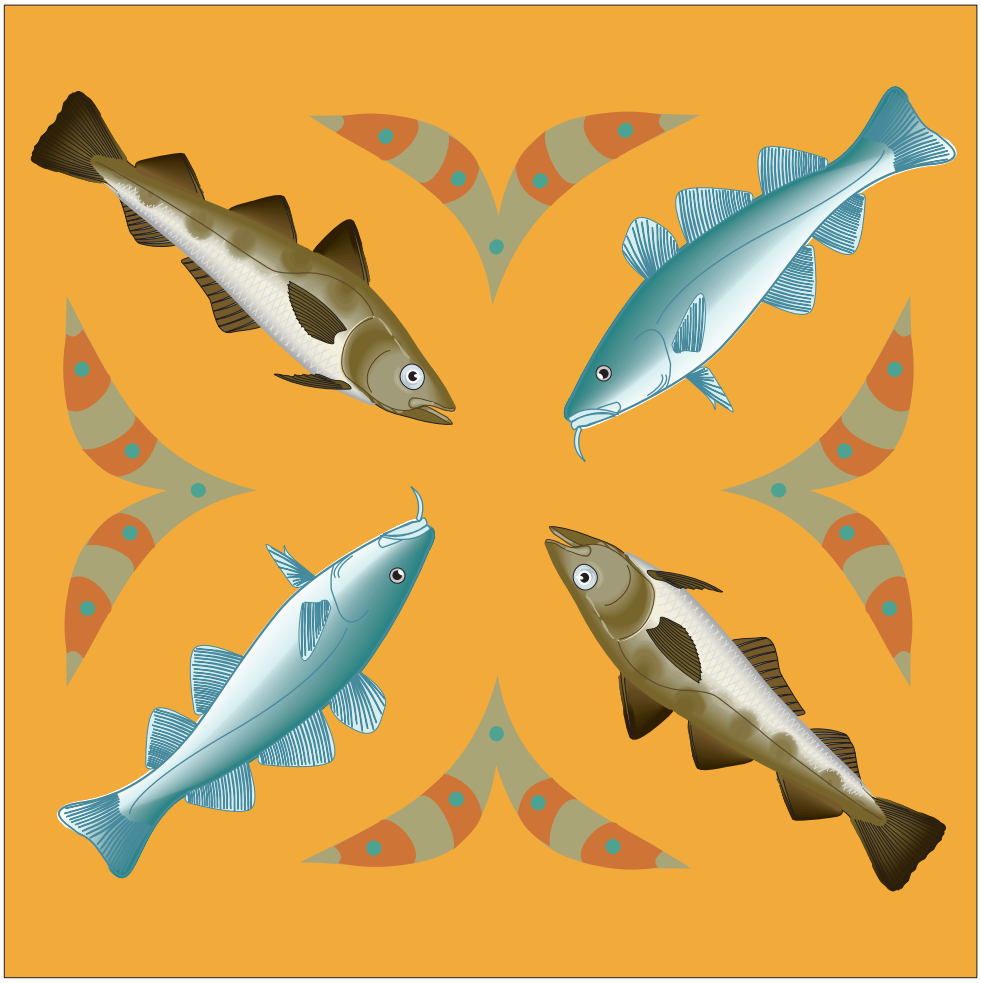
# NORTH PACIFIC GROUNDFISH OBSERVER PROGRAM

# 2005 OBSERVER SAMPLING MANUAL



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
ALASKA FISHERIES SCIENCE CENTER
NORTH PACIFIC GROUNDFISH OBSERVER PROGRAM

NOVEMBER 11, 2004

**OBSERVERS: KEEP THIS MANUAL THROUGHOUT THE 2005 FISHING YEAR!**

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# INTRODUCTION

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## The Observer Program

The North Pacific Groundfish Observer Program (NPGOP) collects, maintains, and distributes data for scientific, management, and regulation compliance purposes in the Gulf of Alaska and the Eastern Bering Sea. The NPGOP is a component of the Alaska Fisheries Science Center (AFSC) of the National Marine Fisheries Service (NMFS). The parent agency for NMFS is the National Oceanic and Atmospheric Administration (NOAA), and NMFS is often referred to as NOAA Fisheries.

The NPGOP deploys over 300 certified groundfish observers each year on a variety of commercial fishing vessels. These observers, in turn, provide the Program with over 37,000 data collection days annually.

An observer's job is unique, challenging and constantly changing. This manual is an indispensable tool both for trainees and experienced observers. It should be used as both a text book for trainees and a field reference manual for observers at sea. It contains the background, procedures and protocols on how to collect the wide variety of information requested, and some ideas on how to cope with specific situations. The methods described in this manual have been tested and modified throughout the fifteen years of the domestic Groundfish Observer Program and will continue to be refined with observer feedback and suggestions.

| | |
|---|---|
| ABC- Acceptable Biological Catch | M-SFCMA- Magnuson-Stevens Fishery Conservation and Management Act |
| ADF&G- Alaska Department of Fish and Game | MSY- Maximum Sustainable Yield |
| AFA- American Fisheries Act | NMFS- National Marine Fisheries Service |
| AFSC- Alaska Fisheries Science Center | NMML- National Marine Mammal Laboratory |
| ALT- Alaska Local Time | NOAA- National Oceanic and Atmospheric Administration |
| BBL- The Bird Banding Laboratory of the U.S. Geological Survey | NORPAC- North Pacific database (Observer Program database) |
| BSAI- Bering Sea & Aleutian Islands | NPFMC- North Pacific Fishery Management Council |
| C/P- Catcher/Processor | NPFOTC- North Pacific Fisheries Observer Training Center |
| CDP- Community Development Plan | NPGOP- North Pacific Groundfish Observer Program |
| CFR- Code of Federal Regulations | NSR- Non-Specific Reserve |
| CPR- Cardiopulmonary Resuscitation | OFL- Over Fishing Limit |
| CPUE- Catch Per Unit Effort | OHF- Observer Haul Form |
| DCPL- Daily Cumulative Production Logbook | ORC- Observer Routing Code |
| DMSO- Dimethyl Sulfoxide | OTC- Official Total Catch |
| EEZ- Exclusive Economic Zone | OY- Optimum Yield |
| EPIRB- Emergency Position Indicating Radio Beacon | PFD- Personal Floatation Device |
| FCC- Federal Communications Commission | PLT- Pacific Local Time |
| FMP- Fishery Management Plan | PRR- Product Recovery Rate |
| FUS- Fully Utilized Species | PSC- Prohibited Species Cap |
| GOA- Gulf of Alaska | PSQ- Prohibited Species Quota (for MSCDQ) |
| GPS- Global Positioning System | RBT- Random Break Table |
| IFQ- Individual Fishing Quota | RKCSA- Red King Crab Savings Area |
| IPHC- International Pacific Halibut Commission | RST- Random Sample Table |
| IR/IU- Improved Retention/Improved Utilization | RSW- Refrigerated Sea Water |
| IRCS- International Radio Call Sign | SSB- Single Side Band radio |
| LOA - Length overall | TAC- Total Allowable Catch |
| MARPOL- Marine Pollution | USCG- United States Coast Guard |
| MRA- Maximum Retainable Amounts (was Maximum Retainable Bycatch) | VHF- Vessel Haul Form (or Very High Frequency radio) |
| MSCDQ- Multi-Species Community Development Quota | |

**Figure 1-1 :Commonly Used Abbreviations and Acronyms**

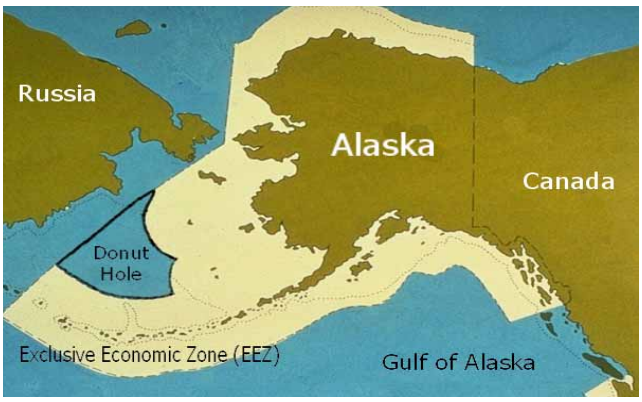
## History of the Fishery

Commercial fishing has occurred in the eastern Bering Sea since the early 1930s. Over time, the countries harvesting this resource have changed, as have the target fisheries. Prior to the 1960s, Japan and Russia dominated this industry, focusing predominantly on yellowfin sole. In the mid-1960s a decline in the flatfish stocks caused the Russians and Japanese to move toward walleye pollock as their main target species. During the 1960s and 1970s other countries, including Taiwan, the Republic of Korea, and Poland, began fishing in these profitable waters.

In 1973 NOAA Fisheries began placing observers on foreign vessels operating off the Northwest and Alaskan coasts, creating the North Pacific Foreign Fisheries Observer Program. The primary goals of these observers were to determine bycatch rates of Pacific halibut in groundfish catches and to verify catch statistics in the Japanese crab fishery. Later, observers collected data on bycatch of other commercially important species including king crab, Tanner (snow) crab, and salmonids.

The flatfish and pollock fisheries remained largely foreign-harvested, off-shore fisheries until passage of the Magnuson Fishery Conservation and Management Act in 1976. This act was re-authorized in 1996 as the Magnuson-Stevens Fishery Conservation and Management Act. With this Act, the U.S. declared management authority over fish resources within 200 nautical miles from their shores - the Exclusive Economic Zone (EEZ). The goals of the Magnuson Act were to Americanize the fishery, implement fishery management plans, and to maintain optimum yield (OY) of the resource while rebuilding depleted groundfish stocks.

Additionally, the Magnuson Act established eight regional councils to manage the nation's fisheries. The North Pacific Fishery Management Council (the Council) has jurisdiction over the 900,000 square mile EEZ off the coast of Alaska.




When the Magnuson Act was passed, American fishers had little knowledge how to harvest or process the groundfish species found in the North Pacific. To encourage investment in this resource, the American Fisheries Promotion Act was passed in 1980. This act required fish quotas be given preferentially to nations which contributed heavily to the development of the U.S. fishing industry. Instituting joint-venture fisheries, with American catcher vessels delivering their catch to large foreign floating processors, allowed foreign countries to continue receiving their quota, while developing the domestic fleet. By 1991 all foreign commercial fishing within the 200 mile EEZ was terminated, leaving an entirely domestic fishery.

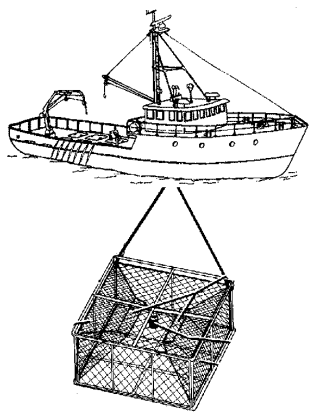
## The Fishery Today

As the fisheries changed, so did the Observer Program. The Council implemented the domestic NPGOP to gather data needed to manage the wide variety of fisheries off the coast of Alaska. Observer coverage requirements for vessels are now based on vessel size and gear type, and observer coverage at plants is based on the amount of groundfish delivered each month. Vessels and plants arrange for observer coverage through a NMFS-permitted observer provider, and the vessel or plant pays for the cost of the observer. The Federal government covers the costs associated with the operation of the Program, observer certification training and briefing, observer debriefing and management of the data.

## Vessel and Plant Descriptions

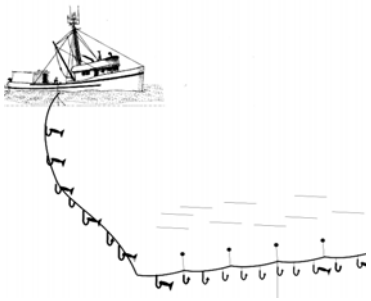
The fishery today is harvested by a variety of vessel types, but most observer trips occur on one of three types: pot, longline or trawl. Within these three vessel types, there are catcher vessels and catcher processors (C/Ps). Catcher vessels are generally small boats that do not process their catch. Fish are caught, brought aboard, and stored in tanks until the vessel delivers to a processing plant. The majority of catcher boats use refrigerated sea water (RSW) to keep their catch fresh until delivery, but a few use ice. Catcher processors have factories and freezers aboard. They make a preliminary or finished product, and store it in large freezer holds. It is the ability to freeze fish that differentiates C/Ps from catcher boats, and a vessel which freezes whole fish is still considered a C/P.

**Pot Vessels**



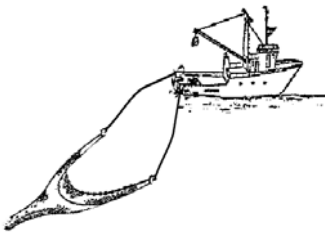
Pot vessels fish with fixed steel traps, or "pots." The pots work much the same way as a lobster pot. The fish enter the pot in search of bait, and become trapped inside. Most pot vessels are catcher boats, but there are a few C/Ps, producing mainly headed-and-gutted product. Pot boats are used to harvest Pacific cod and, to a much lesser extent, sablefish (black cod). Observer coverage aboard pot vessels is dependent upon the number of pots retrieved. These vessels must carry an observer during 30 percent of their pot retrievals each quarter.

**Longline Vessels**



Longline vessels fish with fixed hooks strung along a ground line. The longline can be several miles long, and can have thousands of baited hooks attached. The longline fleet is composed of both catcher boats and C/Ps. Longliners target Pacific cod, Pacific halibut, sablefish, turbot and some rockfish species. Longline vessels 125' or greater in length overall (LOA) are required to carry an observer whenever they are harvesting groundfish in the EEZ off Alaska. Longliners between 60-124' LOA must carry an observer for 30 percent of their fishing days for each quarter.

**Trawl Vessels**



Trawlers fish with a net towed behind the boat. The net is shaped like a large funnel. At the end of this funnel is a bag, called the codend, which collects fish caught by the net. Trawlers make up the largest portion of vessels which carry observers, and include both C/Ps and catcher vessels. They participate in all groundfish fisheries and have the same observer coverage requirements as longline vessels.

**Processing Plants**

Processing plants accept fish from catcher vessels, and make preliminary or final products. Catch is transferred from boats to the plant using a large pump, or Trans-Vac. There are two types of processing plants, shoreside and floating. Shoreside processors are on land and floating processors, or "floaters," are anchored vessels which do not fish for themselves, but rather accept deliveries of pumped fish. In open-access fisheries, processing plants that process 1,000 metric tons or more of groundfish per month must have an observer present each day they process fish. Plants that process 500-1,000 metric tons each month must arrange for observer coverage for 30 percent of those days. Processing plants may obtain fewer observer coverage days during the months when the pollock or Pacific cod fisheries close.

## Management Plans

Management programs have been implemented to allocate quotas among areas, seasons, gear types, vessel types, cooperatives and even individual fishers. Observer data are used in part for assessing, allocating and monitoring these fish stocks and quotas. This information is used by the Council to write fishery management plans (FMPs) for each of the

commercially important species it manages. FMPs must comply with standards laid out in the Magnuson Act in that they must:

- prevent overfishing,
- achieve optimum yield,
- achieve efficiency and utilization of the resource,
- base management on the best scientific data available,
- manage the fishery throughout its range, and
- be fair to all fishers.

### Time-Area Closures

Time and area closures are used in all groundfish FMPs. These are closures which pertain to specific management areas over specific dates. A time and area closure may be used to protect a different resource, or to stop directed fishing in an area. An example of some of these time-area closures are shown in Figure 1-2 on page 1-5. FMPs call for an annual total allowable catch (TAC) to be set for each species, and parts of the TAC are often allocated to particular management areas or user groups. Once an allocation is reached, the area or a specific group's access to this area closes, while the fishery may remain open in other areas. Once the entire TAC has been harvested, the fishery closes. In open access fisheries, removal amounts for each statistical area are calculated using mostly observer data.

**The data you send to NMFS inseason are immediately used by the Regional Office for fishery management purposes.**

Area closures can be mandated by other management measures, such as the Marine Mammal Protection Act (MMPA), which closes areas surrounding critical sea lion and walrus habitat at certain times of the year, and the Red King Crab Savings Area (RKCSA), which closes this area to bottom trawling when female red king crab are gravid. Provisions in our FMPs, such as the Vessel Incentive Program (VIP), encourage trawl fishers to reduce their catch of Pacific halibut and red king crab (see page 4-22). Observer data is used to determine the catch rates for each vessel. Each vessel's bycatch affects the fishery, so those with bycatch rates beyond established limits risk prosecution for exceeding them.

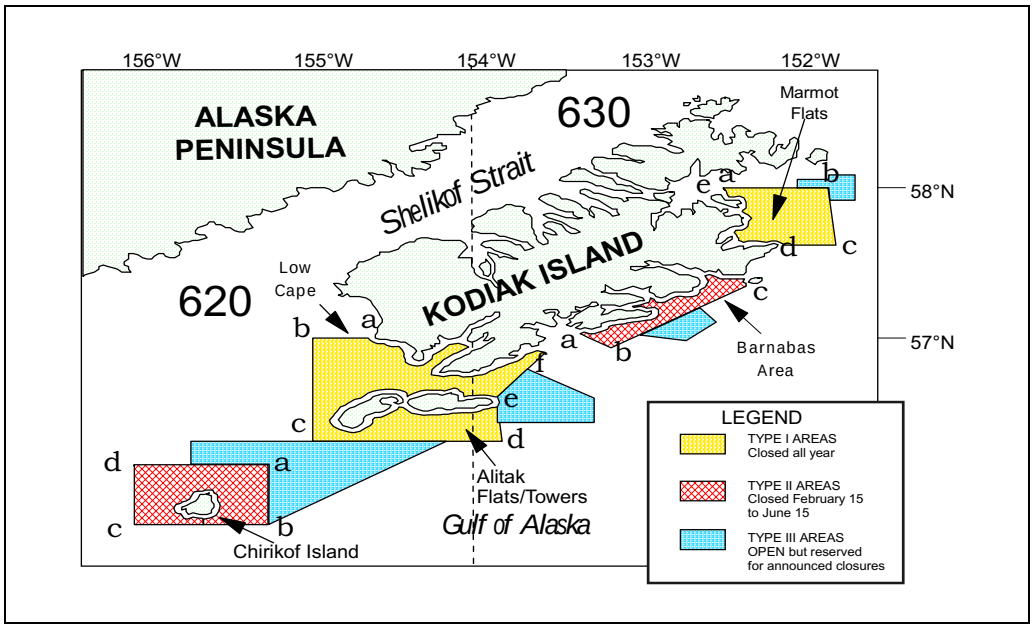



**Figure 1-2 Example of Kodiak Island Time-Area Closures for Non-pelagic Gear**

### Restricted Access Fisheries

Most groundfish in the North Pacific is harvested in open-access fisheries. These fisheries can be targeted until the entire quota is caught and anyone with a Federal Fishing Permit may participate. License Limitation Programs restrict the number of participants in some fisheries. The Individual Fishing Quota (IFQ) program gave permits to fish sablefish and Pacific halibut to fixed gear fisherman and vessels which had historically harvested these species. This reduced the number of vessels targeting these species, and lengthened the amount of time over which they are harvested. The Multi-Species Community Development Quota (MSCDQ) program encourages Western Alaskan communities to become involved with the fishing industry by giving them a percentage of the TAC of all groundfish species. Most of these communities do not have the equipment to harvest and process groundfish yet, so they sell their quota to vessels and processors already involved in open-access fisheries. This arrangement has allowed some communities to purchase fishing vessels or shares in fishing companies. Vessels which participate in the MSCDQ program have to follow strict regulations and be part of a NMFS approved Community Development Plan (CDP). Catch estimates on MSCDQ vessels are based primarily on observer data, and additional training is needed to observe during these fisheries.

**AFA lead observers and MSCDQ observers are called "Level 2" observers. They must be experienced groundfish observers and have had additional training.**

Congressional legislation has also initiated programs which limit the number of vessels targeting a species. The American Fisheries Act of 1998 (AFA) limited the number of C/Ps targeting Bering Sea/Aleutian Island (BSAI) pollock, and created an opportunity for vessels targeting these fish to form cooperative (co-op) agreements. The AFA also established new allocations for BSAI pollock. This TAC is divided among the inshore and offshore components of the fishery. The inshore TAC is further allocated to individual catcher vessel co-ops. Catcher vessels belonging to these co-ops must deliver at least 90 percent of their catch to the co-op processor.

Although not required under the AFA, catcher processors formed a co-op in 1999 and motherships formed a co-op in 2000. These co-ops assign each vessel part of the pollock TAC, much like the IFQ system. Catcher processor vessels and motherships regulated by the AFA carry two observers, one of whom must have additional training to observe aboard these vessels.

### Other Management Agencies

The FMPs for some species delegate the management to other agencies. The commercial king and Tanner crab fisheries are managed by the Alaska Department of Fish and Game (ADF&G), with Federal oversight. The ADF&G has a Shellfish Observer Program, which collects catch and bycatch data from these fisheries. The fishery for Pacific halibut is managed by the International Pacific Halibut Commission (IPHC), although the Council can also develop regulations to manage this fishery. Groundfish observers are occasionally deployed on halibut IFQ vessels.

## Certification and Endorsements

Certification and endorsements for observers are granted and maintained by successful completion of four steps: 1) training, 2) demonstrating proficiency during each cruise, 3) receiving satisfactory performance evaluations and 4) briefing and being deployed at least once every 18 months.

### Training

A three-week job training is required of all new observers, and for prior observers who have not been to sea in more than 18 months. Training can take place at either the NPGOP in Seattle or at the North Pacific Observer Fisheries Training Center (NPFOTC) in Anchorage. The NPFOTC is part of the University of Alaska-Anchorage and is funded by the Alaska SeaGrant program. The NPFOTC works closely with Observer Program staff to provide consistent training at both locations.

**Trainees must be sponsored by a NMFS-permitted observer provider. A list of these companies can be found on page A-74.**

The purpose of the training is for trainees to gain an understanding of how to collect fishery data which can be used to manage the groundfish stocks in Alaska. Trainees learn and demonstrate the proper techniques

of data collection and recording through a variety of in-class and take home practices. Most importantly, trainees learn how to work efficiently under the strenuous conditions of commercial fishing vessels.

Specific requirements for the successful completion of the training course will be provided by your trainer. In general, the training consists of an intensive overview of commercial fishing, sampling protocols, safety at sea, and fish, invertebrates, birds, and mammals of the North Pacific. Trainees must pass a series of tests with a minimum score of 75 percent. Additionally, several homework assignments will be given which must be completed accurately and on time. Through the exams and homework trainees will demonstrate their understanding of, and ability to apply, the following concepts:

- observer priorities and duties,
- methods of independent catch estimation,
- proper recording of catch data,
- methods of sampling and recording species composition data,
- fish identification and use of dichotomous keys,
- gender determination and measurements of fish and crab,
- procedures for collection of age structures,
- applications of volume, weight, density, proportioning, and extrapolation calculations, and
- safety and survival skills.

In order to receive a certification training endorsement, trainees must attend and participate in every training session, pass exams, complete all the homework and make any corrections requested by the trainer. Trainees must also pass a safety test including an on-land and in-water test of immersion suit and life raft use. Additionally, trainees must be able to demonstrate to the instructor that they have the attitude and ability required to perform a difficult job independently, and to act professionally in stressful situations.

## Deployment

The logistical arrangements of your travel, assignments, and debriefing appointments are made by your company. Often, you will receive your assignment prior to leaving your training location and you may be deployed directly after passing the training class. During one of your last days of training, you will be issued some of the equipment needed to complete your sampling tasks. You are responsible for providing your personal gear. NMFS will supply your sampling gear.

**Personal Equipment**

Observers are responsible for providing their own raingear. This is your first and most important protection from wind, spray, inclement weather and fish slime. Your raingear should be heavy, brightly colored PVC, lined with cotton for strength and warmth. Grundens, Cofish International, Helly-Hansen and Eriksens are brands which are frequently used by fisherman and observers. You will need a hooded jacket and “bibs.” Dark colors should be avoided, since they are difficult to see on deck, especially at night. You will also need several pairs of gloves and glove liners. Fishing supply stores stock a variety of gloves of different weights and materials. You should choose a pair that are heavy enough to withstand harsh conditions, but flexible enough to allow you to write. Waterproof boots should be warm and sturdy, with a non-slip sole. The Xtra-tuff brand is the standard boot for Alaskan fisherman, processors and observers.

A list of clothes and belongings you may want to bring to sea is provided in Figure 1-3. If you have questions on what to bring to sea, ask prior observers, or NMFS and NPFOTC staff. Generally, first time observers bring too much with them. In one contract you are likely to be on four airplanes, four vessels, and in any number of cabs and hotel rooms. Throughout this you will need to carry both your personal and sampling gear! Rather than taking a lot of clothes, focus on bringing items which can be layered. Working on deck or in the factory of a vessel in Alaska is cold and wet, and layering will help protect you from the elements. Synthetic or wool materials are recommended and will keep you warmer than cotton. Inexpensive clothes are also recommended, since the smell of fish is difficult to remove from fabric. While you are at sea, you may store extra belongings at NMFS in Seattle (no storage is available in Anchorage). Please note that this service is only for observers while they are at sea, and cannot be used between contracts.

This list of items is approximately what you will need for a 60-90 day contract. The amount and type of heavy clothing will depend on your personal preferences, the vessel type you are assigned to, and time of year you are working. Items you bring should be old, or inexpensive, since the smell of diesel and fish is difficult to remove. Items which **can** be hand washed are recommended, but items which are so delicate that they **must** be hand washed should be avoided.

### Work Clothes

**Raingear-** bib overalls and jacket with hood (1 set)
**Boots-** Xtra-tuff brand highly recommended (1 pair)
**Boot insoles-** wool or felt insoles made for Xtra-tuffs (2 pairs)
**Gloves-** heavy rubber gloves- strong enough for work, but flexible enough to write (6-8 pairs)
**Glove liners-** polypropylene, wool, or poly/cotton blend (3-5 pairs)
**T-shirts-** cotton, polypropylene, or light wool (3 shirts)
**Sweatshirts-** cotton or polypropylene fleece (3- two for work, one for inside)
**Pants-** cotton or polypropylene sweat pants, or wool work pants (2 pairs)
**Shorts-** to sleep in (1 pair)
**Jeans-** a pair of pants for wearing in town (1 pair)
**Sandals-** flip-flops for shower use (1 pair)
**Hiking boots-** lightweight but waterproof boots for town (1 pair)
**Teva or Birkenstock type sandals-** for wearing inside on the vessel (1 pair)
**Long underwear-** polypropylene or other thermal (2 pairs)
**Socks-** wool, polypropylene, or blend (5 pairs)
**Hat-** wool or polypropylene cap that will fit under a hood (2 hats)
**Gloves and hat for town**, also fleece ear and neck bands are useful (1 each)
**Jacket-** any warm jacket for town that will resist rain and heavy winds (1 jacket)

* If you are purchasing a jacket to wear at sea, Stormy Seas, Mustang or another brand of float coat is suggested. This will allow you to wear a PFD while maintaining your range of motion.

### Other Items

**Sleeping bag-** lightweight, but warm
**Pillowcase-** some observers carry a flat sheet with them as well
**Towel-** medium sized terry towel (1-2 towels)
**Toiletry articles**- these are available in port or in ship stores but are often expensive
**Seabag-** an old or inexpensive duffel bag, many observers use Army surplus duffles
**Padlock-** for your duffel, also useful if there is a locker on the vessel
**Backpack-** suitable as an airline carry-on bag for fragile items and useful as a day-pack in town
**Glasses or contacts-** bring an extra pair
**Cash or traveler's checks-** observer providers often provide cash advances, many ports do not have an ATM
**Credit card** and/or pre-paid calling card
**Camera** and film
**Sewing kit-** needle, thread, and safety pins. Duct tape is also useful, and common on vessels.
**Watch** and /or travel alarm clock
**Seasickness medication-** Bonine and Dramamine are common brands used by observers
**First Aid kit-** small, you may want some cold medicine, pain reliever, etc... and any prescription medications
**Vitamins and/or nutritional supplements-** especially if you have a restricted diet (i.e.: vegetarian)
**Stationary**, envelopes, stamps, and a small address book
**Books** and/or a journal
**Music** and Discman/Walkman
**Water Bottle**- for keeping water near your bunk

**Figure 1-3 :List of Personal Gear**

**Sampling Gear**
Sampling and safety equipment is supplied by NMFS. The gear you receive may not be new, but it will be in good working order. It is your responsibility to maintain your gear and return it in the best condition possible. You may be charged for misuse or neglect of sampling gear. It is best to make cleaning and caring for your gear part of your everyday routine, since you will rely on this equipment to do all of your work. Some suggestions on how to care for your gear are:

1. Keep your gear in a secure place aboard the vessel. Avoid leaving gear on the vessel's deck. If there is no alternative to leaving it out on deck, be sure that it is well secured. Keep only weather proof gear on deck!

2. Keep forms, books, pencils, pens, and unused equipment in a ***dry*** safe place, such as your room or a secure lazarette. Leave only what you regularly use in the factory or on deck.

3. Keep all gear as clean as possible. This will make it much easier for you to clean your gear when returning it. Use deck hoses to rinse slime, scales, and blood off your baskets, deck sheets, length boards, clipboards, scalpel and knife after each use. Most C/Ps and shoreside plants have high pressure hoses which are excellent for cleaning gear.

4. Keep metal parts clean and well oiled. The NMFS-issued lubricant oil is food-grade and can be kept in the factory or out on deck. Do not put weighing scales, scalpels, knives, thumb counters, measuring tapes or other metal objects in plastic bags or boxes when they are wet. They will quickly rust.

5. If something does happen to your issued gear, document what happened. You will not be charged for gear damage or loss due to documented circumstances that were out of your control.

6. Keep your gear centralized; you will be less likely to forget something when disembarking.

**Treat your gear like the important asset it is! Without it, you cannot do your job!**

NMFS will also issue you some safety equipment, including an immersion suit and strobe light, a life vest and whistle, a hard hat and ear plugs. These are provided in order to reduce your reliance on vessel equipment. Keep your immersion suit in a safe place, such as your bunk. It is not a good idea to keep your suit with the crew's, since it may not be easily accessible and may be forgotten when you are disembarking. Both your immersion suit and life vest have zippers on them, which need to be kept waxed to prevent sticking.

The majority of your gear will be issued to you at your training or briefing location. However, additional gear may be obtained from the NMFS field offices in Dutch Harbor and Kodiak. Even if you are deployed from these ports, you may be in town for a very short period of time and it is best to take all the gear you will need from Seattle or Anchorage. If your vessel assignment changes at the last minute, you may need to pick up additional thumb counters, baskets, a Mustang suit or a flatbed scale from the field offices. Let your company know your needs so they can arrange the logistics with the vessel.

**Assignments**
The NMFS has a 90-day limit for each observer cruise. Additionally, observers may not be assigned to more than four vessels and/or plants during one cruise. Finally, observers may not be deployed to the same vessel for more than 90 days in any 365-day period. These limitations were created in order to protect observers from “burn-out,” and to allow NMFS to finalize your data in a timely manner. Often, observers work less than 90 contiguous days because of fishery closures, weather and erratic vessel schedules.

Observers enter into contractual agreements to provide observer services for a NMFS-permitted observer provider. These contracts are generally written for 90 days, but may change dependent on provider and union agreements. If you need to complete a contract by a specific date, tell your company logistics coordinator and get this date written into your contract. You should also have a written understanding of payment and reimbursement agreements prior to leaving, since traveling in Alaska can be unpredictable and expensive.

When beginning a new assignment, take time to adjust to your surroundings before the vessel leaves the dock. Familiarize yourself with the safety equipment, using the check list on page 17-3. Read the “First Days on Board,” section beginning on page 16-1 to get an idea

of what to look for in a sample station. Ask the captain how many hauls are expected each day to determine your sampling schedule.

If you know your first assignment prior to leaving your training location, you may get specific information about the vessel or plant from a Vessel or Plant Profile, or training report. These reports are created by Observer Program staff and observers and recommend specific sampling types for each vessel and fishery. They also contain information about lodging, gear requirements and past problems and how to solve them. If you only know what vessel type you are getting on, it may be a good idea to read several pertinent profiles to get an idea of general sampling situations.

VSL_PROF Run Date: November 18, 2003

**VESSEL PROFILE**

**Vessel:** **A001** **NORTHERN GLACIER**
**Length:** **201** **ADFG NO: 48075**

**Target Species:** **A species of group not listed here**

Topic: Living Conditions

The observers share a room in the hospital. It is very cold in the room, so bring a sleeping bag and warm sleeping attire. The bathroom is connected to another room and shared with four processors.

Topic: Communications

This is an Atlas boat. When the vessel is facing east it may be difficult to transmit.

Topic: Description of Sampling Area

The Northern Glacier has an MSCDQ sample station set up, which observers can use during open access fisheries. It is next to the hatch that leads to the engine room, Baader shop, and factory foreman station. There is traffic through the area, but it is large enough to store your samples and allow someone to pass through. The station has a large table, platforms scale, hose, and a sump pump for discard. There is grating throughout the station.

Topic: Recommended method for obtaining prohibited species samples

Occasionally, observers aboard could whole haul for prohibited species. Usually, the running time is too long, and the hauls simply too large. Partial haul sampling is usually used for all species, including prohibited species. For the most part, the method for obtaining prohibited species samples and compostion samples is the same.

**Figure 1-4 Example of a Vessel Profile**

### Communications

You will be communicating with the Observer Program daily, weekly or on a trip by trip basis depending on your vessel. Vessels requiring 100% observer coverage will have the ATLAS communications system. This computer software was designed to allow you to enter your data on the vessel's computer and transmit it to NMFS. It also allows you to send e-mail messages to Program staff. The e-mail you send is read and responded to by a member of the NPGOP debriefing staff who is knowledgeable about the boat. They will also be able to look at your data and troubleshoot problems while you are still at sea. If you are on a vessel that does not have ATLAS, you will fax in your data periodically. For more details on communicating with the NMFS, refer to the Sending Data section beginning on page 2-19. Regardless of your vessel type, you must contact the Observer Program and your company if you are ill or injured and cannot work for more than one day. You also must inform your captain of this impediment.

**You must contact NMFS each day an illness or injury entirely prevents you from sampling.**

Vessel operators are required by law to allow observers free access to communication systems for work purposes. Their communication systems are not usually for personal use. If they allow you to use the phone or fax for personal use, you may be responsible for the charges incurred.

### Using the Vessel's E-mail System

Some vessels may allow you to use the onboard e-mail system for personal communication. ***The messages you send and receive on these systems are not secure or confidential!*** Consider all communications through vessel e-mail as completely public, even if you are accessing your own e-mail account! Never discuss work, catch, vessel design or other "shop talk" that could be considered a breach of confidentiality, which is grounds for decertification.

### Mid-cruise and Field Support

The NPGOP has field stations in Anchorage, Dutch Harbor and Kodiak to provide staff support for observers. When you are in these ports, you should meet with a staff member for a "mid-cruise" debriefing. The mid-cruise allows NMFS staff to review your sampling procedures, calculations and paperwork and ensure that all is going well. It is an opportunity for you to ask questions and receive suggestions on how to solve any problems you may have encountered.

***All observers must complete a mid-cruise during each deployment, until they receive an exemption.*** Although it is termed a mid-cruise, this interview does not necessarily have to take place during the middle of your cruise. It should be completed early enough to allow you to incorporate suggestions and make improvements on your data collection efforts.

When coming into a field station for a mid-cruise, calling ahead will help ensure that a staff member will be available to work with you at a specific time. More information on mid-cruises can be found on page 19-1.

**In-person mid-cruises can be done in Anchorage, Kodiak and Dutch Harbor.**

**Observer Provider Responsibility**

Federal regulations stipulate that you must have a signed contract with your company prior to deployment. The contract must contain the provision that each "...observer completes in-person mid-deployment data reviews, unless: (i)...specifically exempted by the Observer Program, or (ii) the observer does not at any time during his or her deployment travel through a location where Observer Program staff are available for an in-person data review." The contract must require that an observer who is not able to complete an in-person review complete a phone or fax mid-deployment review as described on page 19-2.

## Debriefing

When you complete your cruise, you will debrief with a NPGOP staff member. The main parts of debriefing are to:

- complete a computerized survey for each assignment,
- describe the methods used to collect your data,
- inform NPGOP staff of problems you encountered,
- make corrections or changes to your data,
- get recommendations for future cruises, and
- receive a written performance evaluation.

**Debriefing is generally done in Seattle or Anchorage.**

Your debriefing is a vital part of your contract because it allows the NMFS to get feedback from you. It is an opportunity for you to discuss your methods and ask for suggestions if you encountered problems in the field. The debriefing process is your chance to demonstrate your understanding of the methods you learned in training and your proficiency at applying them in the field. At the end of your debriefing your debriefer will give you a performance score for each vessel, a written evaluation for your entire cruise and a briefing recommendation. Your briefing recommendation is the level of training you will need prior to your next cruise.

The last step in the debriefing process is another computer survey. The "Observer Survey" is an anonymous questionnaire about your training, deployment and debriefing experience. This is a chance for you to tell NPGOP staff how well you feel you were prepared to do your job and let the Program know what would have made your experience better. This survey only takes about fifteen minutes, and is extremely helpful to our staff.

## Briefing

Prior to each subsequent cruise, you will attend a briefing to inform you of any policy changes and to review the priorities and duties on different vessel types. All observers are required to complete a four-day briefing prior to observing in each new calendar year. Upon successful completion of an annual briefing you will receive an "annual general endorsement" to your observer certification. An additional one-day, two-day tutorial or four-day briefing must be completed prior to each additional cruise within the year. Upon completion of these briefings, you will receive a "deployment endorsement" to your certification.

# ESSENTIAL INFORMATION

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## Introduction

As an observer, you will need to refer to this manual frequently. For most topics, you can refer directly to the chapter that addresses a task or vessel type. However, some topics pertain to all observers on all vessel types. ***This information is essential to all observers*** and is explained in greater detail here.

## Duties and Priorities

Observer duties are listed below in order of priority. Use this list to remind yourself of the different tasks that need to be accomplished for each haul, and recognize which are of a higher priority. There will be times when you cannot accomplish all that you have to do in a day, and lower priority duties should be reduced first. If you find that you cannot complete all the tasks listed, concentrate on those with higher priority.

1. Record incidental takes of short-tailed albatross and collect specimens. Record takes of marine mammals. Collect canine teeth from pinnipeds (except walrus), and tissue samples from cetaceans. Rehabilitate live ***endangered*** seabirds.

2. Record fishing effort and catch information. Make an independent estimate for as many hauls as possible. Record all calculations for your independent catch estimates in your logbook.

3. Sample randomly selected hauls for species composition.

4. Send your data to the Observer Program in Seattle.

5. Document compliance infractions and suspected violations in your logbook and complete affidavits.

6. From hauls sampled for species composition, collect additional biological data on prohibited species.

7. From hauls sampled for composition, collect otoliths and sexed length frequency samples from the appropriate species.

8. Maintain your logbook, including: Vessel Safety Checklist, Daily Notes, ***all*** calculations and formulas, sampling techniques, seabird interactions and banded bird information, scale tests and sample area diagrams.

9. Collect data and specimens for standard projects.

10. Log sightings of seabird "species of interest" and marine mammals.

11. Complete special projects as assigned.

## Managing Your Time

Your time and effort given to each task should be proportional to its priority. For example, if your vessel catches a killer whale, you should spend as much time as required to gather all the pertinent information and collect a tissue sample, as that is your highest priority. A few suggestions on how to reduce the time and effort you spend on lower priority tasks are:

- Write sightings of seabirds and mammals on your deck sheets so this information can be transcribed onto the appropriate forms during a non-fishing period.
- Use fish from within your species composition or average weight samples for lengths and otoliths.
- Collect otoliths and record all necessary data while taking lengths. Avoid measuring a fish twice!
- Collect and record all data on prohibited species as you come upon them in your composition samples.
- Write notes on violations on your deck form as you witness them, so this information can later be transferred to your logbook.
- Prepare paperwork at least daily and maintain your logbook at the same time; this will allow you to be ready to send your latest information to NMFS when needed.

## Standards of Observer Behavior

Standards of observer behavior are stipulated in regulation 50 CFR 679.50. The regulation states that, "Observers must avoid any behavior that could adversely affect the confidence of the public in the integrity of the Observer Program or of the government, including but not limited to the following:

1. Observers must perform their assigned duties as described in the Observer Manual or other written instructions from the Observer Program Office.

2. Observers must accurately record their sampling data, write complete reports, and report accurately any observations of suspected violations of regulations relevant to conservation of marine resources or their environment.

3. Observers must not disclose collected data and observations made on board the vessel or in the processing facility to any person except the owner or operator of the observed vessel or processing facility, an authorized officer, or NMFS.

4. Observers must refrain from engaging in any illegal actions or any other activities that would reflect negatively on their image as professional scientists, on other observers, or on the Observer Program as a whole. This includes, but is not limited to:

- Violating the drug and alcohol policy established by and available from the Observer Program;
- Engaging in the use, possession, or distribution of illegal drugs; or
- Engaging in physical sexual contact with personnel of the vessel or processing facility to which the observer is assigned, or with any vessel or processing plant personnel who may be substantially affected by the performance or non-performance of the observer's official duties."

Your behavior must be in accordance with these standards from the moment you enter a briefing until you are completed with your debriefing. Any behavior contrary to these standards, or the intent of these standards, is grounds for decertification. Falsification of data is grounds for decertification, and may be a basis for prosecution.

### Limitations on Conflict of Interest

In addition to standards of behavior, 50 CFR 679.50 sets the following limitations on conflict of interest. "Observers:

1. Must not have a direct financial interest, other than the provision of observer services, in a North Pacific fishery managed pursuant to an FMP for the waters off Alaska, including, but not limited to:

- any ownership, mortgage holder, or other secured interest in a vessel, shoreside or floating stationary processor facility involved in the catching, taking, harvesting or processing of fish.
- any business involved with the selling supplies or services to" ("...or any business involved with purchasing raw or processed products from...") "any vessel, shoreside or floating stationary processing facility participating in a fishery pursuant to an FMP in the waters off the coast of Alaska.

2. May not solicit or accept, directly or indirectly, any gratuity, gift, favor, entertainment, loan, or anything of monetary value from anyone who conducts activities that are regulated by NMFS, or who has interests that may be substantially affected by the performance or nonperformance of the observers' official duties.

**Note that this standard restricts observers from accepting home-packed fish without purchase.**

3. May not serve as observers on any vessel or at any shoreside or floating stationary processing facility owned or operated by a person who previously employed the observer.

4. May not solicit or accept employment as a crew member or an employee of a vessel, shoreside processor, or stationary floating processor in a North Pacific fishery while employed by an observer provider."

### Confidentiality

While you are deployed, the captain may ask to see your data for his vessel. ***The vessel safety checklist is the ONLY part of your logbook that you may share/ copy for the vessel.*** All other data you collect may be shared with the officers of the vessel. Vessel personnel may want this information on a daily basis for their own use. You should provide this data ***when it is convenient for you.*** It may be easiest to give the captain the data when you are sending it to NMFS. This will allow you to give him completed data on a regular schedule. Providing data to the vessel is a low priority, and you should not allow this to prevent you from accomplishing any of your duties. Only the vessel owner or operator, NMFS staff, and you are allowed to see the data you collect. ***Never allow crew from one boat to see any data from another vessel.***

**Skippers are often intensely secretive of their operations. They count on you to be discrete when discussing their vessel.**

If you are on several vessels during your deployment, keep your data and associated "goldenrod" copies of the vessel logbook from earlier vessels in a safe and secure place. No crew member should ever be allowed to see another vessel's data. Sharing another vessel's data, even inadvertently, can be grounds for decertification. Be particularly discreet when discussing problems, "fishing stories," or assignments in public places, on other vessels, or through e-mail. You may inadvertently give more information than you mean to.

### Signing Statements

Vessel or processing personnel have occasionally requested that observers make written statements, or sign prepared statements, regarding observer duties, safety issues, validity of their data or compliance issues. You may discuss these topics with industry members, but it is critical that you ***do not sign any forms that you have not previously seen in a training or briefing.*** Additionally, written statements should be prepared only for NMFS staff. Currently, there are two forms that observers are expected to sign. This is the Record of Daily Scale Tests form for motion compensated flow scales and the Vessel Safety Checklist in your observer logbook. If vessel personnel want more information, please have them contact the Observer Program Office (see "Contact Addresses and Numbers" on page A-48).

## Completing and Organizing Forms

During an average day on a vessel, you will fill out at least four different forms- usually several of each! The specific directions on how to fill out each form can be found in the following chapters. ***Always have your manual with you when you are filling out paperwork.*** Have the instructions to each form type in front of you when filling out that form. This will save you time by allowing you to complete the form correctly and completely the first time, rather than returning to it to fix errors or fill in columns that were missed. More general information for completing your data forms follows.

### Legibility

Your data and logbook entries must be clear and legible. If your writing is unclear, incorrect data may be entered into the inseason database used to manage the fishery. During debriefing, these errors need to be fixed, and if the debriefer is unsure of a number, s/he will need to have you present to interpret your data. This will lengthen time spent debriefing, and if questions cannot be resolved, may cause data to be lost. To ensure that your data are legible:

- write carefully in clear, dark writing,
- check the forms for stray marks or incomplete erasures before faxing, and
- record the data in an organized manner.

**Pay particular attention to your handwriting when preparing forms to fax. Faxing degrades the legibility. Illegible data cannot be entered into the inseason database!**

### Cruise Numbers

The Observer Program refers to the time between training and debriefing as a "cruise." A four-digit cruise number is used as the identifier for data you collect during this time and it must be recorded on every form. Your cruise number will remain the same throughout your cruise. You will receive your cruise number at the end of training or briefing.

### Organization of Forms

Keep a separate set of data for each vessel or plant assignment. For each vessel you are assigned to, you may have Vessel Haul Forms, Observer Haul Forms, deck forms, 3US Species Composition Forms, Form 7 Length Frequency of Measured Species Forms, Form 9 Biological Sampling Forms, 10A Marine Mammal Interaction Data Forms, 10B Marine Mammal Specimen Data Forms, 11US Marine Mammal Sighting Forms and/or fish, crab and bird identification forms.

For each processing plant, you may have Form A Plant Delivery Information, deck forms, Form 7 Length Frequency of Measured Species, Form 9 Biological Sampling and fish identification forms.

Additionally, for any assignment, you may have extra forms associated with standard or special projects. ***Write your name and the vessel name on the first page of every form type for every assignment.***

Observers on vessels or at shoreside processing plants with ATLAS need to keep separate backup and archive discs for each vessel or plant, ***as well as paper copies of the Vessel and Observer Haul Forms, Form As and deck sheets.*** Label the discs with your cruise number, vessel or plant code, name, vessel name and disk contents.

**Page Numbering**

Data forms are numbered separately for each form type. Page numbers must be entered at the top of each form type in the "page_ of_" fields. Put the number of the page in the first blank, and the total number of

pages in the second space. For example, "Page 3 of 40," indicates that this is the third page of forty for this form type.

Vessel Haul Forms and Observer Haul Forms are two different form types, so they must be numbered separately. To keep these forms orderly, you must have one Vessel Haul Form for each Observer Haul Form. For example, if you record hauls 1-9 on page number 1 of your Vessel Haul Form, record only these haul numbers on page number 1 of your Observer Haul Form, even if more space is available.

The Form 9 Biological Sampling Form is an exception to our standard numbering rule. The Form 9s are ***numbered separately for each species and specimen type.*** For example, if you collected both otoliths and length/weight samples from pollock, you would need a set of Form 9s for the otoliths and a set for the length/weight samples. Each set would be numbered separately.

### Deck Forms

You will be issued three types of forms to record your data on deck. One type is specifically for trawl data, another for longline and pot data and the last is a blank form which can be used on any non-Atlas vessel. ***Deck forms must be used on all vessels to record raw data.*** How you format these forms will be dependent on how you transmit your data.

If you are transmitting your data by fax, it does not matter how you format the deck sheets. However, the format you use must be clear and understandable by your debriefer. Following these tips may help you organize your data.

- Use the appropriate form for the vessel type. On Atlas vessels, you must use either the trawl or longline/pot form and follow the instructions outlined in each chapter for completing the forms.
- If using a blank side or form, label all data.
- Record a haul or delivery number for all data.
- Use extra space to record bin measurements, codend measurements, trawl alley heights, partial haul measurements, etc.
- Write as large as needed to be able to read your data.
- Rinse off the deck forms often while you are sampling, if you write on top of scales and blood your writing will rinse away with them!
- Write as dark as possible with a pencil (pen will smear). With rinsing, your writing will fade.
- When there are two or more observers on a boat, each should write their initials on the forms for the hauls they sample.

### Recording Time

When recording time, use the 24-hour clock (0000-2359). Record time using Alaska Local Time (ALT) when your vessel is in Alaskan waters. No colons are used with the 24-hour clock, and they should not be recorded on any forms.

**Most digital watches can be set to a 24-hour clock. This makes tracking and recording time easier.**

### Species Identification Forms

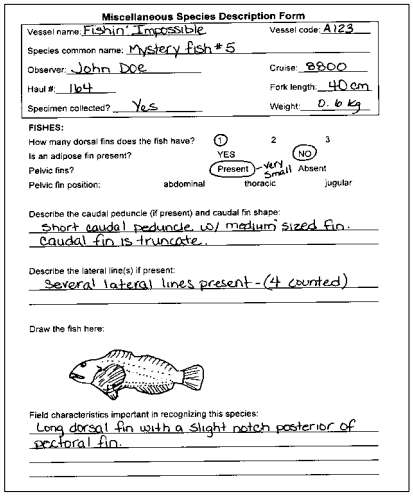
Your species ID sheets are verification of your correct identification of species seen during a deployment. ***Complete, detailed and correct species identification forms are required for all fish, crab and dead seabird species that are new to you.*** First time observers are required to complete species ID forms for the first sighting of all fish, crab and dead seabird species. Prior observers will need to complete ID forms for species which have not had an acceptable form filled out in the past. If a prior observer demonstrates a problem with species identification, s/he may be required to complete ID forms for each species seen during his/her next deployment. The rules for filling out these forms are:

- Species ID forms are not needed for invertebrates other than crab species.
- Species should be identified to the level provided in the keys and guides issued by NMFS.
- If you further identify an organism that only needs to be keyed to family, you must fill out a new form for the identified species (e.g., red Irish lord would need a separate form than Irish lord unidentified).
- Sharks should be identified to species using the Family Key and/or Eschmeyer.
- Species ID forms ***must be filled out with the fish in hand!***
- Species ID forms must describe in detail what you observed from your specimen. Do not copy information verbatim from the key.

- Complete a Seabird Species Identification Form for all dead seabird species encountered for the first time. Also complete this form for all unidentified seabirds and dead species of interest.

During debriefing, you may be asked to provide a verbal description of a fish if you don't have an ID form, or if it is incomplete. If you are not able to provide an accurate description of a species recorded in your samples, NMFS may require you to attend a four-day briefing and pass a fish ID test. It is advisable to redo ID forms on species that you do not encounter frequently, so that you have a written record to refer to.

### Unidentified Fish


Miscellaneous Species Description Form

Vessel name: Fishin' Impossible Vessel code: A123
Species common name: Mystery fish #5
Observer: John Doe Cruise: 8800
Haul #: 164 Fork length: 40 cm
Specimen collected? Yes Weight: 0.6 kg

FISHES:
How many dorsal fins does the fish have? (1) 2 3
Is an adipose fin present? YES (NO)
Pelvic fins? (Present) – very small Absent
Pelvic fin position: abdominal thoracic jugular

Describe the caudal peduncle (if present) and caudal fin shape:
Short caudal peduncle w/ medium sized fin. Caudal fin is truncate.

Describe the lateral line(s) if present:
Several lateral lines present - (4 counted)

Draw the fish here:

Field characteristics important in recognizing this species:
Long dorsal fin with a slight notch posterior of pectoral fin.

Never guess the identification of a species. If you encounter an individual fish, crab, or bird that you cannot identify, fill out a species description form with as much information as possible. You may find a more identifiable specimen of the same species later, so organize your unidentified fish descriptions with names such as "unidentified dark rockfish #1," or "mystery fish #5." Record all form heading information, so that the data can be changed if the fish is identified later. ***Ideally, you should bring the specimen back to NMFS.*** If you are unable to bring the fish back, please take photographs of the specimen for ID purposes.

Record unidentified fish on your Species Composition 3US forms with the most appropriate group code. For example, an "unidentified long-faced flatfish" should be recorded using the "flatfish unidentified" group code of 100 because you can positively identify it as being a flatfish.

## Observer Logbook Entries

Your logbook is probably the single most important piece of data because it contains additional information about all other data. Have your logbook with you whenever completing paperwork so you can easily record your calculations, make notes regarding your data collection, fill out scale verification records, and document seabird sightings and regulation issues. Many observers make notes on their deck forms to remind them of particular events that happened while they were out on deck or in the factory. This is an excellent idea, but is only effective if the details of the events are filled in as soon as possible in the logbook. Remember, events which seem ordinary to you on this vessel may be unusual to the fleet or fishery, so don't hesitate to write down any information which affects your work or day-to-day life aboard the vessel.

Your logbook is your field biology notebook, and must be treated as such. ***Do not use it as a personal journal.*** Although you must document any interference or inappropriate behavior toward you, avoid venting frustrations or making slanderous, derogatory or discriminatory remarks in your logbook. Your logbook must be kept private while you are on the vessel, but is a public document and part of the data turned over to NMFS during debriefing. After this, the contents of the logbook and your name may be released.

**The Vessel Safety Checklist is the only part of your logbook that may be photocopied or have a copy torn out and given to the vessel. Originals of the checklist must remain intact in the logbook.**

### Daily Notes Section

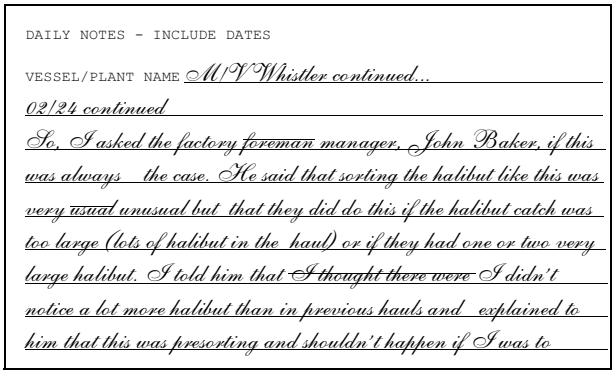
Use the Daily Notes section to include notes on problems that occurred while you were aboard the vessel, any illnesses or injuries you suffered, the reasons you chose all sampling methods used - including those for catch estimation, species composition sampling, length and otolith collection and halibut assessments. Record the circumstances surrounding any violation you witness, including interference with your duties, harassment, mishandling of prohibited species, harassing or harming marine mammals, and MARPOL (marine pollution) violations.

**Set aside time every day to write in the Daily Notes section.**

***Make an entry for every day***, describing the day's events, even if it was what you would consider an "ordinary day." The more self-explanatory your cruise is, the better. Logbooks may be referred to months or even years after your cruise is complete. Therefore, good documentation is vital to what the NMFS considers "meeting expectations" for a successful cruise.

### The Logbook as Evidence

Your logbook is archived and used as a reference to give more information about your data. It may also be used as evidence if regulatory infractions were noted. Therefore, your calculations may be recorded in pencil, but ***all other entries must be in ink.*** If you need to make a correction, draw a single line through the incorrect word(s) and continue with the correct wording. Do not completely cross-out anything, use correction fluid, or tear out pages or parts of pages! If you obscure any part of an original entry, you leave the reader wondering what was originally there. This may affect the validity of your logbook and data.


DAILY NOTES - INCLUDE DATES

VESSEL/PLANT NAME M/V Whistler continued...

02/24 continued

So, I asked the factory ~~foreman~~ manager, John Baker, if this was always the case. He said that sorting the halibut like this was very ~~usual~~ unusual but that they did do this if the halibut catch was too large (lots of halibut in the haul) or if they had one or two very large halibut. I told him that ~~I thought there were~~ I didn't notice a lot more halibut than in previous hauls and explained to him that this was presorting and shouldn't happen if I was to

**Figure 2-1: Properly Corrected Logbook Entries**

## Calculations

All calculations, no matter how small, must be recorded in your logbook. The only exception to this rule is for average weight calculations, which may be written on the Species Composition Form 3US or deck forms. Write your calculations directly into your logbook rather than transcribing them from scrap paper. Document all your calculations, and the formulas used, in order to make your data self-explanatory. Record and label your calculations so that another person could easily understand them without any interpretation.

Calculations which you may think are trivial or obvious must also be recorded. This includes, but is not limited to, conversions from pounds to kilograms, product recovery rate calculations, halibut length to weight conversions, ***and the differences between start and end weights when using a flow scale*** for OTC or partial haul sample weight.

**Calculations may be in pencil, but all other logbook entries must be made in ink!**

### Rounding Rules

When you are performing a calculation, carry the numbers out full field until you have reached your ***final product.*** Do not round any numbers within the calculation! It is important for you to recognize what final product you are calculating when deciding when to round a number. For example, you may need to use an average weight to calculate the total weight of a species within your sample. In this calculation, you would not round until you had calculated the total weight of that species. It is a common mistake to round once the average weight is calculated. Rounding within a calculation will cost you time in debriefing!

When you round a number to put on a form, round to the number of decimal places required by the column. To round your final product:

- look ***only at the first digit*** to the right of the number you are rounding,
- if $X \geq 5$ round up, if $X < 5$ round down.

For example, when recording your final density on the Observer Haul Form, you need to round to two decimal places. If your final calculation was 0.9278226, you would round up to 0.93 mt/m$^3$. If your final calculation was 0.9728226, you would round down to 0.97 mt/m$^3$.

## Selecting Hauls to Sample for Species Composition

Observers must take numerous steps to ensure that their samples are as random as possible. The first step is to randomize which hauls you will sample for species composition. There are three ways in which to randomly select hauls to sample:

1. sample all hauls,
2. use the Random Sample Table (RST), or
3. use the Random Break Table (RBT), either alone or with the RST.

**Do not randomize which hauls to sample in any other way unless it has been approved by a NMFS staff member!**

When you cannot sample all the hauls, you must use the RST and/or the RBT to determine which hauls to sample. This allows the Observer Program to stand behind your data, and makes it legally and scientifically defensible.

### When All Hauls Should be Sampled

Observers aboard catcher-only trawlers participating in the pollock fishery should be able to sample every haul. These vessels make relatively few hauls each day, so sampling all hauls is possible. In general, observers aboard vessels participating in other fisheries can sample all hauls if the vessel is taking three or fewer hauls per day. Catcher/processor longline vessels are the exception to this generality, and observers may need to use the RST or RBT on a longline C/P retrieving more than two sets a day. Finally, if there are two or more observers aboard a vessel, it is expected that all hauls will be sampled.

### When to Use the Random Sample Table

If you doubt that you will be able to sample all of the hauls that your vessel brings aboard on a normal day, use the RST to determine which hauls to sample. It will be necessary to use the RST to select hauls in most fisheries, other than those mentioned above. If you feel that you will usually be able to keep up with all the hauls, but may need an occasional break if fishing picks up or you fall behind on other duties, the Random Break Table (RBT) may be a better choice. A discussion on when and how to use each of these tables follows.

### Versions of the Random Sample Table (RST)

There are three versions of the RST. One is usually used on catcher boats and two are used aboard catcher/processors and motherships. The difference between the tables is the number of "off" hauls in each sequence. Hauls which are not supposed to be sampled are referred to as "off," and hauls which are to be sampled are referred to as "on." The catcher boat table has one "off" haul in each sample sequence, while C/P tables can have between one and three off hauls in each sequence. ***Choose an RST which is appropriate and will best fit your needs.*** You may choose to use a more rigorous schedule, but you may not use less stringent schedule than your vessel requires.

**Use the RST which is most appropriate to your vessel. You may always use a more stringent table if you can keep up with it!**

The three versions of the RST which you can use are:

1. the RST usually used on catcher vessels,
2. the RST used on C/Ps landing 6 or fewer hauls each day, and
3. the RST used on C/Ps landing more than 6 hauls per day.

Look at the title of the table to be sure you are using the correct one. When you first board a vessel, ask the captain how many hauls he expects to land each day. Use this number to determine which table to use. Once you choose an RST, you should stick to it, unless the vessel changes fisheries, or drastically changes their fishing habits.

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | **2** | **3** | **2** | **4** | **4** | **2** | **3** | **2** | **4** | **3** | **4** | **2** | **4** |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **B** | **4** | **3** | **4** | **4** | **3** | **2** | **3** | **2** | **3** | **3** | **2** | **3** | **2** |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **C** | **2** | **4** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **2** | **4** | **3** | **3** |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **D** | **4** | **4** | **3** | **4** | **4** | **4** | **3** | **4** | **4** | **4** | **4** | **3** | **4** |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **E** | **3** | **3** | **3** | **2** | **2** | **3** | **4** | **2** | **4** | **2** | **4** | **3** | **3** |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 2-2: Random Sample Table (example)**

### How to Use the RST

In the RST, the bold-face rows of type indicate the number of consecutive "on" hauls that should be sampled. The normal-face type rows are the number of consecutive "off" hauls that are not sampled. You will be instructed how to enter the RST during your training or briefing. Once you enter, your first hauls selected will always be "on" hauls. From this point, move vertically down through the table sampling or not sampling the number of hauls as indicated. If you reach the bottom of a column, begin again at the top of the next column. If you reach the end of the table (Z, Z) continue at the top of the table (A, A).

### Vessel Responsibility and the RST

The RST was designed to randomize the hauls sampled by an observer. It is the vessel personnel's responsibility under CFR 679.50(f) to "notify observers at least 15 minutes before fish are brought on board,...to allow sampling the catch,...unless the observers specifically request not to be notified." If vessel personnel are not notifying you of retrievals, it can affect your ability to sample according to instructions. Talk to the captain to ensure he understands that you must be notified of fish coming aboard. If problems with notification continue, be sure to document this in your logbook and inform NMFS staff through ATLAS or when you are in port.

**Do not give your RST to vessel personnel. Inform them verbally when you need to be notified!**

The RST is for your use only. Your samples are meant to represent the catch under normal fishing activities. If the crew knows which hauls will or will not be sampled, they could alter their fishing activities. In order to avoid this possible bias, do not give your RST to vessel personnel. If you need to let the captain know your immediate schedule in order to be notified of hauls, do this verbally.

### How to Use the Random Break Table (RBT)

Break tables are designed to give observers a six-hour break each day when normal vessel operations do not permit adequate time off. The RBT is another tool that can be used to randomize which hauls are sampled. The break table should only be used by observers on catcher/processors or motherships when it is used with the RST. The RBT can be used alone on any vessel type when all hauls cannot be sampled, but an RST provides too much time off. Remember, the break table should only be used if you cannot sample all the hauls. If your vessel does not fish for part of a day, or makes one long tow (usually at night), you should consider that your break and disregard the break table.

**The RBT can be used alone, or with the RST to randomize sampled hauls and time off.**

Unlike the RST, you can use the break table on some days, and not on others. Of course, you may also use it every day. Once it is used, you must track each day on the break table, whether the break time is taken or not. For example, if you use the break table one day, then it is not used for two days, record just the date on the second and third lines and use the time on the fourth line for a break on the fourth day.

The break table is made up of three columns. The first field reads "DATE," the second field is for you to record the date and the third field has a break starting time for each day. A 24-hour clock is used, so a day is from 0000 to 2359 ALT. Beginning at the top of the table enter the date of the first day you use the RBT and check to see when you should begin your six-hour break. Work down the first column, filling in the date of each day, whether or not a break is taken, and taking six-hour breaks when needed (only one per day) using the scheduled time for that date. When you finish the first column, start at the top of the second column and so on.

