

Appendix D

Marine Mammal and Sea Turtle Handling and Data Collection for Southwest Fisheries Science Center Fisheries Research Vessels

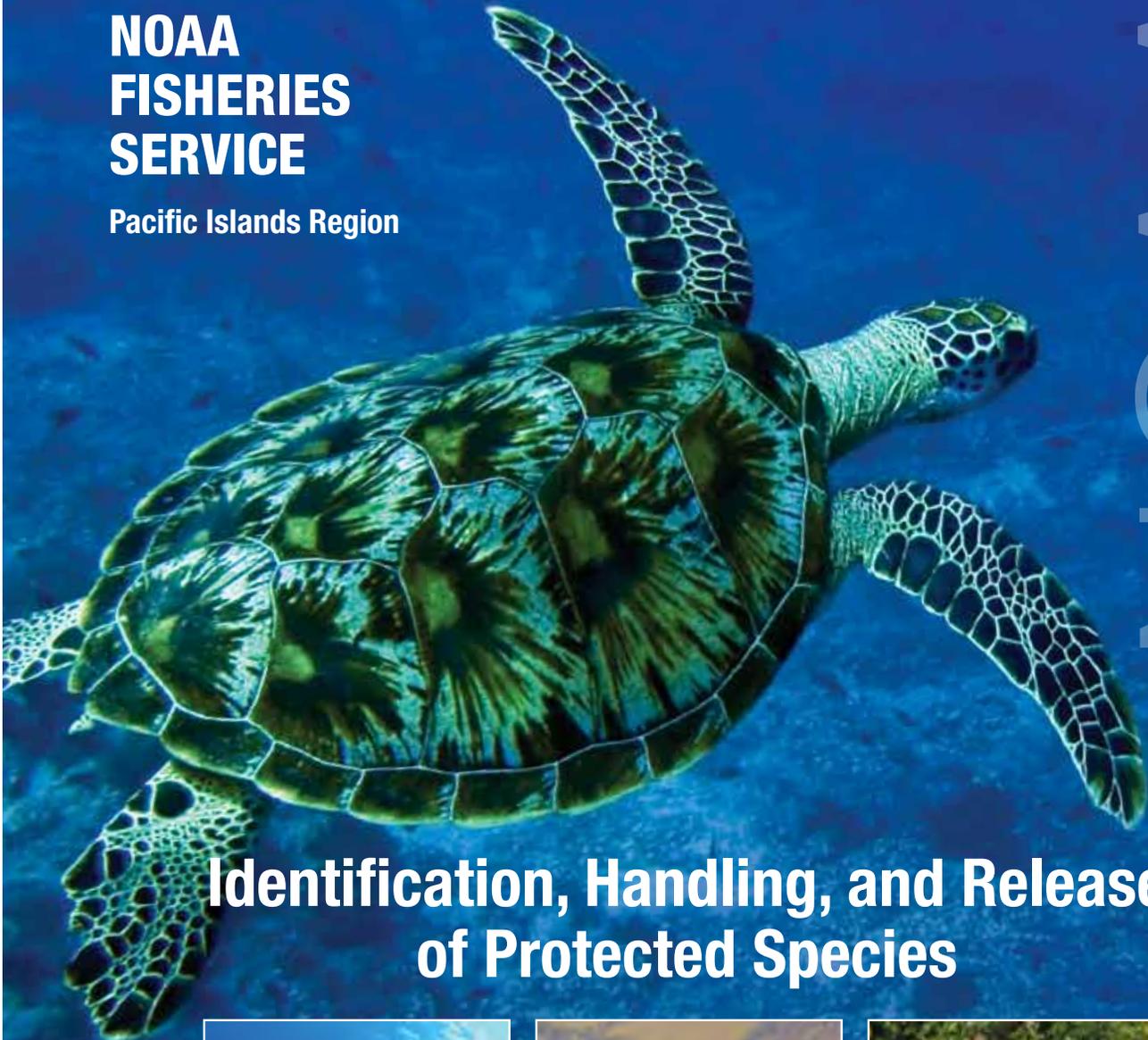
Contents:

1. NOAA Fisheries Service Pacific Islands Region - Identification, Handling, and Release of Protected Species.
2. Marine Mammal and Sea Turtle Biological Data Forms from the PIRO Longline Observer Program.
3. Supplemental Questions for Marine Mammal Biological Data Form.
4. Detailed Sampling Protocol for Marine Mammal and Sea Turtle Incidental Takes on SWFSC Research Cruises

NOAA FISHERIES SERVICE

Pacific Islands Region

NOAA



Identification, Handling, and Release of Protected Species



Sea Turtles



Marine Mammals



Seabirds



Sea Turtle Handling Guidelines

STEP 1:

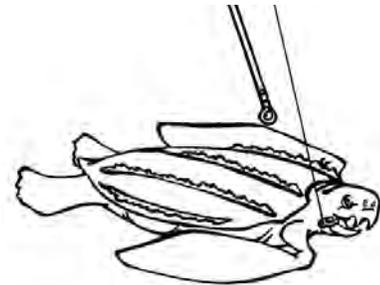
Determine if the turtle is small enough to bring aboard.

Remember to use gaffs only on fishing gear, not on turtles



IF TURTLE IS TOO BIG TO BRING ABOARD:

- Bring turtle close to boat by pulling gently on the line.
- Determine if turtle is hooked or entangled, and choose the proper tools to remove as much fishing gear as possible from the turtle – including the hook.
- If turtle is hooked and the hook is visible just inside the mouth or on the body, use long handled dehooker to remove hook. See **Step 3** for instructions.
- If turtle is entangled or the hook is deep inside mouth or throat and cannot be removed, use a long-handled line cutter to cut all lines.
- Skip to **Step 5**.



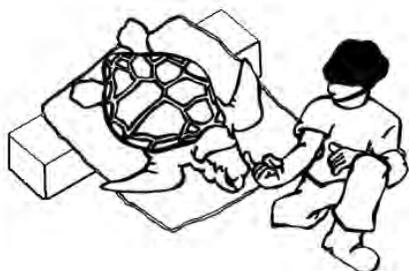
IF TURTLE IS SMALL ENOUGH TO BRING ABOARD:

- Use dip net to bring turtle aboard.
- Do not bring turtle aboard by pulling on fishing line or by grabbing the eye sockets.
- It may be helpful to grab the front flippers close to the turtle's body when using the net to help bring it aboard.
- Go to **Step 2**.

STEP 2:

After the turtle has been brought aboard, determine if it is alive or appears dead.

A turtle that looks dead may just be very tired, and can regain strength with your help.



UNCONSCIOUS TURTLE - inactive and appears dead

- Keep the turtle on a tire in a secure, shaded place away from activity.
- Remove fishing gear using instructions in **Step 3**.
- Place turtle on its belly and elevate back flippers at least 6 inches for at least 4 hours to help remove water from its lungs while recovering.
- Place a wet towel on turtle. Do not cover nostrils. Occasionally wet turtle with a deck hose. Avoid spraying turtle's head.
- Perform a reflex test every 3 hours, by gently touching corner of eye and lightly pulling on tail. Movement may indicate the turtle is recovering.
- If there is no movement from reflex tests after at least 4 hours, but no more than 24 hours, release the turtle to the ocean using methods in **Step 4**.

