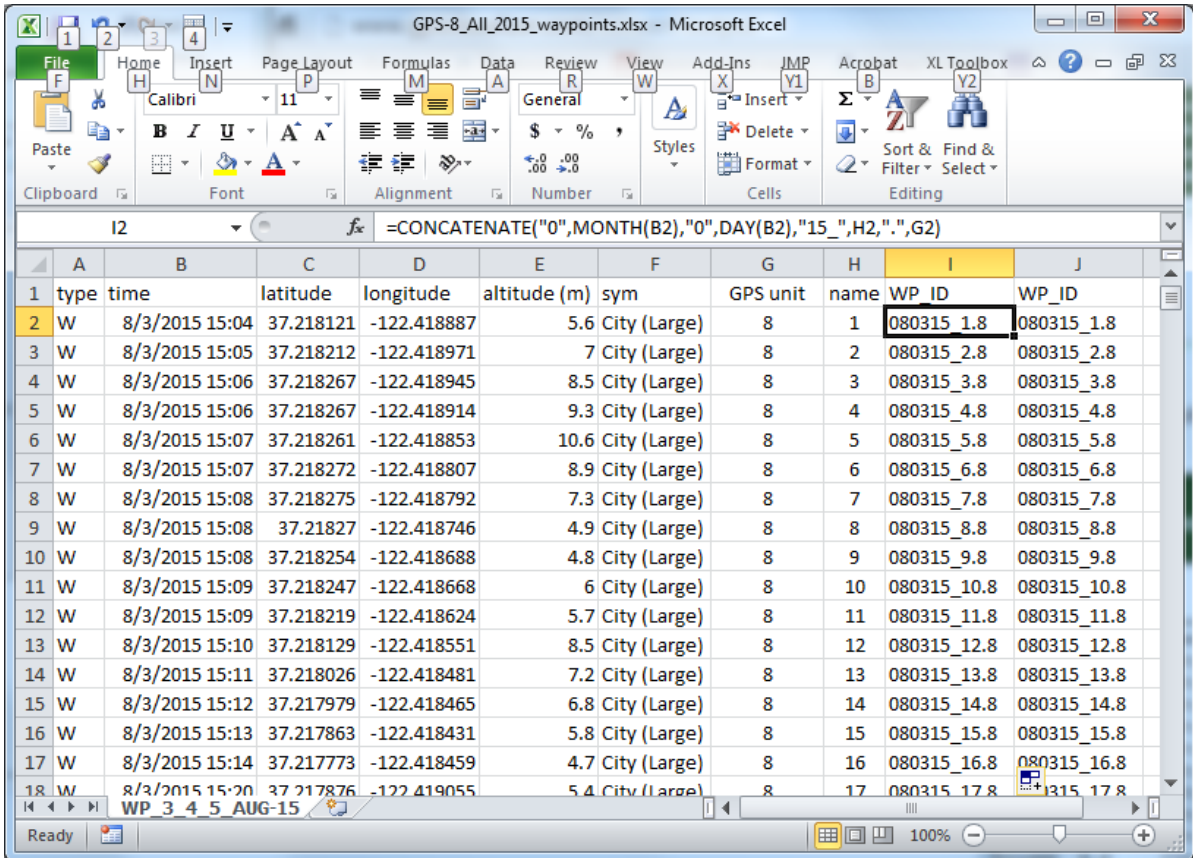
4. Save .txt file from link at the top of the page



5. Open the text file in Microsoft Excel and add a column for :
  - a. The 'GPS\_unit' so you know which unit the waypoints came from.
  - b. "Waypoint ID" and populate with this formula, replacing the time area with the cell number, the year with the last two digits of the pertinent year, and the:
 
$$=CONCATENATE("0",MONTH([time]),"0",DAY([time]),"[Year]_",[name],".",[GPS\ unit])$$
 Which is: for the sheet below
 
$$=CONCATENATE("0",MONTH(B2),"0",DAY(B2),"15_",H2,".",G2)$$

Note: The formula should result in a date that is 6 characters long. You will need to remove/include the "0" for both day and month as needed to end up with 6 characters total.

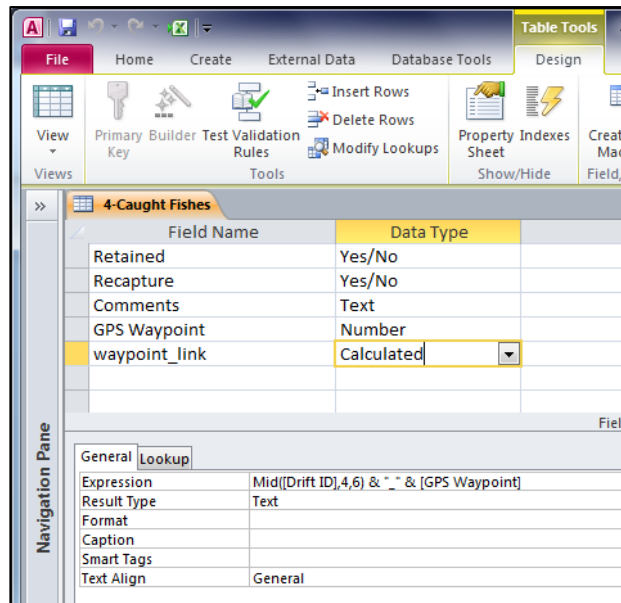
Note: Check that the Access database includes the GPS unit number as part of the Waypoint ID. If not, remove it from the above formula. The important point is to have the GPX data waypoint\_ID perfectly match the Waypoint ID in the database.



6. Save as an .xlsx or .xls for importing into the CCFRP database and in a .xls format if mapping the point in ArcMap. If you are mapping in ArcMap be sure to format the lat and long as numbers.

### How to add lat and lon to *caught fishes* table in database

1. Use the existing (or create a new field) in the Caught Fishes table for the waypoint link. Define the data type as “calculated” in the design view of the table and this expression: `Mid([Drift ID],4,6) & " " & [GPS Waypoint]` to replicate the data in the waypoint ID field of the GPS Excel document.





The screenshot shows the Microsoft Access interface with the 'Table Tools' ribbon active. The ribbon includes tabs for 'Fields' and 'Table', and groups for 'View', 'Clipboard', 'Sort & Filter', 'Records', and 'Find'. Below the ribbon is a data table with the following columns: Retained, Recapture, Comments, GPS Waypoi, and waypoint\_link. The table contains six rows of data, with the third row having 'stomach in mouth' in the Comments column.

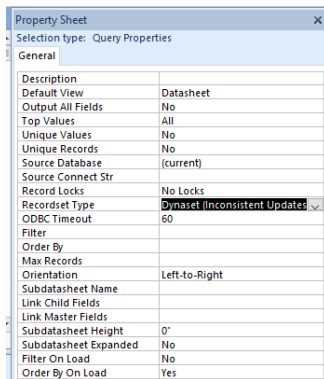
Retained	Recapture	Comments	GPS Waypoi	waypoint_link
<input type="checkbox"/>	<input type="checkbox"/>		794.8	081315_794.8
<input type="checkbox"/>	<input type="checkbox"/>		794.8	081315_794.8
<input type="checkbox"/>	<input type="checkbox"/>		794.8	081315_794.8
<input type="checkbox"/>	<input type="checkbox"/>	stomach in mouth	795.8	081315_795.8
<input type="checkbox"/>	<input type="checkbox"/>	stomach out of mouth	795.8	081315_795.8
<input type="checkbox"/>	<input type="checkbox"/>	stomach in mouth	795.8	081315_795.8

2. Import the Excel document with the waypoints in it.
3. Create a query to link the waypoint ID and the waypoint link

The screenshot shows the Microsoft Access Query Design view for a query named 'Add waypoints to fish'. The design grid shows a relationship between the '2015\_CCFRP\_Waypoints' table and the '4-Caught Fishes' table. The '2015\_CCFRP\_Waypoints' table has fields: type, time, latitude, longitude, altitude, GPS unit, name, WP\_ID\_calc, and WP\_ID. The '4-Caught Fishes' table has fields: Condition 0 through Condition 8, All Conditions, Retained, Recapture, Comments, GPS Waypoint, and waypoint\_link. A line connects the 'WP\_ID' field in the first table to the 'waypoint\_link' field in the second table. Below the design grid is a table with the following data:

Field:	WP_ID	latitude	longitude	Lat Released (DD)	Lon Released (DD)
Table:	2015_CCFRP_Waypoints	2015_CCFRP_Waypoi	2015_CCFRP_Waypoi	4-Caught Fishes	4-Caught Fishes
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:					

While creating the query, click the property Sheet and make sure that Recordset Type is set to 'Dynaset (Inconsistent Update)'. This is necessary to be able to copy and paste into columns as described in step 4



4. Run the query and copy and paste the latitude and longitude columns into the Caught Fishes Lat and Lon released fields.
5. Check the Caught Fishes table for empty lat and lon fields. If there are fishes that were caught in the year you are updating check the waypoint ID field and your Excel document to make sure there were no typos.
6. Delete the query and waypoint table from the database.