You are responsible for all the "on" hauls brought aboard the vessel prior to the start of your break, so you may not actually start your break at the time indicated on the table. For example, you are on a longline vessel following only the break table, and your break starts at 1800 hours. The vessel picks up a set at 1745. You need to sample this set, since it started being retrieved before your break began. When you finish your sample at 2015, you would start your six-hour break. To document your change, draw a line through the 1800 on the table and write 2015 next to it. ***Additionally, if you are too exhausted to wait for your break, follow the same documentation procedure, and write the circumstances in your logbook***.

| | | |
|---|---|---|
| DATE | 01/16 | ~~0800~~ 0245 |
| DATE | 01/17 | 0100 |
| DATE | 01/18 | 0700 |
| DATE | 01/19 | ~~1300~~ 1415 |
| DATE | 01/20 | ~~1600~~ 1730 |
| DATE | 01/21 | ~~1200~~ 1145 |
| DATE | 01/22 | 0400 |
| DATE | 01/23 | ~~1200~~ 0145 |
| DATE | _____ | 0100 |

**Figure 2-3: Properly Completed Break Table**

## Break Table Summary

- Take a break only on days you need it.
- If the retrieval time of an "on" haul is before your break time, complete your sample before taking your six-hour break.
- Break for six hours unless otherwise instructed by NMFS staff.
- Sample the next "on" haul which has a retrieval time after the end of your six-hour break.
- Hauls retrieved during your break continue to be counted against the Random Sample Table.

### Documenting RST and RBT Use

Your use of the Random Sample and Break Tables must be documented on the Observer Haul Form. Fill in the "Random Sample Table" and "Random Break Table" columns to indicate what tables you were using. If you use the break table, staple it into your logbook, so that any changes you made regarding when you took a break are properly documented.

### If Your Sampling Schedule is Too Rigorous

If you find that you cannot sample all the "on" hauls on a vessel, or that your other work is suffering, there are a few things you can try:

1. If you are on a C/P or mothership and are only using the RST, start using the break table on some or all days.

2. Reduce your sampling time by reducing the sample size of one or more hauls in the on haul series. If you are taking a larger sample for prohibited species, reduce this sample to your composition sample size. ***It is preferred to have random, smaller samples from more hauls than large samples from fewer hauls.***

3. Look ahead at your schedule and plan to make best use of your rest time. For example, if your RST reads that you have a four-on, one-off, four-on series coming up, try getting more rest before this series. Complete paperwork, nap, and eat between samples so you have a larger block of rest time in between during your off haul.

4. If you get caught in an unworkable situation, you can skip one of the hauls in the series to be sampled. If you do not sample an "on" haul, continue sampling the rest of the series as if you had. In the four-on, one-off, four-on series example, if you needed to rest for two hauls, you would sample four hauls, rest for two, and sample three hauls to complete the series. If it is necessary to skip on hauls on a continuing basis, contact with an Observer Program for advice. ***Do not sample off hauls to make up for skipped on hauls!***

5. If you are having difficulty following the RST or RBT regularly, contact NMFS for assistance (see "Contact Addresses and Numbers" on page A-48). Do not use a solution that has not been approved by NMFS!

### Frequently Asked Questions About the RST and RBT

**Q1:** I am supposed to sample four hauls in a row. The third haul comes up at 1450, and I am scheduled to begin a break at 1500. Do I sample that haul?
**A1:** Yes. Sample the third haul in that block and then take your 6-hour break. When you finish your break you will re-enter the RST. To re-enter, check the fishing schedule against the RST to see when the next "on" haul will be retrieved.

**Q2:** A haul is retrieved at 0945 and my break starts at 1000. According to the instructions, I should sample this haul, but they don't begin processing until after the fish have aged for four hours. Do I sample this haul?
**A2:** Yes. While you are waiting for them to begin processing, you can do paperwork, laundry, eat, etc. After you complete your sampling you may begin your 6-hour break if needed, or skip the break for that day.

**Q3:** Can I skip breaks and only take them on a few days when I need to?

**A3:** Yes. On the table, record the date of each day whether or not a break was taken. You cannot accumulate break time by skipping a day and taking a longer break the following day. You cannot take more than one break per day.

**Q4:** Can I sample more hauls than those indicated on the RST?
**A4:** No. Do not sample "off" hauls on the RST unless you can sample all the hauls. If the number of hauls taken by the boat was overestimated, you may switch to a more rigorous RST. However, you should not switch more than once unless the vessel changes fisheries or fishing activities.

**Q5:** My break is over and the haul currently being processed is an "on" haul and is about half processed. Can I take a basket sample from the remaining portion?
**A5:** No. Since the catch is already half processed, half the population from which you want to sample is unavailable to you. This would interfere with your random sampling frame. Additionally, you were not present to verify that no presorting, or other unusual sorting, occurred. Use this time to complete paperwork, get some more sleep, or take some down time for yourself.

**Q6:** Suppose my break is just ending and the next haul retrieved is an "off" haul, resulting in a longer break than I need. Should I stick to the RST and not sample?
**A6:** Yes. You must sample only the designated hauls, resulting in a longer break than the six hours scheduled. Consequently, you may not need to take a break the next day.

**Q7:** I was just assigned to a different vessel (or, my vessel just completed a delivery and is resuming fishing). How does this effect my use of the RST?
**A7:** When you are assigned to a new vessel, or when fishing resumes after a delivery, continue where you left off on the table if you were in the middle of an "on"series, or were going to start another. If you left off in the middle of an "off" series, or were going to start another, skip to the next "on" series. ***Your first haul of each new vessel or trip should be an "on" haul.***

## Introduction to Random Sampling Theory

The following section explains the basics of sampling theory. Refer to the sections on your vessel type for specific sampling instructions. In order to properly sample, it is important that you have a good understanding of sampling theory. If you have any questions please contact an Observer Program staff member.

### Sampling Theory

Observers take samples from a population because it is not possible for them to count, weigh and measure every individual within the population. By using a random selection method to draw a sample from the population, you ensure that ***every member of the population has an equal probability of occurring in the sample***. If every member of the population is equally likely to occur in your sample, then when you repeat the sampling over time, these repeated samples are representative of the population. If, over time, your samples are representative of the population, they can be used to draw conclusions about the population from which they were taken.

### Advantages of Random Sampling

The use of a random sample method eliminates any subjectivity on your part. The advantage of this to you as an observer is that you cannot be accused of bias against or for the vessel or vessel personnel.

When random sampling methods are used to collect data, the NMFS is justified in using statistical methods for estimating population parameters based upon that data. The precision and accuracy of these estimates can then be determined.

### Steps in Taking a Random Sample:

1. **Define the population.** The population is the total set of items that we wish to draw inferences about. In the case of species composition sampling, the population is the everything caught in a given haul. In the case of length frequency sampling, the population is the entire group of all individuals of the species to be measured caught in a given haul.

2. **Define a sampling frame.** A sampling frame is a conceptual framework which divides the population into independent, countable sampling units. In practice, you have two general categories of sampling frames on a trawl vessel: spatial and temporal. Use a spatial framework, such as measured portions of a deck or bin, when all of the catch is available at once. Use units of time (e.g., five minute increments) when all the catch passes you at one point, such as on a factory conveyor belt. On a longliner or pot boat, your sampling frame can be composed of units of gear (skates or groups of pots). Gear based frames are considered spatial frames.

**A weight based frame using a flow scale is considered a spatial frame.**

3. **Define your sampling units.** The size of your sampling unit should be defined so that you are able to collect ***all*** animals within a single unit. Sampling units are the separate portions of the sampling frame. If your spatial frame breaks the catch on deck into measured areas, then a single measured area is the sampling unit, and you must be able to collect all the animals from this area. Likewise, a single five minute increment of run time could be a sampling unit for a temporal frame using a factory conveyor belt. On a longliner, a single skate could be a sampling unit. On a pot boat, the sampling units could be a single pot, a group of five pots, or a group of any number of pots as long as the number for the unit is consistent throughout the frame.

4. **Number all of the sampling units in your sampling frame.** If your units are sections of deck, assign a number to each section. If your units are time increments, number them consecutively. Skates or groups of pots can also be numbered consecutively (you need to account for the total number of skates or pots in the entire set).

**Pick random numbers using a random number table, dice, cards or any other objective method.**

5. **Pick random numbers to choose sampled units.** Generate random numbers between 1 and your maximum sample unit number (inclusive) to determine which sampling unit(s) to select for your samples. You will be given a random number table during training or briefing and another can be found on page A-16.

6. **Select the sampling units corresponding to the random numbers.** This is your sample. If your sampling units are deck sections, collect all of the animals from each randomly selected deck section. If your units are sections of longline or pot gear, collect all animals from the randomly selected pieces of gear. If your units are time increments, collect all of the fish during the time increment.

### How to Use the Random Number Table

To use the random number table, enter the table at a random point. The easiest way to do this is by closing your eyes and placing your finger on the table. The column and row nearest your finger is the starting point. Determine how many digits in the row you are using: if you need numbers between 1 and 250, use three digits in the row, and so on. Decide in which direction you will move through the table. Then proceed in any direction through the table (even diagonally), recording appropriate numbers and skipping numbers too high or repeated, until you have enough random numbers. Unlike on the Random Sample Table, you do not have to keep track of your position in a random number table. You should decide on a direction and enter the table at a different random starting point every time you use it.

For example, if you need to choose 3 numbers between 1 and 25, you could enter the table by placing your finger on the table to choose a column and row. Your criterion is two digit numbers between 01 and 25 (inclusive). For this example, you decided to work up the column from your starting point. As you move up the column, the first number you encounter is 14. This is a two-digit number between 01 and 25; it fits the criterion, so you write it down. The next number is 09; it also fits the criterion, so you write it down. The next number is 58 and does not fit the criterion so you skip this number. Keep moving up the column, skipping the numbers that do not fit the criterion, until you have chosen all the numbers you need.

## Species Sub-Sampling

In the course of identifying, weighing and counting the individual specimens in your randomly collected samples, you may find fish species which are difficult to distinguish from one another. Identifying each fish to species may take unreasonable amounts of time, particularly if a distinguishing characteristic requires a time-consuming task such as counting gill rakers. In

these situations, it is appropriate to do a random sub-sample for species identification. Other times you may subsample for lengths or for average weights.

**Sub-samples are often used for rock sole, Tanner crabs, shortraker/rougheye rockfish and arrowtooth/Kamchatka flounder groups.**

To collect a sub-sample, pick random portions of your composition sample (baskets, sampled time units, skates) and collect all the individuals from the group and identify them to species. Randomly choose between 20 and 30 individuals from the group to identify. The identified animals are listed on separate lines on the 3US Species Composition Form with the species name. The remaining individuals from the group, which were not further identified, should be weighed, counted and recorded under the more general code for that species group.

**Do not extrapolate a subsample into the rest of your sample! Record the fish that were not identified to species with the group code (i.e.: rock sole unident., code 104).**

For example, you have too many fish from the rock sole group in your sample. You cannot identify each of them, so you choose two random baskets of mixed fish and remove and identify all the rock sole. Upon completion, you find that of the 29 total rock sole in the two baskets, 26 are northern rock sole and 3 are southern rock sole. On the Species Composition Form, you would list 26 northern rock sole, 3 southern rock sole, and all the rock sole from your remaining baskets as "rock sole unidentified." If rock sole is the predominant species that you will be measuring, you can also use the identified-to-species rock sole for your length sample and record them on the Form 7. An example of recording a sub-sample of rock soles can be found on the Species Composition Form example in Figure 4-12 on page 4-28.

## Using Your Scales

To obtain accurate weights, you must use the appropriate scale. If your vessel is equipped with a motion compensated electronic platform (MCP) scale which is passing ***daily*** tests, you may use this scale for all sampling purposes, including weighing individual fish for otolith or scale sampling. MCP scales can be read to the hundredth of a kilogram. Use your NMFS issued scales in the following manner:

- Use the 2.0 kg brass scale for items weighing up to 2.0 kg. This scale can be read to the hundredth of a kilogram.
- Use the 12.0 kg brass scale for items between 2.0 and 12.0 kg. This scale can be read to the hundredth of a kilogram.
- Use the 50 kg Salter scale for weighing items between 12.0 and 50.0 kg. This scale can be read to the tenth of a kilogram.

If you board a small vessel in Dutch Harbor or Kodiak, Chatillon flatbed scales are available from the NMFS field stations. These scales have a gauge that can be read to hundredth of a kilogram, but it is usually not appropriate to do so. Unless the weather is very calm, these scales should be read to the tenth of a kilogram, like your hanging 50 kg Salter scales.

Although your scales look sturdy, they are susceptible to damage and excessive rust. Keep them in good working order by removing them from open areas when you aren't using them and keeping them well oiled. For instructions on how to care for a Chatillon flatbed scale, see page A-52. ***Bring your scales into a field station some time during your cruise to retest them and ensure they are still accurate.*** Document these test results in the "Scale Verification Record" section of your logbook.

**Keep your scales dry and well oiled. It's nearly impossible to use too much oil on a scale!**

### Motion Compensated Electronic Scales

Vessels regulated under the American Fisheries Act, and vessels targeting some restricted access fisheries, must supply and use motion compensated scales. When they are required to, trawlers will have a flow scale and a platform scale on board and longliners will have a platform scale on board.

Motion compensated platform and flow scales are able to accurately weigh catch by comparing the weight on two separate load cells. The first load cell weighs the object with an unknown weight (your basket of fish), the second load cell, or reference load cell, weighs a known weight. The two weights are compared at least 60 times per second and this enables the scale to compensate for motion that would otherwise cause an inaccurate weight reading. Flow scales, or conveyor scales, also monitor belt speed and incorporate that

information into the weight calculations. Both scale types, when properly calibrated, provide highly accurate weights.

Platform scales are used to weigh the samples you collect. Vessel crew will also use the platform scale to complete their daily flow scale test. Flow scales are incorporated into a conveyor belt and are used to weigh total catch on C/P and mothership vessels. They can also be used to determine partial haul sample sizes and may be used to design a weight based random sample frame. If your trawl vessel is equipped with a motion compensated flow scale, and it is passing daily accuracy tests, you should use this for determining your partial or whole haul sample sizes and OTC. You may use motion compensated scales even if your vessel is not operating in a fishery where they are required, but they must be tested appropriately each day they are used.

**Platform Scale Testing**

If you are using an MCP scale, you are required to test the platform scale at least every 24 hours using certified test weights. When two observers are on board it is recommended that each observer test the scale during their shift. The vessel must provide a combination of test weights that allow the platform scale to be tested at 10 kg, 25 kg, and 50 kg. Most vessels have either gold colored or stainless steel weights. Many vessels also have standard weights (lbs) that are silver in color that they use to test their production scales. ***Make sure the test weights you use are metric and not standard.***

**MCP scales must be off by no more than ±0.5% from the test weight.**

When you test the platform scale, the displayed weight should be off by no more than ±0.5% of the known test weight. Record each test, even failed tests, in your Daily Observer Platform Scale Test Log. If the scale fails at any of the designated weights it should be re-tested or calibrated and re-tested. Whether you simply re-test or calibrate and re-test will depend on the make of scale. The vessel should have a copy of the scale instruction manual and you may want to consult with the engineer or factory foreman the first time you calibrate or test the platform scale. ***The MCP scale cannot be used to determine the weight of any part of your sample if it has not passed the daily test.***

**To test an MCP scale:**

- Test the platform scale at 10 kg, 25 kg, and 50 kg at least every 24 hours. It is recommended that observers test the scale at the beginning of each observer shift. If the platform scale fails, it may be retested or calibrated and retested.
- Recording all test results on the Platform Scale Test Record in your logbook.

Marel and Pols Platform Scales

Seventy percent of the NMFS approved platform scales are made by Marel. Both Marel and Pols platform scales have a function called “marine calibration.” Prior to testing these scales for the first time you should perform a marine calibration. Consult the scale instruction manual, the engineer or a factory foreman if you need assistance. Marel scales will display a reminder to perform a marine calibration by the blinking “CAL” light about every three hours of operation. Pols scales will not remind you to perform a marine calibration.

Skanvaegt Platform Scales.

The only thing you need to do with Skanvaegt platform scales is perform the daily test. There is no marine calibration for this brand of scale.

**What To Do When the Platform Scale Fails**

If the platform scale fails the daily test you should test it again. For Marel and Pols scales you can perform a marine calibration and then re-test the scale. For Skanvaegt scales, simply re-test the scale. If the scale does not pass after two or three attempts, consult with the factory manager or the engineer and inform the captain that the scale has failed. It is the captain’s decision whether the vessel continues to fish. As an observer your role is simply to inform the captain that the scale has not passed and that it is a violation to continue fishing until the scale is repaired. If the vessel continues to fish you should basket sample for species composition using your 50 kg Salter and brass scales. You should also notify NMFS, via your inseason advisor, and document the incident in your logbook. ***Do not refuse to sample or tell the vessel they can’t fish if the platform scale is not functioning.*** The flow scale cannot be used to determine your sample size or OTC if the MCP scale does not pass. The accuracy of the weight used to test the flow scale is dependent on the MCP scale.

**Flow Scale Testing**

Flow scales must be tested at least one time each 24 hour period in which fish are weighed on the flow scale. It is the vessel's responsibility to (1) test the flow scale each day, (2) notify the observer that they are going to test the flow scale at least 15 minutes in advance, and (3) conduct the test while you are present. The vessel should fill out a Record of Daily Scale Test and you will sign the form signifying that you witnessed the scale test.

While watching the flow scale test, pay attention to the actions of the crew. The following scenarios may indicate a problem with the flow scale that must be reported to NMFS:

1. The crew needs to make adjustments to the scale prior to each test.

2. The flow scale frequently goes into fault mode.

3. The tonnage per time period changes dramatically (e.g., fish normally flow at 40 tons/hour and suddenly begin flowing at 20 tons/hour.)

**Flow scales must be off by no more than ±3.0% from the MCP scale weight.**

In order to do a flow scale test, the vessel must weigh at least 400 kg of fish or an alternative material (sand bags) supplied by the scale manufacturer. Other items such as bags of flour or rice and steel test weights are ***not*** approved for testing flow scales. After the fish or sandbags are weighed on the flow scale they should be weighed on the platform scale. The maximum permissible error for flow scales is ±3.0%. Complete instructions for testing the flow scale appear on the Record of Daily Scale Tests form, provided by the vessel. Vessel personnel will ask you to sign this form. It is the only non-Observer Program form you should sign! In summary, the vessel personnel's responsibilities for flow scale testing include:

- Having the scale certified by the Alaska Regional Office.
- Ensuring that hauls are not mixed.
- Performing a daily 400 kg. materials test, using fish or test materials supplied by the scale manufacturer (sandbags).
- Conducting the flow scale test in the presence of an observer, to verify that the test was conducted in accordance with regulations.
- Recording the flow scale test on the proper form (OMB No. 0648-0330).
- Producing a printout of the total catch weights, which must include the haul number, the date of the haul, and the weight of all the catch as weighed by the flow scale.

**If the vessel has trouble with their flow scale, have them contact Alan Kinsolving, NMFS Scale Program Coordinator. Phone (907) 586-7237 Fax (907) 586-7465.**

**What To Do When the Flow Scale Fails**

If the flow scale fails the daily test, it may be re-tested as many times as the crew wishes. However, the scale may not be used to weigh fish until it has passed the daily test. If total catch is weighed on a flow scale that did not pass the daily test, do not use that weight as the OTC. Use the vessel estimate as the OTC and notify your inseason advisor. ***During AFA and CDQ fisheries, no observer estimates should be made or used as the OTC even if the flow scale is not working.***

If the flow scale fails, it is the captain's decision whether they continue to fish. As an observer, your role is to simply inform the captain that the scale has not passed and that it is a violation to continue fishing until the scale is repaired. If the vessel continues to fish, basket sample for composition using the MCP scale (assuming it has passed). Notify NMFS, via your inseason advisor, and document the incident in your logbook. ***Do not refuse to sample or tell the vessel they can't fish if the flow scale isn't functioning.***

## Level 2 Sample Station Requirements

Observer sampling stations and motion compensated scales are not required on all vessels participating in CDQ and AFA fisheries. Though they are required to carry a Level 2 observer, CDQ trawl catcher vessels are not required to provide an observer sampling station or motion compensated scale and, under certain circumstances, non-trawl catcher vessels are not required to provide observer sampling stations or scales. In addition, catcher vessels less than 60 ft LOA that deliver all groundfish CDQ, halibut CDQ, and salmon PSQ to an approved processor are exempt from observer coverage, sampling station, and scale requirements.

| Vessel Types Fishing CDQ or AFA | Sampling Station? | Flow Scale? | Platform Scale? |
|---|---|---|---|
| Vessels < 60 ft (no observer required) | No | No | No |
| Trawl catcher vessels (delivering all catch) | No | No | No |
| Trawl catcher/processors and motherships | Yes | Yes | Yes |
| Non-trawl catcher vessels (discarding at sea) | Yes | No | Yes |
| Non-trawl catcher vessels (delivering all CDQ catch) | No | No | No |
| Non-trawl catcher/processors | Yes | No | Yes |

**Figure 2-4: Sample Station Requirements by Vessel Type**

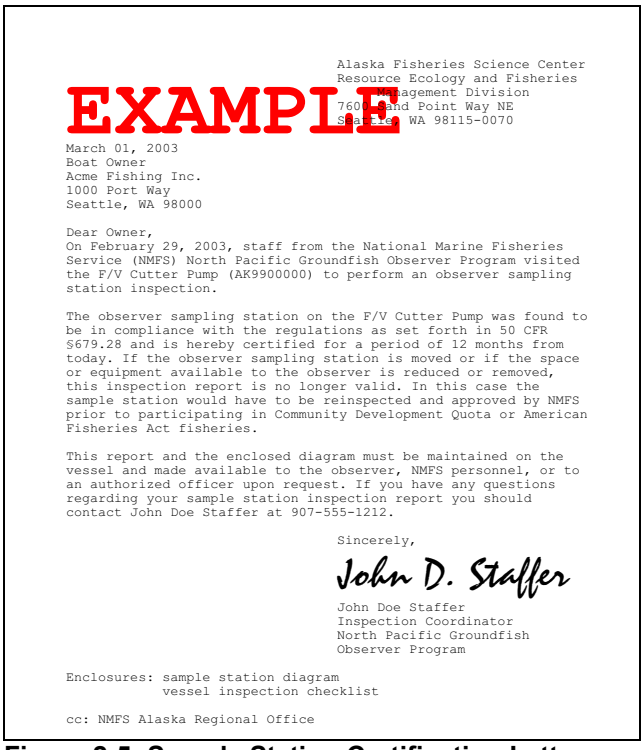
Vessels required by regulation to have an observer sampling station or motion compensated scales must have those items certified before participating in CDQ or AFA fisheries. Observer sampling stations are certified by NPGOP staff and motion compensated scales are certified by NMFS Regional Office staff. Certification is good for one year from the date the observer sampling station or motion compensated scale was approved. Once certified, vessels must maintain an Observer Sampling Station Inspection Report and/or Scale Inspection Report onboard and make that report available to the observer, NMFS personnel, or to an authorized officer upon request.

**Observer Sampling Station Inspection Reports**

When boarding a CDQ or AFA vessel read the Observer Sampling Station Inspection Report. Note the date the Inspection Report was issued (certification is good for one year), examine the sample station diagram, and compare the setup of your station against the diagram. Before you complete your inspection of the sampling station, make sure the station is completely setup. Many vessels store their motion compensated platform scales when they are not CDQ or AFA fishing or disassemble the observer sampling station. If possible, test the platform scale before your vessel embarks to make sure it passes the daily test. The scale should be turned on at least ½ hour prior to testing so that it can warm up.

If your vessel is not able to produce an Observer Sampling Station Inspection Report, inform the captain of the requirement for maintaining one onboard and to request a copy from their company office. A faxed copy and original inspection report were sent to each vessel's home office following certification and the vessel should be able to obtain a copy. If the captain is unable to obtain a copy, notify your inseason advisor that the vessel does not have a copy onboard. ***Do not refuse to sample or refuse to embark on a vessel that can't produce the inspection report.*** Once you notify your inseason advisor, NMFS will contact the fishing company and take any necessary action.

Each observer deployed on a vessel fishing with a certified sampling station should complete an Observer Sampling Station Verification Checklist in their logbook. The information you provide will be used to determine if sampling stations are functional or if modifications have been made since the station was last inspected. It is very important that you fill out the checklist completely and provide comments when necessary. You may find that your measurements are slightly different from those listed on the inspection checklist. Small differences are to be expected.



EXAMPLE

Alaska Fisheries Science Center
Resource Ecology and Fisheries
Management Division
7600 Sand Point Way NE
Seattle WA 98115-0070

March 01, 2003
Boat Owner
Acme Fishing Inc.
1000 Port Way
Seattle, WA 98000

Dear Owner,
On February 29, 2003, staff from the National Marine Fisheries Service (NMFS) North Pacific Groundfish Observer Program visited the F/V Cutter Pump (AK9900000) to perform an observer sampling station inspection.

The observer sampling station on the F/V Cutter Pump was found to be in compliance with the regulations as set forth in 50 CFR §679.28 and is hereby certified for a period of 12 months from today. If the observer sampling station is moved or if the space or equipment available to the observer is reduced or removed, this inspection report is no longer valid. In this case the sample station would have to be reinspected and approved by NMFS prior to participating in Community Development Quota or American Fisheries Act fisheries.

This report and the enclosed diagram must be maintained on the vessel and made available to the observer, NMFS personnel, or to an authorized officer upon request. If you have any questions regarding your sample station inspection report you should contact John Doe Staffer at 907-555-1212.

Sincerely,

John D. Staffer

John Doe Staffer
Inspection Coordinator
North Pacific Groundfish
Observer Program

Enclosures: sample station diagram
vessel inspection checklist

cc: NMFS Alaska Regional Office

**Figure 2-5: Sample Station Certification Letter**

**Completing the Observer Sampling Station Verification Checklist**

The following should be used to fill out the checklist in your logbook. Each item that pertains to your vessel type should be addressed on the checklist. Whenever possible, quantified units should be recorded. ***Both the lead and the second observer are required to return for debriefing with completed checklists.***

Sample Station:

**Trawlers:** If sample collection points are within the sampling station write "within station." For basket sample collection: measure from the nearest point in the sampling station to the closest point of the diverter board (or whatever device is used). For partial/whole haul collection: measure from the nearest point in the sampling station to the closest point of the portion of the belt used for partial and whole haul sampling.

**Non-Trawl:** There are three points to be considered for non-trawl vessels. The crucifier or pot launcher is the ***point where fish are brought onboard. The collection point*** is where you gather fish as they come off the line or are emptied from the pot. The ***tally station*** is the area in which tally samples are conducted. If the collection point, location where fish is brought on board, or tally station is within the sampling station write "within station." If outside, record the distance from the nearest point of the sampling station to the specified area.

Minimum Work Space:

The minimum work space must be at least 4.5m$^2$, which includes the sample table. Copy the sample station diagram and record the dimensions as you measure the station. If there is any unusable space (e.g., sump pump), record the areas length and width. Unusable space is defined as any area within the sample station where access to the floor is blocked or limited by another object or where height is restricted. A good test of usable space is to simulate moving, storing, and working with a blue basket. If a basket will not fit, then the space is probably not usable.

Table:

The length, width and height of the table should be recorded in the comment box. Measure the outside dimensions (i.e., from the outside of a lip, not from the end of the inside flat surface). If the table is adjustable, note that in the comment box. The area for the scale is in addition to this space, and should not be included in the measurements for the table. If there is any unusable space note the length and width of that area. Unusable table space is defined as an area where setting a blue basket is impossible.

Observer Sampling Scale Location and Height:

This refers only to the MCP scale. The shortest distance from the scale to the table and the height of the platform should be recorded in the comment box. Comment on whether or not the scale has a sticker confirming that its certification is current and what combination of weights are available and where they are kept. Note: MCP scale height cannot exceed 0.70m.

Flow Scale Display Visibility (trawlers only):

Note if the flow scale display is readable from where you collect unsorted catch and the area where partial/whole haul sampling takes place. Note the brand and model number of the flow scale.

Floor Grating:

Diamond plate hatch covers are acceptable in lieu of standard grating, as long as drainage and slipping are not a concern. The comment box should contain notes on type, condition, and location of grating.

Lighting:

Note the number and type of lights directly in the sampling station. Any other light sources should also be recorded.

Hose:

Note whether or not the hose reaches the sampling station, the location of the water valve, and your access to the water valve.

Unobstructed Access:

This refers to movement between the sample collection point and the sample station. Note the width of passageways you must use to move baskets of fish as well any tripping hazards or stairs. Obstructed access is any passageway less than 0.65 m wide and 1.8m high (floor to ceiling) or a passage which is blocked or limited by objects in the passageway.

Diverter Board (trawl vessels only):

The diverter board must be located after the flow scale and preferably before any sorters. Check that the diverter board is functional. Note: Some vessels have acceptable alternatives for removing catch from the flow of fish for sample collection (e.g.,trap doors).

Sample Types (trawl vessels only):

This refers to your ability, based on vessel configuration, to collect randomly chosen, unsorted portions of the vessel's catch. You must be able to use all three sample types: basket, partial haul, and whole haul samples. Specific points of concern are: obstructed visual access to sorting, length of belt available to you after the flow scale, and sufficient area to store baskets while collecting your sample.

Sample Station Inspection Report:
Note the date and exact pages of the inspection report. Were the sampling station diagram and checklist presented to you with the certification letter?

Additional Comments:
This is the place to record details which are not specifically addressed in the regulations, but are of concern to the NPGOP. Specific points for non-trawl vessels are: tally station details such as location, route between sample station and tally station, and sample collection details

**Scale Inspection Reports**
All scales required on CDQ or AFA vessels will be marked with a NOAA sticker signifying they are certified. Test weights will be stamped with NOAA insignia to indicate that they are certified. If a scale on your vessel does not have a valid "NMFS Approved Scale" sticker, you should ask to see the Scale Inspection Report. If your vessel is not able to produce a Scale Inspection Report, inform the captain of the requirement for maintaining copies onboard. Notify your inseason advisor that the vessel does not have these documents onboard. Send another message if the vessel obtains copies from NMFS or their home office. ***Do not refuse to sample or refuse to embark on a vessel that is unable to produce a Scale Inspection Report or a weight certificate.*** Once you notify your inseason advisor, NMFS will contact the fishing company and take any necessary action.

## Working with Two Observers

There are several North Pacific fisheries that require two observers aboard a C/P vessel. These include the CDQ, AFA, and Atka mackerel fisheries. Some vessels voluntarily carry two observers, even during an open access fishery. This presents observers with the unique opportunity to work together. Both observers are expected to work together as a team to provide consistency in sampling techniques, data recording and communications with vessel personnel. A "lead" observer will be assigned by your employer. The other observer is referred to as the "second." Although ***the lead observer is not in a supervisory position,*** their role is slightly different from that of the second.

### Lead Observer's Role

As a lead observer, you will be responsible for the entire data set. With the exception of the "Haul sampled by" column on the OHF, all data must be recorded under your cruise number, regardless of who actually collected it. If your vessel is equipped with ATLAS, all data entry and text messages should be entered and sent under your cruise number. As a lead observer, you are also responsible for ensuring that catch messages are sent to NMFS on time. You and the second observer(s) should maintain separate Daily Notes in your own logbooks, but all calculations must be recorded in your logbook.

Because lead observers are responsible for the data set, it is necessary for them to direct the sharing of duties and other activities of the observer team. In instances when opinions differ, the lead observer will have the immediate say in the matter. NMFS should be notified immediately and will have the final say.

As the lead, your role in debriefing is more involved than that of the second. You are responsible for submitting the data set to NMFS and for making all necessary corrections to the data set. Therefore, it is in your best interest to double check all paperwork according to the instructions given in the debriefing section (see "At Sea Preparation" on page 19-2). NMFS staff will try to debrief you and the second observer at the same time if logistically possible. This is preferred, since speaking to both observers at the same time makes it easier to clear up any data questions.

### Second Observer's Role

The second observer has the same responsibilities for data quality and integrity as the lead. As the second observer, you will record all the data you collect under the lead observer's cruise number except in the "Haul sampled by" column on the OHF where you will record which hauls you sampled. Record all calculations in the lead observer's logbook. The only data that you will collect under your own cruise number are your fish ID forms and your Daily Notes. Any compliance issues that you witness should be documented thoroughly in your logbook and the lead observer should be notified. Sampling problems that arise during your shift should

be handled immediately and you should inform the lead observer. Recurring problems will be resolved by the lead observer.

When you collect salmon scales, these should be recorded under the lead observer's cruise number and kept in numerical order with scales s/he collects. Write your initials on the back of the envelope, so that species identification verification can be done for scales collected by both observers.

If you and the lead observer do not debrief at the same time, you will need to reconstruct your time aboard the vessel during your debriefing interview. Keep very detailed notes in your own logbook regarding how you sampled and any problems you encountered to assist you in remembering specific events aboard the vessel. You may make photocopies of calculations, diagrams or other pertinent information from the lead observer's logbook to bring to debriefing if you would like (this is not required, but some observers have found it helpful). With the exception of making data corrections, your debriefing will be the same as that of a lead or solo observer.

### Shared Duties

As a part of the observer team you are expected to maintain effective communication with your fellow observer. You should agree on a specified time between shifts to discuss pertinent fishing and sampling activities that occurred during the previous shift. Decide on a ***secure*** common area to leave recent data that needs to be entered or checked by your colleague. Each observer is responsible for all hauls during his/her shift. Each observer should be on duty for no more than 12 hours in a 24 hour period. ***During CDQ and AFA, you must not sample for more than nine of these 12 hours***. Both observers should share the responsibility of collecting the data for the Vessel and Observer Haul Forms and entering data into ATLAS. Additionally, both observers are responsible for, and should take the initiative in, resolving sampling problems that arise due to the vessel setup and operation. Remember that both observers should always be advised of all pertinent activities and instances related to observer duties. Be sure to establish a system of checking calculations, data, and data entry before sending data. ***Checking someone else's data for errors is more efficient than checking your own– do both!***

You must work together to establish viable random sample frames. Since each haul represents a population and can be sampled independently, it is not necessary that both observers use the same sample frames. However, a frame must remain the same throughout any individual haul or set. So, in the event that both observers sample a haul or set, the observer who begins the sample will decide on the appropriate random sample frame and the second observer should follow that frame.

Both observers should contact NMFS if there are significant differences of opinion concerning sampling methods. Each observer must describe their sampling technique thoroughly. The inseason advisor will advise you on the proper course of action.

## Inseason Advisors and Text Messages

Vessels or plants with ATLAS will have assigned staff acting as inseason advisors. ***Be sure to alert your inseason advisor when you first board the boat***. They will answer questions, review inseason data and request corrections. Quick responses to these questions and corrections will aid in effective communications ensuring quality data for your cruise.

## Sending Data

During the course of your cruise, you may need to contact NMFS for many reasons, but the most common reason is to send your data. The data you collect at sea is vital for inseason management. When the Observer Program receives your data, preliminary quality control checks are done, and the information is made available to the Sustainable Fisheries Division in Juneau. The Division uses the observer data to determine how much catch has been removed from each regulatory area. If you do not submit data on time, and in the proper format, the Observer Program cannot provide the information necessary for making sound management decisions.

### Sending Catch Messages via ATLAS

The table below describes how often observers should send data on each vessel type. Send data as required, even if your vessel has not fished in this time period. Send in the non-fishing day positions to let the NMFS know that there was no fishing activity. ***If your vessel landed catch, but you were unable to sample for any full day, you must include a text message explaining why.*** The Observer Program needs to be able to verify that data was not collected on that day. For more information on sending data via ATLAS, refer to page 15-10.

| Vessel Type / Fishery | Transmission Frequency |
|---|---|
| C/P or mothership trawl<br>All fisheries | Once per day |
| Longline & Pot<br>MSCDQ fisheries | Once per day |
| Longline & Pot<br>Non-CDQ fisheries | 2-3 times per week |
| Processing plants | 2-3 times per week |
| Trawl catcher vessels<br>All fisheries | Once per day |

**Figure 2-6: When to Send Data via ATLAS**

### Sending Data from Pollock Catcher Vessels

If you are on a pollock catcher boat with ATLAS using proportioned delivery weights for OTC, on a daily basis you need to enter all haul data using the vessel estimate as OTC. Send this data to NMFS. After calculating the real OTC based on delivery information, edit the haul records. When you next send data, these changes will be submitted to NMFS.

If you disembark your vessel before receiving your final fish ticket ***DO NOT*** fill out paper forms and fax them once you get your delivery information. If it is possible, go to a field office where a NMFS staff member can load your ATLAS data on a computer and you can enter and transmit via ATLAS. If this is not an option, you may need to wait until you return for debriefing to enter that data.

### Correcting and Resubmitting ATLAS Data

If you are on a vessel or at a plant with ATLAS and you need to change your data, see "Editing in ATLAS" on page 15-9 for specific instructions. Any data that you edit in Atlas will automatically be sent to Seattle the next time you prepare and transmit data. If you are asked to resend ATLAS data, select a haul or date range before you prepare your data to be transmitted.

### Faxing Data

How often you send your data will depend upon your vessel type, and the fishery in which it is participating. Observers who use fax communications must fax their data on a weekly or trip by trip basis (whichever is more frequent). If you are using fax communications, your sent data will consist of your Vessel and Observer Haul Forms, and the corresponding Form 3, 7, 9, 10A, and 10B information. If no fishing was done for a trip, fax in the Vessel Haul Forms with the non-fishing day locations recorded on them. ***If your vessel landed catch, but you were unable to sample for any full day, you must include a text message explaining why.*** You may have been ill or the weather may have been bad; but whatever the reason, the Observer Program needs to be able to verify that data was not collected on that day.

Fax your catch message to the Groundfish Observer Program in Seattle at 206-526-4066 or 206-526-4207. If you have trouble sending your catch message don't give up! Call the Observer Program collect at 206-526-4240 if you continue to have problems. If no one answers, leave a voice mail message. Include your name, cruise number, vessel name, and the reason why you can't send your data.

Questions or text messages can be included with your data on a blank, unlined sheet of paper and may be hand written or typed. Please print or use a large font so faxes can be easily read.

## Correcting and Resubmitting Faxed Data

If you have a correction to data that you have previously faxed to the Observer Program, simply correct the information on your paper form(s) and ***circle all the changes!*** At the top of the form, write "resubmission" so we know you are sending corrections to previously faxed data.

Occasionally, the Observer Program will not receive some or all of your data due to a communications problem. If this happens, you may get a message from your employer instructing you to resend the missing data. In this case, simply fax the missing data.

..

**OBSERVER HAUL FORM**

Page 4 of 10 for vessel

| Cruise Number | Vessel code |
|---|---|
| 8008 | A110 |

Resubmission

Observer name JANE DOE

Vessel name C/P NET INCOME

Page _____ of _____ for transmission

| Plant / Processor name | Location | Processor code |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Haul # | Haul sampled by (cruise no.) | RST on haul? (y= on, n= off, x= n/a) | RBT on break? (y= on break, n= no break) | % Monitored for marine mammals | Bird deterrence device (longline) | Trawler seabird sample type | Total hooks or pots in set | Official Total Catch (OTC) in metric tons | Observer's catch estimate in metric tons | B, C, or W | Density in mt/m³ | Processor code (for catcher vessels only) | Date fishing began for delivery Month | Date fishing began for delivery Day | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 97 | 8008 | X | N | 100 | | P | | 98.03 | 98.03 | C | .89 | | | | |
| 98 | 8016 | | | | | | | 82.53 | 82.53 | C | .86 | | | | |
| | | | | | | | | . | . | | . | | | | |
| 99 | 8008 | | | | | | | 47.07 | 47.07 | C | .91 | | | | |

**Figure 2-7: Resubmitted Fax Data (example)**

# TRAWLER CATCH DATA

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## List of Priorities

- Record fishing effort information from the vessel's official NMFS logbook.
- Obtain independent estimates of catch for at least every haul sampled for composition when required.
- Bring back the "goldenrod" copies of the vessel logbook pages.

## Introduction

This section covers the collection of fishing information for trawl vessels and motherships taking unsorted codend deliveries. It also includes methods used to obtain independent estimates of total catch and how to determine the official total catch (OTC). At the end of this section, instructions are given on how to record fishing effort data and total catch estimates onto the Vessel and Observer Haul Forms. If you are assigned to a shoreside processing plant or a floating processing plant (a vessel that pumps or brails sorted catch from the hold of shoreside delivery vessels) you will need to refer to see "SHORESIDE PLANTS AND FLOATING PROCESSORS" on page 8-1 for record keeping information. Observers aboard longline and pot vessels, refer to "LONGLINE DATA COLLECTION" on page 6-1 or "POT VESSEL DATA COLLECTION" on page 7-1.

**Terminology**

The following terms will be used throughout this chapter to describe the duties on trawl vessels. You will need to fully understand these terms in order to successfully work on a trawl vessel:

**Brailer** - a configuration of netting attached to a crane, used to transport fish and other materials from one vessel to the dock or to another vessel

**Codend** - the end of a trawl net where the catch is concentrated during haulback

**Haulback** - when the vessel lifts the net from fishing depth

**Gantry** - a frame structure, usually at the aft of a vessel, which supports pulleys (blocks) used in setting and retrieving trawl nets

**Gilson** - a lifting cable that is attached to a codend at the end of haulback to pull the codend on board the vessel

**Live Tanks** - tanks or bins on factory trawler vessels where the catch is dumped prior to sorting or processing

**Main Wires** - the two large cables used to connect the trawl net to the vessel while fishing

**Motion Compensated Flow Scale** - a scale built into a conveyor belt; the scale maintains a running tally of weight moving across the belt, in addition to comparing it to a constant weight in order to compensate for vessel movement

**Motion Compensated Platform (MCP) Scale** - an electronic flatbed scale with a constant weight load cell which allows for compensation of the vessel's movement

**RSW Tanks** - holding tanks or bins that use refrigerated sea water to keep fish fresh until delivery

**Third Wire** - a cable in the center front of the net attached to a trawl sonar system (often called the “suitcase”)

**Trawl Alley** - the central passage on a trawl vessel where the codend or fish is placed after haulback

**Trawl Doors** - often referred to as “doors,” these are two metal plates, each attached to a main wire, designed to keep the mouth of the net open while fishing

**Trip** - the time period from when the vessel leaves harbor until it returns to harbor to offload product or catch

**Winch** - a hydraulic machine with one or more drums on which to coil rope, chain, or cable for hauling or hoisting

**Figure 3-1 Trawler Terminology**

## Fishing Effort Data Collection

### Vessel Logbooks

All vessels that carry observers are required by federal regulation to maintain a current NMFS "Alaska Groundfish" logbook for daily fishing and processing activities. The captain, or an assigned crew member, must enter details of fishing activities, effort and catch in this logbook. You will use the logbook to gather the information for the Vessel Haul Form (VHF). Under regulation 50 CFR 679.50, observers have the right to inspect and copy the NMFS logbook and all other documentation of fishing effort. For the VHF, you need to obtain following information from the vessel logbook:

- type of trawl gear used,
- date and time of gear deployment,
- latitude and longitude of gear deployment,
- average bottom depth and average gear depth,
- date and time of gear retrieval,
- latitude and longitude of gear retrieval,
- the vessel crew's estimate of total catch weight,
- whether this haul was from an IFQ, and
- the CDQ group number, if applicable.

In addition, you need to record a code corresponding to the gear performance. You will need to ask the captain to let you know if there were any problems during the tow because this information is not recorded in the vessel logbook.

### Electronic Logbooks

Some vessels are using third-party software to maintain their logbooks electronically. This logbook software is used to capture the same information as the paper versions, but are able to be sent to the Alaska Regional office electronically after each trip. You should bring a copy of the printout back with you in lieu of a goldenrod copy. Currently, you should expect to see electronic logbooks only aboard catcher vessels, but use of this software may expand in the near future. An example of the electronic logbook printout is shown in Figure 3-3. Always be sure to ask the captain what is included in the vessel estimate that you record on your VHF.

### Verifying Logbook Information

Before recording anything from the vessel logbook onto your data forms, you must verify that the data reported are accurate. If you find that a vessel logbook entry is wrong, you should write down the ***correct*** information on the VHF. Document the incorrect data in your logbook, and mention the discrepancy to the captain, or person in charge of maintaining the logbook. Please refer your captain to the Region if he has questions (see page A-48). Usually, the error will be corrected by the crew member, so you should check the logbook for these changes. It is important that you record the correct information on the VHF even if the logbook entry is never amended. In general, your VHF will match the vessel logbook, with the possible exception of these corrections. Verify the following logbook entries:

**Date and Time of Gear Deployment and Retrieval**

When the vessel is setting gear, note the time when the winches stop paying out cable and the vessel increases speed. This is the time when the net reaches fishing depth, and begins fishing. This is the time that should be recorded as the "time of gear deployment" in the vessel logbook and on your forms. The time when the winches start to remove the net from fishing the fishing depth should be recorded as the "time of gear retrieval." The vessel logbook may have erroneous times listed, because crew may list the time the net leaves the stern and the time the codend is pulled onboard. These times do not accurately reflect fishing effort. Let the officer in charge of the logbook know if wrong times are listed. If the incorrect data continues to be logged, consult NMFS for advice on how to record your haul data.

**Start and Stop Times that Do Not Reflect True Fishing Duration**

Sometimes, the codend may be retrieved from fishing depth but not landed, and then reset to fishing depth. This may be done to turn the vessel or if the crew wants to check the contents of the net. When this occurs, the start and stop times recorded on the VHF do not reflect the true fishing effort, since the fishing duration was affected. List all "fishing duration affected" tows on the VHF with a code "9" in the gear performance column. Ask the captain to note when the true fishing duration is not the difference between the start and stop times listed in his logbook.

OMB Control No. 0648-0213
Expiration Date: 7/31/05

WHITE - Vessel Copy: Keep in Logbook
GOLDENROD - Observer copy
BLUE - Discard Report: Submit to Processor
YELLOW - NMFS Copy: Remit

Revised: 10/01/2004

**CATCHER VESSEL DFL GROUNDFISH TRAWL GEAR**

VESSEL NAME: Fishin' Impossible
OPERATOR NAME AND SIGNATURE: Ethan Hunt Ethan Hunt

Date (M - D - Y): 2 - 4 - 05 PAGE: 22
ADF&G Vessel No. 434446
Federal Fisheries Permit No. 4344

IDENTIFICATION

MANAGEMENT PROGRAM (Check if applicable and enter number)
CDQ ☐ Exempted ☐
Research ☐ AIP ☐
No. _____

| INACTIVE | START | END | REASON |
|---|---|---|---|
| | | | |

GEAR TYPE (circle one): Non-pelagic trawl (Pelagic trawl)
CREW SIZE:
FEDERAL REPORTING AREA: 517
TRAWL GEAR ONLY (Circle one): COBLZ RKCSA

OBSERVER INFORMATION
OBSERVER NAME AND CRUISE #: John Doe 8800
NO. OF OBSERVERS ONBOARD: 1

CATCH BY HAUL

| HAUL NO | TIME OF GEAR DEPLOYMENT | BEGIN POSITION OF HAUL LATITUDE | BEGIN POSITION OF HAUL LONGITUDE | AVE. SEA DEPTH (Circle M or FM) | AVE. GEAR DEPTH (Circle M or FM) | DATE AND TIME OF GEAR RETRIEVAL | END POSITION OF HAUL LATITUDE | END POSITION OF HAUL LONGITUDE | TARGET SPECIES CODE | ESTIMATED TOTAL ROUND CATCH WEIGHT (Circle LB or MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 0130 | 5451 | 16611 | 83 | 82 | 0745 | 5450 | 16558 | 270 | 160,000 |
| 11 | 0900 | 5452 | 16554 | 91 | 90 | 1800 | 5452 | 16519 | 270 | 170,000 |
| 12 | 1845 | 5448 | 16518 | 71 | 68 | 2300 | 5430 | 16539 | 270 | 100,000 |
| 13 | 2345 | 5451 | 16512 | 61 | 60 | 2-5 0630 | 5444 | 16518 | 270 | 100,000 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

CATCH DELIVERY INFORMATION

☐ CHECK HERE IF DELIVERIES ARE UNSORTED COD ENDS

✓ CHECK HERE IF DELIVERIES ARE PRESORTED AT SEA. IF FISH PRESORTED, INDICATE WHOLE DISCARDS AND DISPOSITION

For groundfish and Pacific herring, circle: lbs. or nearest 0.001 mt.

For Pacific halibut, Pacific salmon, king crab, and Tanner crab, record in numbers

DELIVERY

| DELIVERY DATE | RECIPIENT'S NAME |
|---|---|
| ADF&G FISH TICKET # | ADF&G PROCESSOR CODE |

DISCARD/DISPOSITION

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES CODE | 123 | 122 | 450 | 200 | | | | | | |
| PRODUCT CODE | 98 | 98 | 98 | 98 | | | | | | |
| BALANCE FORWARD | Ø | Ø | Ø | Ø | | | | | | |
| DAILY TOTAL | 100 lbs | 200 lbs | 3 | 2 | | | | | | |
| CUMULATIVE TOTAL SINCE LAST DELIVERY | 100 lbs | 200 lbs | 3 | 2 | | | | | | |

COMMENTS

**Figure 3-2 Vessel Logbook Example**

**Catcher Vessel Daily Fishing Log 04/02/2005**

Vessel Name: Fishy II
ADF&G Number: 000011
Federal Permit Number: 1111
Original

Page No.: 04/02/2005-1
Printed: 04/04/2005 11:38:48
Activity: Fishing

| Gear Type | Hooks/Skate | Skates Used | Crew Count | Observer Count | Lead Observer | Cruise Number |
|---|---|---|---|---|---|---|
| Non-pelagic trawl | | | 5 | 1 | Tad Pohl | 9983 |

| Haul No. | Set Date/Time | Set Latitude | Set Longitude | Retrieval Date/Time | Ret. Latitude | Ret. Longitude | Target Species | Est. Total Catch Mt | Sorted at Sea | Sea Depth | Gear Depth | FRA | RKCSA | OBLZ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-84 | 04/02/2005 07:30:35 | N 5445.098 | W 16505.155 | 04/02/2005 12:00:35 | N 5452.000 | W 16456.000 | 110 Pacific Cod | 7.000 | Y | 42 | 42 | 509 | N | N |

| Species | Sex | PSC (X if Yes) | Management Plan | Quota Owner | Estimated Weight | Lb or Mt | Estimated Count | Product | Discarded at Sea (X if Yes) |
|---|---|---|---|---|---|---|---|---|---|
| 110 Pacific Cod | U | | AFA | 103 | 6.976 | Mt | 0 | 01 | |
| 121 | U | | AFA | 103 | 0.010 | Mt | 0 | 98 | X |
| 123 Rock Sole | U | | AFA | 103 | 0.010 | Mt | 0 | 98 | X |
| 122 Flathead Sole | U | | AFA | 103 | 0.001 | Mt | 0 | 98 | X |
| 160 Sculpins | U | | AFA | 103 | 0.001 | Mt | 0 | 98 | X |
| 270 Pollock | U | | AFA | 103 | 0.001 | Mt | 0 | 98 | X |
| 125 Rex Sole | U | | AFA | 103 | 0.001 | Mt | 0 | 98 | X |
| 200 Pacific Halibut | U | X | AFA | 103 | 0.000 | Mt | 20 | 98 | X |
| 931 Bairdi Tanner Crab | U | X | AFA | 103 | 0.000 | Mt | 2 | 98 | X |

| Haul No. | Set Date/Time | Set Latitude | Set Longitude | Retrieval Date/Time | Ret. Latitude | Ret. Longitude | Target Species | Est. Total Catch Mt | Sorted at Sea | Sea Depth | Gear Depth | FRA | RKCSA | OBLZ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-85 | 04/02/2005 12:45:50 | N 5452.000 | W 16455.000 | 04/02/2005 17:00:50 | N 5452.000 | W 16457.000 | 110 Pacific Cod | 1.000 | Y | 42 | 42 | 509 | N | N |

| Species | Sex | PSC (X if Yes) | Management Plan | Quota Owner | Estimated Weight | Lb or Mt | Estimated Count | Product | Discarded at Sea (X if Yes) |
|---|---|---|---|---|---|---|---|---|---|
| 110 Pacific Cod | U | | AFA | 103 | 0.700 | Mt | 0 | 01 | |
| 122 Flathead Sole | U | | AFA | 103 | 0.150 | Mt | 0 | 98 | X |
| 123 Rock Sole | U | | AFA | 103 | 0.100 | Mt | 0 | 98 | X |
| 125 Rex Sole | U | | AFA | 103 | 0.039 | Mt | 0 | 98 | X |
| 270 Pollock | U | | AFA | 103 | 0.010 | Mt | 0 | 01 | |
| 160 Sculpins | U | | AFA | 103 | 0.001 | Mt | 0 | 98 | X |
| 200 Pacific Halibut | U | X | AFA | 103 | 0.000 | Mt | 8 | 98 | X |

**Figure 3-3 Electronic Logbook Example**

**Latitude and Longitude of Gear Retrieval**

The captain or mate will read the gear retrieval position from the GPS navigation systems located in the wheelhouse. The locations recorded in the vessel logbook should be the ship's position when the net was removed from the fishing depth. If you notice large changes in position between one haul and the next, check with the captain if these changes are realistic for his vessel. A large change in position is more than two degrees of latitude or longitude in the same day, or more than six degrees of latitude or longitude over a two day period. These positions may be due to an incorrectly recorded position, or may be correct if the boat moved a great distance between hauls. Occasionally, you should check that the latitude and longitude listed in the logbook match that on the GPS display during the haulback.

**Catch Weight Estimate**

The vessel operator must make his own estimate of a haul's weight. By regulation, the estimated groundfish catch weight must be entered into the vessel logbook within two hours of gear retrieval. The vessel operator may record this weight in either metric tons or pounds, but you must record it in metric tons on your VHF. If you need to convert the logbook value from pounds to metric tons, show this calculation in your observer logbook.

During your first few days on board, ***ask the skipper how he makes these estimates. Record his response in your observer logbook***. You need to know how this number was derived, especially if you have to use it as an official total catch (OTC) weight.

| TARGET SPECIES CODE | ROUND CATCH WEIGHT | | |
|---|---|---|---|
| | TOTAL HAUL WEIGHT (Circle one: (LB) or MT) | IR/IU SPECIES | |
| | | SPECIES CODE | (Circle one: (LB) or MT) |
| 141 | 45,000 | 270 | 500 |
| | | 110 | 800 |
| | | SNF | 1100 |

The C/P trawl vessel logbook instructions read that the vessel operator is to record species managed under the IR/IU regulations (see page 18-10) separately from the rest of the catch weight. ***The TOTAL HAUL WEIGHT column should be your vessel estimate***. Check with your captain to make sure that is what he is recording.

## Observer Estimates of Total Catch Weight

Independent estimates of catch weights are made on trawlers that are not using certified motion compensated scales or delivering unsorted pollock catches to a processing plant. If you are on a vessel using a certified motion compensated flow scale, which is passing daily tests, you ***must not take independent observer estimates.*** If you are on a pollock catcher-only vessel and you are proportioning delivery weights for OTC, it is ***not necessary to take independent observer estimates.***

On vessels which observer estimates are taken, make your own independent, substantiated and unbiased estimates of catch weight for as many hauls as possible. There are three methods for determining an independent total catch weight: 1) a weighed estimate-weighing the entire catch using your scales, 2) calculating weight using a bin volume and density, or 3) calculating weight using a codend volume and density. You can use any of these three methods on a vessel, depending upon catch size and composition.

### Weighed Observer Estimates

Weighed independent estimates can only be obtained using observer scales. Observer scales are any of the scales provided by NMFS or a certified, motion-compensated platform scale which has been tested and passed within a 24-hour period. Motion compensated flow scales ***cannot*** be used to obtain an independent estimate, even if they are certified. Realistically, you will only be able to use a weighed independent estimate if the haul weighs less than 500 kilograms. A weighed observer estimate is indicated by a W in the B, C, or W column on the Observer Haul Form (see "Completing the OHF on Trawl Vessels" on page 3-17).

### Volumetric Observer Estimates

The way the catch is handled on a vessel will help you determine which method of independent catch estimation you will be able to use. If the boat is a C/P, the catch is often held in the codend for a few moments before being dumped into a tank or bin. In this case, both codend and bin volumes may be obtained, so you should determine which estimate you feel most comfortable with. If the boat is a catcher only vessel, the codend could be emptied directly onto the trawl deck for sorting or dumped below decks into

refrigerated seawater (RSW) tanks. In this case, a codend estimate may be the best method for obtaining an independent estimate, although you may be able to use checker bins or trawl alley to take a bin volume.

Look at all of the areas where fish will be held before processing and delivery, such as the codend, trawl alley, checker bins and/or live tanks. Determine which container is the most accurate and safe to measure. Total catch volume, multiplied by a density factor (see "Calculating Density" on page 3-9), yields total catch weight, called the Observer Estimate and recorded on the Observer Haul Form (OHF).

When making volumetric estimates of the total catch, keep the following in mind:

- You need to make or verify each component of the estimate. Observer estimates cannot be made by guessing the weight of the catch or by using numbers provided by the crew. They must be calculated by your actual measurements. All dimensions, calculations and methods must be noted in your logbook to document and explain your estimates.
- On C/Ps or motherships, make volumetric estimates only if a certified, tested motion compensated flow scale is not being used.
- On catcher vessels, make volumetric estimates of checker bins, trawl alleys, codends or codend sections- adding the sections together for a total volume.
- The formula for determining catch weight using volume and density is:

**volume ($m^3$) X density ($mt/m^3$) = catch weight (mt)**

- Record your total catch weight estimates on the OHF, even if you are not totally confident about the accuracy of the estimate.
- If you find that none of the methods suggested will provide an accurate independent catch estimate, contact NMFS staff for assistance.

**Observer Estimates by Bin Volumes**

The steps in making a volumetric estimate of live tanks, trawl alleys, or checker bins are:

1. Measure the area of the empty bin.

Many fish bins and tanks are irregularly shaped and need to be divided into several sections in order to be measured. To do this, sketch out the bin and visually break up the floor area into regular shaped sections that can be measured easily. Figure 3-4 shows how an unusual shaped trawl alley was divided and measured, so a floor area could be calculated.

2. Determine the appropriate formulas for each area of the bin.

Consult page A-14 to select the appropriate volumetric formula for each separate shape. Each mathematical formula identifies what dimensions are measured (length, width, height, short radius, diameter, etc.). The summation of the areas of all the sections will provide you with the total area of the bin.

3. Measure the height of the catch in the bin.

The height of the fish in the bin provides the final dimension needed to obtain the volume of the catch. If you are using a fish bin, there may be permanent marks that you can use for a depth measurement. If you use such markings, you must first verify them. If the bin is unmarked, ask permission to mark the bin with your own height gauge. Paint or other permanent writing material may be available from crew members. Marks will erode over time and may need to be replaced. The bin or tank should be marked on all four sides and all markings should be visible. Your height gauge should be in increments of no more than 10 cm. On some vessels, the height of the catch can be measured by placing a calibrated stick into the bin or trawl alley to measure the depth of fish at several points.

4. Calculate and record bin volume and catch weight.

Record height measurements on your raw data deck sheet and record all area and volume calculations in your logbook. When you take multiple measurements for one dimension, such as height, use an average or a weighted average in your final volume calculation. Make sure that all of your measurements are as precise as possible and describe your methods in your logbook.

**Potential Bin Volume Biases**

The following factors that may affect the accuracy of your bin volumetric estimates:

- the tanks may be enclosed such that the depth of fish cannot be determined;
- the tank may hold fish and an indeterminate amount of water;
- the tank may be too difficult to measure because of many irregular shapes; or
- the fish level may be too shallow to obtain an accurate reading.

If you notice these situations, codend volumes would be a better alternative for your observer estimate. Document all methods used for obtaining independent observer estimates in your logbook. Be sure to include descriptions of any problems you encountered.

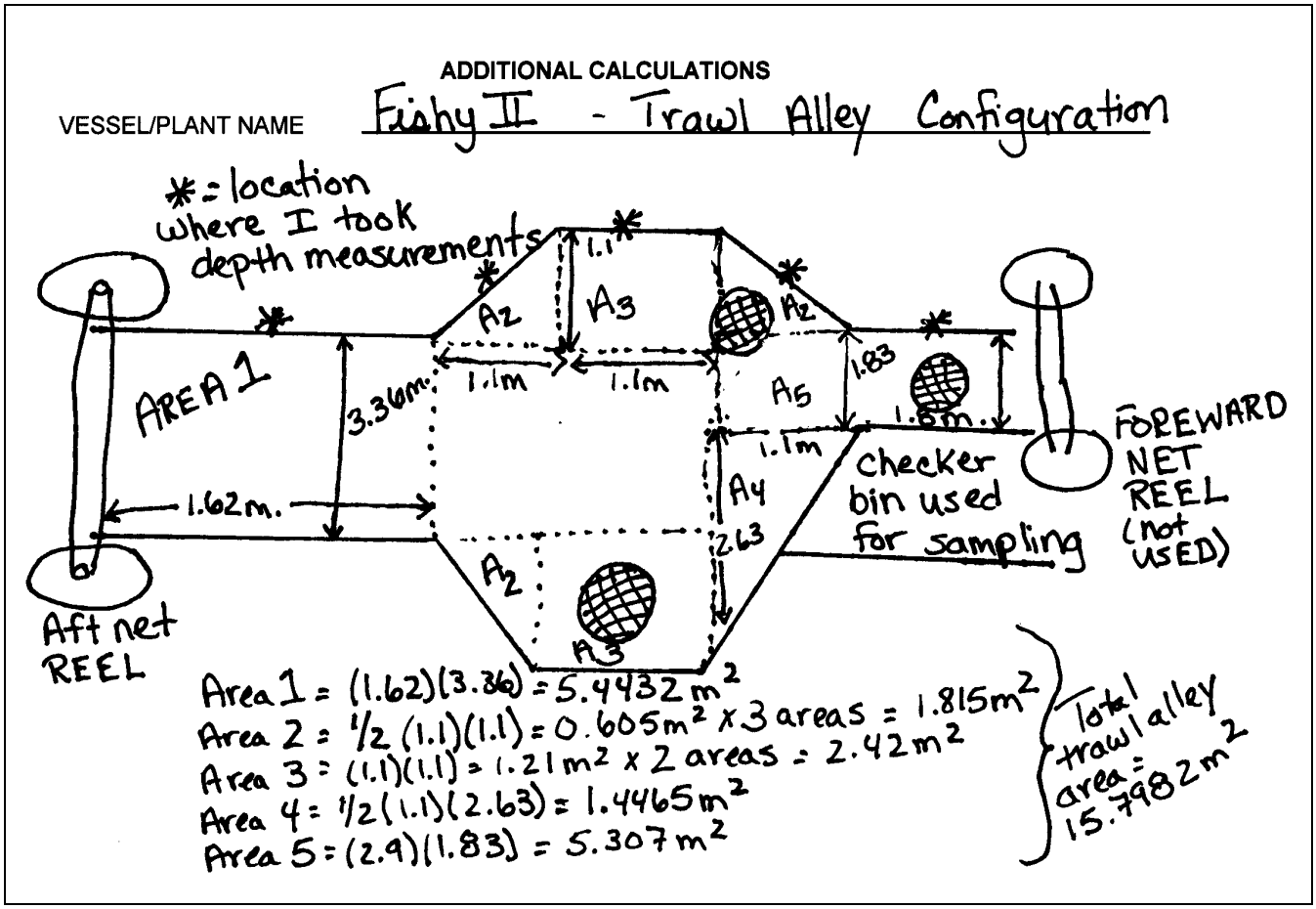


**Figure 3-4 Calculating Area of an Irregular Shaped Trawl Alley**

**Observer Estimates by Codend Volume**

When measuring a codend always remember that safety is your first concern. Nets tend to slide and roll. Ask crew members for assistance; their help will make the task easier and safer. Follow the steps listed below to take an accurate codend measurement.

1. Determine the appropriate geometric shape(s).

Decide on the appropriate formula(s) you will use to calculate the volume of each codend. Using the formula, determine which dimensions you will need to measure in order to obtain a volume. Refer to page A-14 for the formulas required to calculate the various volumetric shapes.

2. Measure sections of the codend, using actual measurements and/or reference points.

Measure the various dimensions of the codend. Take height and width measurements from several segments to obtain the average height and width for the net. You may want to acquire a long stick, or similar item, and mark it for use as a height gauge. When sighting across the net for a height, your eyes should be level with the top of the net. If the net is large, moving around dangerously, or brought aboard in segments, using pre-measured areas of the deck is a safer alternative for codend measurements.