CONSCIOUS TURTLE - active or awake

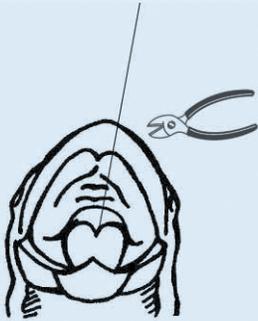
- Keep the turtle on a tire in a secure, shaded place away from activity.
- Remove fishing gear using instructions in **Step 3**.
- Release the turtle using methods in **Step 4**. You do not have to wait 4 or more hours before release.

When to Leave Hooks in Place.

It is normally best to remove all fishing gear from the turtle, but there are situations when the gear should not be removed. Leave hook in place and cut line as close as possible to hook if:

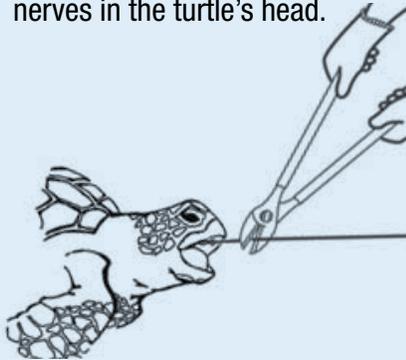
The hook has been swallowed.

Forcing a dehooking device down a turtle's throat may worsen its injuries or cause an infection.



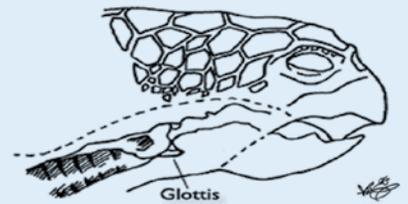
The hook has penetrated the roof of the mouth.

Trying to remove this hook may cause damage to the organs and nerves in the turtle's head.



The hook is in the glottis.

The glottis is located at the back of the mouth and covers the airway. Attempting to remove hooks from the glottis may cause further damage and prevent the turtle from covering its airway during dives.



STEP 3:

Methods for removing fishing gear from a hooked turtle.

TURTLE HOOKED WITH BARB EXPOSED

1. Using bolt cutters, remove the barb of the hook.
2. Once barb has been clipped off, back the hook out to remove it.

TURTLE HOOKED WITH BARB EMBEDDED

1. Follow instructions on using a pig-tail dehooker.
2. If hook cannot be removed, cut line as close as possible to hook.

TURTLE IS HOOKED, BUT YOU CANNOT SEE HOOK

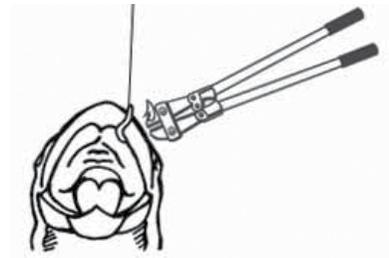
- Cut fishing line as close as possible to hook without pulling hard on line.

TURTLE ENTANGLED IN FISHING LINE

- Use monofilament or wire cutters to remove all fishing line from turtle.

IF BOLT CUTTERS ARE NOT AVAILABLE

1. Place a J-style dehooker or similar hand-held tool on the leader to cut hook. A short handled pig-tail dehooker can also be used. To get dehooker on the line, refer to pig-tail dehooker instructions.
2. Slide device down the leader to the bottom of the hook.
3. Pull the line so it is opposite from the handle of the dehooker.
4. Keep the line tight, then pull and twist dehooker to remove hook.



Sea Turtle Handling Guidelines

Dehooking a turtle using a pig-tail dehooker with your right hand:



Step 1
Place the dehooker at 90° to the line with the end of the pig-tail facing up.



Step 2
Draw the dehooker back towards you like a bow and arrow until loop pulls on line, maintaining contact between the dehooker and the line.



Step 3
Rotate the dehooker 1/4 turn clockwise. (The line should be inside the curl of dehooker)



Step 5
Run the dehooker down the line until it engages the bottom bend of the hook.



Step 6
Pull the line tight and parallel to the dehooker. Give quick thrusts to remove the hook.



Step 9
Keep line tight, so the hook remains inside the curl of dehooker, until hook is clear of the turtle.

Circle Hooks



When using the long-handled pig-tail dehooker on a turtle in the water, it may be easier to remove circle hooks if the line is not parallel to the dehooker's handle once the dehooker is on the line.

- While keeping the line tight, separate the line and dehooker, then try to push and twist the dehooker to

dislodge the hook. This may work better than quick thrusts.

- If you cannot remove the hook, cut line as close as possible to the hook.
- If turtle is aboard, try to rotate the hook back out by using the line or pliers before using the dehooker. This may help remove the hook.

STEP 4: Carefully return turtle to water.

1. Stop vessel, and take engine out of gear.
2. Release the turtle away from any fishing gear in the water.
3. Gently put turtle in the water, head-first.
4. Make sure turtle is clear of vessel before motoring away.

STEP 5: Record the interaction in your logbook.

1. Record the identified species.
2. Write down how much fishing gear remained on turtle after release.
3. Record any tag numbers observed on turtle.

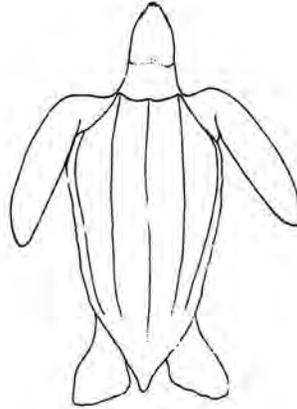


Photo courtesy of Steve Beverly

Questions? Call Pacific Islands Regional Office, Sustainable Fisheries Division at (808) 944-2200

LEATHERBACK

- Dark, leathery skin covers body and shell
- No scutes or scales like other turtles
- 5-7 head to tail ridges on back
- Adults are much larger than other turtles



Hard Shell Turtles

GREEN

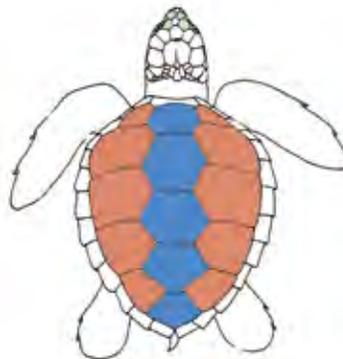
- 1 pair of prefrontal scales
- 5 central scutes
- 4 pairs of lateral scutes
- 4 inframarginal scutes on each side



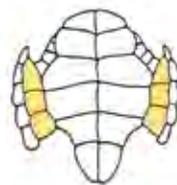
TOP VIEW
OF HEAD

LOGGERHEAD

- 2 pairs of prefrontal scales
- 5 central scutes
- 5 pairs of lateral scutes
- 3 inframarginal scutes on each side



TOP VIEW



BOTTOM VIEW
OF TURTLE

OLIVE RIDLEY

- 2 pairs of prefrontal scales
- 5 central scutes
- 5-9 pairs of lateral scutes
- 4 inframarginal scutes on each side with pores



