Chapter 8

Protected Resources

I. Introduction

Protected resources are species that are regulated under the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), or the Endangered Species Act (ESA).

WCGOP collects biological information from several species. These species are divided into two groups in the manual:

1. Protected resource species, which include Green sturgeon, marine mammals, salmon, seabirds, and sea turtles, which have biological sampling requirements.
2. Species of interest, which include Tagged Fish (non-salmonid), Priority Species, Corals and Pacific halibut, are discussed in Chapter 7, "Biological Sampling".

Marine Mammal Protection Act

The MMPA was passed in 1972 and was most recently reauthorized in 2006. In passing the MMPA, Congress found that certain species and populations of marine mammals are, or may be, in danger of extinction or depletion as a result of human activities. The Act states:

- Such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population level.
- Measures should be taken immediately to replenish any species or population stock which has diminished below its optimum sustainable level.
- There is inadequate knowledge of the ecology and population dynamics of marine mammals and of the

factors which bear upon their ability to reproduce themselves successfully.

- Marine mammals have proven themselves to be resources of great international significance, aesthetic and recreational as well as economic.

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters, by U.S. citizens on the high seas, and on the importation of marine mammals and marine mammal products into the United States. It is also illegal to intentionally feed any marine mammal in the wild, as it is considered a form of harassment.

Endangered Species Act

The purpose of the ESA (1973) is to protect and recover imperiled species and the ecosystems upon which they depend. Currently, there are over 1300 species in the United States listed under the ESA (See Figure 8-1).

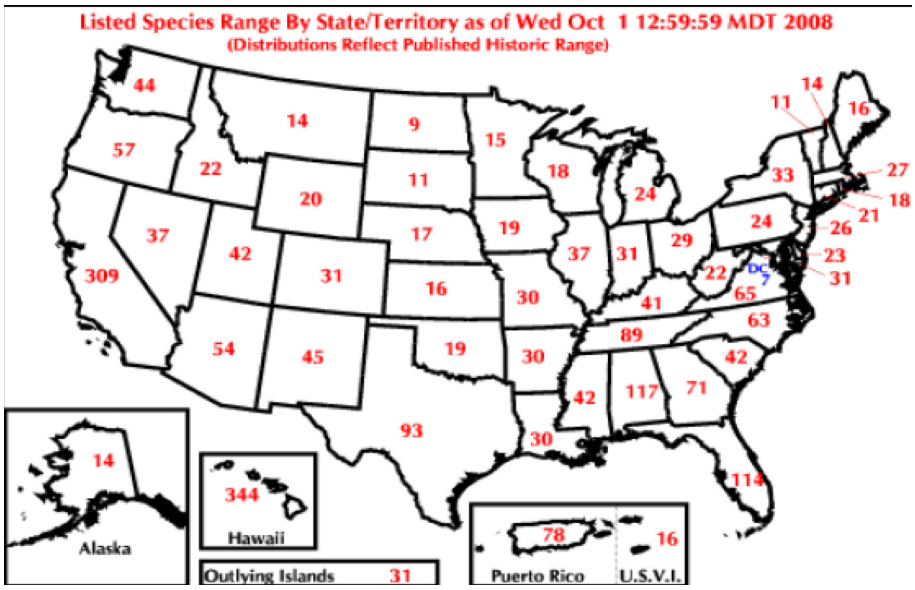
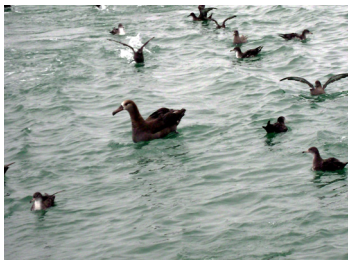


Figure 8-1: Number of species in each state listed under the ESA.

Species are listed under one of two categories, endangered or threatened, depending on its status and the degree of

threat it faces. An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future. A species is listed when it's determined to be endangered or threatened due to any of the following factors:



- The present or threatened destruction, modification, or curtailment of a species habitat or range.
- Overutilizing for commercial, recreational, scientific, or educational purposes.
- Disease or predation.
- The inadequacy of existing regulatory mechanisms.
- Other natural or man-made factors affecting the species' survival.

Once a species is listed under the ESA, all protective measures authorized by the ESA apply to the species and its habitat. Such measures include protection from adverse effects of Federal activities and restrictions on taking, transporting, or selling.

Anadromous - Ascending rivers from the sea, at certain seasons, for breeding.

NOAA Fisheries has jurisdiction over the 62 marine and **anadromous** species listed under the ESA.

Migratory Bird Treaty Act

Migratory Bird - Any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle.

The MBTA of 1916 implemented the 1916 convention between the United States and Great Britain for the protection of birds migrating between the US and Canada. Similar conventions between the US and Mexico (1936), Japan (1972), and the USSR (1976) further expanded the scope of international protection of migratory birds. The MBTA made it illegal to "take" migratory birds, their eggs, feathers, or nests. In total, 836 bird species are protected under the MBTA.

Observers and Protected Resources

Observer sampling of protected resources is the highest priority in the WCGOP. Although incidents with protected resources rarely occur, it's important to remember to take all appropriate samples and acquire all appropriate information when they are encountered. Observers sample protected resources when the following occur:

- A protected resource is caught with the fishing gear, regardless of whether the individual lived or died.
- A marine mammal, seabird, or sea turtle interacted with the fishing vessel but did not get caught in the gear.
- An ESA listed marine mammal, seabird or sea turtle was sighted.

Types of Biological Data Collected from Protected Resources

There are six types of biological information collected from protected resources.

- **Length** - Lengths are collected from all protected species, besides seabirds.
- **Sex** - Sex is collected from all protected species, besides seabirds.
- **Scales** - Salmon scales are used to verify species identification. Salmon are often difficult to identify when caught because of damage incurred during gear retrieval or strange coloration due to their proximity to spawning grounds.
- **Snouts** - Snouts are collected from salmon and pinnipeds.
    - Salmon snouts are collected because they contain coded wire tags (CWT's). The CWT information gathered by observers is used by endangered

species scientists to determine the mortality of protected salmon stocks associated with the fishery, as well as population and migration patterns.

- Pinniped snouts are collected for the canine teeth. The canine teeth are used for aging, assessing health, and species identification.

- **Fin rays** - Fin rays, which are used to age the individual, are collected from green sturgeon only.

- **Tissue** - Tissue samples are collected from salmon, green sturgeon, and cetaceans. Tissue samples are used for genetic information, including tracking and identifying distinct populations.

II. Green Sturgeon

Introduction

Green sturgeon are an anadromous fish which occurs in coastal waters along the entire eastern Pacific Ocean coastline of the United States. Green sturgeon spawn in three rivers along the west coast: the Klamath River, the Sacramento River, and the Rogue River. After they enter the ocean, they appear to make a northern migration and concentrate in coastal estuaries, particularly the Columbia River estuary and coastal Washington estuaries.

Distinct Population Segment (DPS) - A subgroup of a vertebrate species that is treated as a species for purposes of listing under the ESA. It is required that the subgroup be separable from the remainder of and significant to the species to which it belongs.

There are two **Distinct Population Segments** (DPS's) of green sturgeon along the west coast. The two DPS's are identified by their spawning site with the northern/ southern DPS's being divided at the Eel River in Northern California. In 2006, the southern DPS of green sturgeon was listed as threatened under the ESA.

Green Sturgeon Identification

Only two species of sturgeon are found on the west coast, the green sturgeon and the white sturgeon (see Figure 8-2, page 9). Use the following physical characteristics **and the Species Identification manual** to identify green sturgeon:

- **Scutes** - number is less than or greater than 37 on side
- **Barbel location** - mid-way between mouth and snout tip versus close to snout tip.

- **Anus location** - directly between the pelvic fin insertion versus posterior to pelvic fin insertion.

Figure 8-2: Green Sturgeon and White Sturgeon.

Green Sturgeon Data Collection Priorities

Catch Sampling

When a green sturgeon is caught on a haul/set:

1. Inform skipper and crew members that all green sturgeon will be sampled and their help in the collection of these fish would be appreciated.

Tip* Green sturgeon are very hardy fish. In most circumstances they will be returned to sea alive. Therefore, be quick and take care when sampling.

2. Actually weigh or visually estimate the green sturgeons' weight. Often they will be too awkward to handle, too large to fit in an observer basket, and/or too heavy to weigh on the platform scale.
    - If actually weighed, record in appropriate catch category on the **Catch Form** and on the **Species Composition Form**. Reason for discard must be 16 - Regulation.
- If visually estimated, record on the **Catch Form** only using the catch category code **GSTG**. Record reason for discard on the Catch Form as 16-Regulation..

Tip*: If the sturgeon identification is unclear, catch category code USTG for unidentified sturgeon can be used.

Biological Sampling Green Sturgeon

Collect as much of the information as possible. A green sturgeon kit has been provided to ease collection.

1. Using the measuring board or a tape measurer, record the forklength of **all** green sturgeon.

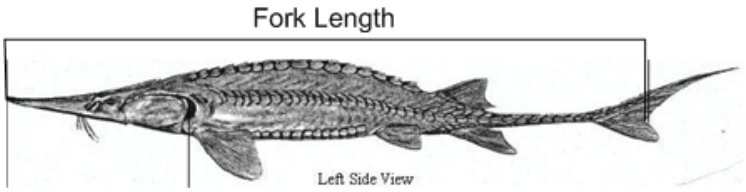


Figure 8-3: Fork length of green sturgeon.

2. Scan the body for tags. Document tag number(s) in raw data and in the comments field on the Biospecimen form.
3. Check the lateral rows of scutes for scute removal (removals will be from the second left lateral scute and the tenth right lateral scute). Document the pattern of scute removal in your raw data and on the comments field on the Biospecimen form.
4. Take pictures of the fish scutes removed and head shots of barbels, using the camera provided in the green sturgeon kit. If scutes have been removed, be sure to take a picture of pattern. Also, if possible, get a head shot of the barbels for identification purposes. Document the picture numbers that correspond to the individual in the comments section on the Biospecimen form.

5. Take a tissue sample from **all** green sturgeon using supplies in the green sturgeon kit.
    - Rinse scalpel/knife profusely with water to avoid contamination and wipe dry.
    - Using scalpel/knife, remove a 5 x 5 mm piece of anal or caudal fin. The tissue should come from a

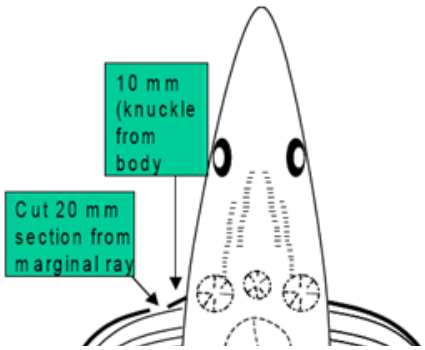
portion of the fin that appears clean and healthy, not frayed or broken.