- Pre-measure the deck, if you are using reference points. Measure the length of the trawl alley and place marks along its length to determine the codend length.
- Measure structures on the deck that you can use as a gauge for estimating dimensions of the codend. Make easily read marks on deck structures in increments of 1/10 to 1/4 meters. Verify the measurements of any marks left by previous observers before using them.
- When measuring a codend, the net is often different than pre-measured distances. In these circumstances actual measurements from the pre-measured marks are preferred over visually estimated distances.
- Measure the width of the entire trawl alley. If the codend does not fill the entire alley, measure the distance between the codend and the trawl alley walls. This can be done using the tape measure or by pre-measuring your clipboard, a stick or ribs or planks in the deck. Subtract this measurement from the total trawl alley width to determine the codend width.
- If the codend is the same height as your shoulder, head, arm, or other part of your body, use this height for the measurement. This is the least preferable method of obtaining a measurement, since it isn't as precise as one obtained with a measuring stick. Use this option if you are unable to take more precise measurements.

3. Record dimensions, calculations, and volumetric formula.

In your logbook, record the methods, dimensions and calculations used in obtaining your volumetric estimate. Record the calculated volume in cubic meters. Also document the calculations used to obtain the metric tonnage of the catches, including density calculations when appropriate.

**Occasionally, large items like boulders are caught. See page 4-16 for information on how to account for these in your estimates.**

**Measuring Large Codends**

Codends can sometimes be larger than the trawl deck and must be emptied in several sections. To determine the codend volume in this situation, measure each codend section as it is brought onboard. Use the reinforcing cables or "expansion straps" around the circumference to divide the codend into sections. Determine a volume for each segment of the net measured and add them together for a total volume of the codend. ***Do not apply a predetermined or constant volume to the number of codend segments to calculate your independent observer estimate!***

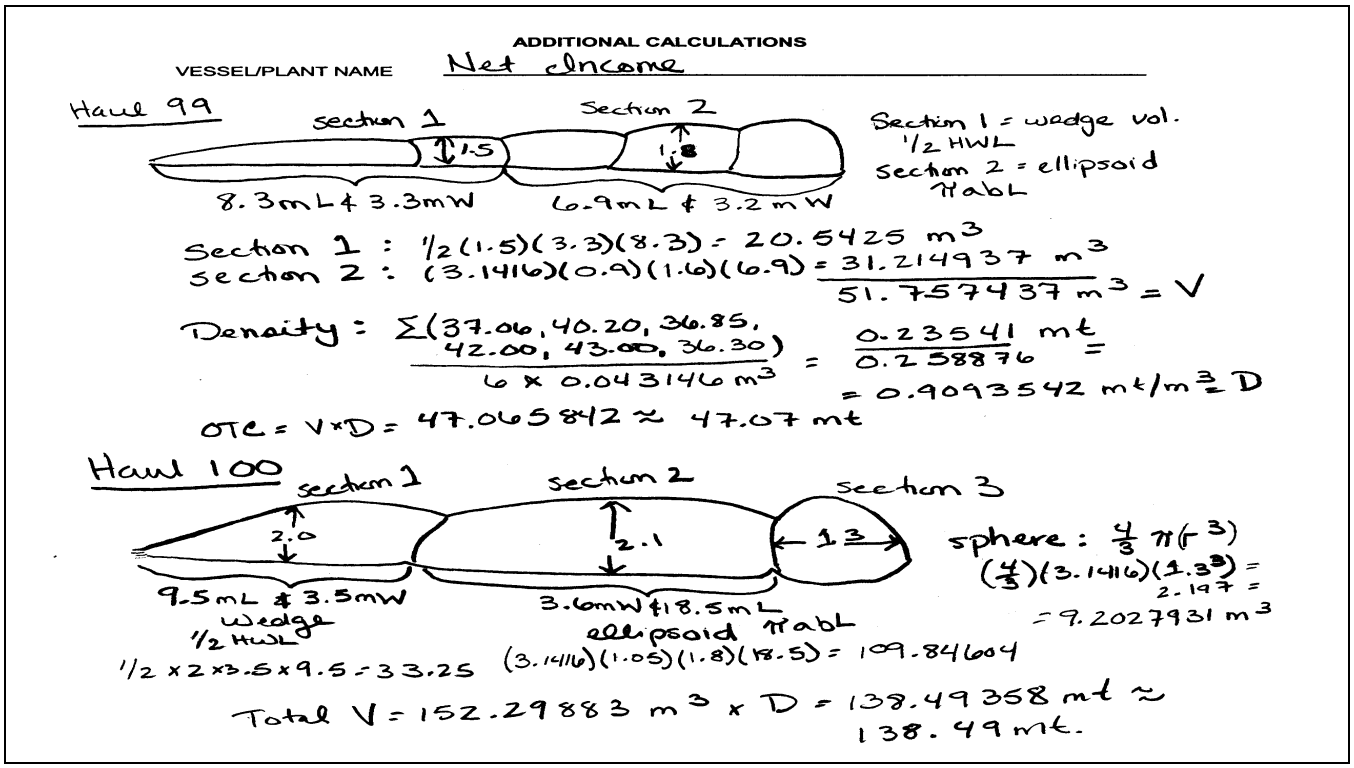


**Figure 3-5 Measuring Large Codends (example)**

## Calculating Density

Once you have obtained a volumetric estimate of the catch, you must calculate the weight of the catch. To do this, you need to multiply the catch volume by a density. Density is weight per unit of volume and, for the Observer Program, is expressed in metric tons per cubic meter. Densities are either prescribed for a given fishery, or will need to be calculated from a sample of the catch. Multiply the density by a codend or bin volume to calculate the catch weight estimate.

### Prescribed Densities

If the catch consists of ***50% or more pollock***, apply a density of 0.98 mt/m³ when using bin volume or a density of 1.02 mt/m³ when using codend volume.

### Calculating Density

If you are calculating density, you must take a density sample ***at least once a day***, more often if there are significant changes in species composition between hauls on one day.

You must measure both the volume and weight of a sample of catch to calculate density. Choose a container that has a shape which can be calculated and will hold 500 kg or less. An oil drum or plastic garbage can holds about 300 kg and are excellent density containers. A plastic tote, filled part way, is also excellent for calculating density estimates. As a last resort, use ***four*** or more blue observer baskets for the density sample. Refer to Figure 3-6 when using the Observer Program's standard blue basket to obtain density estimates.

<u>To calculate density:</u>

1. Determine the volume of your container by measuring it using the same methods you would use to measure the volume of fish in a bin. If you are using your blue baskets, use the volume given in Figure 3-6.

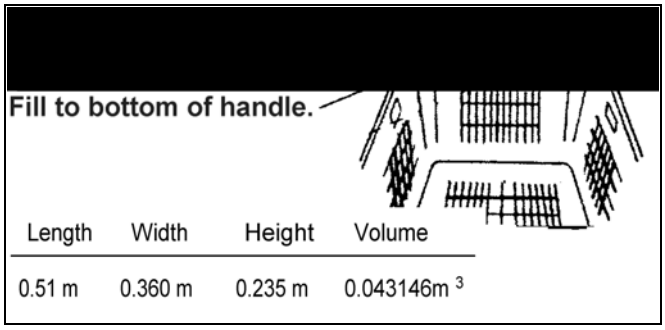


**Figure 3-6 Blue Basket Volume**

2. Fill the container with randomly selected unsorted catch. In many instances it will be easiest to use your species composition sample. Settle or arrange the fish to minimize interstitial space.

3. Fill your containers consistently to the same level or measure the height of the catch in your containers and record this on your deck sheet. If you are using your blue baskets to test for density, be sure to fill it to the bottom of the handle. This level corresponds with the standard volume given in Figure 3-6.

4. Weigh everything in your density sample. Record this weight on your deck sheet.

5. Use the formula below to calculate density. Document these calculations in your logbook!

**density (mt/m$^3$) =**
**wt. of sample (mt) ÷ volume of sample (m$^3$)**

## Official Total Catch (OTC) Weight

The official total catch (OTC) is the best estimate, in your judgment, of total catch weight for each haul. The OTC is a weight estimate, or verified scale weight, of all species caught, whether retained or not. There are four options for OTC's in order of preference: 1) flow scale weight, 2) proportioned plant delivery weight, 3) observer volumetric estimates of catch weight, and 4) vessel operator's hail weight. The option you choose will depend on your vessel type and fishery. If you find that none of the options will provide an accurate catch weight, or if you have concerns about the accuracy of an OTC method you are using, contact NMFS staff for assistance. As you gain experience, the method you use to obtain the best estimate of total catch may change. All the methods you use should be recorded in your logbook, along with any corresponding calculations.

### Options for OTC on C/Ps and Motherships

Three of the four options for OTC can be used on a C/P. They are, in order of preference: 1) flow scale weight, 2) observer estimate and 3) vessel estimate. C/P vessels completely sort their catch at sea and make a preliminary or final product from retained species, so delivery weights are not an option for OTC. The three valid options are described in detail below.

**Option 1- Flow Scale Weights:** Motion compensated flow scales record the weight of catch as it runs over the scale. If you are going to use the flow scale to determine the OTC, the crew must test the scale every 24 hours. You may use the flow scale readout for OTC ***only*** if it has been tested for that day, has passed the test, and the test was witnessed by an observer. For more information of flow scales, see page 2-13.

**Record of Daily Scale Tests**

Vessel Name: Pacific Rover Date: 06/01/00
Time test started: 12:13

I. Weigh Fish on Observer Platform Scale

| Basket # | Wt Fish + Basket (kg) | Basket # | Wt Fish + Basket (kg) | Basket # | Wt Fish + Basket (kg) | Basket # | Wt Fish + Basket (kg) |
|---|---|---|---|---|---|---|---|
| 1 | 46.83 | 8 | 43.29 | 15 | | 21 | |
| 2 | 40.91 | 9 | 41.16 | 16 | | 22 | |
| 3 | 36.22 | 10 | 40.33 | 17 | | 23 | |
| 4 | 38.93 | 11 | 37.86 | 18 | | 24 | |
| 5 | 45.25 | 12 | 39.22 | 19 | | 25 | |
| 6 | 40.01 | 13 | | 20 | | 26 | |
| 7 | 32.64 | 14 | | Total weight all fish+baskets | | | 482.64 |

II. Calculate Percent Error of Flow Scale
Scale Indicator: Begin Test: kg
End Test: kg

| Total weight fish and baskets (kg) | - | Weight of Baskets | 0 | Platform scale weight of fish | Weight of Fish on Flow Scale (kg) | Error (B) - (A) | % Error = (C) ÷ (A) x 100 |
|---|---|---|---|---|---|---|---|
| 482.64 | | 50.76 | | 431.88 (A) | 433.62 (B) | 1.74 (C) | 0.4028% |

III. Sea Conditions (Beaufort Scale) at Time of Scale Test (Circle One):
0 1 (2) 3 4 5 6 7 8 9 10 11 12

Signature of vessel operator [signature]
I observed this test and to the best of my knowledge it was conducted in accordance with 50 CFR 679.28 (b)(3)
Signature of observer Chris Observer

INSTRUCTIONS
1. Collect approximately 400 kg of fish in baskets and weigh the baskets of fish on the platform scale. Record the weight of each basket of fish (basket plus fish) in Section I.
2. Record the total weight of all baskets plus fish in the first box in Section II.
3. Record the weight of the baskets in the second box. Subtract the weight of the baskets from the total weight of fish plus baskets to determine the weight of the fish only, record this weight in the third box in Section II. This is the platform scale weight of the fish (A).
4. Record the weight displayed on the flow scale before and after the test fish are weighed.
5. Weigh the fish from the baskets on the flow scale. Record the weight in the fourth box of Section II (B).
6. Calculate error of flow scale by subtracting the platform scale weight (A) from the flow scale weight (B). Record the error (C) in the fifth box of Section II.
7. Calculate percent error by dividing the error (C) by the known weight of the fish (A) and multiplying by 100. Record this information in the last box of Section II. The scale is weighing within 3 percent error if the result is between -3.0% and +3.0%.
8. Record Beaufort Scale sea conditions at time of test.
9. Have form signed by vessel operator and observer.

**Figure 3-7 Flow Scale and Record of Daily Scale Tests**

**Option 2- Observer Volumetric Estimates:** Record the observer estimate as the OTC. Your estimates must be made by measuring the volume of the catch from the live tank, bins, trawl alley or codend, or by weighing the total catch using your observer scales. If you are using observer estimate for OTC, you should obtain an observer estimate for as many hauls as possible.

**Option 3- Vessel or Captain's Estimate:** When neither a tested flow scale weight nor an independent observer estimate of total catch are available, record the vessel operator's estimated catch weight as the OTC. Remember to ask the skipper how he derives this number and record his answer in your logbook. It is very important that you understand how all your OTC estimates were made.

### Options for OTC on Catcher-Only Trawlers

Three of the four options for OTC can be used on a catcher only vessel. They are, in order of preference: 1) proportioned delivery weight, 2) observer estimates, and 3) captain's estimate. Catcher only vessels are usually fairly small, and none currently carry motion compensated flow scales.

The option you decide to use will depend mostly upon which fishery your vessel is participating in, and the way the crew handles the catch. Pollock is a fairly clean fishery, and most of the catcher vessels that target it do not sort and discard bycatch at sea. When the majority of each catch is delivered to a processing plant, the best option for OTC is a proportioned delivery weight. Other fisheries usually have more bycatch than does pollock, so the crew may sort the catch at sea, keeping only the desirable fish and discarding the rest. In these situations, at-sea discard is too difficult to keep track of, so observer estimates or captain's estimates are your best options for OTC.

**Option 1- Proportioned Delivery Weight:** Using this method, you will calculate the OTC for each haul by proportioning the total delivery weight of the combined catches. This method should only be used in the pollock fishery when there is little or no sorting at sea. When the vessel delivers its catch to a processing plant, the fish are weighed. The scales at each plant are tested by the State of Alaska annually and they do not need to be tested daily for you to use this weight as a delivery weight. The delivery weight information must be verified by either yourself or the plant observer. Ultimately, the data used is yours, so do not rely on plant observers to verify your delivery weight unless they have agreed to do so. Plant observers need to give you documentation on how verification was done when they complete this task. See "Verifying Delivery Weights" on page 8-3 for more information.

**When using proportioned delivery weight for OTC, you must verify the delivery weight. You are responsible for knowing and documenting how all your data were derived!**

When using proportioned delivery weight for OTC, you'll need to add back the weight of any catch discarded at sea to each proportioned haul weight. ***Therefore, it is important to track and record the weight of discarded species while you are at sea.***

Estimate discards at sea if vessel personnel sort out and discard a few undesirable fish or if portions of the catch are dumped overboard. Account for catch discarded at sea in one of the following ways, or use a combination of methods.

- If the amount of discard is minimal, weigh all discarded catch. This method is only possible if the crew helps by setting aside sorted catch.
- If all of the discard is put into a checker bin or small tote, and it accumulates to a measurable depth, determine the volume of the discard. Multiply this volume by a density estimate to calculate the weight of discard.
- If one or two undesirable species are prevalent, tally those species as they are discarded and apply an average weight to the total number to get total weight. Do not rely on crew members to count fish they are throwing overboard. To determine the average weight of the discarded species, take a random sample of 50 or more individuals.
- If large amounts of catch are dumped overboard, estimate the tonnage discarded by obtaining a codend estimate of the volume discarded, or by using the estimate determined by the vessel operator.
- Your visual estimate is a final option, if a better estimate cannot be made.

To calculate OTC by proportioning delivery weight:

1. Obtain the total delivery weight for each fishing trip. Work with plant observers and plant personnel to determine the best source of accurate weights. You are responsible for your data and must know how all delivery weights were obtained. Delivery weight data can be obtained from the electronic scale readout, scale weights recorded by a factory representative, the Alaska Department of Fish and Game (ADF&G) fish ticket or the plant's NMFS logbook. See "ADF&G Fish Tickets" on page 8-3 for information on interpreting fish tickets and tips on how to avoid potential errors.

2. Proportion the plant delivery weight to the individual hauls. Use the vessel's deck estimate of catch weight or your estimate by band count for relative percentage of haul size. Whichever estimate you choose to use as your proportioning tool, you must maintain consistency by using only one source for proportioning each delivery. To proportion a delivery weight:

- Subtract any at-sea discards included in the vessel estimates of haul weight.
- Total the at-sea estimates (minus discards) to obtain a total estimated delivery weight.
- Divide each estimated haul weight (minus discards) by the total estimated delivery weight to obtain an estimated haul weight to total estimated delivery weight ratio for each haul.
- Multiply this ratio by the total delivery weight to determine a delivered weight for ***each haul***:

$$\frac{\text{weight est. of delivered catch}}{\sum \text{weight ests. of delivered catch for trip}} \times \text{delivery weight} = \text{proportioned delivery wt. of haul}$$

3. Calculate the OTC by adding back the at-sea discard weight to the appropriate proportioned delivery weight for each haul. Delivery weight is only the weight of fish delivered, not the total weight caught- you must add the weight of at sea discards in order to calculate the total catch weight!

$$\text{proportioned delivery wt.} + \text{at sea discard} = \text{OTC}$$

Several vessels in the pollock fishery sort extensively while at sea. Weighing or accounting for discards is impossible due to the large amount of incidental species removed from the catch. If this is the case on your vessel, take an observer estimate and use this for OTC. If it is impossible to obtain observer estimates on your vessel, use the captain's estimate for OTC and contact NMFS staff as soon as possible for advice.

**ADDITIONAL CALCULATIONS**

VESSEL/PLANT NAME Fishin' Impossible Del. #2 Hauls 10-13

vessel estimate conversions:

Haul 10 : 160,000 lbs x 0.4536 kg/lb = 72576 kg = 72.58 mt
Haul 11 : 170,000 = 77112 kg = 77.11 mt
Haul 12 : 60,000 = 27216 kg = 27.22 mt
Haul 13 : 100,000 lbs x 0.4536 kg/lb = 45360 kg = 45.36 mt

Total weight delivered : 517,633 lb x 0.4536 = 234,798.32 kg
(see pg. 155 for verification)

Total estimated delivery wt :
Haul 10, 11, 13 = no discard
Haul 12 : 27216 kg − 142.95 kg flats & protibs = 27073.05 kg = 27.07 mt
Σ haul wts − discard = 222,121.05 kg.

OTC Calculations
Haul 10 : (72576/222121.05) x 234,798.32 = 76718.167 kg = 76.72 mt
Haul 11 : (77112/222121.05) = 81513.054 kg = 81.51 mt
Haul 12 : (27073.05/222121.05) = 28618.205 + 142.95 = 28761.155 = 28.76 mt
Haul 13 : (45360/222121.05) x 234,798.32 = 47948.845 = 47.95 mt

**Figure 3-8 OTC Calculations Using Proportioned Delivery Weight**

**Option 2- Observer Volumetric Estimates:** When there is extensive sorting of the catch at sea, observer estimates of catch weight are the best option for OTC. Using delivery weights for OTCs is not possible because they do not account for this discard and an accurate amount of discard at-sea cannot determined. Most fisheries, other than pollock, have diverse catch composition. In these fisheries the crew sort and discard all non-profitable or unwanted species at sea. The discard rates are too high for you to weigh, or estimate the weight, of the discard.

**Option 3- Vessel or Captain's Estimate:** This is the least preferred method of determining an OTC, but may be necessary when you cannot obtain an independent estimate, and the catch was extensively sorted at sea.

## Recording Haul Data

### Observer Logbooks

Record all your calculations, methods and justifications for determining the independent observer estimate and OTC in your logbook. Keep accurate records on all sampling methods you used during your deployment, so you can provide details by referring to your logbook. You are responsible for your work and must be able to recall all methods and techniques used in the collection and recording of your data.

### Completing Haul Forms on Trawl Vessels

In addition to entering your data and calculations in the observer logbook, all observers must complete a summary of fishing effort and total catch on the Vessel and Observer Haul Forms (see Figure 3-9, 3-10, 3-11 and 3-12). ***If you are on a vessel equipped with ATLAS you must fill out both forms on paper and enter the data into the computer.***

**Keep the "goldenrod" copies of the logbook in a secure place. These forms are confidential, and must not be seen by crew from other vessels.**

The fishing effort information required on the Vessel Haul form should come from the vessel's NMFS logbook. Additionally, there is a removable goldenrod copy of the vessel logbook pages that observers should tear out and bring back with their data. When recording information for the VHF, check carefully to ensure that the data are accurate, reasonable and that no transcription errors are made. The data requested on the Observer Haul Form are those items which you are responsible for calculating or verifying. The instructions on how to fill out each of these forms follows.

### Completing the VHF on Trawl Vessels

***An entry must be made for every day you are assigned to a vessel.*** Start your entries with the day you embark a vessel and end them on the day you disembark the vessel. ***Skip a line between each day's entries.*** Each delivery or day in port must be noted on a line of the VHF. Observers on catcher boats need to use one line to note a delivery, even if there are also hauls retrieved on that day.

When recording hauls, make sure that you, 1) record all hauls retrieved during your deployment whether you sampled them for species composition or not, 2) record the hauls in the order that they were retrieved, and 3) keep the data from each vessel separate from other vessels.

**Heading:** Enter the cruise number and vessel code supplied in your training or briefing. Vessel codes can be found in page A-26. For "Year" enter only the last two digits, such as "04."

**ORC:** When transmitting the VHF data to the Observer Program via a fax, you will need to enter an Observer Routing Code (ORC) number in this field. The ORC is a three-digit security code which will be explained and provided during training or briefing.

**Haul number:** All hauls must be recorded and assigned a number. Haul numbers must be unique and should be sequential and ascending. Except for a haul number "0," there can be no duplicate haul numbers for a vessel. Enter a "0" haul number for each non-fishing day.

**Occasionally, you may need to skip haul numbers to match the vessel logbook. Include a note in the "Notes" column of the OHF so NPGOP staff know that the skip is intentional and data are not missing.**

**VESSEL HAUL FORM**

| Cruise Number | Vessel code | Year |
|---|---|---|
| 8008 | A110 | 05 |

ORC 523

Observer name: JANE DOE

Vessel name: C/P NET INCOME

Page _____ of _____ for transmission

Page 4 of 10 for vessel

| Full name of catcher boat | ADF&G # |
|---|---|
| | |
| | |
| | |
| | |
| | |

Weekly message or Resubmission

| Haul # | Gear type | Gear performance | Vessel type | Date of gear deployment Month | Date of gear deployment Day | Time of gear deployment | Begin Position of Haul or Set Latitude (N) | E or W | Longitude (100) | Average bottom depth | Average gear depth | M or F | Date of gear retrieval Month | Date of gear retrieval Day | Time of gear retrieval | Location code | End Position for Haul or Set Latitude (N) | E or W | Longitude (100) | Vessel's total catch estimate in metric tons | Catcherboat's ADF&G # (motherships only) | IFQ? Y/N | CDQ # | # of segments in set | # of hooks per segment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 97 | 1 | 1 | 1 | 02 | 07 | 0530 | 5244 | W | 7920 | 140 | 140 | M | 02 | 07 | 1300 | R | 5242 | W | 7924 | 90.00 | | N | | | |
| 98 | ( | ( | ( | 02 | 07 | 1620 | 5245 | W | 7921 | 136 | 136 | ( | 02 | 07 | 1955 | ( | 5116 | ( | 7922 | 85.00 | | ( | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 99 | ↓ | ↓ | ↓ | 02 | 08 | 0340 | 5244 | W | 7919 | 132 | 132 | ( | 02 | 08 | 0605 | ↓ | 5118 | W | 7922 | 50.00 | | ↓ | | | |
| 100 | 1 | 1 | 1 | 02 | 08 | 0745 | 5116 | E | 7913 | 105 | 105 | ( | 02 | 08 | 1045 | R | 5126 | E | 7901 | 165.00 | | N | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 0 | | | | | | | | | | | | ( | 02 | 09 | | N | 5206 | E | 7750 | . | factory catching up. | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 101 | 1 | 4 | 1 | 02 | 09 | 2245 | 5242 | W | 7922 | 115 | 115 | ( | 02 | 10 | 0305 | R | 5244 | W | 7920 | 37.00 | | N | | | |
| 102 | ( | 1 | ( | 02 | 10 | 1600 | 5245 | ( | 7920 | 116 | 116 | ( | 02 | 10 | 1825 | ( | 5242 | ( | 7922 | 86.00 | | ( | | | |
| 103 | ( | 9 | ( | 02 | 10 | 2100 | 5244 | ( | 7921 | 113 | 113 | ( | 02 | 10 | 2315 | ( | 5243 | ( | 7921 | 45.00 | | ( | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 104 | ↓ | 1 | ↓ | 02 | 11 | 0015 | 5243 | ↓ | 7920 | 126 | 126 | ↓ | 02 | 11 | 0330 | ↓ | 5244 | ( | 7920 | 32.00 | | ↓ | | | |
| 105 | 1 | 1 | 1 | 02 | 11 | 0510 | 5242 | W | 7922 | 110 | 110 | M | 02 | 11 | 1000 | R | 5244 | ( | 7921 | 43.00 | | N | | | |
| | | | | | | | | | | | | | | | | | | ↓ | | . | | | | | |
| 0 | | | | | | | | | | | | | 02 | 12 | | N | 5158 | W | 7922 | . | finish processing, going to Dutch | | | | |

**Figure 3-9 Vessel Haul Form (catcher processor trawler example)**

**OBSERVER HAUL FORM**

| Cruise Number | Vessel code |
|---|---|
| 8008 | A110 |

Observer name: JANE DOE

Vessel name: C/P NET INCOME

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Page 4 of 10 for vessel

| Plant / Processor name | Location | Processor code |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Haul # | Haul sampled by (cruise no.) | RST on haul? (y= on, n= off, x= n/a) | RBT on break? (y= on break, n= no break) | % Monitored for marine mammals | Bird deterrence device (longline) | Trawler seabird sample type | Total hooks or pots in set | Official Total Catch (OTC) in metric tons | Observer's catch estimate in metric tons | B, C, or W | Density in mt/m³ | Processor code (for catcher vessels only) | Date fishing began for delivery Month | Date fishing began for delivery Day | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 97 | 8008 | X | N | 100 | | P | | 98.03 | 98.03 | C | .89 | | | | |
| 98 | 8016 | ( | ( | ( | | ( | | 82.53 | 82.53 | C | .86 | | | | |
| | | | | | | | | . | . | | . | | | | |
| 99 | 8008 | ( | ( | ( | | ( | | 47.07 | 47.07 | C | .91 | | | | |
| 100 | 8008 | ( | ( | ( | | ( | | 138.49 | 138.49 | C | .91 | | | | |
| | | | | | | | | . | . | | . | | | | |
| 0 | | ( | ( | ( | | ( | | . | . | | . | | | | |
| | | | | | | | | . | . | | . | | | | |
| 101 | 8008 | ( | ( | ( | | ( | | 40.44 | 40.44 | C | .91 | | | | net ripped |
| 102 | 8008 | ( | ( | ( | | ↓ | | 93.79 | 93.79 | C | .86 | | | | |
| 103 | 8016 | ( | ( | ( | | P | | 49.69 | 49.69 | C | .90 | | | | end atka |
| | | | | | | | | . | . | | . | | | | |
| 104 | 8016 | ↓ | ↓ | ↓ | | B | | 30.70 | 30.70 | C | .94 | | | | Yellowfin |
| 105 | 8008 | X | N | 100 | | B | | 45.22 | 45.22 | C | .95 | | | | Yellowfin |
| | | | | | | | | . | . | | . | | | | |
| 0 | | | | | | | | . | . | | . | | | | going to Dutch |
| | | | | | | | | . | . | | . | | | | to drop off 2nd |
| | | | | | | | | . | . | | . | | | | observer. |

**Figure 3-10 Observer Haul Form (catcher processor trawler example)**

| Cruise Number | Vessel code | Year |
|---|---|---|
| 8800 | A123 | 05 |

ORC 767

## VESSEL HAUL FORM

Observer name JOHN DOE

Vessel name FISHIN' IMPOSSIBLE

Page 1 of 9 for transmission

Page 2 of 6 for vessel

| Full name of catcher boat | ADF&G # |
|---|---|
| | |
| | |
| | |
| | |
| | |

Weekly message or Resubmission

| Haul # | Gear type | Gear performance | Vessel type | Date of gear deployment Month | Date of gear deployment Day | Time of gear deployment | Begin Position of Haul or Set Latitude (N) | E or W | Longitude (100) | Average bottom depth | Average gear depth | M or F | Date of gear retrieval Month | Date of gear retrieval Day | Time of gear retrieval | Location code | End Position for Haul or Set Latitude (N) | E or W | Longitude (100) | Vessel's total catch estimate in metric tons | Catcherboat's ADF&G # (motherships only) | IFQ? Y/N | CDQ # | # of segments in set | # of hooks per segment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | 02 | 03 | | N | 5353 | W | 6632 | . finish offload at BUY-BUY FISH | | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 10 | 2 | 1 | 3 | 02 | 04 | 0130 | 5451 | W | 6611 | 83 | 82 | F | 02 | 04 | 0745 | R | 5450 | | 6558 | 7258 | | N | | | |
| 11 | 2 | 2 | 3 | 02 | 04 | 0900 | 5452 | | 6554 | 91 | 90 | | 02 | 04 | 1800 | R | 5452 | | 6519 | 77.11 | | | | | |
| 12 | 2 | 1 | 3 | 02 | 04 | 1845 | 5448 | | 6518 | 71 | 68 | | 02 | 04 | 2300 | R | 5430 | | 6539 | 27.22 | | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 13 | 2 | 9 | 3 | 02 | 04 | 2345 | 5451 | W | 6512 | 61 | 60 | F | 02 | 05 | 0630 | R | 5444 | | 6518 | 4536 | | N | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 0 | | | | | | | | | | | | | 02 | 06 | | N | 5353 | W | 6632 | . Offload to Boy-Buy fish | | | | | |

Figure 3-11 Vessel Haul Form (catcher vessel trawler example)

| Cruise Number | Vessel code |
|---|---|
| 8800 | A123 |

## OBSERVER HAUL FORM

Observer name JOHN DOE

Vessel name FISHIN' IMPOSSIBLE

Page _____ of _____ for transmission

Page 2 of 6 for vessel

| Plant / Processor name | Location | Processor code |
|---|---|---|
| BUY-BUY Fish | DUTCH HARBOR | F09632 |
| | | |
| | | |
| | | |

| Haul # | Haul sampled by (cruise no.) | RST on haul? (y= on, n= off, x= n/a) | RBT on break? (y= on break, n= no break) | % Monitored for marine mammals | Bird deterrence device (longline) | Trawler seabird sample type | Total hooks or pots in set | Official Total Catch (OTC) in metric tons | Observer's catch estimate in metric tons | B, C, or W | Density in mt/m³ | Processor code (for catcher vessels only) | Date fishing began for delivery Month | Date fishing began for delivery Day | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | . | . | | . | | | | finish offload |
| | | | | | | | | . | . | | . | | | | |
| 10 | 8800 | X | N | 100 | | B | | 7672 | . | | . | F09632 | 02 | 04 | |
| 11 | 8800 | X | N | 100 | | B | | 81.51 | . | | . | | | | crab pot |
| 12 | 8800 | X | N | 100 | | B | | 28.76 | . | | . | | | | |
| | | | | | | | | . | . | | . | | | | |
| 13 | 8800 | X | N | 100 | | B | | 47.95 | . | | . | F09632 | 02 | 04 | haul back to check comp- re-set |
| | | | | | | | | . | . | | . | | | | |
| 0 | | | | | | | | . | . | | . | | | | offloading |
| | | | | | | | | | | | | | | | |

Figure 3-12 Observer Haul Form (catcher vessel trawler example)

**Gear type:** Enter a code for trawl gear based on the configuration of the gear, not whether it's fished mid-water or on the bottom. If you are on a vessel using a type of trawl gear not listed, please contact the Observer Program for instructions.

1 - Non-pelagic trawl

2 - Pelagic trawl net

4 - Pair trawl - A trawl net (usually a large pelagic net) towed between two vessels. Each vessel tows the net by one of two cables and no doors are used. The catch is landed aboard one of the two vessels.

5 - Shrimp trawl

**Gear performance:** One of the following codes must be recorded:

1 - No Problem

2 - Problem: a crab pot was in the haul

3 - Problem: the net hung up on some obstacle and vessel had to back down

4 - Problem: the net ripped

5 - Problem: Other problem, write an explanation in the "Notes" area of the OHF and your logbook

6 - Problem: trawl net or codend lost

9 - Fishing Duration Affected: the deployment and retrieval times do not reflect true fishing time

**Vessel type:** Enter a code which identifies how the vessel received and processed fish for any given tow. The codes are:

1 - Catcher/processor (C/P): The vessel caught and processed its own catch on this tow. Catch was stored in a freezer hold.

2 - Mothership: The vessel received unsorted catch by codend transfer from a catcher vessel for this haul.

3 - Catcher-only vessel: The vessel caught its own fish and retained it for delivery to a processing plant. On board, the catch was kept on ice or in refrigerated seawater (RSW) tanks, but was not frozen.

4 - A mothership or C/P received this tow as sorted (or potentially sorted) catch from a catcher vessel. Catch was transferred by brailer, by pumping, or by another method other than codend transfer.

5 - The catch from this tow was sold over-the-side to other fishing vessels which will utilize the fish for bait.

6 - The entire catch from this catcher-only vessel's haul was discarded and not delivered.

**Date of gear deployment:** Enter the month and day the gear was deployed.

**Time of gear deployment:** Enter the time the gear ***reached fishing depth***. Copy this time from the vessel logbook, unless you have identified a problem with this data. If the skipper is entering data that may not be accurate (see "Start and Stop Times that Do Not Reflect True Fishing Duration" on page 3-3), enter your own independently collected times if possible. All entries must be in Alaska Local Times (ALT). Use 24 hour time notations, in four digits with no colons.

**Begin Position of Haul:** Record the latitude and longitude of the "Begin Position of Haul or Set" from the vessel logbook into this field. One hundred+ degrees of longitude are assumed, so do not enter the "1." Round the positions to the nearest minute if the vessel log has positions to seconds or hundredths of seconds (see Figure 3-9 and 3-11). Do not enter degree marks. Fill out the "E or W" column to indicate if the longitude is east or west of the 180 degree line.

**Average bottom depth and Average gear depth:** Copy the "Ave. Sea Depth" and the "Ave. Gear Depth" from the vessel logbook into these fields. All entries must be to the nearest whole number. Record both depths in the same unit of measure and label them as fathoms (F) or meters (M) in the "M or F" column.

**Date of gear retrieval:** Enter the month and day the gear was retrieved. A haul is assigned to a date according to the time the net is retrieved from the fishing depth, which may not be the same day the net was set or the day you sample. Hauls with retrieval times before 0000 hours are attributed to the previous day and retrieval times on or after 0000 hours are assigned to the next day.

**Time of gear retrieval:** Enter the time the gear was ***removed from fishing depth***. Copy this time from the vessel logbook unless you have identified a problem with this data. If the skipper is entering data that may not be accurate (see "Start and Stop Times that Do Not Reflect True Fishing Duration" on page 3-3), enter

your own independently collected times if possible. Use 24 hour time notations, in four digits with no colons. Enter all 2400-hour notations as 0000 hours-which starts a new date entry.

**Location code:** This column corresponds to the location you will enter in the "End Position for Haul or Set" columns. For most hauls, you will enter "R" to indicate the position is for the **R**etrieval of a net. A day in which no hauls were retrieved is termed a "**N**on-fishing day." For these days, enter an "N" to indicate that no hauls were retrieved. Observers on motherships should refer to "Catch Information (Vessel and Observer Haul Forms)" on page 5-2 for instructions on entering delivery information.

**Non-fishing positions:** A non-fishing day is one during which no hauls were retrieved. For all non-fishing days enter "0" in the haul number column, the location code "N," and the latitude and longitude of the vessel for that day in the **"End Position for Haul or Set"** column. On the remainder of the line, you can write a reason why there was no fishing. All days aboard must be accounted for with either a fishing or non-fishing position. This is the Observer Program's only way to account for the number of days you were assigned to a vessel and is generally used by observer providers calculate sea days for pay.

For days spent in these ports, you can use the coordinates listed below for the non-fishing position:

| Port | Latitude | Longitude (W) |
|---|---|---|
| Adak | 51 53 | 176 39 |
| Akutan | 54 08 | 165 46 |
| Cordova | 60 33 | 145 45 |
| Dutch Harbor | 53 53 | 166 32 |
| Homer | 59 38 | 151 33 |
| Juneau | 58 10 | 134 18 |
| King Cove | 55 03 | 162 19 |
| Kodiak | 57 42 | 152 15 |
| Sand Point | 55 20 | 160 30 |
| Seattle | 47 42 | 122 13 |
| Seward | 60 07 | 149 27 |

**Delivery locations and dates:** If you are on a catcher boat, each delivery must be noted on a line of the VHF. For each catcher vessel delivery, use one line to note the date and plant name even if there are also hauls made on that day. This information ***does not*** need to be accompanied by a non-fishing day position if hauls were retrieved on the same day as the delivery.

**End Position for Haul or Set:** Record the latitude and longitude of the "End Position of Haul or Set" from the vessel logbook into this field. Follow the same rules given for recording the "Begin Position of Haul" above.

**Vessel's total catch estimate in metric tons:** Record the "Estimated Round Catch Weight" from the vessel logbook. Convert the estimate to metric tons if it is recorded in pounds, and round to the nearest two decimal places. There must be an entry for every haul.

**Catcher boat's ADF&G number and Full name of catcher boat box:** Fill in these two items on the VHF ***only if you are on a mothership***. For all unsorted codends and sorted catch delivered to your ship, record the ADF&G permit number of the delivering vessel, then write in the delivering vessel's name and the same code in the box at the top of the VHF.

**IFQ? Y/N:** Enter a "Y" or "N" to indicate which hauls were fished under an Individual Fishing Quota (IFQ). This column must be filled out for all hauls.

**CDQ group number:** For each haul taken under a Community Development Quota (CDQ), record a "C" and the 2 digits of the CDQ group number, found on the vessel logbook page under "Management Program" if CDQ is checked.

**Number of segments in set and number of hooks per segment:** Leave these columns blank for trawl vessels.

### Completing the OHF on Trawl Vessels

**Haul number:** Haul numbers must correspond to the ones used on the VHF. If a line is skipped on the VHF, you should skip the same line on the OHF so that the haul data would be continuous if the forms were laid end to end.

**Haul sampled by:** Enter the cruise number of the observer who sampled this haul. Enter a "0" for unsampled hauls. If more than one observer worked on sampling the haul, use an agreed upon criteria to decide who will receive credit for this haul.

**RST on haul?:** Enter the code which reflects the haul's status on the RST:

Y - Yes, this is an "on" haul.

N - No, this is not an "on" haul.

X - RST is not being used, all hauls are sampled

**RBT on break?:** Enter the code which reflects if you you were taking a break prescribed by the Random Break Table during the haul:

Y - Yes, I'm on break during this haul.

N - No, I'm not on break during this haul. If you aren't using the RBT, this is your default code.

**Percent monitored for marine mammals:** If you monitor for marine mammals during the dumping of the haul, enter "100." If the haul was not monitored for marine mammals, enter a "0." No other values are valid on trawlers.

**Bird deterrence device:** Leave this column blank on trawl vessels.

**Trawler seabird sample type:** Enter the code which reflects the sample size you used to look for seabirds:

W: I whole haul sampled for seabirds.

P: I partial haul sampled for seabirds.

B: I basket sampled for seabirds.

Leave this column blank for unsampled hauls.

**Total hooks or pots in set:** Leave these columns blank for trawl vessels.

**Observer's Total Catch Estimate in metric tons:** Enter your independent observer estimate for each haul where one was made. Record the estimate in metric tons, rounded to two decimal places. If you did not estimate the haul weight or actually weigh the entire catch, leave this field blank for that haul. A 0.00 MT entry indicates that you determined no weight was caught in that haul. Record how each catch estimate was made by filling out the next column with a W, C or B. Enter "W" if the entire catch was weighed by you on your observer scales, "B" you used a bin volume calculation or "C" if you used a codend estimate.

**Density in mt/m3:** Record the density used to calculate volumetric observer estimate. Record the density in metric tons per cubic meter, rounded to two decimal places. You must record a density if the observer estimate was obtained using a bin or codend volume.

**Processor code and Plant/Processor name, Location, and code number box:** On catcher-only vessels, you must record the processing plant's permit number for each haul. There is a list of the processor codes for shoreside or floating plants, and motherships on page A-22. If your vessel delivers to a plant that is not on the list, use code F9999 in the body of the form.

In the box in the upper right hand corner, fill in the name and processor code for each of the plants to which your vessel delivers. You only need to record each plant once for each data set.

If a delivery is split and sold to more than one processor, and you are unable to determine hauls which hauls are delivered to which plant, enter the processor code for the plant that receives the greater share of the delivery. If this, or any other incident out of the ordinary, occurs please note this in the "Notes" section of this form as well as in your logbook.

**The most common OHF errors are missing processor codes and missing OTCs. Haul data with these fields null is not available to inseason managers. Check these fields carefully before sending!**

**Date fishing began for delivery:** This field is only for catcher vessels. Fill in the date that the vessel first sets their gear within each trip. All the hauls that are included in a single delivery will have the same date listed in this field. The date should be the same as the deployment date for the first haul of each trip (see Figure 3-12).

**Notes:** This field is for your own use. Enter comments that pertain to individual hauls, such as comments on gear performance, marine mammal interactions and explanations of unusual data. Additional comments can be made at the bottom or top of each form, but must always be in a "non-keypunch" field.

**Official Total Catch in metric tons:** Record the best estimate of total catch weight for each haul (see "Official Total Catch (OTC) Weight" on page 3-10). OTC must be recorded in metric tons, rounded to two decimal places. There must be an entry of OTC for every haul!

# TRAWLER COMPOSITION SAMPLING

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**Terminology**

**Bias -** Tending to yield one outcome more frequently than others. Some factors introducing bias to a sample include mechanical sorting of catch by an incline belt and purposeful presorting by a crew member.

**Bycatch -** Anything caught in fishing operations that is not the target species, such as other fish species, prohibited species, marine mammals, seabirds, invertebrates and inert objects.

**Composition -** In the groundfish Observer Program, this refers to the makeup of harvested species in a catch and in the samples you collect.

**Fishing mortality -** Removal (deaths) of fish from a population due to fishing activity.

**Population -** The total of individuals occupying an area or making up a whole. When sampling aboard a trawler, a population is defined as the catch from a single haul.

**Presorting -** The segregation and/or removal of any item(s) or organism(s) from the catch prior to where you are collecting your composition sample.

**Prohibited species or prohibited species groups -** Species whose allowable retention is zero. Salmonids, herring, Pacific halibut and king and Tanner crabs are always prohibited in Alaska open-access groundfish fisheries. For vessel operators, prohibited species include the above and any other species declared prohibited by a notice of closure.

**Random -** Relating to a set containing elements which all have an equal probability of occurring in a sample. These elements are chosen as sample units in a manner which eliminates subjectivity.

**Random sample frame** - The population divided into independent countable units.

**Sampling -** The process of selecting part of a population for the purpose of determining the parameters, or characteristics, of the whole population. Composition sampling refers to taking samples in order to determine the fishing mortality of species occurring in the sample.

**Sample size** - The portion of the population that is sampled.

**Sample type** - The method used to select part of a population. This includes basket, whole haul, partial haul, and the pre-sorted "X" sample types.

**Sample weight** - The total weight in kilograms of a composition sample.

**Spatial** - Refers to a unit of space used in random sampling. For example, a third of a bin or a section of trawl alley are spatial units.

**Systematic**- Refers to methodical sampling continuing throughout an entire population. For example, collecting a basket of fish every ten minutes or collecting a partial haul sample every other thousand kilograms using a flow scale would be systematic sampling procedures.

**Target species** - Fishers generally call the species they wish to catch the target species. The Observer Program uses the same definition. The Sustainable Fisheries Division of the NMFS Alaska Region uses delivery and production data to determine target fishery, which may differ from what the vessel records as the target.

**Temporal -** Referring to a unit of time used in random sampling. For example, one hour of processing time or systematic intervals of ten minutes are examples of temporal units.

**Figure 4-1 Trawl Sampling Terminology**

## Introduction

Species composition sampling is third in the Observer Program's priority list. Species composition sampling is the collection of catch samples from a selected haul to determine the proportion of each species harvested.

Fisheries managers need to know the fishing mortality, or how much has been caught, of each species group harvested. The total catch estimate for each species is based on the results of your species composition samples. This information is used by inseason managers to monitor allowable harvest, and by other scientists for population analyses and stock assessment.

## Determining a Sampling System

One of the first things you should do when you arrive on a vessel is inspect your sampling station and determine a sampling system. Refer to "FIRST DAYS ON BOARD" on page 16-1 for what to look for in a sampling station. When you design your sampling system you must determine:

- if using the Random Sampling Table (RST) is necessary (see "When to Use the Random Sample Table" on page 2-8)
- what sample type and size to collect
- where to collect your sample
- what sampling biases could occur in your collection and how to minimize them
- how to collect your sample
- how to process your sample

Draw a diagram of your sampling station in your logbook. Additionally, fill out a Random Sample Frame Detail form in your logbook for each frame you plan to use. On this form describe your sampling system in detail, addressing each of the above topics.

First-time observers may need to watch the first retrieval to familiarize themselves with the way catch is handled. Familiarity with this process will allow you to decide on a sampling system that is right for that vessel and fishery. As you gain experience, you may alter your system as you become aware of biases or as the species composition or target fishery changes. Document all changes in the Daily Notes section of your logbook and explain why they were made. If you have problems designing or implementing a sampling system, contact your ATLAS inseason advisor or other NMFS staff member.

## Selecting Hauls to Sample

There are two options for selecting which hauls to sample for species composition. You may:

1. sample all hauls; or
2. use the appropriate Random Sample Table (RST).

If it is not possible to sample all hauls brought aboard the vessel, you must use the RST to select hauls from which to collect species composition samples. Please refer to "How to Use the RST" on page 2-9 for instructions on how to use the RST. Experienced observers are expected to sample all hauls when less than three per day are landed. When extenuating circumstances prevent this, you must document the situation in your logbook.

## Guidelines for Composition Sampling

There are three methods for collecting species composition samples on a trawl vessel. Each method is a function of sample size.

- A **whole haul** sample is when the sample size is the entire haul.
- A **partial haul** sample is when a relatively large portion of the haul is sampled.
- A **basket** sample is an **actually** weighed sample. Usually this is a relatively small sample, but can be the entire catch for very small hauls.

When considering which sample type to use, follow these guidelines:

1. Strive to collect random samples using a random sample frame (see "Random Sample Frames" on page 4-11). When this is not possible, document the reasons in your logbook.

2. Allocate your time appropriately. Maximize your sample size based on the amount of time you can afford per haul while keeping to the RST and completing your other required duties. Keep the following factors in mind when you determine which sample type you should use.

- **General Health -** The amount of time and energy you can spend on composition sampling will be affected by your general health. Most factory vessels will operate 24-hours per day. It is not expected that you work 24-hours as well! Using the RST will reduce the number of hauls you need to sample, but you still may need to reduce your sample size to keep up with your other duties, or to recover from seasickness or other illnesses.
- **Size of Hauls -** The amount of catch per haul is a consideration when deciding on a sample type. In some fisheries, 100 mt codends taking 4-8 hours to process are not uncommon. Weighing and counting everything in such a haul will not be possible due to time constraints and the high numbers of fish.
- **Species Diversity -** It takes longer to sample a "dirty" haul (one with many different species) than it does to sample a "clean" haul (one with few species). In fisheries with a lot of bycatch, you will need to reduce your sample size in order to process your samples in a reasonable amount of time. Conversely, in clean fisheries you may be able to take larger samples.

3. You must sample from unsorted catch and you must be present to sort, or directly supervise the sorting of, all fish in your sample. If you see, or suspect, that you are missing individuals in your sample, reduce your sample size and/or change your sampling method until you can control the sorting and are certain that you can account for all of the fish in your sample.

4. You must sample for all species. You cannot leave out any component of the catch. If you sample for prohibited species, you must also sample for target species and other bycatch and vice versa. For each sampled haul there are two main categories, and seven groups of species, that must have a sample type associated with them. Use any combination of sample types for the seven species groups.

- **Prohibited species** - In the North Pacific, the five prohibited species groups are: the king crab group, the Tanner crab group, the salmon group, Pacific halibut, and herring. You can use a different sample type for each of the five prohibited species groups.
- **Non-prohibited species** - This is made up of two groups: bycatch species and target species. The sample weight is usually equal to or less than the sample weight for prohibited species. Bycatch species and target species may also have different sample types.
- **Seabirds -**Seabirds are difficult to see when mixed with the rest of the catch and occur infrequently, which makes sampling difficult. Use the largest sample type feasible in which you can ensure every seabird would be found. Use your best judgement to document seabird mortalities and comment in your logbook on why you selected the sample type you used. A sample type "W" for birds would be common when working on a pollock catcher only vessel while whole hauling during the offload (see page 3-18).

5. You cannot have more than one sample weight for any sample type within a haul. For example, you cannot have two different partial haul sample weights. All species found in a partial haul must have the same sample weight.

6. You cannot have two sample weights for any one species or species group. For example, you may whole haul sample for prohibited species, but basket sample for target and non-prohibited species. Since a basket sample is a sub-set of the whole haul, any halibut that occurred in your basket sample would be included only in the whole haul sample. The only exception to this rule is for pre-sorted organisms (see page 4-7).

## Minimizing Sampling Bias

The goal of the Observer Program is to obtain unbiased samples of the harvested catch in each target fishery. A sampling system must take into account any potential biases and limit their effects. Two ways to limit sample biases are:

- **Use random sampling:** By using a random sample frame, you will ensure that every member of the population has an equal probability of occurring in your sample and eliminate subjectivity. When you use this method, the Observer Program will treat your sample as a fair representation of the composition.

- **Maximize your sample size:** Weighing and counting everything in a population is the best way to obtain information about the population, since the "sample" size is the whole population. However, in most cases this is not possible, and you will need to take smaller samples. Although large samples are preferred, small samples still fairly represent the population when they are randomly collected. Small, random samples are preferred over larger, potentially biased samples.

Samples which are not collected randomly may still be representative of the haul. However, the NMFS cannot make that assumption or use statistical methods of estimation, as it can with random samples. If you determine that you cannot use a random sample frame on your vessel, you must document your reasons in your logbook and use another method to collect your samples. Two acceptable methods to collect non-random samples are:

- **Samples of convenience:** These are samples taken from the most accessible portion of the catch. For example, if you were to sample from only one area of the codend or deck, every fish in the population would not have an equal chance of ending up in your sample. Sometimes, due to vessel constraints or safety considerations, this is unavoidable. Document your situation and your resolution.
- **Haphazard samples:** These samples are taken without pre-selecting when, or from where, you are going to sample. On some vessels, random sample methods will not be possible, and haphazard samples will the best available data. If you use haphazard sampling techniques, document the reasons why you felt this was best.

Sampling methods to avoid are ones in which you make a decision on when or where to sample based on perceived composition. Never take a sample from a particular area of the haul because you feel that organisms in that area have not been fairly represented in your sample. For example, if you see halibut while the haul is being dumped, but do not get any in your sample, it is not appropriate to select an additional portion to sample just because it contains halibut.

## Recognizing Potential Bias

The vessels you will be working on are not research vessels and most sampling situations you encounter will not be ideal. There will be many factors that affect your sampling and you must be aware of them. Assess your collection site for possible biases, document what they are, and how you attempt to avoid them. Some biases you need to look for are:

**Mechanical Biases**

Be aware of the flow of fish from the codend to their final destination. Specifically, watch for:

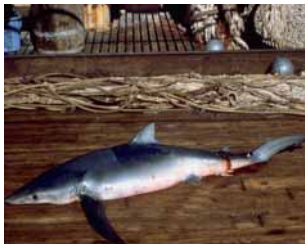
- **Grates or small openings** - These sort out large individuals such as sharks, large skates and halibut. Look for grates on deck hatches and bin doors. Weigh, or estimate the weight of, anything you see sorted out of the catch and include it in your composition samples as either a whole haul or a sample type "X" (see "Pre-sorted Sample Type" on page 4-7).
- **Inaccessible bins, tanks, or belts** - These will prevent you from setting up a random sampling frame because the fish in the inaccessible bin, tank or belt will not have a chance to fall into your sample. There is no solution to this problem. Try to randomize your collection as much as possible and note the biases in your logbook.
- **Conveyor belts** - Running a conveyor belt too fast or too deep won't allow you to see or sort everything that passes by you. You must be able to account for all individuals in your sample! Ask the crew to slow the belt and run the fish one layer deep. If the vessel will not comply, or if you are still unable to sort everything in your sample, note this in your logbook and basket sample for species composition.
- **Incline belts** - Incline belts can affect a sample in many different ways. Some are steep, with small tines that won't accommodate large fish. Others will allow large fish to move up, but at a different rate than the smaller fish. When this occurs and you are not whole haul sampling, larger fish have less of a chance of falling into your sample. To alleviate this bias, try to take your sample before the incline. If you cannot avoid the incline belt, be sure to ***clear all fish*** from in front of the incline before and after you collect your sample. Fish that did not make it up the incline belt during your sample collection period must be taken from the base of the incline and included in your sample.

- **Pumping the net** - There are a few vessels that pump fish from their codend into the hold. These vessels use transfer tubes which sort out large individuals. Transfer tubes may also be fitted with grinders. There is no way to account for organisms sorted out in this way. In your logbook, make note of the fact the vessel transfers fish by pump and include the diameter of the pump tube and the maximum size individual you observe. Basket sample for species composition as if this were not a factor.

**Deliberate Interference**

In some fisheries it is advantageous for the vessel to remove certain species prior to your sampling. This is especially true for prohibited species bycatch. This practice is illegal and biases your samples by misrepresenting the true bycatch rate for these species. Federal Regulation 50 CFR 679.7 states that it is unlawful to "interfere with or bias the sampling procedure employed by an observer, including physical, mechanical, or the sorting or discarding of catch before sampling." Refer to page 18-2 for a list of steps to take if you suspect deliberate interference with your sampling. There are several ways vessel personnel could sort out individuals prior to your sample, so watch for the following:

- **Dumping undesirable catch overboard** - Vessel crew may dump an entire codend, or a portion of one overboard because of the high proportion of bycatch. This biases your data because you cannot get an accurate picture of what is being caught. Ask the skipper not to discard fish from the codend until you have the opportunity to sample. On factory vessels, this may mean that you will need to reduce your sample size and sample on deck. If the skipper will not comply, note this in your logbook. If the vessel regularly dumps codends before you can sample, contact your ATLAS inseason advisor or other NMFS staff member.
- **Removing and discarding unwanted species** - Vessels may have crew members in the trawl alley, fish bin or on the sorting line to sort out fish prior to you taking a sample. If this occurs, inform the skipper or factory manager that you must have access to unsorted catch. To the best of your ability, quantify the amount of fish removed each time it occurs. Notify the Observer Program or NMFS Enforcement personnel of pre-sorting problems. If you feel this may make your position on the vessel unworkable, you can ask NMFS staff not to confront vessel personnel until you are disembark the vessel.
- **Large animal removal on deck** - Although no presorting is legal, removing large animals on deck to prevent them from entering the factory or RSW tanks is a common practice, and sometimes is unavoidable. You must be notified when this occurs, and you should include the animals in your species composition sample with either a whole haul sample or a sample type "X" (see "Pre-sorted Sample Type" on page 4-7).



- **Crewmen in the bins** - The setup of some factory vessels is such that a crew member is required to push fish out of the bin door or onto a conveyor belt. This is a potential problem because s/he can push select species away from the conveyor belt where you are sampling, or hold these species until you are finished sampling. The best way to combat this is to:

1. Ask the crewman to step out of the bin when you are sampling.
2. Randomly select times to take your sample.
3. Watch the crew in the bin.
4. Watch the sorting line to see if specific species concentrations increase when you are not sampling.
5. Look for halibut and/or salmon being held in the bin. Some boats have areas in the bin where fish can be stored until you leave the factory.
6. Speak with the individual responsible, then talk with the factory managers and the skipper. If the problem continues, notify the Observer Program or the NMFS Office of Law Enforcement.

**Inform the captain the first time pre-sorting occurs. Document all occurrences and conversations you have regarding this problem.**

## Pre-sorted Sample Type

In order to account for pre-sorted individuals, and increase the accuracy of observer data, the pre-sorted sample type "X" is used. Documenting pre-sorted animals does not validate the practice of sorting in order to bias your composition samples, and this practice remains illegal. Most often this sample type will be used for large sharks, skates and halibut, but it may be used for any pre-sorted organism. When you are certain that you are able to find all of the individuals of a pre-sorted species, you should use the whole haul sample type to account for them. Therefore, you can never have the same species listed in both a whole haul and as an "X." When you cannot be sure that all individuals of the species were removed, you must use the sample type "X," following the guidelines below.

- Animals must have been removed from the catch ***prior*** to composition sampling.
- You must observe the animal being pre-sorted.
- You must be able to estimate the size or weight of the animal.
- For halibut, you may estimate the length and use the length/weight table in the "Halibut Length to Weight Table" on page A-37.
- A species can have more than one sample type only if one of the sample types is "X," ***but no species can have an X and a W sample type for the same haul***.
- For the sample type "X," the sample weight is always the OTC.

## Basket Sampling

In the course of your work as an observer you will collect baskets of fish for various purposes. A "basket" sample is not necessarily collected with the observer's blue baskets; any container can be used. ***The following criteria must be met in a basket sample:***

- A basket sample must have ***all items actually weighed*** on NMFS scales or on a tested motion compensated platform scale. Applying average weights to the number of fish to obtain a total weight ***cannot*** be used in a basket sample. You may use the length/weight table (see page A-37) to determine the weight of halibut over 1 meter long.
- The sum of the animals/items weighed must equal the sample weight of the basket sample.

A basket sample is a subsample of catch used for one of three purposes: **1)** to determine the species composition, **2)** as a subsample to determine a proportion of two predominant species when a larger species composition sample is taken, or **3)** as a subsample for one predominant species when a larger species composition sample is taken. The purpose of the basket sample dictates the minimum sample weight expected by the Observer Program.

- When it is used to obtain a ***species composition sample*** of the entire catch, the minimum sample size is ***300.0 kg***. This is also the minimum sample size when subsampling for three or more species when a larger sample is taken for prohibited or rare species.
- When it is used for a sample of the ***two predominant species*** to determine their relative abundance, and a larger species composition sample is taken, the minimum sample size is ***200.0 kg.***
- When it is used to subsample for ***one predominant species***, and a larger species composition sample is taken, the minimum sample size is ***80.0 kg.***

The weights given above are the Observer Program's minimum sample sizes. They should be exceeded whenever possible. If you find that you cannot routinely obtain species composition sample sizes of 300 kg or more, contact your ATLAS inseason advisor or other NMFS staff as soon as possible. You must record an explanation in your logbook for each species composition sample weight less than 200 kg. Data from small samples can usually be used, especially if the sample was collected in a random, unbiased manner. Record your methods and any difficulties you encounter in the Daily Notes section of your logbook.

### When To Basket Sample

- A basket sample of the predominant species must be taken to accompany whole or partial haul species composition samples.
- If the catch is diverse in composition, and you cannot use a partial or whole haul sample type, you must basket sample for the species composition of the haul.

The methods used to collect basket samples are different depending on vessel type, and are discussed in detail in the following sections.

### Basket Sampling on a Catcher/Processor

Sampling on a C/P or mothership usually takes place in the factory, from a conveyor belt. The belt used should be prior to all sorting activities, so watch the flow of fish to ensure that there are no processors, mechanical size sorters, size sorting incline belts or pumps prior to your collection site. Usually, the closer you are to where the catch exits the bin or tank, the less chance sorting can occur.

There are three easy methods for collecting unsorted catch off conveyor belts. You do not need to collect the entire sample at one time, and each of these methods can be used within your sampling frame. They are:

- **Collecting from the flow of fish---** Hold a container under the flow of fish from the live tank or under the flow of fish falling from one conveyor belt to another. This is a good method for collecting unsorted catch. You must include all fish from the flow in your sample, even if they do not fit into your container.
- **Diverting the flow of fish---** Use a diverter board to spill fish into a container. A diverter board is a board hinged to the side of a conveyor belt that, when open, allows the catch to spill off the belt into a basket.

- **Collecting fish directly off the belt---** Collect all catch in a prescribed area of the belt. If there is no place in the factory that allows collection by diverting the flow of unsorted catch, you can stop the belt and collect all the catch in an area. To do this:

1. Close the bin door and clear the belt by running the fish into the factory. You cannot use these fish, since you cannot be sure that they haven't been sorted.

2. Once the belt is cleared, re-start the flow of fish until the belt contains enough for your sample.

3. Stop the flow of fish and collect all fish from the belt. If you cannot take all the fish off the belt, use a prescribed area (from point A to point B) and collect all fish in the area, regardless of species or size. Never hand select fish to include in a sample.

### Basket Sampling on Catcher Boats

On catcher vessels, obtaining random samples takes creativity and a thorough assessment of how the catch is handled. Catcher boats usually handle their codends in one of two ways.

- The catch is dumped directly down hatches into the RSW tanks. This is typical on pollock vessels.
- The entire catch is dumped into the trawl alley and the crew sorts retained fish into RSW tanks. This is typical on Pacific cod, flatfish, and rockfish vessels.

**Sampling from a Codend**

If your vessel dumps unsorted catch directly into the RSW tanks, you may have to fill your baskets by catching the fish as they are flowing from the net to the deck, or from the deck through the RSW hatch. If you choose this method, make sure that any large fish that hit your basket are included in your sample, even if they don't fit in your basket. You may need assistance from a crew member to hold your basket into the flow of fish. Always consider your safety when choosing a collection site-- do not position yourself under the codend when taking a sample!

**Sampling Using a Checker Bin**

If your vessel has checker bins (compartments on either side of the trawl alley) available, you can divert unsorted catch into one by lifting a bin board, or ask for some of the codend to be dumped into the bin, to use as your basket sample. The disadvantage of using checker bins is that your sample comes from only one area of the codend. Try to minimize this bias by implementing a random sample frame (see page 4-14).

**Sampling from the Trawl Alley**

If the catch is dumped onto the trawl alley you must take steps to prevent size or hand selecting your sample. Do not take a sample by shoveling fish into your baskets, or by using your basket as a scoop. Instead, you should try to isolate an area from which to collect all fish. You can use an overturned basket to create a "sampling circle." Any organism touching the rim of the basket is part of the sample. This only works well if the fish are not sliding around while you are

collecting them. Another way to cordon off an area is to ask the vessel for extra bin boards. These wooden planks can be used to section off an area of the trawl area, from which you can collect all fish for your sample. Never hand select fish from the trawl area to use as your sample. Not looking at the fish while you grab or shovel them does not eliminate this bias.

In the Pacific cod, rockfish and flatfish fisheries, the crew will want to start sorting the catch immediately. You must be sure to take your sample before any active sorting by the crew or machines.

## Whole-Haul Sampling

A whole haul sample is an account of all organisms in the haul. It will not be possible to count and weigh the predominant species, so a whole haul consists of letting the predominant species pass you while you remove all other bycatch. The bycatch is weighed and counted, and a subsample of the predominant species is collected for an average weight sample. A whole haul sample must meet the following criteria:

- The sample weight is equal to the official total catch.
- You must sort out, or supervise the sorting of, all bycatch from the entire catch.
- You must be able to see every organism in the catch as it passes you. If you are missing organisms while attempting a whole haul sample, you must change your sample type and collect a smaller, more accurate sample.
- The whole haul bycatch is accounted for by counting and/or weighing.
- A weighed basket sample of at least the predominant species must accompany the whole haul.

To fulfill these requirements, your vessel must be participating in a fishery with very low diversity. In the pollock fishery, hauls may have less than 1% bycatch, and whole haul sampling for species composition may be possible. Whole haul sampling is usually used when you have access to a sorting line, such as on C/Ps or motherships, and at floating and shoreside processors. When sampling in a low-diversity fishery, you should try to whole haul at least for prohibited species, and it may be possible to whole haul for the all species composition as well. Keep in mind the factors mentioned on page page 4-3 when deciding to whole haul sample. You must have time, energy, space, and a low-diversity haul!