## Data Entry and Error Checking

### Getting familiar with database and terms

- Before any data entry (or data checking) occurs, make sure to read the sections regarding the database: [Database Information](#), [Database Tables](#), [Explanations](#), [Codes used in the Database](#), [Glossary of Database Fields](#). This may seem like something that is overwhelming or wouldn't make that much of a difference if someone else is showing you how to do these types of tasks. There are SO many rules; it is hard to keep track of all of them even if someone has recently been working in the database. It is best to have this read before someone goes over data entry/data checking with you so that you may ask questions about those specific rules.
- Additionally, it is important to update these sections with any information that may be relevant. If there are items that have changed or new procedures arise, these need to be documented and should have the date or season entered with them (e.g., In 2012, we implemented...).

### Data Entry: Getting started

- When it is time to start data entry, it is important to make documentation during the process and note questions that arise. It is easy to forget things when working on the database intermittently.
- Make a list of all of the data that need to be entered (e.g., angler information, trip information, individual days of sampling; [Figure 9](#)). These data will go into a word document that will be placed in front of the datasheets to be entered. Print document and keep at the beginning of the data binder. This sheet documents who is entering each day, when data entry started, commenced, and notes on quality control/data checking.
- When correcting data, note all errors on this sheet so that the person entering those data is aware of mistakes and can alter the way they enter and spot check their own data.

Trip Date	Entry Start	Entry End	Quality Control	Errors	Completed?
PL-05 8/23/12	11/26/12 AL	12/7/12 AL	12/17/12 JC	<ul style="list-style-type: none"> <li>• incorrect lat/long</li> <li>• missed wind direction</li> <li>• missed checking condition boxes</li> <li>• typo in drift comment</li> <li>• incorrect cell id</li> <li>• incorrect gear type</li> <li>• incorrect angler id</li> <li>• wrong TL</li> <li>• wrong long (misspelled)</li> </ul>	YES 12/17/12 JC
PL-06 9/18/12	12/7/12 AL	12/7/12 AL	12/17/12 JC	<ul style="list-style-type: none"> <li>• incorrect start time</li> <li>• wrong weight value entered</li> <li>• missed checking condition box</li> <li>• wrong sex for LCD written</li> <li>• missed fish comment</li> <li>• wrong lat/long</li> <li>• station # is written in wrong column</li> <li>• switched lat/longs</li> <li>• incorrect angler # in drift</li> <li>• misspelled (from science crew)</li> </ul>	YES 12/17/12 JC
PL-07 9/19/12	12/7/12 AL	12/10/12 AL	12/17/12 JC	<ul style="list-style-type: none"> <li>• missed drift comment</li> <li>• wrong TL</li> <li>• wrong sex for LCD written</li> <li>• wrote R (REF) instead of M (MPA)</li> <li>• wrong lat/long written</li> <li>• wrong degree angle written for cell #7</li> <li>• condition code box not checked</li> <li>• typo in fish comments</li> <li>• incorrect fish comment</li> </ul>	YES 12/17/12 JC
PL-08 9/20/12	12/10/12 AL	12/10/12 AL	12/18/12 JC	<ul style="list-style-type: none"> <li>• typo in start lat</li> <li>• repeated drift comments within same drift</li> <li>• date entered incorrectly in drift id</li> <li>• forgot B sign on ion released</li> <li>• wrong lat/long</li> </ul>	YES 12/18/12 JC

Figure 9. Example of data entry/data checking records sheet.

### *Angler Information*

- Before entering any data, compile all of the angler waivers for the year to double check that existing information in the database is correct, and to add any new anglers to the database.
- Make sure all contact information for the anglers are up to date to avoid communication mishaps in the future (especially email addresses).
- Adding all new anglers to the database at the same time in the beginning allows for a more streamlined data entry process. To add a new angler, assign them an unused *Angler ID* (letter, then 3 digit number, e.g., A001). Use numbers that are within the current range that are not currently assigned first (check with the person in charge of the database for these). Make certain that they are a new angler and aren't found anywhere else in the system. Proceed to add all of their contact information and primary monitoring region.

### *Trip Information*

- Prior to entering any drift data, it's a good idea to enter in all of the trip information initially. This gives a framework for the data you will be entering and keeps things orderly with respect to trip numbers (since the format is PLT01\_19 as opposed to the actual date, it's much easier to get confused on which day you're working on).
- Proceed to enter in the corresponding trip information using the log book (date, vessel, captain, number of anglers, etc.). Now your database is set up as an outline for you to begin entering drift data.
- When beginning data entry, it is good to look through the database and the datasheet together to get a feeling for where items go in the database as it isn't necessarily written the same way in the database.
- If someone is entering data for the first time, only enter one complete day of data and **stop**. It is important that these data are checked before going on to make sure that all of the rules are understood and being practiced.
- Review comments on your checked data each time before returning to entry to eliminate repetitive errors.

### *Notes Sheet*

- When starting a day with Hook and Line anglers, make a crib sheet with the gear type, angler name, and angler number ([Figure 10](#)). This helps both the person entering and person checking the data.
- When checking data, ensure the angler numbers match the angler names before checking the other data for that day.
- Tallies of adjusted fishing time can also be easily added here to calculate angler off time for the day. Adjusted angler fishing times should be entered by day into an Excel spreadsheet with all of the trip dates in columns and anglers in rows ([Figure 11](#)). At the end of entering a day, enter the adjusted angler fishing time in the Excel file (including zeros for anglers that did not have plus or minus time).
- At the end of data entry, these angler adjusted fishing time data can be summarized to calculate annual adjusted fishing time by angler and use a "count" feature to determine the number of days an angler fished with us in a season (these data all go on the **Angler Information** table in Access). These data are for checking and for summary statistics for the individual anglers. REMEMBER that angler off time is now recorded in minutes, no need to convert to hours or portions of a day.

8/6/12 PLO1-12

BAR

1 A003 ✓ Darrell Bunse

2 A025 ✓ Matt Michie

3 A005 ✓ Dave Kammerer (-1)

4 A428 ✓ Hernan Paez (-1)

---

Flies w/Boit (FLY)

6 A538 ✓ Heather Kramp (3.5) (-1)

7 A519 ✓ David Andres (-3) (-1.5)

8 A219 ✓ Michael Richardson (-3) (-1.5)

9 A220 ✓ Frank Pickell (-2) (-1) (-3)

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w/Boit (BAT)

11 A055 ✓ Bob Shannon (-3)

12 A431 ✓ Donna Kline (-1.5) (-3)

13 A073 ✓ Paul Reilly (-1) (-1.5)

14 A374 ✓ Janet Meyer (-1.5) (-1) (-2)

Figure 10. Crib sheet for angler gear types, numbers, names, and angler numbers.

Angler ID	Angler First Name	Angler Last Name	4-Nov	7-Nov	8-Nov	TOTAL	total in days	Count	total in days
A003	Darrell	Bunse	0	0	0	0	0	3	0
A005	David	Kammerer	0	0	-6	-6	-0.00416667	2	-0.00417
A025	Matt	Michie	0	0	0	0	0	2	0
A073	Paul	Reilly	0	-1	0	-1	-0.00069444	2	-0.00069
A219	Michael	Richardson	0	0	0	0	0	1	0
A270	Don	Crocker	0	0	0	0	0	1	0
A428	Hernan	Paez	-6	0	0	-6	-0.00416667	1	-0.00417
A475	Joan	Bennett	0	0	2	2	0.00138889	1	0.001389
A478	David	Andres	0	0	0	0	0	1	0
A488	Lester	Yung	0	0	-5	-5	-0.00347222	2	-0.00347
A489	Greg	Arca	0	0	-3	-3	-0.00208333	1	-0.00208
A505	Rhett	Frantz	0	0	0	0	0	3	0
A511	Nick	Ingram	-13.33333333	-4.5	0	-17.8333	-0.01238426	2	-0.01238
A512	Mike	Ingram	-2	0	0	-2	-0.00138889	2	-0.00139
A519	Cyndi	Dawson	0	0	0	0	0	1	0
A523	Thomas Barrett	Carpenter	0	0	0	0	0	1	0
A525	Alex	Klein	0	0	0	0	0	2	0
A555	Jennifer	Chiu	-8	0	0	-8	-0.00555556	3	-0.00556
A556	Jahnava	Duryea	-1	0	0	-1	-0.00069444	2	-0.00069
A557	Andrea	Launer	0	0	0	0	0	1	0
A558	Ryan	Fields	0	0	0	0	0	1	0
A560	Anne	Tagini	0	-3	0	-3	-0.00208333	1	-0.00208
A563	Andrew	Klein	0	0	0	0	0	1	0
A564	EE Chang	Ong	0	0	0	0	0	1	0
A565	Nick	Pham	0	0	-1	-1	-0.00069444	1	-0.00069
A566	Catarina	Plen	0	0	0	0	0	1	0
A567	Chris	Vierra	0	0	-2	-2	-0.00138889	1	-0.00139
A568	Mark	Woodard	-2	0	0	-2	-0.00138889	1	-0.00139
A569	Jeff	Yusem	-2	0	0	-2	-0.00138889	1	-0.00139
		count	12	13	11				
		TOTAL	41549.66667	41576.5	41571				
		sum	-34.33333333	-8.5	-15				
		total in da	-0.023842593	-0.005902778	-0.010416667				

Figure 11. Data entry spreadsheet with records of adjusted angler fishing time and number of days fishing.