- Place tissue sample in tube containing EtOH.
    - If you run out of EtOH tubes, place fin tissue in a scale envelope to dry. Wait 24 hours to stack envelopes to ensure tissue fully dries. Do not place envelopes in direct sun or intense heat..

Tip* Any tissue samples in EtOH tubes need to be hand delivered to a debriefer. Do not mail EtOH samples.

6. Determine whether individual is **obviously dead** or **not obviously dead and document in the raw data and on the biospecimen form**.
7. If **obviously dead,** sex the fish.
    - Use a scalpel or razor blade to make an incision at the fish's belly anterior from the pelvic fins and offset from the ventral midline.
    - If male, gonads appear:
        - Immature: typically uniform in texture, consisting of smooth, yellowish, fatty tissue surrounding a strip of white testicular tissue which extends lengthwise through the gonad.
        - Ripe: comprised mostly of large, white-lobed testicular tissue.
    - If female, ovaries appear:
        - Immature: small, folded, white to yellowish color with no visible oocytes.
        - Mature: grainy with "salt & pepper"-like or dark coloration due to the presence of small oocytes. Ovarian grooves, present adjacent to the body wall. Ripe females have large, dark oocytes.
8. If **obviously dead,** collect a fin ray sample.

- Using a knife or scalpel, separate the leading pectoral fin ray from the pectoral fin.
- Cut the whole first pectoral fin ray off near the base.
- Place the fin ray in a barcode-labeled scale envelope.



Recording Green Sturgeon Information

- Document on the **Catch Form** and if necessary, on the **Species Composition Form**.

- Complete a **Biospecimen Form**.
  - **Inside/Outside** - Green sturgeon may fall inside or outside of the species composition sample, depending on their size and ability of observer to weigh.
  - **Random/Nonrandom** - All green sturgeon should be sampled, therefore, they should be **randomly** collected.
  - In notes/comment document:

    1.Tag # if present

    2.Pattern of scute removal

    3.Camera photo numbers and what photo are of

    4.If tissue sample taken, whether individual is **obviously dead** or **not obviously dead,**

    5.If dead document sex, fin ray sample

- Record information on **Salmon Scale envelope** when fin ray sample is taken.

III. Marine Mammals

Introduction

The Pacific Ocean is home to vast numbers of marine mammals. Interactions between fishing operations and cetaceans and pinnipeds are unavoidable. Observers provide reliable estimates of marine mammal interactions with fishing fleets, including data on incidental takes.

All marine mammals are regulated under the Marine Mammal Protection Act, however, some marine mammals are also regulated under the Endangered Species Act.

- Endangered Species
    - Blue Whale
    - Fin Whale
    - Gray Whale
    - Humpback Whale
    - Killer Whale (Southern Residents)
    - North Pacific Right Whale
    - Sea Otters (USFWS jurisdiction)
    - Sei Whale
    - Sperm Whale
- Threatened Species
    - Guadelupe Fur Seal
    - Steller Sea Lion

Marine Mammal Identification

When identifying marine mammals pay close attention to both the physical characteristics of the animal and to its behavior.

Marine Mammal Physical Characteristics

Below are some general physical characteristics to take note of when identifying marine mammals.

Cetaceans

- **Body shape** – Robust or slender, small or large?
- **Head shape** – Long or short, definite beak present, bulbous forehead?
- **Dorsal fin shape** – small or large, curvature, location on body?
- **Coloration** – spots, stripes, patches or mottling?
- **Scars and scratch marks** – pieces missing from fins, scratches or dents on body?
- **Orca saddle patches** – note exact size and shape of patch. Take a photo if possible. Researchers are able to identify individual Orcas by their saddle patch.
- **Shape and direction of blow** – bushy or tall blow, single or double blow, blow straight up or angled forward?

Pinnipeds

- **Body shape** – Robust or slender, small or large?
- **Head shape** – Long or short snout, ears present?
- **Coloration** – spots, stripes, patches or mottling?
- **Scars and scratch marks** – pieces missing from flippers, scratches on body?

Marine Mammal Behaviors

Animal behavior is useful in assisting with accurate species identification. Descriptions of several standard cetacean and

pinniped behaviors are listed below. Watch for these behaviors when identifying marine mammals.

Small Cetaceans

- **Bow riding**—Animals swim beside the bow or in the bow wave of a moving ship.
- **Porpoising**—Animal raises its body to be nearly or fully out of the water while traveling forward at a fast rate of speed, usually in a fluid, arching motion.
- **Leaping entirely out of the water**—Animal jumps fully clear of the surface of the water (as opposed to merely breaking the surface of the water), not for forward locomotion but for other reasons.
- **Rooster tailing**—Animal surfaces at high speed creating a spray of water in front and over the top of the animal which looks like a rooster's tail. Usually seen only in Dall's porpoise.
- **Slow rolling**—Animal comes to the surface to breathe, with the blowhole and dorsal area usually showing, and then rolls back underwater.

Large Cetaceans

- **Blow visible from a distance**—Blow can be seen from more than 500 meters away. Usually only seen in certain large cetaceans.
- **Breaching**—The whale accelerates forward underwater and then jumps free of the water, sometimes fully clearing the water's surface, and then lands on the surface of the water, creating a large splash. Used for Orca-sized cetaceans or larger.
- **Flipper slapping**—Whale floats or swims at the surface, turns on its side and slaps one pectoral fin

against the water, either once or several times in quick succession.

- **Group feeding**—Seen primarily in humpback whales, when they coordinate feeding by lunging out of the water with their mouths open, engulfing fish and water.
- **Lob tailing**—Whale raises its tail flukes up out of the water and slaps them down against the surface with great force. This may occur once or be repeated many times.
- **Spy hopping**—Whale is vertical in the water and raises its head out of the water, usually with its eyes showing.
- **Tail raised on dive**—When diving, the whale's entire tail lifts completely above the water before going underwater.
- **Side and stern wake riding**—Whale is riding in the wake created amidships along the side of the vessel, or the wake created by the stern.

Pinnipeds

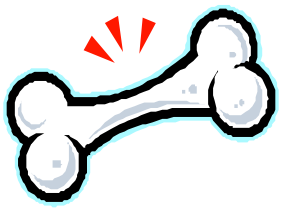
- **Jug handle**—Seal or sea lion floats on its side with one front flipper and one rear flipper above the water, creating what looks like a handle.
- **Porpoising**—Pinniped is swimming fast, jumping at least partially out of the water in fluid, arching motions. This swimming pattern resembles that of dolphins or porpoises seen at a distance.
- **Rafting**—A group of pinnipeds resting at the surface together.
- **Spooked from haul out**—Pinnipeds which had been resting on a beach, rocks or ice dove into the water due to your vessel's interaction with them.
- **Vocalizing**—Pinniped making directed noises at you or at another pinniped.

Marine Mammal Data Collection Priorities

The priorities for sampling of marine mammals are:

1. Document information on **all** interactions, including incidental takes, between marine mammals and fishing operations.
2. Document sighting of **all** ESA-listed marine mammals.
3. Document sightings of non-ESA-listed marine mammals.

Tip* As non-ESA sightings are the lowest observer priority, sighting information should only be collected if it does not interfere with other observer data collection priorities.



50 CFR 229.7 of the Federal Code of Regulations, gives observers the authority to take and possess pinniped snouts and cetacean tissues. **Do not collect bones, skulls, or any other parts as specimens** as they are not needed and will be discarded. Sea otters are under the jurisdiction of the US Fish and Wildlife Service and possessing any specimen material from them is a federal offense.

Marine Mammal Data Collection - Interactions

Observers must record **all** interactions between marine mammals and fishing operations. Interactions that must be documented include:

- Feeding on Catch - Marine mammal is feeding on fish prior to the fish being brought on-board vessel.
- Deterrence Used - A deterrent device, such as a seal bomb, pole gaff, or yelling was used to deter a marine mammal.
- Boarded Vessel - Marine mammal boards the fishing vessel on it's own volition and then escapes.

- Killed by Gear - Marine mammal was killed by the fishing gear.
- Killed by Propeller - Marine mammal is struck by the propeller of fishing vessel and dies.
- Previously Dead - Marine mammal is caught in gear but it was already dead before coming in contact with fishing gear.
- Lethal Removal - Marine mammal is killed **by vessel personnel** to prevent serious damage to or loss of gear, catch, or human life.
    - **Trailing gear vs. Not trailing gear** :
        - Trailing Gear - Pieces of gear, including net and line parts, are attached to animal when it's returned to sea.
        - Not Trailing Gear - Animal has **no gear** attached when it's returned to sea.

Trailing Gear - Pieces of gear, including net or line parts, are attached to animal when it returns to sea.
Not Trailing Gear - Animal has **no gear** attached when it returns to sea.

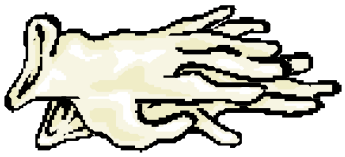
- Entangled in Gear - Marine mammal is entrapped or entangled in fishing gear but escapes or is released alive.
    - **Trailing gear vs. Not trailing gear**
        - Trailing Gear - Pieces of gear, including net and line parts, are attached to animal when it's returned to sea.
        - Not Trailing Gear - Animal has **no gear** attached when it's returned to sea.
- Other - Marine mammal was involved in an interaction not included in list of interaction codes.
- Unknown - The vessel or vessel personnel had some interaction with marine mammal, but the observer did not directly view the interaction and/or ascertain what the interaction was.

Catch Sampling - Interactions

Always wear gloves when handling a marine mammal.

Catch sampling will be necessary when marine mammals were involved in interactions that result in the death of the animal:

1. Inform skipper and crew that samples must be collected from marine mammal.
2. Identify to species.
3. Actually weigh or visually estimate the weight of the marine mammal.
    - If actually weighed, record in appropriate catch category on the **Catch Form** and on the **Species Composition Form.** Reason for discard must be 16 - Regulation.
    - If weight visually estimated, record on the **Catch Form** only, using the catch category code **ZMRM**. In the Comments field, document the species name. Reason for discard must be 16 - Regulation.



Biological Sampling - Incidental Takes

Always wear gloves when handling a marine mammal.

Biological information is only taken from **dead** marine mammals.

