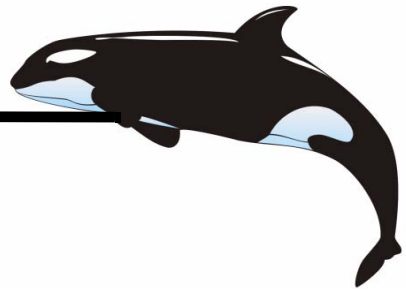

MARINE MAMMAL INTERACTIONS AND SIGHTINGS

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List of Priorities

- Record marine mammal interaction data.
- Record marine mammal specimen data.
- Record marine mammal sightings.

Introduction

Alaskan waters support one of the largest fisheries in the world and are home to a vast number of marine mammals. Interactions between fishing operations and marine mammals are unavoidable. Observers provide reliable estimates of marine mammal mortality and other interactions due to fishing operations. Vessel owners and operators are required to submit reports of marine mammal injury and mortality that occur as a result of fishing operations. The Observer Program's independent data help determine the reliability of these reports. Observer data are also used to identify changes in fishing methods or technology that may increase or decrease incidental injury or mortality to marine mammals.

Marine mammal sighting data contributed to the National Marine Mammal Laboratory (NMML) by observers provide important information on the distribution and behavior of marine mammals in Alaskan waters. There are several species in the Gulf of Alaska and Bering Sea which are threatened or endangered, and information on these animals is of great interest.

Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA) was most recently reauthorized in 1994. In passing the MMPA in 1972, Congress found that:

- certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man's activities;
- 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 such marine mammals and of the factors which bear upon their ability to reproduce themselves successfully; and
- 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 and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. As a NMFS certified observer you are authorized, under provision 50 CFR 229.7 of the Federal Code of Regulations, to take and possess marine mammal specimens (see page 18-17). The only specimen samples you should ever have in your possession are pinniped snouts or skulls and/or tissue samples from cetaceans. ***Do not collect other bones, or parts as specimens.*** They are not needed and will be discarded. Walrus and sea otters are under the jurisdiction of the U. S. Fish and Wildlife Service and you are not allowed to possess any specimen material from them. Possession of any part of a walrus or sea otter is a federal offense.

Marine Mammal Monitoring

The role of observers under the MMPA is to conduct statistically reliable monitoring of fishing operations and to record information on all interactions between fishing operations and marine mammals. Observers are asked to determine sex and measure the length of any marine mammal found dead in the catch. If possible, observers should take photographs of any marine mammal involved in an interaction. If Steller sea lions, northern fur seals or elephant seals are found dead in the catch, observers are required to collect the upper snout including the upper canine teeth, which are used for age and stock determinations. If possible, the entire skull of other seals should be collected to aid in identification. Observers are also asked to collect tissue samples from any large cetaceans captured and killed in fishing operations. Interaction and specimen data are recorded on the Forms 10A and 10B.

Random Sampling

To provide statistically reliable information, you must randomly select which hauls are to be monitored for incidental take of marine mammals. If there is any doubt in your mind that you will not be able to monitor all of the hauls during a trip, you must use a method to randomly select the hauls to be monitored. To select which hauls to monitor, use the random sample table and monitor the same hauls you sample for composition. For information on using the RST, see page 2-9. Indicate which hauls or sets you have monitored for marine mammals in the appropriate column on the Observer Haul Form. You may monitor additional sets, but if there are any marine mammal interactions, you must indicate in the remarks section of the Form 10 that they are not from randomly selected hauls or sets. In the trawl fishery, where you are unable to watch the entire dumping of a haul, it is acceptable to spot check the dumping and still mark the haul as being monitored 100% for marine mammals. You must be certain that you would have been able to observe any discard of any marine mammals. Spot checking means observing the dumping of a codend at times throughout the dumping process, not just at the beginning or end.

Form 10 - Marine Mammal Interactions

The Form 10 is used to document interactions between fishing operations and marine mammals. This form is made up of two parts: the Form 10A and Form 10B. The Form 10A is used to document any interaction between fishing operations and marine mammals. This may include marine mammals feeding on fish from longline gear, deterrence from feeding, or catches of marine mammals (whole or parts) in fishing gear. The Form 10B is only used when marine mammals (whole or part) are caught in fishing gear and/or specimen data is taken. Specimen data can include measurements of the animal or part and/or photographs of the animal. For mammal interactions, all data will be recorded on the Form 10 and the Form 11US is not needed.

Form 10A - Marine Mammal Interaction Data

Complete the Form 10A only if there are direct interactions between fishing operations and marine mammals. These interactions include the following:

Deterrence Used: marine mammals are subjected to deliberate actions intended to frighten or harm them in order to limit, discourage, or avoid interaction with fishing operations. The animal may be in direct contact

with gear or in very close proximity. Authorized deterrence include yelling at the animal, and banging pots or other objects. Whatever method is used, it should not result in the serious injury or mortality of the marine mammal. At this time, using firearms on marine mammals and seal bombs on cetaceans are prohibited. Log this interaction on the 10A even if the deterrence had no affect.

Marine Mammal Deterrence Codes

1 - Seal Bombs - Any explosive device used to frighten marine mammals from the catch.

2 - Pole Gaff - Using the long pole (typically used by crewman to gaff drop-off catch) to scare off marine mammals either by direct contact or by hitting the water.

3 - Skiff - Any use of a skiff to attempt to frighten off marine mammals.

4 - Acoustical device - Any electronic acoustical device designed to frighten or annoy marine mammals.

5 - Yelling - Crew yelling at marine mammals in order to frighten them from the catch.

6 - Making noise by any other method - Any method, other than yelling, of making noise to annoy or frighten marine mammals from the catch.

7 - Other - Any other means, not listed above, of deterring marine mammals. Document the method in your logbook.

8 - Unknown - If a deterrence method was used but its exact nature is unknown.

