DRAFT

Programmatic Environmental Assessment

for

Fisheries and Ecosystem Research Conducted and Funded

by the

Alaska Fisheries Science Center

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Appendix D

Protected Species
Mitigation and Handling Procedures

for

AFSC Fisheries Research Vessels

Prepared for the National Marine Fisheries Service by:

URS Group

700 G Street, Suite 500

Anchorage, Alaska 99501

Contents

1. Mitigation and Handling Measures for Marine Mammals and other Protected Species during AFSC Research Cruises 1

2. Pre-Cruise Actions 3

3. Mitigation Measures 4

3.1 Mitigation Measures for Ship Strikes 5

3.2 Mitigation Measures for Protected Species during Research with Trawl Gear 5

3.2.1 Monitoring Methods 5

3.2.2 Operational Procedures 5

3.3 Mitigation Measures for Protected Species during Research with Longline Gear 7

3.3.1 Monitoring Methods 7

3.3.2 Operational Procedures 7

3.4 Mitigation Measures for Protected Species with Gillnet Gear 8

3.4.1 Monitoring Methods 8

3.4.2 Operational Procedures 8

3.5 Mitigation Measures for Protected Species with Other Research Gear 8

3.6 Completing the AFSC Research Protected Species Interaction Form 9

4. Handling Procedures for Incidentally Captured Marine Mammals 11

4.1 Marine Mammals that are Living when Brought Aboard 11

4.1.1 Procedures and Safety 11

4.1.2 Strandings and Disentanglement 14

4.1.3 Alaska Regional Stranding Coordinators 14

4.2 Marine Mammals that are Dead when Brought Aboard 14

4.2.1 Safe Environment to Collect Marine Mammal Specimens 14

4.2.2 Photos 15

4.2.3 Collection of Pinniped Specimens 15

4.2.4 Measurements of Dead Marine Mammals 16

4.2.5 Determining Gender (Sex) in Marine Mammals 16

4.2.6 Tissue Collection from Dead Cetaceans 17

4.2.7 Entering Specimen Data on the Specimen Sub-Form 18

5. Seabird Handling Procedures and Data Collection 19

5.1 Seabird that is Brought Aboard Alive 19

5.2 Seabird that is Brought Aboard Dead 20

5.3 Bird Storms 21

6. ESA-listed Fish Handling Guidelines and Data Collection 22

6.1 Handling of Salmonids 22

List of Figures

Figure 4-1: Canine Teeth of Sea Lions 15
Figure 4-2: Sea Lion and Seal Measurements 16
Figure 4-3: Determining Gender of Marine Mammals 17

1. Mitigation and Handling Measures for Marine Mammals and other Protected Species during AFSC Research Cruises

Research conducted or funded by the Alaska Fisheries Science Center (AFSC) must comply with applicable statutes and regulations, including those relating to incidental takes of protected species under the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and Migratory Bird Treaty (MBT). Protected species include all marine mammals, ESA-listed species (certain marine mammals, birds, salmonids, and all sea turtles), and other seabirds that may interact with AFSC fisheries and ecosystem research. Sea turtles have rarely been seen in marine waters off Alaska but unusually warm ocean currents may carry turtles north of their normal range. AFSC monitoring efforts are more oriented to frequent marine mammals encountered in Alaskan waters.

The following suite of monitoring, mitigation, and handling measures and procedures will be employed by the AFSC during research cruises and activities. These procedures are the same whether the survey is conducted on board a NOAA vessel or charter vessel. The procedures described are based on protocols used during previous research surveys and/or best practices developed for commercial fisheries using similar gear. Mitigation measures are those taken to monitor, avoid, or minimize the encounter and potential take of protected resources. Handling measures are those taken to return a live animal to the sea or process a dead animal.

The AFSC conducts a large variety of research operations, but only activities using trawl, longline, and gillnet gears have a low but estimable chance of taking protected species. AFSC's past experience has had few direct marine mammal or protected species takes. AFSC's use of charter and small vessels often precludes intense and frequent monitoring for protected species so these protocols are streamlined to continue the past record of few direct takes, yet provide credible, documented, and safe encounters with observed or captured protected species. Whales and dolphins are also frequently observed during survey operations and reporting every encounter would be burdensome. Mitigation procedures will be focused to those situations where mammals, in the best professional judgement of the vessel operator and Chief Scientist, pose a risk of incidental take. In many instances, the AFSC will use streamlined protocols and training for protected species developed in collaboration with the North Pacific Groundfish and Halibut Observer Program and implemented through AFSC's Fishery Monitoring and Analysis Division.

The AFSC is initiating a process to review, improve, and streamline its efforts to monitor and mitigate for the incidental takes of protected species. AFSC Chief Scientists and vessel operators will annually communicate and exchange information about their experiences with protected species during research work and review and improve, where possible, these procedures to monitor, mitigate, and handle protected species with the goal of improving decision-making to avoid and minimize adverse interactions. There are many situations where professional judgment is used to decide the best course of action for avoiding marine mammal interactions before and during the time research gear is in the water. The intent of communicating experiences is to draw on the collective experience of people who have been making those decisions, provide a forum for the exchange of information about what went right and what went wrong, and try to determine if there are any rules-of-thumb or key factors to consider that would help in future decisions regarding avoidance practices. The AFSC will also coordinate not only among its staff and vessel captains but also with those from other fisheries science centers, cooperating research partners, the Alaska Regional Office, and other institutions with similar experience.

The AFSC will develop a formalized protected species training program for all scientists and crew members that may be posted on monitoring duty or handle incidentally caught protected species. This training would be required for all AFSC research projects. Training programs will be conducted on a regular basis and will include topics such as monitoring and sighting protocols, species identification, decision-making factors for avoiding take, procedures for handling and documenting protected species caught in research gear, and reporting requirements. The AFSC will work with the North Pacific

Groundfish and Halibut Observer Program to customize this new protected species training program for researchers and ship crews. AFSC Chief Scientists and appropriate members of AFSC research crews will be trained using similar monitoring, data collection, and reporting protocols for protected species. All AFSC research crew members that may be assigned to monitor for the presence of marine mammals during future surveys will be required to attend an initial training course and annual refresher courses or as necessary. The implementation of this training program would formalize and standardize the information provided to all research crew that might experience protected species interactions during research activities.