**Even 1% bycatch in a 50 mt haul is 500 kg - about thirteen 40 kg baskets!**

When whole haul sampling on a C/P or mothership for species composition, or at a processing plant for prohibited species, all unsorted catch must pass by you, and you must be able to sort out all bycatch for weighing and counting. You must be present for the entire sorting process. You cannot leave the sorting area, or do anything other than sort, or supervise the sorting of, the catch. If crew members are assisting you in sorting, you must have direct, visual supervision of them! Make sure that the crew realizes you are sampling, and knows what species you want set aside.

Every whole haul sample must have a randomly collected subsample of the predominant species associated with it. Use the guidelines outlined in the basket sampling on page page 4-7. The minimum subsample size for one predominant species accompanying a whole haul is 80 kg.

## Partial Haul Sampling

Whole haul sampling may not be possible if you do not have sufficient access to the catch, space to store bycatch, or time to monitor the entire haul. Hauls which contain large amounts of bycatch, take too long to process, or which are extremely large may also be impossible to whole haul sample. When this is the case, you can sample a portion of the haul, using the same sampling procedures as a whole haul. In a partial haul, the sample is collected from only part of the catch, and your sample weight is less than the OTC.

## How to Partial Haul Sample

Three methods used to determine partial haul sample size are: bin volume, tally method, and verified flow scale readout. Bin volumes can sometimes be used on C/P and motherships operating in open access fisheries. The tally method can be used aboard any type of vessel, and is the method commonly used aboard catcher boats. Flow scale readout is the most common method used and is possible on any C/P or mothership that has a flow scale passing daily tests.

You must take an 80 kg or 200 kg basket sample (see page 4-7) for the predominant species to accompany your partial haul sample.

***You must obtain your sample weight by one of these three methods.*** Visual estimates such as "about half the catch" are not acceptable. The only exception is when your pollock catcher boat dumps part of an unsorted codend at sea prior to your sampling. When you sample the delivery for prohibited species at the shoreside plant, you have only sampled the portion of the haul that was not discarded at sea. If this happens, make a volumetric or visual estimate of how much was discarded. Subtract this quantity from your total catch estimate, and use that number to proportion the delivery weight (see "Options for OTC on Catcher-Only Trawlers" on page 3-11). The proportioned delivery weight for that haul will be the partial haul weight.

**Partial by Bin Volume**

A relatively easy way to determine sample weight is to calculate the volume of fish sampled from a bin and apply a density. Measure the height of fish in the bin prior to, and after, sampling. The difference in height, multiplied by the area of the bin will give you the volume sampled. Multiply this volume by the density (see page 3-9), to determine the sample weight

$$\text{change in fish ht. (m)} \times \text{bin area (m}^2\text{)} \times \text{density (kg/m}^3\text{)} = \text{sample wt. (kg)}$$

Refer to "Observer Estimates by Bin Volumes" on page 3-6 for instructions on measuring the amount of fish in a bin. You cannot use bin volume to calculate partial haul sample weight if:

- you have not measured, or verified the measurements, of the bin,
- you cannot see into the bin to accurately read fish depth markings,
- there is standing water in the bin, or
- unknown amounts of fish are added to the bin during your sample period.

Fish tend to stratify in a bin. If you frequently partial haul sample, you should use a random sample frame (see page 4-11) to choose the segments of the bin to sample. If you are unable to use completely random sample techniques, you can take haphazard samples from different parts of the catch. If sampling from all parts of the catch cannot be done for each sample, then take opportunistic samples from different parts of the catch over several hauls.

**A bin can be any container which holds fish. You can use the trawl alley, checker bin, large tote, etc. for a partial haul by bin volume.**

**Partial Haul by Flow Scale Readout**

Verified flow scale readout ***must*** be used during Multi-Species Community Development Quota (MSCDQ) fisheries and vessels regulated by the American Fisheries Act. Sampling aboard these vessels is discussed in more detail starting on page 4-22. You may use the flow scale for partial haul sampling during any fishery provided the crew is testing the scale correctly and the scale passes these tests (see "Motion Compensated Electronic Scales" on page 2-13).

Getting a partial haul weight by flow scale readout is easy and accurate. Record the weight from the readout prior to sampling. Remove all partial haul species from the sorting belt after the flow scale. Record the weight from the scale readout after you have completed your sample. The difference between the end weight and the start weight is your partial haul weight. Even though you have an actual weight for the predominant species, you will still need to take an 80 kg or 200 kg basket sample as a subsample (see page 4-7).

**Partial Haul by Tally**

A partial haul sample by tally is an accurate count of the predominant species and a collection of bycatch. The bycatch is sorted, counted, and weighed by species. The count of the predominant species is multiplied by an average weight to determine the total

weight of that species. The summed weights of the predominant species and the bycatch species equals your partial haul sample weight. This method can only be used when the predominant species can be reliably counted. It is typically used during the Pacific cod fishery, on both catcher boats and factory trawlers.

To determine the average weight of the predominant species, collect a random sample of at least 50 fish. This will be your basket sample for predominant species. Weigh these fish, and divide the weight by the number of fish weighed. This is the average weight.

**weight ÷ number = average weight**

Multiply the tallied number of the predominant species by the average weight of this species to calculate the total weight of the predominant species.

**average weight X number tallied = total wt. of tallied species**

Record only the entries for the sorted (non-tallied) species as sample type "P" for partial haul sampled. Record your sample for average weight of the tallied species as sample type "B" for basket sample. ***The total weight of the tallied species is only used to calculate the partial haul sample weight.***

**total wt. of tallied species + wt. of sorted species = partial haul wt.**

## Random Sample Frames

In order to take random samples from a population, you need to establish a framework which assures that all individuals have an equal probability to be included in your sample. A sample frame eliminates subjectivity and removes any decisions regarding when to take a sample. Without a defined, documented sampling frame, your samples cannot be considered random. To set up a sampling frame, see "Steps in Taking a Random Sample:" on page 2-11.

The units which make up your frame can either be spatial (units of space) or temporal (units of time.) When the entire population is available at one time, for instance when a codend is dumped out on deck, spatial sampling units should be used. When the entire population is available over time, such as on a factory conveyor belt, temporal units may be easier to use.

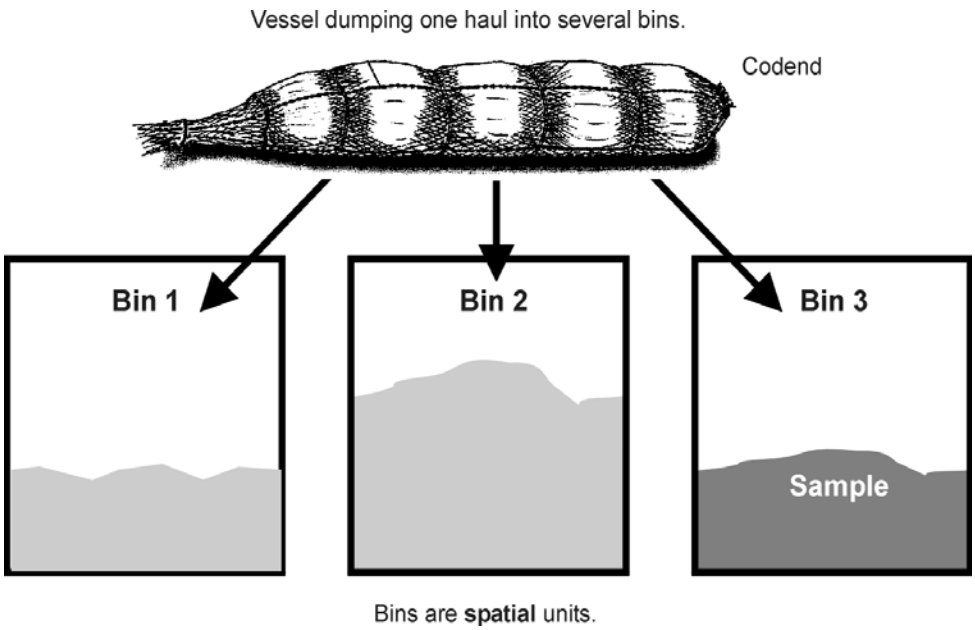
On a trawl vessel, your population will be all the individuals caught in a haul. The frame and units you use will depend on your vessel type and fishery. First define your frame and units, then randomly pick which units to sample from. Finally, collect samples from the selected units. Note that random sample frames are used only for partial haul and basket samples. Whole haul samples are a true census of the population, and therefore are not subject to sample bias.

### Using a Random Sample Frame on a C/P

Both temporal and spatial frames can work on C/P or mothership vessels. Commonly, these vessels have motion compensated flow scales or fish bins that are easy to read. Spatial frames can be used in both scenarios.

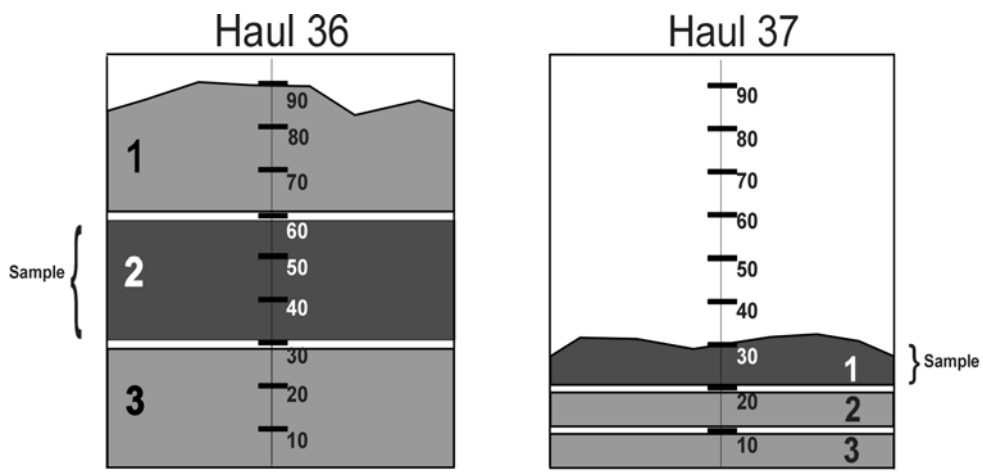
#### Spatial Frames

You can use volumetric units in a fish bin for either basket or partial haul samples. On vessels which dump one codend into several accessible bins, you can randomly choose a bin, and sample the entire bin for your partial haul (see Figures 4-2 and 4-3) or take basket samples from only the chosen bin. When using this sample frame, you can determine partial haul sample size either by bin volume and density or by flow scale readouts.




Use your random numbers table to choose which bin to take your sample from. In pollock and other low-diversity fisheries, you could partial haul the entire chosen bin. In diverse fisheries, such as yellowfin sole, you could take basket samples from the chosen bin. In this example, Bin 3 was randomly picked, and will be sampled.

**Figure 4-2 Spatial Sampling (example using multiple bins)**




If your vessel dumps their codend into only one bin, you should divide the haul into thirds or fourths. Pre-select which third or quarter to sample using your random number table. Again, either bin volume estimates or flow scale readout could be used to determine partial haul sample size when using this method.

**Figure 4-3 Spatial Sampling (example using a single bin)**

**Temporal Frames**

On vessels where it takes several hours to empty the bins, a temporal frame may work better for you. Time intervals can also be used for selecting random basket or partial haul samples in a factory setting. Factory managers will usually have an idea of how many tons of fish per hour the factory can run. Use this as a guideline for how much time it will take for the bins to empty. Divide the total amount of running time into numbered units. Use the random number table found on A-16 to pick time units to sample. Monitor the flow of fish for the entire time unit if you are partial haul sampling. Collect fish within these intervals if you are basket sampling. See Figure 4-4 for an example of a partial haul by using temporal units, and read Figure 4-5 for an idea on how to use time units for basket samples.

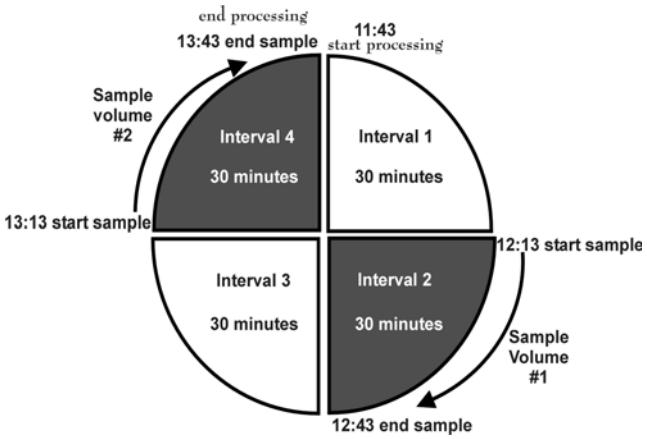



**Figure 4-4 Temporal Sampling Frame**

Your yellowfin sole vessel lands a 30 ton bag. They process about 7-8 tons per hour, so you expect the running time to be about 4 hours. It usually takes you 20 minutes to sort through two baskets, and you need 10 baskets to collect 300.0 kg. You decide to use half hour sample intervals and collect two baskets from each chosen interval. Divide the four hours of processing time into eight 30-minute intervals. Number the intervals one through eight. Using your random number table, pick five intervals during which to sample. You pick numbers 8, 3, 6, 5, and 6. Since you chose interval 6 twice, disregard this duplicate and choose another number. You choose 2. Since it doesn't take you a half hour to collect two baskets of fish, you choose a random time within your intervals to collect fish. Choose a number between one and thirty minutes, and collect both your baskets at the chosen time. If you chose minute 18, you would collect your baskets during the 18th minute of your intervals. Using this frame, your first sample is taken during the 3rd half hour interval, at the 18th minute- one hour and 18 minutes after they began processing fish.

**Figure 4-5 Example of Basket Sampling Using Temporal Frame**

**Systematic Frames**

Another way to use time intervals to sample is to set up a random systematic frame. Systematic sampling involves taking a sample during every "$n^{th}$" defined time interval. For a random systematic frame, you randomize your sampling start time within the first interval. In the example above, you could have set up a systematic sample frame by taking a basket during ***every*** 30 minute interval rather than from only pre-selected ones. Use the random number table, numbered slips of paper, or some other method to choose a time in the first interval in which to start sampling. In the previous example, you would need to pick a number between one and thirty. If you picked the 13th minute in which to begin sampling, you would wait until thirteen minutes of processing time had passed prior to taking a basket. Once you started, you would collect a basket at every 13+n minutes where n = 30. For example, you would take baskets at 13 minutes, 43 minutes, 1 hour and 13 minutes, 1 hour and 43 minutes, etc. until the end of the haul.

**If you systematically sample an entire haul, randomize your start time within the first interval, and sample throughout the entire haul!**

If you want to use a systematic sampling frame, but don't want to be in the factory for the entire running of a haul, you can systematically sample a randomly chosen portion of the haul. If the haul in the previous example was a 60 ton bag, the running time would have been estimated at eight hours- too long to spend on one basket sample! If this was the case, you could divide the haul into two, and choose a random half to systematically sample. Then, use the same systematic frame described. If you chose the first half, and used the exact frame above, you would collect samples at minute 13, 43, 1 hour and 13 minutes, etc. until four hours of processing time had passed.

**If you systematically sample a portion of a haul, randomize your start time within the first unit in that portion and sample throughout the entire portion!**

## Using Random Sample Frames on Catcher Vessels

**Spatial Frames**

Implementing a random sample frame on catcher vessels can be very challenging. Try the following methods, and document your results. If you determine that sampling using a random frame is not possible you must document your reasons, and give an explanation of the sampling methods used. Both temporal and spatial frames can be possible on catcher boats depending on the target fishery.

Spatial frames may work on vessels which dump their entire codend onto the trawl alley before sorting retained species into the RSW tanks. One way to implement a spatial random sample frame is to establish a "grid" pattern on the trawl alley. Mark out a grid pattern, if possible, or use reference marks, such as trawl alley boards, hatch, or scupper openings, etc. Number the grid section, and use the random number table on A-16 to pick areas in which to sample. Either collect all fish from within the grid, or toss your basket into the prescribed grids and collect the fish which touch the baskets (see Figure 4-6).

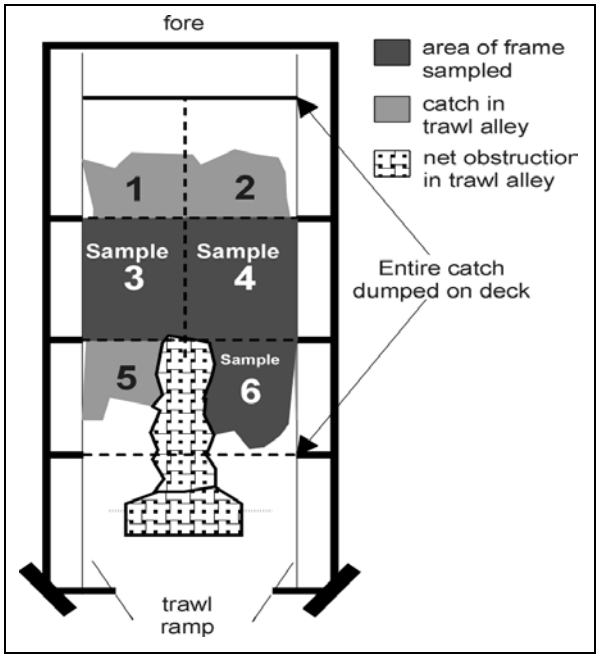



**Figure 4-6 Spatial Frame Using Trawl Alley**

Another possible spatial frame can be used if your vessel has several checker bins that are available for use. Number the checker bins, and use the random number table (RNT) to pick which checker bin(s) to draw samples into. Lift the checker bin boards, and allow the fish to flow from the trawl alley into the bins. Collect your 300 kg sample from all chosen bins (see Figure 4-7).

In this example, the checker bins are numbered and the observer uses the RNT to pick bin #1 and #5 to sample from. Note that Bin 6 is unusable. Document this as a source of potential bias. Bin boards are lifted and fish flows in. All catch is weighed and counted as a basket sample.

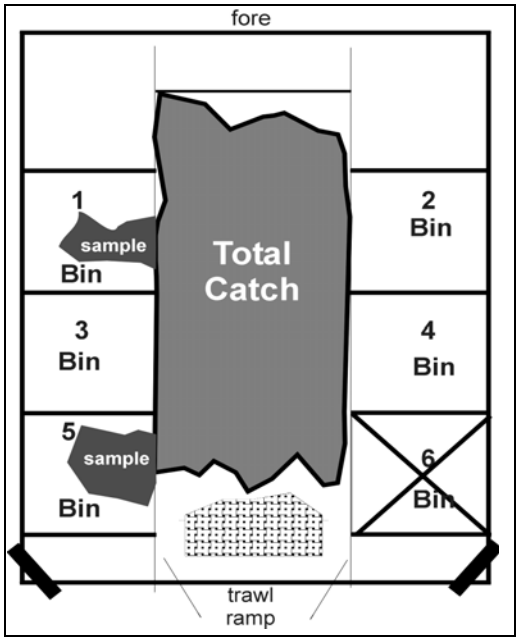



**Figure 4-7 Spatial Frame Using Checkerbins**

**Temporal Frames**

Temporal frames can be used when the codend is dumped directly into the RSW tanks, and sampling requires you to divert the flow of fish directly from the codend into your baskets or other containers. Divide the dumping time into equal numbered intervals. Use the RNT, or other method, to choose time intervals from which to collect samples. Collect samples from several intervals when possible. If your vessel dumps fish very rapidly, you may need to take the entire sample from one interval. If this is the case, make sure that interval is randomly selected! Document your methods and any possible biases in your logbook. Read Figure 4-8 for a temporal frame scenario.

Your pollock catcher boat takes approximately 35 minutes to dump their bag into the RSW tanks. Create time intervals by dividing the dumping time into three intervals of 12 minutes. You need to collect ten baskets of fish for your sample, but have only enough storage space to keep five baskets of fish at one time. To work within these constraints you decide to sample two intervals and collect five baskets per selected interval. You choose your intervals using the random number table. The 12 minute interval gives you enough time to weigh and count a few baskets of fish in order to free up some storage space. Sometimes the fish is dumped in less than 35 minutes. When the last interval is randomly chosen, you sometimes can collect only two or three baskets of fish, so you document this in your logbook.

**Figure 4-8 Example of Basket Sampling Using Temporal Frame on a Catcher Boat**

**Systematic Frames**

Another way to use time intervals is to sample systematically. Systematic sampling involves taking a sample during every "$n^{th}$" defined time interval. In the previous example, a systematic sample could have been taken by collecting two baskets of fish every five minutes. You must randomize your sampling start time when using a systematic sample frame. Since five minutes will be your unit, break the first five minutes up into one minute intervals. Say you picked the second minute in which to start your sampling. You would wait until one minute of the dumping time had passed prior to taking your two baskets of fish. Once you started, you would collect two baskets every five minutes until the end of the dumping. In this example, you would collect fish at minutes 2, 7, 12, 17, etc. Note that using if you were using this frame, you would collect 14 baskets of fish for your sample.

## Processing Your Sample

### Species Identification

While sorting through your samples you will encounter lots of organisms that need to be identified to species. To properly document the identification of the animals, you need to complete Species ID forms. For details on how and when to complete these, see see "Species Identification Forms" on page 2-5.

### Counting and Weighing

Once your sample has been taken, you can weigh your fish in one of two ways. In most fisheries, observers find it easiest to sort their sample, and then count, weigh, and record each species separately. However, in low-diversity fisheries you may choose to weigh the unsorted fish and then sort the sample. If you do this, you need to weigh the bycatch and subtract their weight from the total to obtain the weight of the predominant species.

Generally you will be using some container (like a blue basket) to weigh your fish. ***Remember to tare the scale for this container!*** Check your tare frequently and change the tare every time you change containers!

Organisms such as brittle stars and jellyfish are sometimes too numerous, or too broken, to count accurately. It is often easier to weigh them all and use their average weight to calculate their number. Use at least 50 whole individuals to calculate average weight. ***For basket samples, you must actually weigh all organisms.*** To calculate the number of organisms in your sample, weigh all organisms, and divide by the species average weight.

**total weight ÷ average weight = number of animals**

### Decomposed Fish and Miscellaneous Items

Decomposed fish, or fish waste, are those in an obvious state of decomposition, with a breakdown of muscle and skin. Decomposing fish must be distinguished from damaged fish. Damaged fish should be identified, weighed, and recorded along with other undamaged fish of the same species. Miscellaneous items are garbage, fishing gear, wood and other debris which may have been caught in the net and appear in your sample. The ***true weight of decomposed fish and miscellaneous items must be recorded,*** but the number of these items is irrelevant. Always enter a "1" as the number of miscellaneous items (code 900), or decomposed fish (code 899), on your species composition form.

### Crab Pots

Trawlers occasionally will pick up a crab pot in the net. The incident is recorded on your Vessel Haul Form (see page 3-16). Crab pots are not included in the OTC or the species composition sample. Do not count any crab that are in the crab pot in your sample. The crab were caught by the pot, and the pot was caught by the trawl. Note the incident in your logbook, with a description of the pot, any identifying numbers or tags, and an account of the contents.

### Large Items

Occasionally a large item such as a boulder, 55-gallon drum or large organism will be caught by your trawler. You can handle these in one of two ways. Either option prevents the weight of the object from being labeled as fish when your species composition sample data is extrapolated to the entire haul.

1. Include the weight of the large item in your OTC and include an estimated weight of the item on your 3US. If you are sure that you can sort out all of the large items, record the item as a whole haul sample, with the sample weight equal to the OTC. If you are not sure that you can sort out all of the items, record the item as a pre-sorted sample type "X," with the sample weight equal to the OTC.

2. Do not include the weight of the item in either the OTC or on the 3US. ***If the "object" is a marine mammal, this is the option you must use.***

## Estimating Percent Retained

Percent retained needs to be estimated for each non-prohibited species. This is an estimation of the percentage of the round weight of a species retained. Round weight is the weight of the whole fish, prior to processing. The entire fish (therefore the entire round weight) is considered retained when more than 15% of the round weight is turned into product. ***Percent retained is only an estimation, and your effort and time spent obtaining it should be minimal!***

Percent retained, by species, is often difficult to estimate because discard can happen in a variety of places. Make your estimation based on what you see happening, on a haul by haul basis. Potential types of discard include fish falling off belts, dumping large portions of nets at sea and size sorting fish. If the vessel dumps a portion of a net at sea, none of the species groups should be considered fully retained. For example, if 30 mt of an 80 mt net is dumped overboard, then 3/8$^{ths}$ of all species would be discarded. Therefore, you should record no more than 5/8$^{ths}$ (or 63%) of any group as retained.

### Percent Retained on C/Ps

In most cases, percent retained will be your visual estimation aboard C/P vessels. Sometimes a C/P will put up product and later discard it to make room in their freezer for a more valuable product. This is called "high-grading," and it should be noted in your logbook as a possible regulation infraction. Since you will not know which hauls the product came from, do not change your earlier figures for percent retained.

### Percent Retained on Catcher Vessels

Everything that is delivered to the processing plant from a catcher vessel is considered retained by that vessel. The processor may later discard it or even give it back to your vessel for discard, but as long as it was once delivered, it is considered retained. Fish that are discarded at sea ***prior*** to delivering the catch to the plant is actual discard and should be deducted from retained catch when estimating percent retained.

### Improved Retention/Improved Utilization (IR/IU)

Through industry initiative, the North Pacific Fishery Management Council created a regulation which requires all vessels to retain, and utilize, Pacific cod and pollock in the BSAI and GOA. This regulation was recently expanded to the shallow water flatfish complex for vessels in the GOA. When the open access fisheries for these species are open, all vessels operating in all fisheries must keep 100% of the pollock and cod they catch. Additionally, some product must be made of at least 15% of the whole(round) weight of the fish. Once the fisheries for IR/IU species close, vessels are required to keep the maximum retainable amount for these species. Your sample is not covered under the IR/IU regulations, so fish discarded as a result of you working up your sample (taking otoliths, sexing fish, or completing a stomach sample) do not need to be factored into percent retained.

Vessel personnel might challenge you on your percent retained estimations for IR/IU species. You should document your conversations when this happens. ***Do not make any changes to your percent retained***

***methodology because of the IR/IU regulations, or pressure from the crew.*** The fishing industry has been informed that your percent retained estimates are visual estimates only. If vessel personnel have questions about this regulation, you may refer them to the Alaska Regional Office at (907) 586-7228, or to the NMFS Office of Law Enforcement at (907) 586-7225.

## Sampling in Specific Situations

There are several situations on vessels that make it challenging for observers to sample, or which have a sample type dictated by policy or regulation. The following brief paragraphs cover sampling protocols in these specific situations.

### Mixing of Hauls on C/Ps

Mixing of hauls creates a sampling problem because it prevents haul specific data from being collected. If your vessel frequently mixes hauls, contact your ATLAS inseason advisor. Try to collect unmixed samples whenever possible. Speak to the captain and factory manager about keeping the hauls separate if at all possible.

Vessel personnel are required to notify you 15 minutes prior to fish being brought aboard the vessel. At the very least, this notification should give you warning that fish are going to be mixed. From that point, you can do one of the following:

- If you can ***determine where fish from each haul start and end*** (either visually in a bin or by estimating processing time of each haul) then you can use this as a basis for haul definition. You can then sample as if these hauls weren't mixed by taking fish that you are fairly sure came from each haul.
- If the fish are ***completely mixed before you start sampling,*** and you know in what proportions they are mixed, take a large sample from the combined hauls. This sample will be two haul's worth of data, so try to double the sample size if possible. Proportion the data to the hauls and enter the data separately. Sampling this way may mean you sample some hauls that are "off" according to the RST. Refer to "Proportioning Plant Data" on page 4-19 for directions on how to proportion sample data. Proportioning for species composition is usually done by species weight, rather than by number.
- If these options are not feasible, you should stop sampling. Attribute all species seen to the haul you were sampling. Stopping your sample may mean that you fall below minimum sample weights. Document the reasons for this in your logbook.

Most importantly, you should keep detailed notes on when and why mixing of hauls occurs. In the Daily Notes section of your logbook, document each time this happens, how it affected your sample, and the steps you took to try to resolve the problem.

### Sampling Policies on Pollock Catcher Vessels

Observers on catcher boats operating in the pollock fishery must basket sample at sea for target and non-prohibited bycatch. Additionally, they must whole haul sample the delivery at the processing plant for prohibited species and seabirds. Some Bering Sea catcher boats have sorting belts below deck and do some sorting at sea, but the fish are usually run too deep and fast for an accurate whole haul sample. A more thorough sorting should be done at the plant for prohibited species and seabirds. If your vessel is sorting and you cannot monitor or collect all the prohibited species for which you will be whole haul sampling at the plant, reduce your sampling effort to a basket or partial haul sample for these species.

Any sampling at a processing plant should be for prohibited species and seabirds only. NMFS will not accept proportioned species composition data for the target species and non-prohibited bycatch collected at a plant.

Although whole haul sampling at the plant for prohibited species is required by the Observer Program, there may be circumstances which prevent you from whole haul sampling for one or more prohibited species or seabirds. Frequently, fish will be run across conveyor belts at high speed and in deep piles causing small fish such as herring to be missed. If you do not feel confident that all the herring in a delivery can be accounted for, you should use your basket sample as the sample for herring.

When basket sampling at sea, collect basket samples as previously described (see "Basket Sampling on Catcher Boats" on page 4-8). Make note of all prohibited species found in your basket samples. These fish should eventually be included in your whole haul sample, but may need to be recorded as part of the basket sample if something prevents you from sampling at the plant.

Frequently, the crew will sort out obvious prohibited species and unwanted bycatch for discard at sea. You must identify, count, weigh, and measure all prohibited species discarded at sea. Record the sex of all salmon and crab species. These fish must be included in the whole haul sample and in the official total catch calculation. If the quantity of prohibited species being discarded at sea prevents you from weighing them all, you may take a subsample of 50 individuals and apply an average weight to your total count.

**Sampling at the Processing Plant**

The first time your vessel delivers to a plant, meet with the plant observer. He or she will familiarize you with the processing operation, and should provide you with a Delivery Weight Verification explanation (see page 8-4) and show you the following:

- the best location in the plant to sample for prohibited species,
- the location to check for after-scale prohibited species (see "After-Scale Area" on page 8-4), and
- location of the fax machine for sending data.

**When using proportioned delivery data, the delivery weight must be verified. You are responsible for knowing and documenting how all your data were derived!**

If you expect your off-load to take longer than 5 hours, you should make arrangements to have the plant observer give you a break from sampling. Remember, the entire off-load must be sampled, therefore you cannot leave the sorting area any time fish are running unless the plant observer takes over! The plant observer, or dock personnel, should be able to give you an idea of when your off-load will begin. This delivery schedule is tentative, and will change with little notice, so stay with your vessel until it off-loads to ensure you don't miss part of the delivery. If your vessel completes a delivery, and is going back out to sea before you are done sampling, you should arrange for the plant observer to finish the sample for you. If the plant observer is not available, and you must return to your vessel, document this thoroughly in your logbook and notify NMFS and your employer. Assisting vessel observers is a priority of plant observers, so it should be a rare event that he or she would not be available to relieve you. Although you may be required to reboard your vessel, you should not be sent to another assignment or to your final debriefing prior to the completion of your whole haul sample for prohibited species. It is your employer's responsibility to ensure that this doesn't happen. If you are put in this situation, contact the Observer Program as soon as possible.

**It is unacceptable to miss any portion of an offload when recording the hauls as whole haul sampled. If any of your offload is missed, record only the basket sample data from hauls in the delivery and document the circumstances.**

Proportion the weights and numbers of prohibited species found in the delivery to individual hauls based on the vessel estimate. If you find that the vessel estimates are terribly inaccurate, you may use band counts for proportioning plant data.

For each haul, add your proportioned numbers and weights of prohibited species from the delivery to any prohibited species discarded at sea. On rare occasions, a vessel may dump each haul in a separate RSW tank and you may be able to attribute prohibited species found at the plant to specific tows. This can only be done if there is no mixing in the RSW tank and you can be sure of which tank the plant is pumping.

If you did not basket sample ***all*** hauls at sea, you still must sample the entire delivery for prohibited species. Proportion the prohibited species as usual, but remember that you cannot record prohibited species data on a Form 3US if a basket sample was not taken. You can, however, record all the prohibited species on the Form 7, even if they were proportioned to an unsampled haul (see "Length Measurement" on page 10-8).

**When You Are Overwhelmed with Salmon**

On occasion, a vessel will deliver too many salmon to be sampled at the plant. This is often a problem during the fall pollock fisheries when the Chum Salmon Savings Area is open. When you are overwhelmed with salmon at the plant, take a subsample for average weights and sexed lengths. You need to collect a minimum of ***50 fish per species per haul in the delivery for average weights***. You also need to collect a minimum of ***20 fish per species per haul in the delivery for a sexed length sample.*** An example of a deck form showing this situation can be found in Figure 4-10. To accomplish these sampling tasks:

1. Begin sampling as usual and take all salmon off the sorting belt. Usually you won't know there are too many salmon until you are overwhelmed!

2. As you remove the salmon, sex and measure them. Record these data on a deck form. Place the salmon in a basket to be weighed.

3. Once the basket is full, weigh the fish. When salmon are not plentiful, most observers weigh individual fish as they come across them. However, weighing in aggregate is more practical when salmon are abundant.

4. You may stop sexing, measuring and weighing fish when you reach your minimums. If you aren't overwhelmed, continue collecting data through the offload.

5. Count remaining salmon by species as they pass on the belt. Use your average weight to calculate total weight of salmon delivered.

**Salmon are managed by number, not weight. Getting an accurate count of salmon in the delivery is an important part of managing their stocks!**

**Proportioning Plant Data**

1. Sample for prohibited species at the plant. Collect or tally all prohibited species from the sorting belt. Record the requested biological data including species, length, and sex for salmon and crab groups and length and viability for Pacific halibut (see page 10-5). Take scale samples (see page 10-8) from salmon species as needed.

2. Proportion prohibited species found at the plant to the individual hauls using vessel estimates (see example below).

| | |
|---|---|
| **Haul 10:** | 72.58 mt |
| **Haul 11:** | 77.11 mt |
| **Haul 12:** | 27.07 mt* |
| **Haul 13:** | 45.36 mt |
| **Total:** | 222.12 mt |

* Haul 12 had significant amounts of flatfish and some prohibited species discarded. You estimated the amount of flatfish discarded and have actual weights for prohibited species (see Figure 3-8 on page 3-12). You use the vessel estimate minus this discard as your proportioning tool.

3. Numbers of fish are proportioned and then assigned to hauls. To set up a proportion ratio, divide each haul catch estimate by the sum of all catch estimates and multiply by the number of fish for each prohibited species found. Round the proportion number of fish so that you only have whole fish in each haul. The sum of the rounded numbers should equal the total number of fish actually found in the delivery.

$$\frac{\text{(estimated haul wt. - discard)} \times \text{number of fish}}{\sum\text{(estimated catch wts. - discard) in delivery}} = \text{number of fish in individual haul}$$

Individual fish must have the same assigned haul number for all data taken, including length, viability, sex or specimen sample numbers. Do not be concerned if your haul assignments create the appearance that all female salmon were from one haul, and all males were from another. The whole haul data from deliveries are not assumed to be site specific, rather it is known to be delivery specific.

4. Species weights for the ATLAS deck form or 3US are obtained by summing the individual weights of fish proportioned to each haul or by applying an average weight to tallied fish.

5. Enter prohibited species data on your ATLAS deck form or 3US form. Remember you must add prohibited species that were discarded at sea to the totals found at the plant, and the data must be combined on your form. Since you whole haul sampled at the plant, any prohibited species from your basket sample must be added to the whole haul, and their weight removed from the basket sample weight.

6. On your 3US form, your sample weight for the whole haul sample at the plant will be equal to the official total catch. Remember, this will be the proportioned delivery weight plus haul specific at sea discard and prohibited species. For methods on obtaining correct delivery weight information see page 3-12.

ADDITIONAL CALCULATIONS

VESSEL/PLANT NAME FISHIN' IMPOSSIBLE Del #2 (Hauls 10-13)

| Species | Sex | Length | Wt |
|---|---|---|---|
| CHUM | F | 62 | 3.3 (10) |
| | M | 63 | 3.2 (10) |
| | F | 59 | 2.8 (10) |
| | F | 75 | 6.2 (10) |
| | F | 57 | 2.4 (11) |
| | M | 55 | 2.3 (11) |
| | F | 62 | 3.5 (11) |
| | F | 66 | 4.2 (11) |
| | M | 60 | 3.7 (12) |
| | M | 63 | 3.7 (13) |
| CHUM | M | 71 | 5.0 (13) |
| King | M | 53 | 2.2 (10) |
| | M | 57 | 2.6 (10) |
| | F | 58 | 2.8 (10) |
| | M | 64 | 3.2 (11) |
| | F | 53 | 2.5 (11) |
| | M | 51 | 2.2 (11) |
| | M | 46 | 1.8 (12) |
| | F | 42 | 1.6 (13) |
| King | F | 53 | 2.5 (13) |
| Halibut | | 56 | 2.0 (10) |
| | All Dead | 38 | 0.6 (10) |
| | | 68 | 2.7 (11) |
| | | 72 | 3.2 (11) |
| Halibut | | 73 | 4.0 (13) |

Haul 10 = 72.58 MT
Haul 11 = 77.11 MT
Haul 12 = 27.07 MT
Haul 13 = 45.36 MT
222.12 MT

Haul 10:
72.58/222.12 MT = 0.3267603
x 11 chum = 4 fish
x 9 kings = 3 fish
x 5 halibut = 2 fish

Haul 11:
77.11/222.12 MT = 0.3471546
x 11 chum = 4 fish
x 9 king = 3 fish
x 5 halibut = 2 fish

Haul 12:
27.07/222.12 MT = 0.121871
x 11 chum = 1 fish
x 9 king = 1 fish + *
x 5 halibut = Ø

Haul 13
45.36/222.12 MT = 0.2042139
x 11 chum = 2 fish
x 9 king = 2 fish
x 5 halibut = 1 fish

* 1 female chum, 65cm, 4.0 kg and 1 excellent Halibut, 50cm 1.35 kg

34

**Figure 4-9 Prohibited Species Proportioning with Few Salmon (see Figure 4-13 for 3US)**

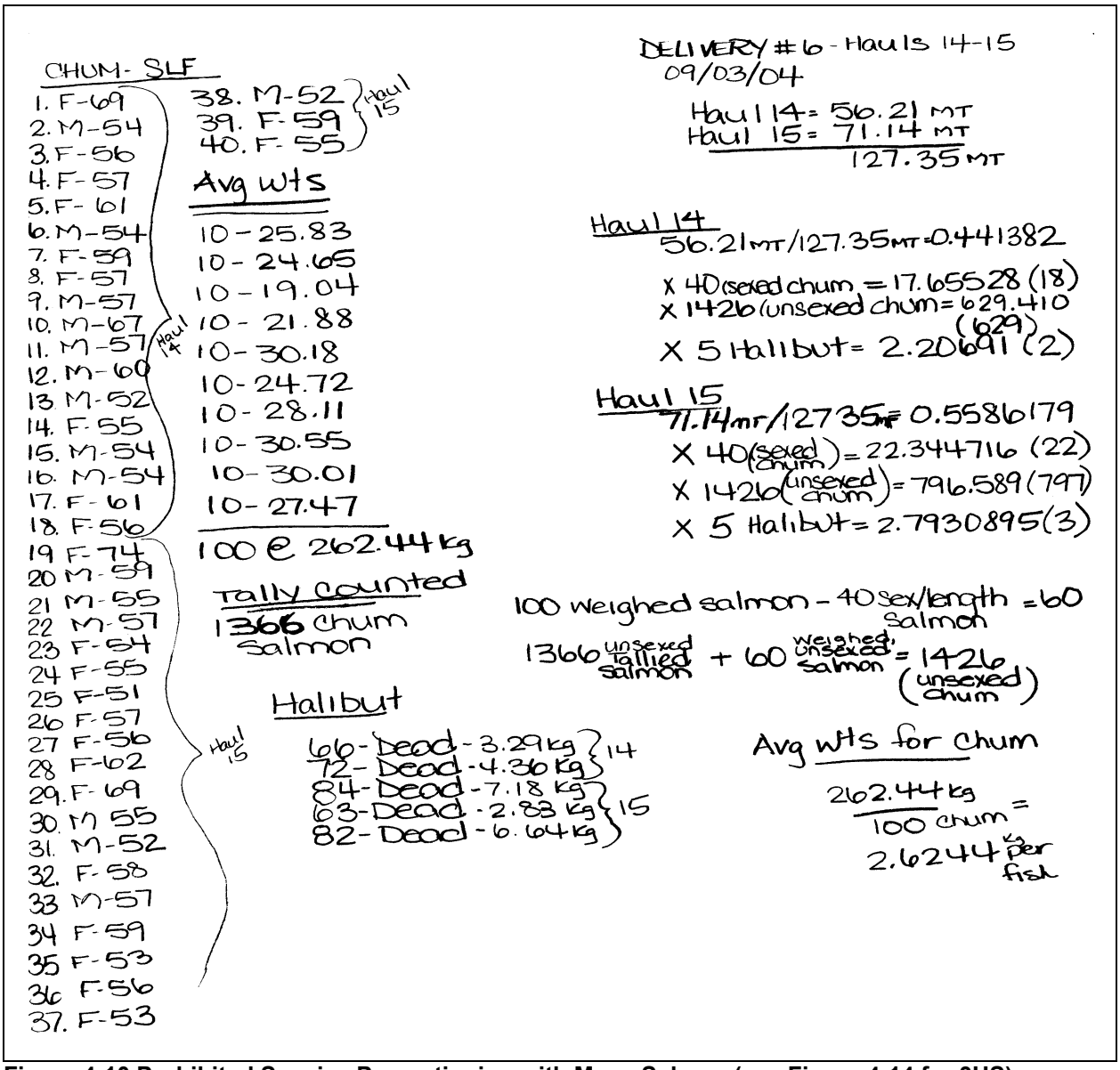



**Figure 4-10 Prohibited Species Proportioning with Many Salmon (see Figure 4-14 for 3US)**

### Sampling Flatfish and Pacific Cod Fisheries

Sampling during flatfish and Pacific cod fisheries differs from pollock in that:

**For information on the rock sole subsample protocols, see "Species Sub-Sampling" on page 2-12.**

- the catch tends to be smaller,
- the catch is usually dumped on deck for sorting,
- tows are more frequent,
- the catch composition is usually quite diverse, and
- the catch of prohibited species is usually higher.

Because of catch diversity, basket sampling is the most common sampling method used in these fisheries. In some cases, you may be able to increase your sample size, and partial or whole haul sample for composition, or just for prohibited species. This is preferred in these fisheries, but is not always possible. Vessels in these fisheries are involved in the Vessel Incentive Program.

**Vessel Incentive Program (VIP)**
The Vessel Incentive Program was designed to encourage trawl vessels with high bycatch rates of Pacific halibut and red king crab to change their fishing strategies to reduce their incidental catch of these species. The program establishes bycatch rate standards for all North Pacific groundfish trawl fisheries. Vessel operators that exceeded the bycatch standards for their target fisheries may be subject to penalties for not taking appropriate measures to reduce their individual bycatch rates.

A fishery may be closed to further fishing before the target species quota is reached because a prohibited species catch limit has been reached for that fishery. Some vessel operators will tow repeatedly where there are good catches of target species, regardless of whether the hauls have a high rate of prohibited species bycatch. When a fishery closes before the quota of target species is taken, the vessel skippers that took the time and effort to fish cleanly often have less fish than those with high diversity hauls. The VIP encourages skippers to use fishing strategies to reduce their bycatch, such as using more selective gear or moving to another area.

Observer data is used to calculate the bycatch rates of halibut and red king crab by VIP target fishery. The NMFS Regional Office in Juneau posts the rates for all trawl vessels on the fisheries Bulletin Board Service, which each vessel can access using a password. Violations can be issued for each month that the standard was exceeded and penalties of monetary fines, permit sanctions, or forfeiture of the vessel and its catch can be levied. When you are sampling, watch for pre-sorting of the catch and document thoroughly in your logbook any intimidation or hindrance of your sampling. Vessel crew operating in these fisheries have more incentive to pre-sort than in other fisheries.

Do not calculate prohibited species bycatch rates for vessel personnel. The numbers the NMFS uses to manage VIP fisheries are not direct extrapolations from your data, and a vessel operator may not be held responsible for their fishing practices if you provided them with faulty information. The vessel operators may obtain the sample data necessary to calculate their bycatch rates from you, but vessels are responsible for monitoring their own activities. If the vessel personnel have questions about the VIP program, their bycatch rates, or how to calculate their own rates, do not advise them. Refer them to the Alaska Regional Office in Juneau at (907)586-7228.

The Council has recently been investigating the efficacy of the VIP program. Significant changes, or possibly elimination, of the program may occur. Your briefer will update you if changes occur during this fishing year.

## Sampling on CDQ or AFA Trawl Vessels

The Observer Program has different sampling protocols for some vessels regulated by the American Fisheries Act or targeting a Community Development Quota. The specific policies are noted by vessel type and fishery below.

### AFA Pollock Catcher Vessels

Pollock catcher vessels operating under an AFA co-op have the same sampling protocols as open access pollock fisheries (see “Sampling Policies on Pollock Catcher Vessels” on page 4-17). These vessels will not have an observer sampling station or motion compensated platform scale. ***While AFA fishing, pollock catcher vessels may sort at sea.***

### CDQ Pollock Catcher Vessels

Pollock catcher vessels will not have an observer sampling station or MCP scale. While CDQ fishing, these vessels must deliver ***unsorted*** catch (all CDQ species and salmon PSQ) to an eligible processor. The vessel must provide space on deck for you to sort and store samples and a place to hang your scale. The vessel must ***retain all halibut PSQ and crab PSQ until it is counted and sampled by you. Halibut PSQ and crab PSQ may be discarded at sea after you sample it.*** Don’t forget to add these discards back into your OTC after you proportion the delivery weight. All other sampling protocols are the same as for open access pollock (see “Sampling Policies on Pollock Catcher Vessels” on page 4-17).

The processing plant that your vessel delivers to is required to sort and weigh catch by species during CDQ deliveries. If you notice that catch is not being sorted to species, document which species the plant is not sorting correctly. You may have to work with the plant observer, who will have access to the ADF&G fish tickets, in order to determine what the plant is

reporting. As in open access, your primary purpose at the plant is to conduct a whole haul sample for prohibited species. Monitoring the plant's sorting and weighing activities is secondary to completing your whole haul.

For both ATLAS and non-ATLAS vessels, send your catch messages as soon as you receive the delivery information and are able to complete your data.

### CDQ Non-pollock Trawl Catcher Vessels

Few non-pollock trawl catcher vessels have participated in CDQ fisheries. This may be because their catch is typically diverse and bycatch rates can be very high. These vessels will not have an observer sampling station or MCP scale and they must deliver all CDQ species and salmon PSQ to an eligible processor. The vessel must provide space on deck for you to sort and store samples and a place to hang your scale. Finally, halibut and crab must be discarded by the vessel after you have had an opportunity to sample those species. At sea discard information should be given to the plant observer.

Do observer estimates using codend or bin volume estimates for each haul. Densities should also be taken for each haul. If an observer estimate is not possible, use the vessel's estimate for OTC. Since the catch is usually diverse, you will most likely basket sample at sea for all species. In rare cases, such as a very small haul, you may be able to whole haul at sea for prohibited species. As the vessel observer on a non-pollock trawl catcher vessel, you have no duties at the plant other than notifying the plant observer of any at sea discards. It is the plant observer's responsibility to monitor the offload. Catch messages should be faxed each time the vessel delivers.

### AFA and CDQ Information for C/P Trawlers and Motherships

Regardless of the fishery, AFA trawl C/Ps and motherships are required to carry two observers, have the ATLAS program, a NMFS-certified observer sampling station, a flow scale and a MCP scale. All catch landed by the vessel must be weighed on the flow scale and ***hauls cannot be mixed.*** Your duties and responsibilities will be the same no matter what species an AFA C/P or mothership vessel targets and the vessel's operating requirements will be the same as well. This is not true for non-AFA trawl C/Ps where the equipment and operating requirements change between open access and CDQ. The vessel is required to test the flow scale daily (see "Flow Scale Testing" on page 2-15).

It is your responsibility to test the platform scale daily (see "Platform Scale Testing" on page 2-14). It is common for AFA and non-AFA trawl C/Ps to participate in a variety of fisheries during any given trip. If catch coming onboard may be designated as CDQ, the vessel should provide you advanced notice, but the vessel has up to two hours to officially designate a tow as CDQ in their logbook. As the observer, you should only be concerned with whether they treat potential CDQ catch appropriately and whether the catch is designated as CDQ when you record your information from the vessel's logbook. Since motherships must coordinate their recordkeeping with the delivering vessel, they cannot designate catch as potential CDQ and then change it to non-CDQ. Their catch should be designated prior to landing it. Check the logbook information carefully when filling out your VHF, since a vessel may be fishing for several CDQ groups or participating in multiple fisheries.

Even though vessels are required to weigh all catch, there are certain fish (e.g.: large sharks, halibut, etc.) that are too large for flow scales to weigh. If this occurs, estimate the weight of the fish that was not weighed on the flow scale and add that estimate to the flow scale total weight printout. The sum is the OTC. Contact your inseason advisor each time part of the catch is not weighed on the flow scale. Include the haul number, what wasn't weighed, the item's estimated weight, the flow scale total and the calculated OTC in your message. Document the situation in your logbook (including the OTC calculation) so there is record of why the OTC is greater than the flow scale total.

Observer estimates of total catch must not be made on CDQ or AFA trawl C/P or motherships. Additionally, bin volumes cannot be used to determine partial haul sample weights. The OTC, partial haul sample weight, and whole haul sample weight must come from the flow scale. If the flow scale is broken, has faulted out and catch has passed over the scale without being weighed, or if it has failed the daily test, use the vessel estimate for OTC. If the flow scale is not working, do not partial haul sample. Basket sampling or whole haul sampling are your only options. If the vessel has

questions about flow scale requirements, refer them to the Alaska Regional Office in Juneau at (907)586-7228. Do not refuse to sample or tell the vessel they can't fish if the flow scale or platform scale is not functioning (see page 2-14). Simply inform your inseason advisor of the situation and NMFS will take any necessary action.

Because these vessels are required to have flow scales, partial and whole haul sampling are the most common way to collect composition data. However, even in the pollock fishery, bycatch may become too diverse for these sample types. If this occurs, drop your sample type to a basket sample for predominant species (see page 4-8). If at all possible, continue to partial or whole haul sample for prohibited species and/or unusual bycatch species. Remember, you must be able to sort out, or supervise the sorting of, all the species for which you are partial or whole haul sampling!

### ATLAS Deck Form Instructions

The ATLAS form can be taken out on deck, and on ATLAS vessels, replaces the 3US form. Using the deck form allows you to keep original data and enter it directly into the ATLAS system without having to transcribe the data. They are a backup in case of a computer crash, so it is important to fill out the forms completely and legibly. The following form rules must be followed on all ATLAS vessels.

Maintain a separate set of forms for each vessel. List sample data from each haul on a separate side of the ATLAS form. An example of a completed deck form is found on page 4-25.

<u>The following fields must be filled out completely:</u>

**Haul, Date, Page_ of_, Cr #, Vcode:** Enter the haul number and the date on which it was retrieved. The date on this form must correspond to the information on the VHF. Number the deck forms in consecutive order. Your cruise number will be given to you during training or briefing, or by your employer. The vessel code is not the same as the vessel permit number used in ATLAS. Vessel codes are listed on A-26.

**Partial haul sample weight in kg.:** This field only needs to be filled out if you partial haul sampled. Enter the amount of catch sorted through, in kilograms, which yielded your sample.

**W/P/B field for prohibited species:** The sample type you used for each prohibited species group must be checked. Check "W" if you whole haul sampled, "P" if you partial haul sampled and "B" if you basket sampled.

**Keypunch Check for Species #'s:** Sum the entries from the "#" column(s) for all species groups and sample types, and enter the value in this field. For the Species Composition form in the ATLAS program, this sum will be entered under species ***code 999*** in the ***Number*** field (see "Data Check and Verification" on page 15-6).

**Keypunch Check for Species wt's:** Sum the entries from the "Weight" column(s) for all species groups and sample types, and enter in this field. For the Species Composition form in the ATLAS program, this sum will be entered under species ***code 999*** in the ***Weight*** field.

**Species:** List each species encountered by their common name. Enter the number of each species in the "#" column, and their corresponding weight in the "Weight" column. Use as many lines and columns as necessary for each species.

**Sex:** Tanner crab, king crab, and salmon should be listed separately by species and sex. Record a "M" or "F" for these species when sex is determined.

**% Ret.:** Enter your rough estimate of the percent of each non-prohibited species kept. Retention applies to organisms kept for any reason, including consumption on the vessel, processing, delivery, or for a home pack. Record the percent retained to the nearest whole number.

**Sample type (ST):** Indicate the sample method used for each species listed. Use a "B" for basket sample, a "W" for whole haul samples, a "P" for partial haul samples, and an "X" to indicate a pre-sorted organism.

**Length data, Viabilities, and Measurements:** Use this space for recording target species lengths, otolith information, length and viability for halibut and salmon and crab sex and measurement data.

**Notes:** This space, and the blank box at the top of the page, are for your use. Record notes such as average weight calculations, codend/bin measurements, weights used for density, and mammal or seabird interactions or sightings.

| Haul # 53 (*otolith haul) | W | P | B | Page 53 of 115 |
|---|---|---|---|---|
| Halibut | ☐ | ☑ | ☐ | |
| Salmon | ☐ | ☑ | ☐ | CR# 8011 Vessel A110 |
| King Crab | ☐ | ☑ | ☐ | |
| Tanner Crab | ☐ | ☑ | ☐ | |
| Herring | ☐ | ☐ | ☑ | |
| Date 03-09-05 | | | | |

| Partial haul sample weight in kg. | Keypunch check for species #'s. | Keypunch check for species wt's. |
|---|---|---|
| 20919.6 kg | 355 | 427.19 |

| Species | Sex | # | Weight | # | Weight | # | Weight | % Ret. | ST |
|---|---|---|---|---|---|---|---|---|---|
| Pollock | | 39 | 23.73 | 54 | 43.66 | 56 | 39.87 | 100 | B |
| Pollock | | 51 | 38.6 | 53 | 37.02 | 43 | 26.2 | 100 | B |
| Herring | | 6 | 2.15 | 2 | 1.05 | | | | B |
| P. Cod | | 3 | 15.62 | | | | | 100 | P |
| Arrow. | | 9 | 8.52 | | | | | 100 | |
| N. Rocksole | | 2 | 0.95 | | | | | 0 | |
| YFN Sole | | 2 | 1.56 | | | | | 0 | |
| Jellyfish | | 26 | 12.53 | | | | | 0 | |
| Squid | | 3 | 0.65 | (retained for consumption on boat) | | | | 100 | |
| Poacher | | 1 | 0.2 | | | | | 0 | |
| Insh Lord | | 1 | 0.42 | | | | | 0 | |
| AK. SKATE | | 2 | 13.21 | | | | | 0 | |
| N. Fulmar | | 1 | 1.25 | | | | | 0 | P |
| Pac. Sleep | | 1 | 160.0 | (estimated weight & added to flow scale wt. for OTC.) | | | | 0 | X |

Length data, Viabilities, and Measurements

Pollock
SLF's
F/56
M/52
M/51
F/61
M/48
M/45
M/51
M/52
F/56
Length/weights
M/59/1.84
M/55/1.44
M/55/1.33
F/64/1.97
F/50/1.53
M/62/1.88
F/60/1.89
OTOLITHS
408861
M/52/1.32
083294
M/47/.85

Notes: Lots of herring - basket sampled for 2 predominant sp.*
PARTIAL START:
20200.8
END: 41120.4 } = 20919.6

(3 King Salmon outside smpl for salmon retention)

National Marine Fisheries Service / North Pacific Groundfish Observer Program

Revised 1/1/2000

☆GPO 2003 591-784

**Figure 4-11 Atlas Deck Form**

## Form 3US - Species Composition Instructions

Record the species composition data for each sampled haul on these forms. Two hauls of species composition data will usually fit on each 3US page. Maintain a separate set of forms for each vessel to which you are assigned.

**Cruise number, Vessel code, Year, Month, Day and Haul:** Your cruise number will be given to you during training or briefing, or by your employer. Vessel codes are listed on A-26. In the year box, enter the last two digits of the year. In the month and day boxes, enter the date the sampled haul was retrieved, with leading zeros if necessary. The date of the sample must correspond to the information on the VHF! In the haul box, enter the haul number.

- You must group your species composition samples together by size, and skip a line between each sample type. List samples in order of size, with the largest sample size first.
- List the prohibited species first. You must indicate how much catch was monitored for each of the five prohibited species groups by listing them on each form, even if no individuals were seen. When no individuals of a prohibited species group are seen, list the group name, species code, sample type, sample weight, and "0" for both the species number and weight (see Figure 4-12).

**Species name:** List each species encountered by their common name.

**Sex:** Tanner crab, king crab, and salmon should be listed separately by species and by sex. Record an "M" or "F" for these species when sex was determined. Leave the column ***blank when sex was not determined.*** Do not put halibut condition codes in this column. Leave this column blank for halibut, herring and all other species.

**Species code:** Enter the species, or group, code for each species listed. A list of codes is given, beginning on A-1. Enter the code that corresponds to the most specific identification that you could positively make.

**Sample type (ST):** Indicate sample method used for each species listed. Use a "B" for basket (actually weighed) samples, a "W" for whole haul samples, a "P" for partial haul samples and an "X" to indicate a pre-sorted organism. Individuals with an "X" sample type listed must have a sample weight equal to the OTC.

**Number:** Enter the number of each species listed. If you calculated an average number using a known weight, or proportioned prohibited species number from a whole haul sample at the plant, enter the rounded whole number of individuals. You must enter the number of decomposed fish (code 899) and miscellaneous items (code 900) as a "1." The NMFS does not need an average weight for these items, therefore true total numbers are not needed.

**The most common problem on this form is a recorded whole haul weight not equal to the OTC. This affects the accuracy of the in-season database. Please check this field carefully before sending data!**

**Species weight in kg w/ decimal:** Enter the weight of each species. Weights must be written with a well defined decimal and be recorded to the nearest tenth or hundredth. If you feel that your scale could not be read accurately to the tenth, you must fill in at least a trailing zero. Do not enter weights to more than two decimal places. If a species in your sample was too small to weigh, such as one brittle star, enter the weight as 0.01 kg. When estimated weights are entered on the 3US, a note should be written at the top of the form (see Figure 4-12).

**Quantity sampled:** Enter the amount of catch sorted through, in kilograms with a decimal, which yielded your sample. If you whole haul sampled for a listed species, its sample weight, when rounded, must equal the official total catch. If you basket sampled for listed species, the summed species weights must equal the sample weight.

**If the vessel made any product from more than 15% of the fish, the whole fish is considered retained.**

**Percent retained:** Enter your rough estimate of the percentage of each non-prohibited species kept. Retention applies to organisms kept for any reason, including consumption on the vessel, processing, delivery or for a home pack. Record the percent retained to the nearest **whole number**, without a "%" sign. For prohibited species groups, this column must be left blank. Refer to page 4-16 for instructions on how to estimate percent retained.

**Keypunch check:** You must sum the values in the species code, number, species weight, and percent retained columns and enter them on this line. If your species composition data requires both sections on the 3US page, enter the total sums on the keypunch line in the first section, and leave the keypunch line in the second section blank (see Figure 4-12). Double check your summaries!

**Worksheet fields:** Record raw data such as average weight samples, numbers and weights of pre-sorted fish, estimated weights and other notes in the worksheet fields at the top of the form. Make note of anything unusual about the catch or your sampling technique for this haul. Complete descriptions of these notes should be documented in your logbook. Making note of unusual occurrences on your 3US will assist in the debriefing process, and help you distinguish one haul from others.

FORM 3US – SPECIES COMPOSITION

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| | | | | | |
|---|---|---|---|---|---|
| Species: | atka | Partial haul by tally | | | |
| Wt. of above: | 76.70 | | | | |
| No. weighed: | 136 | 1732 atka x avg. weight = 976.79769 total atka for partial haul wt. | | | |
| Avg. weight: | 0.5639705 | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 8008 | A110 | 05 | 02 | 10 | 103 |

ST = Sample Type
B = basket L= Longline
P = partial haul T = Trap/pot
W = whole haul

Page _____ of _____ for transmission

| Species Name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 2781 | + | 172 | 112.8 | X | 330 |
| Halibut | | 101 | P | 0 | 0 | 1012.9 | |
| Herring | | 611 | | 0 | 0 | | |
| Salmon | | 220 | | 0 | 0 | | |
| Tanner Crab | | 3 | | 0 | 0 | | |
| Brown King Crab | M | 8 | | 2 | 4.6 | | |
| Arrowtooth | | 141 | | 2 | 6.0 | | 0 |
| P.Cod | | 202 | | 1 | 2.1 | | 100 |
| Light Dusky | | 330 | | 7 | 9.2 | | 45 |
| Northern RF | | 303 | | 20 | 12.5 | | 85 |
| IRISH LORD | | 418 | | 3 | 1.5 | | 0 |
| Ronquil | | 240 | P | 1 | 0.2 | 1012.9 | 0 |
| | | | | | | | |
| Atka Mackerel | | 204 | B | 136 | 76.70 | 76.70 | 100 |
| | | | | | | | |
| | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Species: | 3 halibut presorted from bin by crewmember who "didn't know I was | | | | |
| Wt. of above: | sampling" Estimated lengths 95, 95, 70 cm. L to W converts to 10.7, | | | | |
| No. weighed: | 10.7, 3.98 kgs → 25.38 kg. See page 147 in logbook for details. | | | | |
| Avg. weight: | | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 8008 | A110 | 05 | 02 | 11 | 104 |

ST = Sample Type
B = basket L= Longline
P = partial haul T = Trap/pot
W = whole haul

| Species Name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 3097 | + | 1188 | 363.08 | X | 850 |
| Salmon | | 220 | B | 0 | 0 | 337.7 | |
| King Crab | | 2 | | 0 | 0 | | |
| Tanner Crab | | 3 | | 0 | 0 | | |
| Herring | | 611 | | 0 | 0 | | |
| Halibut | | 101 | | 2 | 3.4 | | |
| YFN Sole | | 140 | | 900 | 256.4 | | 100 |
| Flthead Sole | | 103 | | 15 | 13.3 | | 100 |
| P.Cod | | 202 | | 6 | 8.6 | | 100 |
| Pollock | | 201 | | 33 | 28.95 | | 100 |
| N.Rocksole | | 120 | | 23 | 4.7 | | 100 |
| S. Rocksole | | 121 | | 2 | 0.6 | | 100 |
| Rocksole unid. | | 104 | | 62 | 11.65 | | 100 |
| Alaska Plaice | | 106 | | 4 | 2.4 | | 100 |
| Starfish | | 20 | | 136 | 6.2 | | 0 |
| Ak. Skate | | 88 | | 1 | 0.4 | | 50 |
| N. Fulmar | | 854 | B | 1 | 1.1 | 337.7 | 0 |
| | | | | | | | |
| Pacific Halibut | | 101 | X | 3 | 25.38 | 30704.36 | |
| | | | | | | | |

**Figure 4-12 Form 3US - Species Composition from the Net Income (Hauls 103 and 104)**

FORM 3US -- SPECIES COMPOSITION

Page 4 of 8

| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | Vessel discarded rocksoles, flathead, chum salmon, and halibut @ sea. | | | | | |
| Wt. of above: | % retained is a visual estimate. | | | | | |
| No. weighed: | | | | | | |
| Avg. weight: | | | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 8800 | A123 | 05 | 02 | 04 | 12 |

ST = Sample Type
B = basket L= Longline
P = partial haul T = Trap/pot
W = whole haul

Page _____ of _____ for transmission

| Species Name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 2763 | + | 293 | 345.73 | X | 355 |
| Halibut | | 101 | W | 1 | 1.35 | 28761.16 | |
| Chum Salmon | M | 221 | | 1 | 3.77 | | |
| Chum Salmon | F | 221 | | 1 | 4.01 | | |
| King Salmon | M | 222 | | 1 | 1.82 | | |
| King Crab | | 2 | | 0 | 0 | | |
| Tanner Crab | | 3 | | 0 | 0 | | |
| N. Fulmar | | 854 | W | 1 | .98 | 28761.16 | 0 |
| | | | | | | | |
| Herring | | 611 | B | 0 | 0 | 333.8 | |
| N. Rocksole | | 120 | | 17 | 12.8 | | 85 |
| Rocksole unid. | | 104 | | 32 | 22.6 | | 85 |
| Flathead sole | | 103 | | 6 | 5.2 | | 85 |
| Pollock | | 201 | B | 233 | 293.2 | 333.8 | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | | | | | | |
| Wt. of above: | | | | | | |
| No. weighed: | | | | | | |
| Avg. weight: | | | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 8800 | A123 | 05 | 02 | 05 | 13 |

ST = Sample Type
B = basket L= Longline
P = partial haul T = Trap/pot
W = whole haul

| Species Name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 1361 | + | 275 | 334.0 | X | 100 |
| Halibut | | 101 | W | 1 | 4.0 | 47948.85 | |
| Chum Salmon | m | 221 | | 2 | 8.7 | | |
| King Salmon | F | 222 | | 2 | 4.1 | | |
| King Crab | | 2 | | 0 | 0 | | |
| Tanner Crab | | 3 | W | 0 | 0 | 47948.85 | |
| | | | | | | | |
| Herring | | 611 | B | 0 | 0 | 317.2 | |
| Pollock | | 201 | B | 270 | 317.2 | 317.2 | 100 |

**Figure 4-13 Form 3US-Species Composition from the Fishin' Impossible (hauls 12 and 13)**

FORM 3US – SPECIES COMPOSITION

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| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | Chum | | | | | |
| Wt. of above: | 262.44 Kg | | | | | |
| No. weighed: | 100 | | | | | |
| Avg. weight: | 2.6244 | | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 7142 | A724 | 05 | 09 | 01 | 14 |

ST = Sample Type
B = basket L= Longline
P = partial haul T = Trap/pot
W = whole haul

Page _____ of _____ for transmission

| Species Name (keypunch check) | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| | X | 1616 | + | 1356 | 2076.64 | X | 200 |
| Halibut | | 101 | W | 2 | 7.65 | 56210.33 | |
| Chum Salmon | M | 221 | | 9 | 23.62 | | |
| Chum Salmon | F | 221 | | 9 | 23.62 | | |
| Chum Salmon | | 221 | | 629 | 1650.75 | | |
| King Crab | | 2 | | 0 | 0 | | |
| Tanner Crab | | 3 | W | 0 | 0 | 56210.33 | |
| | | | | | | | |
| Herring | | 611 | B | 0 | 0.0 | 371.0 | |
| Pollock | | 201 | B | 704 | 370.9 | 371.0 | 100 |
| Jellyfish | | 35 | B | 3 | .10 | 371.0 | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | Chum | | | | | |
| Wt. of above: | 262.44 Kg | | | | | |
| No. weighed: | 100 | | | | | |
| Avg. weight: | 2.6244 | | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 7142 | A724 | 05 | 09 | 02 | 15 |

ST = Sample Type
B = basket L= Longline
P = partial haul T = Trap/pot
W = whole haul

| Species Name (keypunch check) | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| | X | 1684 | + | 1583 | 2587.06 | X | 200 |
| Halibut | | 101 | W | 3 | 16.65 | 71139.24 | |
| Chum Salmon | M | 221 | | 7 | 18.37 | | |
| Chum Salmon | F | 221 | | 15 | 39.37 | | |
| Chum Salmon | | 221 | | 797 | 2091.65 | | |
| King Crab | | 2 | | 0 | 0 | | |
| Tanner Crab | | 3 | W | 0 | 0 | 71139.24 | |
| | | | | | | | |
| Herring | | 611 | B | 0 | 0 | 421.02 | |
| Pollock | | 201 | B | 760 | 420.9 | 421.02 | 100 |
| Flathead Sole | | 103 | B | 1 | .12 | 421.02 | 100 |

**Figure 4-14 Form 3US - Species Composition Form from Proportioning (example with many salmon)**

# MOTHERSHIP DATA COLLECTION

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## List of Priorities

- Obtain independent catch estimates by bin or codend volume (if required).
- Collect haul information for delivering catcher boats.
- Send daily catch messages.
- Sample for species composition.
- Collect otoliths for predominant species.
- Collect length frequency data as required.
- Complete assigned standard and special projects.