1. Put on a pair of rubber deck gloves to prevent the transfer of disease.
2. Lay the animal on its back with its head and vertebral column in as straight a line as possible.
3. Take the standard length (preferred) or curvilinear length of the marine mammal.
    - Standard length - With the animal belly up, measure the straight line distance from the tip of the snout or rostrum to the tip of the tail notch.
    - Curvilinear length - Measure the shortest surface distance from the tip of the snout or rostrum to

the tip of the tail notch along the back, belly, or side. **Use only if rigor has set in or the animal is too large or deteriorated to maneuver.**

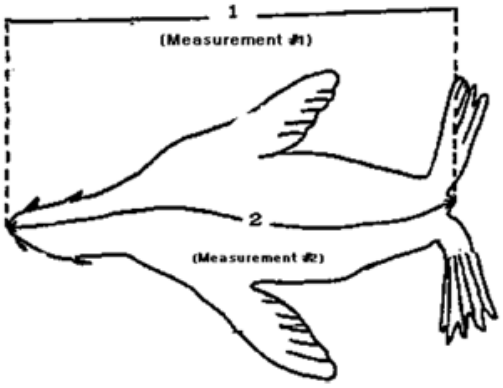


Figure 8-4: Pinniped measurements (NPGOP)

4. Sex the marine mammal. In cetaceans, the distance between the anus and the genitals is greater in males. Otherwise the sexes appear similar!

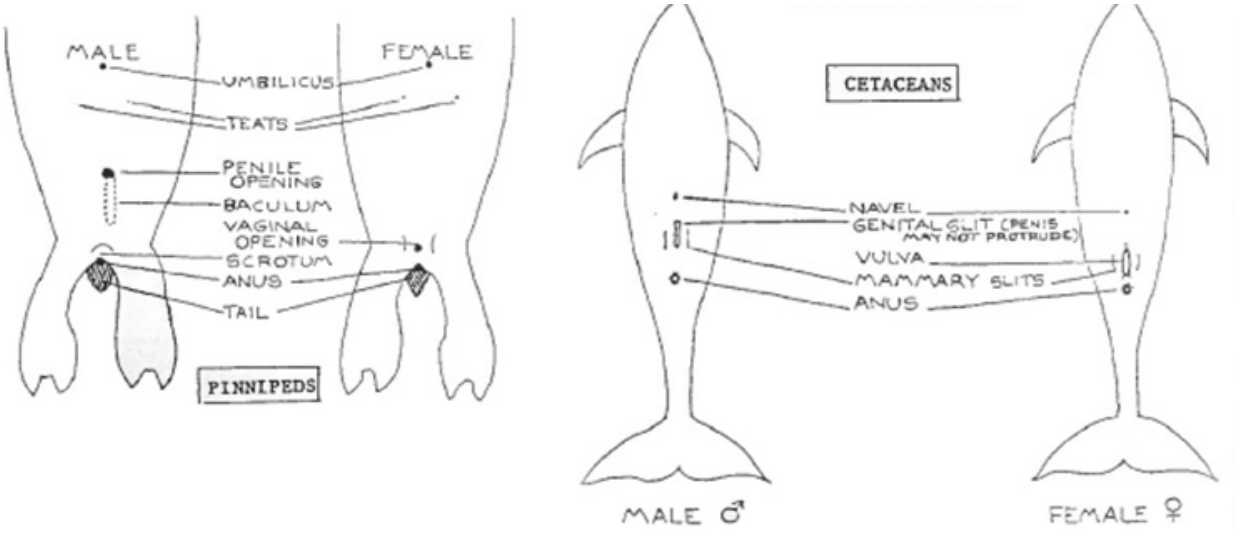


Figure 8-5: Sexing marine mammals (NPGOP)

5. If marine mammal is tagged, retrieve the tag and any research instrumentation/attachments affixed to the animal.

6. Collect canine teeth (snouts) from dead sea lions and Northern fur seals.
    - Skin the snout using a sharp knife.

- Using a hacksaw, cut the snout between the second and third post-canine teeth.
- Place snout in a plastic bag with a Specimen Collection Label.

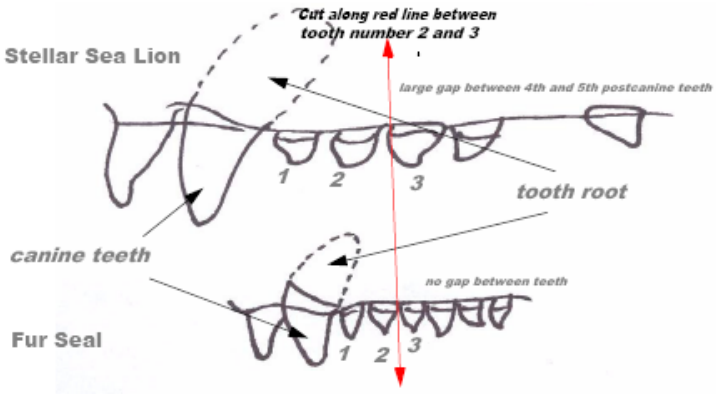


Figure 8-6: Removing pinniped canine teeth

7. Collect a tissue sample from all dead cetaceans.
   - Exchange fishing gloves for the blue nitrile gloves provided (do not use latex gloves).

Warnings about DMSO: DMSO has exceptional solvent properties for organic and inorganic chemicals and is widely used as an industrial solvent. DMSO has also been used to administer drugs topically. It is able to penetrate intact skin and will carry anything dissolved into it directly into the blood stream. Side affects from DMSO include nausea, headache, and skin rash. Further, since DMSO is a "carrier" chemical, it could deliver harmful substances into the bloodstream if they are present in impure DMSO or on the skin. Great care should be taken when handling DMSO. Never allow DMSO to contact skin. **Always wear the nitrile gloves provided when handling DMSO**.

- Lightly scrape the sample area clean with a knife to remove fish slime and to reduce potential contamination of the sample. If possible, take the sample from the back of the animal, just posterior to the dorsal fin. If sample can't be taken from that location, it can be collected from anywhere on the animal.

- Using a sterile scalpel, cut out a strip of skin approximately 2 cm by 1 cm.
- Remove any excess blubber from the strip of skin.
- Place the skin sample in a vial of DMSO.
    - The skin sample must be completely covered by the solution, so don't take too big of a sample.
    - Only one tissue sample per vial of DMSO.
- Store sample at room temperature. Do not freeze!
- If DMSO vials are not available, preserve tissue sample using one of the following methods:
    - Place the tissue sample in a sterile otolith vial and freeze it.
    - Place the tissue sample in a sterile otolith vial filled with saturated salt solution or table salt and store at room temperature.

Recording Interactions Marine Mammals

1. Record actual or visual weight on **Catch Form** and, if actual weight, on **Species Composition Form**. Reason for discard 16 - Regulation should be documented.

2. Record length, actual weight, sex, tag number (if applicable) and barcode number(s) of dissection(s) on **Biosampling Form.**
    - **Inside/Outside** - Usually marine mammals will fall **outside** of a species composition sample, as they are too large to weigh.
    - **Random/Non-random** - As 100% of all incidentally caught marine mammals should be sampled, it should be a **random** collection.

3. Complete a **Specimen Collection Label** if canine teeth are collected.

4. Complete a **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form.**

Marine Mammal Data Collection - Sightings

Depending on the status of the species, sightings can be a very high or a very low priority. All sightings of ESA-listed marine mammals must be documented. When time allows, observers should document sightings of non-ESA-listed marine mammals. Sighting information is stored in the Platform of Opportunity database by NMML to determine locations where marine mammals have been seen.

Catch Sampling - Sightings

No catch sampling is required with marine mammal sightings.

Biological Sampling - Sighting

No biological sampling is required with marine mammal sightings.

Recording Marine Mammal Sightings

1. Sightings are recorded on the **Marine Mammal/ Seabird/Sea Turtle Interaction and Sighting Form**. See "Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions" on page 48. If marine mammal was tagged, document tag number on form.

Tip* If a deterrence device, such as a seal bomb, pole gaff, or yelling, was used, circle "Deterrence Used" in the Fishing Interactions column.

IV. Salmon

Introduction

There are eight species of salmonids encountered in the eastern Pacific Ocean: King (Chinook), Silver (Coho), Sockeye (Red), Chum (Dog), Pink (Humpback), Atlantic

salmon, Steelhead (sea-run Rainbows), and Cutthroat trout. Numerous stocks are designated as threatened or endangered under the ESA. Specific stocks, termed **Evolutionary Significant Units** (ESU's) that are designated include (does not include ESA-listed Steelhead stocks):

Evolutionary Significant Units (ESU's) - A group that is considered distinct for purposes of conservation under the ESA.This term can apply to any species, subspecies, geographic race, or population. To qualify as an ESU, a population must 1) be substantially reproductively isolated from other con-specific populations, and 2) represent an important component in the evolutionary legacy of the biological species (Waples 1991).

- Endangered ESU's:
    - Upper Columbia River spring-run Chinook
    - Sacramento River winter-run Chinook
    - Central California coast Coho
    - Snake River Sockeye
- Threatened ESU's:
    - California coastal Chinook
    - Central Valley spring-run Chinook
    - Lower Columbia River Chinook
    - Puget Sound Chinook
    - Snake River fall-run Chinook
    - Snake River sping/summer-run Chinook
    - Upper Willamette River Chinook
    - Columbia River Chum
    - Hood Canal summer-run Chum
    - Lower Columbia River Coho
    - Southern Oregon and Northern California coasts Coho
    - Ozette Lake Sockeye

Salmon Identification

Salmon are often difficult to identify to species due to the condition they are in when brought aboard. Use the following salmonid characteristics **and the Species Identification manual** to identify to species:

- **Color at base of mouth** - black or white.
- **Spotting on tail -** spotting vs. no spotting, both lobes vs. one lobe.

- **Spotting on back -** spotting vs. no spotting.
- **Scale size** - small vs. large, shape.

Salmon Data Collection Priorities

Tip* All salmon caught with trawl gear have incurred enough scale loss and other trauma to be considered dead, even if they are flopping around.

Catch Sampling

When salmon are caught in a haul/set:

1. Inform skipper and crew members that all salmon will be sampled and their help in the collection of these fish would be appreciated
2. Identify to species.
3. Document the weight and number of **all** salmon, by species, on the **Catch Form** and the **Species Composition Form**.

Biological Sampling - Length and Sex

1. Measure the length of **all** salmon.
2. Sex **all** salmon.
    - Insert blade into the anus and cut forward to the throat as gonads are found along the backbone near the throat.

OR

- Cut down and back from just below the lateral line to about 1 or 2 inches behind the pectoral fin.

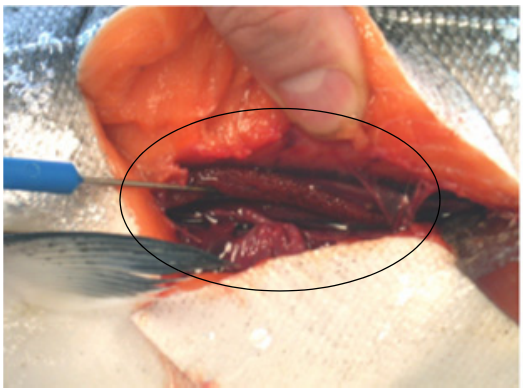


Figure 8-7: Salmon gonad placement

- Remove viscera to expose gonads.
- Determine sex:
  - Males: creamy ribbons along the spine.
  - Females: orange, granular sacs extending back along the spine (eggs are always discernible in salmon).