- Prefrontal Scales
- Central Scutes
- Lateral Scutes
- Inframarginal Scutes

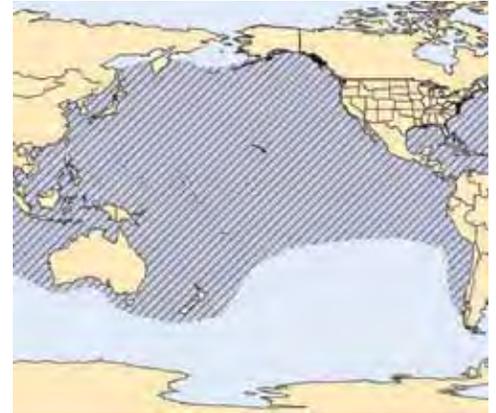


Sea Turtle Identification

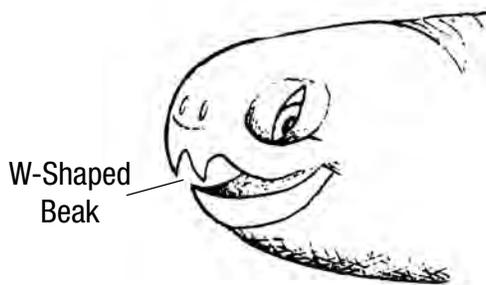
Leatherback Sea Turtle

(*Dermochelys coriacea*)

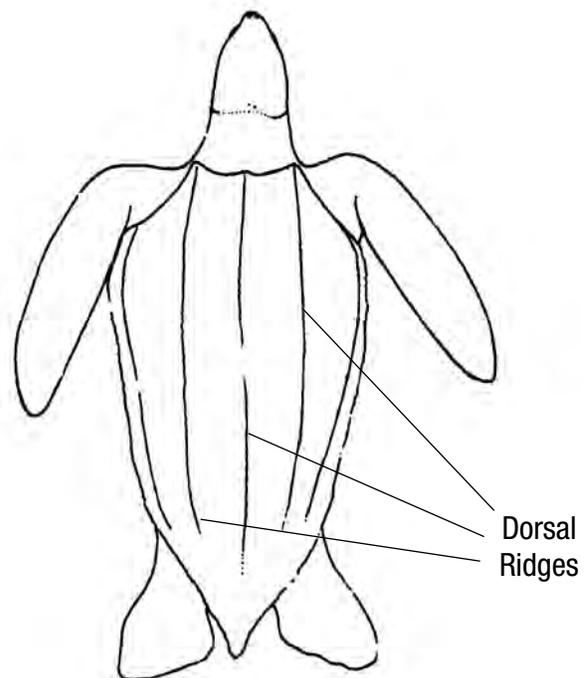
- Only soft-shelled species
- Dark gray or black with variable white spotting
- 5-7 head-to-tail ridges on back
- Leathery shell
- No scales
- W-shaped upper jaw or beak
- May attain great size



Approximate range



SIDE VIEW
OF HEAD



TOP VIEW



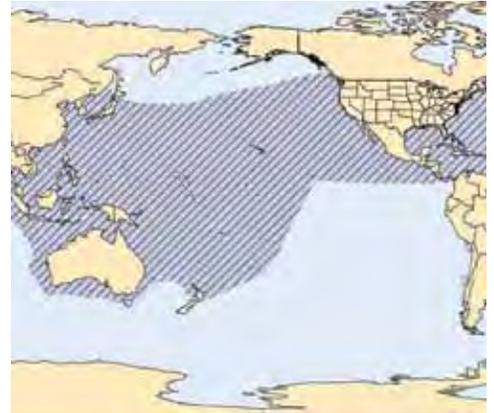
TURTLE FACTS:

Leatherback turtles interact with both the Hawaii swordfish (shallow-set) and tuna (deep-set) longline fisheries. They are usually hooked or entangled externally, rather than in the mouth. This turtle has a firm, leathery skin covering the shell and body, instead of a hard shell and scales like other turtles. They are highly migratory, swimming long distances across the Pacific from nesting to foraging areas. Leatherbacks are the largest of all sea turtles with adults reaching 6½ feet (2 meters) in length and over 1,500 pounds (681 kg).

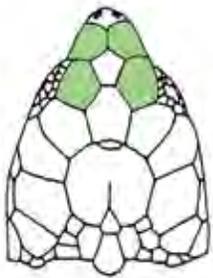
Loggerhead Sea Turtle

(*Caretta caretta*)

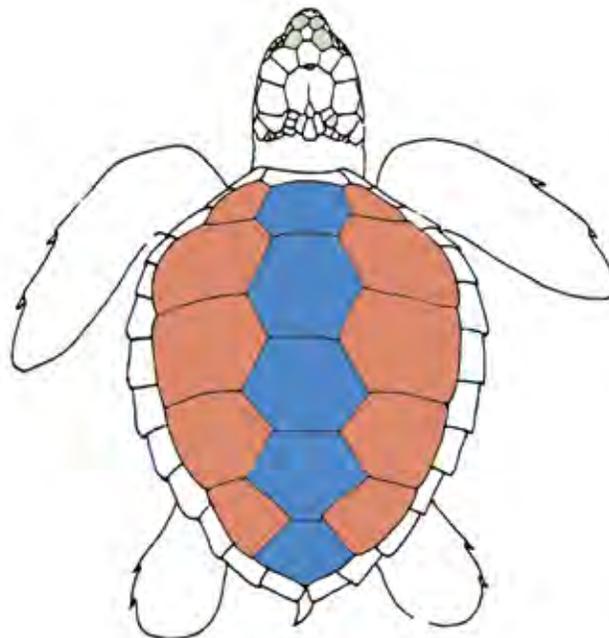
- 2 pairs of prefrontal scales
- 5 central scutes
- 5 pairs of lateral scutes
- 3 pairs of inframarginal scutes



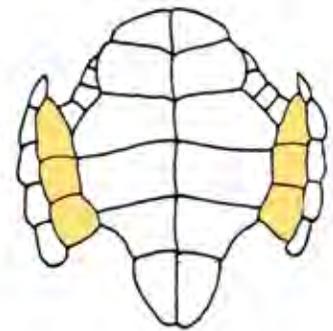
Approximate range



TOP VIEW
OF HEAD



TOP VIEW



BOTTOM VIEW
OF TURTLE



TURTLE FACTS:

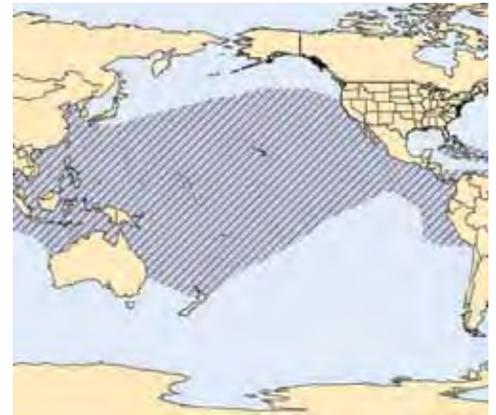
Loggerhead turtles interact with both the Hawaii swordfish (shallow-set) and tuna (deep-set) longline fisheries. In the North Pacific, juveniles hatched from nests in Japan swim across the ocean to feed and grow near the Mexican coast. They can spend decades in migratory and developmental habitats in Mexico and the central Pacific until maturity, when they return to Japan. Loggerheads can grow to over 36 inches (92 cm) in shell length and 250 pounds (113 kg). They have large heads, strong jaws, and typically have shells that are reddish-brown with a yellow underside.