2. Pre-Cruise Actions

1. This document will be required on all AFSC conducted or funded cruises.
2. AFSC will train the designated Chief Scientist, also known as the Field Party Chief, and other key personnel on monitoring, mitigation, and handling procedures before the cruise commences.
3. Whether onboard a NOAA, charter, or partner vessel, prior to the cruise the Chief Scientist will communicate and coordinate with vessel crew about established protected species incidental take (PSIT) reporting and handling procedures.
4. Division Directorates ensure that pertinent protected resources staff from the Alaska Region are in the PSIT email alert notification list.
5. The Chief Scientist shall establish a communications protocol with the Division Directorate to report any incidental takes of a marine mammal or other protected species.
6. The Division Directorate shall identify the PSIT coordinator, report to the appropriate Regional Stranding Network, and query about additional numbers or specific contacts to reach in case of an incidental take of a marine mammal or protected species.

3. Mitigation Measures

The AFSC will take the following mitigation measures to monitor, avoid, or minimize the encounter and potential take of protected resources. The AFSC will frequently review its procedures and investigate options for incorporating new mitigation measures and equipment into its on-going survey programs. Evaluations of new mitigation measures include assessments of their effectiveness in reducing risk to marine mammals but any such measures must also pass safety considerations and allow survey results to remain compatible with previous data sets. These mitigation measures also apply to handling captured dead or live specimens.

The responsibility for monitoring and mitigating for interactions with marine mammals and other protected species lies with the Chief Scientist of the cruise and the vessel operator. The vessel operator may be the NOAA Ship Captain of a NOAA vessel, the designated ship captain of a charter or other NOAA vessel, or the designated small boat operator. The Chief Scientist (also known as the Field Party Chief on some cruises) may designate other personnel to stand watch and the vessel operator may designate other crew members to stand watch and conduct vessel handling operations. However, the responsibility of employing mitigation measures and other procedures still lies with the Chief Scientist and vessel operator on each cruise. Communication of standing procedures is, therefore, important when assigning others to fulfill these tasks. The Chief Scientist is responsible for completing required forms and contacting their Divisional Directorate when a reportable interaction occurs. The Chief Scientist is responsible that handling procedures are correctly executed and that any forms are sent directly to the Division Directorate. The vessel operator is responsible for minimizing vessel and gear interactions with protected species and for handling any animals that come aboard the vessel. The Division Directorate is responsible for contacting appropriate PSIT, Strandings Coordinators, or the U.S. Fish and Wildlife Service (USFWS) as appropriate. The Division Directorate is also responsible for evaluating protected species interactions and for improving procedures and mitigation based upon the analysis of actual events.

Effective monitoring is a key step in applying mitigation measures and is achieved through regular marine mammal watches. Marine mammal watches are a standard part of conducting AFSC fisheries research activities, particularly those activities that use gears that are known to or potentially interact with marine mammals or any other protected species. Marine mammal watches and monitoring occur during daylight hours prior to deployment of gear (e.g., trawls, gillnets, and longline gear), and they continue until gear is brought back on board. If marine mammals or other protected species are sighted in the area and are considered to be at risk of interaction with the research gear, then the sampling station is either moved or canceled or the activity is suspended until the marine mammals are no longer in the area. On smaller vessels, the Chief Scientist and the vessel operator are typically those looking for marine mammals and other protected species. When marine mammal researchers are on board (distinct from marine mammal observers dedicated to monitoring for potential gear interactions), they will record the estimated species and numbers of animals present and their behavior using protocols similar or adapted from the North Pacific Groundfish and Halibut Observer Program. If marine mammal researchers are not on board or available, then the Chief Scientist in cooperation with the vessel operator will monitor for marine mammals and provide training as practical to bridge crew and other crew to observe and record such information. Because marine mammals are frequently observed in Alaskan waters, marine mammal observations may be limited to those animals that directly interact with or are near to the vessel or gear. NOAA vessels, chartered vessels, and affiliated vessels or studies are required to monitor interactions with marine mammals and protected species but in reality are limited to reporting direct interactions, dead animals, or entangled whales.

3.1 Mitigation Measures for Ship Strikes

When research vessels are actively sampling, vessel speeds are typically less than five knots, a speed at which the probability of collision with large whales and other marine mammals is negligible. When transiting between sampling stations, AFSC research vessels cruise, on average, at speeds up to 10 knots, with occasional speeds up to 13 knots when ships are running with fast tidal currents. This standard cruising speed is slower than marine mammals can swim so the risk of collisions and serious injury or mortality is very low. In addition, AFSC vessel captains and crew watch for marine mammals while underway during daylight hours and take necessary actions to avoid them. There are currently no Marine Mammal Observers aboard the vessels dedicated to watching for marine mammals to minimize the risk of collisions, although the large NOAA vessels (e.g., R/V *Oscar Dyson*) operated by the NOAA Office of Marine and Aviation Operations include one bridge crew dedicated to watching for obstacles at all times, including marine mammals. When research vessels are operating in areas and times when many marine mammals have been seen or are likely to be present, e.g., Seguam Pass during humpback whale migration, additional crew are often brought up to the bridge to monitor for whales. In such cases vessel captains may also reduce speed to improve the chances of observing whales and avoiding them. At any time during a survey or in transit, any bridge personnel that sights protected species that may intersect with the vessel course immediately communicates their presence to the helm for appropriate course alteration or speed reduction as possible to avoid incidental collisions, particularly with large whales.

3.2 Mitigation Measures for Protected Species during Research with Trawl Gear

3.2.1 Monitoring Methods

The Chief Scientist (also called the Field Party Chief on some cruises) or other designated member of the scientific party and vessel operator standing watch on the bridge visually scan for marine mammals and protected species prior to all trawl operations. Some sets may be made at night or during other limited visibility conditions.