Biological Sampling - Snout and Fin Clip

Snouts and fin clip samples are to be collected from all salmon in the haul.

1. Document adipose presence/absence from **all** salmon in the haul.
2. Collect a small fin clip from the pectoral fin from all salmon in haul.
   - Rinse off any blood or slime that may be present on the pectoral fin.
   - Using clean scissors and tweezers, clip a small (about 1 cm^2 or size of a pinky nail) piece of the

pectoral fin. (Larger pieces take longer to dry and will rot.)

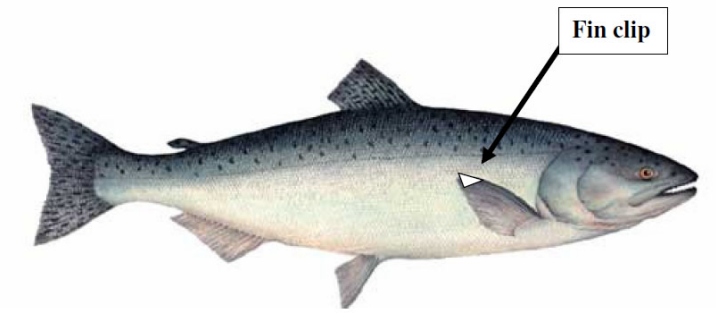


Figure 8-8: Salmon fin clip location.

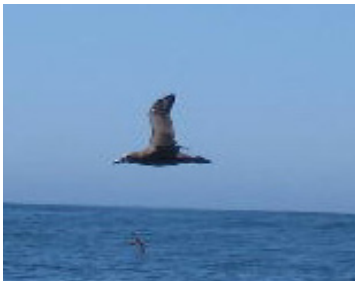
- Place fin clip on the second fold of blotter paper, maintaining a layer between the tissue and the scales. Position fin clip on blotter paper, so that it does not overlap the scale once the blotter paper is folded in the envelope.
- Fold over the third part of blotter paper to protect the sample.
- Dry sample and place in an **unsealed** scale envelope. **Keep envelopes clean and dry!**

Figure 8-9: Storing salmon fin clip samples.

3. Collect snouts from **all** salmon.
    - Cut one centimeter behind the eye, down to the end of the maxilla or the crook of the mouth.
    - Remove snout and place in a plastic bag.
    - Immerse snout in salt or freeze immediately.
        - If salting, periodically drain of fluid.
    - Place a barcode in the bag with the snout.

Recording Salmon Information

- Document on **Catch Form** and **Species Composition Form**.
- Complete a **Biospecimen Form**.
    - **Inside/Outside** - Salmon will most likely fall **inside** of the species composition sample.
    - **Random/Nonrandom** - All salmon should be sampled, therefore, they should be **randomly** collected.
- Record information on **Salmon Scale envelope**, when fin clips are collected. Be sure to document species, trip number, haul number and date. all other fields may be left blank. Affix a barcode sticker on the envelope.
- Be sure to place a barcode sticker in the bag with the snout.



V. Seabirds

Introduction

Seabird mortalities associated with commercial fisheries are estimated at 300,000 to one million per year worldwide. Most commercial fisheries do not monitor seabird bycatch, making it difficult to accurately estimate mortality rates or to predict the long-term effects of fishing on seabird populations. The NOAA Fisheries is collaborating with the U.S. Fish and Wildlife Service (USF&WS) to gather data on fishery related mortality of seabirds in the West Coast groundfish fisheries.

Most seabirds are regulated under the Migratory Bird Treaty Act. In addition, three species found on the West Coast are listed under the Endangered Species Act.

- Endangered Species:
    - Short-tailed Albatross

    - CA Least Tern
- Threatened Species:
    - Marbled Murrelet

Seabird Identification

When identifying seabirds, pay close attention to both the physical characteristics of the animal and to its behavior.

Seabird Physical Characteristics

- **Size -** large or small and robust or slender.
- **Color Pattern** - color pattern of head, wings, and body.
- **Bill and Feet** - color, size, shape (tubenose or not tubenose).

Seabird Behaviors

- **"Flying" underwater** - Animal dives under surface and swims/flys while still submerged.
- **Plunges from air** - Animal dives underwater from the air to catch it's food.
- **Perched on land** - Animal perches on pilings, reefs, docks, etc. with wings spread to dry.
- **Harassing other birds** - Animal harasses other birds in an effort to steal their food.
- **Soaring/Gliding** - Animal soars/glides when flying, with few wing beats.
- **Bird storms** - Flocks of birds hitting ship.

Seabird Data Collection Priorities

1. Document information on **all** interactions, including incidental takes, between seabirds and fishing operations.

2. Document **all** sightings of endangered or threatened seabirds and banded birds.

Tip* Seabirds may be banded with coded metal or plastic leg bands, nasal markers, or radio tags.

3. Document sightings of non-ESA listed seabirds.

Tip* As non-ESA sightings are the lowest observer priority, sighting information should only be collected if it does not interfere with other observer data collection priorities.

Seabird Data Collection - Interactions

Observers must document **all** interactions between seabirds and fishing activities. Interactions include:

- Feeding on Catch - Seabird is feeding on fish prior to the fish being brought on-board vessel.
- Deterrence Used - A deterrent device, such as a seal bomb, pole gaff, or yelling was used to deter a seabird.
- Boarded Vessel - Seabird boards the fishing vessel on it's own volition and then escapes.
- Killed by Gear - Seabird was killed by the fishing gear.
- Killed by Propeller - Seabird is struck by the propeller of fishing vessel and dies.
- Previously Dead - Seabird is caught in gear but it was already dead before coming in contact with fishing gear.
- Lethal Removal - Seabird is killed by vessel personnel to prevent serious damage to or loss of gear, catch, or human life.
    - **Trailing gear vs. Not trailing gear** :

Trailing Gear - Pieces of gear, including net or line parts, are attached to animal when it returns to sea.
Not Trailing Gear - Animal has **no gear** attached when it returns to sea.

- Trailing Gear - Pieces of gear, including net and line parts, are attached to animal when it's returned to sea.
- Not Trailing Gear - Animal has **no gear** attached when it's returned to sea.

- Entangled in Gear - Seabird is entrapped or entangled in fishing gear but escapes or is released alive.
  - **Trailing gear vs. Not trailing gear**
    - Trailing Gear - Pieces of gear, including net and line parts, are attached to animal when it's returned to sea.
    - Not Trailing Gear - Animal has **no gear** attached when it's returned to sea.

- Other - Seabird was involved in an interaction not included in list of interaction codes.

- Unknown - The vessel or vessel personnel had some interaction with seabird, but the observer did not directly view the interaction and/or ascertain what the interaction was.

Catch Sampling - Interactions

1. Identify to species.
2. Actually weigh or visually estimate the weight of the seabird.
   - If actually weighed, record in appropriate catch category on the **Catch Form** and on the **Species Composition Form.** Reason for discard must be 16 - Regulation.
   - If weight visually estimated, record on the **Catch Form** only, using the catch category code **XBRD**. In the Comments field, document the species name. Reason for discard must be 16 - Regulation.

Biological Sampling - Interactions

Collect biological information from **dead** seabirds only!

1. If seabird has a tag or band, remove or document tag number(s) and/or band color(s) **Be sure to note which leg the band was on or if two bands were on same leg, the order of the colored bands (e.g. white band on top, blue band on bottom).**

Recording Seabird Interactions

1. Record actual or visual weight on **Catch Form** and, if actual weight, on **Species Composition Form**. Reason for discard 16 - Regulation should be documented.
2. Complete a **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form**. See "Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions" on page 48.

Seabird Data Collection - Sightings

Observers must document **all** sightings of endangered/ threatened seabirds. When time allows, sightings can be documented on other seabird species.

Catch Sampling - Sightings

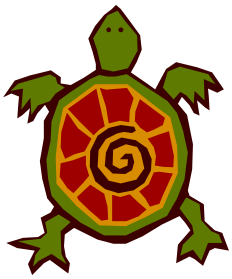
No catch sampling is required with seabird sightings.

Biological Sampling - Sighting

No biological sampling is required with seabird sightings.

Recording Seabird Sightings

1. Sightings are recorded on the **Marine Mammal/ Seabird/Sea Turtle Interaction and Sighting Form**. See "Form Completion". **If seabird was tagged or banded , document tag number or band colors.**



VI. Sea Turtles

Introduction

Five species of sea turtles inhabit the waters off the West Coast of the United States, all of which are designated as endangered or threatened under the ESA.

- Endangered Species:
  - Hawksbill Sea Turtle
  - Leatherback Sea Turtle

- Threatened Species:
  - Green Sea Turtle
  - Loggerhead Sea Turtle
  - Olive Ridley Sea Turtle

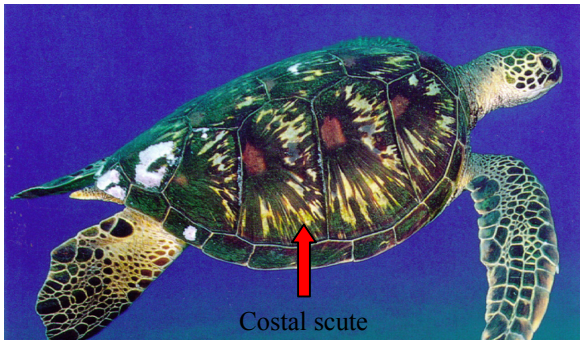
Sea Turtle Identification

Sea turtles can be identified to species using physical characteristics. Behavioral characteristics can be used to confirm the identification. Use the following characteristics and the **Species Identification manual** to identify sea turtles to species.

Sea Turtle Physical Characteristics

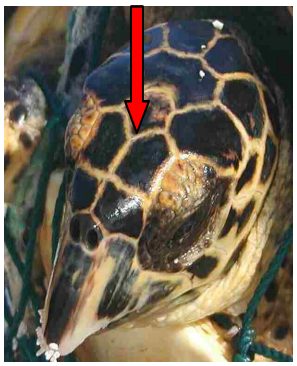
- **Hard-Shell vs. Soft-Shell** - Presence of a bony or non-bony shell.

- **Number of Costal scutes -** Costal scutes are found on the shell of the sea turtle..



- **Number of Pairs of Prefrontal Scales** - Prefrontal scales are found on the head of the sea turtle..

Prefrontal scales



- **Color** - red, gray, green, etc.