Feeding On Catch: marine mammals feed on fish from the fishing gear prior to landing. Marine mammals such as killer whales, sperm whales, and sea lions are often seen pulling fish from nets or more commonly from off of longline gear. On a longline vessel, having marine mammals around the vessel and seeing empty hooks is not necessarily an indication of feeding. Look for fish heads or lips or fish that have been bitten or raked by teeth. Do not record feeding on discarded fish or intentional feeding of marine mammals by humans on the Form 10A unless they occur in conjunction with other interactions. See "Intentional Feedings" on page 12-12.

Entangled in Gear: marine mammals are entrapped or entangled in fishing gear but escape or are released by vessel personnel alive.

Killed by Gear: marine mammals are killed by entanglement or entrapment in fishing gear during a particular haul or set. The animal is not decomposed and did not show any evidence of death by something other than the fishing gear. Evidence of a fresh kill include free flowing blood or other body fluids and bright red blood or meat. Freshly dead animals can be warm or cold depending on the length of the tow or set and the time of death. Rigor mortis is not a good indicator, as period of time an animal is in rigor can vary greatly depending on its physical condition and the environment.

Previously Dead: an animal was already dead before coming in contact with fishing gear. There may be a putrid, rotted smell; bloating; discoloration of the flesh; or loss of the skin/fur. Vessels often catch bones and/or masses of decomposed flesh, these are also considered previously dead. Look for signs of trauma which may have been caused by something other than the fishing gear (i.e., gunshot wounds, decapitation, skinning.) If you believe that the same dead animal has been caught in the gear more than once record it each time and indicate in your remarks why you believe it to be the same individual.

Lethal Removal: marine mammals are killed by vessel personnel to prevent serious damage to or loss of gear, catch, or human life. The death of these animals is caused directly by the actions of vessel personnel and not solely through contact with the fishing gear.

Killed by Propeller: marine mammals are struck by the propeller of the fishing vessel and die. This has been observed with killer whales and sea lions feeding on vessel discards.

Marine Mammal Boarded Vessel: When marine mammals board the fishing vessel and then escape. Sea lions and seals will infrequently board vessels to look for food or to escape predators.

Instructions for Completing the Form 10A

Enter the cruise number, vessel code, and the last two digits of the year in the heading. Start a new sheet for each vessel you are assigned.

Date - Record the date with the leading zeros where appropriate, i.e. 01/09 for January 9.

Interaction Number - Assign a number for each marine mammal interaction noted for a particular cruise/vessel. Start with 1 for the first interaction and consecutive numbers for the following interactions. Each interaction must have a different code, even if the interaction is by the same individual mammal. For example, two separate records and interaction codes would be documented for an animal that was feeding on catch and then was deterred by the vessel.

Haul or Set Number - Enter the haul, delivery, or set number for each catch in which there was a marine mammal interaction. If the interaction occurred outside of fishing operations, enter the haul number of the nearest haul in this field. Include an explanation and the actual position in the ***Remarks*** field.

Species Name - Write the common name of the marine mammal species involved into this field. If you are unsure of the identification use a broader classification, such as unidentified pinniped or unidentified dolphin/ porpoise, but be as specific as possible. Do not enter different species in the same record. If more than one species of marine mammal are involved in an interaction, repeat the date and haul/delivery number in the next box down the page and enter the second species on its own line with a new interaction number.

Mammal Code - Record the two character species code found on page A-12.

Did you observe mammal? - Record "Y" if you actually saw the animal, and "N" if you did not.

Number of individuals - Enter your best estimate of the number of individuals animals which were involved in the interaction. If there are more than one species involved in the interaction, each species must have a separate Form 10A record. The number must be an exact number. Do not enter a number range. If you are unsure about how many individuals there are, enter your best estimate and include the number range in the Remarks field.

Interaction code - Enter the interaction code. If an animal is involved with more than one interaction during one haul or set, list them as separate records with different interaction numbers.

Marine Mammal Interaction Codes

1 - Deterrence Used - Marine mammal was deterred or a deterrence was attempted. Log this interaction using this code even if the deterrence was not successful.

2 - Entangled in Gear (Not Trailing Gear) - A marine mammal was captured by the fishing gear and the animal was released/escaped without fishing gear attached.

3 - Entangled in Gear (Trailing Gear) - A marine mammal was captured by the fishing gear and the animal was released/escaped alive with some fishing gear attached.

4 - Killed By Gear - A marine mammal was captured and died due to interactions with the fishing gear.

5 - Killed By Propeller - A marine mammal hit the propeller and died.

6 - Previously dead - A marine mammal was captured by the fishing gear and was dead prior to coming into contact with the vessel or fishing gear.

7 - Lethal removal (Trailing Gear) - Vessel personnel killed a marine mammal entangled in fishing gear, but death was not due entirely to the entanglement. Gear was observed attached to the animal after the animal was removed from the gear.

8 - Lethal removal (Not Trailing Gear) - Vessel personnel killed a marine mammal entangled in fishing gear, but death was not due entirely to that entanglement. No gear was observed trailing from the animal after the animal was removed from the gear.

9 - Boarded Vessel - A marine mammal boarded the vessel on its own volition.

10 - Feeding on Catch -A marine mammal was observed feeding on catch not yet landed.

12 - Other - Interaction occurred that is not included in the list of interaction codes.

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

Condition of Mammal - Record the condition of the mammal based on the outcome of the interaction, for example a live animal that has been lethally removed is to be considered a carcass and an injured animal released alive is considered alive even if you believe it may eventually die.

1 - Carcass, dead animal
2 - Bones other than skull
3 - Live animal
4 - Skull
5 - Skull and bones
6 - Tusk/teeth (no skull)
7 - Baleen only
9 - Fur, flesh or skin

Injured? - This field is only filled in if the interaction involves a live animal, condition code 3, otherwise the field is left blank. If there is an interaction with a live animal, record "Y" if you actually observed the animal to be injured, enter "N" if you observed the animal to be uninjured, or "U" if you are unsure as to the condition of the animal.

Deterrence Method - Fill in this field only for interactions involving marine mammal deterrence, interaction code 1. Otherwise leave this field blank. A list of codes is given on page 12-3; use the code that is most appropriate.

If the vessel personnel employed more than one method of deterrence, document this in the Remarks field. Also describe in the Remarks field how the deterrence was conducted.