Sea Turtle Identification

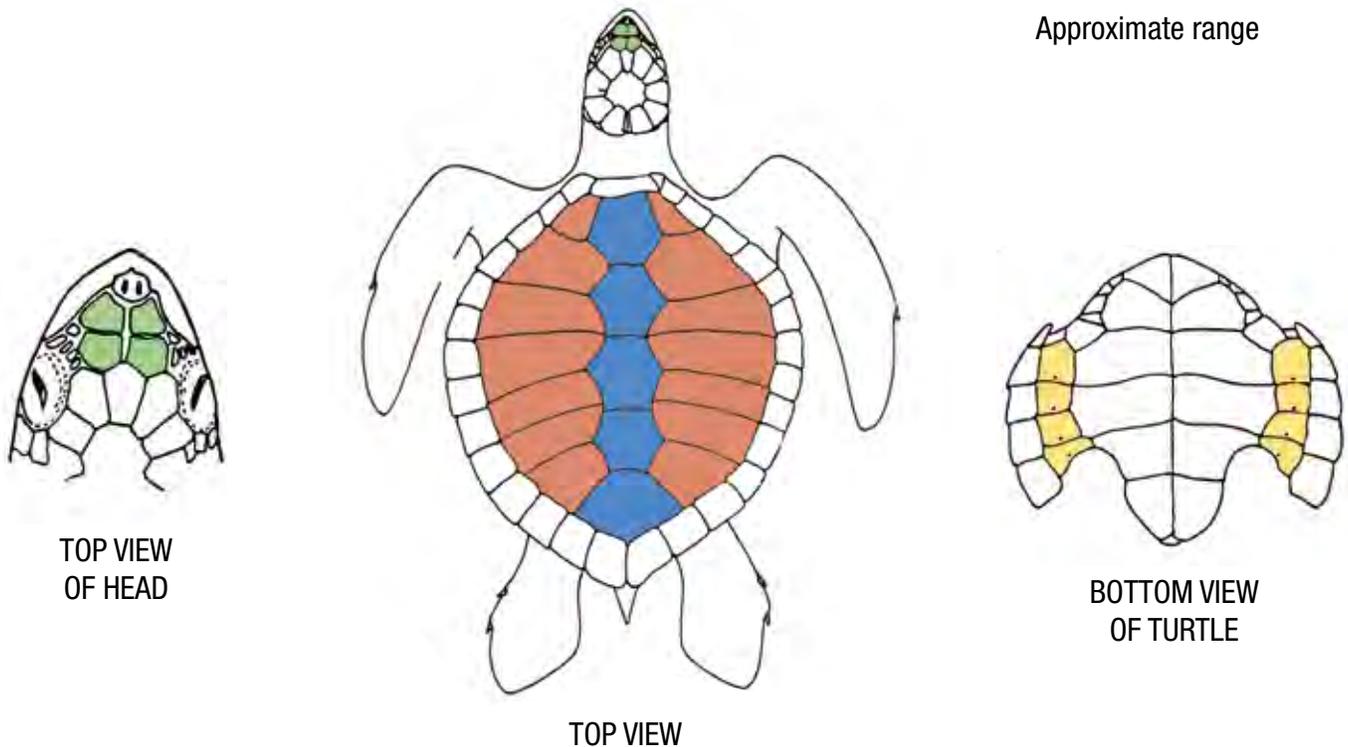
Olive Ridley Sea Turtle

(*Lepidochelys olivacea*)

- 2 pairs of prefrontal scales
- 5 central scutes
- 5-9 pairs of lateral scutes
- 4 pairs of inframarginal scutes with one pore on each scute



Approximate range



TOP VIEW
OF HEAD

TOP VIEW

BOTTOM VIEW
OF TURTLE



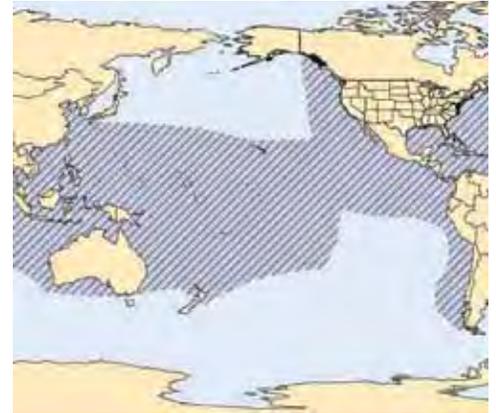
TURTLE FACTS:

Olive ridley turtles interact primarily with the Hawaii tuna (deep-set) longline fishery, and occasionally with the swordfish (shallow-set) fishery. These turtles are highly migratory and usually live in warm, tropical waters, but may also occur in cooler waters north of Hawaii. Olive ridley turtles are the smallest sea turtles, averaging 25 inches (61 cm) in shell length and 100 pounds (45 kg). Their shell is generally olive green with a light yellow underside. They sometimes have more lateral scutes on one side of their shell than the other. They are the only turtles in the Pacific with a pore on each inframarginal scute.

Green Sea Turtle

(*Chelonia mydas*)

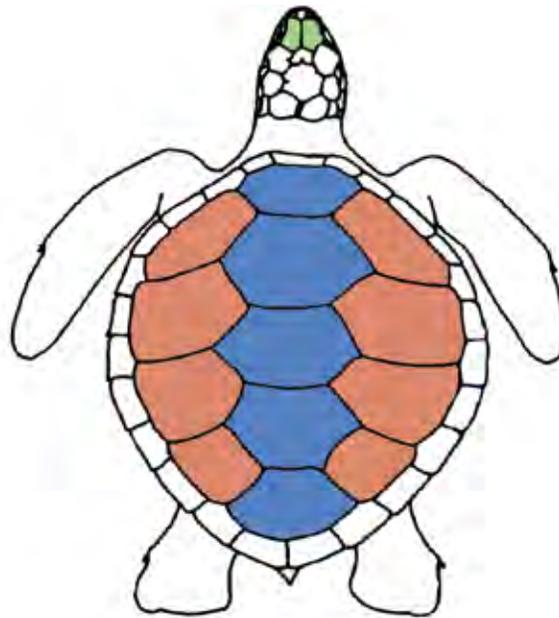
- 1 pair of prefrontal scales
- 5 central scutes
- 4 pairs of lateral scutes
- 4 pairs of inframarginal scutes



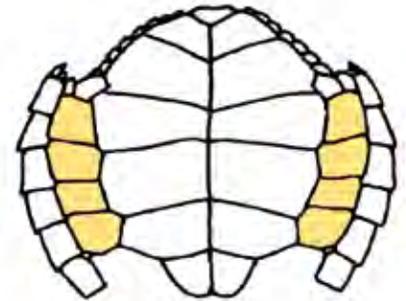
Approximate range



TOP VIEW
OF HEAD



TOP VIEW



BOTTOM VIEW
OF TURTLE



TURTLE FACTS:

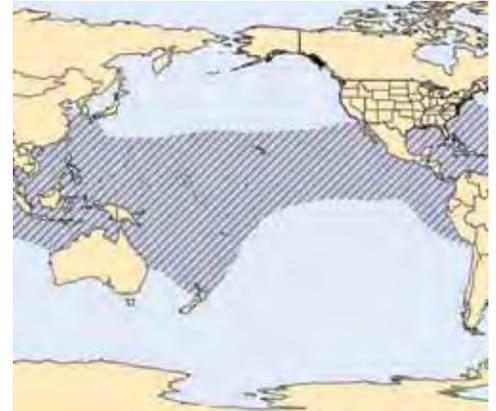
The green turtle is the most widespread and commonly-known sea turtle in tropical and sub tropical waters. Green turtles are not usually caught in longline fisheries, but interactions can occur in the Hawaii and American Samoa fisheries. Green turtles are the largest of the hard-shell turtle species and can grow up to 47 inches (120 cm) in shell length and weigh over 300 pounds (136 kg). They get their name from the color of their fat. The shell color can range from yellow-green to reddish-brown to almost black. Loggerheads and olive ridley turtles can be easily mistaken for a green turtle. When in doubt, look at the head and check the number of prefrontal scales.