### Comments about data entry

- If two anglers rotated a station and it was uncertain who was fishing during a given drift, the person listed first on the sign-in sheet was given credit for the fishes caught.
- If the station number is listed incorrectly (e.g., Station #4 was listed, but there was no one fishing at that station that day) then no station number or gear type information is listed in the database and the fish is assigned to *Angler ID* A000 (unknown angler).
- If no release latitude or longitude values are written down for a caught fish on the data sheet, the release latitude and longitude values of the previously caught fish in that drift are assigned to it. If none of the previously caught fishes had a release latitude and longitude, the first half of the caught fishes are assigned to the start coordinates, and the second half to the end coordinates. If there is an odd number of fishes caught, the “middle” fish can be assigned either the start or end coordinates.
- If no release depth is specified for a caught fish on the data sheet, the depth of the previously caught fish in that drift is assigned to it. If none of the previously caught fishes have a release depth, the start depth is used. However, if no depths are recorded for the fishes during a particular drift, the first half of the caught fishes are assigned to the start depth, and the second half to the end depth. If there is an odd number of fishes caught, the “middle” fish can be assigned either the start or end depth (2007-2011: if there was less than a 10 foot difference between the start and end depth, all of the fishes were assigned the start depth).
- If the comments section of the data sheet it says, “harbor seals (or sea lions) present,” but no number expressing the quantity of seals (or sea lions) is listed, the number “2” is entered into the database under the *Number of Seals* (or *Number of Sea Lions*) field in the **Drift Information** table because this is generally what it meant as it is the minimum number we would have seen to prompt writing this.
- Both the observed swell height and wind speed are averaged (e.g., if the wind speed is listed as being between 0-5 knots or less than 5 knots, “2.5” was entered into the database).
- If errors are found in data sheets, make a note on a sticky and place on data sheet next to the error. Verify with other members of your team to understand the error, and make changes accordingly to the datasheets/database.
- Ensure that each fish has an *Angler ID*, even if the angler is not known (use code A000). It was discovered that if fishes were not assigned an angler number they would not appear in queries no matter the category.
- People that come out on the boat and do not fish (e.g., reporters, photographers, and people that assisted the science crew) are not given *Angler IDs* (no fish need to be associated with them). These non-fishers are identified in the **Trip Information** table in the comments field.
- If a grid cell is within a Marine Protected Area, “MPA” is listed in the “Site” field. If it is within a Reference site, “REF” is listed.
- The latitude and longitude (in decimal degrees) of the center point and the four corners of the polygon that bounds each grid cell are listed in the **Grid Cell Location** table. Lat/Lon1 is the northwest corner of grid cell, Lat/Lon 2 is the northeast corner, Lat/Lon 3 the southwest corner and Lat/Lon 4 is the southeast corner.
- For the MPA grid cells in Point Lobos, an extra column was added to designate whether the grid cell is located in the “OLD” section of the Point Lobos MPA (the portion of the MPA that overlaps with the 1973 Point Lobos Ecological Reserve) or in the “NEW” section (no overlap).
- Lingcod bar, lead sinker weight, and end depth **were not recorded** during the 2007 field season.

- If a CCFRP tagged fish is caught and reported by a fisherman or a diver at a time other than during a CCFRP survey, the information for this fish at the time of recapture is entered into the “Tag Returns” database.
- Note: In Piedras Blancas and Point Buchon, tag numbers are not unique for each color set of tags. For this reason, *Tag IDs* in these areas are listed as the five digit tag number, followed by the first letter of the color of tag (e.g., O for Orange tags, Y for Yellow tags, or W for White tags). In Año Nuevo and Point Lobos, only the number is listed because all numbers were discrete regardless of color. For groups added post-statewide expansion, a letter precedes the 4 or 5 digit tag number (B: BML, D: SIO, H: HSU, S: UCSB)
- Make sure to check/compare angler off times with drift off times. We found it easiest to create an Excel spreadsheet ([Figure 11](#)) with our anglers and dates so we could calculate their angler off time and used in combination with the crib sheet ([Figure 10](#)), it was more accurate than other methods.
- In 2013, Cal Poly utilized a few different abbreviations in the comment section for caught fishes: SIM (stomach in mouth) and BE (bulging eyes). Going forward, these abbreviations can be used on the datasheets but should be spelled out in the database.

### *Checking Data Entry*

- Data should be checked soon after it is entered. It is advised that a separate person checks data than the person who entered it to eliminate any biases that may exist with respect to data entered (one might be more vigilant in finding errors in other’s data entry than they would their own).
- Upon finding errors, they should be entered into the data checking log ([Figure 9](#)). A short description is sufficient (e.g., incorrect depth splitting, error in start lat).
- For a new data enterer, it is a good idea to thoroughly check their work (go through line by line to ensure all fields are entered correctly, at least for their first day of entry). This method is time consuming, however, so after the data enterer is comfortable, the remaining data can be spot checked. Spot checking includes (but is not limited to) range checks on total lengths, +/- times, total fishes caught, start/end lat/lons, etc. See Database Checklist for more details.
- It is important that the data checker also reads the SOP document sections referencing the database. Ideally, this person would also have experience entering data so they are very familiar with datasheets, data rules, and how to enter data.

## Database Checklist

### 1-Trip Information

- *Trip IDs* match logbook records.
- *Trip IDs* match area, site, month, day, year, vessel, captain, deckhand fields.
- Number of anglers matches logbook record.

### 2-Angler Information

- Check for skipped numbers in *Angler ID* using Excel (copy the *Angler IDs*, then create a column next to it with sequential numbers next to it, check to see if the number matches at the end of the A### sequence). Keep track of these to fill in later for new anglers.
- Check for duplicate anglers by exporting to Excel and sorting by *Angler Name* or *Last Name*. Use the contact information to decide whether some anglers are different people or duplicates. If there are duplicates, reassign fishes to one of the *Angler IDs*.

### 3-Drift Information

- *Drift IDs* match up with *Trip ID*, *Cell ID*, *ID-Cell per Trip*, and *Drift*.
- Sort by *Start Time*. Make sure the times make sense (~7 am to 3 pm). Some of the afternoon times may not have been entered as PM (e.g., 02:00 vs 14:00).
- Sort by *End Time*. Make sure the times make sense (~7 am to 3 pm). Some of the afternoon times may not have been entered as PM (e.g., 02:00 vs 14:00).
- Check the range of angler off times. Anything above 10 minutes should be verified in datasheets.
- Make sure there are no blanks in the *BAR*, *FLY*, *BAT*, *SBT*, or *DPR (+/-) Fishing Time* columns. If there is no adjustment, the value in the column should be 0.
- Sort the *Start/End Latitude and Longitude*. Check for accuracy (also useful to plot these coordinates in ArcGIS with a layer of your grid cells)
- *#Anglers Fishing* should be between 6 and 12 anglers. If there are blanks or values outside of this range, check the datasheet(s). THIS SHOULD NOT BE LEFT BLANK!
- *Surface T* field should be in Celsius. Values should range between about 6-18. If values fall outside this range, double check them. If the values are in Fahrenheit, convert them.
- *Depth T* field should be in Celsius. Values should range between about 6-18. If values fall outside this range, double check them. If the values are in Fahrenheit, convert them.
- *SWT Vessel* field should be in Fahrenheit. Values should range between about 48-70. If values fall outside this range, double check them. If the values are in Celsius, convert them.
- *Relief* should be 1, 2, or 3. No zeroes! Values may be blank in this field.
- *Cloud Cover* should be 0-3. Values may be blank in this field.
- Check the range of *Start* and *End Depths*. Sites aren't likely much deeper than 150 feet. Deeper than 150 or shallower than 20 feet deserve a double check on the datasheet. All values are positive.

### 4-Caught Fishes

- All fish have a *Species Code*. If species identification is unsure, use UKR (unknown rockfish) or UNK (unknown species).
- *Tag IDs* are 4 or 5 digits long, make sure to add leading zero(s). Check that your group's letter precedes the tag number (B: BML, D: SIO, H: HSU, S: UCSB)
- *Length* is in centimeters and an integer (no decimals).
- *Gear types* are BAR, BAT, FLY, SBT, or DPR. Blanks are okay if the station # is blank and the *Angler ID* is A000.