Deterrence Successful? Fill in this field only for interactions involving marine mammal deterrence, interaction code 1. Otherwise leave this field blank. If you observed that the deterrence worked to deter marine mammals from the catch enter a "Y". Enter "N" if you observed that the deterrence was unsuccessful. Enter "U" if you are unsure as to the success of the deterrence method.

Food Species - Fill in this field only if you have a marine mammal feeding on catch, interaction code 10. Otherwise leave this field blank. Enter the species code of the species upon which the marine mammals are feeding using the codes starting on page A-1. If the marine mammals are feeding upon more than one species, record the predominant species in Food Species field and list the other species in the Remarks field.

Involved in another interaction? - If this individual marine mammal or group of marine mammals was involved in other interactions listed on the Form 10A for the same set or haul, enter a "Y". If not, enter a "N".

Remarks - Write a paragraph describing the interaction. If you did not observe the animal, briefly explain why not and where you received your information. Each remark must include the following:

- ***Species Identification*** - Write a description of the animal and what features led you to believe it was this species. If possible, try to include descriptions of features which are specific to the individual (i.e., scars, saddle markings for killer whales, spot patterns, etc.).
- ***Condition of the Animal*** - Write a description of the general welfare of the animal (e.g., did it look healthy, injured, rotting?).
- ***Description of Interaction*** - Write a description of the interaction you observed between the vessel and the marine mammal. Be as descriptive as possible. Include names of crew members involved and their actions. For feeding interactions, describe evidence of feeding. In the logbook or on the paper Form 10A, draw pictures of rare or unusual marine mammal species involved in interactions. If there was evidence of gear depredation please list the following:
    - Type of bait being used
    - Target species
    - Species of the depredated fish
    - How many hooks had heads only remaining
    - The size of gashes (in cm) found on the fish
    - Total # of fish with evidence of predation

  If there was evidence of feeding off the discard, please give evidence and list the proximity of the whales to the vessel.

  In either case, please note if there was evidence of the whale(s) following the vessel from a previous set or staying with the vessel during the soak time.

Cruise Number	Vessel code	Year
9263	A110	06

Form 10A - Marine Mammal Interaction Data

Describe features used in identification; circumstances and effects of deterrence; particulars of entrapment or entanglement; types and extent of injuries.

Page 1 of 1

Date Month	Date Day	Interaction number	Haul or set number	Species name	Mammal code	Did you observe mammal?	Number of individuals	Interaction code	Condition of mammal	Injured?	Deterrence method	Deterrence successful?	Food species	Involved in another interaction?
05	17	1	132	Dall's Porpoise	PX	Y	1	4	1					N

Remarks: (see manual for list of required information)
Upon retrieval of Haul 132 a freshly dead Dall's porpoise was caught in the intermediate portion of the pelagic trawl net. No visible signs on body of death. Individual was black in color with a white belly and flanks. Small stocky body with small flippers and flukes. (Rooster-tail splashes were seen around the vessel while it fished) photos were taken. See 10B for specimen data.

Figure 12-1 Marine Mammal Interaction Data - Biological Specimen Collected

Cruise Number	Vessel code	Year
65562	A714	06

Form 10A - Marine Mammal Interaction Data

Describe features used in identification; circumstances and effects of deterrence; particulars of entrapment or entanglement; types and extent of injuries.

Page 1 of 1

Date Month	Date Day	Interaction number	Haul or set number	Species name	Mammal code	Did you observe mammal?	Number of individuals	Interaction code	Condition of mammal	Injured?	Deterrence method	Deterrence successful?	Food species	Involved in another interaction?
03	15	1	132	Sperm Whale	PM	Y	2	10	3	N			203	Y

Remarks: (see manual for list of required information)
About 1/3 of the way through hauling Set 132, two sperm whales appeared and began feeding on the sablefish. The vessel was targeting sablefish using herring for bait. Over the course of 5 mags of 880 hooks each, I counted 48 fish lips, 15 fish heads, and 8 raked bodies (approximately 12-15cm gashes). Total fish w/ evidence of predation = 71 sablefish. Individuals were present for the duration of the haul with closest approach at about 40M. Their heads were large and squared and their blow had a forward slant of about 45 degrees.

Date Month	Date Day	Interaction number	Haul or set number	Species name	Mammal code	Did you observe mammal?	Number of individuals	Interaction code	Condition of mammal	Injured?	Deterrence method	Deterrence successful?	Food species	Involved in another interaction?
03	15	2	132	Sperm Whale	PM	Y	2	1	3	N	6	N		Y

Remarks: (see manual for list of required information)
Same whales as in interaction #1 (feeding). Rollerman banged on side of vessel as hauling continued. This did not seem to deter the whales, so after gear was retrieved, the captain steamed for two hours.

Figure 12-2 Marine Mammal Interaction Data - Sperm Whale Interaction

Form 10B - Marine Mammal Specimen Data

This form should only be used when there is specimen data. There are five data types that should be recorded on the Form10B: length, sex, snout or skull collection, tissue collection and photos taken.

Determining Length of Dead Marine Mammals

All dead marine mammals captured during fishing operations must be measured.

Before touching a marine mammal remember that there are many diseases that are transferable from marine mammals to humans. Always wear gloves when handling a marine mammal.

There are two acceptable methods for measuring marine mammals:

Standard length - This is the preferred method of measurement and is the length of the animal in a straight line from the tip of the snout or rostrum to the tip of the tail flesh or tail notch on the unskinned body, belly up, ideally with the head and vertebral column on a straight line Figure 12-3.

Curvilinear length - The shortest surface distance from the tip of the snout or rostrum to the tip of the tail or tail notch along the back, belly, or side. This method is used if rigor has set in or the animal is too large or deteriorated to maneuver. Take the measurements with the flexible measuring tape provided by NMFS.

Determining Sex of Dead Marine Mammals

In cetaceans, the distance between the anus and the genitals is greater in males. Otherwise, the sexes appear similar because both have external teats, and females have an enlarged clitoris. In pinnipeds, sex can easily be determined by spreading the hind flippers and lifting the tail. Females have two holes (the anus and vaginal opening) between their flippers and males have only one.