## Introduction

A mothership is a factory vessel which routinely takes unsorted catch from other vessels. Unsorted catch is usually delivered by codend transfer. Some catcher/processors will act as motherships, taking catch from smaller delivering catcher boats, while at the same time fishing for themselves. Three vessels act exclusively as motherships: the Ocean Phoenix, the Golden Alaska and the Excellence. These boats do not have the capability to fish for themselves. The Golden Alaska and the Excellence occasionally receive pumped fish, but the majority of their deliveries are from codend transfer.

All three of the motherships listed above are part of a co-op allowed under the American Fisheries Act (see "Restricted Access Fisheries" on page 1-6). When these vessels participate in the Bering Sea pollock fishery, they carry two or three observers, one of whom has to have additional NMFS Level 2 training. For more information on the roles of each observer, (see "Working with Two Observers" on page 2-18).

Vessels that routinely pump fish from delivering catcher vessels are considered to be floating processors, or "floaters." The Northern Victor, the Arctic Enterprise and the Yardarm Knot are floating processors. The fish delivered to these vessels have the potential to be sorted at sea, and the vessel acts the same as a shoreside plant. Follow the directions in "SHORESIDE PLANTS AND FLOATING PROCESSORS" on page 8-1 if your vessel is acting as a floater. If your vessel meets the description of a floater, but is not listed as one, contact NMFS for information on how to report delivered catch.

Please let me know if there are any gear problems or marine mammal interactions reported by the catcher boats. Thanks!

| Del.# | Vessel Name | Date Set | Time Set | Set Latitude | Set Longitude | Bottom Depth | Fishing Depth | Date Retrieved | Time Retrieved | Retrieval Latitude | Retrieval Longitude | Catch Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | M.D. | 01/25 | 1830 | 54.36' | 165.39' | 92F | 65F | 01/26 | 0025 | 54.37' | 165.39' | 36.90 |
| 41 | O.L. | 01/25 | 1810 | 55.29' | 164.49' | 85F | 68F | 01/25 | 2030 | 55.29' | 164.48' | 39.50 |
| 42 | Ald. | 01/25 | 2315 | 54.30' | 165.43' | 95F | 61F | 01/26 | 0335 | 54.30' | 165.64' | 38.32 |

**Figure 5-1 Observer Radio Schedule Worksheet (example)**

## Catch Information (Vessel and Observer Haul Forms)

As an observer on a mothership, your most important duty is gathering catch information. This will often take longer than on catcher/processors and involves a lot more coordination and cooperation with the vessel personnel. The fishing effort information required on the Vessel Haul form should come from the vessel's NMFS logbook. Check carefully to ensure that the data are accurate, reasonable, and that no transcription errors are made when you copy data to this form. The data requested on the Observer Haul Form are those items which you are responsible for calculating or verifying. The instructions on how to fill out each of these forms follows. See "Fishing Effort Data Collection" on page 3-3 and "Completing the OHF on Trawl Vessels" on page 3-17 for rules and instructions on how to fill out the Vessel and Observer Haul Forms. The particulars that are specific to motherships are listed and explained below.

***Maintain only one set of Vessel and Observer Haul Forms.*** List self-made tows and deliveries together, in the order which they occurred. Most motherships will have a radio schedule for when they gather fishing data from the catcher boats. This is usually done by the captain, mate, purser, or in rare cases, the observer. If a crew member is getting haul data for you, make sure that they are gathering complete and accurate data from the catcher boats. You should use the delivery schedule to match up specific hauls to a catcher boat. Most motherships will follow a catcher boat delivery order, but these change frequently, and may not be reliable. Some observers create a "worksheet" for the person doing the radio schedule, although most vessels will already have one. See Figure 5-1 as an example of an Observer Radio Schedule worksheet.

## Rules for Completing VHF on a Mothership

Codend Delivery Rules

1. **Vessel type:** Enter a "2" to indicate that the vessel received unsorted catch.

2. **Date and Time of Gear Deployment:** You will need to get this data from the catcher vessels. Remember that hauls must be listed by the date of gear ***retrieval***, so these ***deployment*** dates and times may be out of sequence!

3. **Begin Position, Bottom depth, and Gear depth:** Collect these data from the catcher boats.

4. **Date and Time of Gear Retrieval:** Enter the day and time the catcher boat retrieved these hauls. It may be easier to fill these columns out first, so that your haul order is established before filling out the Date, Time and Position of the beginning of the set.

5. **Location Code:** Enter an "R" and the corresponding latitude and longitude of the catcher boat's retrieval position.

6. **Vessel Estimate:** Enter the catch estimate made by mothership personnel.

7. **Catcher boat's ADF&G#:** Enter the ADF&G number for the catcher boat which made this delivery.

Pumped Fish Delivery Rules

1. **Vessel type:** Enter a "4" to indicate that the vessel received potentially sorted catch.

2. **Date and Time of Gear Deployment and Bottom Depth and Gear Depth:** Leave these columns blank. Often, pumped fish are made up of several hauls, so these data are not applicable.

3. **Date of gear retrieval:** Enter the day on which the delivery occurred.

4. **Time of gear retrieval:** Enter the time when the delivery occurred.

5. **Location code:** Enter a "D" and the corresponding latitude and longitude of the mothership when it received the delivery. If your vessel is in port when it accepts the pumped fish, you may use one of the port locations given on page 3-17. If your mothership is floating, you will need to record the location off the GPS.

6. **Vessel Estimate:** Enter the mothership's captain's estimate of the weight of the entire delivery.

7. **Catcher boat's ADF&G#:** Enter the ADF&G number for the catcher boat which made this delivery.

## Haul Order

The retrieval time always determines the date of the catch. This is not necessarily the same day the catch was delivered to the mothership. Although the retrieval time determines the date on the VHF, it does not have to determine the order in which the codends were delivered to your mothership. Often, codends are delivered out of sequence. ***It will be easiest for you to use the order of delivery to number the catches coming aboard***, since that is the way the vessel will be numbering the hauls in their logbook. Your retrieval times will be out of sequence, but most of your haul numbers will correspond to the vessel's delivery numbers. Using this method, the only haul numbers which may not match the vessel's delivery numbers are those retrieved around midnight, or 0000 hours.

When filling out the VHF, you may find it easier to fill out the gear retrieval information first. You will avoid recording hauls on the wrong date if these columns are completed before recording the gear deployment information. An example of changing the sequence of deliveries in order to keep the haul date correct is shown with delivery 40 in the worksheet example (see Figure 5-1). Note that this delivery has been renumbered as Haul 41 in the VHF example, (see Figure 5-2). Hauls 40 and 41 are out of sequence because Haul 40 (the vessel's 41st delivery) was actually hauled back the day before it was delivered, but the mothership received Haul 41 (the vessel's 40th delivery) first. It is very important that the correct date and haul number get recorded on the corresponding Forms 3US, 7 and 9 (if you are using paper forms). Note the reason why you deviated from the vessel delivery number in your logbook, or in the "Notes" section of the Observer Haul Form.

## Vessel Type

On a C/P acting as a mothership the "vessel type" code and the ADF&G column distinguish which hauls were self-made and which were deliveries. Use a vessel type "1" for self-made tows, and leave the ADF&G column blank. Use a vessel type "2" for codend deliveries. If your mothership pumps fish from the hold of another vessel, enter a vessel type "4," indicating the delivery of potentially sorted catch. For all deliveries, enter the catcher boat's ADF&G number in the appropriate column (see Figure 5-2). At the top of the VHF, list the vessel names and corresponding ADF&G number for all catcher boats delivering to your mothership. One list per data set is sufficient; you do not need a list on each page.

## Monitoring for Marine Mammals

On a mothership, it is not possible to watch the true haul back of the delivered codend for marine mammal interaction, since this is done on the catcher boat. However, it is possible to monitor the catch during the dumping of the codend. If you cannot monitor every delivery, this should be done on as many ***randomly selected*** catches as possible. If you monitor the dumping of the haul, record this haul as monitored for marine mammals. If there is an observer aboard the delivering catcher vessel, contact him/her to determine if there were any marine mammal encounters during the haul back. If your vessel, or the catcher boats, report marine mammals nearby or possibly interacting with gear during haul back or delivery, this should be noted in your logbook.

## Observer Estimates

All motherships accepting pollock in the Bering Sea must have a motion compensated flow scale, as required by the American Fisheries Act. On these vessels, ***no observer estimates should be taken.*** If you are on a mothership that is not regulated by the AFA and does not have a flow scale, use the best method for obtaining independent catch estimates (see "Observer Estimates of Total Catch Weight" on page 3-5).

## Codend Delivery Duties

Treat these deliveries as if your vessel caught the fish. Standard C/P prioritized duties should be followed for each haul. These are:

- obtaining an independent observer estimate (if required),
- sampling for species composition (and density, if applicable),
- collecting otoliths for predetermined hauls,
- collecting length frequency samples on prohibited and predominant species, and
- completing your standard and special projects.

Refer to the individual manual section regarding each one of these duties.

### Codend Delivery Problems

Usually codend transfers go smoothly. However, there are two situations that may complicate you getting delivery data or official total catch weights. The first is when the codend is lost during transfer. In this situation, obtain the haul data from the delivering catcher boat and ask them for an estimate of catch weight. Use this estimate for OTC and contact your ATLAS inseason advisor to alert them of the situation.

The second situation is when the codend "leaks" fish during transfer. This may happen when the zipper is not secured. If you see fish spilling out from a codend during delivery, make an estimate of the tonnage lost and add this weight to the flow scale read out for OTC. Again, notify your inseason advisor that the OTC did not come only from the flow scale weight.

## Pumped Fish Delivery Duties

These fish have the potential to be sorted at sea, so they are treated differently than those delivered by codend transfer. If the flow scale is not being used, you should try to make an independent estimate. If the delivery is made up of several hauls, it may be too large to be pumped into a bin at once, or may be pumped into unmarked tanks. In these cases, use the skipper's estimate for the OTC. Note any difficulties you had in obtaining independent estimates in your logbook. ***Do not sample these hauls for species composition or collect any biological data.*** If your vessel takes nothing but pumped fish, contact a NPGOP office for recording and sampling duties.

## Random Sample and Break Table Use

All exclusive motherships regulated by the AFA are required to carry two observers. The Ocean Phoenix carries three observers. Therefore, it is rare that a mothership observer will need to use either the Random Sample or Random Break Tables. If there is more than one observer aboard a mothership and an RST or RBT must be used, use the lead observer's tables and document the circumstances in all observers' logbooks.

If you are the only observer on a C/P which is taking outside deliveries, use one of the RSTs (page 2-9) if you cannot sample all hauls. If there are several deliveries being made each day, you may also need to use the RBT (page 2-9). Record the appropriate codes on the Observer Haul Form (see page 3-17).

If you are the only observer aboard an exclusive mothership, you will likely need to use both the RST and RBT. If you find that you cannot get enough rest and complete your observer duties while using both tables, you may modify the RBT to take eight hour breaks. Use the RBT as instructed on page 2-9, but lengthen your break to eight hours. If you need to use a modified RBT, ***you must notify your ATLAS inseason advisor*** and document your reasons in your logbook.

## Length Frequency and Otolith Sampling

Mothership observers take lengths following the same protocol as other observers (see page 9-1). However, if you are the only observer aboard the mothership, you may need to reduce the number of lengths taken. If you cannot keep up with all your duties when following the RST and RBT, reduce your length collection by taking predominant species sexed length frequencies on every other sampled haul. Observers on motherships carrying two observers should be able to collect lengths from all sampled hauls, and otoliths from predetermined sets.

## Observers on Catcher Boats Delivering to Motherships

It is unusual for catcher boats delivering to a mothership to carry an observer. However, fishing is unpredictable, and you may find yourself aboard a catcher boat delivering a few hauls to a mothership before delivering landed catch to a shoreside plant. If you are on a catcher boat which is delivering to a mothership, your duties will change depending on how the fish are being delivered.

If the haul is being delivered as a codend, the mothership observer is completely responsible for the recording and sampling of this haul. Do not record this haul on your Vessel or Observer Haul Forms. It will be accounted for by the mothership observer. Your only duties are to obtain catch information for the mothership observer and monitor the haul back for any marine mammal interactions. If the skipper usually gives haul information to the mothership, you must verify that all the data the mothership observer will need was given.

If your vessel is dumping fish into RSW tanks, and then pumping the fish to a mothership, you should treat these hauls as if they were being delivered to a shoreside processor. Obtain an observer estimate and sample for species composition. Collect length frequency and age data from sampled hauls. All data you collect will go on your forms, under your cruise number.

| Cruise Number | Vessel code | Year |
|---|---|---|
| 9015 | A316 | 05 |

ORC 969

**VESSEL HAUL FORM**

Observer name Chris Observer

Vessel name m/v Whistler

Page _____ of _____ for transmission

Page 8 of _____ for vessel

| Full name of catcher boat | ADF&G # |
|---|---|
| Aldebaran | 48215 |
| Vangaurd | 39946 |
| Misty Dawn | 68858 |
| Ocean Leader | 00032 |
| Jamie Marie | 58330 |

Weekly message or Resubmission

| Haul # | Gear type | Gear performance | Vessel type | Date of gear deployment Month | Date of gear deployment Day | Time of gear deployment | Begin Position of Haul or Set Latitude (N) | E or W | Longitude (100) | Average bottom depth | Average gear depth | M or F | Date of gear retrieval Month | Date of gear retrieval Day | Time of gear retrieval | Location code | End Position for Haul or Set Latitude (N) | E or W | Longitude (100) | Vessel's total catch estimate in metric tons | Catcherboat's ADF&G # (motherships only) | IFQ? Y/N | CDQ # | # of segments in set | # of hooks per segment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | 2 | 1 | 1 | 01 | 24 | 1103 | 5545 | W | 6414 | 106 | 73 | F | 01 | 24 | 1215 | R | 5543 | W | 6415 | 91.38 | | N | C54 | | |
| 37 | 2 | 1 | 2 | 01 | 24 | 1602 | 5432 | W | 6518 | 111 | 102 | F | 01 | 24 | 1815 | R | 5433 | W | 6517 | 29.13 | 48215 | N | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 38 | 2 | 1 | 2 | 01 | 24 | 1415 | 5409 | W | 6535 | 144 | 125 | F | 01 | 25 | 0028 | R | 5411 | W | 6535 | 37.55 | 39946 | N | | | |
| 39 | 2 | 2 | 2 | 01 | 25 | 1602 | 5432 | W | 6518 | 111 | 106 | F | 01 | 25 | 2029 | R | 5432 | W | 6516 | 26.15 | 68858 | N | | | |
| 40 | 2 | 1 | 2 | 01 | 25 | 1810 | 5529 | W | 6449 | 85 | 68 | F | 01 | 25 | 2030 | R | 5529 | W | 6448 | 39.50 | 00032 | N | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 41 | 2 | 1 | 2 | 01 | 25 | 1830 | 5436 | W | 6539 | 92 | 65 | F | 01 | 26 | 0025 | R | 5437 | W | 6539 | 36.90 | 68858 | N | | | |
| 42 | 2 | 1 | 2 | 01 | 25 | 2315 | 5430 | W | 6543 | 95 | 61 | F | 01 | 26 | 0335 | R | 5430 | W | 6542 | 38.32 | 48215 | N | | | |
| 43 | 2 | 1 | 4 | | | | | | | | | | 01 | 26 | 0900 | D | 5413 | W | 6535 | 163.24 | 39946 | N | | | |
| 44 | 2 | 1 | 2 | 01 | 26 | 0601 | 5502 | W | 6533 | 91 | 80 | F | 01 | 26 | 0945 | R | 5502 | W | 6533 | 38.96 | 58330 | N | C54 | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 0 | | | | | | | | | | | | | 01 | 27 | | N | 5353 | W | 6631 | . | | | | | |

**Figure 5-2 Vessel Haul Form (mothership example)**

| Cruise Number | Vessel code |
|---|---|
| 9015 | A316 |

**OBSERVER HAUL FORM**

Observer name Chris Observer

Vessel name m/v Whistler

Page _____ of _____ for transmission

Page 8 of _____ for vessel

| Plant / Processor name | Location | Processor code |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Haul # | Haul sampled by (cruise no.) | RST on haul? (y= on, n= off, x= n/a) | RBT on break? (y= on break, n= no break) | % Monitored for marine mammals | Bird deterrence device (longline) | Trawler seabird sample type | Total hooks or pots in set | Official Total Catch (OTC) in metric tons | Observer's catch estimate in metric tons | B, C, or W | Density in mt/m³ | Processor code (for catcher vessels only) | Date fishing began for delivery Month | Date fishing began for delivery Day | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | 9015 | X | N | 0 | | P | | 91.38 | . | | . | | | | Self tow - CDQ |
| 37 | 9015 | | | 100 | | W | | 29.13 | . | | . | | | | large halibut didn't go over scale added for OTC |
| | | | | | | | | . | . | | . | | | | |
| 38 | 9015 | | | 100 | | W | | 37.55 | . | | . | | | | |
| 39 | 9010 | | | 100 | | P | | 26.15 | . | | . | | | | |
| 40 | 9010 | | | 0 | | P | | 39.50 | . | | . | | | | Vessel haul # 41 |
| | | | | | | | | . | . | | . | | | | |
| 41 | 9010 | | | 100 | | P | | 39.90 | . | | . | | | | Vessel haul # 40 |
| 42 | 9015 | | | 100 | | W | | 38.32 | . | | . | | | | |
| 43 | 0 | | | 0 | | | | 163.24 | . | | . | | | | pumped fish delivery |
| 44 | 9015 | X | N | 100 | | P | | 38.96 | . | | . | | | | CDQ |
| | | | | | | | | . | . | | . | | | | |
| 0 | | offloading @ Dutch Harbor City Dock | | | | | | | | | . | | | | |
| | | | | | | | | . | . | | . | | | | |

**Figure 5-3 Observer Haul Form (mothership example)**

# LONGLINE DATA COLLECTION

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## List of Priorities

- Collect data and specimens from marine mammal and endangered seabird mortalities.
- Rehabilitate endangered and threatened seabirds.
- Record the vessel's total fishing effort for every haul retrieved.
- Sample for species composition and official total catch (OTC) estimates.
- Send data to NMFS twice weekly at minimum (more often if possible).
- Document any compliance concerns.
- Measure and assess injury of Pacific halibut.
- Measure and sex other prohibited species.
- Collect otoliths and sexed lengths from requested species.
- Record calculations and Daily Notes.
- Complete special projects.
- Record sightings of bird "species of interest."
- Record marine mammal sightings.

## Introduction

Nearly one third of all observer days are spent aboard longliners. The primary target species of the longline fisheries are Pacific cod, sablefish (black cod), Pacific halibut, and turbot. Longline vessels also often retain incidentally-caught species such as skates, rockfish, arrowtooth flounder, and pollock. The species retained depends upon fishing regulations, such as IR/IU, and upon market prices. Some incidentally-caught species are only retained if market prices are high at the time of capture.

### Description of Longline Operation

The type of longline gear used in the North Pacific is bottom gear, meaning the line with baited hooks lays at or near the bottom while fishing.

The "backbone" of the gear is the groundline, to which the hooks are attached. The length of the groundline depends on the size of the vessel and the species targeted. Hooks are attached to the groundline by another line, called a gangion. The length of the gangion and the distance between gangions differs between target fisheries and vessels. Finally, there is an anchor on each end of the groundline (and there may be more along the line) and buoys are attached to each of the anchors by buoy lines (see Figure 6-1).

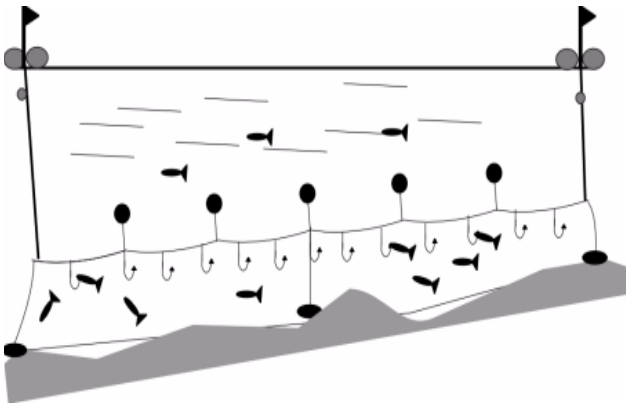


**Figure 6-1 Typical Longline Configuration**

Longline fishers further divide their gear into smaller segments in order to handle it aboard a vessel. A "set" consists of several segments of gear with the groundlines tied to one another. Segments of gear can be referred to as magazines (mags), skates, coils, or tubs. On some vessels, the terms are used interchangeably, while on other boats the crew uses each term to indicate a specific amount of gear.

**Your vessel may call segments of gear "mags," skates, tubs, coils, racks or rails. We'll just call them segments!**

Longline gear is set by dropping a buoy and anchor and allowing the groundline to trail out of the aft of the vessel. On some vessels, hooks are baited by hand before setting the gear and the gear is set directly from tubs or canvas skates. On other vessels, a mechanized "autobaiter" is used and the gear is deployed from this machine. After the desired amount of gear is set, another anchor and buoy are deployed to complete the set.

The gear is allowed to soak for some time before retrieval. Longline gear is retrieved by pulling in the groundline so that the hooks come aboard one at a time. The line comes in over the rollers, through the crucifier, over the block, and then is either coiled or the hooks are placed onto magazine racks.

Usually, longliners set multiple sets, or "strings," let them soak and then rotate among hauling and setting the gear. This cycle may be continued for three or four sets per day.

**Terminology**

**Flag pole** - Aluminum pole with a float that is often topped with a flag, radar reflector, or strobe light

**Buoy line** - The length of line connecting the buoy assemblage to the anchor.

**Running line** - The length of line connecting the anchor to the baited gear.

**Groundline/Mainline** - The length of line to which all the hooks are attached - the "backbone" of the gear.

**Skate/Tub/Coil** - A segment of the groundline within the set or magazine.

**Magazine (Mag)** - A term used to describe a segment of gear within a set. The length of this segment of gear is dictated by the length of the magazine rack on which the hooks and groundline are hung.

**Gangion** - The length of line connecting the hook to the groundline.

**Cannonball** - Lead weights attached to the groundline between gear segments, helping to sink the gear and keep it on the sea floor.

**Setting Chute** - A metal trough that guides the baited gear out a hatch or off the stern of the vessel.

**Autobaiter** - A machine that cuts bait and places it on the hooks as the groundline is being set.

**Block/Hydro/Hauler/Gurdy** - Hydraulically driven wheel that the groundline is placed into during gear retrieval. As the wheel spins the groundline is brought on board.

**Combi** - A machine which hangs gear on the magazine racks as it is brought on board. This term may also refer to a crew member that works both in the factory and on the deck of a catcher processor.

**Crucifier** - A pair of vertical steel rollers with only enough space for the groundline to pass between. Fish are removed from the hooks as they hit the crucifier.

**Magazine rack (mag rack or rails)** - Metal rails on which the gear hangs prior to setting. The gangions and the groundline then hang from the hooks, with the hooks functioning similar to a coat hanger on a closet rod.

**Roller station/pit** - The area where fishermen (rollermen) stand while retrieving the line and gaffing fish.

**Rollerman** - The crewman in the roller station during the retrieval of the gear. The rollerman lands any commercially valuable fish and prevents any non-commercially valuable fish from being landed.

**Roller** - A device made up of one or more metal pins that spin, allowing the groundline to be pulled up and over the rail of a vessel during retrieval such that tension and friction on the line is reduced.

**Turning/Overhauling gear** - Term used to describe the work involved in straightening hooks, replacing gangions, or splicing the damaged groundlines.

**Drop-off** - Those organisms that fall or are knocked off a hook prior to their being landed.

**Horn Off** - To knock organisms off of a hook using the butt of a gaff or the horns of the roller.

**Hook Counts** - The average number of hooks per segment of gear.

**Mustang Suit** - Insulated and waterproof coveralls worn in the cold winter months while sampling on deck.

**Set** - The entire length of groundline from the first hook to the last hook, also referred to as a "string" of gear.

**Segment of Gear** - A standard unit of gear. This could refer to a mag, skate, tub, rail or coil of gear.

**Figure 6-2 Longline Vessel Terminology**

### Safety Concerns on Longliners

It is always your highest priority to stay safe and be aware of your surroundings aboard every vessel. Remember that every vessel is different and fishing situations are constantly changing. There are several safety concerns specific to longliners of which you need to be aware. When sampling on longliners, you stand outside for long periods of time and are exposed to the elements. In the winter months, you could experience freezing conditions, snow, spray, and high winds for long periods of time. The Observer Program provides Mustang suits and you are strongly encouraged to bring additional winter clothing if you know you will be deployed on a longliner during the winter.

Some "tally stations," (where you stand to collect species composition samples), may be on the deck above the rollerman. On others, you may sample next to the roller station. Roller stations are usually open areas and are near the water line. It is not uncommon to have a wave come through the roller station and you need to be alert to this possibility. Additionally, the roller station is full of moving hooks and line. If moving line wraps around an arm or leg, it can drag a person overboard or into machinery. Moving hooks are also a serious threat, and it is not uncommon for crewmembers to be seriously injured by incoming and outgoing hooks.

### Catcher Processor (C/P) Vessels

Longline C/Ps usually conduct fishing operations 24 hours a day, 7 days a week and have crewmembers working in shifts. You will need to schedule your work time not only to achieve sampling objectives but also to obtain adequate rest. The lack of adequate rest is a safety concern.

Processing aboard each C/P longliner will be a bit different, but generally the operation is as follows. The gear is retrieved and fish are removed from the hooks by the crucifier. The fish enter the factory area through a series of conveyor belts or troughs. Once in the factory, fish are usually sorted by species and size prior to processing. Mechanical size sorting occurs at incline belts and size sorting is also done by crewmen in order to process large fish differently from the rest of the catch. Finally, processed fish are panned and frozen. Finished product is stored in freezer holds.

To sample effectively aboard longliners, you need to communicate with the crew, especially with the rollermen. This can be difficult aboard C/Ps because the rollermen may not always be able to see you, hear you or understand you. Upon boarding a vessel, seek out the factory manager(s) and the rollermen, and explain your needs before they begin hauling gear and you begin sampling. Experienced crew may have suggestions based on how they have worked with previous observers. This may be good information, but you alone need to decide where and how you will sample to obtain the best data. Prior to the first gear retrieval, work out a communications system with the rollerman. For every haul, remind the rollerman when you are sampling and what your needs are for that haul. Try different techniques and be creative to achieve your sampling goals.

### Catcher-only Vessels

Catcher-only longliner vessels are similar to C/P longliners in that the gear is deployed and retrieved in a similar manner. Most of the differences between the two vessel types are in the scale of the operations. Catcher-only longliners tend to have smaller crews, set fewer hooks and catch less fish. Most catcher-only operations hand bait their hooks, but a few use autobaiters. Some will set and retrieve gear such that the entire crew gets a 6-8 hour sleep break.

Additionally, catcher only longliners deliver their catch to processors periodically, so you will get some downtime on the way to and from town to complete paperwork and catch up on sleep.

When choosing a sampling area on a catcher-only longliner, work closely with crew members. Space is limited and there may not be a permanent observer sampling station. Be creative; you may need to use baskets or bin boards to construct a sample table, or use the hold hatch cover. Look around, talk to the crew, and use what is available.

## Determining Total Number of Hooks

One of the very first things you need to do when assigned to a longliner is find out how many hooks are being retrieved. ***The total number of hooks on each segment of gear and in each set is the foundation of all your other data.*** Without these numbers, you cannot calculate your sample size or the official total catch!

### Average Hooks Per Segment

You must calculate the average number of hooks attached to each segment of gear. We refer to the average number of hooks per segment as "hook counts." The captain will record a number of hooks per segment in his vessel logbook, but you must calculate an average hook count independently. Often, the captain's estimate is the number of hooks attached when gear was first constructed. The average number of hooks per segment will change from set to set due to hook loss and repairs. These factors contribute to the inaccuracy of the vessel's number.

***Accurate hook counts are essential for longline sampling.*** You must count the number of hooks attached to each segment of gear for at least ***one-fifth of a set, twice per week***, the entire time you are aboard the vessel. Update your hook per segment value each time it changes, based upon your bi-weekly count.

The following methods may be used to determine hook counts:

- **Count hooks in the coils/tubs/magazine racks -** Longline gear is stored in some configuration prior to being set. Use this opportunity to count the hooks on this gear. Make sure only overhauled, ready-to-set gear is counted. Use a thumb counter since the numbers can get very high! Count hooks in these configurations when the vessel is in transit or between sets.
- **Count hooks as they come aboard -** Since hooks come aboard one at a time, you can count them as the gear is being retrieved. You can do this during your tally sample by counting the empty hooks as well as the fish. Add the number of organisms you counted to the number of empty hooks to obtain a hook count. This method should not be used on most C/Ps because the gear is retrieved too quickly for you to obtain an accurate empty hook count. Use the previous method aboard C/Ps!

**Do not use the autobaiter counters to verify hook counts. These machines may not be in good repair and the hook counts are not verified.**

Once you have hook counts from a fifth of a set, you can calculate the average number of hooks per segment. Calculate this number by summing the number of hooks in your count and dividing this number by the number of gear segments counted:

$$\frac{\sum \text{number of hooks counted in each segment}}{\text{number of gear segments counted}} = \text{average hook count}$$

### Verifying the Number of Segments in a Set

Now that you have an average number of hooks per segment, you need to apply it. The second step in calculating the total number of hooks in a set is determining the number of gear segments in each set. There are several ways to verify the amount of gear segments deployed in a given set. You may use any of the following methods to determine this number:

Count segments before the set is deployed.
On catcher vessels and some C/Ps, gear segments are stored in plastic tubs or coiled on canvas sheets. On these vessels, you can verify the amount of gear on board by counting the tubs or gear coils prior to each set. After each set, determine how many tubs or coils remain. Subtract the remaining number from the total number for the amount of gear in the set.

On most C/Ps and some catcher vessels, gear is stored on magazine racks, with several segments of gear attached to one another. Ask the crew what the vessel uses as a standard segment of gear and how these segments are distinguished from one another; every vessel differs in its techniques. Count the number of segments of gear on each magazine before the gear is set, then again after each set. Subtract the "post-set" number from the "pre-set" number to obtain the amount of gear set.

Count gear as it is being set.
You may be able to count the segments of gear on catcher vessels if you are able to watch the gear as it is being set. Go into the setting area and tally the segments of gear deployed as they are being set.

Count gear as it is retrieved.
For vessels that use smaller sets with fewer segments, it may be possible to count the gear as it is being retrieved. On many C/P vessels, this method is not feasible because the retrieval of gear may take an entire day or you may not be able to see the gear during the non-tally period.

## Composition Sampling

There is only one sample type on a longliner- the longline sample. This sample can be of any size, but the Observer Program's ***minimum is one third of the set.*** When deciding your sample size, consider your general health, the size of the set and the possible species diversity. You may need to reduce your sample size if you are not feeling well, have not had enough sleep, or if species diversity has been high. Use the Random Sample Table and Random Break Table (see page 2-8) to determine which hauls to sample when you cannot sample all sets.

Species composition samples on longliners consist of two distinct sampling periods: the ***tally period*** and the ***non-tally period***. Tally sampling is done as the gear is being retrieved by counting (tallying) everything that comes up on the line during randomly or systematically chosen gear segments or time periods. During a tally period, ***count all catch***, including drop-offs and items which are horned off.

Non-tally periods are those times when gear is being retrieved, but you are not tally sampling. The non-tally period is used for collecting average weights, measuring predominant and prohibited species, assessing injuries of Pacific halibut and performing other duties.

### Objectives for Composition Sampling

Fishery managers need to know the fishing mortality of each species harvested. To eliminate any subjectivity in the data collected, species composition should be randomly collected. These following protocols will help you achieve these objectives.

1. Select hauls to sample randomly by:
   - sampling all of the sets or,
   - using the Random Sampling Table (RST) and/or the Random Break Table (RBT) to determine which sets to sample (see page 2-8).

2. Use a random sampling frame to determine which segments to sample.

3. Tally sample at least 1/3 of all hooks in each sampled set.

4. Count everything that comes up on the line during each tally period, including drop-offs and organisms that were horned off prior to coming onboard.

5. Weigh the animals from your tally sample or determine an average weight for each species and multiply it by the number counted to obtain the total weight of each species in your composition sample.

## When to Sample for Species Composition

Consider two elements when deciding when to sample on a longliner: **1)** which sets to sample, if all sets cannot be sampled, and **2)** which segments of gear will be in the tally and non-tally periods.

### Which Sets to Sample

On some vessels, you will be able to sample every set, especially on catcher vessels targeting sablefish and Pacific halibut. If all hauls cannot be sampled, use the appropriate RST and/or RBT to determine which hauls to sample. See page 2-9 for RST and RBT instructions.

## Using a Random Sample Frame on a Longliner

You need to tally at least one-third of all hooks in a set and use a random sample frame to determine which third you tally. To accomplish this, determine how many segments are in a set or how much time it takes for a vessel to retrieve a set. Once this has been ascertained, determine which random sample frame would be most appropriate for your vessel and sampling situation. The following paragraphs describe how to use a random sample frame aboard a longliner.

**Do not use a random sample type that is not listed here unless you contact NMFS first!**

There are four types of sample frames that can be used on longliners: **1)** spatial, **2)** temporal, **3)** combined temporal-spatial, and **4)** systematic. You can use any of these frames for a particular set and you can alternate between frames to adjust to different situations.

### Spatial Frames

A spatial sample frame on a longliner uses the gear segments as units. You can use each segment as a unit or group several segments together, as long as your ***units are equal***. To use a spatial frame, first determine the number of segments of gear in a set. Then, decide how many segments you wish to tally in each tally period and base your units on this decision. Take into account how long you can stand on deck tallying and on how much bycatch can be stored in the fish collection area when deciding on your unit size. In colder months, or where space is limited, you may want to have a small sample unit. On vessels with a lot of space, you may be able to have a larger unit.

To obtain the number of units in a set, divide the total number of segments in a set by the number of segments per sample unit. Number the units consecutively. Use the random number table (RNT), dice, slips of paper, or another random method to choose which of these units to tally sample. Document your random selection method in your logbook. Remember, you must sample at least one third of a set, so at least one third of your units must be chosen to tally sample.

The spatial method is illustrated in Figure 6-3. The example set is composed of 24 segments of gear and each segment is a unit. To sample 1/3 of this set, you would tally eight segments. To choose which eight, number the segments 1 through 24, and use the RNT to randomly pick eight units. In this example, you used the RNT to choose gear segments 20, 15, 4, 11, 8, 19, 23, and 7 to tally sample for composition (shaded). The units not being tallied make up your non-tally periods.

**Figure 6-3 Example of Spatial Sampling**

| Skate | Activity | Skate | Activity |
|---|---|---|---|
| 1 | non-tally | 13 | non-tally |
| 2 | non-tally | 14 | non-tally |
| 3 | non-tally | **15** | **tally** |
| **4** | **tally** | 16 | non-tally |
| 5 | non-tally | 17 | non-tally |
| 6 | non-tally | 18 | non-tally |
| **7** | **tally** | **19** | **tally** |
| **8** | **tally** | **20** | **tally** |
| 9 | non-tally | 21 | non-tally |
| 10 | non-tally | 22 | non-tally |
| **11** | **tally** | **23** | **tally** |
| 12 | non-tally | 24 | non-tally |

### Temporal Sampling Frame

When using a temporal sample frame, ***you must be able to count empty hooks*** during your tally sample. This frame uses the time it takes to retrieve the gear as the framework. The sampling units are time intervals. To apply a temporal sampling method on a longliner, first estimate the time it takes to retrieve the entire set of gear. You may need to ask the crew for an estimate

until you are familiar with the vessel operations. Next, divide the total estimated retrieval time into equal units: an equal number of hours, ½ hours, minutes, etc. Number the units consecutively and use the RNT or other method to choose which of the units will be your tally period(s).

**Use a temporal sampling frame only if you can count empty hooks.**

The temporal method is illustrated in Figure 6-4. In the example, a set takes six hours to retrieve. You decide on a time unit of 30 minutes. Divide the total retrieval time of 6 hours into twelve 30 minute units and number consecutively. You must tally at least 1/3 of the set, so you use the RNT to choose four units to tally. In this instance, time intervals 7, 1, 10, and 5 are selected (shaded). At the end of the set, you will have tallied for a total of two of the six hours, or 1/3 of the total set.

During your tally periods, ***you must count empty hooks.*** Your empty hook count plus the total number of organisms tallied is used to calculate your total sample size. No other method of obtaining sampled hooks can be used for a temporal sample frame. For this reason, this type of frame is very rarely used on vessels when gear retrieval is fast.

**Figure 6-4 Example of Temporal Sampling**

| Time Interval | Skate | Activity |
|---|---|---|
| 1 (30 min.) | 1 | tally |
| 2 (60 min.) | | non-tally |
| 3 (90 min.) | | non-tally |
| 4 (20 min.) | | non-tally |
| 5 (150 min.) | 6 | tally |
| 6 (180 min.) | | non-tally |
| 7 (210 min.) | 7 | tally |
| 8 (240 min.) | | non-tally |
| 9 (270 min.) | | non-tally |
| 10 (300 min.) | 9 | tally |
| 11 (330 min.) | | non-tally |
| 12 (360 min.) | | non-tally |

**Combined Temporal-Spatial Sample Frame**

The temporal-spatial method is a combination of the two previously discussed frames. This sampling frame is based on time, but you track sampled gear by segments.

**Use a combined temporal-spatial sampling frame when you cannot count hooks.**

To use the temporal-spatial method, choose your sample times using a temporal frame and use segments of gear as your tally sample units. To use this frame, estimate the time it takes to retrieve the entire set of gear. Like in the temporal frame, choose a temporal unit size (e.g.: 10 minutes, 15 minutes, 30 minutes, etc.). Divide the total retrieval time by your temporal unit. This gives you the total number of units in your frame. Number these units sequentially. Use the RNT or other random method to pick at least one-third of the time intervals in which to tally sample.

The difference between this method and a straight temporal frame is that you will ***not*** start tallying at the beginning of your designated time unit. Instead, you will ***wait until the beginning of the next segment of gear to start*** tallying. You will not stop tallying at the end of your designated time interval, but will c***ontinue to tally until the end of the segment.*** You will tally only whole segments of gear retrieved in your chosen time units. Because you are sampling only whole segments of gear, you do not need to count empty hooks while tally sampling. You use your average hook calculation to determine sample size.

Look again at Figure 6-4 and apply a temporal-spatial frame to that scenario. The set takes six hours to retrieve. For this set, you chose a sampling unit of 30 minutes. Divide the total retrieval time of six hours into twelve 30 minute intervals. Number these 1 through 12. Since you must tally sample at least 1/3 of the set, use the random number table to choose four of these units. In this example you chose units 7, 1, 10, and 5. During these time periods, skates 1, 6, 7 and 9 began to be retrieved, and you would tally these entire skates.

**Systematic Sample Frames**
A systematic frame is one in which you tally sample every "$n^{th}$" unit throughout the haul. In designing your sampling frame, keep in mind that you must tally at least one-third of a set and have a random starting point. Your units can be either spatial or temporal.

The first step in conducting a systematic sample is to determine which unit type to use. If you can accurately count the segments of gear as they are being retrieved, the spatial systematic frame may be easiest. If you cannot count segments of gear, but can count empty hooks, a timed method is best. In the following description, gear based units are used. Temporal units are interchangeable in this example.

After you have determined the type of systematic frame you want to use, follow the instructions below to devise a sampling frame for the specific set.

1. Determine the size of your sample units. In the following example, the unit is made up of 2 gear segments.

2. Divide the set into units. If the total number of gear segments is not evenly divisible by the number of segments in a unit, there will be remaining gear segments. Any remaining gear segments should be counted as a separate unit. Number the units in the set consecutively. Make a diagram similar to Figure 6-5 in your logbook.

3. Determine what fraction of a set you want to tally. This will determine your sampling pattern. For example, if you were to tally 1/3 of a set, your sample pattern would be tally one, take two units off, tally one, etc.

4. Determine which sampling units you will tally sample.

- Pick a random number between one and the total number of sampling units. The randomly selected unit will be the first unit tallied in your sampling pattern.
- Using the sampling diagram made in step 2, plot your sampling pattern starting with the randomly selected unit.
- At the end of the first sampling pattern, plot the pattern again. Repeat the pattern until the end of the set. When the last unit of the set is reached, loop back to the first unit and continue to plot your sampling pattern until you reach the unit at which you started.

**A systematic sampling frame can be used any time a spatial or temporal frame can be used. A systematic frame may give you more time between the tally and non-tally periods.**

For example, in Figure 6-5, if you determined that you were going to sample 1/3 of the set and then randomly selected a five, you would mark unit 5 as tallied, and units 6 and 7 as not tallied, unit 8 as tallied, units 9 and 1 as not tallied, unit 2 as tallied and units 3 and 4 as not tallied.

**Figure 6-5 Example of a Systematic Sample Frame**

| Set with 17 gear segments and a unit of two gear segments. Selected tally units are blue. | | | |
|---|---|---|---|
| Gear Segments | Sampling Units | Gear Segments | Sampling Units |
| 1 | Unit 1 | 9 | Unit 5 |
| 2 | | 10 | |
| 3 | Unit 2 | 11 | Unit 6 |
| 4 | | 12 | |
| 5 | Unit 3 | 13 | Unit 7 |
| 6 | | 14 | |
| 7 | Unit 4 | 15 | Unit 8 |
| 8 | | 16 | |
| | | 17 | Unit 9 |

## Composition Sampling

Prior to beginning your composition sample, you must account for several details. Each vessel will have a different configuration and the following items should be considered:

**Tally Station** - The tally station is where you stand to count organisms as the groundline is retrieved. You must have a ***clear line of sight to the groundline coming aboard***. From your tally station, you must be able to identify fish as they come aboard and identify drop-offs. Choose a location that is safe, away from

direct wave action, and out of the way of the pole gaffer and rollerman, if at all possible. Because of these requirements, the Observer Program suggests that the tally station is never more than six meters from where fish are landed. Often, the best place will be on the weather deck, above the roller station. ***Never tally from the wheelhouse.***

**Sample Station -** The sample station is the location where you will weigh and measure catch. Many of the C/P vessels will have a sample station already set up for you and some will have motion compensated platform scales (see page 2-13). On vessels that do not have established stations, select a location that is out of wave action, out of crew traffic and has enough room to store one or two baskets of fish. The location should be as close as possible to where the fish come on board. On some vessels, there may not be much choice and you will need to make the best out of the area provided. Explain your needs to the crew and work with the them as much as possible.

**Equipment -** You will need three to six thumb counters, a clipboard, and longline ATLAS deck forms. Prior observers have devised many innovative techniques to make using multiple thumb counters easier. The most common is to use duct tape to attach multiple thumb counters to a clipboard. Be creative, experiment, and find what works best for you.

## The Tally Period

The tally period is when you count all catch that you observe hooked on the longline. It is during this phase of sampling when you obtain the number of organisms occurring in your sample.

Most observers use thumb counters to tally the predominant species and use the longline ATLAS deck form to tally everything else. On some vessels, the rollerman may be able to collect all the uncommon species during the tally periods. Continue to count these species because some may be missed or lost before they can be weighed. The following instructions describe the tally process. The following descriptions are not step by step methods for tally sampling, but describe a number of techniques that will be used simultaneously.

**Predominant Species and Empty Hooks**

Use thumb counters to tally predominant species and, if possible, empty hooks as they are retrieved. The predominant species will change depending on the area and depth fished. At the beginning of your trip, or when you travel to a new fishing area, ask the crew what species they believe will be predominant in the catch. You will gain experience in guessing the predominant species as you spend more time on longliners. If you observe a change in composition, change the species that you tally with the thumb counters.

**Non-predominant Species and Drop-Offs of Retained Species**

Non-predominant catch is also counted during the tally period, but it is not practical, or even possible, to have a thumb counter for every species that is caught. Use the back of the ATLAS deck form to keep track of these less abundant species (see Figure 6-6). Create several columns or rows on the blank side of a form for every species observed. Make a tally mark in the column for each individual of that species observed. Keep a separate count of any drop-offs or discarded fish of the species that are being retained. The separate counts of drop-offs will be used to determine the percentage of the fish retained.

This category includes a tally of all seabird species encountered. NMFS requires the crew to ***retain all seabirds retrieved during an observer's tally period*** for the purposes of species identification. You should inform the rollermen when your tally period begins and remind them to keep any seabirds during this time. If the crew is not keeping seabirds for you, inform the captain and NMFS of this problem. For detailed duties regarding seabirds, see "BIRD SIGHTINGS AND INTERACTIONS" on page 13-1.

For less predominant species it is preferred that you collect the actual animals from your tally period. When this is possible, you are able to provide NMFS with an actual weight of these animals instead of an applied average weight. To collect species while you are tallying, you must ask the rollerman to retain all non-predominant species. After a short period you may determine which species are not rare and inform the rollerman to stop retaining these species.

It may not always be possible to determine the species of fish that drop off the line prior to being landed. For these fish, use a group code for your species composition. This will be necessary for drop-offs of such fish as arrowtooth and Kamchatka flounder (arrowtooth/Kamchatka group), northern and southern rocksole (rocksole unidentified group), shortraker and rougheye rockfish (shortraker/rougheye group) and longspine and shortspine thornyhead rockfish (thornyhead unidentified group). You may need to identify some flatfish as "flatfish unidentified," and some roundfish as "roundfish unidentified." ***Identify each fish to the most accurate category possible.*** The only species of skates that can be identified on the line are Longnose and Big skates. All other skate species that are not retained and identified in hand must be keyed out to soft snout skate (***Bathyraja spp.***) or stiff snout skate (***Raja spp***.). The sculpin genus ***Myoxocephalus*** is not possible to identify from the line and must be identified in hand, otherwise list it as sculpin unidentified.

**Always subsample for any fish for which you are using group codes. Your average weight fish should be keyed to species if collected from inside your tally. The rest of these fish would be recorded under the group code.**

**Collecting Shortraker & Rougheye Rockfish**

Shortraker and rougheye rockfish are common bycatch species in the Pacific cod, Pacific halibut and sablefish fisheries. Currently, the Sustainable Fisheries Division of NMFS Alaska Region manages these animals as a single species group. There is growing concern that these species may not have similar life histories. If these fish do have significantly different life histories, the Agency needs to manage them separately.

To that end, observers are asked to take the following information on shortraker and rougheye species:

- Randomly collect 30-40 big red rockfish ***from within your tally sample***.
- Identify these fish to species on your species composition form.
- Use these fish for average weights.

Bycatch of shortraker and rougheye rockfish is often high on sablefish vessels, and you should be able to collect the 30-40 specimens on many sampled hauls. To allow time for completing this task, you may ***discontinue collecting halibut injury assessments on sablefish vessels only!***

## The Non-Tally Period

The non-tally periods are often referred to as the weigh periods. This is because you will use these periods to weigh organisms to determine average weights to apply to your tally sample. It is during this phase of sampling when you obtain the weight of organisms occurring in your sample. For each species, use one of the following methods to calculate the weight of fish in each sample.

1. Weigh every individual of a species from your tally sample.

2. Obtain an average weight and multiply the number of the species counted by the average weight.

3. For halibut only, use the halibut length-to-weight table (see page A-37) to convert a length to weight.

Each of these options is discussed in detail in the following paragraphs.

**Weighing Everything**

You will only be able to weigh every individual of a species from your tally period if:

1. the species is not very abundant in the sample, and

2. the rollerman is able to retain them for you during your tally periods.

The method is very simple: retain the organisms during your tally periods and weigh them during your non-tally periods.

**Average Weights**

For most species, it is impossible to weigh all the individuals from your tally period and you'll need to take average weights. Collect the following:

- 50 fish from predominant species
- 30-40 individuals from the shortraker/rougheye group from ***inside*** your tally sample
- 15 individuals for all other species.

**If you tally 8 individuals of a species and the rollerman saves all 8 of those species for you - the weight of those 8 individuals is the actual weight. Do not collect more of those species for average weights. Actual weights are preferred over average weights.**

Attempt to randomize your collection of predominant fish for average weights. A method that has worked for prior observers is to randomly pick several of the non-tallied segments of gear in the set. Then, ask the rollerman to set aside all of the fish that are caught until you fill one or two baskets. Continue to collect baskets in this manner until you have enough of each species for average weights. Another method that has worked on smaller vessels, where you have direct communication with the rollerman, is to ask the rollerman to retain every other or every "$n^{th}$" fish for a particular species until you have the number of fish needed. Determine the method that best suits your situation. Fully document your methods in your logbook.

**Calculating Average Weight and Total Weight**
To calculate an average weight, divide the total weight of animals collected by the total number of animals collected. To calculate a weight for a species tallied in your sample, multiply the number tallied during a tally period, including drop-offs, by the average weight.

$$\frac{\text{average weight sample (kg)}}{\text{number of animals weighed in sample}} \times \text{total number of individuals counted during tally sample} = \text{total weight of species in composition sample}$$

**Calculating Total Hooks in the Set and Your Sample**
Use your average hook count (unless you counted empty hooks) to calculate the total number of hooks for the entire set and the total number of hooks in your tally sample. To calculate the total number of hooks in a set, multiply the total number of gear segments in a set by the average number of hooks per gear segment.

$$\text{average hook count} \times \text{total \# segments in set} = \text{total hooks in set}$$

**Average number of hooks per segment must be rounded to the nearest whole number.**

If you did not count empty hooks during your tally sample, use the number of gear segments sampled for composition multiplied by your average hook count to determine the number of hooks sampled.

$$\text{average hook count} \times \text{total \# segments sampled} = \text{total hooks in sample}$$

If the vessel has Pacific halibut IFQ (see page 6-25), the skipper may fish two different kinds of longline gear (halibut and black cod gear) with differing numbers of hooks per gear segment in a single set. The average number of hooks per segment of gear and number of gear segments must then be determined for each kind of gear. Ask the skipper or setting crew if they are using segments of gear with differing hook counts.

## Halibut

The International Pacific Halibut Commission (IPHC) manages the Pacific halibut fishery. This commission sets the total allowable catch of halibut for both the United States and Canada. Accurate accounting of halibut mortality is necessary for the IPHC to assess the health of the halibut stock and determine future allocations. Halibut are a prohibited species and must be released with minimal harm to the animal (unless the vessel has IFQ). Unlike groundfish, where mortality is assumed to be equal to catch, many halibut survive being caught by commercial gear. The IPHC applies mortality rates to the commercial catch of halibut to estimate total mortality. Halibut mortality can potentially close groundfish fisheries if it is exceeded before target quotas. By carefully releasing halibut, longline vessels are able to reduce their overall halibut mortality and extend their fishery.

### Careful Release Methods for Halibut

The following bullets outline NMFS' careful release regulations for Pacific halibut. The rollermen may use any of these methods, or a combination thereof.

- Cut the gangion - the rollerman cuts the line attaching the hook to the groundline.
- Twist the hook - the rollerman uses the gaff hook to twist the hook out of the halibut's mouth - usually called the "twist-and-shake" method.

- Straighten the hook - the rollerman uses the gaff to straighten the hook and slide the halibut off the hook (this is different from "horning off" in that the rollerman will not tear the fish's mouth in the straightening process).

One of your duties is to assess the way halibut are handled on your vessel. Document the following in your logbook:

- The methods that each rollerman uses to release halibut and the effectiveness of this method in reducing injuries to halibut.
- Anytime a halibut hits the crucifier (include the rollerman's name, the time and date, and any circumstances surrounding the incident). Inform the captain any time you witness halibut hitting the crucifier.
- Whether the captain and crew are cooperative with your sampling efforts.

If the rollermen are not utilizing careful release methods, document this thoroughly in your logbook and tell the captain what you are seeing. Document all conversations with the captain on the subject and note if the skipper is aware that the halibut are being released improperly. Document whether there is a general disregard of careful release methods or if it is just a particularly careless or inexperienced rollerman. Bring all of these issues to the attention of the NMFS staff as soon as possible.

### Halibut in the Composition Sample

Halibut are tallied at the same time as all other species. However, the method used for determining the weight of halibut in a sample is different than for other species. Halibut are often too large to obtain an accurate weight with the scales provided to observers and very large halibut may not be brought on board the vessels at all. The IPHC has generated a halibut length to weight table (see page A-37) which lists an approximate weight of halibut by its fork length measurement (in centimeters). Estimate the weight of halibut in your tally samples in one of two ways; **1)** estimate the length of each halibut and look up the weight on the length to weight table, or **2)** if the halibut are small enough, collect an average weight sample and apply this weight to a tallied number.

The example in Figure 6-6 shows the commonly used technique of recording halibut data within your tally sample. In the example, a range of size categories are listed in 10 centimeters increments. As halibut are observed on the line, make a visual estimate of the length of each halibut and place a tick mark next to the appropriate size category.

The following suggestions will help you estimate the length of halibut:

- Measure the distance from the roller to weld marks on the side of the vessel or the waterline, if weather permits.
- Measure the distance between the gangions on the groundline and measure the length of the gangions themselves. On most longline vessels, the distance between the gangions and the lengths of the gangions are consistent. Under normal operations, you will be able to see the fish being pulled by the groundline and gangion. Estimate the length of the halibut in reference to the length of the groundline between the gangions or the length of the gangion itself.
- Use the length of the gaff or the pole gaff to compare to the lengths of the halibut.
- Pre-measure the length of the longline trough. Some halibut will be brought on board either to be retained or by accident. Having several marked measurements in the trough will allow you to quickly estimate length of the landed halibut.

Test and refine your halibut length estimates using the halibut landed for injury assessments. With experience, you will become more proficient at estimating halibut measurements and knowing which methods work for you in different situations.

After sampling a set, use the length to weight table on page A-37 to determine the proper weight. Multiply the number of halibut for each length by the weight on the table. Sum the weights for all sizes to obtain the total weight of halibut in your sample.

**Average Weights for Halibut**
Use average weights to estimate the weight of halibut in your sample only if you are catching a great deal of halibut or if you are unable to accurately estimate the length of the halibut being caught. For this method, tally the number of halibut that are retrieved during the tally period, and then apply an average weight to determine total weight of halibut in your sample.

The halibut may be divided up into size groups; those that are small enough to be landed and fit on your scale and those that are not. Use the halibut length to weight table (see page A-37) for fish that are too large for your scale. ***Randomly collect at least 20 fish per set for average weights if halibut is the predominant species*** (15 if halibut is not predominant). Do this by either determining a random start point and selecting every "$n^{th}$" fish or by randomly determining several collection points and collecting the next "X" number of fish.

## 3US Species Composition Form Instructions

If your assigned vessel does not have the ATLAS program, fill out a "Form 3US Species Composition" sheet for every haul sampled for species composition.

**Observers Name/Vessel Name** - For each vessel deployment, write your name and the vessel's name across the top of the first page.

**Cruise #/Vessel Code** - Enter the cruise number and vessel code on all forms. Your cruise number will be issued to you at your briefing or training prior to your deployment. There is a list of vessel codes in "Vessel/ Plant Names and Codes" on page A-26.

**Date** - Enter the date that the last hook of a set was retrieved. For the month and the day, use leading zeros when needed (e.g., 01/01/05 for January 01, 2005). This date must match the date on all other forms.

**Species Name/Sex/Species Code/Sample Type** - Enter the species name and species code in the proper columns (see page A-1). The Sex column is only used for prohibited crab and salmon species, and only **M** and **F** are valid entries (leave this field blank if the sex is unknown). The Sample Type on a longliner is always **L**, on a pot boat it is always **T**, and on a Jig boat it is always **J**.

**Number** - Enter the total number of all of the individuals of each species counted during your tally period. This should be the total of all your tick marks and numbers from your thumb counters for the species indicated, including any drop-offs.

**Weight of Specimens** - Enter the total weight of all of the individuals of each species counted during your tally period. See page 6-12 for information on how to obtain these numbers.

**Quantity Sampled** - Enter the total number of hooks counted during your tally sample or calculated based on the average hooks per segment. The total number of organisms tallied cannot be larger than the total number of hooks sampled.

**Percent Retained** - Percent retained needs to be estimated for each non-prohibited species. ***Never record a percent retained for any prohibited species***. This is an estimation of the percentage of the round weight of a species retained. Round weight is the weight of the whole fish, prior to processing. The entire weight of the fish is considered retained when more than 15% of its weight is turned into product. ***Percent retained is an estimation, and your effort and time spent obtaining it should be minimal.***

Percent retained, by species, is often difficult to estimate because discard can happen in a variety of places. Make your estimation based on what you see happening, on a haul by haul basis. Potential types of discard include fish falling off the line or being sorted off the line. Additionally, fish may be discarded in the factory or from other locations after being landed. Some observers tally drop-off fish separately from retained fish, and use this to calculate discard at the roller (see page 6-16 for more information on how to calculate percent retained).

Haul 131

TALLY SKATES: 3, 8, 9, 12
Avg. wts : 5

SR/RE
~~||||~~ ~~||||~~
~~||||~~ ~~||||~~
~~||||~~ |||
SR = 18 @ 37.2 kg
RE = 10 @ 17.7 kg

SKATES
~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~
AK = 15 @ 35.4 kg

KAM/ARROW
~~||||~~ ~~||||~~ ~~||||~~ ||
~~||||~~ ~~||||~~ ~~||||~~
ARROW = 15 @ 29.1

HALIBUT
30
40
50
60 - || = 4.82 kg
70 | = 3.98 kg
80 - ||| = 18.39 kg
120 - | = 22.81 kg

FLATHEAD SOLE
| = 0.6 kg

DOVER SOLE
||| = 2.2 kg

DOGFISH
|| = 5.4 kg

SHORT SPINED THORNYHEAD RKFISH
~~||||~~ = 3.2 kg

UNIDENT. TANNER
1 @ 0.6 kg
(HAD TO USE AVG. WT FROM HAUL 128, 129.)

TALLY COUNTER #
Sablefish = 178

Sablefish wts
20 @ 38.7
20 @ 46.6
10 @ 21.4

Sablefish DROP OFFS
||

FORM 3US -- SPECIES COMPOSITION

MARCO VOVCHOK
F/V SABLEFISHER II

Page 1 of 15

| Species: | Sablefish | AK SKATES | ARROW | | | |
|---|---|---|---|---|---|---|
| Wt. of above: | 106.7 | 35.4 | 29.1 | | | |
| No. weighed: | 50 | 15 | 15 | | | |
| Avg. weight: | 2.134 | 2.36 | 1.94 | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 6562 | A714 | 05 | 03 | 15 | 131 |

ST = Sample Type
B = basket L = Longline
P = partial haul T = Trap/pot
W = whole haul

Page 3 of 8 for transmission

| Species Name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 2867 | + | 282 | 617.38 | X | 99 |
| HALIBUT | | 101 | L | 7 | 50.0 | 3624 | |
| SALMON | | 220 | | 0 | 0.0 | | |
| HERRING | | 611 | | 0 | 0.0 | | |
| King CRAB | | 2 | | 0 | 0.0 | | |
| TANNER CRAB | | 3 | | 1 | 0.6 | | |
| SABLEFISH | | 203 | | 180 | 384.12 | | 99 |
| SHORTRAKER | | 326 | | 18 | 37.2 | | 0 |
| ROUGHEYE | | 307 | | 10 | 17.7 | | 0 |
| ALASKA SKATE | | 88 | | 15 | 35.4 | | 0 |
| SKATE UNIDENT. | | 90 | | 8 | 18.88 | | 0 |
| ARROWTOOTH | | 141 | | 15 | 29.1 | | 0 |
| KAM/ARROW | | 149 | | 17 | 32.98 | | 0 |
| FLATHEAD SOLE | | 103 | | 1 | 0.6 | | 0 |
| DOVER SOLE | | 107 | | 3 | 2.2 | | 0 |
| SPINY DOGFISH | | 66 | | 2 | 5.4 | | 0 |
| THORNYHEAD, S.S. | | 350 | L | 5 | 3.2 | 3624 | 0 |

**Figure 6-6 Tally Sheet and Corresponding Form 3US (haul 131 longline example)**

## ATLAS Deck Form Instructions

If your vessel has the ATLAS computer program, you must adhere to following form protocols:

**Header Information:** Haul #, Date, Cruise #, Vessel Code, Observer's Name, Vessel Name: fill out these fields in the same format as the 3US Form (see page 6-14).