- *Station #s* range typically from 1-14 (may vary by region; MLML used to use stations 5 and 10 when the program started so they're in the database even though we don't use them today).
- Blanks in *Station #* and *Gear Type* are verified on datasheets.
- *Angler ID* should have NO BLANKS! If an angler is unknown use A000, regardless of area.
- *Depth released* values should be between 15-200 ft (blanks are not okay if there is a start or end depth recorded for that drift).
- Sex should be M, F, did not record, or blank (for Lingcod, Kelp Greenling, and Sheephead).
- Compare sizes of **Caught Fishes** to maximum sizes. A spreadsheet with all of the published maximum sizes for fishes that we catch in our CCFRP projects. Compare these to the data we have collected.
  - This can be done in Access by filtering by species and sorting by *Length*, or doing the same in Excel.
  - Fishes that are greater than the published maximum size need to be revisited on the datasheet to ensure the species was entered properly.
  - If the species is entered properly and the size on the datasheet is over the max size, delete the size of the fish in the *Length* field and write in the *Comments* the size of the fish and that its likely incorrect.
- Look at minimum sizes of caught fishes. For previous analyses, fishes smaller than 15 cm were revisited on the datasheets to double check that the *Length* was entered correctly. Catching small fish (less than 15 cm) does not happen that frequently so it's a good idea to confirm the sizes of these fish. Sometimes the person entering data will mistakenly put "5" instead of "25" for total length and a quick look back at the original datasheet will clear it up.

#### *Fish Species*

- Make sure there are no duplicates. Sort by *Species Name*. If there are duplicates, keep the abbreviation that is more intuitive or has more fish assigned to it (fewer that you have to change).

#### *Database Checking*

- Compare off time by gear type with angler off time for the year.
  - This is easily done by exporting the **Angler Information** page and the **Drift Information** page.
  - Sum the time off columns (should be a combination of the following 5: BAR, BAT, FLY, SBT, DPR) to get a total time off per drift. Calculate the TOTAL angler off time by gear and from the **Angler Info** table for this year and compare.
  - If this doesn't match up, individual data sheets may need to be checked. These data can also be calculated by day (creating a field that has the six digit date from the *Drift ID*) and compared with the Excel spreadsheet of adjusted angler time. These data won't be able to give you a specific drift that is incorrect, but will at least lead you to a day where the adjusted fishing time doesn't match up and narrow the number of datasheets that need to be checked.
- Compare *Total Fishes Caught per Drift ID* (from **Drift Info** table) with **Caught Fishes** (summarized by *Drift ID*).
  - Export the **Drift** and **Caught Fishes** tables from Access into Excel.
  - Use Excel to calculate number of fishes caught per drift (can use Subtotal function or Pivot tables) from the **Caught Fishes** table.
  - Sort the **Drift** table by the *Total Fishes Caught* column and delete records that have a zero (these won't have entries in the **Caught Fishes** table which makes comparing them difficult).
  - Resort data (for both tables) by *Drift ID*.
  - Copy and paste them into the same worksheet.

- Create a column that is titled “Difference” and subtract one of the caught fishes values from the other (order doesn’t matter) and carry down for all of the records and use highlight cell rules for values not equal to zero, then sort by cell (or text) color. You can also create a new column where you select one cell value and set it equal to the other (e.g. B2=C2). This will cause the value of the cell to report TRUE or FALSE, sort the column by the FALSE values.
- If these do not equal zero in the “difference” column (or FALSE using the other method), further investigation is needed. The first thing to check is if the *Drift IDs* match for rows where values don’t equal zero or are FALSE and move up or down rows accordingly if they don’t line up.

## Combining Records from Another Source (Merging Databases)

For most of our databases, each group enters and checks their data separately before combining them into a final database. These are the procedures to combine them. It is relatively simple but the important things to remember are (1) order of operations is important as there is a hierarchy of the data (e.g. a *Trip ID* has to be entered before a Drift containing that *Trip ID* can be entered) and (2) to keep track of the records in each of the databases (e.g. MLML, Cal Poly, HSU, BML, UCSB, SIO, and final). Be sure that both databases have been checked by the respective institutions using the [Database Checklist](#) prior to combining the databases.

1. Save a copy of each of the databases so that if anything goes wrong (or gets changed) we can go back to the original data easily.
2. Go through the column titles and orders for each of the tables to make sure they match and rearrange them if they don't. This is the most common cause of paste errors.
  - **1-Trip Information**
  - **2- Angler Information**
  - **3- Drift Information**
  - **4- Caught Fishes**
  - **Fish Species**
3. Some may find it useful to record the number of entries for each of the tables in both of the databases ([Table 1](#)). You'll refer to this table when you're finished to compare the numbers.

**Table 1.** Table used to ensure all records make it to the final version of the database when combining data from two sources.

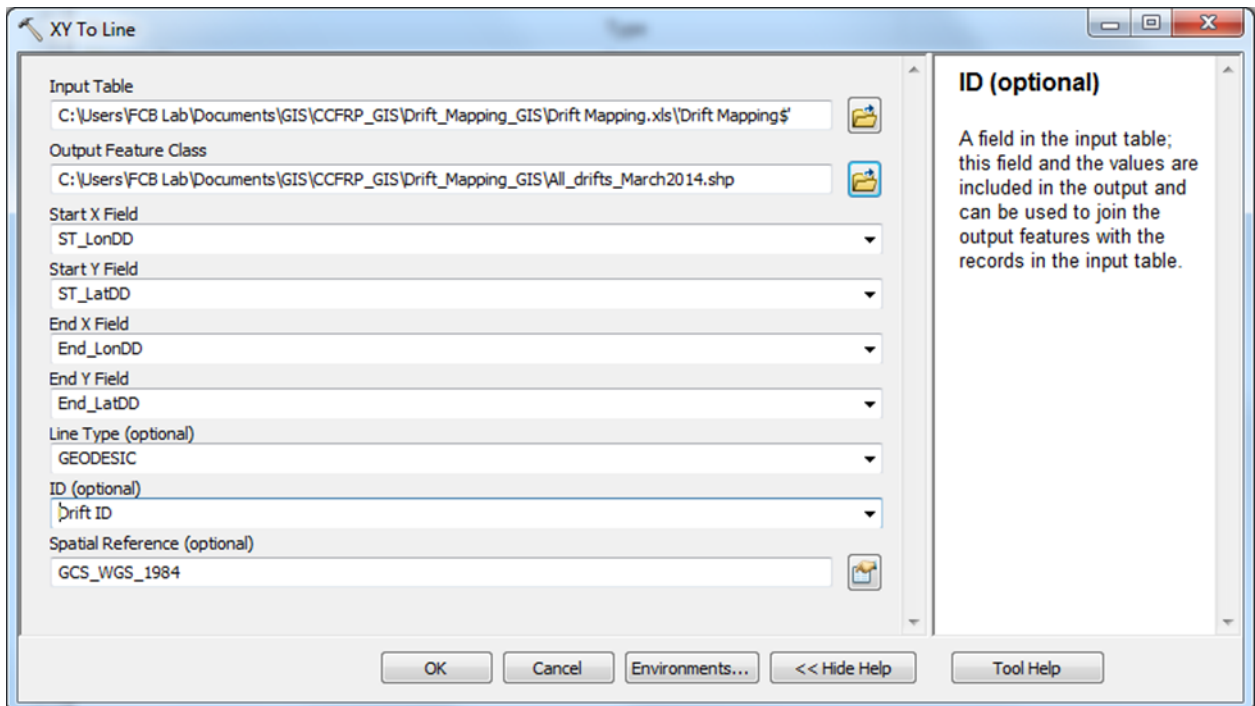
Table Name	MLML version	Cal Poly version	Sum	Final database	Match
Trip Info					
Angler Info		New (      )			
Drift Info					
Caught Fishes		New (      )			
Fish Species					