Sexing of marine mammals is not difficult. See diagrams in Figure 12-4 to view the morphological differences between male and female pinnipeds and cetaceans.

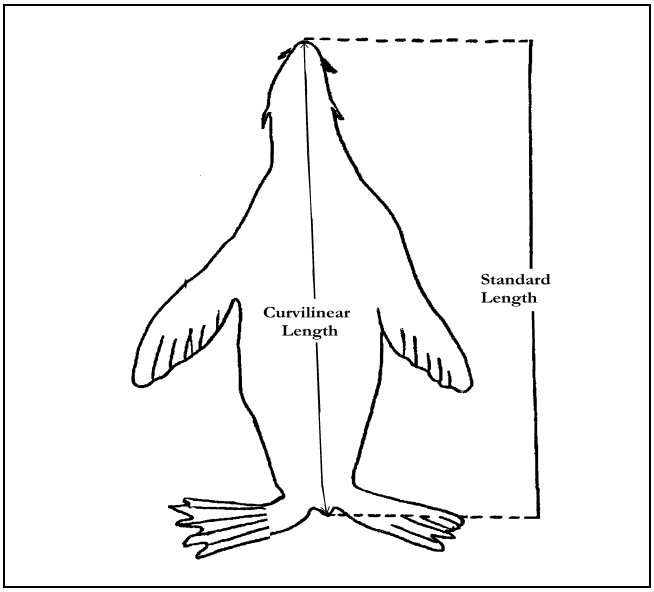

Figure 12-3 Sea Lion and Seal Measurements

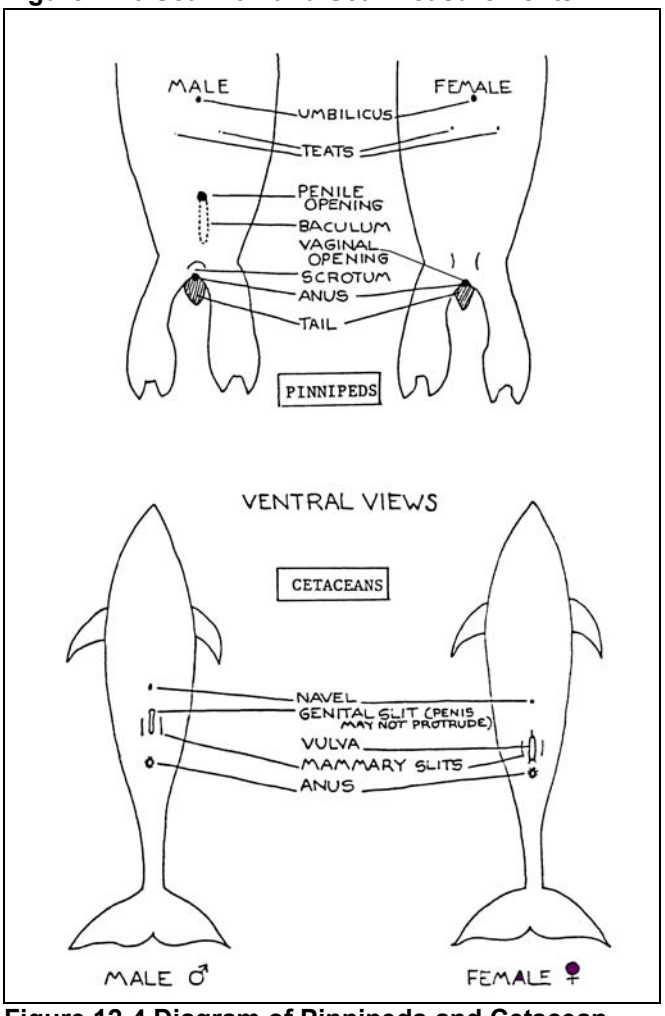

Figure 12-4 Diagram of Pinnipeds and Cetacean Sex Differentiation

Collection of Pinniped Snouts and Skulls (Except Walrus)

Do not collect snouts or skulls from walrus. They are managed by the US Fish and Wildlife Service and are therefore not covered under our MMPA collection permit.

When Stellar sea lions, northern fur seals or elephant seals are caught and killed or found dead in the fishing gear you must collect upper snouts of these animals, including their canine teeth (see Figure 12-5). Canine teeth of these animals are relatively easy to identify and are used to determine the animals age. Stellar sea lions in the Bering Sea, Aleutian Islands and the western Gulf of Alaska have been listed as endangered species. Data on these animals are greatly needed to assist in determining the causes of this species' decline. Combined with the length data you collect, teeth can help determine the general health of the sea lion population.

If harbor, spotted, bearded, ribbon, or ringed seals are found dead, you should also collect their snouts, including upper canines, or if possible collect the entire skull of these animals. Canine teeth of these animals are difficult to differentiate for species identification, while the complete skull provides positive identification.

Collecting the snout of pinnipeds, including complete canine teeth, requires a hacksaw (which you should be able to obtain from the vessel). Cut across the snout, slightly in front of the eyes, in a line that passes between the second and third post-canine teeth. Do not remove the skin as coloration of fur and whiskers aid in species verification back at the lab.

Collecting the skull is often easier than collection of the snout. Determine where the base of the skull is by pressing your fingers along the top of the head until you feel where it ends, or slopes down to its point of attachment with the first vertebra of the neck. Using a sharp knife, cut through the neck muscle about two inches posterior to the base of the skull until you hit neck bone. Using a hacksaw, you can now saw easily through the neck bones. Excess tissue (tongue, trachea, muscle tissue etc.) can be removed from the throat area to reduce weight.

Preserve the skull or snout by placing it in three of the plastic bags provided by NMFS and freeze it. Place a label, which includes your name, date, cruise number, vessel code, haul number, species and length of pinniped inside the outer bag and another label on the outside.

Never preserve the snout in formaldehyde. This will destroy the area of the tooth needed for age determination.