Sea Turtle Identification

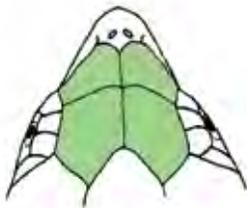
Hawksbill Sea Turtle

(*Eretmochelys imbricata*)

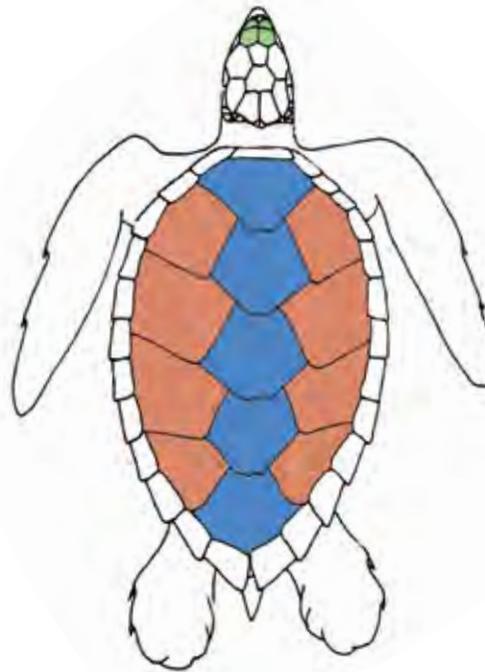
- 2 pairs of prefrontal scales
- 5 central overlapping scutes
- 4 pairs of overlapping lateral scutes
- 4 pairs of inframarginal scutes



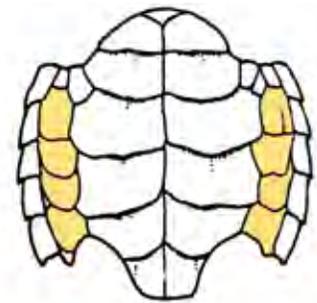
Approximate range



TOP VIEW
OF HEAD



TOP VIEW



BOTTOM VIEW
OF TURTLE



TURTLE FACTS:

There has been no reported interaction between a hawksbill turtle and the Hawaii longline fisheries. Hawksbills can be found in tropical and sub-tropical regions across the Pacific. They nest in low numbers throughout the Pacific, including Hawaii. Adult hawksbills can grow to almost 3 feet (90 cm) in shell length and weigh up to 200 pounds (91 kg). The hawksbill is named for its sharp, pointed, bird-like beak. The shell has "tortoise shell" coloring, ranging from dark to golden brown, with streaks of orange, yellow, brown and black. These are the only sea turtles that have overlapping scutes on the top shell, like roof shingles.

Marine Mammal Handling and Release Guidelines

Have an identification guide and paper available in case of a marine mammal interaction.

Small Whales and Dolphins



1. Make sure the crew is ready to help.
2. Move the boat carefully, stop the boat, and put the transmission in neutral when the animal is close.
3. If the far side of the mainline is within reach, use gaffs to grab only the line. This will keep any remaining gear in the water from pulling on the line and the animal. Do NOT use gaffs or sharp objects to grab an animal.
4. Slowly bring the animal next to the boat.
5. Avoid sudden actions that may scare the animal.

If the animal is tangled in line:

1. Grab the far side of the mainline and tie the mainline to the boat.
2. Use a long-handled line cutter to cut as much line off the animal as you can.

If the animal is hooked:

1. Use a dehooker to remove the hook.
2. If the hook cannot be removed, use a long-handled line cutter to cut the line as close as you can to the hook.
3. Remove as much line as possible from the animal. Do not use ropes or other lines to tie the animal to the boat.

Large Whales

If a large whale is alive and hooked or entangled in fishing gear, immediately call the Disentanglement Hotline at **1-888-256-9840** or the U.S. Coast Guard on VHF Ch. 16 for instructions.

If a large whale is dead and hooked or entangled in fishing gear, immediately call the U.S. Coast Guard on VHF Ch. 16 for instructions.

For All Interactions



Write down as much information as possible to describe the animal, and its injuries.

- How long was the animal?
- What did the animal look like (did it have stripes, spots, or different colors)?
- Was there any fishing gear still on the animal when it was released?
If so, where, what kind, how much?
- Did you see any tags on the animal? If yes, can you see any letters or numbers on the tag?

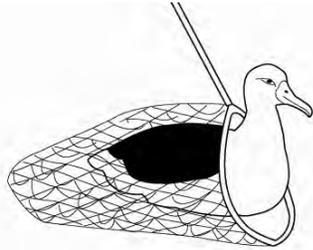
After an interaction with a marine mammal, get the rest of your fishing gear out of the water. Then record all the information about the interaction on your Marine Mammal Injury / Mortality Reporting Form, even if you had an observer aboard. Mail the form when you get to port.

If you have a marine mammal interaction, you could have another if you keep fishing in the same area. Move away from the area, and call other fishermen to warn them. If you stay in the same area, wait 2 days before setting your gear to avoid more interactions.

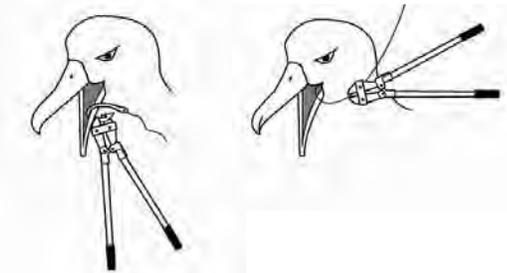
Seabird Handling Guidelines

PLEASE NOTE: If bird is a short-tailed albatross, follow special guidelines for handling short-tailed albatross. For all other seabirds, see below.

1. Stop vessel to reduce tension on the line and bring bird aboard using a dip net.



2. Working with another person, hold the back of the bird's head and isolate the hooked or entangled area while the other person takes the bird from the net. Fold the bird's wings to their natural resting position against the body.
3. Wrap the bird's wings and feet with a clean towel or blanket. Do not wrap the bird's body too tightly or block the nostrils, as these will prevent the bird from breathing.
4. Cut and remove all fishing line from bird. If bird is lightly hooked in the bill, leg, or wing, and the barbed end of the hook is visible, use bolt cutters to cut the barb and then back the hook out. If bird has been deeply hooked, cut the line as close as possible to hook and leave hook in place.



Never attempt to remove a hook from anywhere on a bird by pulling on line.

5. Allow bird to dry for 1/2 hour to 4 hours in a safe, enclosed place. Refer to **Release Guidelines**.
6. Record any leg band numbers observed on the bird in logbook.