4. Note that the number of records in the **Angler Info** and **Fish Species** tables won't be a sum from the two databases. There will be duplicates in both the MLML and Cal Poly versions so you'll have to determine which entries are new to the CalPoly version. Follow the instructions separately for each of the two tables.
  - To do this, you can copy the same table from each of the databases into Excel.
  - Paste them in the same worksheet with the MLML entries on top and the CalPoly entries underneath. Be sure to color code the entries somehow so you know which database the entry came from.
  - For *Angler IDs*, make sure the angler isn't a duplicate. Sort all of the records by *Angler ID*. Use the Conditional Formatting feature > Highlight Cell Rules > Duplicate values. Custom sort by the formatting you set up in the Duplicate values section to compare the duplicates. If all the fields match, it's fine, you can remove the duplicate (either by deleting them as you go through or at the end by Data tab > Duplicate Value and select the Unique ID). Make sure to search for the person's first and last name in the existing database. Use common sense and the additional information provided by the angler in the sign in sheet or survey to assess whether it is the same person. We do have some volunteers with the same name.
  - Once these are sorted, you also want to make sure that new entries are not duplicates. Sometimes, we have an angler start with us in one year at two different sites, which would cause both databases to add an *Angler ID* when only one is needed. Do this by sorting by name or highlight cell rules.
  - If there are duplicates for a specific angler:
    - Two *Angler IDs* for one angler > choose the *Angler ID* with the greatest number of fishes assigned to that *Angler ID* and reassign the fishes from the other *Angler ID*.
    - One angler ID for two anglers > the angler with more fishes assigned to that *Angler ID* in its respective database keeps the *Angler ID*. A new *Angler ID* needs to be created for the other angler.
  - Verify that the new *Species Codes* are not duplicates (using two different codes for the same species). Additionally, check in the Master Species list to see if there is already a code for that species (and what the code is) or if that three letter code is used by another species in another database (we don't want overlaps). If new *Species Codes* are created, please notify the person who is responsible for editing the Master Species code list so it can be updated.
5. Calculate the sum for all columns in [Table 1](#). For **Fish Species** and **Anglers**, add the MLML total with the CalPoly value in parentheses.
6. Start copying entries into the tables. FOLLOW the order listed below. If you have a problem with that level, DO NOT move on. There is a hierarchy of tables in the database so you won't be successful by moving on. After each paste, record the new number of records. Make sure the new total matches the sum from the table. Move on if the number matches; troubleshoot the problem if it does not. Another hint on checking, Access asks if you want to paste X number of records... make sure that matches the number of records from the CalPoly section of the checking table.
  - **Fish Species:** Copy only the records that are new from the individual databases to the final merged database (this list is maintained year to year and simply added to). A list should exist from procedure 4.
  - **Angler Information:** Copy all records from individual databases to the final merged database. If you only copy the "new anglers", you will miss any edits that have been made to existing anglers (i.e. updated email addresses). Check for duplicates again! A list should exist from procedure 4.
  - **Trip Information**
  - **Drift Information**
  - **Caught Fishes**

## How to Map Drifts

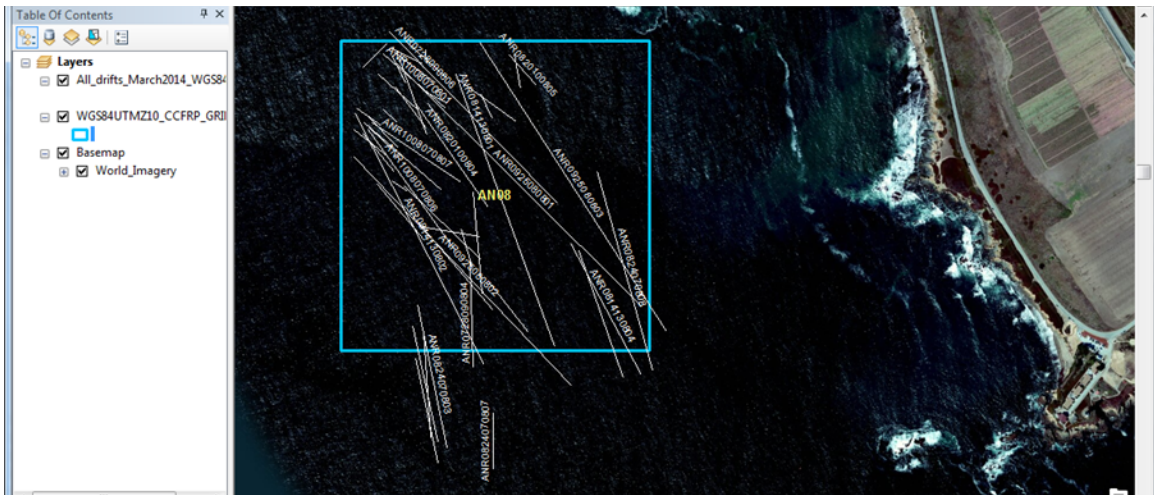
1. Create a query for fields from the **Drift Information** and the **Trip Information** tables in the CCFRP Access database. Select fields in query:
  - a. *Drift ID* - **Drift Information**
  - b. *Start Lat, Start Lon, End Lat, End Lon* - **Drift Information**
  - c. *Start Depth, End Depth\** - **Drift Information**
  - d. *Obs. wind speed\** - **Drift Information**
  - e. *Cell\_ID\** - **Drift Information**
  - f. *Year* - **Trip Information**

\*these fields are helpful to identify position entry errors
2. Define the year of data you would like to map by typing the year in quotes in the *criteria* for the year field (e.g. "2019")
3. Export the query as an .xls file
4. Open the file and remove all spaces, apostrophes and parentheses in the column headers
  - a. Check for blank entries for start or end lat and lon – NO BLANKS or ZEROS ALLOWED!
  - b. Make sure the lat, lon columns are formatted as numbers.
5. Open ArcCatalog.
6. Use the XY to Line tool and browse to the table you just created. Define the fields as follows:



7. Use the *Project* tool to create a projected drift shapefile. Project the geographic coordinate system to: *WGS\_1984\_UTM\_Zone\_10N*
8. Open ArcMap.
9. Add the sampling grid cell shapefile and turn on the labels of the grid cells. Confirm the coordinate system is: *WGS\_1984\_UTM\_Zone\_10N*

10. Add the projected drift shapefile you created and turn on *Drift ID* labels to identify mislabeled drifts.



11. Identify any drifts that are too long or in the wrong location and correct the lat-lon using the field datasheets.
12. Re-export drifts with corrected lat-lons and remap them with the same methods as above.
13. Zoom in and scroll through the grid cells and drifts one by one. Note any drifts which need to be excluded from CPUE calculations and change *Drift IDs* in the database accordingly. Use the drift exclusion rules below.

#### Rules for Discarding Drifts

- Drifts that start or end in another grid cell are considered out.
- If a drift is completely out of a grid cell but the start and end are within 25 m of the grid cell boundary, consider it in.
- If >50% of the drift is outside of the grid cell and it ends >80 m from the cell, consider it out.

#### Rules for Renaming Drifts

- If a drift is to be thrown out, the *Cell ID* is changed to the two letter area code followed by MM for MPA (MO or MN for Point Lobos) or RR for reference (e.g. ANMM or ANRR).
- For the *Drift ID*, the cell number is changed to two letters (e.g. RR, MM, MO, MN). The drift number is also changed (within the *Drift ID* and also in the *Drift* column). Thrown out drifts should be renumbered so that the drift that occurred first (use the start time to assess this) is the first (e.g. MM01) and subsequent drifts follow. The sequence of the drifts that are kept in that cell are not renumbered (e.g. if 1001 was changed to RR, do not change 1002). We want the datasheets to match the *Drift IDs* in the database as much as possible.
- In the *Excluded Drift Comment* column, write a basic reasoning why the drift was discarded (e.g. drifted into another cell, no start lat/lon, out of cell). Additionally, the cells former *Drift ID* can be copied here for future reference and ease of location in datasheets.

## How to Calculate Drift Length

1. After Drifts have been checked and a final line-shapefile has been created as described in the above steps, open the attribute table for the drift lines shapefile.
2. Add a new field and name it "Length\_m" and set to type 'Short Integer'. This will round values in this field to the nearest whole number.