3.2.2 Operational Procedures

- "Move-On" Rule. If any marine mammals are sighted around the vessel before setting the gear, the vessel may be moved away from the animals to a different section of the sampling area if the animals appear to be at risk of interaction with the gear. In many cases, the survey design can accommodate sampling at an alternate site. The Chief Scientist and the vessel operator will determine the best strategy to avoid potential takes based on the species encountered, their numbers and behavior, their position and vector relative to the vessel, and other factors. For instance, a whale transiting through the area and heading away from the vessel may not require any move, or may require only a short move from the initial sampling site, while a pod of dolphins gathered around the vessel may require a longer move from the initial sampling site or possibly cancellation of the station if the dolphins follow the vessel. After moving on, if marine mammals are still visible from the vessel and appear to be at risk, the Chief Scientist may decide, in consultation with the vessel operator, to move again or to skip the station in order to avoid any chance of interacting, catching, or injuring a marine mammal. In most cases, trawl gear is not deployed if marine mammals have been sighted from the ship in its approach to the station unless those animals do not appear to be in danger of interactions with the trawl, as determined by the judgment of the Chief Scientist and vessel operator. The efficacy of the "move-on" rule is limited during night time or other periods of limited visibility; although operational lighting from the vessel illuminates the water in the immediate vicinity of the vessel during gear setting and retrieval. In these cases, it is again the judgment of the Chief Scientist as based on experience and in consultation with the vessel operator to exercise due diligence and to decide on appropriate

course of action to avoid unintentional interactions. The Chief Scientist or designee will document significant interactions on the AFSC Research Protected Species Interaction Form (ARPSIF, see below).

- Once the trawl net is in the water, the Chief Scientist and the vessel operator continue to monitor the waters around the vessel and maintain a lookout for marine mammals as environmental conditions allow (as noted previously, visibility can be limited for various reasons). If marine mammals are sighted before the gear is fully retrieved, the most appropriate response to avoid incidental take is determined by the professional judgment of the officer on watch, in consultation with the Chief Scientist and vessel operator, as necessary. These judgments take into consideration the species, numbers, and behavior of the animals, the status of the trawl net operation (net opening, depth, and distance from the stern), the time it would take to retrieve the net, and safety considerations for changing speed or course. If marine mammals are sighted during haul-back operations, there is the potential for entanglement during retrieval of the net, especially when the trawl doors have been retrieved and the net is near the surface and no longer under tension. The risk of catching an animal may be reduced if the trawling continues and the haul-back is delayed until after the marine mammal has lost interest in the gear or left the area. The appropriate course of action to minimize the risk of incidental take of protected species is determined by the professional judgment of the Chief Scientist and the vessel operator based on all situational variables, even if the choices compromise the value of the data collected at the station. Encounters, actions, and outcomes will be documented on the ARPSIF.
- In operations in areas of southeast Alaska deploying surface nets where there may be significant concentrations of marine mammals, several additional measures have been employed to minimize the likelihood of marine mammal encounters, including no offal discard prior to or during the trawling at a station, trawling of short duration and seldom at night, avoidance of trawling near marine mammal rookeries or haulouts, and deployment of porpoise deterrent acoustical pingers attached on the trawl foot or head ropes. Acoustic pingers are underwater sound emitting devices that are intended to deter the presence of marine mammals and therefore decrease the probability of entanglement or unintended capture of marine mammals.
- Standard tow durations are 15-30 minutes for bottom trawls and up to one hour for some midwater tows, excluding deployment and retrieval time, which reduces the likelihood of attracting and incidentally taking protected species. These short tow durations decrease the opportunity for curious marine mammals to find the vessel and investigate. The resulting tow distances are typically one to two nautical miles, depending on the survey and trawl speed.
- The scientific crew will avoid dumping previous catches when the net is being retrieved, especially when the net is at the surface at the trawl alley. This practice of dumping fish when the net is near the vessel may train seabirds and marine mammals to expect food when the net is retrieved and may capture the protected species.
- AFSC scientists will limit their activity to prevent or minimize disturbance of protected species when operating vessels nearshore around harbor seal haulouts, Steller sea lion rookeries and haulouts, and other places where protected species are aggregated. Unless otherwise permitted, minimum approaches shall be not less than one km from the aggregation area.
- The Chief Scientist will document significant marine mammal sightings, direct interactions, and mitigation actions onto the ARPSIF or other data collection system. Forms will be forwarded to Survey Coordinators and then to the Division Directorate who will be responsible for compiling, reporting, and evaluation of the interactions. Specimens and images will be forwarded to the Marine Mammal Laboratory.

3.3 Mitigation Measures for Protected Species during Research with Longline Gear

3.3.1 Monitoring Methods

The vessel operator and Chief Scientist or other designated person crew stand watches to visually monitor the area of operation for marine mammals and other protected species during all longline operations. The objective is to avoid transecting or operating in areas with significant concentrations of animals.

3.3.2 Operational Procedures

- The "move-on" protocol may be implemented if protected species are present near the vessel and appear to be at risk of interactions with the longline gear; longline sets are not initiated if marine mammals or short-tailed albatrosses are detected and represent a potential interaction with the longline gear, as determined by the professional judgment of the Chief Scientist and vessel operator. The location of the sampling station may be altered to avoid potentially adverse interactions.
- Whales, particularly killer whales in the Bering Sea and sperm whales in the Gulf of Alaska, are commonly attracted to longline fishing operations and have learned how to remove fish from longline gear as it is retrieved. Such depredation of fish off the longline by whales can significantly affect catch rate and species composition of data collected by the survey. The effect of depredation activity on survey results has been a research subject for many years and many aspects are therefore recorded as part of normal survey protocols, including the amount of catch potentially depredated (percent of empty hooks or damaged fish), number of whales visible, behavior of whales, whale proximity to the vessel, and any whale/vessel interactions. Sperm whale depredation can be difficult to determine because they can alternate between diving deep to depredate the line and swimming at the surface eating offal (see below). The presence of sperm whales at the surface does not mean they are actively depredating the line
- The Alaska Longline Survey (for sablefish) uses bottom longline gear with a 16 kilometer long mainline. Sets are made in the morning if no whales or short-tailed albatross are present and the longline gear is allowed to soak for three hours before haul-back begins. Due to the length of the mainline and numbers of hooks involved, it takes up to eight hours to complete the haul-back. Whales have learned to associate particular sounds with longline operations and typically arrive on scene as the gear is being retrieved. Efforts have been made to avoid depredation by allowing the line to sink back down but such strategies have proved impractical as whales can wait in the area for days and fish caught on the line are then eaten by other demersal marine organisms. The only practical way to minimize depredation if whales find the vessel is to continue retrieving the gear as quickly as possible. As killer whales may also follow the survey vessel between stations, the station order has been altered to disrupt the survey pattern as a means to dissuade the animals from this behavior and to avoid continued interactions.
- AFSC longline gear include the use of Tori lines or other lines, flagging, buoys, and gear to reduce or eliminate the contact and capture of seabirds with the longline gear as it is set and retrieved.
- AFSC longline protocols specifically prohibit chumming before or during the longline setting operations (i.e., releasing additional bait to attract target species to the gear). However, longline surveys are conducted on contracted commercial fishing catcher/processor vessels and fish are processed as the longline is retrieved. Spent bait and processing offal are discarded away from the longline retrieval area which often serves to attract seabirds and marine mammals away from the longline. Due to the volume of fish caught with each set and the length of time it takes to retrieve the longline (up to eight hours), the retention of spent bait and offal until the gear is completely

retrieved is not possible and the attraction of birds and marine mammals to the vessel are unavoidable.