Wear gloves, long sleeves and protective eyewear when handling seabirds. They have sharp beaks and give painful bites.

Release Guidelines

A bird is ready for release when its feathers are dry.



Albatross NOT ready to be released



Albatross ready to be released

If bird is ready for release:

Stop the vessel. Gently place bird onto the surface of the water. Do not throw bird in air or motor away if bird is not clear of vessel.

Short-Tailed Albatross Handling Guidelines

Short-tailed albatross are an endangered species and have special handling requirements.

If you catch a short-tailed albatross:

Immediately try to contact National Marine Fisheries Service, U.S. Coast Guard, or U.S. Fish and Wildlife Service. They will contact an expert to give you advice in the handling and release of short-tailed albatross.

National Marine Fisheries Service (NMFS)
(808) 944-2200

U.S. Coast Guard (USCG)
08240.0 KHz (Daytime ITU Channel 816)
12242.0 KHz (Daytime ITU Channel 1205)
04134.0 KHz (Nighttime ITU Channel 424)
06200.0 KHz (Nighttime ITU Channel 601)

**U.S. Fish and Wildlife Service at
French Frigate Shoals (USFWS)**
Contact frequency: 10.0054

If a short-tailed albatross is hooked or entangled:

1. Stop vessel to reduce tension on the line and bring bird aboard using a dip net.
2. Wrap the bird's wings and feet with a clean towel to protect its feathers from oils or damage.
3. Remove any entangled lines from the bird and determine if the bird is dead or alive.

If dead, notify NMFS. Label the bird, put it in a plastic bag and store in freezer. Give bird to NMFS when you return to port.

If alive, place bird in a safe, enclosed place and immediately contact NMFS, USCG and USFWS.

If unable to make contact for 24-48 hours, determine if the bird is lightly, moderately, or deeply hooked. See description.

4. If bird is deeply hooked, keep bird in a safe, enclosed place until further instructed. Do NOT release the bird.
5. If bird is lightly or moderately hooked, remove hook by cutting the barb and backing hook out.
6. Allow bird to dry for 1/2 hour to 4 hours in a safe, enclosed place. Refer to **Release Guidelines**.
7. Record information in the short-tailed albatross recovery data form.



Short-tailed albatross fly across the entire North Pacific. Around Hawaii, only young short-tailed albatross (shown above) have been seen. The number of birds is increasing, but fewer than 3,000 birds remain in the wild.

Is the bird lightly, moderately, or deeply hooked?



Lightly Hooked: Hook is clearly visible on bill, leg or wing.

Moderately Hooked: Hooked in the mouth or throat with hook visible.



Deeply Hooked: Hook has been swallowed and is located inside the bird's body below the neck.

Release Guidelines

The bird is ready for release if it meets ALL of the following criteria:

- Stands on both feet with toes pointed forward
- Holds its head erect and responds to sound and motion
- Breathes without making noise
- Flaps and retracts wings to normal folding position
- Feathers are dry

If any of these conditions are not met, the bird cannot be released.

If bird is ready for release:

Stop the vessel. Gently place bird onto the surface of the water. Do not throw bird in air or motor away if bird is not clear of vessel.

Seabird Identification

Laysan Albatross (*Phoebastria immutabilis*)

- Feathers:**
- White head, neck, and belly
 - Dark brown upper wings and back
 - Brown and white under wings
 - Dark area around each eye

Legs/Feet Color: Pink to gray

Bill Color: Yellow-pink with gray tip



Black-footed Albatross (*Phoebastria nigripes*)

- Feathers:**
- Dark brown head, body, and wings
 - Small white patch behind the eyes
 - White ring around base of bill
 - Adults - small white patch at base of tail

Legs/Feet Color: Black-brown

Bill Color: Black-brown



Short-tailed Albatross (*Phoebastria albatrus*)

ENDANGERED SPECIES

JUVENILE

Feathers: Dark brown head, body, and wings

Legs/Feet Color: Brown-gray

Bill Color: Bright pink with a thin black line around base



SUB ADULT

- Feathers:**
- White neck, belly, and back
 - Dark brown cap and back of neck
 - Black and white wings

Legs/Feet Color: Pink to gray

Bill Color: Bright pink with a thin black line around base



ADULT

- Feathers:**
- Golden-yellow head and neck
 - White back, base of tail, and belly
 - Black and white wings

Legs/Feet Color: Pink to gray

Bill Color: Bright pink with a thin black line around base

Observer ID

DOC/NOAA Fisheries
Pacific Islands Region
Longline Observer Program

Trip No. Set No. **Marine Mammal Biological Data Form****Capture**Date/Time Latitude Longitude Landed? Tags Present? Y= Yes
N= No
U= UnknownSpecies Code

742 False Killer Whale
746 Risso's Dolphin
743 Short-Finned Pilot Whale
731 Bottlenose Dolphin
700 Unidentified Cetacean

Associated Form Code Associated Form Page No. Associated Form Line No. Release Condition 03 Injured
04 DeadPhoto?
Specimen?
Sketch? **Hooking/Entanglement**Hook Type Hooked? Entangled?

Location (check all that apply) Location (check all that apply)

		Code		
Mouth	<input type="checkbox"/>	MO	Mouth	<input type="checkbox"/>
Lip	<input type="checkbox"/>	LP	Lip	<input type="checkbox"/>
Head	<input type="checkbox"/>	HD	Head	<input type="checkbox"/>
Body	<input type="checkbox"/>	BO	Body	<input type="checkbox"/>
Pectoral Fin	<input type="checkbox"/>	PF	Pectoral Fin	<input type="checkbox"/>
Dorsal Fin	<input type="checkbox"/>	DF	Dorsal Fin	<input type="checkbox"/>
Fluke	<input type="checkbox"/>	FK	Fluke	<input type="checkbox"/>
Internal/Ingested	<input type="checkbox"/>	IN	Internal/Ingested	<input type="checkbox"/>
Unknown	<input type="checkbox"/>	UK	Unknown	<input type="checkbox"/>
Other	<input type="checkbox"/>	OT	Other	<input type="checkbox"/>

(describe on back) (describe on back)

Gear**Gear Attached After Release**

Code			
NO	None	<input type="checkbox"/>	
HK	Hook	<input type="checkbox"/>	
WL	Wire leader	<input type="checkbox"/>	If ✓'d, provide length.
MN	Mono leader	<input type="checkbox"/>	If ✓'d, provide length.
WT	Weight	<input type="checkbox"/>	If ✓'d, provide size & numbers.
BL	Branch line	<input type="checkbox"/>	If ✓'d, provide numbers & lengths.
FO	Float line	<input type="checkbox"/>	If ✓'d, provide numbers & lengths.
FT	Floats	<input type="checkbox"/>	If ✓'d, provide numbers.
ML	Main line	<input type="checkbox"/>	If ✓'d, provide length.
OT	Other	<input type="checkbox"/>	If ✓'d, provide description.

Provide requested details about anything ✓'d above on reverse side under Gear Comments.

Measurements

Total Length cm
OR
Approximate Length
 F= feet
M= meters

Capture Behavior

	Code
<input type="checkbox"/> Struggling?	SR
<input type="checkbox"/> Calm?	CA
<input type="checkbox"/> Vocalizing?	VO

--	--	--	--

Observer ID

DOC/NOAA Fisheries
Pacific Islands Region
Longline Observer Program

Trip No.