**Total Hooks or Pots Sampled -** Enter the total number of hooks calculated based on average hook counts and segments of gear sampled, or counted during your tally sample. The total number of specimens tallied cannot be larger than the total number of sampled hooks.

**Total Mags or Skates Sampled -** Enter the total segments of gear sampled. For a completely temporal sample frame, this field will be left blank.

**Keypunch Check for Species #'s:** Sum the entries from the ***Total #*** column for all species groups and sample types. Enter this sum into the **Keypunch Check for Species #'s** field. For the Species Composition form in the ATLAS program, this sum will be entered under species ***code 999*** in the ***Number*** field.

**Keypunch Check for Species Wt's:** Sum the entries from the ***Total Weight*** column for all species, groups, and sample types. Enter this sum into the **Keypunch Check for Species Wt's** field. For the Species Composition form in the ATLAS program this sum will be entered under species ***code 999*** in the ***Weight*** field.

**Species / Sex -** Enter the species or group name in the proper columns, as neatly as possible. The Sex column is only used for prohibited crab and salmon species. Enter the gender only if you were able to determine it by direct observation. "M" and "F" are the only valid entries. If gender is unknown, leave this blank.

**# / Weights -** For each species, enter the number and weight of the animals actually counted and weighed. Use these numbers and weights to calculate the average weights for specimens that were only tallied.

**Total # -** Enter the total number of all of the individuals of each particular species that were counted during your tally sample. Total all of your tick marks and the numbers from your thumb counters for the specified species, including drop-offs.

**Total Weight -** For each species, enter the total weight of the organisms counted during your tally period. Obtain this weight by either weighing all the organisms tallied or by calculating an average weight (per species group) and multiplying it by the total number of organisms tallied.

**% Ret-** This is a rough estimate of the percent of each non-prohibited species retained by the vessel. ***You should never record percent retained for any prohibited species.*** Tally drop-offs and discards and use average weights to determine the total weight discarded. Determine the total percent of the species discarded by dividing this weight by the total weight of the species group. Enter this number rounded to the nearest whole percent in the Percent Retained column.

**ST -** The Sample Type on a longliner is always **L**, on a pot boat is always **T**, and on a jig boat is always **J**.

**When there are multiple observers aboard a vessel, each should initial the deck forms for the hauls they sampled!**

| Haul # 147 | Total Skates or Segments Sampled | Page 98 of 194 |
|---|---|---|
| Date 2/6/05 | 5 Mags / 40 Skates | CR# 9898 Vessel A002 |
| Number of hooks or pots sampled | Keypunch check for species #'s. | Keypunch check for species wt's. |
| 4930 | 1626 | 5212.46 |

| Species | Sex | # | Weight | # | Weight | Total # | Total Weight | % Ret. | ST |
|---|---|---|---|---|---|---|---|---|---|
| P. Cod | | 9 | 32.6 | 10 | 36.4 | 1153 | 4178.47 | 100 | L |
| | | 12 | 37.0 | 10 | 40.0 | | | | |
| P. Cod | | 9 | 35.2 | | | | | | |
| ALASKA SKATE | | 5 | 21.6 | 4 | 20.1 | 6 | 24.5 | 0 | |
| SKATE UNIDENT | | | | | | 77 | 339.83 | 0 | |
| ARROWTOOTH FLOUNDER | | 9 | 21.8 | 6 | 17.2 | 15 | 39.0 | 0 | |
| KAM/ARROW | | | | | | 63 | 163.8 | 0 | |
| POLLOCK | | 10 | 15.7 | 7 | 11.4 | 132 | 210.42 | 80 | |
| FLATHEAD | | 15 | 14.4 | | | 37 | 35.52 | 0 | |
| N. ROCKSOLE | | 11 | 6.8 | | | 11 | 6.8 | 0 | |
| UNIDENT. ROCKSOLE | | | | | | 7 | 4.33 | 0 | |
| FLATFISH UNIDENT. | | | | | | 9 | 7.34 | | |
| IRISH LORD SCULPIN | | 15 | 13.8 | | | 41 | 37.72 | | |
| SHORTRAKER | | 10 | 20.9 | 13 | 28.4 | 23 | 49.3 | | |
| ROUGHEYE | | 2 | 4.2 | | | 2 | 4.2 | | |
| SR/RE | | | | | | 31 | 66.34 | 0 | |
| Halibut | | | | | | 16 | 62.06 | | |
| Opilio | M | 3 | 2.8 | | | 3 | 2.8 | | |
| Opilio | F | 2 | .8 | | | 2 | 0.8 | | |
| TANNER UNIDENT. | | | | | | 4 | 3.73 | | L |

Length data, Viabilities, and Measurements

P. Cod lengths

| M | F |
|---|---|
| 51 | 59 |
| 59 | 64 |
| 60/2 | 83 |
| 63 | 86 |
| 77 | 92 |
| 86 | 97 |
| 91 | 101 |
| 92 | 104 |
| 104 | 107 |

P. Cod oto's

46077-
F/76/4.92

196075-
F/70/4.15

SHORTRAKER LENGTHS

| M | F |
|---|---|
| 53 | 43 |
| 54 | 44 |
| 56 | 46 |
| 57 | 48 |
| | 50 |

S. RAKER OTO'S

196076
F/46/2.16

196077
F/51/3.22

Notes:
HALIBUT INJURY
64cm-1 73cm-1
58cm-2 73cm-1
85cm-1 48cm-4 (sandfleas)

OPILIO CRAB
M-78 F-73-eggs-N
M-58 F-78-eggs-N
M-128

Revised 1/1/2000

Figure 6-7 Longline Deck Form

## Vessel's Fishing Effort Information

### Vessel Logbooks

Under regulation 50CFR679.5, observers have the right to inspect and copy the NMFS logbook and all other documentation of fishing effort. Transfer the following information from the vessel logbook to the Vessel Haul Form (see Figure 6-9 on page 6-19).

- Date and Time of Gear Deployment
- Date and Time of Gear Retrieval
- Position of Gear Deployment - Latitude and Longitude
- Position of Gear Retrieval- Latitude and Longitude
- Average Sea Depth
- Individual Fishing Quota (IFQ), Yes or No
- Community Development Quota (CDQ) group number, if applicable
- Number of Skates or Pots

In addition, record information on any problems associated with the retrieval of the longline gear. This information is not recorded in the vessel logbook. Ask the person responsible for logbook entries to record problems with gear somewhere on the logbook page or on a separate page for you.

**Vessels Fishing IFQ**

All longline and pot vessels (both IFQ and non-IFQ) use the same logbook. However, data is entered differently depending on whether the vessel is fishing for IFQ species or not. On the vessel logbook (see Figure 6-8), check the columns "IFQ Halibut" and "IFQ Sablefish." A > 0.00 entry in these columns indicates IFQ fishing. For a more detailed description of IFQ, see page 6-25.

### Problems with Logbook Information

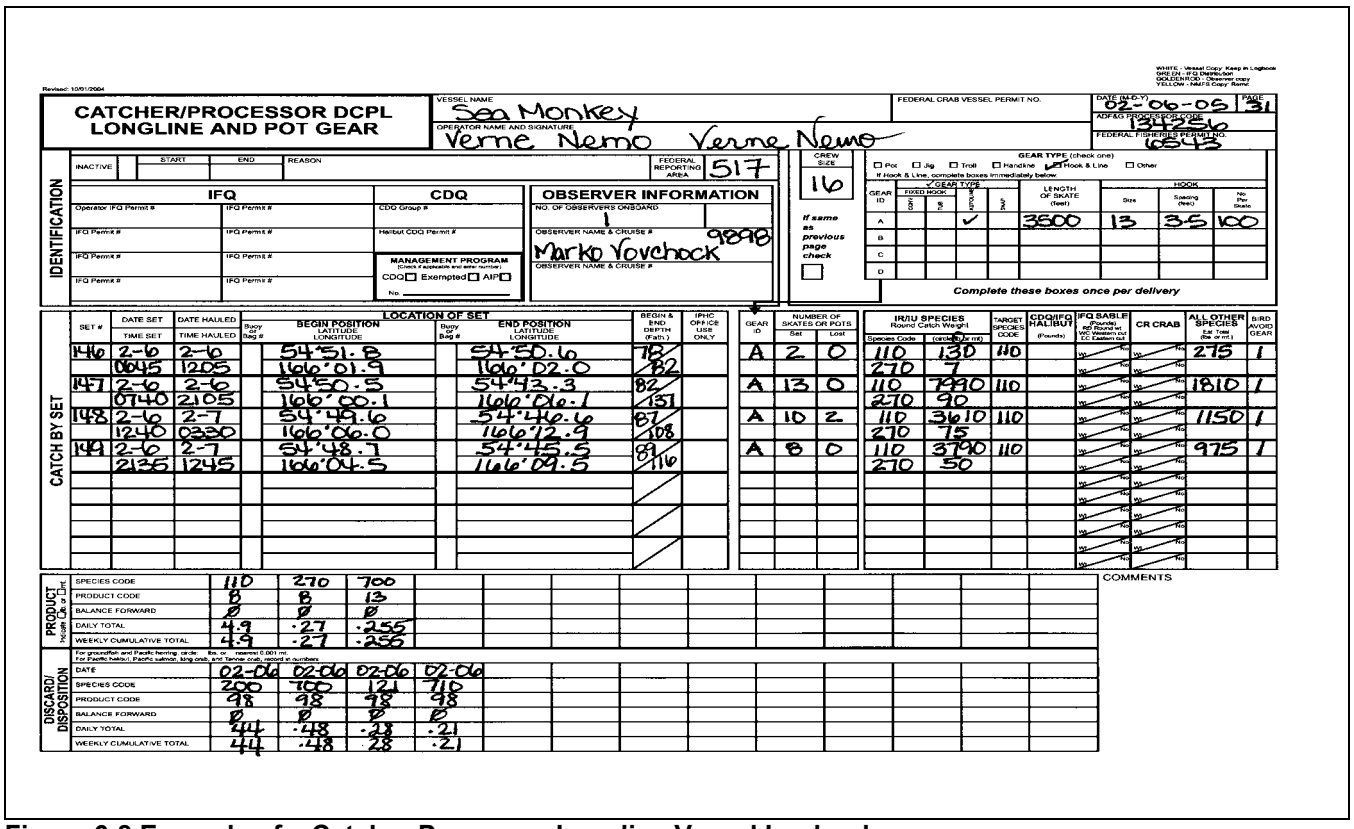
Before copying anything from the vessel logbook to your data forms, you must determine the accuracy of the data reported. Misunderstandings are possible concerning how the log is filled out. You will need to verify the following entries:

**Date and Time of Gear Deployment and Retrieval**

Whenever possible, note the time when the crew begins to deploy hooks and note the time the last hook is retrieved for a set. You will not be able to verify deployment or retrieval times for all sets. For unverified sets, rely on the information provided by vessel personnel in the vessel's logbook. If your vessel's logbook contains erroneous times, let the officer in charge of the logbook know about the error. If the incorrect data continues to be logged, consult NMFS for advice on how to record your set data.

**Position of Gear Deployment and Retrieval - Latitude and Longitude**

The latitudes and longitudes entered in the "Begin Position of Set" and "End Position of Set" columns in the vessel's logbook should be the position of the first hook set to the last hook set. The captain or mate reads these positions from the GPS navigation systems located on the bridge. Occasionally, check that the positions listed in the vessel's logbook match the GPS readings. The person responsible for the logbook may have incorrectly entered the position. Question any large changes in position between one set and the next if you have not had a long run between sets.



CATCHER/PROCESSOR DCPL LONGLINE AND POT GEAR

VESSEL NAME: Sea Monkey
OPERATOR NAME AND SIGNATURE: Verne Nemo Verne Nemo
FEDERAL CRAB VESSEL PERMIT NO.
DATE (M-D-Y): 02-06-05 PAGE: 31
ADF&G PROCESSOR CODE: 131250
FEDERAL FISHERIES PERMIT NO.: 16543

IDENTIFICATION: INACTIVE | START | END | REASON | FEDERAL REPORTING AREA: 517

IFQ: Operator IFQ Permit # | IFQ Permit # | IFQ Permit # | IFQ Permit # | IFQ Permit # | IFQ Permit # | IFQ Permit # | IFQ Permit #

CDQ: CDQ Group # | Halibut CDQ Permit #

MANAGEMENT PROGRAM (Check if applicable and enter number): CDQ ☐ Exempted ☐ AIP ☐ No.

OBSERVER INFORMATION: NO. OF OBSERVERS ONBOARD: 1 | OBSERVER NAME & CRUISE #: Marko Vovchock 9898 | OBSERVER NAME & CRUISE #

CREW SIZE: 16

If same as previous page check ☐

GEAR TYPE (check one): ☐ Pot ☐ Jig ☐ Troll ☐ Handline ☑ Hook & Line ☐ Other

If Hook & Line, complete boxes immediately below.

| GEAR ID | FIXED HOOK: DSR | FIXED HOOK: Pot | ✓ GEAR TYPE: Longline | ✓ GEAR TYPE: Pair | LENGTH OF SKATE (feet) | HOOK: Size | HOOK: Spacing (feet) | HOOK: No. Per Skate |
|---|---|---|---|---|---|---|---|---|
| A | | | ✓ | | 3500 | 13 | 3.5 | 100 |
| B | | | | | | | | |
| C | | | | | | | | |
| D | | | | | | | | |

Complete these boxes once per delivery

CATCH BY SET

| SET # | DATE SET / TIME SET | DATE HAULED / TIME HAULED | Buoy or Bag # | BEGIN POSITION LATITUDE / LONGITUDE | Buoy or Bag # | END POSITION LATITUDE / LONGITUDE | BEGIN & END DEPTH (Fath.) | IPHC OFFICE USE ONLY |
|---|---|---|---|---|---|---|---|---|
| 146 | 2-6 | 2-6 | | 54'51.8 | | 54'50.6 | 78 | |
| | 0645 | 1205 | | 166°01.9 | | 166°02.0 | 82 | |
| 147 | 2-6 | 2-6 | | 54'50.5 | | 54'43.3 | 82 | |
| | 0740 | 2105 | | 166°00.1 | | 166°06.1 | 131 | |
| 148 | 2-6 | 2-7 | | 54°49.6 | | 54°46.6 | 87 | |
| | 1240 | 0330 | | 166°06.0 | | 166°12.9 | 108 | |
| 149 | 2-6 | 2-7 | | 54°48.7 | | 54°45.5 | 89 | |
| | 2135 | 1245 | | 166°04.5 | | 166°09.5 | 116 | |

| GEAR ID | NUMBER OF SKATES OR POTS: Set | Lost | IR/U SPECIES Round Catch Weight: Species Code | (enter lb. or mt.) | TARGET SPECIES CODE | CDQ/IFQ HALIBUT (Pounds) | IFQ SABLE (Pounds) | CR CRAB | ALL OTHER SPECIES Est. Total (lbs. or mt.) | BIRD AVOID GEAR |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 2 | 0 | 110 | 130 | 110 | | | | 275 | 1 |
| | | | 270 | 7 | | | | | | |
| A | 13 | 0 | 110 | 7990 | 110 | | | | 1810 | 1 |
| | | | 270 | 90 | | | | | | |
| A | 10 | 2 | 110 | 3610 | 110 | | | | 1150 | 1 |
| | | | 270 | 75 | | | | | | |
| A | 8 | 0 | 110 | 3700 | 110 | | | | 975 | 1 |
| | | | 270 | 50 | | | | | | |

COMMENTS

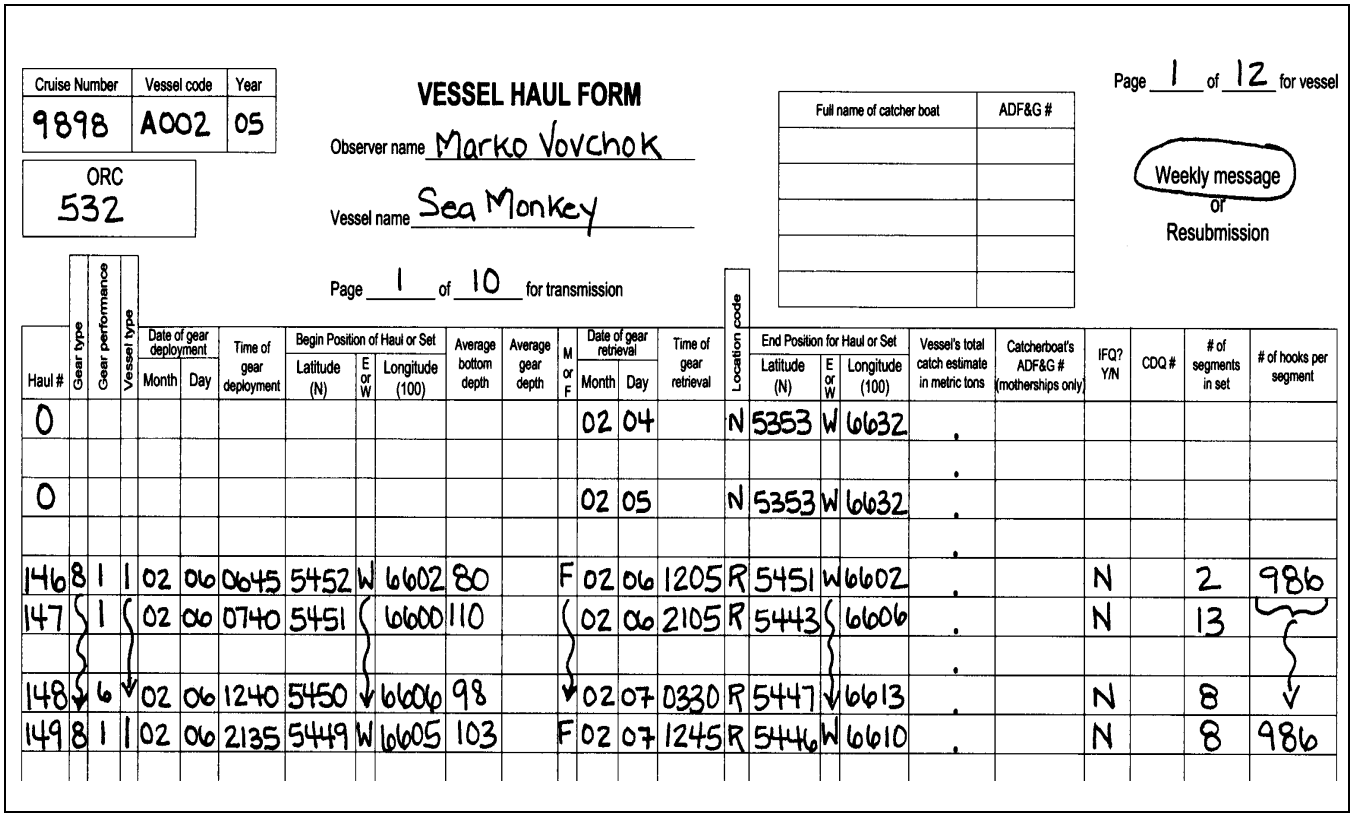
PRODUCT (Round Cod in Lbs.)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES CODE | 110 | 270 | 700 | | | | | | | | | | |
| PRODUCT CODE | 8 | 8 | 13 | | | | | | | | | | |
| BALANCE FORWARD | 0 | 0 | 0 | | | | | | | | | | |
| DAILY TOTAL | 4.9 | .27 | .255 | | | | | | | | | | |
| WEEKLY CUMULATIVE TOTAL | 4.9 | .27 | .255 | | | | | | | | | | |

DISCARD/DISPOSITION (For groundfish and Pacific herring, circle lbs. or mt; rounded 0.001 mt. For Pacific halibut, Pacific salmon, king crab, and Tanner crab, record in numbers.)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | 02-06 | 02-06 | 02-06 | 02-06 | | | | | | | | | |
| SPECIES CODE | 200 | 700 | 121 | 710 | | | | | | | | | |
| PRODUCT CODE | 98 | 98 | 98 | 98 | | | | | | | | | |
| BALANCE FORWARD | 0 | 0 | 0 | 0 | | | | | | | | | |
| DAILY TOTAL | 44 | .48 | .28 | .21 | | | | | | | | | |
| WEEKLY CUMULATIVE TOTAL | 44 | .48 | .28 | .21 | | | | | | | | | |

Figure 6-8 Example of a Catcher Processor Longline Vessel Logbook



| Cruise Number | Vessel code | Year |
|---|---|---|
| 9898 | A002 | 05 |

ORC 532

VESSEL HAUL FORM

Observer name Marko Vovchok

Vessel name Sea Monkey

Page 1 of 10 for transmission

| Full name of catcher boat | ADF&G # |
|---|---|
| | |
| | |
| | |
| | |
| | |

Page 1 of 12 for vessel

Weekly message or Resubmission

| Haul # | Gear type | Gear performance | Vessel type | Date of gear deployment: Month | Day | Time of gear deployment | Begin Position of Haul or Set: Latitude (N) | E or W | Longitude (100) | Average bottom depth | Average gear depth | M or F | Date of gear retrieval: Month | Day | Time of gear retrieval | Location code | End Position for Haul or Set: Latitude (N) | E or W | Longitude (100) | Vessel's total catch estimate in metric tons | Catcherboat's ADF&G # (motherships only) | IFQ? Y/N | CDQ # | # of segments in set | # of hooks per segment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | 02 | 04 | | N | 5353 | W | 6632 | . | | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 0 | | | | | | | | | | | | | 02 | 05 | | N | 5353 | W | 6632 | . | | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 146 | 8 | 1 | 1 | 02 | 06 | 0645 | 5452 | W | 6602 | 80 | | F | 02 | 06 | 1205 | R | 5451 | W | 6602 | . | | N | | 2 | 986 |
| 147 | | 1 | | 02 | 06 | 0740 | 5451 | | 6600 | 110 | | | 02 | 06 | 2105 | R | 5443 | | 6606 | . | | N | | 13 | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 148 | | 6 | | 02 | 06 | 1240 | 5450 | | 6606 | 98 | | | 02 | 07 | 0330 | R | 5447 | | 6613 | . | | N | | 8 | |
| 149 | 8 | 1 | 1 | 02 | 06 | 2135 | 5449 | W | 6605 | 103 | | F | 02 | 07 | 1245 | R | 5446 | W | 6610 | . | | N | | 8 | 986 |

Figure 6-9 Vessel Haul Form (longline example)

## Vessel Haul Form for Fixed Gear Vessels

The Vessel Haul Form (VHF) is used for recording fishing effort data from all gear types. An ***entry must be made for every day you are assigned to a vessel.*** Start your entries with the day you embark a vessel and end them on the day you disembark the vessel. Each delivery or day in port must be noted on a line of the VHF. Skip a line between each day's entries. Observers on catcher boats must use one line to document each delivery even if there are also sets retrieved on the same day. Make sure that all of the sets retrieved during your deployment are recorded on your VHF whether you sampled them or not. Keep the data from each vessel separate.

**Heading:** Enter the cruise number supplied in your training or briefing. Enter the vessel code found in "Vessel/Plant Names and Codes" on page A-26. For "Year" enter only the last two digits, such as "05."

**Observer name/Vessel name:** Enter your name and the name of the vessel.

**ORC:** When transmitting the VHF to the Observer Program via a fax, you will need to enter an Observer Routing Code (ORC) number in this box. The ORC is a three-digit code which will be provided to you during training or briefing.

**Haul Numbers:** There must be an entry for every set of gear retrieved. Each set should have its own distinct number and you should try to keep them in consecutive order. You may want to number your hauls so that they correspond to the set numbers in the vessel's logbook. This should make it easier to track the sets and enter the corresponding data to your forms. Enter a zero in this field for all non-fishing day entries.

**Gear Type:** Enter the appropriate gear code in this column. The **Gear Type** codes for the VHF are:

8 - Longline vessels
7 - Jig vessel
6 - Pot vessels

**Gear Performance:** Enter the appropriate code. This code denotes if there were any problems with the gear that may affect the amount of fish caught. There are five different codes that may be applicable to longline fishing.

1= No problems.
2= Crab pot(s) in haul.
5= Problem -- Other problem, write explanation in the "Notes" area of the Observer Haul Form (OHF).
6= Some or all gear lost.
7= Considerable predation of the catch by sea lions.
8= Considerable predation of the catch by killer whales.
10= Considerable predation of the catch by sperm whales.

**Note:** Document what occurred whenever you use a gear performance code other than 1. You may do this in either the "Comments" field on the OHF or in your logbook. When codes 7, 8 or 10 are used, complete a Form 10 - Marine Mammal Interaction form (see page 12-2).

**Vessel Type:** Enter the appropriate code.

1 - Catcher Processor (C/P)- vessel processes and freezes its own catch.
3 - Catcher Vessel- vessel has retained fish for delivery to a shore-based plant, a floater or mothership.
5 - Bait- vessel used the catch as bait, or sold the catch directly to other vessels to use as bait.

**Date of Gear Deployment:** Enter the date the ***first hook*** of a set is deployed. The month and day must be two digits (e.g., 01/01 for January 1st).

**Time of Gear Deployment:** Enter the time the ***first hook*** of a set entered the water. Verify the captain is entering the correct time in, and not the time the anchor or flag enter the water. All entries must be in Alaska Local Time (ALT). Enter four digits with no colon marks.

**Begin Position of Haul or Set:** Enter the latitude and longitude of the vessel when the first hook of the set was deployed. This position can be found in the "Begin Position" field in the vessel logbook. The first digit of the longitude is understood to be 1 and does not need to

be entered. If the vessel log has positions to seconds or hundredths of seconds, round the position to the nearest minute for your VHF entry. Coordinates with minutes greater than 59 are not valid. Enter only numbers in the latitude and longitude columns. Do not enter any marks indicating degrees, minutes, or seconds.

**Average Bottom Depth:** Average the begin and end depths found in the vessel's logbook. Round the depth to the nearest whole number. Do not enter decimals in this field.

**Average Gear Depth:** Leave this column blank.

**M or F:** The vessel logbook instructions request that the bottom depth be recorded in fathoms (F). Check with the captain to ensure that this is the case.

**Date of Gear Retrieval:** Enter the date the ***last hook*** of a set is retrieved. Month and day must both be two digits (e.g., 01/01 for January 1st). Attribute the set to the ***day retrieval is completed.***

**Time of Gear Retrieval:** Enter the time the last hook was retrieved. You can find this time in the "Time Hauled" field in the vessel logbook. All entries must be in Alaska Local Time (ALT). Enter four digits with no colon marks.

**Location Code:** Enter "R" if the location is a retrieval position. Enter a "D" if you are on a mothership receiving catch and are unable to obtain a retrieval position. Enter "N" for each day that no gear is retrieved (vessel is in port, steaming, or waiting out a storm). A list of common ports follows.

***Latitude/Longitude for common ports***

| *Port* | *Latitude* | *Longitude (W)* |
|---|---|---|
| Adak | 5153 | 17639 |
| Akutan | 5408 | 16546 |
| Cordova | 6033 | 14545 |
| Dutch Harbor | 5353 | 16632 |
| Homer | 5938 | 15133 |
| Juneau | 5810 | 13418 |
| King Cove | 5503 | 16219 |
| Kodiak | 5742 | 15215 |
| Sand Point | 5520 | 16030 |
| Seattle | 4742 | 12213 |
| Seward | 6007 | 14927 |

**Non-fishing Days:** For all non-fishing days, enter a "0" in the Haul Number column, a location code of "N", and enter the latitude and longitude of the vessel at or around noon, Alaska Local Time (ALT) in the "End Position of Set" column. On the remainder of the line, comment on the reason the vessel did not fish. All days aboard must be accounted for with either retrieval or non-fishing positions.

**End Position for Haul or Set:** Enter the latitude and longitude of the vessel when the **last** hook of a set was retrieved. This position can be found in the "End Position" field from the vessel logbook. Follow the same rules for these entries as for the "Begin Position for Haul or Set" columns.

**Vessel's Total Catch Estimate in Metric Tons:** Leave this column blank.

**IFQ? Y or N:** Was the particular set fished under an Individual Fishing Quota? Enter an "N" if it was not. Enter a "Y" if it was. Check the IFQ permit number columns in the vessel's logbook. An entry in these columns indicates IFQ fishing. For a more detailed description of IFQ, see page 6-25.

**CDQ group #:** Record a "C" and the two digit CDQ group number for each haul taken using the Community Development Quota (CDQ). This number can be found at the top of the vessel logbook in the box marked "CDQ group #."

**Catcher Boat's ADF&G # and Full Name of Catcher Boat box:** Fill in these two items only if you are on a mothership (see page 5-1).

**# of Segments in Set:** Enter the total number of segments of gear in the set. Record only the amount of gear retrieved, **do not record gear that has been lost**. The amounts of gear set and lost are recorded in the vessel's log in the "Number of Skates or Pots" columns. What captains consider to be a "skate" differs between vessels. The captain may be counting skates, mags, tubs, or coils of gear, any of which you may designate as a segment of gear. Remain consistent in what you designate as a segment of gear for your entire time on a vessel.

**# of Hooks per Segment:** Enter your calculated average number of hooks per segment (see page 6-5). Use only whole numbers. Enter the average number of hooks for the type of gear segment you are using.

## Observer's Fishing Effort Information

### Official Total Catch (OTC) and the Observer Estimate

One of your most important tasks is to calculate the observer estimate for every set sampled and the official total catch (OTC) for every set retrieved. The accuracy of these estimates depends upon the accuracy of your species tallies, sample weights, and hook counts. Every calculation for observer estimates and OTC must be recorded in your logbook. Thorough documentation is required to meet the NMFS' expectations and will generally make the debriefing process faster.

**Sets Sampled for Composition**

If you have sampled the set for species composition, the observer estimate will always be the same as the OTC. Use the formula shown below to determine the observer estimate and official total catch (OTC) for sampled sets on longliners.

$$\frac{\text{sample weight}}{\text{hooks sampled}} = \frac{\text{Observer Estimate and OTC}}{\text{total hooks retrieved}}$$

- **Sample Weight -** The weight of all species counted during the tally period. This value appears on the 3US at the top of the column under "Species Weight." For ATLAS vessels, sum all weight in the total weight column.
- **Hooks Sampled -** The total count of all the hooks that were sampled during your tally periods for this set (see page 6-12).
- **Total Hooks Retrieved** - The average number of hooks per segment of gear multiplied by the total number of gear segments in a set.

**Unsampled Sets**

You must account for every set retrieved during your deployment and every set must have an OTC. For sets that are unsampled, use an "average of like sets" to determine OTC. This method for calculating an OTC is an estimation of catch based on catches from similar areas, depths and soak times (fishing duration). Since actual measurements are unavailable and vessel estimates may be unreliable, the "average of like sets" is the best alternative available.

**Don't use the vessel's estimate for OTC on a longliner, unless instructed to do so by Observer Program personnel.**

When you are calculating the OTC for an unsampled set, you must use more than one "like set" for your calculation. "Like sets" should be close in proximity to the unsampled set and deployed around the same date and depth and have a similar duration in the water. In most circumstances you will be able to use the sets just before and after your unsampled set. The lengths of the set or the number of hooks in the comparison sets do not need to be similar for the calculation of "like sets."

To calculate the OTC for an unsampled set, sum the total sample weights from several "like" sampled sets and divide this by the sum of the number of hooks sampled for these sets. This number will be a ratio of the weight per hook. Multiply this ratio by the total number of hooks in the unsampled set to obtain the OTC. ***An unsampled set will never have an observer estimate.*** Leave the observer estimate column blank. Record all calculations in your logbook.

| "Like" Sets | | Unsampled Set |
|---|---|---|
| $\sum$ sample weights | = | OTC of unsampled set |
| $\sum$ hooks sampled | | total hooks retrieved of unsampled set |

- **Sum of the Sample Weights** = The total weight of everything in the "like sets" composition samples.
- **Sum of the Hooks Sampled** = Number of hooks retrieved and sampled during the "like sets."
- **Total Hooks Retrieved** = The total hooks retrieved in the unsampled set.

## Observer Haul Form for Fixed Gear Vessels

The Observer Haul Form (OHF) is used for recording fishing effort data from all gear types. ***An entry must be made for every set made by the vessel whether it was sampled or not.*** Follow the same guidelines as for the VHF. Include the same spacing and 0's for non-fishing days. When placed side-by-side, you should be able to read the VHF and OHF forms across all lines. Always start a new OHF when you start a new VHF. Keep the data from each vessel you are assigned to separate.

**Heading:** Enter the cruise number supplied in your training or briefing. Vessel can be found in "Vessel/ Plant Names and Codes" on page A-26.

**Observer's Name/Vessel Name:** Enter your name and the name of the vessel.

**Haul #:** The haul number must correspond with the haul number on the VHF and all other data forms. Non-fishing day entries must also match the VHF with a haul number of zero.

**Hauls Sampled By?:** This field is used to indicate whether a set was sampled, and by whom. All sets must have one of the following codes in this field:

0- not sampled or;

cruise number of observer who sampled that haul

**Divide hauls that both observers sampled evenly. Determine your system and document it in your logbook.**

**Random Sample Table:** Enter one of the appropriate letter codes:

Y - I used the RST and it was an "ON" haul

N - I used the RST and it was an "OFF" haul

X - I did not use the RST

**Random Break Table:** Enter the appropriate code as to whether you were using the RBT or not.

Y - I am on a break

N - I am not on a break or I am not using the break table

**% Monitored for Marine Mammals:** This is the percent of the gear you monitored for the presence of marine mammals. This is normally the percent of the gear that was tallied, but **may include more if you also watched the gear at other times.** Divide the number of segments of gear you watched being retrieved by the total segments of gear in the set, or divide the total time you watched gear being retrieved by the total retrieval time of the set. Multiply this number by 100, round it to the nearest whole percent, and enter it into the **% Monitored for Marine Mammals** column. See "MARINE MAMMAL INTERACTIONS AND SIGHTINGS" on page 12-1 for duties related to marine mammals.

**You may include unsampled gear as monitored for marine mammals as long as you were near enough to the line to ensure that you could have seen any mammal interactions or bycatch.**

**Bird Deterrence Device:**

1 = Paired streamer line used

2 = Single streamer line used

0 = No streamers were used

N = Observer didn't check deterrent type

See "Seabird Avoidance Initiatives" on page 13-5, "Monitoring Avoidance Measures" on page 13-5, the Streamer Line Schematic on page 6-28, and a summary of Avoidance Regulations on page 18-16.

**Trawler seabird sample type:** Leave blank.

**Total Hooks or Pots in Set:** Enter the total number of hooks in a set. Total Hooks must be a whole number and there must be an entry for every set. Record only the amount of gear retrieved, ***do not record gear that has been lost.***

**Official Total Catch:** Enter an OTC for every set of gear that the vessel has retrieved. Enter the official total catch estimate in metric tons rounded to two decimal places.

**The most common OHF errors are missing OTCs and processor codes. This haul data is not available to inseason managers with null fields. Check these fields carefully before sending!**

**Observer's Total Catch Estimate:** Only fill out the observers total catch estimate when you have conducted a species composition sample and have extrapolated an OTC. Record the weight estimate in metric tons rounded to two decimal places. ***If you did not complete a species composition sample for a set, leave this field blank.***

**B, C, or W:** For longliners, leave this column blank.

**Density in mt/m$^3$:** For longliners, leave this column blank.

**Processor Permit:** This field is for catcher vessel observers only. For each set, enter the processor code where the catch was delivered. There is a list of shoreside plant, floating plant, and mothership processor codes on page A-22. If the plant your vessel delivers to is not on the list, use code F99999. For each plant to which your vessel delivers, fill in the name and processor code in the Plant/Processor Name box in the upper right corner of the OHF. This information needs to be entered into the box only once per data set.

If one delivery is sold to two different processors, and you are unable to separate the catch by individual sets, enter the processor code for the plant that received the greater share of the delivery. If this or any other incident out of the ordinary occurs, please make a note in the non-keypunch area of the form and explain the incident.

**Date Fishing Began for Delivery:** This field is only for catcher vessel observers. For each set, enter the date that the vessel first deployed gear for the delivery. This means that all sets that are included in a single delivery will have the same entry for the "Date Fishing Began for Delivery" field.

**OBSERVER HAUL FORM**

Page 1 of 12 for vessel

| Cruise Number | Vessel code |
|---|---|
| 9898 | A002 |

Observer name Marko Vorchok

Vessel name Sea Monkey

Page 2 of 10 for transmission

| Plant / Processor name | Location | Processor code |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Haul # | Haul sampled by (cruise no.) | RST on haul? (y= on, n= off, x= n/a) | RBT on break? (y= on break, n= no break) | % Monitored for marine mammals | Bird deterrence device (longline) | Trawler seabird sample type | Total hooks or pots in set | Official Total Catch (OTC) in metric tons | Observer's catch estimate in metric tons | B, C, or W | Density in mt/m$^3$ | Processor code (for catcher vessels only) | Date fishing began for delivery Month | Date fishing began for delivery Day | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | . | . | | . | | | | Waiting for Crew in Dutch |
| | | | | | | | | . | . | | . | | | | |
| 0 | | | | | | | | . | . | | . | | | | |
| | | | | | | | | . | . | | . | | | | |
| 146 | 9898 | Y | N | 45 | 1 | | 1972 | 3.69 | 3.69 | | . | | | | |
| 147 | 9898 | Y | N | 33 | 1 | | 12818 | 13.55 | 13.55 | | . | | | | |
| | | | | | | | | . | . | | . | | | | |
| 148 | 9898 | Y | N | 33 | N | | 7888 | 6.28 | 6.28 | | . | | | | Lost 2 Skates |
| 149 | 0 | N | N | 0 | N | | 7888 | 8.12 | . | | . | | | | |

**Figure 6-10 Observer Haul Form (longline example)**

## Fish Measurements: a Longline Supplement

Your duties for measurements and other biological data are the same as for all other vessels. However, you may encounter a lack of space or lack of cooperation from crews on longliners. Lack of space may be a problem on smaller catcher vessels. You may need to construct a table in checker bins or measure fish directly on the deck. If you are unable to collect measurements or otoliths because of space constraints, contact an Observer Program staff person as soon as possible. In your logbook, document any difficulties encountered and the methods you used.

### Uncooperative Crews

In the past, some longline crews have refused to allow observers to cut the fish in order to obtain sexed length frequency data. In your logbook, document any interference to your collection of sexed length frequency measurements and contact an Observer Program staff person as soon as possible.

If you encounter difficulties, seek the cooperation of the captain in completing your duties. Vessel crew are required to allow you to determine the sex of fish and we are seeking their cooperation. Be mindful that the crew may only protest to your cutting of fish if the cut damages their final product. If this is the case, ask them which cuts would not damage the product. Many observers have successfully used a pectoral cut to sex roundfish, without destroying product. If the cut you need to use is time consuming or difficult, request crew assistance. Most fisherman are cooperative when they realize the extra time you are taking is to prevent damage to their product.

If the crew continues to be uncooperative, ask the skipper if it would be acceptable to cut only a subsample of your measured fish. Request that you be allowed to cut 15 or 10 fish from your ~20 measured fish. If you do sex fewer fish than you measure, the sexed subset should be randomly selected. Unsexed data is more valuable than no length data, so if the captain is adamant that no fish are cut, you should collect unsexed length frequency samples. Fully document in your logbook all interactions with the crew and all methods you used to collect lengths.

## Individual Fishing Quota (IFQ)

In 1993, the North Pacific Fisheries Management Council and the Secretary of Commerce approved the Individual Fishing Quota (IFQ) program for the halibut and sablefish fisheries. This policy changed these fisheries from an open access fishery with a limited season to a limited entry fishery managed through an individual quota assigned to each fisherman. The individual quotas are allocated to fishermen that have historically been involved with either the sablefish or halibut fisheries. The individual shares of the quota can be sold or transferred to different individuals and companies. The IFQ system now allows fishermen to fish for their individual quota throughout the fishing season when prices are high or as the weather permits.

### Vessels and Gear

Typically, the vessels that fish sablefish and halibut IFQ's are smaller vessels, although some larger C/P's also hold quota. When targeting sablefish, the vessels typically set gear much deeper and retrieve the gear at a slow pace compared to Pacific cod or Greenland turbot fisheries. When targeting halibut, the vessels set their gear in areas that are shallower, but halibut gear tends to have less hooks spread farther apart, so the rate of hook retrieval will be equivalent or even slower than sablefish retrievals.

### Composition Sampling

The methods of choosing which hauls to sample and which sampling methods to use are the same as those discussed earlier in this chapter. IFQ vessels tend to be less automated and gear retrieval is slower. Follow normal sampling procedures for tally and weighing periods to collect your composition sample. On some IFQ vessels, observers have been able to weigh all non-predominant species from the tally period. Obtain average hook counts in the same manner as in the regular fisheries. Because the gear is maintained by hand and may not be repaired as diligently, you may need to verify hook counts more often. ***Remember, you should verify hook counts on at least 1/5 of a set of gear twice per week***.

#### When Halibut is the Predominant Species

Your sampling will change slightly when halibut is the predominant species. The following are the sampling protocols that change:

Average Weight Collection

Because of their size, halibut present a problem for observers when they are the predominant species on an IFQ vessel. When observing on halibut IFQ vessels, you will need to account for halibut on the line either by estimating and recording each fish's length or by collecting an average weight sample and applying it to halibut in your tally. If you decide to use an average weight collection, you will need to randomly collect at least 20 halibut per set. Do this by using a random starting point and either collecting the next "X" number of halibut or every "$n^{th}$" halibut. Ideally, you could weigh these selected fish, but as they may be far too large to weigh, you may use the halibut length to weight table.

Sex-Length Frequency/Otoliths

You will need to collect sexed lengths and otoliths for your Form 7 and Form 9 from the next predominant species in the catch. (Only collect lengths and otoliths from species listed on the priority list)

Halibut Injury Assessments

Vessels that have a halibut IFQ are allowed to retain halibut of legal size. The vessel crew are required to carefully release any undersized halibut. The IPHC is interested in the injuries caused to released halibut. In order to obtain an accurate representation of the total population, all halibut in your injury assessment must be measured. If you plan on measuring the halibut for an average weight sample and you want to use the same sample for your halibut injury assessment, the fish must be measured flat and a fork length recorded (see "Technique for Measuring Halibut" on page 10-5). For your sample, randomly collect halibut regardless whether they will be retained or not. Collect and measure all the halibut that are in this sample, ***but only assess the injuries of fish that are discarded***. Record the sublegal or discarded halibut with the injury code that you determined. Record the additional legal, retained halibut from your sample with a code 9, "Unknown," in the Injury column of the Form 7. ***Remember, do not sex halibut***. Always record a "U" in the sex column of the Form 7.

## CDQ Specific Information for Fixed Gear Catcher Vessels

Non-trawl catcher-only vessels (longline and pot) are given two options through CDQ regulations. Each option has its own requirements for observer coverage and equipment and operational requirements. To date, all non-trawl catcher-only vessels have chosen Option 1, however, it is possible a vessel will choose Option 2 in the future. Inquire as to whether the vessel will be fishing both IFQ and CDQ during a trip. Keep in mind that under Option 1, the vessel ***must retain all CDQ species during any trip that CDQ is landed,*** commencing with the first CDQ set. Thereafter, even during an IFQ set, all CDQ species must be retained if the vessel is also fishing CDQ during that same trip. Non-trawl catcher-only vessels cannot fish CDQ and open access or CDQ, IFQ and open access during the same trip if they are using Option 1.

Non-trawl catcher-only vessels fishing under Option 1 may fish 24 hours/day and have unsampled sets. In most cases you will be able to sample all sets given this vessel types fishing style. These vessels will not have an observer sampling station or a motion compensated platform scale.

Option 1 is a CDQ catch accounting option that requires the vessel operator to retain all groundfish CDQ and salmon PSQ until it is delivered to a shoreside processor. ***It is the vessel's responsibility to know which species are CDQ species.*** If they have questions please direct the operator to the NMFS Regional Office for clarification. Halibut and crab must be discarded by the vessel after you have had an opportunity to sample those species. Once delivered, the catch is sorted by species, weighed and reported to NMFS.

Under Option 1, delivery weights are used to manage the CDQ quota. If there is a plant observer it is their responsibility to monitor the offload. However, the regulations allow you (the vessel observer) to monitor the delivery if there is no plant observer. This is the only situation on an Option 1 vessel when the working hour limitations are in effect. The regulations state, "A separate CDQ observer for the shoreside processor is not necessary if the vessel observer can monitor the sorting and weighing of catch at the shoreside processor without exceeding the statutory working hour limits." This is usually only necessary at remote plants such as Adak Seafoods, but it may happen at other plants. If you are called upon to act as the plant observer do not fill out a Form A, simply document in your logbook that you monitored the sorting and

weighing of the catch and any problems that occurred. With the exception of monitoring for the retention of CDQ species and possibly acting as the plant observer, your duties are the same as in open access. For CDQ plant observer duties, see page 8-10.

Option 2 is a CDQ catch accounting option where catch may be sorted at sea. Observer data is used for all catch accounting and the processor's reports of landed catch weight are not used as the basis for CDQ catch accounting. If a vessel chooses this option, an observer sampling station and motion compensated platform scale are required. If you find yourself on one of these vessels, simply follow the sampling protocols for non-trawl C/Ps. Plants receiving CDQ catch from non-trawl catcher vessels using option 2 are not required to have the delivery monitored by an observer.

## CDQ Specific Information for Fixed Gear Catcher/Processors

Longline and pot C/Ps commonly participate in a variety of fisheries during any given trip. Unlike catcher vessels, C/Ps may harvest CDQ, IFQ, and open access fish during a trip. The vessel must notify you which sets are CDQ prior to bringing the catch onboard. The vessel must record a CDQ group number in their logbook for all CDQ sets to identify which group they are fishing for. Check the vessel's logbook information carefully when filling out your VHF, since a vessel may be fishing for several CDQ groups or participating in multiple fisheries.

Each CDQ set must be sampled for species composition and average weight. For each sampled set, determine OTC by extrapolating your sample data to the entire set. If a set is not sampled due to weather or illness calculate the OTC using 'like sets'. Document in your logbook why you were unable to sample the set and how you calculated the OTC. You must notify your inseason advisor if a CDQ set is not sampled. Do not refuse to sample or tell the vessel they can't fish if the platform scale is not functioning. Simply inform your inseason advisor of the situation and NMFS will take any necessary action (see "What To Do When the Platform Scale Fails" on page 2-14).

Sampling on this vessel type should be identical to sampling in open access, however, you will have an observer sampling station and a motion compensated platform scale. You must test the platform scale at least every 24 hours. All non-trawl C/Ps will have the ATLAS program so direct any sampling questions to your inseason advisor. While CDQ fishing, send daily catch messages.

If the vessel you are on is fishing under an alternative fishing plan, they have been approved by NMFS to fish with one Level 2 observer. Even with one observer, the vessel must fish in a manner that enables you to sample every CDQ set within the confines of your 12 hour schedule. Discuss fishing plans with the captain, inform him of your time constraints, and do your best to work with the vessel to find a fishing schedule that accommodates both parties.

## Marine Mammals

Interactions between longline fishing operations and marine mammals occur because marine mammals feed on the fish targeted by longliners and lifting the longline provides marine mammals easy access to the fish. When marine mammal predation is taking place, often only the heads, or just the upper and lower jaws of fish, are left on the hooks.

Whale predation is the most common form of marine mammal feeding interaction observed in the North Pacific. Orcas and sperm whales have been observed feeding on catch from longline gear in both the Bering Sea and Gulf of Alaska.

Signs of whale predation include, 1) raked carcasses, heads, or lips coming up on hooks where normally whole fish would appear and/or 2) whales diving on the longline.

You'll need to count carcasses, heads and even lips in your tally sample since these fish were caught by the line. Do not weigh partial fish as part of your weight sample; ***use only whole fish to obtain average weights***, and apply the average weight of the whole fish to any parts of fish tallied. If you are unable to identify a fish to species or group using just the head or lips left

on the line, include these animals as "unidentified fish" in your tally sample.

When marine mammal predation occurs, this should be documented in your logbook on a haul by haul basis. Important issues to address are:

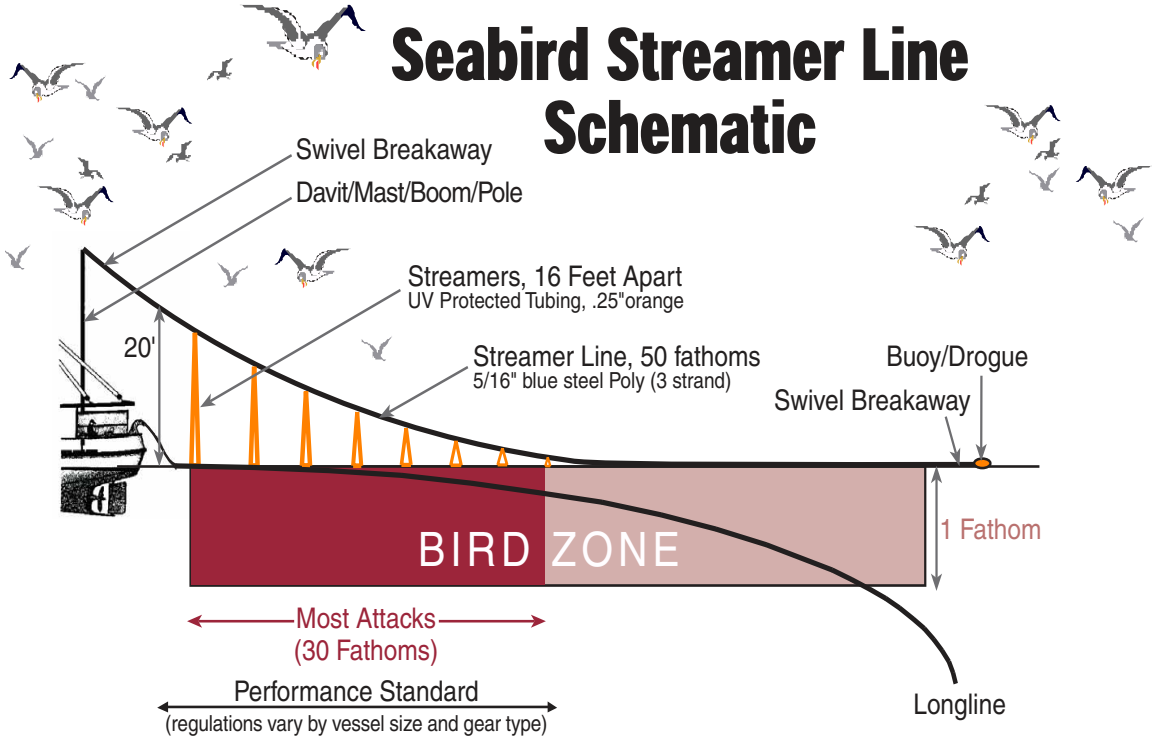
- How many marine mammals did you see around the line and what were the behaviors you witnessed?
- How much of your tally sample was made up of gear containing "preyed upon" fish?
- What is your estimate of how much of the total line had predation (i.e., were whales feeding from the line only before, during or after your tally or were they consistently feeding throughout the line)?
- How egregious was the predation (i.e., were whales taking only a few fish, were lots of heads left on the line for you to tally or was the line just empty, etc.)?
- How do you feel about the data you collected? Do you feel that it closely represented the true catch, or did the predation severely effect the composition and resulting OTC?

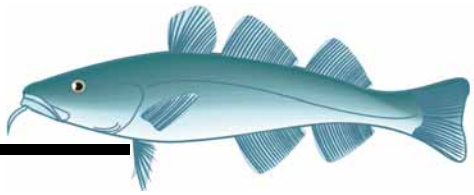
All marine mammal interactions must be fully documented on the Form 10A - Marine Mammal Interaction Data. For a more detailed explanation of how to document a marine mammal interaction see page 12-2 in the Marine Mammal Sightings and Interactions section of this manual.

## Seabirds

Longline vessels attract significant numbers of birds which feed on the fish discards. In addition to feeding on the discards, seabirds attempt to feed on the baited hooks as they are being set. Birds are often hooked or snagged and dragged down with the gear and drowned. Longline vessels are required to use streamer line seabird deterrent devices to reduce this possibility.

You are encouraged to notify the captain if you observe short-tailed albatross around the vessel. Based on this information, the captain may decide to take alternative or extra measures to reduce the likelihood of interacting with this endangered species. For information on observer duties in regards to seabirds, see "List of Priorities" on page 13-1.





# POT VESSEL DATA COLLECTION

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## List of Priorities

- Collect data and specimens from marine mammal and endangered sea bird mortalities. Rehabilitate endangered and threatened seabirds.
- Record the vessel's total fishing effort for every set retrieval.
- Sample for species composition and Official Total Catch (OTC) estimates.
- Send data to NMFS once weekly (unless otherwise instructed).
- Document any compliance concerns.
- Measure and assess viability of Pacific halibut. Measure and sex other prohibited species.
- Collect otoliths and sexed lengths from predominant species.
- Record calculations and daily logbook notes.
- Complete special projects.
- Record sightings of bird "species of interest."
- Record marine mammal sightings.

## Introduction

In 1998, observers served over 800 days on pot fishing vessels. The National Marine Fisheries Service defines pot fishing as using a stationary, buoyed line attached to a single trap, or traps attached to a longline, for the purpose of capturing fish. Although various species of crab are also fished with pots, groundfish observers are only deployed to monitor Pacific cod fisheries and some sablefish fisheries.

### Pot Fishing Operations

A pot used to fish groundfish consists of mesh panels attached to a rectangular metal frame. Pots vary in size, but cod pots are most often two meters by two meters by one meter. Fish are attracted by bait attached inside the pots. Mesh tunnels on either side of a pot allow fish

**Terminology**

**Bait bags/jars -** Containers filled with ground bait that are hung inside pots to attract fish.

**Bag -** Another name for a buoy.

**Block -** Hydraulically driven wheel that is used to retrieve line and lift pots.

**Bridle -** A length of line that attaches two sides of a pot to the buoy line.

**Bleeder/Sorter -** Crewman assigned to sort bycatch out of the catch, and to cut the isthmus (throat) of the cod.

**Chopper -** Machine used to grind frozen herring or squid for bait or the person assigned this duty.

**Coiler -** Person or machine that is designated to coil line as it is retrieved by the block.

**Diver/Trailer buoys -** A small buoy attached to the main buoy with a length of line. The diver buoy "trails" behind the main buoy and allows a larger target for grappling. Some fishers call the main buoy the diver buoy.

**Dogs -** Metal hooks that are hydraulically controlled to secure a pot to a launcher.

**Door -** A panel on a pot that can be unhooked and swung open to remove catch. The door is usually held shut by bungee cords.

**Fingers/Triggers -** Small plastic strips located in the tunnel of a pot which allow fish to enter a pot but not exit.

**Halibut excluder -** A divider located in the tunnel of a pot that restricts the size of the opening, preventing large halibut from entering the pot.

**Hook -** Usually a three pronged grappling hook used to snag the trailer buoy line.

**Launcher -** Hydraulic lift, usually located on the starboard side of a vessel, used to "launch" pots over the side of the vessel and to adjust the angle of the pot when it is being emptied.

**Longline Pots -** Some vessels targeting black cod will connect their pots to each other and create one string.

**Panel -** Mesh netting attached to a square metal frame. Two large panels and four smaller panels are attached to a heavy steel frame box to form the six sides of a pot.

**Pick/"Running the hook" -** Hook connected to the end of the boom which is attached to the bridle and is used to lift a pot onto the launcher as the pot is being retrieved.

**Plotter -** Electronic mapping device that displays the local area and the vessel's position on it. The plotter allows skippers to record the area of a string and also the number of pots in a string on a digital map display.

**"Run pots" -** A phrase used interchangeably with "retrieve pots". It is the phrase used in the vessel logbook to indicate the number of pots that have been retrieved from a string.

**Shot -** A pre-measured length of buoy line, usually 10 to 20 fathoms long. Normally there are two set lengths, a "Long" shot and a "Short" shot. When setting a string, the skipper will tell the crew how many shots to tie to a pot for various bottom depths.

**Stack -** This term is used on pot vessels to refer to pots stacked on the deck.

**String -** Generally pots are deployed individually and are not attached to one another in any way. This term refers to pots set at a similar time in a similar area and depth. What a skipper calls a string varies considerably between vessels. Strings are analogous to sets.

**Table -** Some vessels have a sorting table on the deck that pivots on one axis. The contents of a pot are dumped onto the table, and the table is swung out of the way to re-launch the pot.

**Tunnel -** Short mesh-lined openings on two or three sides of a pot. These are the entrances to the trap. Fish and crab are able to swim in but are unable to make their way back out due to the fingers/triggers.

**Figure 7-1 Pot Vessel Terminology**

to enter and plastic "triggers" prevent them from escaping. Halibut excluders are required for all pot groundfish fisheries. The excluders are fitted into tunnels to restrict the width of the opening. This prevents large halibut from entering the pots while permitting entry of smaller fish.

The deck of a pot boat is equipped with a launcher and a boom. The launcher is a hydraulic lift usually located on the starboard side of the vessel. The boom is a hydraulic crane usually on the port side of a vessel. To deploy a pot, the crew will use the boom to move a pot into the launcher. Metal hooks or "dogs" from the sides of the launcher grab the pot and hold it secure. The pot is then adjusted so that it is horizontal to the deck. A single length of line is attached to the pot and the coil is set next to the launcher. The pot is baited, the doors shut, and the pot is "launched" over the side. The coil of line plays out as fast as the pot is sinking. A set of buoys are attached at the end of the line with the vessel's permit number and often a pot number.

To retrieve a pot, a crew member tosses a grappling hook to snag the buoys. The buoys are dragged on deck and the line is placed into the rotating "block". The block retrieves the line and pulls the pot from the water. When the pot reaches the side of the boat, the picking crane is hooked to the bridle, then the pot is lifted and placed onto the launcher. The angle of the launcher can be adjusted to remove the catch or to redeploy the pot. The "dogs" on the sides of the launcher grab the pot and secure it as the pot door is opened and the contents are dumped into a tote or sorting table. Once all of the catch has been dumped into the tote or sorting table, the crew pulls the tote or table out of the way, sorts out the bycatch, bleeds the Pacific cod or removes the head of the sablefish (blackcod), and throws the fish into the hold.

If pots are to be redeployed, the bait bag is replaced, the doors are tied shut, and the launcher is lifted to slide the pot back into the water. If the pots are being stacked, the boom drags or lifts the pot to the back of the deck where it is placed on the stack and secured by pot ties and chains.

The pot is launched.

After soaking, it is retrieved,

and the catch is dumped for sorting.

Pots are deployed in units called strings. When the skipper decides to set gear, the crew prepares the pots and drops them overboard one at a time. The result is a row or string of pots. Pots may also be deployed in a cluster, grouped around favorable fishing bottom. Skippers use various means of recording the numbers and locations of pots set. Most use a computerized plotter, marking the latitude and longitude of each pot. Strings can be viewed on the screen as points connected with lines; each point representing a pot. Some skippers record detailed data on location, depth, and soak time into the NMFS logbook for each string. While others simply record the total numbers of pots retrieved in a day as one string, regardless of the set information.

## Safety Concerns on Pot Vessels

On a pot vessel, all work is conducted on deck. Be conscious of your surroundings at all times. Pot vessels have low rails over which the pots are lifted. Waves can easily wash crew and gear overboard. When you first arrive on a vessel, discuss with the deckboss or skipper which area would best allow you to access the catch. The area needs to have a clear view of the pots as they leave the water and are emptied. This area should also be located out of danger from swinging pots.

Discuss with the crew how best to collect samples. The best option may be to have the crew push full totes or swing the sorting table to you. Be sure to coordinate your activities around the movement of the pots. Be aware of coils of line attaching the buoys to the pot. These are deployed as the pot is launched and have been known to wrap around ankles and drag crew overboard. Pots may slip or jump from the launcher or the pots may break free from ties on the stack. Pots are very heavy, between 350 and 450 kg, and have crushed crew members. While sorting and weighing samples, check deck activity frequently and be attuned to the crew for danger warnings. Be aware of possible hazards and plan a safe response.

## Delineating Strings

One of the greatest difficulties faced by observers on pot vessels is determining what constitutes a string of gear. Pots are set individually, each with its own buoy. Though pots of a string may be set at varying depths, areas, and may have different soak times, skippers sometimes list them as a single, long string. Try to obtain the most discrete data you can, by working with the skipper, consulting the plotter, and tracking the gear retrieval yourself. Be sure to document in your logbook any difficulties you encounter when determining strings on your vessel.

## Fishing Effort Data From Vessel Logbooks

### Vessel Logbooks

Under regulation 50CFR679.50 (see “Records” on page 18-12), observers have the right to inspect and copy the NMFS logbook and all other documentation of fishing effort. You will be required to transfer the following information from the vessel logbook (see Figure 6-8 on page 6-19) to the Vessel and Observer Haul Forms for Trawl, Pot, and Longline (see Figure 6-9 on page 6-19 and Figure 6-10 on page 6-24).

- Date and Time of Gear Deployment
- Date and Time of Gear Retrieval
- Position of Gear Deployment- Latitude and Longitude
- Position of Gear Retrieval- Latitude and Longitude
- Average Sea Depth
- Individual Fishing Quota (IFQ), Yes or No
- Community Development Quota (CDQ) number, if applicable
- Number of Skates or Pots

In addition, you need to record in your logbook information on any problems associated with the retrieval of the pots. This information is not recorded in the vessel logbook. Ask the person responsible for entering information in the vessel’s logbook to record missing pots or problems with pot retrieval somewhere on the logbook page or on a separate page for you.

### Verifying Logbook Information

Before copying anything from the vessel logbook to your data forms, you must verify that the data reported are accurate. Misunderstandings about how the log is filled out are possible. Note that unlike trawl and longline vessels, observers on pot boats may use different haul data than that from the vessel logbook. You may break a “string” into several separately recorded units, or combine several units into one string if it will provide better data. Please note that this requires that you work closely with cooperative vessel personnel in order to record the correct time and

position data for any altered sets. Because of this, you should undertake this endeavor only if you are sure it will increase the accuracy of your data, and that you will be able to obtain the correct haul data. In any case, you should verify the following logbook entries:

**Date and Time of Gear Deployment, and Date and Time of Gear Retrieval**

Whenever possible, note the time when the crew begins to deploy gear and note the time the last pot is retrieved for a set. You will not be able to verify deployment or retrieval times for all sets. For unverified sets, rely on the information provided by vessel personnel in the vessel's logbook. If your vessel's logbook contains erroneous times, let the officer in charge of the logbook know about the error. If the incorrect data continues to be logged, consult NMFS for advice on how to record your set data.

**Position of Gear Deployment and Position of Gear Retrieval - Latitude and Longitude**

The Begin Position of Set is the position of the vessel when the first pot of a string was deployed. The End Position of Set is the position of the vessel when the last pot of a string was retrieved. The captain or a mate reads these positions from the GPS navigation system located on the bridge. Occasionally, check that the positions listed in the vessel's logbook match that on the GPS display during the retrieval or deployment of a string. Review positions listed in the vessel's logbook. Question any large changes in position between one set and the next if you have not had a long run between sets. The person responsible for the logbook may have incorrectly entered the position.