- AFSC scientists will limit their activity to prevent or minimize disturbance of protected species when operating vessels nearshore around harbor seal haulouts, Steller sea lion rookeries and haulouts, and other places where protected species are aggregated. Unless otherwise permitted, minimum approaches shall be not less than one km from the aggregation area.
- The Chief Scientist will document significant marine mammal sightings, direct interactions, and mitigation actions onto the ARPSIF (See below). Forms will be forwarded to Survey Coordinators and then to the Division Directorate who will be responsible for compiling, reporting, and evaluation of the interactions. Specimens and images will be forwarded to the Marine Mammal Laboratory.

3.4 Mitigation Measures for Protected Species with Gillnet Gear

3.4.1 Monitoring Methods

The monitoring procedures for gillnets are similar to those described for trawl gear.

3.4.2 Operational Procedures

- Gillnets are not deployed if marine mammals have been sighted on arrival at the sample site. The exception is for animals that, because of their behavior, travel vector or other factors, do not appear to be at risk of interaction with the gillnet gear.
- If no marine mammals are present, the gear is set and monitored continuously during net deployment. If a marine mammal is sighted during net deployment and appears to be at risk of interaction with the gear, then the gear is retrieved immediately.
- AFSC scientists will limit their activity to prevent or minimize disturbance of protected species when operating vessels nearshore around harbor seal haulouts, Steller sea lion rookeries or haulouts, and other places where protected species are aggregated. Unless otherwise permitted, minimum approaches shall be not less than one km from the aggregation area.
- The Chief Scientist will document significant marine mammal sightings, direct interactions, and mitigation actions onto the ARPSIF (See below). Forms will be forwarded to Survey Coordinators and then to the Division Directorate who will be responsible for compiling, reporting, and evaluation of the interactions. Specimens and images will be forwarded to the Marine Mammal Laboratory.

3.5 Mitigation Measures for Protected Species with Other Research Gear

- The AFSC deploys a wide variety of gear to sample the marine environment during all of their research cruises, including but not limited to plankton nets, oceanographic sampling devices, video cameras, high-frequency active acoustics, AUVs, ROVs, and a variety of less commonly used small nets. It is not anticipated that these types of gear or equipment would interact with protected species, or are used rarely, and are therefore not subject to specific mitigation measures. However, vessel operator and Chief Scientist and designated crew monitor for any unusual circumstances that may arise at a sampling site and use their professional judgment and discretion to avoid any potential risks to protected species during deployment of all research equipment.
- Specific to active acoustics, mitigating factors are inherent in the operational aspects of these fisheries acoustic systems. Operational frequencies are typically above the hearing range of most

marine mammals, the duty cycle is of short pulse length (milliseconds), and involve directed (narrow) beams - as opposed to mid-frequency seismic and military sonar with less directional and longer duration pulse lengths. This difference in exposure time is important because our current understanding is the marine mammals integrate hearing over short periods on the order of .05 -.2 seconds (e.g., for dolphins), so a longer pulse will be perceived as louder. Another feature of these frequencies is the much greater propagation losses due to increased absorption of sound, so range effects are highly diminished.

- AFSC scientists will limit their activity to prevent or minimize disturbance of protected species when operating vessels nearshore around harbor seal haulouts, Steller sea lion rookeries and haulouts, and other places where protected species are aggregated. Unless otherwise permitted, minimum approaches shall be not less than one km from the aggregation area.
- The Chief Scientist will document significant marine mammal sightings, direct interactions, and mitigation actions onto the ARPSIF (See below). Forms will be forwarded to Survey Coordinators and then to the Division Directorate who will be responsible for compiling, reporting, and evaluation of the interactions. Specimens and images will be forwarded to the Marine Mammal Laboratory.

3.6 Completing the AFSC Research Protected Species Interaction Form

The AFSC Research Protected Species Interaction Form (ARPSIF) has two pages. The first and main form contains information about the cruise, location, and species that were significantly interacted with during scientific operations. The sub-form or second page is for information when a specimen or specimens, live or dead, are captured and brought on board the vessel. Instructions on filling out the sub-form are presented in Section 4. The following are instructions for completing the main form of the ARPSIF:

The top box includes information about the cruise.

- Record the cruise name, cruise number (if available or appropriate), vessel name, Chief Scientist or recorder of observations, date of the interaction and the time of the interaction.
- Circle whether the date and time are recorded as Alaska Standard Time (AST - fall/winter), Alaska Daylight Time (ADT - spring/summer) or Coordinated Universal Time (UTC).

The second box includes information about the location of the interaction.

- Record the station number (if appropriate, the region or area, the latitude and longitude making sure to circle whether the location is in the Western (W) or Eastern (E) hemisphere.
- Clearly indicate whether you are using decimal degrees, decimal minutes, or degrees-minutes-seconds. Record the gear type, if appropriate, and the seafloor depth where the interactions occurs.

The third box is for information about the species.

- Record the type of interaction: Check whether the species was a close encounter, whether the species interacted or was caught by the gear, whether the species was captured, or indicate an “other” type of interaction.
- List the species name and the distinguishing characteristics that led you to identify the species. Record the number of animals involved in the interaction. Record the closest distance in meters; use 0 if the animal came on board.

- Circle Y (Yes) or N (No) for whether the vessel contacted the animal, whether the gear contacted the animal, whether the animal came on the vessel, and whether the animal was live when it was seen or came upon the vessel.
- Circle whether images were taken of the animal and list the numbers of the digital files. Be prepared to forward these images along with the completed forms.
- Circle Y or N if specimens were examined and whether samples were taken. Checking these two boxes will necessitate completing the Specimen Sub-Form.