FID	Shape	Drift_ID	ST_LatDD	ST_LonDD	End_LatDD	End_LonDD	Length_m
0	Polyline	ANR0724180101	37.244549	-122.42806	37.24168	-122.42666	0
1	Polyline	ANR0724180102	37.24369	-122.42706	37.242519	-122.42726	0
2	Polyline	ANR0724180103	37.2435	-122.42814	37.241928	-122.42893	0
3	Polyline	ANR0724180501	37.218079	-122.41824	37.216511	-122.41708	0
4	Polyline	ANR0724180502	37.21809	-122.41669	37.216431	-122.41558	0
5	Polyline	ANR0724180503	37.21492	-122.41942	37.214802	-122.41908	0
6	Polyline	ANR0724180504	37.215809	-122.41805	37.21479	-122.41769	0
7	Polyline	ANR0724180601	37.197701	-122.41333	37.197609	-122.41286	0
8	Polyline	ANR0724180602	37.197109	-122.41214	37.197189	-122.41166	0
9	Polyline	ANR0724180603	37.197262	-122.41185	37.197121	-122.41125	0
10	Polyline	ANR0724181001	37.164928	-122.3792	37.164001	-122.37917	0
11	Polyline	ANR0724181002	37.165039	-122.37952	37.164768	-122.37891	0
12	Polyline	ANR0724181003	37.164928	-122.37952	37.164768	-122.37891	0
13	Polyline	ANR0724181004	37.164928	-122.37952	37.164768	-122.37891	0
14	Polyline	ANR0724181005	37.164928	-122.37952	37.164768	-122.37891	0
15	Polyline	ANM0725181303	37.23315	-122.42593	37.232521	-122.4256	0
16	Polyline	ANM0725181701	37.23328	-122.42764	37.23159	-122.42722	0
17	Polyline	ANM0725181702	37.23315	-122.42593	37.232521	-122.4256	0
18	Polyline	ANM0725181703	37.23315	-122.42593	37.232521	-122.4256	0
19	Polyline	ANM0725181901	37.23315	-122.42593	37.232521	-122.4256	0
20	Polyline	ANM0725181902	37.23315	-122.42593	37.232521	-122.4256	0
21	Polyline	ANM0725181903	37.23315	-122.42593	37.232521	-122.4256	0
22	Polyline	ANM0725181301	37.23315	-122.42593	37.232521	-122.4256	0
23	Polyline	ANM0725181302	37.23315	-122.42593	37.232521	-122.4256	0
24	Polyline	ANR0726180301	37.23315	-122.42593	37.232521	-122.4256	0
25	Polyline	ANR0726180302	37.23315	-122.42593	37.232521	-122.4256	0
26	Polyline	ANR0726180303	37.23315	-122.42593	37.232521	-122.4256	0
27	Polyline	ANR0726180501	37.23315	-122.42593	37.232521	-122.4256	0
28	Polyline	ANR0726180502	37.23315	-122.42593	37.232521	-122.4256	0
29	Polyline	ANR0726180503	37.23315	-122.42593	37.232521	-122.4256	0
30	Polyline	ANR0726180601	37.23315	-122.42593	37.232521	-122.4256	0
31	Polyline	ANR0726180602	37.195332	-122.41041	37.19529	-122.41106	0
32	Polyline	ANR0726180603	37.196701	-122.41373	37.1964	-122.4136	0
33	Polyline	ANR0726180604	37.195751	-122.4123	37.19574	-122.41219	0

3. Right click the header for "Length\_m" and select "Calculate Geometry". Choose Length with 'meters' as the unit. Select OK. The field will now be populated with drift length estimates.

FID	Shape	Drift_ID	ST_LatDD	ST_LonDD	End_LatDD	End_LonDD	Length_m
0	Polyline	ANR0724180101	37.244549	-122.42806	37.24168	-122.42666	0
1	Polyline	ANR0724180102	37.24369	-122.42706	37.242519	-122.42726	0
2	Polyline	ANR0724180103	37.2435	-122.42814	37.241928	-122.42893	0
3	Polyline	ANR0724180501	37.218079	-122.41824	37.216511	-122.41708	0
4	Polyline	ANR0724180502	37.21809	-122.41669	37.216431	-122.41558	0
5	Polyline	ANR0724180503	37.21492	-122.41942	37.214802	-122.41908	0
6	Polyline	ANR0724180504	37.215809	-122.41805	37.21479	-122.41769	0
7	Polyline	ANR0724180601	37.197701	-122.41333	37.197609	-122.41286	0
8	Polyline	ANR0724180602	37.197109	-122.41214	37.197189	-122.41166	0
9	Polyline	ANR0724180603	37.197262	-122.41185	37.197121	-122.41125	0
10	Polyline	ANR0724181001	37.164928	-122.3792	37.164001	-122.37917	0
11	Polyline	ANR0724181002	37.165039	-122.37952	37.164768	-122.37891	0
12	Polyline	ANR0724181003	37.164928	-122.37952	37.164768	-122.37891	0
13	Polyline	ANR0724181004	37.164928	-122.37952	37.164768	-122.37891	0
14	Polyline	ANR0724181005	37.164928	-122.37952	37.164768	-122.37891	0
15	Polyline	ANM0725181303	37.23315	-122.42593	37.232521	-122.4256	0
16	Polyline	ANM0725181701	37.23328	-122.42764	37.23159	-122.42722	0
17	Polyline	ANM0725181702	37.23315	-122.42593	37.232521	-122.4256	0
18	Polyline	ANM0725181703	37.23315	-122.42593	37.232521	-122.4256	0
19	Polyline	ANM0725181901	37.23315	-122.42593	37.232521	-122.4256	0
20	Polyline	ANM0725181902	37.23315	-122.42593	37.232521	-122.4256	0
21	Polyline	ANM0725181903	37.23315	-122.42593	37.232521	-122.4256	0
22	Polyline	ANM0725181301	37.23315	-122.42593	37.232521	-122.4256	0
23	Polyline	ANM0725181302	37.23315	-122.42593	37.232521	-122.4256	0
24	Polyline	ANR0726180301	37.23315	-122.42593	37.232521	-122.4256	0
25	Polyline	ANR0726180302	37.23328	-122.42764	37.23159	-122.42722	0

4. Export this table as a text file, but change the extension to '.csv'. This will allow you to open in Excel and save as an Excel File.
5. Follow same steps in Access that you used to amend the GPS waypoints to individual fishes
  - o Import the newly created Drift length CSV/Excel file into Access
  - o Create a query with the Drift table and the new Drift Length table making sure to connect the Drift ID fields
  - o Check that table properties has Recordset Type = 'Dynaset Inconsistent Update' [This is necessary to copy and paste the drift length information]
  - o Run query and copy and paste the drift length information into the empty drift length column from the Drifts Table
  - o Save and delete the temporary Drift lengths table you just imported.

## How to Calculate BPUE (biomass per angler-hour) and CPUE (catch per angler-hour) from the CCFRP Hook and Line Access Database

### Extracting Fish Data

- Run a query in the database to export all fish caught. Select these fields for the query:
  - ID-Cell per Trip* (this is our sample unit)
  - Fish ID* – in case you find an error and need to go back to a specific fish record in the database.
  - Species Code*
  - Length (cm)*
  - Cell ID*
  - Excluded Drift Comment*. Criteria = "is null"
- In the query criteria for the *Cell ID* paste:
 

```
<>"AIMM" And <>"AIRR" And <>"ANMM" And <>"ANRR" And <>"BHMM" And
<>"BHRR" And <>"BLMM" And <>"BLRR" And <>"CMMM" And <>"CMRR" And
<>"CPMM" And <>"CPRR" And <>"FNMM" And <>"FNRR" And <>"LBMM" And
<>"LBRR" And <>"LJMM" And <>"LJRR" And <>"PCMM" And <>"PCRR" And
<>"PLMN" And <>"PLMO" And <>"PLRR" And <>"PBMM" And <>"PBRR" And
<>"DRXX" And <>"PRXX" And <>"FNXX" <>"SPMM" And <>"SPRR" And
<>"SWMM" And <>"SWRR" And <>"TMMM" And <>"TMRR"
```

This excludes all entries of fish that were caught on drifts outside of the CCFRP sampling grid cells as well as at the Farallon Islands, Duxbury Reef, and Point Reyes.

Field:	Fish ID	IDCell per Trip	Species Code	Length (cm)	Cell ID	Excluded Drift Comment
Table:	4-Caught Fishes	3-Drift Information	4-Caught Fishes	4-Caught Fishes	3-Drift Information	3-Drift Information
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					<>"ANMM" And <>" Is Null	
or:						

- Run the query and export the caught fishes data to an Excel document: Right click the query > Export > Excel. Specify name, destination, and formatting preferences.
- Open the caught fishes Excel document. Duplicate the sheet; one tab for CPUE and one tab for BPUE.

### Extracting Effort Data

- Create a new query in the H&L Access database for the drift data. Include these fields:
  - Cell ID*, criteria: <>"AIMM" And <>"AIRR" And <>"ANMM" And <>"ANRR" And <>"BHMM" And <>"BHRR" And <>"BLMM" And <>"BLRR" And <>"CMMM" And <>"CMRR" And <>"CPMM" And <>"CPRR" And <>"FNMM" And <>"FNRR" And <>"LBMM" And <>"LBRR" And <>"LJMM" And <>"LJRR" And <>"PCMM" And <>"PCRR" And <>"PLMN" And <>"PLMO" And <>"PLRR" And <>"PBMM" And <>"PBRR" And <>"DRXX" And <>"PRXX" And <>"FNXX" <>"SPMM" And <>"SPRR" And <>"SWMM" And <>"SWRR" And <>"TMMM" And <>"TMRR"
  - Site*
  - Year*
  - IDCell per trip*
  - Total adjusted angler hrs*

Before running the query in the *Design* tab click on the large summation sign button.