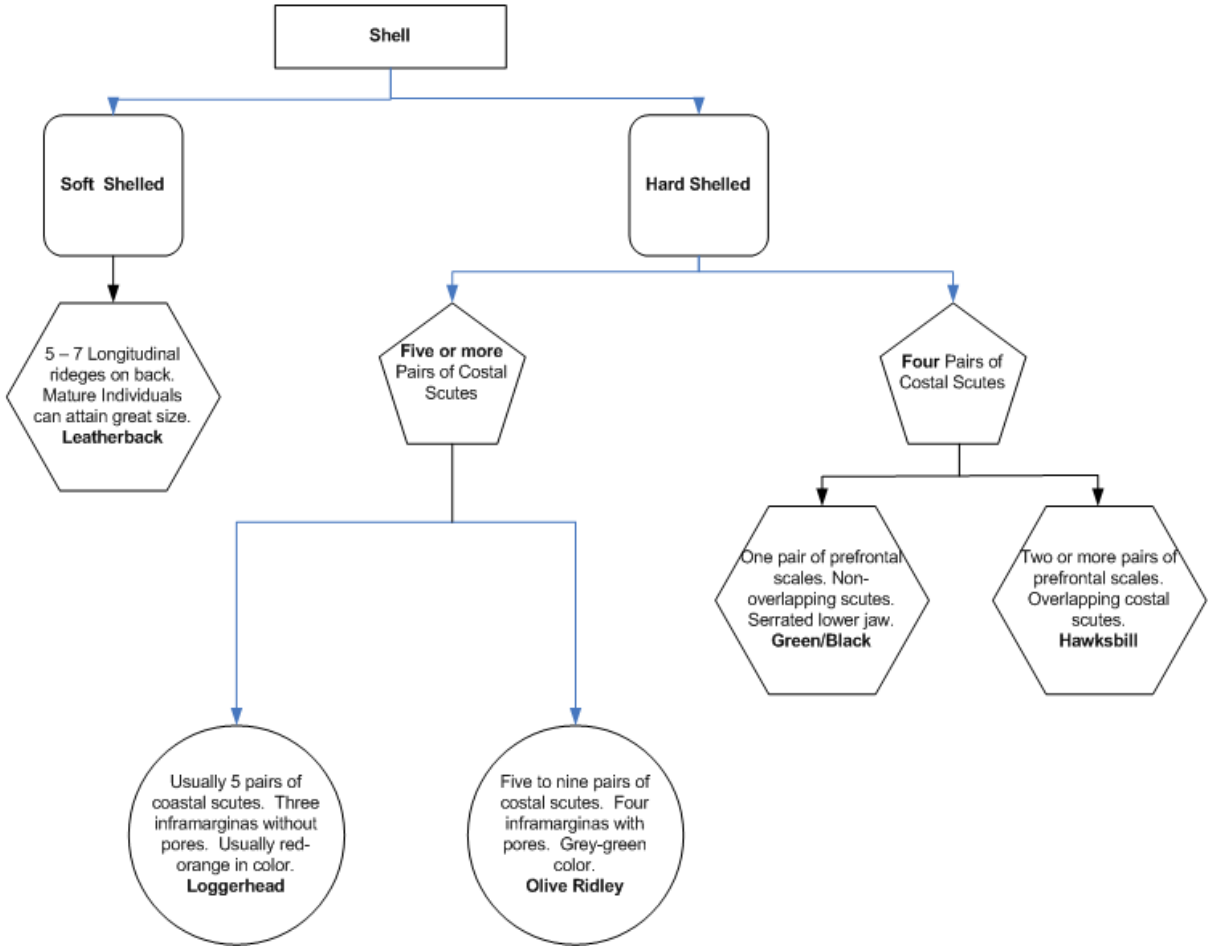


Figure 8-10: Eastern Pacific Marine Turtles Identification

Sea Turtle Behaviors

- **Swimming** - Turtle moving slowly along relatively level at or just below surface of the water.
- **Diving** - Turtle seen at or near surface which suddenly submerges or is seen disappearing into the deep.
- **Basking/Floating** - Turtle seen floating at the surface, usually only their back seen but sometimes both flippers may be raised - may be followed by diving once boat is detected.
- **Foraging** - Turtle seen with food in mouth or diving in area of high abundance of jellies or pelagic invertebrates.
- **Breathing** - Turtle seen at surface, head out of water with mouth slightly open (no food) - usually followed by floating and another breath or swimming or diving.

Sea Turtle Data Collection Priorities

1. Document **all** interactions, including incidental takes, between sea turtles and fishing operations.
2. Document **all** sea turtles sightings .

Sea Turtle Data Collection - Interactions

Observers must document **all** interactions between sea turtles and fishing activities. Interactions include:

- Feeding on Catch - Sea turtle is feeding on fish prior to the fish being brought on-board vessel.
- Deterrence Used - A deterrent device, such as a seal bomb, pole gaff, or yelling was used to deter a sea turtle.
- Boarded Vessel - Sea turtle boards the fishing vessel on it's own volition and then escapes.
- Killed by Gear - Sea turtle was killed by the fishing gear.

- Killed by Propeller - Sea turtle is struck by the propeller of fishing vessel and dies.
- Previously Dead - Sea turtle is caught in gear but it was already dead before coming in contact with fishing gear.
- Lethal Removal - Sea turtle is killed by vessel personnel to prevent serious damage to or loss of gear, catch, or human life.
    - **Trailing gear vs. Not trailing gear** :
        - Trailing Gear - Pieces of gear, including net and line parts, are attached to animal when it's returned to sea.
        - Not Trailing Gear - Animal has **no gear** attached when it's returned to sea.

Trailing Gear - Pieces of gear, including net or line parts, are attached to animal when it returns to sea.
Not Trailing Gear - Animal has **no gear** attached when it returns to sea.

- Entangled in Gear - Sea turtle is entrapped or entangled in fishing gear but escapes or is released alive.
    - **Trailing gear vs. Not trailing gear**
        - Trailing Gear - Pieces of gear, including net and line parts, are attached to animal when it's returned to sea.
        - Not Trailing Gear - Animal has **no gear** attached when it's returned to sea.
- Other - Sea turtle was involved in an interaction not included in list of interaction codes.
- Unknown - The vessel or vessel personnel had some interaction with sea turtle, but the observer did not directly view the interaction and/or ascertain what the interaction was.

Catch Sampling - Interactions

1. Identify to species.
2. Actually weigh or visually estimate the weight of the sea turtle.
    - If actually weighed, record in appropriate catch category on the **Catch Form** and on the **Species**

Composition Form. Reason for discard must be 16 - Regulation.

- If weight visually estimated, record on the **Catch Form** only, using the catch category code **ZMIS**. In the Comments field, document the species name. Reason for discard must be 16 - Regulation.

Biological Sampling - Interactions

1. Determine carapace length by measuring:
    - Distance between the center edge of the nuchal scute and the posterior edge of the carapace, following the curvature of the dorsal center line.
    - If there is a notch between the two posterior marginal scutes, measure the distance to the rear most point of the scutes.
    - For Leatherbacks, juvenile olive ridleys and juvenile loggerheads, measure to one side of the median keel, not on top of it.

Figure 8-11: Measuring carapace length

2. Measure carapace width by measuring the maximum distance between the lateral edges of the carapace. Measure over the curvature of the shell.

Figure 8-12: Measuring carapace width

3. Determine tail length by measuring the distance between the posterior most point of the plastron and the tip of the tail.
    - If the stretched tail does not extend beyond carapace, the length is "0000".

Figure 8-13: Measuring sea turtle tail length.

4. Determine condition of turtle.
    - **Previously Dead** - The turtle was already dead when it was sighted or captured.
    - **Released Unharmed** - The turtle was returned to the sea alive and uninjured.
    - **Released Injured** - The turtle was injured as a result of fishing operations or by vessel personnel. "Injured" is an animal removed from the gear with obvious physical injury or with gear attached.
    - **Killed Accidentally** - The turtle died due to injuries incurred during fishing operations or was returned to the sea while comatose.
    - **Escaped** - The turtle left the gear or deck unaided after the capture or entanglement, with no apparent injuries.
    - **Treated as Catch** - The turtle was not previously dead and was sacrificed for market, table, or other use.
    - **Other/Unknown** - The final fate of the turtle involved in the haul/set is unknown or whose condition after leaving the gear or deck was unobserved.

5. If sea turtle has a tag:
    - If turtle is **alive**, document tag number(s).
    - If turtle is **dead**, remove the tag.
6. Take one photograph of the head and several additional photos of different angles of the whole turtle showing the costal and vertebral scutes.

Recording Sea Turtle Interactions

1. Record actual or visually weight on **Catch Form** and, if actual weight, on **Species Composition Form**. Reason for discard 16 - Regulation should be documented.
2. Complete a **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form**. (See Figure 8-16 and Figure 8-19)..

Tip* If a deterrence device, such as a seal bomb, pole gaff, or yelling, was used, circle "Deterrence Used" used in the Fishing Interactions column.

Sea Turtle Data Collection - Sightings

Observers must document **all** sightings of sea turtles.

Catch Sampling - Sightings

No catch sampling is required with sea turtle sightings.

Biological Sampling - Sighting

No biological sampling is required with sea turtle sightings.

Recording Sea Turtle Sightings

Sightings are recorded on the **Marine Mammal/Seabird/ Sea Turtle Interaction and Sighting Form**.

VII. Protected Species Data Collection Forms

There are five forms, in addition to Catch and Species Composition Forms, that are used for recording information on Protected Resources.

1. Biospecimen Form - Used to record length, sex, weight, and barcode numbers from dissections.
2. Specimen Collection Label - Used to record data when pinniped canine teeth (snouts) are collected.
3. Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form - Used to record marine mammal, seabird, and sea turtle interaction and sighting information.
4. Salmon Scale Envelope - Used when salmon scales, salmon fin clip tissue, or green sturgeon fin rays are collected.
5. Sea Turtle Life History Form - Used anytime a sea turtle is brought on-board a fishing vessel.

Biospecimen Form Instructions

Complete the Biospecimen Form (See Figure 8-14) any time length, sex or actual weight information is collected from a dead marine mammal. Also complete this form when dissections are collected.

- **Haul Number –** Record the number of the haul that the sample came from.

- **Date –** Record the date as MM/DD/YY.

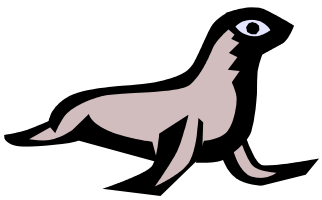
- **Trip Number –** This is an automatically generated number by the database. Complete this field once the trip has been started in the database.