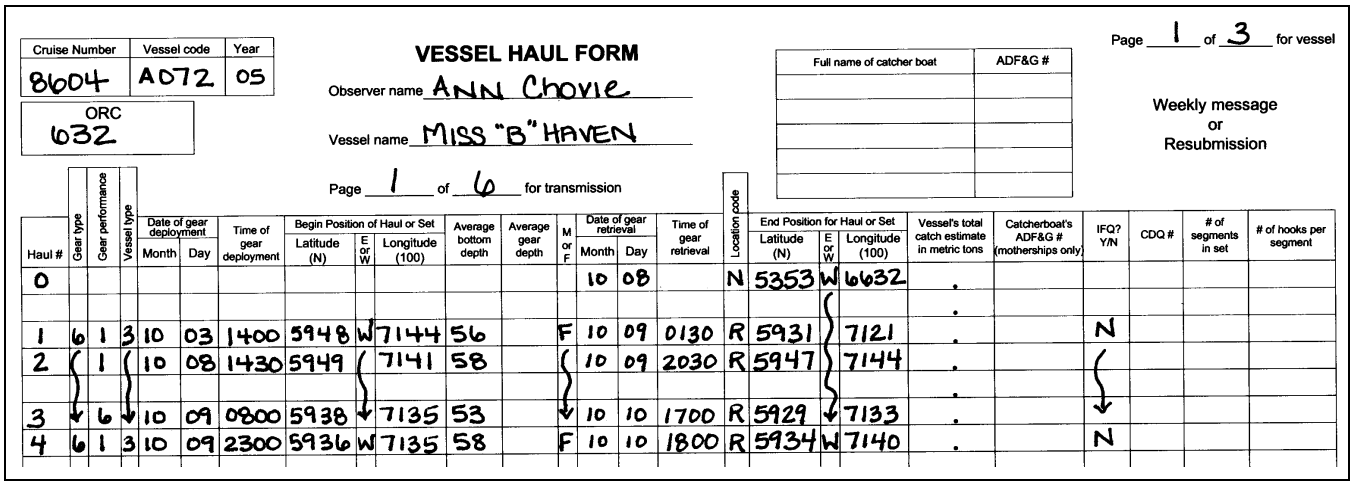
**Number of Skates or Pots Run**

The total number of pots retrieved in a string are key pieces of data needed to determine OTC. Never rely solely on the number of pots the skipper lists as being run for your total number of pots in a set. Due to the variability in gear deployment and differences in how skippers log the number of pots in a string, you will need to develop a method for verifying the number of pots retrieved. Actual counts of the pots are the most reliable. While on deck you may be able to tally all the pots in a string. If it is not possible to count all the pots in a string, count the number of pots in an identifiable section of a string, and cross check these numbers with the plotter and skipper's logbook. Make sure to check and verify the "Pots Lost" column and subtract lost gear!

## Vessel Haul Form for Pot Vessels

The Vessel haul form is used for recording fishing effort data from all gear types. For most of the columns on the Vessel Haul Form, refer to the Longline section starting on page 6-23. Listed below are some specific rules for pot vessels.

- **Gear Type** code for a pot or trap vessel is 6
- There are three **Gear Performance** codes applicable to pot vessels:
  - 1- No Problem
  - 5- Miscellaneous problem in retrieving gear, write explanation in the "Notes" area of the OHF
  - 6 - Problem - pots were lost
- **# of Segments in Set:** Leave this field blank.
- **# of Hooks per Segment:** Leave this field blank.



| Cruise Number | Vessel code | Year |
|---|---|---|
| 8604 | A072 | 05 |

ORC 632

VESSEL HAUL FORM

Observer name ANN Chovie

Vessel name MISS "B" HAVEN

Page 1 of 6 for transmission

| Full name of catcher boat | ADF&G # |
|---|---|
| | |
| | |
| | |
| | |
| | |

Page 1 of 3 for vessel

Weekly message or Resubmission

| Haul # | Gear type | Gear performance | Vessel type | Date of gear deployment Month | Date of gear deployment Day | Time of gear deployment | Begin Position of Haul or Set Latitude (N) | E or W | Longitude (100) | Average bottom depth | Average gear depth | M or F | Date of gear retrieval Month | Date of gear retrieval Day | Time of gear retrieval | Location code | End Position for Haul or Set Latitude (N) | E or W | Longitude (100) | Vessel's total catch estimate in metric tons | Catcherboat's ADF&G # (motherships only) | IFQ? Y/N | CDQ # | # of segments in set | # of hooks per segment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | 10 | 08 | | N | 5353 | W | 6632 | . | | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 1 | 6 | 1 | 3 | 10 | 03 | 1400 | 5948 | W | 7144 | 56 | | F | 10 | 09 | 0130 | R | 5931 | | 7121 | . | | N | | | |
| 2 | | 1 | | 10 | 08 | 1430 | 5949 | | 7141 | 58 | | | 10 | 09 | 2030 | R | 5947 | | 7144 | . | | | | | |
| | | | | | | | | | | | | | | | | | | | | . | | | | | |
| 3 | | 6 | | 10 | 09 | 0800 | 5938 | | 7135 | 53 | | | 10 | 10 | 1700 | R | 5929 | | 7133 | . | | | | | |
| 4 | 6 | 1 | 3 | 10 | 09 | 2300 | 5936 | W | 7135 | 58 | | F | 10 | 10 | 1800 | R | 5934 | W | 7140 | . | | N | | | |

**Figure 7-2 Vessel Haul Form (pot vessel)**

## Observer's Fishing Effort Information

### Official Total Catch (OTC) and the Observer Estimate

One of your most important tasks is to calculate the observer estimate and the official total catch (OTC). The accuracy of these estimates depends upon the accuracy of your sample weights, and pot counts. If these figures are skewed or biased, your OTCs will be biased as well. Every calculation for observer estimates or OTCs must be documented in your logbook. Thorough documentation will ease verification of calculations and speed the debriefing process.

**Strings Sampled for Composition**

If you have sampled the string for species composition, the observer estimate will always be the same as the OTC. Use the formula shown below to determine the observer estimate and official total catch (OTC) for sampled strings on a pot vessel.

$$\frac{\text{sample weight}}{\text{pots sampled}} = \frac{\text{Observer Estimate and OTC}}{\text{total pots retrieved}}$$

- **Sample Weight -** The total weight of all the species in your composition sample. The sample weight appears on the 3US Species Composition form at the top of the column under species weight. For ATLAS Vessels add all of the weights in the total weight column.
- **Pots Sampled -** The total count of all the pots that were sampled for a string.
- **Total Pots Retrieved** - The total pots retrieved from a string. Do not include lost pots!

**Unsampled Sets**

You must account for every string retrieved on a deployment. Every string must have an OTC recorded. For strings that are unsampled employ a "sum of like strings" to determine OTC. This method for calculating an OTC is an estimation of catch based on catches from similar areas, depths, and times. Since actual measurements are unavailable and vessel estimates may be unreliable, "sum of like strings" is the best alternative available.

**Never use the vessel's estimate for OTC on a pot vessel unless instructed to do so by NMFS staff.**

When you are determining the OTC for an unsampled string, you must use more than one "like string" for your "sum of like strings" calculations. "Like strings" should be ***close in proximity to the unsampled string and deployed near the same date, time, and depth***. In most circumstances, you will be able to use the strings just before and after your unsampled string. The number of pots in a string in the comparison strings do not need to be similar for the calculation of "like strings."

To determine the OTC for an unsampled string, sum the total sample weights from several sampled "like strings" and divide this by the total number of pots sampled for these strings. This will give you a weight to pot ratio, i.e., the average weight (in kilograms) of organisms caught per pot. Multiply this ratio by the total number of pots in the unsampled string to obtain the OTC. An unsampled string will never have an observer estimate. Leave the observer estimate column blank. Document all calculations in your logbook.

| "Like" Sets | | Unsampled Set |
|---|---|---|
| $\sum$ sample weights | = | OTC of unsampled set |
| $\sum$ pots sampled | | total pots retrieved of unsampled set |

- **Sum of the Sample Weights** = The total weight of everything in the "like strings'" composition samples.
- **Sum of the Pots Sampled** = Number of pots of the "like strings" sampled.
- **Total Pots Retrieved** = The total pots run in the unsampled string.

| Cruise Number | Vessel code |
|---|---|
| 8604 | A072 |

**OBSERVER HAUL FORM**

Page 1 of 3 for vessel

Observer name ANN Chovic

Vessel name Miss "B" HAVEN

| Plant / Processor name | Location | Processor code |
|---|---|---|
| UNISEA Inc. | Dutch Harbor | F05310 |
| | | |
| | | |
| | | |

Page 2 of 6 for transmission

| Haul # | Haul sampled by (cruise no.) | RST on haul? (y= on, n= off, x= n/a) | RBT on break? (y= on break, n= no break) | % Monitored for marine mammals | Bird deterrence device (longline) | Trawler seabird sample type | Total hooks or pots in set | Official Total Catch (OTC) in metric tons | Observer's catch estimate in metric tons | B, C, or W | Density in mt/m³ | Processor code (for catcher vessels only) | Date fishing began for delivery Month | Date fishing began for delivery Day | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | . | . | | . | | | | |
| | | | | | | | | . | . | | . | | | | |
| 1 | 0 | X | N | | | | 20 | 1.98 | . | | . | F05310 | 10 | 03 | |
| 2 | 8604 | X | | 33 | | | 48 | 1.43 | 1.43 | | . | | | | |
| | | | | | | | | . | . | | . | | | | |
| 3 | 8604 | X | | 33 | | | 30 | 2.31 | 2.31 | | . | | | | Lost 2 pots |
| 4 | 8604 | X | N | 33 | | | 25 | 1.42 | 1.42 | | . | F05310 | 10 | 03 | Offloaded @ UNISEA 2200 HRS |

**Figure 7-3 Observer Haul Form (pot vessel example)**

## Observer Haul Form for Pot Vessels

The Observer Haul form is used for recording fishing effort data collected by observers from all gear types. Follow the same guidelines as for the Vessel Haul Form. For most of the columns on the Observer Haul Form, refer to the Longline section starting on page 6-22. Include the same spacing and zeros for non-fishing days as you have entered on the Vessel Haul form. Always start a new Observer Haul Form when you start a new Vessel Haul form. Keep the data from each vessel you are assigned on separate sets of forms. Listed below are some specific rules on how to complete the Observer Haul Form for pot vessels.

**The most common OHF errors are missing processor codes and missing OTCs. The haul data is not available to inseason managers when these field are null. Check these fields carefully before sending your data!**

- **% Monitored for Marine Mammals:** This is the percent of the gear you monitored for the presence of marine mammals. Divide the number of pots you watched being retrieved by the total number of pots in the set to obtain this number. See "Marine Mammal Monitoring" on page 12-2 for duties relating to marine mammals.
- **Bird deterrence device:** Leave this column blank.
- **Trawler seabird sample type:** Leave this column blank.
- **Total Hooks or Pots in Set:** Enter the total number of pots for the set. ***Do not include lost pots!*** Total Pots must be a whole number. There must be an entry in this field for each set.
- **B, C, or W:** Leave this column blank.
- **Density in mt/m3:** Leave this column blank.

## Composition Sampling

### When to Sample for Species Composition

In the pot fishing fleet, there are vast differences in the amount of gear each vessel fishes and how quickly each vessel retrieves and deploys gear. Many catcher vessels do not retrieve pots at night, some vessels spend days prospecting or pulling a few short strings and catcher processors, with larger crew sizes, may set and retrieve pots around the clock. All of these factors will affect your ability to sample for species composition on these vessels. Develop sampling strategies to randomly sample as many strings and pots within a string as possible, while keeping in mind all the other observer duties.

A skipper may utilize one of two strategies in deploying pots; he may set one long string of pots or he may set several, smaller groupings of pots. How you sample will be determined by the skipper's method of setting gear.

- For several short strings of pots use the appropriate random sample table (RST) to determine which strings to sample or use the random break table (RBT). If the strings have greater than 20 pots, use a random sampling frame to sample at least 1/3rd of the pots retrieved from each string. When strings have less than 20 pots, observers are generally able to sample every pot in the selected string.
- If the skipper sets one or two long strings of gear per day, sample every string. Use a sampling frame to sample at least 33% (one third) of the pots retrieved from each string.

### Random Sampling Frame

Sampling all of the pots in a string is preferred over using a random sampling frame. Sampling all pots would require you to count and/or weigh everything in every pot of a string. This may be possible in many situations, but when it is not, you must use a random sampling frame to determine a manageable number of pots to sample.

**Spatial Sampling Frame**

The sampling frame for the spatial method on a pot vessel is the total number of pots in a string.

Employing a spatial sampling frame requires the ability to identify when selected pots are pulled. This may be accomplished by working closely with the skipper and crew. You may be able to track this information using the plotter or, for smaller strings, actually counting pots retrieved while sampling on deck.

To use a spatial sampling frame on a pot vessel:

1. Determine the total number of pots in a string.

2. Determine your sampling units. For example, divide the string into units or groups of pots. A string of 70 pots could be split into 70 separate units, seven units of ten pots, or any other grouping where there are an equal number of pots in each unit. Base the number of pots in your sampling unit on the amount of bycatch that can be stored in the fish collection area. On vessels with space available you may be able to have a larger sampling unit, while on vessels where space is limited you may need to have smaller sampling units.

3. To obtain the total number of sampling units in a string divide the total number pots in a string by the number of pots per sampling unit.

4. Number the units consecutively starting with one and randomly select at least a third of the total units to sample. Use the Random Number Table, dice, numbers from a hat, or any method that is truly random to select units to sample.

**Temporal Sampling Frame**

**With a temporal frame, you determine the total number of pots sampled by counting them. Do not use "pots per time" to determine the number of pots sampled.**

Another method of applying a random sampling frame on a pot vessel is a temporal or timed sampling method. The frame for the temporal method is the total time required to retrieve all the pots in a string. The sampling units in a temporal sampling frame are intervals of time. Consider a temporal sampling frame when you are unable to keep track of individual pots in a string. This method requires the ability to know approximately how long it takes to pull a given string of gear. You do not need to know the exact amount of time it takes to retrieve a string of gear. An estimate close to the actual retrieval time will suffice. This method is most appropriate for long strings.

To use a temporal sampling frame on a pot vessel:

1. Estimate the amount of time it takes to pull a string of gear.

2. Split this time into equal time intervals.

3. Use a random method to select at least 33% (one third) of the time intervals to sample. The Random Number Table, dice, or numbers from a hat could be used to predetermine which intervals are to be sampled.

4. Sample all the pots that are retrieved within the time interval, make sure to count the number of pots sampled for your sample size.

**Systematic Sampling**

A systematic sampling frame is comprised of several sample periods which are of equal numbers of pots or times separated by non sampled periods of a consistent number of pots or times. In designing your sampling frame keep in mind that you must sample at least one-third of a string and have a random starting point. You can conduct a systematic sample either spatially or temporally. Like the spatial and temporal frames, the systematic sampling population is the total number of pots or the total amount of time it requires to retrieve a string.

**Systematic sampling can be used instead of a spatial or temporal frame if you want a more significant pause between the tally and non-tally periods**

The first step in conducting a systematic sample is to determine which framework you wish to use. When you can accurately count the pots as they are being retrieved the spatial systematic sampling frame will be easiest. If you cannot keep track of pots, a timed method will be more applicable. The following explanation makes reference to pot units only, but remember that you can treat units of time in the exact manner as pots in a systematic sampling frame.

After you have determined the type of systematic frame you wish to use, follow the instructions below to devise a sampling frame for the specific set.

When you use a timed systematic sampling frame, sample size is determined by pot count. Therefore, you must count all the pots while sampling.

1. Determine the size of your sample units. Base your decision as to the size of your sample unit on how long you can stand on deck sampling and on how much bycatch can be stored in the fish collection area. You may select any number of pots as your sampling unit. In Figure 7-4, the sampling unit is 2 pots.

2. Divide the string into sampling units. If the total number of pots is not evenly divisible by the number of pots in a sampling unit, there will be remaining pots. Any remaining pots should be counted as a separate sampling unit. Number the total sampling units in the string consecutively starting at one. Make a diagram similar to Figure 7-4 in your logbook.

**Figure 7-4 Systematic Sampling Frame Example**

| ***Sampling frame for a set with 17 gear segments and a sampling unit of two gear segments*** | | | |
|---|---|---|---|
| Gear Segments | Sampling Units | Gear Segments | Sampling Units |
| 1 | Unit 1 | 9 | Unit 5 |
| 2 | | 10 | |
| 3 | Unit 2 | 11 | Unit 6 |
| 4 | | 12 | |
| 5 | Unit 3 | 13 | Unit 7 |
| 6 | | 14 | |
| 7 | Unit 4 | 15 | Unit 8 |
| 8 | | 16 | |
| | | 17 | Unit 9 |

3. Determine what fraction of a string you wish to sample, i.e. 1/3, 2/5, 1/2, 2/3. The Observer Program requires that you tally sample at least 33% or 1/3 of each string. Your sampling pattern will be groups of a sampled unit or units followed by units that are not sampled. For example, if you wish to sample 1/3, your sampling pattern would be to sample one unit, not sample the next two, sample one unit and not sample the next two, etc., over the course of the entire string.

4. Determine which sampling units you will sample.

- Pick a random number between one and the total number of sampling units. The randomly selected sampling unit will be the first sampled unit in your sampling pattern.
- Using the sampling diagram made in step 2, plot your sampling pattern starting with the randomly selected unit.
- At the end of the first sampling pattern, plot the sampling pattern again, repeat plotting the sampling pattern until the end of the string. When the last sampling unit of the string is reached, loop back to the first sampling unit and continue to plot your sampling pattern until you reach the sampling unit at which you started.

For example, in Figure 7-5 if you determined that you were going to sample 1/3 of the string and then randomly selected a five, you would mark unit 5 as sampled, and units 6 and 7 as not sampled, unit 8 as sampled, units 9 and 1 as not sampled, unit 2 as sampled and units 3 and 4 as not sampled.

**Figure 7-5 Selected Units of a Systematic Sampling Frame**

| ***Set with 17 gear segments and a sampling unit of two gear segments*** | | | |
|---|---|---|---|
| Gear Segments | Sampling Units | Gear Segments | Sampling Units |
| 1 | Unit 1 | 9 | Unit 5 |
| 2 | | 10 | |
| 3 | Unit 2 | 11 | Unit 6 |
| 4 | | 12 | |
| 5 | Unit 3 | 13 | Unit 7 |
| 6 | | 14 | |
| 7 | Unit 4 | 15 | Unit 8 |
| 8 | | 16 | |
| | | 17 | Unit 9 |

5. Sample the string according to your sampling diagram. For the string in Figure 7-5 you would sample pots 3, 4, 9, 10, 15, and 16. Pots 1, 2, 5, 6, 7, 8, 11, 12, 13, 14, and 17 would be your non-sample periods.

## Sampling Methods

### Tally Sampling

Collection of species composition samples will depend on the amount of gear retrieved, the speed of gear retrieval, and the amount of fish that is being caught. When there is little catch, all of it may be sorted, counted, and weighed from each sampled pot. Most often this method will not be possible. When counting and weighing everything in a pot is not possible, you should **1)** tally the predominant species and **2)** count and weigh all other catch from the selected pot. The number of individuals of the predominant species will later be multiplied by average weights of each predominant species to obtain a total weight for the sample.

As a pot is dumped into a tote or onto a sorting table, count the predominant species using thumb counters and collect all other bycatch in a separate tote or your blue baskets. At the same time, randomly collect fish of each species that you are tallying for average weights. You must collect approximately 50 individual fish of each species tallied for every string sampled. If there are significantly less than 50 individuals of a species in your sample you should weigh all of them. Therefore, you must retain all rare or non-predominant species.

### Collecting Catch for Average Weights

How you collect catch for average weights will depend on the configuration of the vessel, how the crew processes the catch after dumping it from the pot, and how much is being caught in each pot. The best way to obtain fish for average weights is to randomly determine which of the sampled pots to collect fish from prior to gear retrieval. Number the sampled pots consecutively from 1 to the total number of sampled pots. Use the random number table to determine the pot or pots from which you will collect catch for average weights. It is often difficult to know exactly how many pots you will need, and in many instances you may need to rely on haphazard sampling. Try to use a random sampling frame as often as possible. If this does not work, do the best you can and document how you determined when to collect catch for average weights.

If there is an extra tote on board, have the crew place all the catch from the selected pot into this tote. Move the tote out of the way of the crew and any swinging

pots. If possible, weigh everything from the selected pot. This will help you avoid hand selection of fish. If there are greater than 50 individuals of a species, devise a system to avoid hand selection. For example, if the catch is dumped into a tote, divide the tote into halves or quarters and select all the fish from a randomly selected side or quarter. If you are collecting fish from a sorting table, mark the table into sections and pull the fish from a randomly determined section.

**Tips for Sampling on a Pot Vessel**

As the vessel is retrieving gear, there is generally enough time between pots to weigh fish from the predominant species for average weights and to weigh bycatch. There may even be enough time to measure fish for length frequencies. Sometimes it helps to have the crew show you how to bleed or cut the fish in your sample in the same manner as they do. The crew tends to be more willing to cooperate with your sampling needs when you make attempts to reduce your effect on their processing time. This may be accomplished by bleeding or cutting the fish in your sample yourself. Processing the fish in your sample is not required and should not be done if you find yourself running low on time.

### 3US Species Composition

Follow the instructions given on page 6-14 of the Longline section. There are two differences for filling out the form:

- **Sample type** must be "T" for trap.
- For **Quantity Sampled** column enter the total number of pots sampled.

### Atlas Deck Forms

For vessels having the ATLAS AtSea transmission system, observers use the ATLAS deck forms. The ATLAS deck forms are filled out in the same manner as on a longline vessel, refer to page 6-16 in the Longline section. Average weights and tallies should be recorded in the first two columns; total number and weight should be listed in the right hand column. All fields must be complete (see page 6-16).

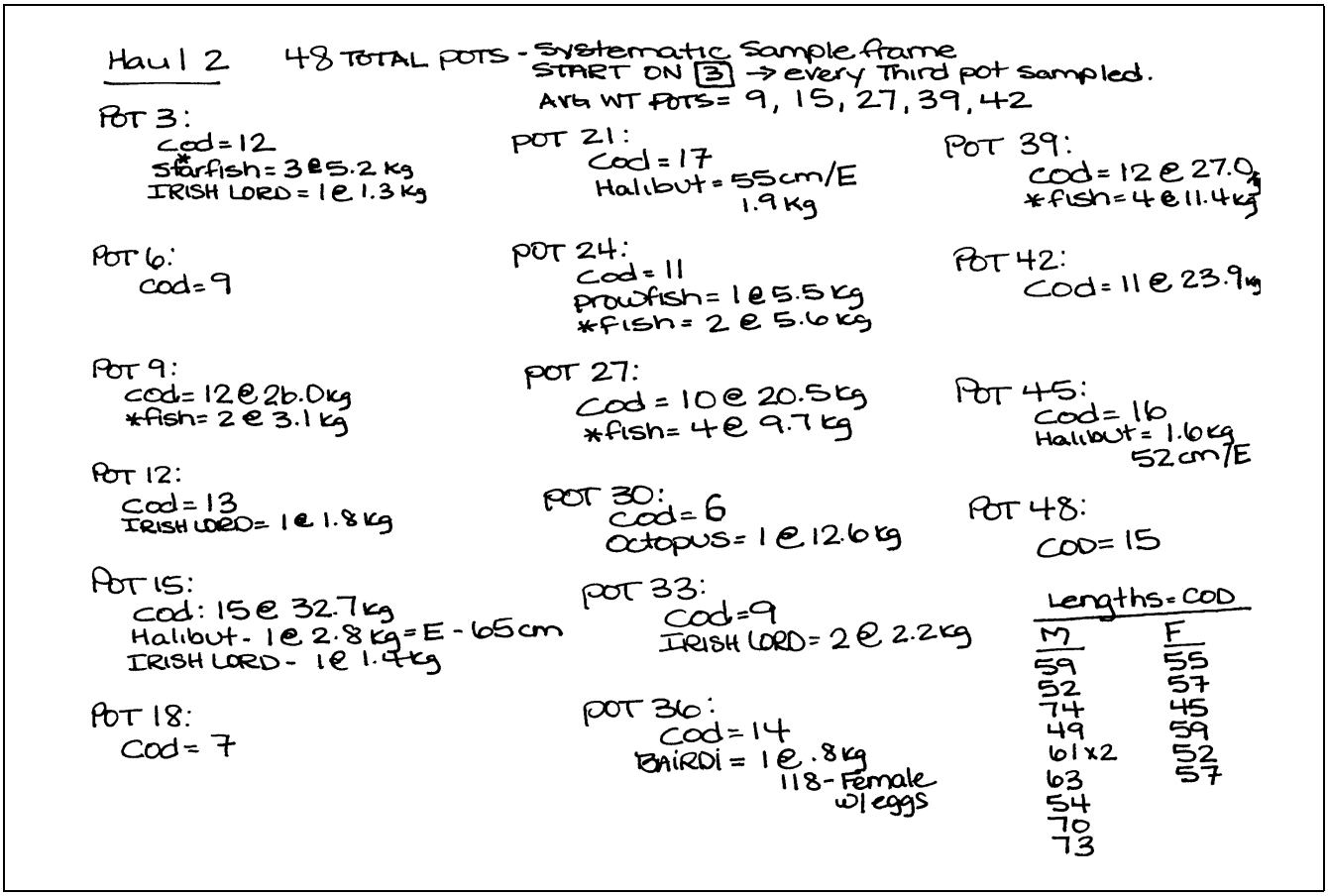



**Figure 7-6 Raw Data Deck Sheet and Corresponding Form 3US (Haul 2)**

FORM 3US – SPECIES COMPOSITION Ann Chovie – F/V Miss "B" Haven Page 1 of 2

| Species: | P. COD | | | | | |
|---|---|---|---|---|---|---|
| Wt. of above: | 130.1 kg | | | | | |
| No. weighed: | 60 | | | | | |
| Avg. weight: | 2.1683333 | | | | | |

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 8604 | A072 | 05 | 10 | 09 | 2 |

ST = Sample Type
B = basket L = Longline
P = partial haul T = Trap/pot
W = whole haul

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| Species Name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Quantity sampled (hooks, pots, or kilograms) | % retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 1843 | + | 215 | 476.71 | X | 100 |
| HALIBUT | | 101 | T | 3 | 6.3 | 16 | |
| SALMON | | 220 | | 0 | 0 | | |
| KING CRAB | | 2 | | 0 | 0 | | |
| BAIRDI TANNER | F | 4 | | 1 | 0.8 | | |
| HERRING | | 611 | | 0 | 0 | | |
| P. COD | | 202 | | 189 | 409.81 | | 100 |
| IRISH LORD | | 418 | | 5 | 6.7 | | 0 |
| STARFISH | | 20 | | 15 | 35.0 | | 0 |
| PROWFISH | | 205 | | 1 | 5.5 | | 0 |
| OCTOPUS | | 60 | T | 1 | 12.6 | 16 | 0 |

**Figure 7-6 Raw Data Deck Sheet and Corresponding Form 3US (Haul 2)**

## Halibut on Pot Vessels

### Assessing Halibut Viability

The criteria for assessing viability on a pot vessels differs somewhat from that used for assessing trawl caught halibut. The main issues to be concerned with on pot vessels are listed in "Halibut Condition Criteria For Pot Bycatch" on page A-40. Halibut used in viability samples must be in your hands and actually measured. Length estimates are not acceptable. All halibut viabilities must be recorded on the Form 7 or in the ATLAS program. Use E-(excellent), P-(poor), and D-(dead) in the **Viability** column. For halibut viability place a U in the sex column and leave the injury column blank.

Halibut for viability assessments must be randomly selected from sampled sets. Halibut assessed for viability do not need to come from your species composition sample, but they should reflect how the vessel handles the fish. If the vessel is not catching many halibut, it is easiest to assess the viability of every halibut in your composition sample.

If the vessel is catching a great deal of halibut, randomly select individual pots and assess halibut viabilities from all the halibut in these pots. Number the pots and then use the random number table to select an appropriate number of pots. Determine the number of pots to sample for halibut viabilities by estimating the number of halibut that could be in each pot. Assess a maximum of 20 halibut per day for viability.

In your logbook, document all methods you employed for collecting fish and assessing viabilities. Use your best judgment to determine how much time you can spend assessing halibut viabilities. If you assess less than 20 halibut per day, record in your logbook what factors limited your ability to conduct viability assessments.

### Other Halibut Related Issues on a Pot Vessel

If the vessel is catching a great deal of halibut make sure to verify that the halibut excluder devices are in place. The halibut excluders are required. In your logbook, record any instances of missing excluders. For a specific definition of halibut excluders that must be used see "Groundfish Pots Requirements" on page 18-17.

In addition, be aware of how the crew is discarding halibut. The fish should be supported as it is lifted or slid off the deck. The spine of halibut can be broken by mishandling, especially lifting the halibut by the caudal peduncle. In your logbook, record any incidences of

the crew lifting halibut by the caudal peduncle or any other mishandling of halibut by the crew.

## Fish Measurements on a Pot Vessel

Your duties for collecting predominant and prohibited species measurements and other biological data are the same as for all other vessels. How these duties are conducted may be further constrained on a pot fishing vessel by the lack of cooperation from crews. In your logbook document any difficulties encountered and the methods you employed. If you are having difficulties with cooperation from the crew please refer to see "Uncooperative Crews" on page 6-25 for further instructions.

## Vessels Fishing IFQ and CDQ

### IFQ

All longline and pot vessels (IFQ and non-IFQ) use the same logbook. However, data is entered differently depending on if the vessel is fishing for IFQ species or not. On the vessel logbook (see Figure 6-8 on page 6-19), check the columns "IFQ Halibut" and "IFQ Sablefish." A > 0.00 entry in these columns indicates IFQ fishing. For a more detailed description of IFQ, (see page 6-25).

### CDQ

For information about your duties during CDQ, see "CDQ Specific Information for Fixed Gear Catcher Vessels" on page 6-26 or see "CDQ Specific Information for Fixed Gear Catcher/Processors" on page 6-27.

# SHORESIDE PLANTS AND FLOATING PROCESSORS

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## List of Priorities

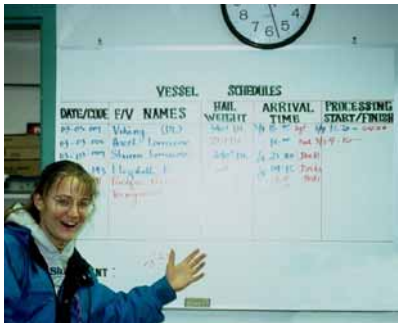
- Verify delivery weights for as many deliveries as possible
- Prepare and distribute a Delivery Weight Verification explanation
- Collect Form A data from captains, logbooks, or vessel observers
- Record delivery information on the Form A
- Assist vessel observers
- Collect lengths and age structures

## Introduction

When you are assigned to a shoreside plant or floating processor, your duties and priorities are different from those of a vessel observer. You are responsible for gathering data from incoming vessels making deliveries to your facility. You are also responsible for assisting vessel observers and informing them of the particulars of your plant. Lastly, you may be responsible for gathering length frequency data and age structures on the target species your plant is accepting. Plant observers also transmit their data to NMFS at least once each week.

How your employer assigns an observer to a plant can vary, and some observers may be assigned to cover two plants at once. Regardless of how many plants you are assigned to, your time will be under a great deal of demand. It is important that you understand all of your duties and their relative priority when you arrive. This assignment will be very different than sampling aboard a vessel, so please read this entire section carefully, and refer to it often.

## Delivery Schedule




In order to gather fishing effort and biological data, you will need to know when to expect delivering vessels. Most plants have a "radio schedule" between one and three times daily. From the radio schedule, the plant personnel will prepare a delivery schedule. You will need to either attend the radio schedule, or get a reliable copy of the delivery schedule. It is vital that you communicate with the person(s) responsible for updating these schedules. They are not definitive schedules, and changes occur frequently, so it is important to check them often in order not to miss vessels! Check in with the plant frequently. Your physical presence at the plant is important, and plant personnel are more willing to cooperate with a person whom they see on a regular basis.

Plant observers often have the unique situation of being on land. This presents opportunities to move about, and possibly not always be at your duty station. It is ***expected*** that plant observers be available to meet every delivering vessel. You may decide if you can leave the plant and still accomplish all your duties for a given day. However, missing deliveries due to being absent from the plant is grounds for an unfavorable deployment evaluation and, depending on severity, could be grounds for decertification.

## Observer Provider Responsibilities

According to 50CFR679.50 (i) (2) (vi) observer provider companies are responsible for, providing all logistics to place and maintain the observers aboard the fishing vessels or at the site of the processing facility. This includes all travel arrangements, lodging and per diem, and any other services required to place observers aboard vessels or at processing facilities. Each observer deployed to shoreside processing facilities shall be provided with a working cell phone or pager for notification of upcoming deliveries. If accommodations are more than 1 mile from the assigned shoreside processing facility the observer will be provided with motorized transportation. Therefore, it is your employer's responsibility to ensure that you have adequate transportation to the plant from your lodging. If you are unable to perform your duties as an observer because there is no reliable transportation to the plant, please contact a NPGOP office. If your accommodations are inadequate, contact NMFS and let your employer know about the problem.

## Collecting Delivery Information

One of your duties as a plant observer is to gather haul information from the various vessels delivering to your plant. These data are recorded on the Form A. Each day you are assigned to the plant must be accounted for on this form, even if there are no deliveries that day. The required information can be gathered in a variety of ways. You will likely use a combination of the following:

- **Ask the vessel observer.** This is a great way to get reliable data for a delivery, but obviously only works when there is a vessel observer. Asking the observer is the most accurate method of getting information.
- **Consult the vessel's logbook.** If there is no observer aboard, you can get the gear type, fishing start date and NMFS area from the delivering vessel's NMFS logbook. You should always introduce yourself as the plant Observer, and inform the skipper of what information you are looking for in the logbook.
- **Interview the captain.** Vessels under 60 feet long are not required to carry NMFS logbooks, so you will need to ask the skipper for the pertinent data. At the King Cove-Peter Pan, Trident-Sand Point, the southeastern Alaskan and Kodiak plants, these boats will make up the majority of your delivering fleet. In the past, Observers have made up "worksheets" for the captain to take with him for each trip, and this is occasionally successful.

Regardless of which method you use, it is important to meet each vessel at the dock when it comes in, and to establish a working relationship with the captain and vessel observer.

## ADF&G Fish Tickets

If you determine that ADF&G fish tickets are the most reliable way to obtain verified delivery weights, it is important that they are read correctly. Familiarize yourself with how the processor personnel fill out the fish tickets at your plant. You will need to pass along this information to vessel observers on delivering catcher vessels, and make sure that they are getting the information they need to calculate official total catch for the hauls delivered.

### Round (Whole) Weight Delivered

Round weight is the weight of the entire fish, as it was when it was alive. In some fisheries, such as Pacific cod and sablefish, the catcher vessels begin processing their catch at sea. Pacific cod is usually bled and sablefish are usually headed and gutted. Since parts of the fish have been removed prior to delivery, the recorded delivery weight must be adjusted to represent a delivery whole weight. To do this you convert the recorded delivery weight using the appropriate NMFS product recovery rate (PRR.) The product recovery rate is the average percentage of the fish used to make a product. By dividing the delivery weight by the PRR, you calculate the round weight of the fish (see page A-17).

## Verifying Delivery Weights

As a plant observer, you will often need to provide delivery weights to vessel observers. During your first few days at the plant you should determine the best method of obtaining this number. Two ways to obtain delivery weight are: **1)** actually sum the scale weights, or **2)** interpret the ADF&G fish ticket. Summing actual scale weights is preferred, but if you find that the fish tickets are consistently accurate when checked against summed weights, you may use them. If you determine that the ADF&G fish tickets are not reliable, do not use the fish ticket amount. Record your verified delivered weight whenever possible. When you are not on hand to record the scale readouts, or check the ticker tape readouts, you will have to use the fish ticket weight.

Plant scales are required to be tested annually by the State of Alaska and display panels are sealed and protected against tampering. Therefore, it is not necessary to verify that the scale displays the correct weight, and the plant scales will not be tested daily. Plant observers will need to check that plant personnel are recording the weights accurately and that the entire delivery is weighed.

Items to check:

- Does the scale weigh the entire catch, or is bycatch sorted out first, and weighed separately?
- Do summed scale readouts equal the total delivery weight on the ADF&G fish ticket?
- Do plant personnel subtract a percentage of the pollock weight for water before filling out the fish ticket?
- Does the fork-lift driver record weights for every tote, and how are the tote weights tared on the scale?

If you determine that data are not being recorded accurately at your plant, you must verify as many delivery weights as possible. Document how the fish ticket and delivery information is recorded by the plant personnel, and what you think the problem is. The problem may be easy to correct. For example, if you notice that the plant deducts 3% of the delivery weight as water weight, but you never see any water go over the scale, you can correct the problem by adding the 3% back as the target species weight. This practice has occurred in the pollock fishery, but is not appropriate at all plants. In the Pacific cod fishery, the catch is often weighed in totes. If the totes are not properly tared, the delivery weight will be inaccurate. Check the tare weight by asking the forklift drivers to weigh empty totes for you. If you find that the totes are not being weighed properly, you must work with the dock personnel to assure correct recording or calculate the weights yourself.

If you find that the fish ticket weights are recorded properly, continue verifying one or two deliveries per day. In your logbook, document how you are checking these weights. Once you determine the best method for obtaining delivery weights, you should inform vessel observers to use that method. All vessel observers delivering to your plant should use the same method. In your logbook, document your reasoning for picking the method you did, and any problems or concerns you have with that data.

## After-Scale Area

The "after-scale" area is another place where weights may not be accurately recorded. This is an area where factory workers will set aside bycatch that has made it past the sorters and into the factory. This bycatch has been weighed as the target species. Factory personnel should deduct the weight of the after-scale bycatch from the target species weight. They also need to add after-scale weights to the appropriate group on the fish ticket. Check to ensure that after-scale bycatch is being recorded as the correct species and not as the target species. You should also ***check the after scale-area for any prohibited species that pollock vessel observers may have missed during sampling.*** Record the species, length, weight, and sex of prohibited species found in after-scale area and give these data to the vessel observer with the rest of their delivery information.

## Delivery Worksheet Verification

You will need to let each vessel observer know how you are getting delivery weights if they will be using a proportioned delivery weight for OTC. This is a very important task, and crucial to the vessel observers delivering to your plant. To do this, prepare a written paragraph or two explaining how the delivery weights are verified, and what the weights include. In this description, you will need to address each of the concerns listed on page 8-6. Make several copies of this to give to each of the observers delivering to your plant. An example of such a description is shown in Figure 8-1.

**Alaska Processing Inc. Delivery Weight Verification**

For All Vessel Observers:

I will verify the delivery weight for each pollock delivery weight in the following manner:

- Delivery weights are usually taken from the ADF&G fish ticket. The plant manager does not want me giving out copies of the fish ticket, so I will give you a copy of all my calculations. I will add up the fish ticket weights myself, after they have been verified. If I find any discrepancies during the verification process, I will use the sum of the scale weights, and leave you a note. (I checked all the fish tickets during cod, and never found any discrepancies.)
- Every fish ticket is checked against the hopper scale ticker-tape for pollock weights. These are stapled to a copy of the fish ticket in the plant office, if you ever need them.
- All bycatch weights are double checked against the tote weights from the dock tally. (These are also stapled to a copy of the fish ticket.)
- Jellyfish weights are not usually listed on the fish ticket. I take this weight directly from the dock tally sheet.
- I try to check the dock tally once a day during a non-observed delivery. The tote tare weights are checked, and I check to ensure the forklift drivers are recording the information correctly. If you notice any totes being weighed incorrectly during your offloads, please let me know!
- Delivery weights will NOT include prohibited species weights! I will give you a separate herring weight, and I'll give you all the necessary data from after scale halibut, salmon and crab. Salmon and crab will be identified to species, and their sex and length will be recorded. I'll give you halibut lengths. The after-scale area is in the north part of the factory (near the break room, by fillet machine #6). Prohibited species are put in the basket, and the delivering vessel is written on the white board above.
- No water weight is deducted at this plant.
- Any partially processed fish, such as bled cod, will already have the PRR applied when I give you the delivery weight. I'll give you a copy of these calculations.

Please leave me a note with any salmon and at-sea discard information. I need this information for my Salmon Retention and Form A! Thanks!

**Figure 8-1 Delivery Weight Verification Process (example)**

## Assisting Vessel Observers

Assisting vessel observers may be one of the most difficult and time consuming of your priorities as a plant observer. It is very important to keep in contact with observers aboard vessels delivering to your processor. Try to meet with them every time they come in. Your first few weeks at the plant, you will need to give each vessel observer a tour of the plant and explain to them your delivery weight verification process. The tour of the plant should include:

- the area in which they can sample for prohibited species,
- the "after-scale" area,
- areas of potential size or composition bias (sorters, incline belts etc...),
- the location of the office, phone, fax machine, and computer,
- where they can obtain verified delivery weights and messages from you.

You will need to set up a method for vessel observers to reach you whenever they are in. Vessel observers will need to reach you to schedule their breaks and to receive delivery data from previous deliveries. Most plants will have quarters with a phone and answering machine available to you, but in some cases you may have to establish a "message board" which is accessible 24 hours a day.

### Relieving Vessel Observers During Pollock Offloads

Offloads of pollock can last between one and 24 hours, depending on the plant and the vessel. It is usually required that the entire offload be sampled for prohibited species. It is important that vessel observers are given breaks during this time, and that the plant observer periodically take over monitoring for prohibited species. Near the beginning of each offload, you should ask vessel observers what type of assistance they will need and take this into account when scheduling your other duties. You will likely need to give vessel observers breaks for rest, meals, and time to do paperwork. ***You are required to give longer breaks to observers who need to complete a mid-cruise evaluation.*** As with any other whole haul sample, an observer must be present to monitor the entire offload. Do not rely on plant personnel to sort and save fish when there is no observer present!

**By federal regulation, pollock catcher vessel observers must not be assigned to another vessel or sent to debriefing prior to completing their whole haul sampling.**

There is no required amount of time that you have to give vessel observers, but a general guideline is: one hour off for every five hours of sorting. For example, an observer with a 10 hour delivery should be given a break after the first five hours to eat and rest. An observer with a 10-12 hour delivery may choose to take two breaks of one hour each, or one break for two hours. Many observers with extremely long offloads prefer one long break, rather than several short ones. You will need to work out a fair schedule with each observer.

While you are monitoring the haul for the vessel observer, you must pull out any prohibited species. Collect the appropriate biological data for these prohibited species including species, length, weight, and sex or condition code. Do not leave it up to the vessel observer to collect data on fish you collected.

**Proper Use of Fish Ticket Weights**

A. Fish tickets will only contain accurate information on the catch delivered. A condition code “98” will indicate an estimate of catch discarded at sea. Catch with code of “98" should not be included in your delivery weights on your Form A. Vessel observers should use their own estimated at sea discard weights when calculating OTC.

B. Fish tickets may contain only numbers of the prohibited species delivered. If the fish ticket does include a prohibited species weight, it is often inaccurate, therefore an observer must weigh them. In the pollock fishery, you and the vessel observers will be sorting prohibited species from the entire catch at the plant. Vessel observers should use their own numbers and weights of prohibited species when they calculate their proportioned OTC.

C. Completion of fish tickets is often delayed. Coordinate with vessel observers to ensure that they get the delivery weights when they have finally been recorded. This may be during their next offload, or it may require you to fax the information to another port or a NPGOP office.

D. Condition/Delivery codes - Sometimes bled fish are delivered (throat cut/or stuck to bleed the fish and retard spoilage). You need the whole weight of fish caught for your Form A. Vessel observers will need whole weights to calculate OTCs. Look at the condition codes for the fish weights on the fish ticket. If the code listed is not a “1,” the whole fish has not been weighed. You will need to convert any partially processed fish weight to whole weight using a product recovery rate. A list of NMFS PRRs is provided on page A-17.

E. Some of the weights listed may not be correct. Fish of no value to the plant may have weight estimates rather than scale weights. Check for this before using fish tickets.

F. The bycatch species listing is often incorrect, unless the species was paid for. Bycatch species may all be lumped together. You must check that the weight for total bycatch was recorded properly somewhere, even if it is combined under one species listing and one weight. This should not be a concern for you, as you only need the total weight of bycatch and not the species breakdown. Check only that the weights are not estimates and don't worry about species identification. If AFA or CDQ please see page 8-10.

G. The total weight sum at the bottom of the fish ticket is often not the total weight of the delivery! This usually is the weight for which money was paid. You must add up the weights in order to get a correct total weight.

H. Water weight deductions may appear on the fish ticket. These deductions may occur in the pollock fishery, but are not appropriate at all plants. If you do not see water passing over the scale, and feel that the water weight deduction is not necessary, then add the deducted amount back in as target weight and document your reasons in your logbook.

I. Species may be missing from the fish ticket. Some plants do not record jellyfish, and other “non-allocated species” weights. Processing plants are not required to record these weights, but you must include them in your delivery weights! If AFA or CDQ please see page 8-10.

**Figure 8-2 ADF&G Groundfish Ticket Instructions**

PURCHASER

**ALASKA DEPARTMENT OF FISH & GAME**
**GROUNDFISH TICKET**

DO NOT WRITE IN THIS SPACE

DO NOT WRITE IN THIS SPACE G05 000280

**Vessel Name** Ocean Harvester

CDQ No. if applicable

Fishery Name

Permit Number

ADF&G NO. 00101

Port of Landing or off-shore operation type: King Cove

Type of Gear used: 07

**STATISTICAL AREA WORKSHEET**

| Stat. Area | % | Stat. Area | % |
|---|---|---|---|
| 655430 | 100 | | |
| 517 | | | |

01/14/05 Date Fishing Began (Gear in Water)

01/19/05 Date Landed

**Proc. Code**

Company

**PARTIAL DELIVERY:**

☐Multiple IFQ Permits
☐Partial Delivery

Ticket #
Processor

Ticket #
Processor

Ticket #
Processor

| SPECIES | CODE | STAT AREA | DELIV. CODE | POUNDS | PRICE | AMOUNT |
|---|---|---|---|---|---|---|
| Sablefish | 710 | | | | | |
| Other flat | 120 | | 98 | 250 | | |
| Halibut | 200 | 2 fish | 98 | 5 | | |
| Salmon | | 1 fish | 98 | 2 | | |
| Flathead Sole | 122 | | | | | |
| Rock Sole | 123 | | 01 | 15 | .015 | .23 |
| Yellowfin Sole | 127 | | | | | |
| Arrowtooth Flounder | 121 | | | | | |
| Greenland Turbot | 134 | | | | | |
| Pacific Cod | 110 | | 03 | 660 | .18 | 118.80 |
| P. Cod | 110 | | 03 | 398 | .015 | 5.97 |
| Pollock | 270 | | 01 | 486639 | .015 | 729.59 |
| Pollock | 270 | | 01 | 2006686 | .03 | 6020.58 |

| SPECIES | CODE | STAT AREA | DELIV. CODE | POUNDS | PRICE | AMOUNT |
|---|---|---|---|---|---|---|
| Rockfish - Specify | | | | | | |
| King Salmon | | 8 fish | | 22 | | |
| Shortraker Rockfish | 152 | | | | | |
| Rougheye Rockfish | 151 | | | | | |
| Pacific Ocean Perch | 141 | | | | | |
| Thornyhead Rockfish | 143 | | | | | |
| Lingcod | 130 | | | | | |
| Squid | 875 | | | | | |
| Octopus | 870 | | | | | |
| Skates | 700 | | | | | |
| Other - Specify | | | | | | |
| Gross | | | | 250677 | | |
| 3% | | | | 7745 | | |
| Net | | | | 242932 lbs | | |

Permit Holder's Signature

Fish Received by

Date

FISH DELIVERED HEREBY WERE CAUGHT IN COMPLIANCE WITH STATE LICENSING LAWS AND STATE LABOR LAWS AND REGULATIONS.

FORM 11-218 REVISED 9/01

| ADF&G USE | |
|---|---|
| Interview | |
| Observer | |
| Logbook | |

**Figure 8-3 ADF&G Groundfish Ticket (example)**

## Form A- Plant Delivery Form Instructions

Record the information that you obtained from the skipper interview, vessel observer, and/or vessel logbooks on this form. Maintain a separate set of forms for each plant.

**You must maintain and bring back paper copies of the Form A, regardless of the fact that the plant is equipped with ATLAS!**

You must make an entry for every groundfish delivery made to the plant. Enter at least one line every day. For days with no deliveries, write in a zero for delivery number and note whether you were assigned to the plant that day, and whether or not they were still processing groundfish. These notes are required by NMFS to verify coverage days.

- **Cruise number, Plant code, Year:** Your cruise number will be given to you during training or briefing, or by your employer. The plant code is not the same as the processor code. Plant codes are listed on page A-26. In the year box, enter the last two digits of the year.
- **Catcher boat name:** Enter the name of each catcher boat delivering to your plant and the corresponding ADF&G number. You only need to list each boat once per data set, and the vessel does not have to be listed at the top of the page where its deliveries are listed. When all the lines on the first page are used up, go on to page 2, etc. Keep the catcher boat list together on the first several pages of your Delivery Forms.
- **ADF&G #:** You can find the number written in one foot high numbers on the wheelhouse of each delivery boat. It is also recorded in the vessel and plant logbooks and is often imprinted and written on the fish ticket. If the vessel does not appear to have an ADF&G number, try to locate the Coast Guard number or the NMFS permit number. These numbers will help NMFS staff find the ADF&G number when you debrief.
- **Delivery Date:** Enter the date of ***completion*** of each delivery to the processing plant. If the delivery continues over two or more days, use the date when the delivery is complete. This delivery date must be used on the Form 7 and 9 dates if you collect lengths or age data, even if it is not the date the information was collected. This date should coincide with the one used in the NMFS processor logbook and on the fish ticket.
- **Delivery number:** These should be sequential numbers, with only one line of data for each delivery. Do not split delivery data due to fishing in two NMFS areas. The "Haul Number" on the Form 7 and 9 must correspond to the delivery number on the Form A.
- **Gear Type:** Enter the appropriate code from the list below: If the delivering vessel is acting as a Tender, enter the gear type that was believed used for fishing.

| | |
|---|---|
| 1= Non pelagic trawl | 6= Pot or trap |
| 2= Pelagic trawl | 7= Jig |
| 3= Mixed trawl | 8= Longline |
| 4= Pair trawl | 9= Gill net |
| 5= Shrimp trawl | 10= Scottish Seine |

- **NMFS area:** This is the three digit code for the area in which the delivering vessel fished. If the vessel fished in two or more areas for the delivered catch, record the area in which most of the fish were caught. Do not divide delivery data by area. To determine NMFS areas, see page A-35 or page A-36.
- **Total weight (round wt.), LB or MT:** Record the total round weight delivered (including pollock) to the plant for that trip. Delivery weights reported in pounds must be recorded to the nearest whole pound. Weights reported in metric tons must be recorded to the nearest tenth of a metric ton. Remember that when cut or bled fish are delivered, the round weight must be calculated by dividing by the appropriate product recovery rate (PRR). A list of NMFS product recovery rates is found on page A-17.
- **Total pollock weight:** Complete this column if you meet the following criteria: You are at Alyeska, Westward, Unisea, Trident Seafoods (Akutan), Arctic Enterprise, Northern Victor or

Peter Pan Seafoods (King Cove). Gear code must be "2" and all pollock must be from the Bering Sea. Record the total weight of all pollock in that delivery.

- **Was all groundfish weighed?:** Enter Y, N, or U (for unknown) to indicate if all groundfish ***delivered*** to the plant was actually weighed. If you enter an "N" or "U," you must note why all fish was not weighed, or why you are unsure, in your logbook. For normal groundfish deliveries, enter "Y" if all species delivered were weighed. For halibut IFQ deliveries, enter "Y" if all species other than halibut were weighed.
- **ADF&G # of delivering vessel:** Record the ADF&G number of the delivering catcher vessel. This number should correspond to the vessel name written at the top of your first few Plant Delivery Forms. Do not enter Coast Guard or NMFS permit numbers in this field. If these are the only numbers available to you, leave this column blank and make note of which vessel the delivery is from.
- **ADF&G fish ticket number:** Record the fish ticket number associated with the delivery from this vessel. This number should be recorded in the NMFS fishing and production logs. You can also get it directly off the fish ticket. Record the fish ticket number ***exactly*** as it appears on the ticket. Fish ticket numbers usually start with a "G" or "J," followed by eight numbers.
- **Date fishing began for delivery:** Record the date on which each delivering vessel first set gear for this delivery. You can obtain this date from the vessel's log, from a vessel observer, or by asking the captain of the delivering vessel.

**FORM A - PLANT DELIVERY FORM**

Page 1 of 3

| Cruise Number | Plant code | Year |
|---|---|---|
| 8444 | P016 | 05 |

Observer name Chris P. Observer

Vessel name Alaska Processor

Page _____ of _____ for transmission

| Catcher boat name | ADF&G # | CG # | Permit # |
|---|---|---|---|
| Aleutian Spray | 00991 | | |
| Fourm Star | 59687 | | |
| Hoover | 21702 | | |
| Sea Venture | 08225 | | |
| Tordenskjold | 36037 | | |
| Ocean Harvester | 00101 | | |

| Delivery date | | Delivery number | Gear type | NMFS area | Total weight (round weight) | Total pollock weight | LB or MT | Were all groundfish weighed? | ADF&G # of delivering vessel | ADF&G fish ticket number | Date fishing began for delivery | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Day | | | | | | | | | | Month | Day |
| 01 | 15 | 0 | No deliveries, No processing, Observer present | | | | | | | | | |
| 01 | 16 | 0 | No deliveries, No processing, Observer present | | | | | | | | | |
| 01 | 17 | 0 | No deliveries, No processing, Observer present | | | | | | | | | |
| 01 | 18 | 1 | 2 | 517 | 187297 | 180111 | LB | Y | 00991 | G02018470 | 01 | 15 |
| 01 | 18 | 2 | 8 | 519 | 6534 | | | | 59687 | G02018471 | 01 | 16 |
| 01 | 19 | 3 | 2 | 517 | 205639 | 197266 | | | 08225 | G02018472 | 01 | 15 |
| | | 4 | 2 | 517 | 250420 | 249325 | | | 00101 | G02000280 | 01 | 14 |
| | | 5 | 8 | 521 | 849 | | | | 36037 | J03013626 | 01 | 17 |
| 01 | 19 | 6 | 6 | 519 | 11375 | | LB | Y | 24255 | G03018444 | 01 | 16 |
| 01 | 20 | 0 | Released from plant to do trip on Aleutian Spray | | | | | | | | | |
| 01 | 21 | 0 | Returned to plant, No deliveries, Plant processing. | | | | | | | | | |
| 01 | 22 | 7 | | | | | LB | U | 06525 | | 01 | 17 |
| 01 | 23 | 8 | 2 | 517 | 166239 | 165200 | | Y | 00991 | G03016545 | 01 | 20 |
| 01 | 24 | 9 | 2 | 517 | 213322 | 211311 | | | 08225 | G03016546 | 01 | 19 |
| | | 10 | 1 | 517 | 113692 | | | | 59838 | G02000281 | 01 | 18 |
| | | 11 | 6 | 519 | 6275 | | | | 53247 | G02000282 | 01 | 20 |
| | | 12 | 2 | 517 | 237692 | 231012 | | | 08225 | G03016547 | 01 | 19 |
| 01 | 24 | 13 | 2 | 517 | 205394 | 199302 | LB | Y | 00991 | G03016548 | 01 | 23 |
| 01 | 25 | 0 | No deliveries, still processing, observer present | | | | | | | | | |
| | | | | | | | | | | | | |

National Marine Fisheries Service / North Pacific Groundfish Observer Program

REV.04

**Figure 8-4 Form A - Plant Delivery Form (example)**

## Sampling on the Arctic Enterprise

The Arctic Enterprise is altering its factory in 2005. Please refer to the sampling protocol handout given to you during training/briefing. If you have any further questions please be sure to contact NMFS staff.

## Deliveries from Tender Vessels

Tender boats are vessels which receive catch from catcher boats. They do not carry observers and they are not set up to process any fish. Rather, they serve as a "middle-man" by picking up fish from several vessels and bringing it to a processing plant. Tender vessel deliveries are potentially sorted and are usually from several different vessels. Tenders will issue their own ADF&G fish tickets to delivering vessels. The fish ultimately delivered to your shoreside plant already have several fish tickets associated with it. To avoid double recording, do not write a fish ticket number on the Form A for tender deliveries. Do not fill out the gear type or NMFS area fields on the Form A for tender deliveries. Record only the date on which the delivery was completed, the delivery number, the total weight delivered, the ADF&G number of the tender vessel, and the date fishing began for delivery (see Figure 8-4).

## Halibut Deliveries

When IFQ boats fish for halibut, they are required to keep all incidental catch of rockfish, and abide by IR/IU regulations by keeping some or all pollock and Pacific cod. As the plant observer, you need to record only the groundfish portion of the delivery. In the "Total weight" column on your Form A, record the round weight of catch other than halibut. If no groundfish are in the delivery, you do not need to record the delivery on the Form A.

## Level 2 Information for Plant Observers

Plant observer duties vary depending on the type of vessel delivering and the fishery the vessel participated in. The 12-hour rule applies during both CDQ and AFA fisheries at all plants. Plants accepting AFA or CDQ deliveries will have the ATLAS program. Send ATLAS data weekly.

Plants are required to weigh all CDQ species on certified scales. However, unlike flow scales and platform scales, there are no daily test requirements for you or the plant. The State of Alaska tests and certifies scales at plants.

### Scale and Catch-weighing Requirements for AFA Inshore Processors.

All plants receiving AFA pollock deliveries are required to have a Catch Monitoring and Control Plan (CMCP). This plan defines the method in which each individual plant will sort and weigh all species during AFA pollock deliveries. Upon arriving at the plant you should review a copy of the CMCP. If the plant is not following their CMCP, inform the plant liaison listed in the plan as well as a NPGOP office. The plan should:

- Detail the amount and location of space for sorting catch, the number of staff assigned to catch sorting and the maximum rate catch will flow through the sorting area.
- Identify by serial number each scale to be used to weigh groundfish and describe each scale's use.
- Describe the procedure used to test the scale, list the test weights used, list where these weights will be stored and the plant personnel responsible for testing. Observers are not required to request scales be tested or be present when scales are tested. There are no daily test requirements for the plant's scales.
- Identify the delivery point. The delivery point is the first location where fish removed from a delivering vessel can be sorted.
- Designate an observation area. This observation area is the location where an individual may monitor the flow of fish during a delivery. It must be freely accessible to observers and have an unobstructed view of the flow of fish between the delivery point and the location where sorting and weighing occurs. Plants may use video cameras, parabolic mirrors or other devices to meet this requirement.
- Identify an observer work station. This station should include a platform scale, a table, and a lockable cabinet. The area must be at least 4.5 $m^3$. This work station will not have to meet the same requirements as a CDQ sample station. The work station should correspond to the one detailed in the CMCP. Test weights should be available to test the

platform scale. The scale needs to be tested at 10, 25, and 50 kg on a daily basis. Make sure to inform the vessel observers delivering to the plant that the scale has been tested daily. You should be able to walk between the work station and the observation area in less than 20 seconds without encountering any safety hazards.

- Describe the communication equipment for the observer to facilitate communication within the plant. This communications equipment should be the same used by the plant staff.
- Identify a plant liaison. This person is responsible for orienting new observers to the plant and assisting with the resolution of observer concerns.
- Be accompanied by a scale drawing of the plant showing the delivery point, the observation area, the observer work station, the location of each scale used to weigh catch and each location where catch is sorted.

***Please remember the CMCP and the observer work station requirements only apply to AFA pollock deliveries.*** Each plant's CMCP will be different so be sure to review each plan carefully even if you have worked at plants before. Contact your inseason advisor if you have any questions about the specifics of your plant's CMCP.

Inshore processors receiving deliveries of groundfish from AFA catcher vessels are required to submit a Shoreside Processor Electronic Logbook Report ***daily***. The processor is required to generate and retain printed output of the shoreside processor electronic logbook report at the processing plant for use by NMFS Enforcement and groundfish observers.

**CDQ Deliveries From Catcher Vessels Less Than 60'**

Vessels less than 60' LOA are not required to carry an observer or complete a groundfish logbook. When fishing halibut CDQ, they are not required to retain or deliver any groundfish to the plant. If no groundfish is delivered, you have no responsibilities as the plant observer and the plant is not required to notify you of these deliveries. However, if a vessel fished both halibut CDQ and IFQ, the vessel is required to retain Pacific cod, pollock, and rockfish. Treat those deliveries as halibut IFQ deliveries and ***record only the groundfish (non-halibut) in the delivery on your Form A*** (see "Halibut Deliveries" on page 8-10).

Vessels less than 60' LOA participating in any other CDQ groundfish fishery (e.g., sablefish or Pacific cod) are required to retain and deliver all CDQ species to an eligible processor. All halibut and crab must be discarded at sea. The plant is required to notify you of these deliveries and all CDQ species must be sorted and weighed by species. Monitor the plant's sorting and weighing activities and notify your inseason advisor if the plant is not complying with the regulations. Weighing and sorting generally take place in different locations at plant. The NPGOP does not expect you to monitor all aspects of each delivery, but do your best and monitor as much as you can.

**CDQ Deliveries From Catcher Vessels Greater Than 60'.**

Non-trawl catcher vessels fishing groundfish or halibut CDQ that chose Option 1 in the regulations are required to deliver all CDQ species to an eligible processor. All halibut PSQ (under size halibut for CDQ halibut boats) and crab must be discarded at sea. As the plant observer, it is your responsibility to monitor the delivery. To the best of your ability, monitor the plant's sorting and weighing activities and notify your inseason advisor if the plant is not complying with the regulations. Only report the groundfish portion of the delivery for halibut CDQ deliveries. These vessels must carry an observer, and that observer should help monitor the offload if you have reached your 9-hour sampling limit.

## Referring Sampling Questions

Plant observers are a tremendous help to vessel observers, but it is important that they do not overstep their boundaries. ***Plant observers should not answer sampling questions that do not pertain to their plants.*** Vessel observers should be encouraged to contact a NMFS staff member if possible. If the observer is not at the plant during NMFS hours, have them write their question down and fax it to one to the NMFS offices. Give the written response back to the vessel observer. Do not interpret answers or relay the answer to the observer. If your plant is equipped with ATLAS, follow the same procedure for a text message.

## Length Frequency Sampling

Please refer to see "FISH MEASUREMENT AND OTOLITH COLLECTION" on page 9-1 for instructions on how to collect a length sample and how to sex and measure fish.

Plant observers take 20-30 sexed lengths per unobserved, delivery that was not size sorted at sea based on the priority lists (see page 8-12). During some fisheries, you may get deliveries that fit the following criteria, however, you should not collect more than 150-200 lengths per day, even if more could be done! You need to take lengths from deliveries meeting the following criteria:

- The delivery is from a vessel with no observer onboard. ***If all vessels delivering to your plant are carrying observers, do not take lengths***.
- There is no at-sea discard of the roundfish target species associated with the delivery. Prior to gathering lengths, ask the skipper if any of the target species was discarded at sea. At-sea discard could introduce a size bias, and lengths should not be taken. The exception to this rule is for the flatfish fishery (see "Requested Flatfish in Order of Priority" on page 8-13). ***If all roundfish deliveries are sorted at sea, do not take lengths.***
- Take lengths and otoliths from at least ***four*** deliveries each day, whenever you have four or more vessels which meet the above criteria.
- Note that plant observers ***do not*** collect pollock length-weight samples.
- Note that plant observers ***do not*** collect lengths on trawl caught Pacific cod.

**Use a deck form to record and keep your raw length and otolith data. Raw data helps answer data questions during debriefing.**

If more than one preferred target species is delivered, you should take lengths from each delivered species. Take 20-30 sexed lengths per sampled delivery for each target species. Please refer to page 9-7 for the correct methods to sex and measure different species of fish.

If you find that the majority of delivering vessels are carrying observers, or if all roundfish deliveries are sorted at sea, you may not be able to collect lengths everyday. If only a few of the vessels meet the above criteria, track these boats carefully and take lengths from their catch whenever they deliver. Alternatively, you may find that the majority of the delivering vessels are small, unobserved boats which report no sorting at sea. In this case, you need to attempt to spread out your length sampling. Attempt to get lengths from a variety of vessels and NMFS areas.

### Requested Roundfish in Order of Priority

| **Bering Sea and Gulf of Alaska** |
|---|
| 1st - sablefish * |
| 2nd - rockfish (all species) |
| 3rd - pollock |
| 4th - Pacific cod (non-trawl) |
| *if an observed vessel delivers live sablefish, collect lengths and ages on them if the vessel observer was unable to collect these data. |

Your plant may be accepting various species of flatfish during your deployment. Follow the priority list below to determine the species from which to preferentially take lengths. You may be able to gather lengths on several of these species. Flatfish vessels will always sort at-sea for preferred species. During this process, some size sorting may occur. If all the flatfish vessels delivering to your plant report at sea sorting of delivered species, take lengths anyway, and document this in your logbook.