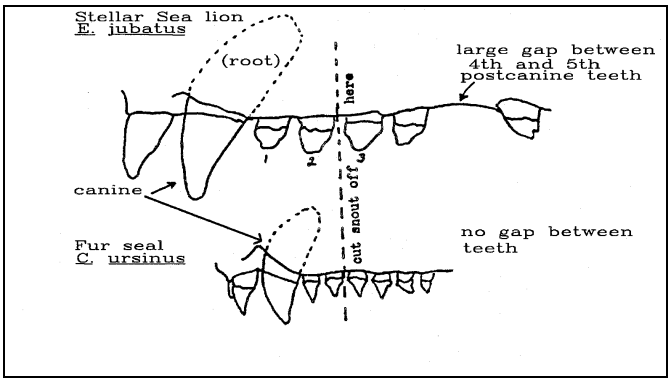

Figure 12-5 Canine Teeth of Sea Lions

Tissue Collection from Dead Cetaceans

Currently, commercial fishing vessels in the Gulf of Alaska and the Bering Sea take several cetaceans per year. Genetic information on these species is limited, and more data are needed to identify stock structures. Observers have access to cetacean carcasses and can easily collect tissue samples. The National Marine Mammal Laboratory has asked that observers take tissue samples and are provided with the necessary equipment. You have been supplied with a sterile scalpel, a pair of nitrile gloves, and three vials of the preservative Dimethyl Sulfoxide (DMSO). Skin samples should be taken from all cetacean carcasses, regardless of their condition.

Warnings about DMSO: Dimethyl Sulfoxide has exceptional solvent properties for organic and inorganic chemicals and is widely used as an industrial solvent. It has also been used to administer drugs topologically. DMSO is able to penetrate intact skin and will carry anything dissolved into it directly to 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 and you should never allow it to come into contact with your skin. **Always wear the nitrile gloves provided when handling DMSO**.

To collect a sample:

1. After recording length data for the Form 10B, exchange your fishing gloves for the non-latex (nitrile) gloves provided by NMML. This is to protect you from possible disease and to protect the sample from you. Any DNA contamination from any mammal may compromise the sample. Do not use latex gloves while handling DMSO.

2. Lightly scrape the sample area on the cetacean clean with a knife to remove fish slime and reduce contamination of the sample. The sample collection area can be anywhere on the animal, but preferably from the back just posterior to the dorsal fin.

3. Using a sterile scalpel cut out a strip of skin approximately 2 cm by 1 cm. Remove any excess blubber from the strip before placing it in the vial of DMSO. Place the skin sample in the vial of DMSO provided. Try not to take a large sample, the skin sample must fit in the DMSO vial and be completely covered by solution.

4. Label each specimen vial with the cruise number, vessel code, haul number, and species name. There should be no more than one specimen to a vial. If there is more than one animal in a haul they should all be listed as separate specimens, placed in separate vials, and labeled accordingly. Record interaction information on the Form10A and record specimen information on the Form 10B, including length and how you obtained the specimen.

Do not freeze DMSO samples, store them at room temperature. More vials of DMSO, gloves, and sterile scalpels can be obtained at the field offices in Dutch Harbor and Kodiak.

In the event that a cetacean carcass is available for sampling, but DMSO vials are unavailable, skin samples should still be collected. These samples can be preserved in one of the following ways:

1. The sample can be frozen

2. The sample can be placed in an otolith vial filled with a saturated salt solution

3. The sample can be placed in a plastic bag and covered with table salt.

Samples not stored in DMSO are of lesser value, but still extremely useful to NMML.

In addition to the skin and blubber sample that is preserved in DMSO, the NMML would also like observers to collect a second tissue sample. Cut a 2 inch square of tissue from the dead carcass just below and behind the dorsal fin. The depth of the sample should be from the outer skin layer to the muscle layer, including the entire blubber layer. To store this second tissue sample, seal it in a ziploc bag. Place this sealed bag inside another ziploc bag with a label (list your cruise #, vessel code, date and haul number). ***This sample should be frozen and kept frozen to the best of your abilities during transit.*** See “Form 10B - Marine Mammal Specimen Data” on page 12-10.

Photos

Record any photographs taken of marine mammal interactions with a fishing vessel or vessel personnel on the Form 10B. When taking photos, try to include distinguishing marks of the individuals; old scars and scratches are useful as well as the saddle patch on orcas. The NMFS flash pocket cameras have been supplied only for photographs of incidental take interactions, photographic records of tissues collection samples from dead cetaceans, and (when possible) some types of groundfish catch feeding interactions by the same pods of sperm and killer whales. These cameras must be returned to NMFS at the time of debriefing, whether used or unused.

The camera issued with your gear should be used for photos of dead marine mammals only.

Instructions for Completing the Form 10B

Each entry on the Form 10B must correspond to an entry on the Form 10A. If more than one animal of the same species was involved in an interaction on the Form 10A, you may have two or more records on the form Form 10B that correlate to it, if a specimen was taken from each mammal involved. Fill out one Form 10B record for each animal from which measurements, specimen, or photos were taken.

Enter the cruise number, and vessel code in the heading. Start a new sheet for each vessel you are assigned.

Cruise Number	Vessel code
9263	A110

Form 10B - Marine Mammal Specimen Data

Data describing individual specimens sexing criteria, methods of measurement, types and extent of injuries, etc.

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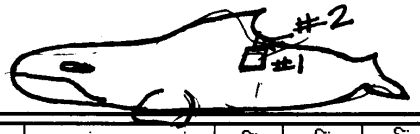
Form 10A Interaction number	Specimen number	Haul or set number	Species name	Mammal code	Sex	Standard length in cm.	Curvilinear length in cm.	Tooth taken?	Photo taken?	Tissue taken?
1	1	132	Dall's Porpoise	PX	m	201			Y	Y

Remarks: (see manual for list of required information)

Two Separate tissue samples were collected. A small amount of skin and blubber were stored in a DMSO vial. A larger (frozen) sample of skin and blubber were also collected (a 2 inch square from the skin to muscle layer. Locations of DMSO (#1) and frozen (#2) samples are on diagram.



Form 10A Interaction number	Specimen number	Haul or set number	Species name	Mammal code	Sex	Standard length in cm.	Curvilinear length in cm.	Tooth taken?	Photo taken?	Tissue taken?