- **USCG # –** Record the USCG vessel number. This six or seven digit USCG number is usually posted on the side of the vessel or request this number from the vessel skipper or a coordinator. **If the vessel does not have a USCG number, leave field blank.**

- **Page _ of _** – Number forms sequentially with in a haul.

- **Catch # -** Record the number that corresponds to the catch category on the Catch Form.

- **Catch Category –** Record in capital letters the catch category the species is in as recorded on the Catch Form.



- **R or D –** Record whether the individual was **R** – Retained or **D** – Discarded.

- **Species Name -** Record the **common name** of the species. This column must be filled in with the species name. Do not only enter the species code! The common name listed on the paperwork must match the common name used in the database.

- **Species Code** - Record the species code of the corresponding species. See Species Codes in the Appendix.

- **Discard Reason** - Record the skipper/crew's reason for discard. (refer to Chapter 3. "Observer Basics" for more information on these codes)
    - 11 - Incidental/Accidental
    - 12 - Drop-off
    - 13 - Market
    - 14 - Other
    - 15 - Predation
    - 16 - Regulation
    - 17 - Safety

18 - Market (Dockside only)

- **Method –** Record the Biospecimen Sampling Method used:
  - 6 - Outside and Nonrandom
  - 7 - Outside and Random
  - 8 - Inside and Nonrandom
  - 9 - Inside and Random
  - 10 - P. Halibut Visual Length Estimate

- **Sex –** Record **M** – Male, **F** – Female, or **U** – Unknown (individuals where the sex cannot be determined). If you did not attempt to sex the individual, LEAVE COLUMN BLANK.

- **Length –** Record the length of the individual in whole centimeters.

- **Weight –** Record the weight of the individual in pounds.

- **Viability** - Do not record any viability information for protected species. This is for P. Halibut only.

- **Adipose Present** - For **salmon only**, document a "Y" if adipose was present or a "N" if adipose was absent.

Tip*: The salmon scale envelopes and the biological specimen form record information on adipose differently. On the Salmon Scale Envelope, missing adipose Y or N is documented while on the biosampling form, adipose present Y or N is documented. Be sure to double check that this information is documented correctly on both.

- **Maturity Stage** – Do not record maturity stage for protected species. This is for Dungenes Crab only.

- **Dissection Type –** Record the type of dissection that was taken.

  1– Otoliths
  2 – Scales
  3 – Snout
  4 – Tissue
  5 - Fin Ray
  6 - Tissue and scales

- **Barcode # –** Record the barcode number of the vial, envelope, or other container that the dissection was placed in.

- **Dissection Type – If two dissections were taken from the same individual**, record the second type of dissection that was taken.

  1– Otoliths
  2 – Scales
  3 – Snout
  4 – Tissue
  5 - Fin Ray
  6 - Tissue and scales

- **Barcode # – If two dissections were taken from the same individual**, record the barcode number of the vial, envelope, or other container that the dissected part was placed in.

- **Comments**
  - Record the tag number of the protected resource.
  - **Green sturgeon** - document whether the fish was **obviously dead** or **not obviously dead**, if photo was taken, and if scute was sampled (yes or no).

- **KP Length –** Sum up all of the length **by species** and note total of all lengths in the KP Length (keypunch length) column.

- **KP Weight -** Sum up all of the weights **by species** and note total of all weights in KP Weight (keypunch weight) column.

Haul # | | **BIOSPECIMEN FORM** Page ____ of ____

Date | | | | | | | Trip Number | | | | | | USCG # | | | | | | | |

Catch #	Catch Category	R or D	Species Name	Species Code	Discard Reason	Method	Sex	KP Length / KP Weight	Length	Weight	Viability	Adipose Present	Maturity stage	Dissection Type	Barcode #	Dissection Type	Barcode #	Comments (tag #)

Method : 6-Outside and Nonrandom 7-Outside and Random 8-Inside and Nonrandom 9-Inside and random 10-PHLB visual length estimate

Dissection Type: 1 - Otoliths 2 - Scales 3 - Snouts 4 – Tissue 5 – Fin ray 6 – Tissue and Scales

Biological Sampling Form v.9 January 2010 OMB Control No. 0648-0593 expires 9-30-2012

Figure 8-14: Biospecimen Form

Specimen Collection Label Instructions

Complete the Specimen Collection Label (See Figure 8-15) when:

- Salmon snout is collected.
- Pinniped snout is collected.

- **Vessel Name** – Record the name of the vessel on which the specimen was collected.

- **Haul Number** – Record the haul number from which the specimen was collected.

- **Trip Number** – This is an automatically generated number by the database. Complete this field once the trip has been started in the database.

- **Date** – Enter the date that the haul/set was retrieved as MM/DD/YY.

- **Species Identification** – Record the common name of the species.

- **Entered As** – Record the species name entered into the database, if this differs from the above (e.g. you entered it as marine mammal, unidentified but believe it was a California Sealion).

- **Depth (FM)** – Record the retrieval depth of the haul/set in fathoms.

- **Length (cm)** – Record the length of the individual, in centimeters.

- **Weight (LB)** – Record the weight of the individual, in pounds.

- **Sex** – Record the sex of the individual.
- **Observer Name** – Record your first and last name.
- **Bar Code Sticker** – When collecting snouts or fin rays, be sure to affix a WCGOP bar code sticker to the back of the specimen label in order to uniquely identify the specimen.

SPECIMEN COLLECTION LABEL
West Coast Groundfish Observer Program
DOC/NOAA/NMFS/NWFSC/FRAMD
2725 Montlake Blvd. Seattle, WA 98112
(use pencil ONLY!)
VESSEL HAUL
NAME_____ NUMBER_____
TRIP
NUMBER_____ DATE_____
SPECIES IDENTIFICATION_____
ENTERED AS_____
DEPTH(FM)_____ LENGTH(CM)_____
WEIGHT(LB)_____ SEX (if applicable)_____
OBSERVER NAME_____

Figure 8-15: Specimen Collection Label

Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions

Complete the Interaction and Sighting Form for **all marine mammal, seabird, and sea turtle** interactions and sightings. Fill out the form as completely as possible (See Figure 8-16, page 53 and Figure 8-17, page 54). The more information you provide, the more useful the data is to NMML in determining species ranges and documenting interactions.

- **Trip Number** - This is an automatically generated number by the database. Complete this field once the trip has been started in the database.

- **USCG #** - Record the USCG vessel number. This six or seven digit USCG number is usually posted on the side of the vessel or request this number from the vessel skipper or a coordinator. **If the vessel does not have a USCG number, leave field blank.**
- **Date/Time** - Record the date as MM/DD/YY. Record the time that the animal was first seen in military time HH:MM.
- **Latitude** - Record the latitude (in degrees, minutes, 1/10th of a minute) where the animal was first seen.
- **Longitude** - Record the longitude (in degrees, minutes, 1/10th of a minute) where the animal was first seen.
- **Species** - Record the **common name** of the species. Do not enter the species code!!
- **Body Length Estimate** - Record a check mark in the box that best describes the length of the individual(s) observed.
- **Sighting Conditions** - Record a check mark in the box that best describes the overall sighting conditions (excellent, good, fair, poor).
- **Beaufort** - Record the Beaufort sea conditions value. A description of each Beaufort value is listed on the back of the form.
- **Surface Water Temperature** - Record the surface water temperature in degrees centigrade.
- **Confidence** - Record a check mark in the box that best describes your confidence (sure, likely, unsure) in your species identification.
- **Haul #** - Document the haul number the interaction or sighting occurred. This is required for fishing interactions:

  - Killed by Gear
  - Lethal removal (trailing and not trailing gear)
  - Entangled in gear (trailing and not trailing gear)

- **Closest Approach** - Note the distance in meters of the closest approach of the animal to the vessel.

- **Number Sighted (Best)** - Record the best estimate of the total number of individuals observed.

- **Number Sighted (Minimum)** - Record the best estimate of the minimum number of individuals observed.

- **Number Sighted (Maximum)** - Record the best estimate of the maximum number of individuals observed.

- **Notes and Identifying Characteristics -** Record physical and behavioral information about the animal(s). **This section is the most important section of the form and should be completed as fully as possible. The following information must be documented in the Notes box for the form to be accepted:**
  - **Physical characteristics used to identify the animal.**
  - Behavioral characteristics used to identify the animal. **These characteristics can be circled on the MM/SB/ST Interaction and Sighting Form but they must also be listed in the Notes box for entry into the database.**
  - Description of sighting or interaction. This should be very detailed!
  - **Sketches** - A sketch of the animal seen can be placed in the Notes box also. The identifying characteristics must also be **written in text** for entry into the database.

- **Behaviors Seen** - Circle all of the behaviors observed. Figure 8-16, page 53 for a list of behaviors of marine mammal and sea turtles.

Tip* When entering MM/SB/ST Form into the WCGOP database, document behaviors noted in the **Notes** box.

  - Small Cetacean Behaviors:
    - Bow riding
    - Leaping entirely out of water
    - Porpoising
    - Rooster-tailing
    - Slow Rolling
  - Large Cetacean Behaviors:
    - Blow visible for a distance
    - Breaching
    - Flipper slapping
    - Group feeding
    - Lob-tailing
    - Spy-hopping
    - Tail raised at dive
    - Side wake riding
    - Stern wake riding
  - Pinnipeds:
    - Jug handling
    - Porpoising
    - Rafting
    - Spooked from haulout
    - Vocalizing
  - Seabirds:
    - Flying under water
    - Plunges from air
    - Perched on land
    - Harassing other birds
    - Soaring/Gliding
    - Bird storms

- Sea Turtles:
  - Swimming
  - Diving
  - Floating
  - Foraging
  - Breathing

- **Fishing Interactions** - Circle all of the interactions observed between the animal and fishing vessel.
  - Feeding on Catch
  - Deterrence Used
  - Boarded Vessel
  - Killed by Gear
  - Killed by Propeller
  - Previously Dead
  - Lethal Removal (Trailing Gear)
  - Lethal Removal (Not Trailing Gear)
  - Entangled in Gear (Trailing Gear)
  - Entangled in Gear (Not Trailing Gear)
  - Other
  - Unknown

- **MM/ST/ST Silhouettes (Back of Form)**- Circle the silhouette of the marine mammal that looks the most like the marine mammal observed.

- **Photos/Video (Back of Form)** - Record the barcode number from the disposable camera and frame number(s) of the picture(s).