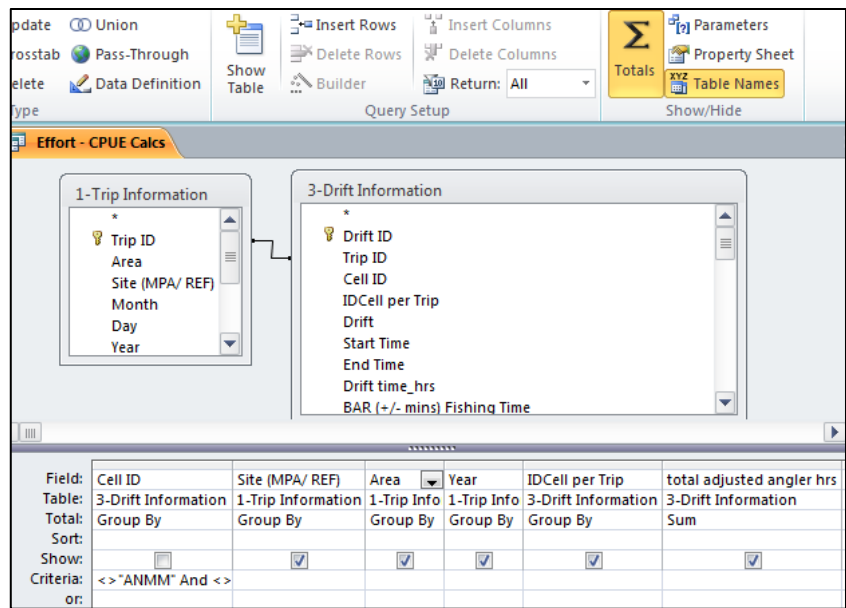




Change the *Total* row input under the *total adjusted angler hrs* field to “Sum” rather than “Group by”. This will sum all the angler-hours by the IDCell per Trip when the query is run. (Remember, *IDCell per Trip* is our sample unit.

2. Run the query and export the drift data to an Excel document.

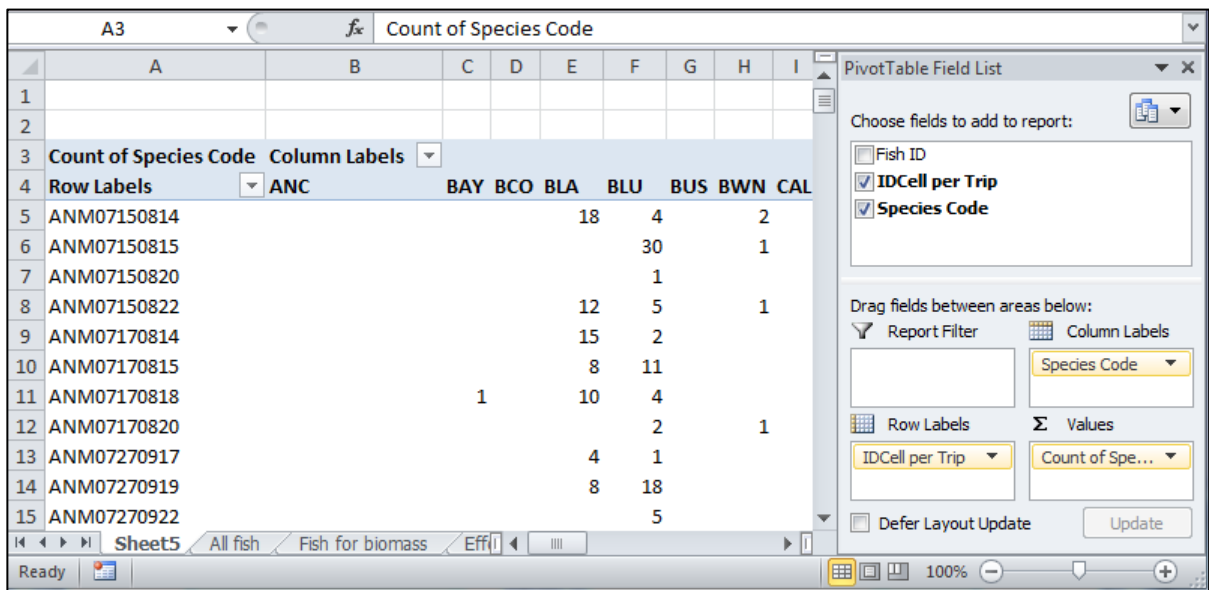
Effort query →



### How to Calculate CPUE

1. Return to the fish spreadsheet and use a pivot table or other stats program to sum the number of each species by *IDcell per Trip*.

Example of pivot table:



2. Copy and paste the values of the pivot table of fishes to the effort spreadsheet making sure that each *IDCell per Trip* matches up. This can be automated in R with the *merge* function or in JMP with the *join* function but you can also sort, paste, and check your work in Excel. Important: There are some ID cells where no fish are caught and you will need to add those *IDcellper Trip* rows in the fish spreadsheet to account for this if you use a pivot table rather than JMP or R.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Drift_CellIDPerTrip	Fish_CellIDPerTrip	Year	Area	Sum of Adjusted_angler hrs	Site	BAY	BLA	BLU	BUS	BWN	CAL	CBZ	CHN
75	PBM09150901	PBM09150901	09	PB	3.877	M	0	0	0	0	0	0	0	0.257954
76	PBM09150904	PBM09150904	09	PB	1.522	M	0	1.314348	0	0	0	0	0	0
77	PBM09150906	PBM09150906	09	PB	2.877	M	0	2.780997	0	0	0	0	0	0
78	PBM09150908	PBM09150908	09	PB	2.578	M	0	0	0	0	0	0	0	0
79	PBR07210912	PBR07210912	09	PB	9.017	R	0	0.665434	0.332717	0	0	0	0	0
80	PBR07210914	PBR07210914	09	PB	9.173	R	0.109012	0.65407	0.109012	0	0	0	0.109012	0
81	PBR07210916	PBR07210916	09	PB	5.973	R	0	0.167411	0.167411	0	0	0	0	0
82	PBR07210919	PBR07210919	09	PB	9.253	R	0	0	1.621037	0.108069	0	0	0	0
83	PBR09110912	PBR09110912	09	PB	7.720	R	0	0.129266	0.129266	0	0	0	0	0

3. Divide the fish caught by the summed angler hours for each *IDCell per Trip* to calculate CPUE.
4. For analyses calculate the mean CPUE by *Area*, *Site*, and *Year* and calculate standard error to create graphs of change in catch rates over time.

### How to calculate BPUE

1. Open the caught fishes spreadsheet with lengths.
2. Create a *biomass (g)* and *biomass (kg)* column and use the formulas in the “Weight from Length Equations” Word document for each species to populate the column with biomass estimates for each fish with a length.

	A	B	C	D	E	F
1	Fish ID	IDCell per Trip	Species Code	Length (cm)	Biomass (g)	Biomass (kg)
2	5648	ANM08200718	BAY	30	577.8	0.578
3	527	ANR07140805	BAY	31	640.0	0.640
4	29086	ANM08151112	BAY	28	466.1	0.466
5	29087	ANM08151112	BAY	30	577.8	0.578

3. Sum the biomass (kg) for each species as well as total biomass for each *IDCell per Trip*
4. Merge the datasheets of the effort data (*adjusted angler hours*) with the summed biomass for each *IDcell per Trip* and divide each species biomass by the effort.
5. For analyses calculate the mean BPUE by *Area*, *Site*, and *Year* and calculate standard error to create graphs of change in biomass over time.

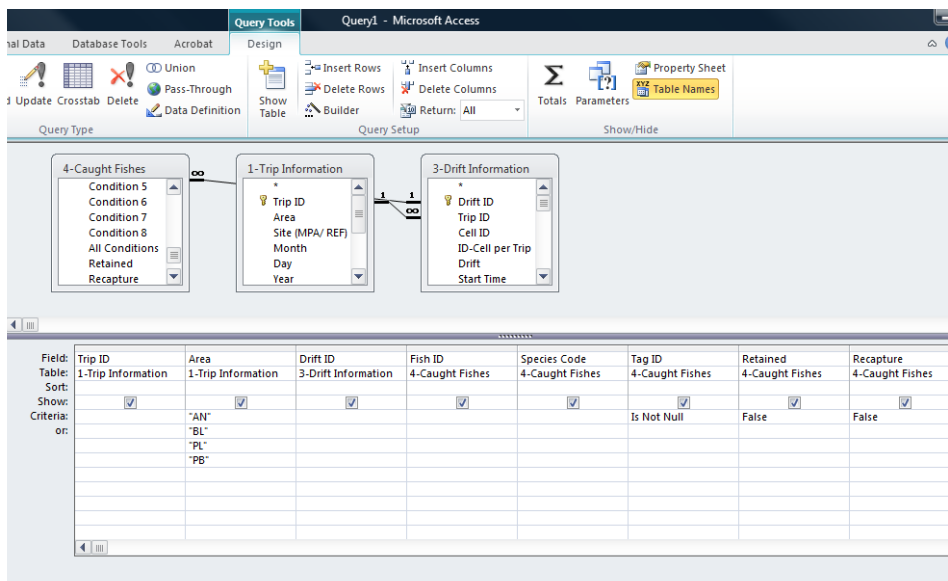
### Data Analysis Reminders

- CPUE / BPUE Calculations: Do not include ‘MM’ or ‘RR’ drifts (e.g., those out of the grid cell). They can use in species compositions and length analyses, however.
- Use a page header containing first initial, last name, analysis topic, program used, and date.
  - e.g., C. Barnes Length Whiskerplots by Species (2007-2012) – SPSS 19.0 12 Dec 12
- OYT, UKR, UNK, and SMT species codes don’t count toward the total number of species sampled, since they do not necessarily represent a new species, but one that we’ve already sampled.
- The following species codes are lumped for analyses, due to the lack of confidence in previous species designations:
  - SDB and SSD (Pacific and Speckled Sanddab) – list as “Sanddab – Citharichthys spp.”
  - JSM, TSM, and SMT (Jacksmelt, Topsmelt, and Unidentified Silverside) – listed as “Silversides – Atherinopsidae spp.”