Remarks: (see manual for list of required information)

Form 10A Interaction number	Specimen number	Haul or set number	Species name	Mammal code	Sex	Standard length in cm.	Curvilinear length in cm.	Tooth taken?	Photo taken?	Tissue taken?

Remarks: (see manual for list of required information)

National Marine Fisheries Service / North Pacific Groundfish Observer Program

REV02

Figure 12-6 Form 10B - Marine Mammal Specimen Data

Form 10A Interaction number - For each specimen collected, enter the corresponding Form 10A interaction number. If the same animal was involved in more than one interaction during the set or haul, enter the interaction number of the first interaction in which the animal was involved.

Specimen Number - For each cruise/vessel, start the specimen numbers with one and continue consecutively until you disembark the vessel.

Haul or Set Number - Enter the haul, delivery, or set number for each catch in which there is a marine mammal specimen. If the specimen was collected outside of fishing operations, enter the haul number of the nearest haul in this field. Include an explanation and the actual position in the ***Remarks*** field.

Mammal Code - Record the two character species code found in "Species Code List - Marine Mammals" on page A-12. This should match the corresponding Form 10A.

Sex - Record as M = male, F = female, U = unknown.

Standard length in centimeters - (See Figure 12-3) Recorded to the nearest centimeter. Do not record an estimate of length in this field; this field is for actual measurements only. Include length estimates in the remarks section.

Curvilinear length in centimeters - (See Figure 12-3) Recorded to the nearest centimeter. Do not record an estimate of length in this field; this field is for actual measurements only. Include length estimates in the remarks section.

Tooth taken? (Was a snout or skull taken?)- Record "Y" if you collected a pinniped snout or skull; otherwise, record "N". If you did not take a snout or skull from a pinniped, explain why not in the Remarks section.

Photo Taken? - Record "Y" if you took photographs; otherwise, record "N".

Tissue taken? - Record "Y" if you took a tissue specimen, otherwise record "N".

Remarks - There are four topics which must be discussed in the remarks field:

- Describe how the sex was determined.
- Document any uncertainties you have concerning the data.
- Document any distinguishing characteristics of the individual animal that would help differentiate it from others of its species (i.e., saddle patches in killer whales, spots and scars on other marine mammals).
- If a snout, skull or tissue specimen was collected, describe the specimen, your collection method, and your method of storage.

Any comments not directly related to the specimen data, such as cooperation or hindrance by the crew, should be recorded in your logbook.

Tagged and Branded Marine Mammals

The National Marine Mammal Laboratory and several other state and federal programs have on-going projects tracking marine mammals. To do this, they place a tag or brand on the marine mammal. Radio and/or satellite tags have been affixed to Steller sea lions, northern fur seals and elephant seals as well as several species of cetaceans. Flipper tags are also placed on several species of pinnipeds. Commonly brands are found on the side or back of pinnipeds.

If you observe one of these animals, record the tag or brand numbers, color of the tag or marking, and the location of the marking/tag in the daily notes section of your logbook. Also include behavior and the latitude and longitude of where it was observed. A Form 11US (see page 12-13) should also be filled in with all pertinent information.

If the animal is killed in the catch, retrieve the tag, and/or record the numbers, color, and location of the marking, and retrieve any research instrumentation/attachments affixed to the animal to return to the NMML. Record length and sex information from the animal. If it is a pinniped, collect the snout or skull, if it is a cetacean, collect a tissue sample. These animals are being tracked for population assessments so any extra information you can provide will greatly help researchers at NMML.

Intentional Feedings

Under the Marine Mammal Protection act, it is illegal to intentionally feed any marine mammal in the wild. Intentional feeding is considered a form of harassment. If you observe anyone intentionally feeding a marine mammal, you should document the incident fully in your logbook. Please include the name(s) of the person/ people involved in the incident, a description of the marine mammal, and a summary of where and how the violation occurred.

Marine Mammal Sightings

The 11US Marine Mammal Sighting Form helps NMML determine the distribution and behaviors of marine mammals. Data from these forms are integrated into the NMML Platforms of Opportunity database, which has information on marine mammals from throughout the North Pacific Ocean. The 11US Marine Mammal Sighting Form is not only used by the Observer Program but is also given to the U.S. Coast Guard, research ships, and marine mammal enthusiasts on commercial and private vessels. Marine mammal sighting is the lowest priority observer responsibility. These forms should be completed only if it does not interfere with any of your other observer duties.

If you have time, NMML is interested in every species of marine mammal that you encounter. We have provided a marine mammal identification manual to assist you in making identifications. If you are unable to positively identify an animal, then please indicate so on the form. Records of unidentified animals tend to lend credence to those records that include identification. Give a complete description with comprehensive notes and sketches, to fully describe any species you encounter for the first time each cruise.

For more common species (e.g., Dall's porpoise), you do not need to give detailed descriptions of subsequent sightings within one cruise. However, if sighting involves unusual behaviors or warrants some extra description (e.g., humpback whales mating), give a detailed account.

Form 11US - Marine Mammal Sighting Instructions

Fill out the Form 11US as completely as possible. The more information you provide, the more useful the data is to NMML in determining species ranges.

Observer(s), Vessel - Write your name and your vessel's name in these blanks.

Date - Enter year (e.g., 05), month, and day, in that order.

Time - Log the time that the animal was first seen. Use Alaska Local Time (ALT).

Latitude - Record the latitude to tenths of minutes, if possible.

Longitude - Record longitude to tenths of minutes, if possible. Place E or W in box 30.

Sighting conditions - Give a qualitative evaluation of the overall sighting conditions. Excellent: unlimited visibility, flat seas. Good: sighting conditions affected somewhat by glare, sea state, weather, or distance. Fair: Sighting conditions affected by a combination of problems, e.g. heavy seas, poor weather, or distance. Poor: Severely limited visibility due to high seas, poor weather, or distance.

Beaufort - Use the scale of sea and wind conditions (listed on the back of the form) to choose the Beaufort scale number that best describes the conditions during your sighting.