--	--	--	--	--	--

Set No.

--	--

Marine Mammal Biological Data Form Comments

Comments:

Gear Comments: (Please describe in detail anything ✓ 'd on front, & how/where remaining gear was attached upon release)

Injuries Description: (Where exactly is hook? Where/how are lines constricting? Additional injuries sustained during handling/release? Bleeding?)

Identifying Characteristics:

Observer ID

DOC/NOAA Fisheries
Pacific Islands Region
Longline Observer Program
Sea Turtle Biological Data Form

Trip No.
Set No.

Species Code
504 Loggerhead Sea Turtle
502 Green Sea Turtle
506 Leatherback Sea Turtle
503 Hawksbill Sea Turtle
505 Olive Ridley Sea Turtle
500 Unid. Hard Shell Sea Turtle
501 Unidentified Sea Turtle

Photo?
Specimen?
Sketch?
Tag?
Comment?
Associated Form Code
Associated Form Page No.
Associated Form Line No.

Capture
Date/Time
Latitude
Longitude
Boarded
Tags Present?

Release
Date/Time
Latitude
Longitude
Disposition Code
Tags Removed?
Tags Applied?

Hooking/Entanglement
Hooked?
Entangled?
Hook Location
Entangle Location
Gear Removal
Remaining Gear

Morphology
Skin Covered Carapace?
Overlapping Scutes?
Inframarginal scutes with pores?
One pair of prefrontal scales?
Carapace Scute Counts
Dorsal Coloration

Measurements
Round to the nearest half cm.
Carapace Length (curved)
Carapace Width (curved)
Plastron Length (straight)
Tail Length
Carapace Length (straight)
Carapace Width (straight)

Describe hook or line and length left on animal:

Light Device
Complete only if light devices were used and the light device type has been indicated on the gear configuration form.
Color Code
Proximity Code

Supplemental Questions for Marine Mammal Biological Data Form – Longline gear

Please attempt to provide answers to the following questions, as they related to the interaction, when completing the comment section of your MMBD form.

1. How long was the observed/documentated part of the interaction? Did you observe the entire interaction? Was the animal primarily at the surface? If not, approximately how many times did you see the animal surface during the interaction?
2. How far was the animal from the vessel when it was initially sighted? How long did it take to pull the animal in to the vessel and how long was it handled along-side the vessel?
3. *If applicable* – If hooking location is not clearly specified, what can you tell us about likely locations? What prevented you from seeing the hooking location?
4. *If applicable* – How did the interaction end? Did the line break? Was it cut? Where was it cut?
5. Did you attempt to get a sample from the animal?
6. Were there any other animals in the area during the interaction? If so, please describe number, appearance, and behavior.

Please attempt to provide answers to the following questions, as they related to the interaction, when completing the gear section of your MMBD form.

1. *If applicable* – Did you measure the remaining branchline after it snapped/ was cut to determine the amount remaining on the animal, or did you estimate?
2. *If applicable* – Could you verify the hook type/ size associated with the interaction? Did the hook straighten or break during the interaction?

Please attempt to provide answers to the following questions, as they related to the interaction, when completing the injury section of your MMBD form.

1. *If applicable* – If entangled- Could you see line wrapped around or restricting movement in the entanglement location? How many times was the entangled line wrapped around the animal? Were there multiple wraps remaining after its release? Was the line wrapped tightly or loosely?
2. Did the animal incur any injuries during the course of this interaction.

Please attempt to provide answers to the following questions, as they related to the interaction, when completing the identifying characteristics section of your MMBD form.

1. Describe the color of the animal(s)?
2. Describe capes? patterns? scars? masks? etc?
3. Describe head shape? color? Was a beak present? If so, describe its size?
4. Did the animal have a dorsal fin? What size? shape? Describe relative location on the body?
5. When species is unidentified what species might it have been?

Detailed Sampling Protocol for Marine Mammal and Sea Turtle Incidental Takes on SWFSC Research Cruises

When marine mammals or sea turtles are incidentally killed during research activities cannot be retained (i.e., frozen or transferred to shore) as much data as possible is to be collected at sea.

Each animal needs to have a unique identifying field number assigned to it and a data sheet created (Figure 1). A procedural outline for processing follows.

- 1) **Assign a Field ID:** The identification number consists of three parts: 1) letters identifying the platform on which the animal was collected: Bell M Shimada is BMS; Ocean Starr is OS; 2) the date in the format of year, month, day: yymmdd, and 3) a sequential number assigned to each animal as it is processed. For example, the third animal collected by scientists aboard the Bell M Shimada on June 4, 2012 would be BMS120604.03. Attach two tags with cable or zip ties to the animal. Put one around the flukes and flipper of cetaceans, and the hind and fore flippers (of pinnipeds and sea turtles).
- 2) **Record collection details:** Record the year, month and day of collection along with the lat/long and time of day. Record the name(s) of data recorders as “Collector.”
- 3) **Other data to record:**
 - a. **Photos:** Photograph both sides of the animal, the head and genital region. Include a label or tag with the animal’s unique Field ID and an object such as a ruler or pen for scale.
 - b. **Species Id:** *Record the species or common name.*
 - c. **Total Standard Length**
 - i. **Marine mammals:** Measure from tip of upper jaw to fluke notch (cetaceans – Figure 2) or tip of nose to tip of tail (pinnipeds – Figure 3), see diagram on following page. Straight length is preferable to curvilinear. It is assumed length is straight. Please note if it is curvilinear.
 - ii. **Sea turtles:**
 1. **Curved carapace length (CCL):** Measure from the nuchal notch of the carapace (where the skin of the neck meets the carapace) to the caudal tip making sure to measure to the longest point. For leatherbacks, pull the tape tight between the middle of the nuchal notch and the tip of the caudal peduncle (pygal), without forcing the tape along the top of the ridge. Record measurement in centimeters (cm).
 2. **Curved carapace width (CCW):** Measure across the widest point of the carapace from one edge to the other for both hard-shelled species and leatherbacks. The exact location will vary amongst species and individuals so be sure to move the tape up and down to find the widest point. Record measurement in centimeters (cm).
 3. **Straight carapace length (SCL):** Use same landmarks as for CCL, but use calipers if available. If unable to use calipers, please estimate straight length as accurately as possible with a measuring tape, either by laying it out next to the turtle or stretching it out above the turtle. Please check the appropriate box for tape or calipers. Record measurement in centimeters (cm).