## How to Calculate Tagged Fishes

Often we need to calculate the number of tagged fishes for reporting purposes (e.g., newsletter, presentations, tag return rate). To do this, the easiest method is:

1. Start a query in the database using **1-Trip Information**, **3-Drift Information**, and **4-Caught Fishes** tables (make sure the relationships are intact otherwise this won't work properly). Include:
  - a. *Trip ID* – **Trip Information**
  - b. *Area* – **Trip Information**
  - c. *Drift ID* – **Drift Information**
  - d. *Fish ID*– **Caught Fishes**
  - e. *Species Code* – **Caught Fishes**
  - f. *Tag ID* – **Caught Fishes**
  - g. *Retained* – **Caught Fishes**
  - h. *Recapture* – **Caught Fishes**
  - i. *Comments* – **Caught Fishes**
2. Before running the query, specify the following conditions:
  - a. *Area*: "AN", "BL", "PB", "PL"
  - b. *Tag ID*: Is Not Null
  - c. *Retained*: False
  - d. *Recapture*: False



3. Reasoning for filtering out retained and recaptured fish:
  - a. Sometimes we tag fishes so that the person keeping the fish for their thesis or project can identify the data that goes along with them. These fishes are not released so they should not be contributing to this number.
  - b. When we recapture a fish, sometimes the fish is given a new tag. When they're given a new tag the *Tag ID* isn't null but it's not a new fish to our project, so we don't want to double count these fishes.
4. This is the final number of tagged fishes. Most of the databases won't let you filter by tag number (because there are far too many tags to do so) so sorting by *Tag ID* (A to Z) works well. The records with tags can be copied or sometimes it's easier to export the whole Tagged Fishes table and then **erase the records** that:
  - a. *Tag ID*: blank
  - b. *Retained*: (True)
  - c. *Recaptures*: (True)

## Volunteer Angler Workshop Information

-Each institution is responsible for conducting their own angler appreciation event and data workshop. Below are some general guidelines that MLML uses to plan their annual event.

*6 to 8+ weeks prior to workshop:*

- Establish date for workshop
- Reserve meeting space
- Coordinate with science crew and PIs to staff event
- Announce workshop date to volunteers, community, agency staff, etc. MLML likes to announce the workshop date when sending out the annual volunteer angler newsletter (January), but the sooner the better so people can plan accordingly. Make sure to request an RSVP from the guests so that you can plan accordingly for food, prizes, etc.

*4 weeks prior to workshop:*

- Edit existing volunteer angler workshop powerpoint presentation. Add new sections/information as you see fit.
- Compile summary statistics for each angler in the following categories:
  - Total number of caught fishes (by *Angler ID* from **Caught Fishes** table)
  - Number of trips (from **Angler Information**)
  - Average number of fish caught per trip (using the above two pieces of information)
  - These stats can be organized in a 'Top 10, 50, 100, etc.' ranking system. Also, create a document that has all anglers listed (with all of the previous statistics) in alphabetical order so that someone who is not in the Top percentile can still look up their statistics. When doing this, consider that people may not want their full names on these documents so use first name and last initial. Be sure to go through and make sure that there are not duplicates (Bob S. is the same as Robert S. too) and add additional letters to the last name to be able to distinguish without full names.
- Compile recapture data. Look through the most recent tag return database and the CCFRP H&L database to cross-reference and be sure that all recaptured fishes are included. Highlight key tag recaptures in powerpoint presentation.
- Put together a slideshow of angler photos to be displayed as people are coming into the workshop. It can be of all years, but try to include as many anglers in the photos as possible (not as many of tagging, descending, science crew, etc.). Once a guest list has been confirmed, do your best to include photos of people you know will be in attendance. Open House photos, CCFRP newsletter photos, and website/Facebook photos are good places to start when searching for photos to use. The photos can be stored in a folder on a flash drive and put into slideshow mode for viewing (make sure that all photos are properly rotated).

*Day before/day of the workshop:*

- Purchase ingredients for lunch for workshop attendees (in the past, MLML has done a large buffet lunch with taco spread); be sure to purchase drinks as well. Enlist other staff to help prepare/set-up food
- List of items to have on hand (especially if you're presenting away from campus):
  - Powerpoint Presentation
  - Projector
  - Screen
  - Extension cord
  - Power strip
  - Laser pointer for presentations
  - Refreshments
  - Thumb drive with slideshow photos
  - Angler statistic spreadsheets

- Tag return spreadsheet
- Door prizes (e.g., stickers, etc.)
- Raffle prizes (e.g., tshirts, hats, jigs, mugs, bags, etc.)
- Raffle tickets
- Cup to put raffle tickets in
- Drink cooler with ice
- Sign-in sheets and clipboard
- Outreach info (e.g., info binder, handouts, reference books, Department handbooks)
- Student posters (about CCFRP, if applicable)
- Name tags
- Pens and markers
- Push pins
- Masking tape
- Plates, serving platters, and serving utensils (can borrow from student lounge to reduce waste)
- Clear packaging tape

*At the event:*

- Arrive 30 to 120 minutes before to set-up (depends on how much food prep, etc. needs to be done).
- If possible, arrange tables and chairs so that guests are facing each other instead of sitting in rows facing the screen. This hopefully facilitates conversation and encourages participation in the workshop.
- Set-up a buffet-style table for the snacks/lunch and drinks with plates, cups, utensils, etc.
- Set-up the outreach information table. Arrange reference books, handouts, CCFRP binder, and angler guestbook in a way that is inviting for anglers to view. Also display the raffle prizes here to entice people to wander to this table.
- Ensure that speakers are hooked up and turned on if audio is necessary in any part of the presentation.
- Set-up a sign in table where you can greet anglers, have them sign in, create a name tag, give them a raffle ticket, and hand them a door prize. Direct people to the food table, outreach table, and restrooms while they wait for the workshop to begin (slideshow is streaming).

**Tag Return Information Log. Please fill out completely as possible.**

**Initial Call In** (At least get this information if you cannot record the rest of log, so that a follow-up call can be made.) **Double check the spelling of their first and last names, phone numbers, mailing address, and email address before getting off the phone if you are in doubt.**

<b>Caller/ Angler's Full Name:</b>	
<b>Angler's Phone Number:</b>	
<b>Date Called In:</b>	
<b>TAG NUMBER:</b>	
<b>Photo of fish:</b>	
<b>Additional notes:</b>	

**Fill in this information based on the continued/ follow-up conversation.**

<b>Location Caught (Lat/Long)</b> Use Nautical Landmarks if no other data are available	
<b>Date Caught (also write down day of the week):</b>	
Species of Fish:	
Length of Fish:	
Overall Apparent Health of Fish:	
Health of Tag Insertion Site:	
Tag Color, Biofouling?:	
Water Depth Caught In:	
Additional Trip/ Fish Comments (caught on a CPFV, which? Marks on fish anywhere?)	
<b>Fish Retained by Angler?:</b>	
<b>Angler Interested in a Tag Return Information Sheet?:</b> (Get mailing or email address)	
<b>Angler Wants \$20 Reward?:</b> (Get mailing address & SSN)	
<b>Mailing Address:</b>	
<b>Social Security # (if needed by accounts payable):</b>	
<b>Working Email Address:</b>	
Photo of fish (send them an email so they can reply)	

Over to see tips on talking with the tag return reporter.

## Conversation Notes

### Be sure to:

- Identify yourself and the project- the California Collaborative Fisheries Research Program (CCFRP).
- Thank them for reporting their tagged fish, and assure them that each call-in is an important data point for our work.
- If they are requesting an informational flyer, assure them that they should get it in about a week or two. (Be sure to give the preparer enough time to make the sheet and send it out!)
- If they are requesting the \$20 reward (if applicable, will vary by group), ask them to contact us again if they do not receive the check within three weeks. Be sure to submit the payment request.
- If they want to know about the project, share what you do know about it. If they have more questions, ask them to check out our website.
- **Double check the spelling of their first and last names, phone numbers, mailing address, and especially the email address before you get off the phone, if there are any doubts!**