Surface water temperature - Record water temperature in degrees centigrade, rounded off to the nearest whole degree. If below freezing, place a "-" in box 28. If above freezing, place "+" in box 28. The surface water temperature often can be obtained from the skipper or fish master. Many new sonars, plotters, and net detectors will also record the surface water temperature. You could also ask the engineer, surface water temperature is taken at the engine inlet thermometer. The conversion from Fahrenheit to Centigrade is: $C^\circ = (5/9)(F^\circ - 32)$

Species - Write in either the common or scientific name of the marine mammal. Make sure you indicate your level of confidence in your species identification by checking the boxes to the right of the species section. If more than one species are sighted at the same time, note any association in the comments section and fill out a separate sighting form for each

Form 11US

MARINE MAMMAL SIGHTING

NOAA/NMFS/AFSC/NMML
Platforms of Opportunity
7600 Sand Point Way NE
Seattle, WA 98115

Observer(s) JACKSON OBSERVER Vessel FISHNESS IV

year 06 month 05 day 24 local time (24 hr. clock) 12:40

latitude 55° 43.1' N/S N

longitude 171° 26.2' E/W W

sighting conditions: ☒ faint ☐ good ☐ fair ☐ poor

Beaufort 1 +/- water temp. + 5 0 3 °C

species (common and/or scientific name) **Please fill out a form for each species**: HUMPBACK WHALE

confidence: ☒ sure ☐ likely ☐ unsure

sighting cue: Saw flipper slap water about 50 m off port

closest approach 50 meters | number sighted (best) 1 | number (minimum) 1 | number (maximum) 1

For Office Use Only

observer | platform | vis. | species | conf. | sighting cue | photos | roll | frames | behaviors, cues and interactions | behaviors, cues and interactions | length multi

Narrative

Make identifications only on specific features seen. Mention them here. Include body features, markings and coloration, associated organisms, elaborate on behaviors, etc. The most valuable sightings contain a good amount of detailed information.

Estimated size about 40 ft, dark coloration except for undersides of flukes and flippers. Saw dorsal fin at same time as blow and blow was tall and broad. Whale dove twice in 10 minutes, and on last dive, flukes were visible. At one point, whale slapped water with flipper. Photos taken.

Body Length Estimate

- ☐ < 3 m (< 10')
- ☐ 3–8 m (10–25')
- ☐ 8–16 m (25–50')
- ☐ 16–26 m (50–80')
- ☐ >26 m (>80')

Some common behaviors
(circle these or add your own in narrative section)

Small cetaceans
Bow riding
Leaping entirely out of water
Porpoising (swimming fast, body out of the water)
Rooster-tailing (usually a Dall's porpoise cue)
Slow rolling

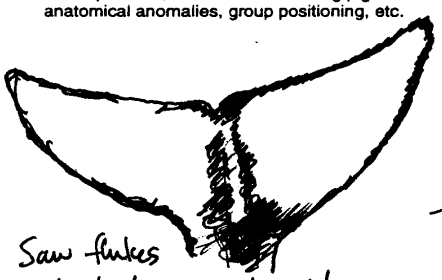
Large cetaceans
(Blow visible from a distance)
Breaching
(Flipper slapping)
Group feeding
Lob-tailing
Spy-hopping
(Tail raised on dive)
Side wake riding
Stern wake riding

Pinnipeds
Jug handle (flippers in air)
Porpoising (swimming fast, at least partially out of the wat
Rafting
Spooked from haulout
Vocalizing

Fishing Interactions ?
Use form 10US

Sketches

When possible, make a sketch noting pigmentation, anatomical features, scarring, posture, anatomical anomalies, group positioning, etc.



Saw flukes on last dive: underside mostly white with black edging.

Relatively small dorsal fin, dark body color.

Photos/Video (optional)
☒ photographs
☐ video
roll/tape # Personal Camera
frame(s) 1-16

☐ **Check here if there was more than one species of marine mammal present at this sighting.**

cruise number and vessel code 9263 A110

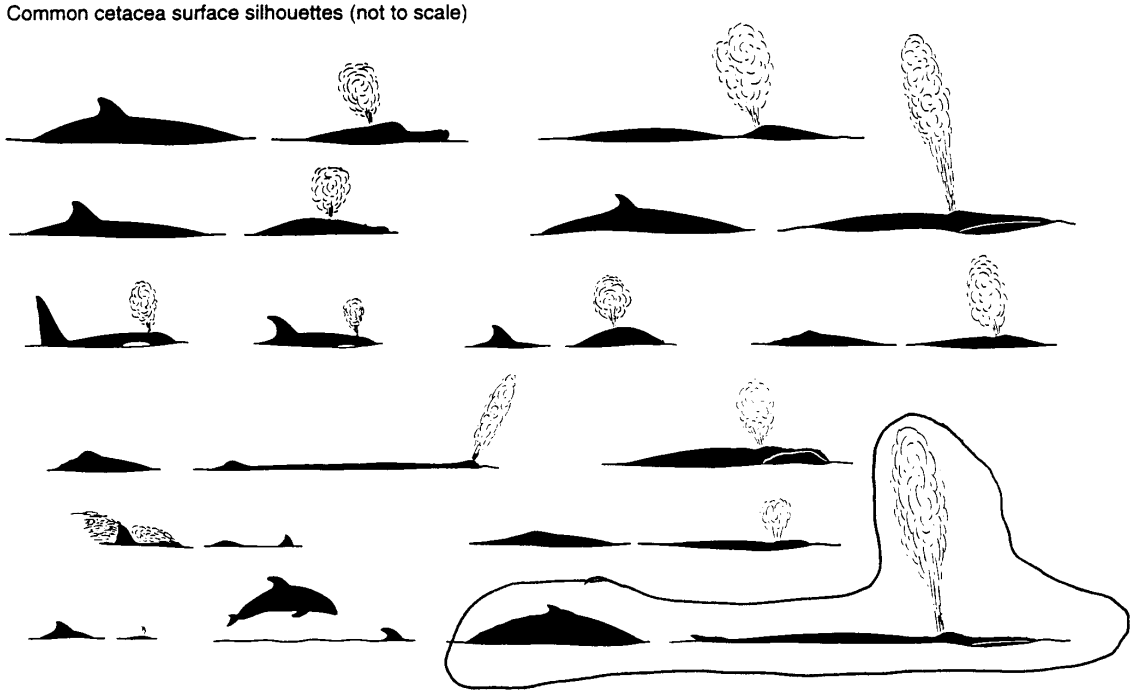
Form 11US: ver. IX.98: Balla, Harkness, Hill, Folkens, Lowell, Mizroch