4. **Straight carapace width (SCW):** Use same landmarks as for CCW, but use calipers if available. If unable to use calipers, please estimate straight width as accurately as possible with a measuring tape by stretching it out above the turtle. Please check the appropriate box for tape or calipers. Record measurement in centimeters (cm).
 5. **Total tail length:** On the ventral side, measure the length of the tail from the caudal end of the plastron to the tip of the tail, following the curve of the tail. Record measurement in centimeters (cm).
 6. **Cloaca to tail tip:** On the ventral side, measure from the cloacal opening to the tip of the tail. Record measurement in centimeters (cm).
- d. **Girth.** Maximum girth is collected for cetaceans (Figure 2) and axillary girth is collected for pinnipeds (Figure 3). If there is no dorsal fin on a cetacean (e.g. northern right whale dolphins) take axillary girth.
 - e. **Sex.** Photograph genital region. In cetaceans – Figure 2, anus and genital slit are almost continuous in females, but are clearly separate in males. In pinnipeds – Figure 3, two openings between the rear flippers indicates female, one between rear flippers and one on belly indicates male.
 - f. **Skin** (3 x 0.5 cm is sufficient), frozen in whirlpack or vial. In pinnipeds, skin (not fur) is available at the end of the flippers. For sea turtles, collect 2-6 mm of soft skin tissue from either the neck or hip area.
 - g. **Blubber** with thin layer of muscle attached, 4 x 4 in, wrapped in foil, frozen. For cetaceans, this is collected from left lateral side just anterior of dorsal fin (where max. girth is taken).
 - h. **Head** - the head should simply disarticulate once you cut through the blubber, muscle and esophagus. Start cutting one fist length posterior to the blowhole. You do not need to cut through any bone to get the head off.
 - i. **Flippers** – Collect one front flipper with humerus bone intact and one rear flipper with femur bone intact.

Figure 1. Data sheet for recording information about each animal.

**MARINE MAMMAL and SEA TURTLE SPECIMEN DATA
INCIDENTAL RESEARCH TAKES ONLY**

Collection Date: _____ **Collector:** _____
Field ID (ship initials-yymmdd.xx): _____ **Species:** _____
Locality: _____ **Lat/Long:** _____
Sex: Male/Female/Unknown
Marine Mammals:
Length (cm): _____ Girth (cm): _____
Sea Turtles:
Straight carapace length (cm): _____ Straight carapace width (cm): _____
Curved carapace length (cm): _____ Curved carapace width (cm): _____
Brief History: Date of Death: _____ Time of Death: _____

ADDITIONAL DATA COLLECTED:	Yes	No
Photographs:		
Carcass:		
Head:		
Skin:		
Blubber:		

EXTERNAL EXAMINATION: Provide as much detail as possible

General condition (lesions, deformities, appearance, color):

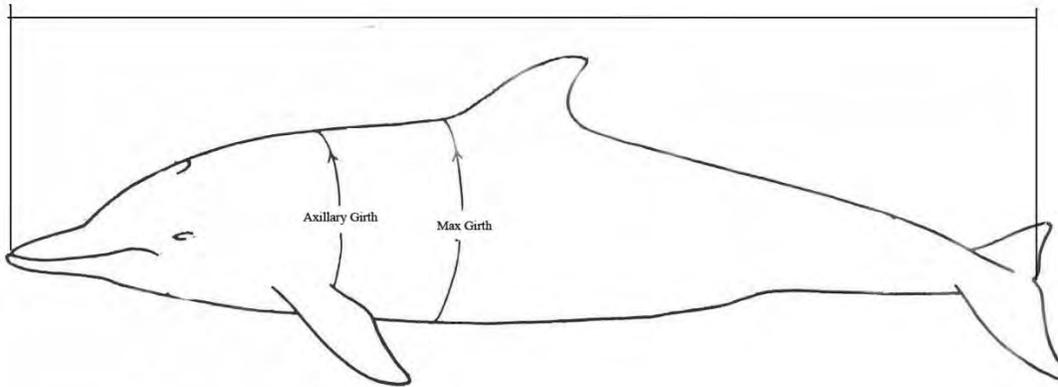
Parasites:
Mouth / Teeth:
Eyes:
Blowhole / Nostrils:
Anus and Urogenital openings:
Mammary slits / glands:
Fins / Flukes / Flippers:

Supplies provided: sampling instructions, data sheets including a fillable pdf, tags, cable ties, body bags.

Questions? For mammals contact Kerri Danil: kerri.danil@noaa.gov, (858) 366-2667, or Susan Chivers: susan.chivers@noaa.gov, (858) 945-0759, and for sea turtles contact Robin LeRoux: robin.leroux@noaa.gov, (619) 840-0693 or Erin LaCasella: erin.lacasella@noaa.gov, (858) 337-9065.

Figure 2: Cetacean data collection:

- a. Standard total length = tip of upper jaw to fluke notch; Locations for axillary and maximum girth measurements are also shown.



- b. Genital slit and anus for females (top) and males (bottom).

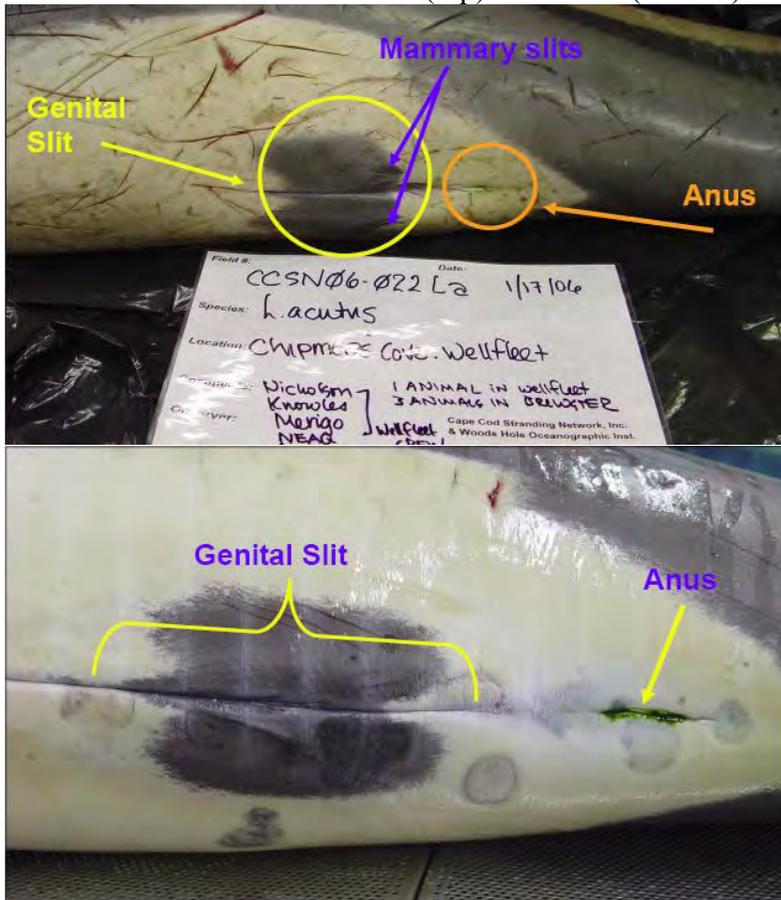


Figure 3: Pinniped data collection: total body length measurement endpoints, girth measurement location and sex determination guide.

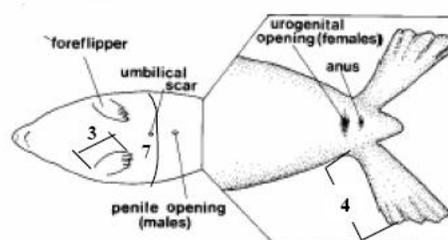


Figure 4. Sea turtle data collection: curved carapace length (CCL) and curved carapace width (CCW) measurements for hard-shelled and leatherback species, and straight carapace length (SCL) measurement.





Curved Carapace Width - leatherback



Straight Carapace Length