MARINE MAMMAL/SEABIRD/SEA TURTLE INTERACTION AND SIGHTING FORM

Trip Number ☐☐☐☐☐☐

USCG # ☐☐☐☐☐☐☐

Date/Time __/__/__ _____

Sighting Condition: (circle one) Excellent Good Fair Poor

Latitude ☐☐ o ☐☐ . ☐ N

Beaufort Scale: ☐

Longitude 1☐☐ o ☐☐ . ☐ W

Water Temp: ☐☐ o C

Species: _____
Common Name

Confidence: (circle one) Sure Likely Unsure

Body Length: (circle one) <3 m (<10') 3-8 m (10-25') 8-16 m (25-50') 16-26 m (50-80') >26 m (>80')

Haul #: (if applicable) ☐☐

Closest Approach ☐☐☐☐ meters

Number Sighted (Best) ☐☐☐☐

Number (Min) ☐☐☐☐

Number (Max) ☐☐☐☐

Notes & Identifying Characteristics

Marine Mammals - include a description of Body Features, Markings, Coloration, and Associated Organisms
Seabirds – include a description of Plumage coloration, Size (Body and Beak), Bill and Foot color, and Bands (Color and Leg)

Behaviors

Circle behaviors on form – Enter all behaviors circled in "NOTES" box in database.

Small Cetaceans
Bow riding
Leaping entirely out of water
Porpoising
Rooster-tailing
Slow rolling

Large cetaceans
Blow visible for a distance
Breaching
Flipper Slapping
Group Feeding
Lob-tailing
Spy-hopping
Tail raised on dive
Side wake riding
Stern wake riding

Pinnipeds
Jug handle
Porpoising
Rafting
Spooked from haulout
Vocalizing

Sea Turtles
Swimming
Diving
Floating/Basking
Foraging
Breathing

Fishing Interactions

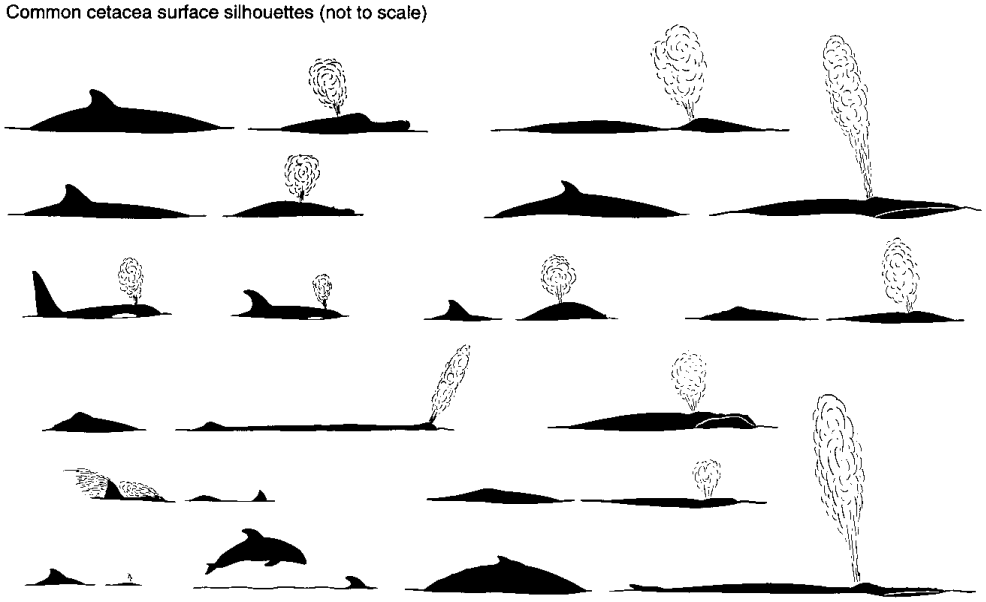
(circle all that apply)

Feeding on Catch	Lethal removal (trailing gear)
Deterrence Used	Lethal removal (not trailing gear)
Boarded Vessel	Entangled in Gear (not trailing gear)
Killed by Gear	Entangled in Gear (trailing gear)
Killed by Propeller	Other
Previously Dead	Unknown

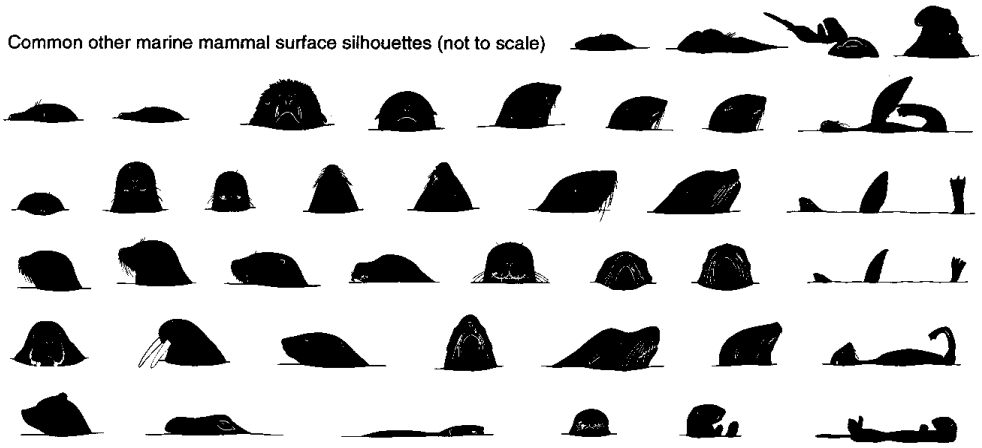
WCGOP MM/SB/ST Form v.6 January 2008

Figure 8-16: MM/SB/ST Form (Front)

Common cetacea surface silhouettes (not to scale)



Common other marine mammal surface silhouettes (not to scale)



These are silhouettes of most genera of marine mammals known to occur in and around North America. Subtilties exist between closely related genera. Care should be taken in identifying species. Assessing one's level of confidence with copious notes and observations is more valuable than a brief misidentification.

Photo/Videos

Barcode # _____

Frames _____

BEAUFORT SCALE (Sea Condition)		*wind*	*wave height*	
0	glassy, calm	0 , 1 kts	calm	
1	light ripple	1 < 4 kts	light air	1/4'
2	small wavelets	4 < 7 kts	light breeze	1/2'
3	scattered whitecaps	7 < 11 kts	gentle breeze	2'
4	small waves, frequent whitecaps	11 < 17 kts	moderate breeze	4'
5	moderate waves, many whitecap	17 < 22 kts	fresh breeze	6'
6	all whitecaps, some spray	22 < 28 kts	strong breeze	10'
7	breaking waves, spindrift	28 < 34 kts	near gale	14'
8	medium high waves, foamy streaks	34 < 41 kts	gale	18'
9	high waves, dense foamy streaks	41 < 48 kts	strong gale	22'
10-12	not meaningful (time to go home)			

Figure 8-17: MM/SB/ST Form (Back)

Salmon Scale Envelope Instructions

Salmon scale envelopes should be used for:

- Salmon tissue
- Green sturgeon fin rays

SPECIES_____ DISSECTION NO._____

TRIP NO._____ HAUL/SET_____

DATE_____ MISSING ADIPOSE? Y or N

FORK LENGTH_____(CM) SEX_____

WT._____(LBS) SCALE ZONE_____

Figure 8-18: Salmon Scale Envelope

- **Species** - Record the **common name** of the species that the scales or fin ray came from.
- **Dissection No.** - Attach a barcode label in this field.
- **Trip No.** - This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Haul/Set** - Record the number of the haul that the sample came from.
- **Date** - Record the date as MM/DD/YY.
- **Missing Adipose?** - Document if adipose is missing. Circle Y or N.
- **Fork Length** - Leave this field blank.
- **Sex** - Leave this field blank.
- **Wt** - Leave this field blank.

- **Scale Zone** - Leave this field blank.

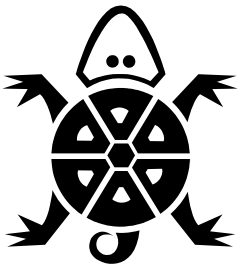
Sea Turtle Life History Form Instructions

The "Gill Net Sea Turtle Life History Form" has been borrowed from the NMFS South West Region Drift Gillnet Observer Program and should be completed for all sea turtles encountered. "Sea Turtle Life History Form – Front" on page 59 and "Sea Turtle Life History Form-Back" on page 60.

Header

- **Trip Number** – This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Specimen** – Leave this field blank.
- **Date** – Record as YY – MM – DD.
- **Set #** - Record the haul or set number.
- **Latitude** – Record the haul/set retrieval latitude as degrees (two digits) and minutes (two digits).
- **Longitude** – Record the haul/set retrieval longitude as degrees (three digits) and minutes (two digits).
- **Species** – Record the two letter species code for the turtle.
  LV – Olive Ridley
  ET – Hawksbill
  CM – Green/Black
  CC – Loggerhead
  DC – Leatherback
  UT – Unidentified
- **Left Costal Scutes** – Record the scute count.
- **Right Costal Scutes** – Record the scute count.

- **Vertebral Scutes** – Record the scute count.
- **Inframarginal Scutes** – Record the scute count.
- **Overlapping Scutes** – Record a 1 for yes, 2 for no, or 3 for unknown.
- **Inframarginal Pore** - Record a 1 for yes, 2 for no, or 3 for unknown.
- **1 Pair of Prefrontal Scales** – Record a 1 for yes, 2 for no, or 3 for unknown.



- **Lacks Bony Shell** - Record a 1 for yes, 2 for no, or 3 for unknown.
- **Dorsal Coloration** – Record a 1 for orange/red, 2 for grayish, or 3 for other/unknown.
- Dimensions
  - **Carapace Length** – Record the length to the nearest tenth of a centimeter.
  - **Carapace Width** – Record the length to the nearest tenth of a centimeter.
  - **Tail Length** - Record the length to the nearest tenth of a centimeter.
- Condition of Turtle
  - Enter the number of the description that best represents the condition of the turtle.

    1 - Previously dead
    2 - Released unharmed
    3 - Released injured
    4 - Killed accidentally
    5 - Escaped from net
    6 - Treated as catch
    7 - Other/unknown
- **Describe Any Injuries** – Provide notes on any injuries or on the general condition of the turtle. If notes are made, record a 1 for yes. Otherwise, record a 2 for no.