See silhouettes on other side

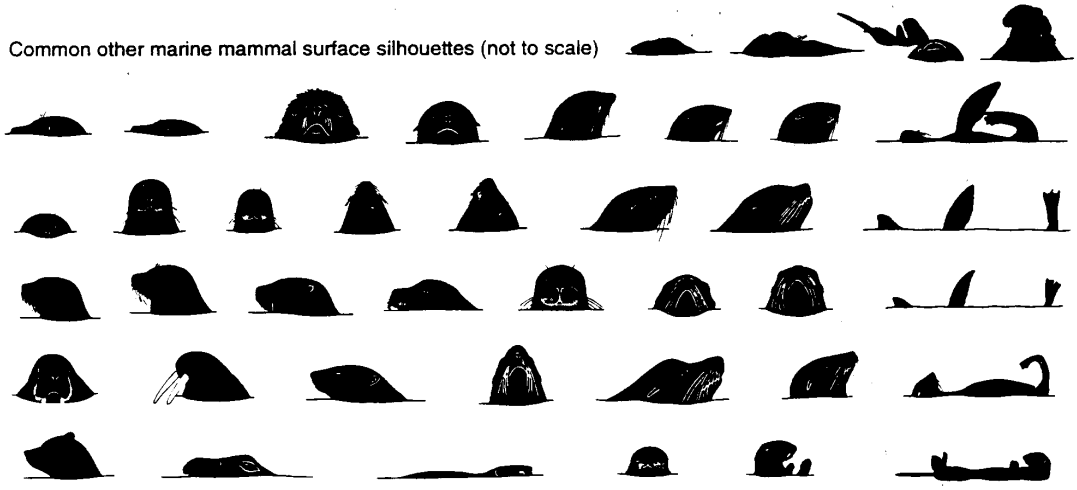
Figure 12-7 Form 11US - Marine Mammal Sighting Form (front side)

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. **Please circle appropriate silhouette(s).**

Common cetacea surface silhouettes (not to scale)



Common other marine mammal surface silhouettes (not to scale)



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 12-8 Form 11US - Marine Mammal Sighting Form (back side)

species. If you cannot determine species, enter the most accurate description possible, (e.g., large whale unidentified, porpoise unidentified, pinniped unidentified, etc.). Remember that an inaccurate or erroneous identification is worse than none at all.

Sighting cue - Note what first attracted your attention to the presence of the marine mammal.

Closest approach - Note the distance in meters of the closest approach of the marine mammal. A table of equivalents for converting English to metric is found on page A-14.

Number sighted - Give the best estimate of the number of individuals observed. If you are unable to count all the animals with certainty, estimate the number seen in terms of range (e.g., Best estimate: 15, minimum present: 12, Maximum present: 20) For Dall's porpoise, note if you see splashes from more animals than you can clearly observe.

Cruise number and Vessel code - At the bottom of the page, enter the cruise number and vessel code.

Body Length Estimate - Check the box that best represents the length of the animal(s) you observed.

Some common behaviors - Circle all of the behaviors observed during this sighting. For a list of behaviors, (see Figure 12-9 on page 12-16).

Narrative and Sketches - These sections are the most important sections of the form and should be completed with as much detail as possible. Everything that you observed about the animal should be entered. There are several important points that you should address to verify the species and individual marine mammal:

- ***Shape and size of dorsal fin and its position on the body*** - This is useful in identifying cetaceans. Also note the size and shape of the tail and flippers.
- ***Length of animal*** - Size is difficult to estimate at sea, so compare unfamiliar species with a species with which you are familiar. You may also compare an animal to a known length on the ship.
- ***General shape of the body*** - Slender or robust?
- ***Shape and size of snout*** - Is it long or short? Estimate the length. Is there a definite beak? Is the forehead markedly bulbous?
- ***Color patterns on the fins and body*** - Look for spots, stripes, patches, or mottling. With Orca sightings, make sure to note the exact shape and shade of the saddle spot on dorsal side directly posterior to the dorsal fin. If possible, try to take a photo of this area. Researchers are able to identify individual Orcas by the saddle patches.
- ***Shape, location, and direction of blow*** - In cetaceans, note whether the blow is single or double. Note where the blowhole is located on the head and whether it goes forward or goes straight up. Note the general shape of the blow, is it bushy or tall?
- ***Scars and scratch marks*** - Look for scars or scratch marks that will help identify the individual mammal or help determine its past behaviors. Some seals will have hook scars on their snouts and a number of Orcas may have bullet wounds on the dorsal fins. This will help NMML determine migratory patterns and determine behaviors of individual marine mammals.

Behaviors of animals - Describe in detail the behaviors of the animals observed. If there are several animals, describe how they interact with each other. Describe their diving behavior, and whether the animals were attracted to the vessel because of fishing operations. Were they feeding on discarded fish and fish parts?

Silhouettes - On the back of the Form 11US are a number of silhouettes of the common marine mammals found in the North Pacific Ocean and Bering Sea. For each sighting, circle the silhouettes that best represent the mammal you observed.

If there was evidence of gear depredation please list the following

Small Cetaceans	Large Cetaceans	Pinnipeds
Bow riding-- Animals swim beside the bow or in the bow wave of a moving vessel. **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 (known only to them). **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. **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.	**Blow visible from a distance**-- Blow can be seen from more than 500 meters away. Usually only seen in certain large cetaceans. **Breaching**-- Used for larger cetaceans (orca sized and larger). 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. **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 or upright in the water and raises its head up out of the water, usually with its eye 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 midships along the side of the vessel, or the wake created by the stern.	**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 haulout**-- Pinnipeds which had been resting on 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.

Figure 12-9 Marine Mammal Behavioral Descriptions