The last box provides space to write your description of the interaction and the steps taken to avoid or reduce the extent of the interaction.

- Check if you waited for the animal to clear the intended area of work, whether you moved the station to avoid the interaction, whether you went ahead and conducted the work, or other mitigation action.

Return completed forms to the Division Directorate as soon as possible. In some cases, copies of the forms may need to be e-mailed to the Division Directorate or essential information transcribed into the body of an e-mail.

4. Handling Procedures for Incidentally Captured Marine Mammals

Marine mammals that are captured may be alive, seriously injured or dead. Handling measures are those taken to return a live animal to the sea or to process a dead animal. The primary directive for handling incidentally captured marine mammals is to maintain the safety of the crew and vessel. Before the cruise begins, the Chief Scientist will provide this protocol to the vessel operator, and they will discuss procedures for handling live and dead marine mammals before the cruise begins. Specific data collection requirements may vary somewhat by survey and species, but have been developed to be responsive to all relevant permits and legislation (e.g., MMPA, ESA, and Magnuson-Stevens Act [MSA]). Handling procedures have been adapted from the North Pacific Fishery Observer Manual.

4.1 Marine Mammals that are Living when Brought Aboard

4.1.1 Procedures and Safety

If a marine mammal is brought aboard that is alive (even if injured), the goal should be to return the animals to the water as rapidly as possible. Of paramount importance is the safety of the scientists and crew. Unnecessary crew should seek the safety of the house. Any actions taken to record data, collect samples, etc., on captured marine mammals should all be performed only after an evaluation of the risks involved to personal safety. Unacceptable human risk is not authorized in assisting marine mammals (e.g., scientists and crew are prohibited from entering the water to aid a marine mammal). A marine mammal may come aboard looking dead when it is in fact in shock and can suddenly wake up. This presents a serious safety risk to any science or vessel crew. Marine mammals can also carry microbes creating the risk off potential disease transmission and care should be taken if handling a marine mammal.

Incidentally captured marine mammals should be released from research gear and returned to the water as soon as possible with no gear or as little gear remaining on the animal as possible. Animals are released without removing them from the water if possible. If animals come on to the vessel, the crew should attempt to provide an unobstructed pathway for the animal to return to the sea, usually down the trawl ramp or transom opening.

Once the risks and safety issues have been properly assessed and managed, identify the animal to species if possible, assess the condition (noting any injuries), take pictures from different angles, and then release the animal and enter the data onto the AFSC Protected Species Interaction Form (ARPSIF). Data collection is conducted in such a manner as not to delay release of the animal(s) and includes species identification, sex identification (if genital region was visible), estimated length, disposition at release (e.g., live, dead, hooked, entangled, amount of gear remaining on the animal, etc.) and photographs. The Chief Scientist and crew collect as much data as possible from captured animals considering the disposition of the animal; if it is in imminent danger of drowning, it is released as quickly as possible. MMPA regulations and Letters of Authorization will allow NMFS to collect biological samples in accordance with section 109(h) of the MMPA for live/dead marine mammals (non-listed), or under a directed scientific research and enhancement permit.

If a large whale is alive and entangled in fishing gear, the vessel should immediately call the U.S. Coast Guard (USCG) at VHF Ch. 16 and the Chief Scientist should immediately report the observation with their Divisional Directorate. The Divisional Directorate will contact the Alaska Marine Mammal Stranding Network ((877) 925-7773 or (877) 9-AKR-PRD) and will report entangled whales to the regional NOAA Fisheries entanglement reporting hotline (1-877-767-9425) and to NMFS' Office of Protected Resources (301-713-8401).

AFSC Research Protected Species Interaction Form

Cruise Name _____ Cruise Number _____

Vessel Name_____ Chief Scientist/Recorder _____

Interaction Date ____/_____/_____ Time _____ ADT AST or UCT

Station Number_____ Region or Area _____

Latitude _____ °N Longitude _____ °W or E

Gear Type _____ Seafloor Depth _____ m ft fm

Type of Interaction: ☐ Close Encounter ☐ Gear ☐ Capture Other _____

Species Name _____

Distinguishing Characteristics _____

_____

No. of animals _____ Closest Distance_____ m

Vessel Contact? Y N Gear Contact ? Y N On Vessel? Y N Seen Live? Y N

Released Alive ? Y N Release Condition: ☐ Unharmed ☐ Injured ☐ Dead ☐ Unknown

Photos Taken? Y N Photo Number(s) _____

Specimen Examined? Y N (complete Specimen Form on Back) Sample Taken? Y N

Describe Interaction: _____

_____

_____

Describe steps taken to avoid interaction: _____

_____

☐ Waited to clear ☐ Moved Station ☐ Conducted Work ☐ Other _____

AFSC Research Protected Species Specimen Sub-Form

(See Manual for Instructions)

Cruise Name _____ Cruise Number _____

Vessel Name_____ Chief Scientist/Recorder _____

Interaction Date ____/_____/_____ Station Number _____

Species Name _____

Specimen Number _____of _____ (*For more than one animal, fill out additional forms*)

Length _____ cm m Length Type: ☐ Total ☐ Standard ☐ Curvilinear

Sex: ☐ Male ☐ Female ☐ Unknown Sample Collected: Y N

Sample No. _____ ☐ Whole Body ☐ Skin Tissue ☐ Deep Tissue ☐ Snout ☐ Skull

Sample No. _____ ☐ Whole Body ☐ Skin Tissue ☐ Deep Tissue ☐ Snout ☐ Skull

Sample No. _____ ☐ Whole Body ☐ Skin Tissue ☐ Deep Tissue ☐ Snout ☐ Skull

Photo Numbers: _____, _____, _____, _____, _____

External Observations

Wounds (type, recent, depth, location body, % body): _____

_____

Gear Damage (entanglement, hooking):_____

_____

Marks, Tags, or Brands (type, location, tag number)_____

_____

Animal Condition and Other Comments:

4.1.2 Strandings and Disentanglement

The National Marine Mammal Health and Stranding Response Program has developed protocols and guidance on responding to marine mammals that are stranded or in distress (including entangled animals), release protocols, and requirements for training. If an entangled animal is encountered, the appropriate NMFS Regional Marine Mammal Stranding Coordinator should be contacted as soon as possible (see Section 4.1.3). In some cases, vessel captains may be required by law to attempt disentanglement; it is the responsibility of a vessel captain to understand and carry out any legal requirements. If disentanglement is attempted, standard procedures on mitigating the risks to the animal and persons aboard the vessel should be followed. Such protocols are outside the scope of this document, but further information and copies of related materials can be obtained from:

Marine Mammal Health and Stranding Response Program, NMFS Office of Protected Resources,
Marine Mammal and Sea Turtle Conservation Division, F/PR2
1315 East-West Highway, Silver Spring, MD 20910
http://www.nmfs.noaa.gov/pr/health/
Phone: (301) 713-2322
Fax: (301) 427-2522

Stranding response resources and publications can be obtained from:
http://www.nmfs.noaa.gov/pr/health/publications.htm

4.1.3 Alaska Regional Stranding Coordinators

If you see injured, entangled, or dead whales, seals or sea lions in the water or on the beach, the most important information to collect is the date, location of stranding (including latitude and longitude), number of animals, and species. Please do not move or touch the animal. Contact information:

NMFS statewide 24-hour Stranding Hotline: (877) 925-7773 or (877) 9-AKR-PRD
Online Notification Form
Protected Resources Office (M-F 8:00-4:00):
Juneau: (907) 586-7235
Anchorage: (907) 271-5006
Alaska SeaLife Center Stranding Hotline: (888) 774-7325

NOTE: If the stranded animal is a walrus, sea otter, or polar bear, call the Marine Mammals Management Office of the U.S. Fish and Wildlife Service (USFWS) in Anchorage (1-800-362-5148 FREE, business hours) or the Alaska SeaLife Center in Seward (1-888-774-7325, 24-hrs). For more information, see https://alaskafisheries.noaa.gov/pr/strandings

4.2 Marine Mammals that are Dead when Brought Aboard

The ARPSIF is used to record specimen data from marine mammals (whole or part) caught in research gear. Specimen data can also include measurements, samples, and photographs of the animal.

4.2.1 Safe Environment to Collect Marine Mammal Specimens

If a marine mammal is taken and a specimen must be collected, ***check with the vessel or facility personnel to determine a safe location to collect specimens.*** A safe location is one that provides a safe place away from gear, physical, and environmental hazards. Before touching a marine mammal,

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

4.2.2 Photos

Use NMFS-issued or other cameras to take photos of marine mammal interactions and related data points such as tissue samples from dead cetaceans and evidence of fish damaged by depredation from sperm whales, killer whales, and/or sea lions.

Try to include distinguishing marks of the individuals in your photos; scars, scratches, and the saddle patches on killer whales are useful. Record photo file numbers of marine mammal interactions with the research gear and vessel on to the ARPSIF.

4.2.3 Collection of Pinniped Specimens

Snout Specimens (Except Walrus)

Do not collect parts or specimens from walrus. They are managed by the USFWS and are therefore not covered under the AFSC MMPA collection permit.

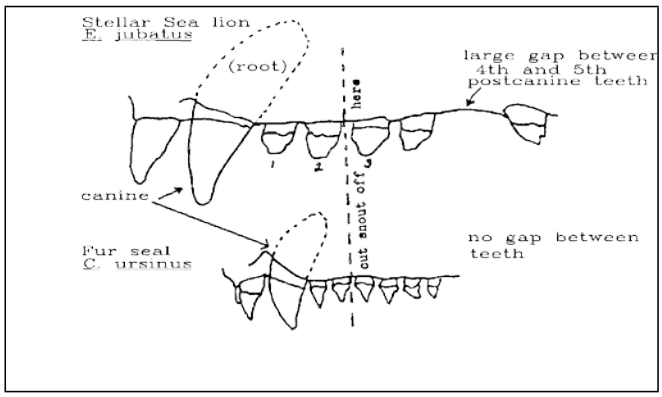

Figure 4-1: Canine Teeth of Sea Lions

When Steller sea lions, northern fur seals or elephant seals are caught, killed, or found dead in the fishing gear you must collect the upper snout of these animals, including the canine teeth (see Figure 4-1). Canine teeth of these animals are relatively easy to identify and are used to determine the animal's age. Steller 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. On bottom trawl surveys, snouts can be part of the voucher specimen collection system.

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

Preserve the snout by placing it in three plastic bags and freeze it. Place a bag and tag label inside the outer bag and another label on the outside. Write the species and length of the pinniped in the comments sections of the label. ***Never preserve the snout in formaldehyde***. This will destroy the area of the tooth needed for age determination.

Skull Specimens (Except Walrus)

Do not collect parts or specimens from walrus. They are managed by the USFWS and are therefore not covered under the AFSC MMPA collection permit.

Collecting the skull of smaller mammals 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.

If harbor, spotted, bearded, ribbon, or ringed seals are found dead, you should try to collect the entire head. Canine teeth of these smaller animals are difficult to differentiate between species, while the complete skull allows for positive identification. If you cannot collect the entire head, collect the snout, including upper canines. Follow the directions for preserving snout specimens (above).

4.2.4 Measurements of Dead Marine Mammals

All dead marine mammals captured during fishing operations must be measured. There are two acceptable methods for measuring marine mammals.

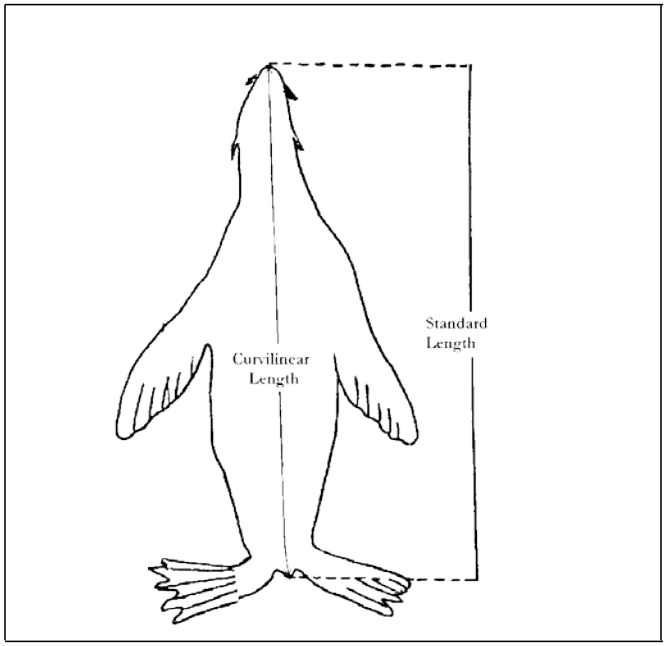

Figure 4-2: Sea Lion and Seal Measurements

Standard length - This is the preferred method of measurement. It 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 (see Figure 4-2). Record the length to the nearest centimeter. Do not record an estimated length; this field is for actual measurements only. Include length estimates in the comments field.