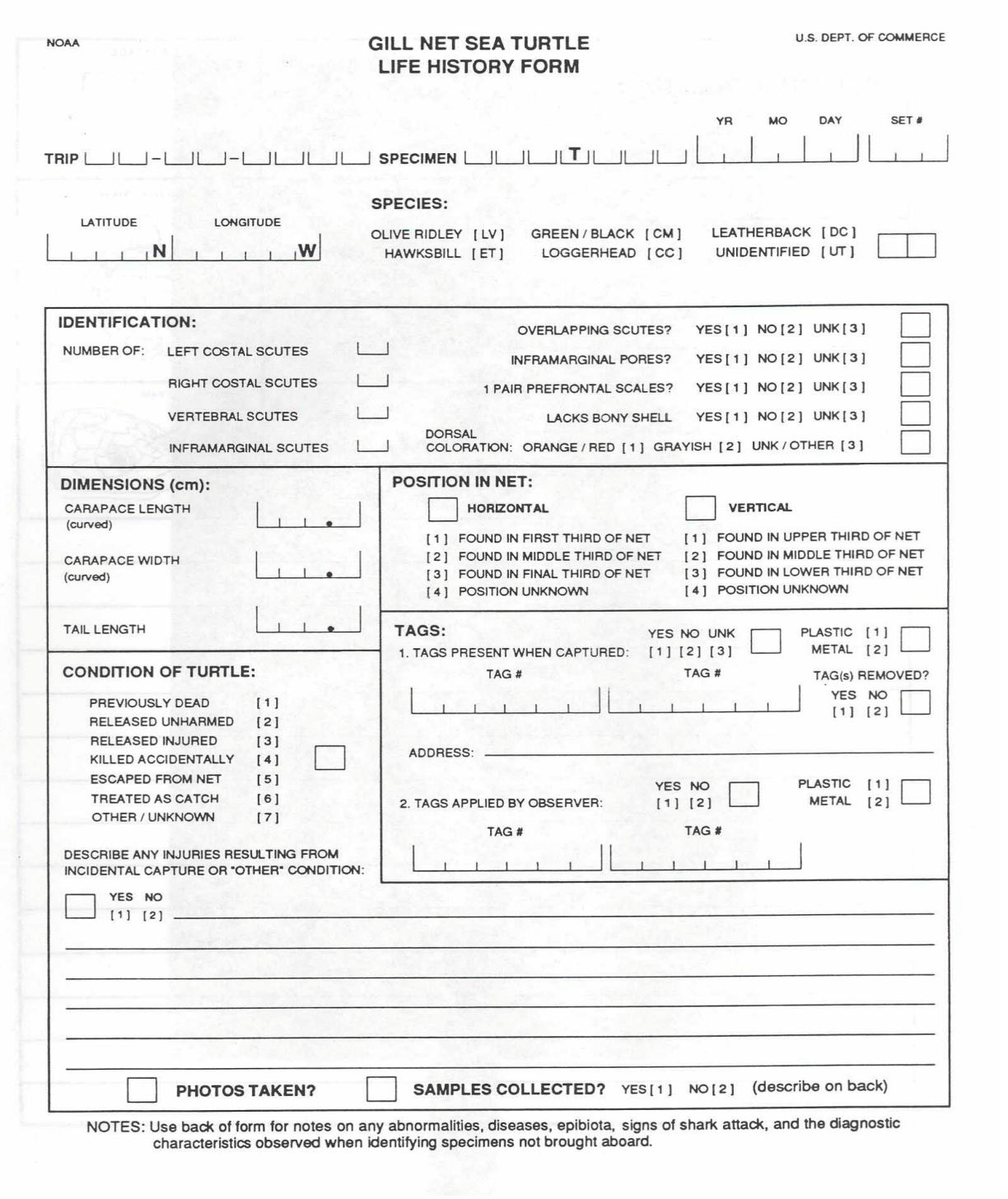
- **Photos Taken** – Record a 1 for yes or 2 for no. Record the camera bar code and frame numbers in the comments section.

- **Samples Collected** – Record "2 – No". At this time we are not collecting ANY samples from turtles.

- Position In Net
    - **Horizontal** - Leave this field blank.
    - **Vertical** - Leave this field blank.

- **Tags Present When Captured** – If a tag is present, record a 1 for yes and the additional information below. If a tag is not present, record 2 for no.
        - **Tag #** - Record the tag number(s).
        - **Tag Type** – Record a 1 for plastic or 2 for metal.
        - **Tag(s) Removed** – Record a 1 for yes or 2 for no.
        - **Address** – Print the return address on the tag(s).

- **Tags Applied By Observer** – Leave this section blank.



NOAA

GILL NET SEA TURTLE LIFE HISTORY FORM

U.S. DEPT. OF COMMERCE

TRIP ___-___-___ SPECIMEN ___T___ YR ___ MO ___ DAY ___ SET # ___

LATITUDE ___N___ LONGITUDE ___W___

SPECIES:

OLIVE RIDLEY [LV] GREEN / BLACK [CM] LEATHERBACK [DC]
HAWKSBILL [ET] LOGGERHEAD [CC] UNIDENTIFIED [UT] ☐☐

IDENTIFICATION:

NUMBER OF: LEFT COSTAL SCUTES ___
RIGHT COSTAL SCUTES ___
VERTEBRAL SCUTES ___
INFRAMARGINAL SCUTES ___

OVERLAPPING SCUTES? YES [1] NO [2] UNK [3] ☐
INFRAMARGINAL PORES? YES [1] NO [2] UNK [3] ☐
1 PAIR PREFRONTAL SCALES? YES [1] NO [2] UNK [3] ☐
LACKS BONY SHELL YES [1] NO [2] UNK [3] ☐
DORSAL COLORATION: ORANGE / RED [1] GRAYISH [2] UNK / OTHER [3] ☐

DIMENSIONS (cm):

CARAPACE LENGTH (curved) ___.___
CARAPACE WIDTH (curved) ___.___
TAIL LENGTH ___.___

POSITION IN NET:

☐ HORIZONTAL
[1] FOUND IN FIRST THIRD OF NET
[2] FOUND IN MIDDLE THIRD OF NET
[3] FOUND IN FINAL THIRD OF NET
[4] POSITION UNKNOWN

☐ VERTICAL
[1] FOUND IN UPPER THIRD OF NET
[2] FOUND IN MIDDLE THIRD OF NET
[3] FOUND IN LOWER THIRD OF NET
[4] POSITION UNKNOWN

TAGS:

1. TAGS PRESENT WHEN CAPTURED: YES NO UNK [1] [2] [3] ☐ PLASTIC [1] METAL [2] ☐
TAG # ___ TAG # ___ TAG(s) REMOVED? YES NO [1] [2] ☐

ADDRESS: ___

2. TAGS APPLIED BY OBSERVER: YES NO [1] [2] ☐ PLASTIC [1] METAL [2] ☐
TAG # ___ TAG # ___

CONDITION OF TURTLE:

PREVIOUSLY DEAD [1]
RELEASED UNHARMED [2]
RELEASED INJURED [3]
KILLED ACCIDENTALLY [4] ☐
ESCAPED FROM NET [5]
TREATED AS CATCH [6]
OTHER / UNKNOWN [7]

DESCRIBE ANY INJURIES RESULTING FROM INCIDENTAL CAPTURE OR "OTHER" CONDITION:

☐ YES NO [1] [2] ___

☐ PHOTOS TAKEN? ☐ SAMPLES COLLECTED? YES [1] NO [2] (describe on back)

NOTES: Use back of form for notes on any abnormalities, diseases, epibiota, signs of shark attack, and the diagnostic characteristics observed when identifying specimens not brought aboard.

Figure 8-19: Sea Turtle Life History Form – Front

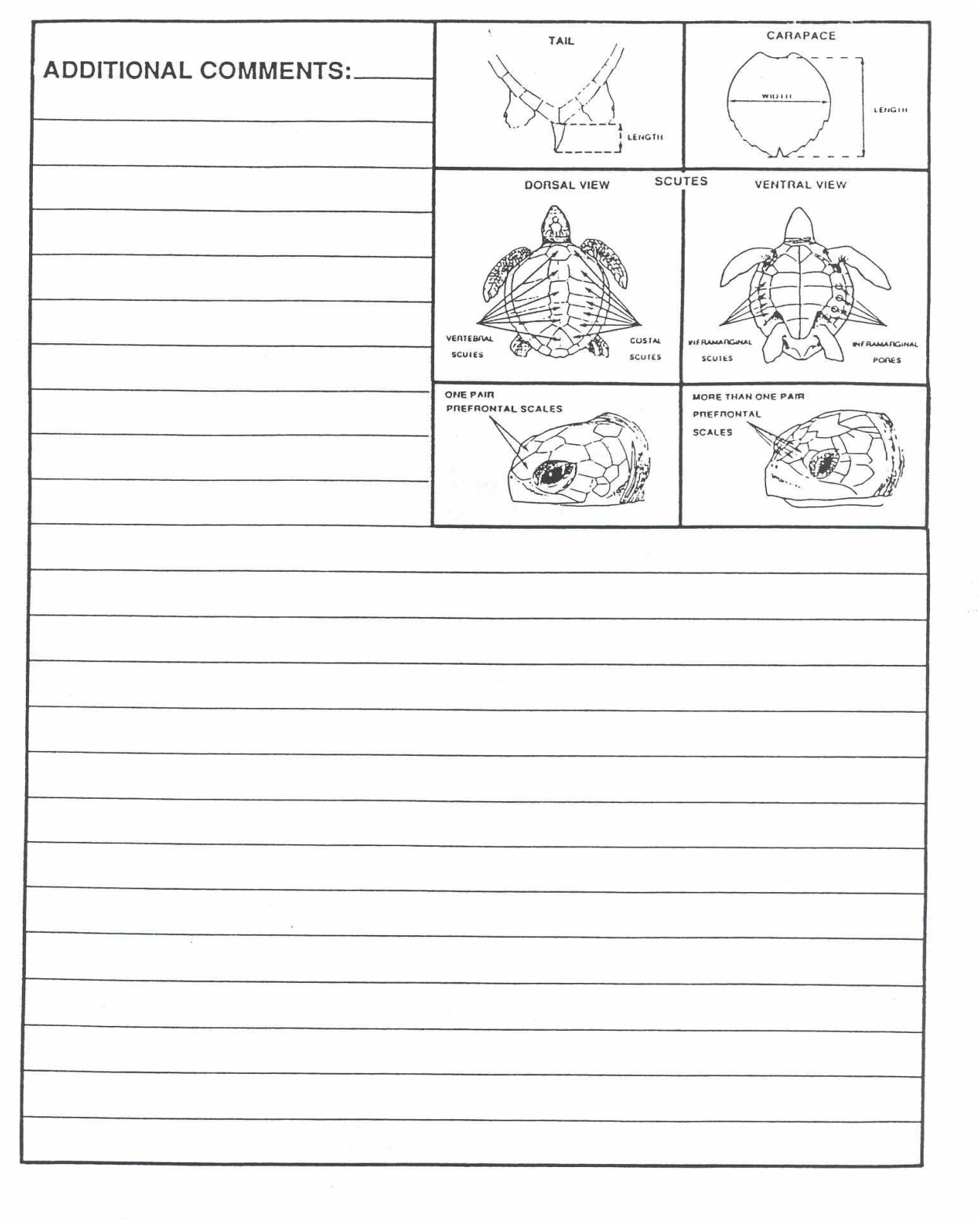


Figure 8-20: Sea Turtle Life History Form-Back