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 (see Figure 4-2). Record curvilinear length to the nearest centimeter. Do not record an estimated length; this field is for actual measurements only. Include length estimates in the comments field.

4.2.5 Determining Gender (Sex) in Marine Mammals

Sexing of marine mammals is not difficult (See Figure 4-3) and is based upon the morphological differences between male and female pinnipeds and cetaceans. In cetaceans, the distance between the anus and the genitals is greater in males. In pinnipeds, 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.

4.2.6 Tissue Collection from Dead Cetaceans

AFSC research and chartered NOAA vessels rarely take cetaceans, but tissue samples from cetacean specimens can undergo genetic analysis to identify cetacean stock structure. AFSC scientists that have access to cetacean carcasses and can easily collect tissue samples. The Marine Mammal Laboratory has asked that ***two tissue samples*** be taken**.** A small skin sample and a deeper skin sample. Tissue samples should be taken from all cetacean carcasses regardless of their condition.

Cetacean tissue samples should be collected with a sterile scalpel, with the sampler wearing a pair of nitrile gloves, and the tissue should be preserved in Dimethyl Sulfoxide (DMSO) when it is available. Otherwise, tissue samples should be preserved, in order of preference: frozen, in a vial with 95% ethanol, in a vial of saturated salt solution, or in a plastic bag covered with table salt. After recording length data for the ARPSIF, exchange your fishing gloves for the non-latex (nitrile) gloves. 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.

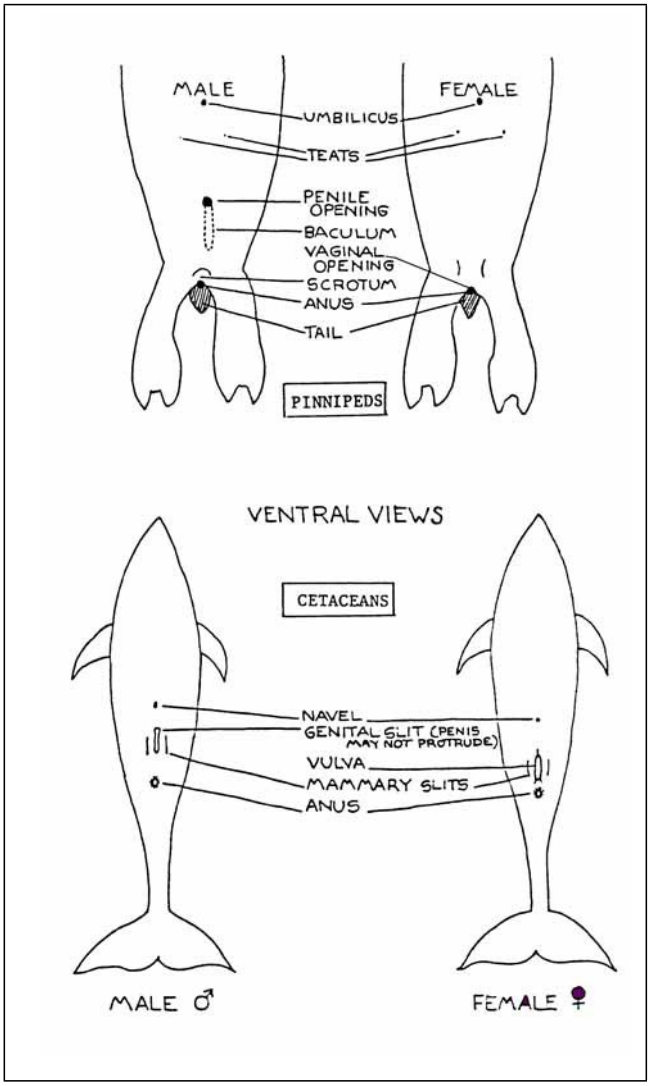

Figure 4-3: Determining Gender of Marine Mammals

Cetacean Skin Samples

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.

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 filled with preservative. Try not to take a large sample, the skin sample must fit in the vial and be completely covered by solution. Do not freeze samples in preservative fluid. Store them at room temperature.

Label each specimen vial with the specimen number, cruise number, vessel name, 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 the skin samples should all be listed as separate specimens, placed in separate vials, and labeled accordingly. Record interaction and specimen information on the ARPSIF. Include in the comments section how you obtained the specimen.

Cetacean Deep Tissue Sample

The deeper tissue samples will be analyzed for contaminant, fatty acid, and stable isotope profiles. The resultant chemical profiles will give us information not only about the animal itself but also about their prey.

To collect the deep 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 into the muscle layer, including the entire blubber layer, and include at least 1-inch depth of red muscle tissue.

To store this second tissue sample, wrap it in aluminum foil if some is available, or seal it in a ziploc bag (aluminum foil is preferred). Place this sealed bag or foil package inside another ziploc bag with a specimen label (list your cruise number, vessel name, date, and haul or station number). ***This sample should be frozen and kept frozen to the best of your abilities during transit.*** Record specimen number and type on the ARPSIF.

4.2.7 Entering Specimen Data on the Specimen Sub-Form

The back of the ARPSIF is the Specimen Sub-Form. Much of the interaction information should have been collected and entered by the Chief Scientist.

- Enter the pertinent cruise, vessel, and station information on the header section of the Sub-Form. Enter the species name of the specimens to be sampled.
- Use more than one Sub-Form if more than one specimen is encountered at the station or during the haul.
- Enter the specimen number (e.g. 1 of 1 or 2 of 3 for the second of three specimens).
- Measure the specimen as described above and enter the length, circle the length unit, and check the length type.
- Record the sex of the specimen (see above and Figure 4-2).
- Each specimen may have more than one sample type, enter the sample number (use voucher numbers on RACE Bottom Trawl Surveys) and check the sample type as described above.
- Enter the numbers of the digital files taken with the camera. Note these file number can be accessed through the regular survey collection process (as in the RACE photo database) or sent to the survey coordinator.
- Record if any wounds are present. Describe the type, how recent, depth of the wound, percent of body.
- Record any gear damage such as entanglements by nets or line or hook damage. Record the depth and location of any hook damage.
- Record and describe any brands, tags, or marks. Photograph tags, marks, or brands.
- Record any other information on animal condition, especially vitality or changes in behavior.

5. Seabird Handling Procedures and Data Collection

Seabirds may be incidentally caught in most gears and seabirds may come aboard during the nighttime, especially when attracted to lights. While it is highly likely birds will be dead in nets, especially those that are towed, it is possible that living birds maybe caught in a net as well as in some other gear types, especially hook and line gears. As with marine mammals, maintaining personal safety is of the greatest importance when handling a captured seabird. Potential injuries include bites and scratches from a live bird and potential diseases on both living and dead birds. Be especially careful to protect your eyes when handling live birds.

The AFSC has a salvage permit from the USFWS for birds incidentally caught during AFSC fisheries research activities (Number MB40092B-0). Make sure that copies of this permit accompany the survey documents. The Chief Scientist or designee will complete the ARPSIF for any interactions with protected species and seabirds.

5.1 Seabird that is Brought Aboard Alive

Consider safety when processing live birds. If a live bird is captured by any research gear, then first disentangle or unhook the bird if hook and line. **At night, especially when anchored near the shore, turn** off **unnecessary lights**. Each morning check for stranded birds on the deck, especially under tables and in dark areas.

If the bird is **not** listed under the ESA, then use the following procedures and complete the Sub-Form of the ARPSIF:

- Identify the bird if possible to species and sex.
- Photograph the bird. If possible take the following pictures: overall dorsal, overall ventral, close up of head/beak, bands or tags, and any wounds, marks, or damage.
- Describe condition of bird including any damage (wounds, scars).
- Check for presence of bands or tags and note number and location of any.
- Comment on response of bird after release (e.g., did it fly immediately).

If a live bird is brought aboard that is federally protected under ESA (i.e., short -tailed albatross, spectacled eider, or Steller's eider), then use the following protocol.

- Immediately try to contact NMFS, USCG, or USFWS. They will contact an expert to give you advice in the handling and release of the bird.

  NMFS: (808) 944-2200

  USCG:
  08240.0 KHz (Daytime ITU Channel 816)
  12242.0 KHz (Daytime ITU Channel 1205)
  04134.0 KHz (Nightime ITU Channel 424)

  USFWS: ???

- If caught in hook and line, stop vessel to reduce tension on the line and bring bird aboard using a dip net.
- Wrap the bird's wings and feet with a clean towel to protect its feathers from oils or damage.

- Remove any entangled lines from the bird and determine if the bird is dead or alive. If dead, follow procedure for processing dead birds. If alive, place bird in a safe, enclosed place and immediately contact NMFS, USCG or USFWS. Determine if the bird is lightly, moderately, or deeply hooked (see description below) and attempt to remove the hook using the protocols provided.
- If bird is deeply hooked, keep bird in a safe, enclosed place until further instructed. Do NOT release the bird.
- If bird is lightly or moderately hooked, remove hook by cutting the barb and backing hook out.
- Allow bird to dry for 1/2 hour to 4 hours in a safe, enclosed place. Refer to Release Guidelines.
- Record information on the ARPSIF.

Record Bird Condition:

- 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.

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

- Bird can stand and walk using both feet.
- Bird can flap both wings and there is no apparent drooping of the wings.
- Bird is alert, active, holds it head up and reacts to stimuli (motion, light, etc.)
- Bird is not bleeding freely.
- Wing and tail feathers have not been lost and are in good condition.
- Bird is repelling water from its feathers.
- If any of these conditions are not met, the bird cannot be released.

5.2 Seabird that is Brought Aboard Dead

- Identify the bird if possible to species and sex.
- Photograph the bird. If possible take the following pictures: overall dorsal, overall ventral, close-up of head/beak, bands or tags, and any wounds, marks, damage.
- Describe condition of bird including any damage (wounds, scars).
- Check for presence of bands or tags and note number and location of any.
- If the bird is a short-tailed albatross, spectacled eider, Steller's eider, or other albatross, retain and freeze the bird, assuming it is fresh (i.e. caught by the survey and not dead for other reasons).
- For these species, prepare a label with bird species, vessel name, date, location, and ID number and place bird and label in large bag and freeze it.
- If the bird is a short-tailed albatross, spectacled eider, or Steller's eider, contact your Divisional Directorate. They will contact Shannon Fitzgerald, the AFSC Seabird Biologist who will contact the USFWS for disposition of the bird.

- Record the information on the ARPSIF and forward to the Survey Coordinator and Division Directorate.

5.3 Bird Storms

In some rare conditions vessels will experience a “bird storm” where the vessel is surrounding by flying birds, many of which come aboard. For safety reasons, stay inside the vessel when this is occurring. Some birds weighing several pounds can fly at over 50 mph and could potentially cause serious injury to crew if struck. After the storm is over, return birds to the sea as quickly as possible. If all birds are the same species use one or two individuals to determine species. If more than one species is involved, try to get a rough idea of the proportion of each species. Save a few individuals of any dead birds, but do not collect all dead birds (which could total quite a few). Return all birds not collected, dead or alive, to the sea. Follow protocols noted above for handling of live birds and collection of representative specimens.

6. ESA-listed Fish Handling Guidelines and Data Collection

The AFSC considers the adverse impacts of its various research activities on ESA-listed salmonids to be very small in magnitude, dispersed in time and geographic area, and likely to have minimal impact on all ESUs. In contrast to these minor adverse effects, AFSC research on Pacific salmon has beneficial impacts on both ESA-listed and non-listed ESUs through its contribution to sustainable fisheries management and monitoring changes in the marine environment important to the recovery of these species.

6.1 Handling of Salmonids

Salmonids will be handled with normal catch processing protocols for the various surveys. For most surveys, salmonids will be identified, weighed, sexed, and measured. They will be discarded with normal procedures. For studies and surveys targeting salmonids or salmonids as species of interest, additional sampling may occur for coded wire tags and genetic samples. Data will be recorded as per normal collection protocols.

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