### Requested Flatfish in Order of Priority

| Bering Sea | Gulf of Alaska |
|---|---|
| 1st - yellowfin sole | 1st - N/S rocksole |
| 2nd - N/S rocksole | 2nd - flathead sole |
| 3rd - Greenland turbot | 3rd - rex sole |
| 4th - flathead sole | 4th - Dover sole |
| 5th - Alaska plaice | 5th- arrowtooth flounder * |
| *Do not take otoliths from arrowtooth flounder. Collect only sexed lengths from these fish. | |

Collect your lengths randomly and throughout the delivery to collect unbiased samples. If unsorted mixed fish are being delivered, divert the flow of fish to half fill a basket. Sex and measure all species in the basket. This will allow you to take randomly collected lengths on a variety of species at once.

Fill out the Form 7 according to standard directions (see page 9-14). Use the delivery completion date on your Form 7, even if that is not the day you took the lengths. This date should correspond to that on the Form A.

## Age Structure Sampling

Otoliths are a standard duty for plant observers, and should be collected from every delivery from which you take lengths. Follow the length priority tables on page 8-12 and page 8-13 to determine which species to collect lengths and otoliths from. It is preferred that you take otoliths as a subset of your length frequency sample, but if you are unable to, the fish you use for your collection must be randomly chosen. If you are unable to complete both a length and otolith collection for a delivery, the otolith collection takes priority.

Refer to "Taking Otoliths" on page 9-12 for collection methods. The number of otoliths you collect each day will depend on the number of target species being delivered to your plant. ***You should try to collect at least 5 otoliths per delivery sampled for lengths, up to a maximum of 25 otoliths per day.*** During some fisheries, there may be many deliveries which fit the unsorted, unobserved criteria for collecting lengths and otoliths. However, you should not collect more than 25 otoliths per day, or more than 5 per haul, even if more could be collected. Collect otoliths according to the following frequencies:

- If only one species is being delivered that is measured for length frequencies, collect five pairs of otoliths per delivery sampled for lengths.
- If two or more species are being delivered that are measured for length frequencies, take two pairs of otoliths per species per delivery sampled for lengths.
- Try to collect otoliths from at least four deliveries per day that meet length frequency collection criteria, for a total of at least 20 otoliths per day.

***Note that you should not take otoliths from arrowtooth flounder or trawl caught Pacific cod***. Remember that if you are collecting otoliths from pot, jig, or longline caught Pacific cod, the fish will likely have been bled before delivery, you must divide the weight of the individual fish by the PRR of 0.98. Show your calculations in your logbook, and record the calculated weight on the Form 9.

The Form 9 form should be filled out according to directions on page 9-16. Use the delivery completion date, even if this is not the date on which the otoliths were taken. This date should correspond to that on the Form A.

## Special Projects

Plant observers have the unique arrangement of having access to lots of fish, freezers, field offices, and airports. Therefore, they will frequently be asked to complete fish collections for training use. If you are asked to collect fish, please work with the plant personnel to obtain secure, easily accessible freezer space in which to store your collection. During fisheries where sorting at sea is common, you should work with vessel observers to collect requested species. The special project will be assigned to you, so lack of cooperation from vessel observers is not an excuse for not completing it. Please note that prohibited species cannot be collected without a permit. When you are picking which fish to collect, try to choose fish which have just been delivered, and freeze them individually. Rockfish spines should be folded down, and ***the fish frozen flat.*** Small fish are preferred, since more fit in a box, but do not hesitate to bring back fish that are

outside of normal size or geographical range. The Observer Program needs to verify any species reported outside these ranges.

Although fish collections are a common special project assignment, there are many projects that may be assigned. Contact a NPGOP office if you have questions about your project, or if you are having difficulty completing it while keeping up with your other duties.

## Checking Plant Logbooks and Delivery Worksheets

Processing plants are required to maintain either a paper or electronic NMFS log. The paper version is shown in Figure 8-6, and the printout from the electronic version is shown in Figure 8-5. You should compare the NMFS Plant Daily Cumulative Production Log against your Form A. These logs are used by plant personnel to prepare the plant's Weekly Production Report, which is sent to NMFS and used for inseason management of the catcher boat fleet. It is important to check that all catch and discards are accounted for in the log and that you note discrepancies in your logbook.

Check the paper Production Log for the following:

- The Delivery Information section should be checked for the date of delivery, catcher boat name and ADF&G number, and delivery weight.
- The Discards/Disposition section should be checked to verify that the plant log reflects the species groups you know to be discarded by the vessel (condition code 98 on the fish ticket) and by the plant (condition code 99 on the fish ticket).

Check the printout from the electronic log for the following:

- The Fish Ticket number and Delivery Date should be checked to ensure that they correspond to the Form A information that you collected independently.
- The Landings section should be checked for the total delivery weight.
- The Discards section should be checked to verify that the Delivery Worksheet reflects the species groups you know to be discarded by the vessel (product code 98) and by the plant (product code 99).

# Delivery Worksheet

National Marine Fisheries Service
Sustainable Fisheries Division
P.O. Box 21668
Juneau, Alaska 99802-1668
FAX 907-586-7131
Ph. 907-586-7228

| Fish Ticket | Management Program | Account | Catcher Vessel ADFG | Date Fishing Began | Delivery Date |
|---|---|---|---|---|---|
| G05002383 | AFA | 101 | 09200 | 9/20/2005 | 9/21/2005 |

Catcher Vessel Name
THE POLLOCK CATCHER

| Federal Gear | State Gear |
|---|---|
| PTR | 47 |

Shoreside Processor
BUY-BUY FISH PROCESSOR

| Name | Buying Station | ADF&G or DMV |
|---|---|---|

## Landings

| SpeciesName | Specie Code | Product | Weight (pounds) |
|---|---|---|---|
| Northern Rockfish | 136 | 41 | 1 |
| Arrowtooth/Kamchatka F | 121 | 41 | 13 |
| Rex Sole | 125 | 41 | 1 |
| Atka Mackerel | 193 | 41 | 2 |
| Pacific Cod | 110 | 02 | 188 |
| Pollock | 270 | 41 | 289 |
| Pollock | 270 | 01 | 267,212 |
| | | Total Weight: | 267,706 |

## Statistical Areas

| State | Percentage | Federal |
|---|---|---|
| 675500 | 100 | 517 |
| 655409 | 0 | 519 |
| Total: | 100 | |

## Discards

| SpeciesName | Specie Code | Product | Weight (pounds) | Count |
|---|---|---|---|---|
| Jellyfish, general | 625 | 99 | 225 | |
| Pacific Herring (bycatch) | 235 | 99 | 1 | |
| Chum Salmon | 450 | 99 | | 615 |
| Chinook Salmon | 410 | 99 | | 1 |
| Chum Salmon | 450 | 98 | | 2 |
| | | Total Weight: | 226 | |

**Figure 8-5 Electronic Printout of Plant Logbook (example)**

OMB Control No. 0648-0213
Expiration Date: 7/31/05

WHITE - Processor Copy: Keep in Logbook
GOLDENROD - Buyer Copy: Forward
YELLOW - NMFS Copy: Forward

Revised: 10/01/2004

**SHORESIDE PROCESSOR DCPL PART 1**

SHORESIDE PROCESSOR OR STATIONARY FLOATING PROCESSOR NAME: Alaska Processor
MANAGER NAME AND SIGNATURE: Joe Manager Joe Manager
MANAGEMENT PROGRAM (Check if applicable, if not, leave blank): CDQ ☐ Exempted ☐ Research ☐ AIP ☐
WEEK ENDING DATE: 02-17-05 PAGE: 40
ADF&G PROCESSOR CODE: 392446
FEDERAL PROCESSOR NO.: 3921

IDENTIFICATION
INACTIVE | START | END | REASON
GEAR TYPE (circle one): Hook & Line | Pot | Non-pelagic trawl | Pelagic trawl | Jig | Troll | Other
FEDERAL REPORTING AREA: 517
SHORE GEAR ONLY (Circle one): COBLZ | RKCSA

OBSERVER INFORMATION
NO. OF OBSERVERS ONSITE: 1
DATES PRESENT: 2/13-2/17
OBSERVER NAME AND CRUISE #: Chris Observer 775
COMMENTS

DELIVERY INFORMATION

| DATE OF DELIVERY | CV or BS | RECORD DISCARD REPORT | NAME | ADF&G NO. | RECEIPT TIME | GROUNDFISH DELIVERY WEIGHT (Lbs. MT) | FISH TICKET # |
|---|---|---|---|---|---|---|---|
| 2-13 | CV | YES | Alaska Dawn | 62537 | 1000 | 63972 | 605 01843 |
| 2-13 | | | Ocean Harvester | 31204 | 1100 | 822 | 605 01844 |
| 2-13 | | | Jamie Marie | 58330 | 1900 | 72963 | 605 01845 |
| 2-13 | | | Barbara J | 44971 | 2345 | 23692 | 605 01846 |
| 2-14 | | | Royal American | 40840 | 0030 | 92391 | 605 01847 |
| 2-14 | | | Pacific Fury | 00030 | 0600 | 26392 | 605 01848 |
| 2-14 | | | Tonquin | 00054 | 1030 | 143216 | 605 01852 |
| 2-14 | | | Columbia | 39560 | 1800 | 106830 | 605 01853 |
| 2-14 | CV | YES | Constitution | 19267 | 2345 | 13462 | 605 01854 |

LANDINGS — Indicate ☐ lb. or ☐ nearest 0.001 mt

| | Species Code | 110 | 110 | 270 | 270 | 270 | 710 | 154 | 141 | 143 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product Code | 2 | 8 | 3 | 3 | 14 | 8 | 7 | 7 | 7 | | | | | |
| SUN | | | | | | | | | | | | | | | |
| MON | | 2740 | 31082 | 141200 | 14139 | 10814 | | 25 | 75 | 398 | | | | | |
| TUE | | 3629 | 452 | 213964 | 11894 | | 13462 | | | | | | | | |
| WED | | 592 | 107040 | | | | | | | | | | | | |
| THU | | 3216 | 132556 | 40682 | 37835 | 2847 | | | | | | | | | |
| FRI | | NO PRODUCTION | | | | | | | | | | | | | |
| SAT | | | | | | | | | | | | | | | |
| WEEKLY CUMULATIVE TOTAL | | | | | | | | | | | | | | | |

For groundfish and Pacific herring, circle: lb. or nearest 0.001 mt
For Pacific halibut, Pacific salmon, king crab and Tanner crab, record in numbers

DISCARD/DISPOSITION

| | Species Code | 200 | 235 | 235 | 410 | 410 | 410 | 410 | 450 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product Code | 99 | 98 | 99 | 86 | 98 | 99 | 99 | 98 | | | | | | |
| SUN | | | | | | | | | | | | | | | |
| MON | | | | | | | | | | | | | | | |
| TUE | | 6 | 140 | 280 | 23 | 2 | 13 | 15 | | | | | | | |
| WED | | 23 | 75 | | 46 | 1 | 2 | 6 | 12 | | | | | | |
| THU | | | | NO DISCARDS | | | | | | | | | | | |
| FRI | | | | | NO DISCARDS | | | | | | | | | | |
| SAT | | | | | | | | | | | | | | | |
| WEEKLY CUMULATIVE TOTAL | | | | | | | | | | | | | | | |

**Figure 8-6 Plant Daily Cumulative Production Log (example)**

# FISH MEASUREMENT AND OTOLITH COLLECTION

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## List of Priorities

- Collect otoliths from randomly selected fish in your length frequency sample. If you are unable to collect both length frequencies and otoliths, the otolith sample takes precedence, and should be used as a small length frequency sample.
- Collect length frequencies from species according to the table on page 9-6.
- Collect length-weight information from Bering Sea pollock.

## Introduction

Fish measurements and otolith collections are used by NMFS fisheries biologists to determine the relative abundance of each year class of predominant and selected bycatch species. Fish measurement data provide information on the abundance of fish in each size category, while otolith and/or scales provide corresponding age information. The age/length relationship of a species may change from year to year and may be quite different for each sex of a species.

### Goals for Biological Data Collection

The goal is to determine the sex and record the length for approximately 20 fish of the ***predominant species*** for each sampled haul, and to collect a very small number of otoliths from a subset of the measured fish (no more than 7 pairs of otoliths will be collected from any sampled haul). This means that a variable number of "sexed lengths" and otoliths will be collected per day, depending upon the number of sampled hauls. The rate of otolith collection will vary depending on which fishery you are in (see Figure 9-4).

It is important to collect lengths from each sampled haul. You may have to measure less than the requested amount per haul if your time is needed for higher priority tasks. If that is the case, log the reasons and

measure and sex as many fish as you can from each sampled haul. Do not measure additional fish from other hauls to compensate for shortages in a given haul.

### Uses of Biological Data

Researchers and resource managers use the length and sex data you collect for age-length relationships (growth rate), length-weight relationships, sex composition and differences in growth between sexes, abundance of year classes and occurrence of year classes in commercial fisheries, and verification of the length data collected during research cruises by NMFS surveys.

All vessel observers are assigned otolith collections. Otoliths are read to determine the age of the fish, then the data are combined with the fish length and weight to provide length-age ratios. Length measurements collected also provide a picture of the abundance of each year class in the catch.

Sexed length, weight, and otolith collections provide information on the sex composition and the differences in the sizes of each sex in the catch. All of these components are used in the determination of the health of the stock and are applied in setting levels of sustainable yield. Commercial fishery quotas will be set, in part, based on observer length data from this and previous years

.

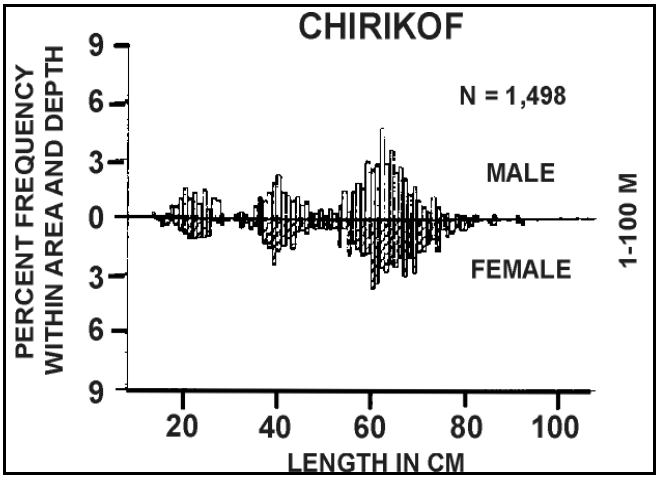



**Figure 9-1 Length Frequencies at Depth (examples)**

## Collecting Fish for Length and Otolith Samples

In selecting fish for measurement and otolith collection, ensure you are not introducing size or sex bias in your selection technique. Watch how fish are sorted, dumped, and moved to ensure no vessel-caused bias exists. If you suspect that there is bias in your sample, contact NMFS staff immediately. Please get our assistance before proceeding.

### Selection of Species for Length and Otolith Samples

To determine which species to select for length measurement samples and otolith collections refer to the following guidelines:

- When your predominant species is listed on the otolith priority list in Figure 9-4, use this species for collection.
- If there are dominant species of equal proportions, select the highest priority of these.
- If the dominant species are relatively in the same proportions in the catch, and are listed at the same priority, alternate between these species from haul to haul.
- In the GOA, if the predominant species in the catch is arrowtooth, measure arrowtooth for the first through fourth sampled hauls. On every fifth sampled haul measure a priority flatfish species listed in Figure 9-4. Collect otoliths from this species.

**If rock soles are the predominant species, subsample for species identification and use the identified ones for the length form (see "Species Sub-Sampling" on page 2-12).**

The species measured will change when species composition changes. For example, cod may be the predominant species for the first two sampled hauls of the day, but the third sampled haul may contain a large amount of sablefish. In this situation, the table instructs you to measure ~20 cod and ~10 shortraker/rougheye from each of the first two sampled hauls, and measure ~20 sablefish and ~10 shortraker/rougheye from the third sampled haul.

## Lengths

Before you begin collecting fish for length measurement samples, set up an area to measure fish. You will need to use or create a "table" large enough to lay a fish on the plastic length strip. If there is no table set up, use the NMFS aluminum board or baskets for a table, or use deck bin boards or the deck. The size of your length station will be a determining factor in how many fish you can collect at one time.

All observers on all vessels collect length-frequency samples. Where there is a predominant species that is listed on the length and otolith priority list, select it. If there are dominant species of equal proportions, select the highest priority of these. If the dominant species are relatively in the same proportions in the catch, and are listed at the same priority, alternate between these species. ***Predominance is determined by your visual estimate*** and you do not need specific weights or numbers of organisms to determine which species to measure.

Measure approximately 20 fish per sampled haul. Fish may be collected outside of your species composition sample if necessary. Samples of selected species should be collected in a random fashion for length measurement and otolith collection. When basket sampling, the easiest way to collect fish for length samples is to randomly select one or more baskets from your basket sample, then measure all of the fish in the basket(s). If you are whole or partial haul sampling, randomly collect unsorted catch for the required subsample of the predominant species and sort out all of the selected fish in one or more baskets. Use these subsamples of selected species for your length samples. Determine the sex of all the measured fish. If you cannot determine the sex of all the fish, determine the sex of a random subsample of the measured fish. Record the unsexed fish lengths with a "U" in the sex column on the Form 7.

**If you use northern & southern rock sole from your species composition sample as your length sample, record these species on your Form 3US as well!**

The number of baskets you designate to collect lengths from depends on the size of the predominant target species: for example, if you are measuring pollock, you will only need to measure pollock from one basket of unsorted catch to get around 20 sexed lengths per haul. If you are measuring cod, you may need to measure all of the cod in your composition sample to get 20 sexed length measurements per haul. It is important to measure fish collected from unsorted catch using a non-size selective method. Under no circumstance should you select 20 fish by hand from your sorted composition sample. You may collect sexed fish lengths from inside or outside of composition samples, as long as you are sure there is no bias.

If you are aboard a catcher vessel delivering to a plant, collect lengths at sea for each haul rather than at plants, where fish are mixed from several locations. The data users prefer to have the length data associated with a catch location.

Once you have devised an unbiased selection method to pick the individuals to measure, look for ways that the layout of the vessel or factory, or the actions of the crew can aid you in carrying out your duties. If there is a diverter board or a belt that can be reversed into a basket, utilize those tools. If you have to collect from the deck, use a gaff or shovel on the selected fish. Never use a shovel, gaff or your hand to select the fish, but you may use them to collect the fish after they have been selected in an unbiased manner. Ask the crew for help in getting all the fish you selected; for example, if the individual fish selected falls back on an incline conveyor belt, ask a crewman to grab it or push it up, ask roller men to gaff aboard those selected on longliners, or ask sorters not to pull out the large fish until you have your sample.

**Figure 9-2 Length Sampling Summary**

| Frequently Asked Questions |
|---|
| **Q:** Which observers on which vessels collect length-frequency measurements?<br><br>**A:** ***ALL*** observers on ***ALL*** vessels collect length-frequency samples. |
| **Q:** Which species should be sampled for length-frequency measurements?<br><br>**A:** When there is a predominant species listed on the length and otolith priority list, select that species.<br><br>If there are dominant species of equal proportions, select the highest priority of these.<br><br>If the dominant species are in the roughly the same proportions in the catch, and are listed at the same priority, alternate between these species. |
| **Q:** How many fish are to be selected for length-frequencies?<br><br>**A**: On average you should measure ~20 fish per sampled haul. Fish may be collected outside of your species composition sample. |
| **Q:** How should fish be selected for the length-frequency sample?<br><br>**A:** Pre-select which basket(s) to measure fish from, then measure all of the fish in the basket(s). It is preferable to use the composition basket samples or "B" subsamples for predominant species. |
| **Q:** Which fish should be sexed?<br><br>**A:** Sex all of the fish measured. If you cannot sex all the fish, sex a random subsample of the measured fish. |

## Otoliths

Otoliths should be collected from a subset of fish in the length sample. Depending on the number of otoliths needed for each commercially important species and the number of hauls you sample in a day, you may collect otoliths a few times per day, or only every few days (see Figure 9-4). Use a random systematic sampling system to determine which sampled hauls to collect otoliths from. Pick a haul or set at random to start your otolith samples. For example; to collect otoliths from every 10$^{th}$ sampled haul, you would pick a random number between 1 and 10. Let's call this number q. You would then collect otoliths from the q$^{th}$ sampled haul, the q+10$^{th}$ sampled haul, the q+20th sampled haul, etc. If q = 4 then you would sample from the 4$^{th}$, 14$^{th}$, 24$^{th}$, etc. sampled hauls until the vessel changes fisheries or your cruise ends.

**Ideally, otolith collections come from length collections. However, otoliths are a higher priority than lengths and there may be times when you can complete only an otolith collection. In this case, record your otolith sample as your length sample so that the fish appear on both your Form 7 and your Form 9.**

If you miss a sampled haul for some reason, collect otoliths from the next sampled haul, and then continue with your original sequence. Maintain this same sequence even if you change vessels. For example, if you randomly chose haul 3 to begin taking pollock otoliths, and the vessel only fishes two hauls, you would take otoliths from the next sampled tow on your next vessel.

It may be difficult to track what otoliths to collect, especially if the predominant species the vessel is catching changes often. One way to track when to collect otoliths is to use the Observer Sampling Record in your logbook. Enter the haul numbers, whether the haul was sampled or not, and the predominant species that you measured for each haul. Determine the hauls from which you will be collecting otoliths by reviewing this chart.

For example, you are sampling all hauls, you chose the third haul to begin otolith sampling, and are fishing in the Gulf of Alaska. The predominant species is arrowtooth flounder, so you measure arrowtooth for the first two hauls. Haul 3 is an otolith haul and otoliths are not collected from arrowtooth, so you must measure and collect otoliths from the second most predominant species. You assess your sample and it looks like rock soles and flathead occur in equal amounts. Since rock soles are higher in priority, you randomly collect approximately 20 fish and key them to northern and southern rock sole while you measure and sex them.

Additionally, you collect 5 pairs of otoliths from randomly selected fish from your length sample, regardless if they are northern or southern rock sole and record the samples appropriately.

Collect otoliths from the selected sampled haul using a random or random systematic method. Never use a haphazard method or hand pick your fish. For a random method, simply number your length sample fish from one to the total number, then randomly pick the number of fish from which you need otoliths. For a random systematic method, divide the number of lengths you collect by the number of otoliths you need to collect. Let's call the resulting number or quotient x. Randomly choose a number from 1 to x. Let's call this number k. Collect otoliths at k, k +x, k +2x, k+3x, etc. until you reach the number of otoliths needed. For example: If you were to collect length measurements from 20 fish and needed to collect 5 otoliths, then x would = 4. Using a random number generator, pick a number between 1 and 4, let's say k = 3. So you would collect otoliths from the 3rd, 3+4=7th, 3+8=11th, 3+12=15th, and 3+16=19th fish. To collect 2 fish from the length sample of 20, x = 10. Pick a random number k between 1 and 10, and put aside fish numbered k and k+10.

This otolith collection technique should result in ages and lengths sampled in proportion to their occurrence in the catch. ***Do not, under any circumstances***, ***select the fish for the otolith samples according to your perception of the size distribution you "should" be getting.*** Use the techniques outlined above to remain as "size-blind" as possible.

| OBSERVER SAMPLING RECORD (OPTIONAL) VESSEL NAME: Aurora Borealis (Gulf of Alaska fishery) | | |
|---|---|---|
| Haul Number | Sampled (Y/N) | Species |
| 1 | No, watched operations | Arrowtooth |
| 2 | Yes, will sample all hauls now | Arrowtooth |
| 3 | Yes, first otolith haul | N/S rocksole (2nd predom.) (took otoliths) |
| 4 | Yes | Arrowtooth (1) |
| 5 | Yes | Pacific cod |
| 6 | Yes | POP (took otoliths) |
| 7 | Yes | Arrowtooth (2) |
| 8 | Yes | Arrowtooth (3) |
| 9 | Yes | Arrowtooth (4) |
| 10 | Yes | Flathead sole (2nd predom) (took otoliths) |

**Figure 9-3 Example of Tracking Otolith Collections when Predominant Species Changes**

**Length and Otolith Priority List for Vessels**

| Predominant Species | Size and frequency of ***sexed length*** samples | Frequency of ***otolith*** samples | Number of otolith pairs & length-weights collected |
|---|---|---|---|
| **Bering Sea pollock** | ~ 20 from every sampled haul | every 5th sampled haul | 2 otolith pairs & 8 length-weight samples |
| **Gulf of Alaska pollock** | ~ 20 from every sampled haul | every sampled haul | 4 otolith pairs |
| **Pacific cod** | ~20 from every sampled haul<br>**AND**<br>~10 shortraker and/or rougheye | every 10th sampled haul | 2 otolith pairs from each measured species |
| **sablefish** | ~20 from every sampled haul<br>**AND**<br>~10 shortraker and/or rougheye | every sampled haul | 3 otoliths pairs from sablefish<br>**AND**<br>2 otolith pairs from shortraker and/or rougheye |
| **Atka mackerel** | ~20 from every sampled haul<br>**AND**<br>~20 dusky rockfish lengths | every sampled haul | 4 otolith pairs<br>(Atka only) |
| **Bering Sea flatfish**<br>1st - yellowfin sole<br>1st - N/S rock sole<br>2nd - turbot (Greenland)<br>3rd - flathead sole<br>3rd - Alaska plaice | ~16 of the most predominant species<br>**AND**<br>~4 of another flatfish on this list from every sampled haul | every 5th sampled haul | 4 otolith pairs from the most predominant species<br>**AND**<br>1 otolith pair from your second measured species |
| **Gulf of Alaska flatfish**<br>1st - N/S rock sole<br>2nd - Dover sole<br>3rd - flathead sole<br>4th - rex sole | ~20 from every sampled haul | every 5th sampled haul | 5 otolith pairs |
| 5th - arrowtooth flounder | ~20 from every sampled haul | **NO OTOLITHS**<br>choose another species | **NONE** choose another species |
| **rockfish**<br>1st - Pacific Ocean perch<br>2nd - northern rockfish<br>3rd - thornyheads<br>4th - shortraker<br>4th - rougheye<br>5th - dusky rockfish | ~20 of the most predominant species<br>**AND**<br>~8 of another rockfish on this list from every sampled haul | every sampled haul | 5 otolith pairs from the most predominant species<br>**AND**<br>2 otolith pairs from your second measured species |
| **skates** | ~20 from every sampled haul<br>(identified to species) | | Length-weights from the predominant skate species |

**Figure 9-4 Otolith and Length Priority Table for Vessels**

**Figure 9-5 : Otolith Sampling Summary**

| Frequently Asked Questions |
|---|
| **Q:** Which observers on which vessels are to collect otolith samples?<br><br>**A:** ***ALL*** observers on ***ALL*** vessels are to collect otolith samples<br><br>*Since we are only asking for a few otoliths per day every observer will be able to collect otoliths. |
| **Q:** Which species are otoliths to be collected from?<br><br>**A:** Otoliths should be a random subsample of the length-frequency sample |
| **Q:** How many hauls are to be sampled for otoliths?<br><br>**A:** Depending on the target fishery, and area fished, it may be:<br>- every sampled haul<br>- every 5th or 10th haul<br>*See Figure 9-4"Otolith and Length Priority Table for Vessels" |
| **Q:** How many otoliths are to be collected?<br><br>**A:** No more than 2 or 5 pairs per sampled haul, dependent on species<br><br>*See Figure 9-4"Otolith and Length Priority Table for Vessels" |
| **Q:** How should the individual fish be selected for the otolith sample?<br><br>**A:** Use a random or random-systematic sampling system.<br><br>*See "Otoliths" on page 9-4. |

### Length-weight Sampling in the Bering Sea Pollock Fishery

In prior years the only information available for length-weight samples were from the otolith samples. The number of otoliths required from the Bering Sea pollock fishery has been reduced from previous years collections. Because of this reduction observers no longer collect enough length-weight samples for this fishery. To supplement the number of length-weight samples, we are requiring observers in the Bering Sea pollock fishery to collect length-weight samples from the hauls designated as otolith collection hauls. On every fifth haul, the same haul as you collect otoliths, weigh and measure a subsample of the fish from your length-frequency sample not used for otolith samples. Record the data ***on a separate Form 9*** with a specimen type of 3 "Length-weight Sample." You must be very careful that the ***data from your otolith fish do not appear on your length-weight Form 9!*** Each fish must be recorded as **either** an otolith sample or a length-weight sample, but must never be recorded as both!

## Sexing Fish

Sexing the collected fish is the first step in the length-frequency task. The sexes have to be recorded together as a group on the plastic strip, the paper Form 7, or the ATLAS length form; therefore, it is best if the fish are sexed before the measurements are taken. After the fish are collected in a random/systematic fashion, cut the fish to determine the sex. While sexing, separate the males and females and then measure one group at a time. That way, when you grab a fish from the basket or pile, you will already know its sex and can make the length mark on the plastic strip quickly.

### Roundfish

Roundfish gonads are in the visceral cavity, ahead of the vent. Insert your knife or scalpel blade in or near the anus and cut forward toward the head. There will be only two organs attached directly to the anus - the intestine and the gonads. If you carefully move the other organs aside until you get a clear view of the tubes attached to the anus, you can then pull on the tubes and discern intestine (which is coiled and attached to the stomach) from gonads (which end as paired structures near the backbone.)

**Cod, Pollock, and Hake**
The gonads are directly above the vent and are attached to the vent. Slit the skin of the belly near the vent and look behind the stomach area for the paired organs.

The ovaries are paired sacs which are typically pink or orange (or clear when immature). When the ovaries are mature, you should be able to see the eggs inside. The sacs should look granular. Pacific cod ovaries often have a black covering on each sac.

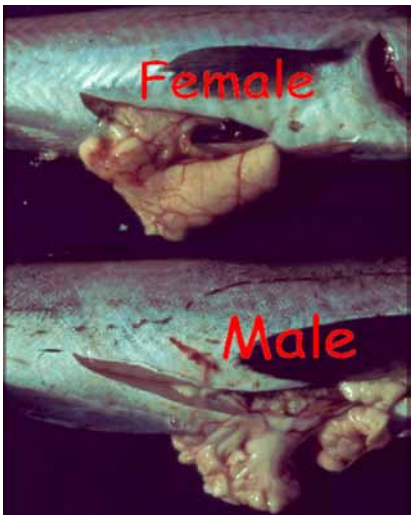



**Figure 9-6 Female and Male Pollock Gonads**

The testes look very different from ovaries. When mature, the testes are convoluted, opaque and smooth in texture. In a mature male, the testes are best described as "greasy-looking, white, twisted Ramen noodles." Immature testes will be pink or cream colored, have a ruffled look to the edges of the tubes, and be located near the backbone. Often, the paired gonads are fused together as if one structure.

**Rockfish**
Rockfish gonads will be found near the backbone in the visceral cavity. Trace the gonad strings from the vent upwards until you see the paired organs. There will always be two strings near the anus that have to be traced some ways before you can find the sacs. Sometimes there is another structure directly at the vent that appears to be a single gonad sac, but do not assess this as the sex organ! You must follow the string-like tubes up to the paired gonads.

The ovaries will be elongate ovals with granular insides. They will be pink, orange, yellow, or white. The two sacs will have smoothly rounded sides, as opposed to the male testes which have a three-sided, triangular shape in cross-section. If immature, look closely or cut the gonad open to see the granular insides which identify it as female. Rockfishes are live spawners, so a spawning female will have larvae in the cavity.

Rockfish testes are cream colored or pink, elongate (5 times as long as they are wide) and smooth in texture. They have three "edges" to the tubes. Instead of a rounded oval tube, testes look triangular in cross section due to the distinct edges. Testes will look like flat tubes when immature, but when examined closely you will see the sharp edges and the triangular shape.

Though you may notice external structures at the vent that seem sexually dimorphic, ***never sex rockfish using external characteristics.*** It is too easy to judge an immature male as a female or a huge female as a male when using external characteristics.

**Atka Mackerel**
Like rockfish, Atka mackerel gonads are at the top of the visceral cavity, close to the backbone. Externally, mature males have a yellow tinge to the white stripes but external color differences cannot be used to sex these fish. The cut and gonad location is the same as with rockfish.

**Figure 9-7 Male and Female Atka Gonads**

Ovaries are two clear sacs filled with small round eggs that are olive green, tan or brown. Atka mackerel spawn in spurts, so eggs in the ovaries will be a mix of different sizes and stages of development.

Atka mackerel testes are similar to those in rockfish. The two tubes will be smooth in texture, cream colored and longer than wide. Be aware that males eat the eggs from other Atka mackerel nests. Don't confuse a stomach full of eggs, or eggs loose in the cavity as a female mackerel.

**Sablefish**

The gonads of sablefish are very different from all other roundfish. They will be located directly on the backbone, forward toward the fish head. Remove all the other organs from the visceral cavity and peer at the backbone area near the posterior of the cavity for the gonad tubes. Immature fish will have nearly see-through ribbons, so you will need to probe them apart to count the correct number of lobes. It is important to count the lobes at the posterior portion of the gonad, since the lobes will be fused anteriorly and will always look like two lobes.

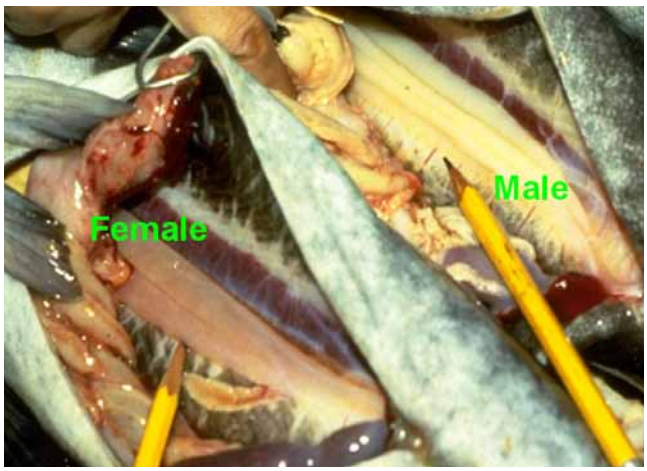



**Figure 9-8 Female and Male Sablefish Gonads**

**Male sablefish gonad lobes are fused at the anterior point, making it easy to mistake a male as female. When checking the gonad lobes, look at the posterior part!**

Both females and males have fleshy smooth tubes of a cream or pink color. Mature fish have liver colored gonad tubes. There are no reliable differences in color or texture between non-ripe males and females. However, males will have four lobes and females will have two lobes. When mature, the ovaries may have a partial fold through each of the two lobes, giving a false impression of four lobes. Cut across the gonad strands and distinguish the true number of lobes.

**Flatfish**

Flatfish gonads are also paired, but are located behind the visceral cavity. If the flatfish has an anal spine, the gonads will begin just behind it. Cut from the anal spine location back toward the tail of the fish. When you gain experience determining sexes using a larger cut, your cut can be made smaller, faster, and in the correct spot for seeing the sex difference. Practice the cut in the fish lab.

Flatfish gonads are posterior to the visceral cavity (and the anal spine if there is one) and extend just under the flesh on both sides of the fish, though it is easier to cut on the blind side. Cut back toward the tail from the anus as if skinning the fish. Lift the skin flap and check for a triangular shaped gonad.

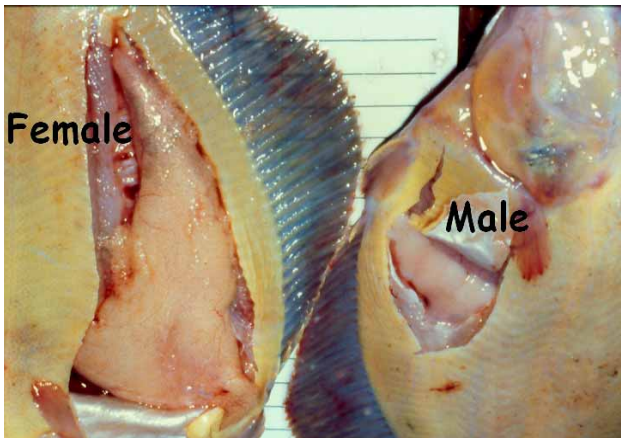



**Figure 9-9 Female and Male Flatfish Gonads**

Female flatfishes have elongate triangle ovaries that extend from behind the anal spine area almost to the tail when mature. When immature, the ovaries will be almost equilateral triangles with one angle shaped like a smoothly rounded tube extending only slightly back toward the tail (the triangle looks like a funnel in shape). The color will be pink (spent, immature) or orange (ready to spawn). Ovaries always have rounded edges on the triangular gonad.

Male flatfishes have a white, equilateral triangle shaped gonad on each side. The triangle will not have a tail extending back toward the caudal fin. Immature males have a small crescent moon shaped, tan colored gonad laying right at or behind the anal spine location. All male flatfishes have “edges” to the triangle. If you lift the gonad with the knife or scalpel and examine the sides of the triangle, you can distinguish the sharp

edges (male) or rounded sides (female), even on an immature flatfish.

### Skates

Skates can easily be sexed externally by noting the presence or absence of claspers. The claspers are paired reproductive structures located between the pelvic fin and the base of the tail. In mature males the claspers are large (possibly half the length of the tail), rigid and are easily identified. However, in immature males the claspers are much smaller and flexible, and may be more difficult to distinguish from the pelvic fin.

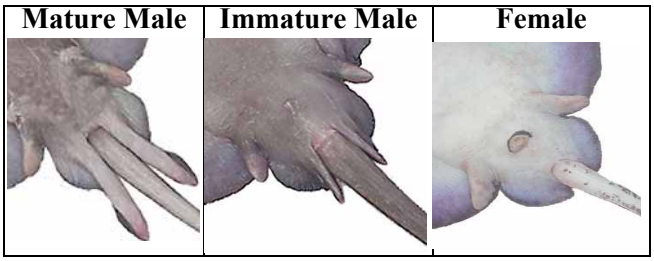



**Figure 9-10 Male and Female Skate Gonads**

### Regulatory Support for Cutting Fish to Obtain Sex Data

The sexing of the target species provides essential data for managing the fishery. Because of its importance, regulations specifically support observers in cutting fish for sexed lengths. 50CFR 679.50, subpart E, part viii, states that the vessel must, "(p)rovide all other reasonable assistance to enable observers to carry out their duties, including, but not limited to: (E) Allowing the observers to determine the sex of fish when this procedure will not decrease the value of a significant portion of the catch." If you encounter any resistance to these regulations you will be asked to complete an affidavit on the matter in debriefing.

There are instances where the crew will want you to not cut the fish because it may destroy or reduce the value of the product. The only alternatives to cutting all of the measured fish are as follows:

- If the fish are spawning, you can squeeze the fish to see milt or eggs, but you must cut the ones in your length sample that are not yet spawning to discern sex.
- If the target species is yellowfin sole, you can sex the mature yellowfin by "candling" them without cutting the flesh. Hold the fish up to a strong light and look through the blind side to see the gonad. Immature fish must be cut to discern sex. ***This method can be used for yellowfin only!***
- Ask if a "pectoral cut" would be acceptable on the product (slicing the throat area just under the pectorals across the body, the same way as the crew heads the fish by hand or machine). The gonads can be seen in the opened cavity or pulled out to examine.
- If the target is a flatfish, make a very small cut, parallel to the anal spine, about an inch behind the anal spine and check the gonad (make sure you try this technique in the training or briefing session to see how it is used). The small cut may not be a problem for the product.
- If there is no other way to sex the fish without cutting them, work with the captain to determine a number that you can cut, and list the rest as unsexed.
- If the vessel refuses to allow you to cut any of the fish because it would destroy a major percentage of the target species product or if product is whole or live fish, leave all measured fish as unsexed. Notify NMFS and document the reasons in your logbook.

## Measuring Fish

Fork length is the fish length measurement method used by the Observer Program and by NMFS researchers. Fork length is the length from the tip of the snout or jaw (whichever sticks out most) to the end of the middle rays of the caudal fin (see Figure 9-11). The only exception to this rule is for grenadier length, which is measured from the snout to the insertion of the anal fin.

You will be given plastic measuring strips marked at centimeter increments. The first line printed on the strip is 4.5 cm, and the space between that line and the next line represents a measurement of 5 cm. Check your plastic strip, on both sides, to insure that the first line is really 4.5 cm. Sometimes the manufacturer has cut the strip incorrectly. Notice that the 10 centimeter increments are not marked with a number. That is so that you can offset the strip by 10, 20, or 30 centimeters for the larger fish. Figure 9-12 shows offsetting the plastic strip for measuring large fish. Position the

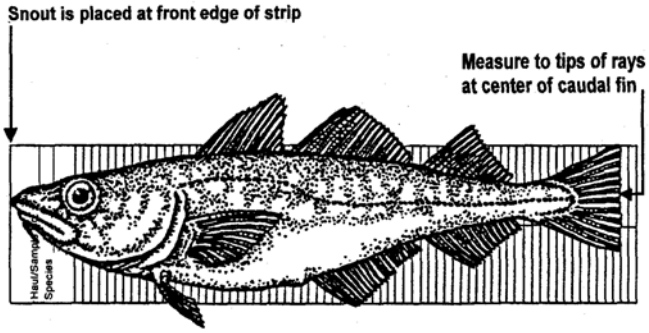



**Figure 9-11 Measuring Fish**

plastic strip on the NMFS aluminum board, the labeled end should be toward the lip of the board so the snout of the fish may be nudged against it. Alternative materials to the aluminum board may be used for doing measurements, but you must be able to nudge the snout against something. The plastic strip can be held down with thumbtacks, tape, or fish slime (rub the back of the strip on the fish and it will "glue" temporarily to the board).

## Steps to Measuring Fish

1. Sex the fish first, if possible.

2. Lay the fish flat on the plastic measuring strip parallel to the center line.

3. Close the jaws.

4. Nudge the fish snout against the end of the aluminum board.

5. Stretch out the tail to find the middle rays (see Figure 9-11).

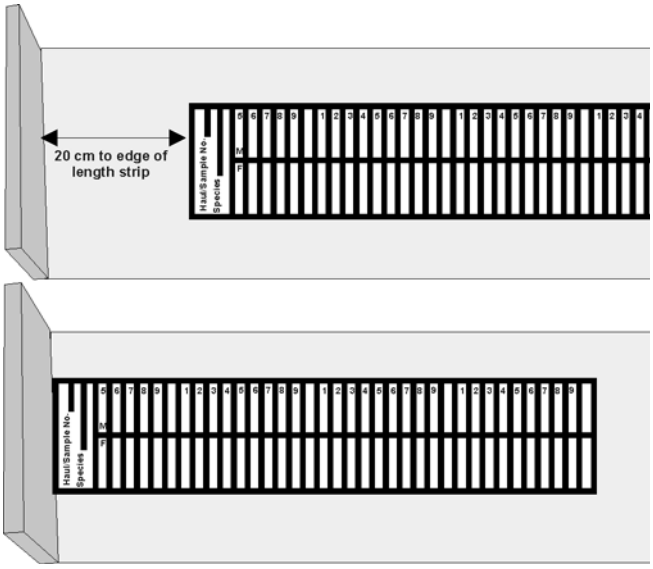



**Figure 9-12 Measuring Strip Placement**

6. Read the space where the fork length falls and record this length on a deck form.

If the fork length falls on a printed line on the strip, try re-measuring the fish. If the length falls on the line again, use the ***lower*** centimeter measurement.

If you choose to write directly on the length strip, it should be cleaned with scouring powder to remove the marks and ready it for the next haul's lengths. Don't scrub too hard because you may scour off the centimeter lines!

## Taking Otoliths

After obtaining the length measurement, weigh the fish. Weigh fish for otolith samples on the brass 2 kg, 5 kg, or 12 kg scales, or your motion compensated platform scale. Do not use the 50 kg Salter scale for individual fish weights unless the fish is over 12 kg and you do not have access to a motion compensated platform scale! Record weight, sex, and length on your plastic deck sheet next to the vial number in which the otoliths and/or scales are placed. ***It is important that the numbered vials match the data for that fish.*** A mistake in the numbering used to relate the otoliths to associated biological data makes that sample useless.

First and second observers collect otoliths as one collection. All otoliths from both observers should be listed under the same cruise number. The primary observer is responsible for returning all data and specimens to debriefing.

Otoliths are fragile and must be in good condition to be read. During a non-otolith haul, practice taking otoliths from different species and different size fish. Try a variety of cuts and knife sizes until you feel comfortable. Since these will only be practice fish, the otoliths should not be kept or recorded on any forms.

The otoliths are located ventrally, and to either side, of the brain tissue, just above where the pre-operculum is located. The common methods of cutting into a fish's head to remove the pair of otoliths are: **1)** a vertical cut through the head above the pre-operculum, or **2)** a horizontal cut through the head just above the eyes. The easiest method to use for most fish is to make a vertical cut down through the top of the head to the location of the otolith pocket. This point is located by a simple rule of thumb: imagine the two points on either side of the fish's head at which, if the lateral lines were extended, they would meet the pre-opercular bones. Plan to cut down to these points. Species with tiny otoliths are best cut using the horizontal technique (see Figure 9-14).

Firmly grasp the fish by putting thumb and forefinger into the eye sockets or grasp the fish just behind the head, holding it dorsal side up. Bear down on the knife with even pressure as you cut through the bone of the head. Pay attention to the amount of pressure you are required to apply to make this cut. As soon as the cutting gets easier, ease off pressure on the knife or you will slice through the otoliths. Break the head open with two hands.

If you have cut to the correct point, the otolith cavities (one on each side of the brain) will break open and expose the white, calcareous otoliths. They can easily be picked out with forceps. The otoliths ***must*** be wiped clean before storage in the vials or they will rot and become useless!

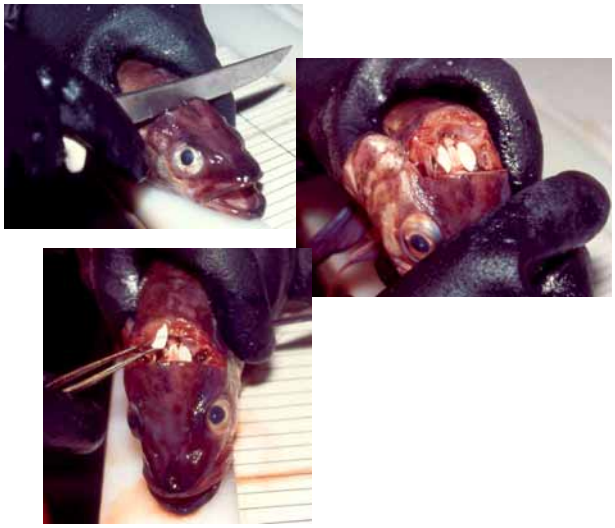


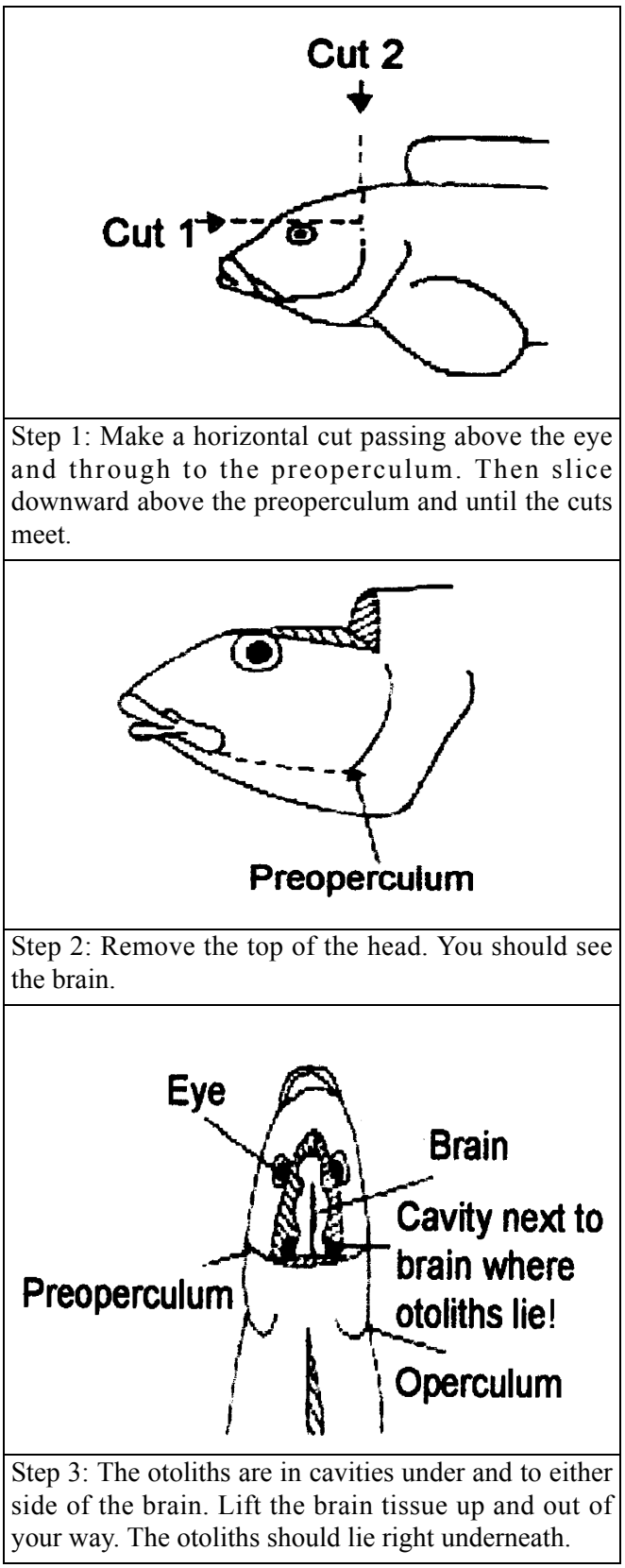
**Figure 9-13 : Location of Roundfish Otoliths**

Carefully clean the otoliths by rubbing them between your fingers in water, or on a wet sponge or cloth to remove slime and tissue. Dry them as much as possible and place one pair of otoliths in each vial. ***It is important to get the otoliths clean and as dry as possible before storing them to prevent their rotting.*** At the end of the collection period, transfer the data from the deck sheet to the paper Form 9 or into the ATLAS database.

**Otolith vials should not be filled with any solution prior to debriefing.**

### Collecting Otoliths from Atka Mackerel and Sablefish

Sablefish and Atka mackerel have very tiny otoliths. Use a horizontal cut method when working with these species. To collect otoliths using the horizontal cut, hold the fish's head and make a horizontal slice into the snout just above the eye. Stop slicing when the knife is just before the preopercle. Make a second cut down into the head until you reach the level of the first cut. Remove the wedge of head (see Figure 9-14). If you have made the cut correctly, there should be no blood flooding the cavity and you should see the brain tissue. The otoliths are just under and beside the brain. Grasp the brain tissue with forceps and pull it out or peel it back from the cavity. On either side of the brain cavity there is a fluid-filled pocket containing an otolith. The otoliths may not be visible yet, but if you insert forceps into the pockets, you will find the bony structures floating within the fluid. If blood fills the cavity, you have cut too deep, and the otoliths may be washed out. It's a good idea to practice this cut. When perfected, the otolith collection will become easy.




Step 1: Make a horizontal cut passing above the eye and through to the preoperculum. Then slice downward above the preoperculum and until the cuts meet.

Step 2: Remove the top of the head. You should see the brain.

Step 3: The otoliths are in cavities under and to either side of the brain. Lift the brain tissue up and out of your way. The otoliths should lie right underneath.

**Figure 9-14 The Horizontal Cut for Otolith Removal**

### Broken Otoliths

Some otoliths may break or be cut accidentally during your collection. Keep samples with otoliths that have a single break, if you have both pieces. ***Discard samples with a shattered otolith or with only one otolith.*** Do not replace the sample by taking otoliths from another fish in that haul.

Each time three or more samples from one species are lost or discarded you should collect otoliths from an additional randomly chosen haul to replace the discarded samples. You do not need to replace samples unless three or more are lost for that species during your cruise. If you find you are consistently breaking otoliths, contact an Observer Program office for advice.

## Form 7 Instructions - Length Frequency of Measured Species

The Form 7 is used for recording lengths of predominant and prohibited species (except herring), presence of crab eggs, and halibut viabilities/injuries. ***Do not record estimated lengths on this form***. Never proportion length data between hauls or sets unless they are lengths of prohibited species from pollock deliveries. Observers using the ATLAS software do not need to complete this form, but will transfer data directly from the deck sheets to the computer.

**Heading:** Fill in the cruise number and vessel code of your ship or plant. A list of these codes can be found on A-26.

**Date:** Fill in the date of the haul retrieval, or if at a plant, fill in the delivery date. This date should match the Vessel Haul Form, or Form A for that haul number. The date must be numerical and in the YY/MM/DD format. ***Use leading zeros when appropriate***.

**Page Numbers:** Number the pages "Page ___ of ___" starting with page one for each vessel or plant and ending with the total number of pages in the Form 7 set. Keep separate sets of Form 7s for each vessel or plant.

**Species Name:** Record the common name of the fish or crab.

**Species Code:** Enter the species code for the measured species (a listing of codes starts on page A-1). ***Pollock catcher vessel observers:*** Predominant species lengths will be done at sea but prohibited species lengths will be taken at the plant. Leave several blank lines after the target fish lengths to later fill in that haul's prohibited species lengths

**Haul/set no.:** Record the haul, set or delivery number.

**Sex:** In the Sex column, record the fish or crab sex as "F" (female), "M" (male), or "U" (unsexed or uncertain).

**Eggs?:** This column is filled out only for ***female prohibited species crab***. Enter a "Y" in this column when eggs are present and follow with lengths for those carrying eggs. Use another line for female crabs without eggs and enter a "N" in the column. Use another line for female crabs where the presence of eggs is unknown and enter a "U" in the column. Leave the column blank for male crabs and all fish.

**Viability:** For all ***trawl and pot*** caught halibut viability measurements, list viability codes in this column. Use condition codes "E" (excellent), "P" (poor), "D" (dead), or "U" (condition not assessed). See page A-38 for more information.

**Injury:** For all ***longline*** caught halibut injury assessments, list the injury codes in this column. For more information, see page A-44. Use one of the following injury codes:

| | |
|---|---|
| 1 - Minor | 4 - Dead/Sand Fleas/Bleeding |
| 2 - Moderate | 9 - Unknown |
| 3 - Severe | |

**Keypunch Check:** Record the sum of all of the lengths and frequencies on that line.

**Size Group:** List the length readings from the plastic length strips. The list must be in ascending order across the line. List only size groups that have a frequency of one or more.

**Freq:** Frequency is the number of animals in the particular length group for that species, sex, and in some instances Eggs?, Viability, or Injury.

Start a new row every time there is a change in sex, viability or presence of eggs. ***Skip a line between different species or hauls.*** Do not enter leading zeros in any columns or fields except the date.

FORM 7 - LENGTH FREQUENCY OF MEASURED SPECIES
(includes halibut, salmon, and crab measurement)

| Cruise | Vessel Code | Year | Month | Day |
|---|---|---|---|---|
| 8800 | A123 | 05 | 02 | 04 |

DO NOT use arrows in form!

Observer name JOHN DOE
Vessel name Fishin' Impossible
Page 5 of 9 for transmission

Page 5 of 10

Size groups: Fish by 1 cm, Crabs by 5mm

M = male
F = female
U = unknown

| Species name | Species code | Haul/set no. | Sex | Eggs? | Viability | Injuries | Keypunch check | Size group | Freq. | Size group | Freq. | Size group | Freq. | Size group | Freq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pollock | 201 | 12 | F | | | | 185 | 42 | 1 | 43 | 2 | 44 | 3 | 47 | 3 |
| Pollock | 201 | 12 | F | | | | 51 | 49 | 2 | | | | | | |
| Pollock | 201 | 12 | M | | | | 176 | 40 | 3 | 41 | 2 | 42 | 2 | 45 | 1 |
| Pollock | 201 | 12 | M | | | | 48 | 47 | 1 | | | | | | |
| | | | | | | | | | | | | | | | |
| CHUM Salmon | 221 | 12 | M | | | | 61 | 60 | 1 | | | | | | |
| CHUM SALM. | 221 | 12 | F | | | | 66 | 65 | 1 | | | | | | |
| | | | | | | | | | | | | | | | |
| King Salmon | 222 | 12 | M | | | | 47 | 46 | 1 | | | | | | |
| | | | | | | | | | | | | | | | |
| Pac. Halibut | 101 | 12 | U | | E | | 51 | 50 | 1 | | | | | | |
| | | | | | | | | | | | | | | | |
| Pollock | 201 | 13 | F | | | | 177 | 40 | 1 | 41 | 2 | 43 | 3 | 45 | 2 |
| Pollock | 201 | 13 | F | | | | 148 | 47 | 2 | 48 | 1 | 49 | 1 | | |
| Pollock | 201 | 13 | M | | | | 181 | 40 | 2 | 42 | 4 | 43 | 2 | 46 | 2 |

National Marine Fisheries Service / North Pacific Groundfish Observer Program

**Figure 9-15 Form 7 - Length Frequency of Measured Species (trawl vessel example)**

FORM 7 - LENGTH FREQUENCY OF MEASURED SPECIES
(includes halibut, salmon, and crab measurement)

| Cruise | Vessel Code | Year | Month | Day |
|---|---|---|---|---|
| 6562 | A714 | 05 | 03 | 15 |

DO NOT use arrows in form!

Observer name Marco Vovchok
Vessel name Sablefisher II
Page 10 of 12 for transmission

Page 1 of 10

Size groups: Fish by 1 cm, Crabs by 5mm

M = male
F = female
U = unknown

| Species name | Species code | Haul/set no. | Sex | Eggs? | Viability | Injuries | Keypunch check | Size group | Freq. | Size group | Freq. | Size group | Freq. | Size group | Freq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sablefish | 203 | 131 | M | | | | 275 | 60 | 1 | 69 | 1 | 70 | 1 | 72 | 1 |
| Sablefish | 203 | 131 | F | | | | 282 | 64 | 1 | 66 | 1 | 71 | 1 | 76 | 2 |
| Sablefish | 203 | 131 | F | | | | 325 | 77 | 2 | 79 | 2 | 80 | 2 | 82 | 1 |
| Sablefish | 203 | 131 | F | | | | 266 | 86 | 1 | 87 | 1 | 89 | 2 | | |
| | | | | | | | | | | | | | | | |
| Shortraker | 326 | 131 | M | | | | 200 | 45 | 1 | 48 | 1 | 51 | 1 | 52 | 1 |
| Shortraker | 326 | 131 | M | | | | 126 | 61 | 1 | 63 | 1 | | | | |
| Shortraker | 326 | 131 | F | | | | 228 | 47 | 1 | 51 | 1 | 56 | 1 | 70 | 1 |
| | | | | | | | | | | | | | | | |
| Rougheye | 307 | 131 | M | | | | 185 | 42 | 1 | 44 | 1 | 45 | 1 | 50 | 1 |
| Rougheye | 307 | 131 | M | | | | 105 | 51 | 1 | 52 | 1 | | | | |
| Rougheye | 307 | 131 | F | | | | 203 | 46 | 1 | 48 | 1 | 52 | 1 | 53 | 1 |
| | | | | | | | | | | | | | | | |
| Halibut | 101 | 131 | U | | | 3 | 156 | 75 | 1 | 79 | 1 | | | | |
| Halibut | 101 | 131 | U | | | 2 | 84 | 83 | 1 | | | | | | |

National Marine Fisheries Service / North Pacific Groundfish Observer Program

**Figure 9-16 Form 7 - Length Frequency of Measured Species (longline vessel example)**

## If You Run Out of Otolith Vials

The following steps need to be followed if you run out of otolith vials while you are deployed:

1. Continue to collect otoliths
2. Wrap otoliths in small piece of foil or paper.
3. Number otoliths with distinct numbers (1, 2, 3, ....)
4. Record all information on a Form 9 until you are able to get usable vials with numbers that you can then enter into the computer out on your vessel with ATLAS, in a field office or during debriefing.

## Form 9 - Biological Sampling Form Instructions

The Form 9- Biological Sampling Form is used to record otolith, length- weights and salmon scale collections.

***Keep separate groups of Form 9s for each species and specimen types and number them separately!***

**Form sets and page numbering:** Each set of Form 9s must be numbered separately by species, by specimen type and by vessel. Start a new page for a new species, a new set of pages for a separate vessel and a new set of pages for each specimen type.

**Heading:** Fill in your cruise number and vessel code in the first two boxes. Enter the year in YY format, followed by species name and species code.

**Specimen type:** Record the specimen type code from this list:

1 - otoliths only

2 - salmon scales

3 - lengths and weights only

**Keep your otolith collections separate for each species and vessel! This will save you from trying to sort them out during debriefing!**

**Date:** Fill in the date of the haul/set retrieval, or if at a plant, fill in the delivery date. This date should match the VHF, or Form A, for that haul number. Use leading zeros in dates to record month and day to two digits.

**Set/Haul Number:** List the haul, set, or delivery number for the otolith, length-weight or salmon scale collection in the first column. You may list multiple hauls on the same page, so long as the hauls listed are from the same specimen type, species and ship. Keep data from the same haul together on the form. Skip a line between different haul/delivery numbers.

**Specimen number:**

Otoliths: Copy the bar coded specimen number on the otolith vial for each pair of otoliths taken for that haul. Each vial number is unique and cannot be altered! Vial numbers do not have to be sequential, although the ATLAS program will auto fill with the next vial number. Be careful of this if using non-sequential vials!

Salmon Scales: Label your salmon scale envelopes (see page 10-8) with specimen numbers. Start with specimen 1 and continue in ascending order until you have numbered all of the salmon scale envelopes you have for that species and vessel. Start with a new number 1 when changing to a new species or new boat. Record the specimen numbers from your envelopes for the hauls sampled in ascending order. (Salmon scale specimen numbers must be less than 999.)

Length/Weight: For each length/weight recorded, create a specimen number that does not match any otolith specimen number. Number your length/weight specimen consecutively from the starting number. (Length/weight specimen numbers must be less than 999.)

**Sex:** Group your data by sex, listing all males together and all females together. Use M, F, or U in this field.

**Length:** Record the fish length in centimeters. Use whole numbers.

**Weight:** Record the individual fish weight in kilograms. Always list the weights to 2 decimals.

### Considerations When Faxing Form 9s

Observers aboard vessels that do not have ATLAS are required to fax their Form 9 data to Seattle. Each form 9 should only be faxed once, regardless of whether the form is full of data or not. ***Once you fax a form 9 you must begin a new form 9***!

**Form 9 - Biological Sampling Form**

Page 1 of 2 for vessel / plant
(Number pages separately for each species and specimen type.)

Observer Name John Doe

Vessel / Plant Name Fishin' Impossible

Page 8 of 9 for transmission

| Cruise Number | Vessel Code | Year | Species Name | Species Code | Specimen Type | Sampling System |
|---|---|---|---|---|---|---|
| 8800 | A 123 | 05 | Pollock | 201 | 1 | 2 |

**DO NOT use arrows in form!**

| | Date | | Haul / Delivery Number | Specimen Number | Sex | Length | Weight (kg) |
|---|---|---|---|---|---|---|---|
| | Month | Day | | | | | |
| 1 | 02 | 04 | 12 | 239617 | M | 40 | .85 |
| 2 | 02 | 04 | 12 | 167839 | F | 43 | .90 |
| 3 | | | | | | | . |
| 4 | 02 | 08 | 17 | 196429 | F | 51 | 1.05 |
| 5 | 02 | 08 | 17 | 43562 | F | 46 | .95 |
| 6 | | | | | | | . |

**Figure 9-17 Form 9 - Biological Sampling Form (otolith data)**

**Form 9 - Biological Sampling Form**

Page 1 of 6 for vessel / plant
(Number pages separately for each species and specimen type.)

Observer Name John Doe

Vessel / Plant Name Fishin' Impossible

Page 9 of 9 for transmission

| Cruise Number | Vessel Code | Year | Species Name | Species Code | Specimen Type | Sampling System |
|---|---|---|---|---|---|---|
| 8800 | A 123 | 05 | Pollock | 201 | 3 | 2 |

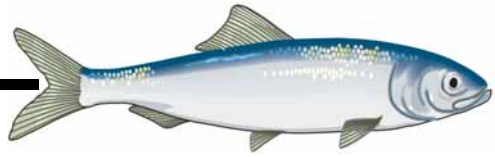
**DO NOT use arrows in form!**

| | Date | | Haul / Delivery Number | Specimen Number | Sex | Length | Weight (kg) |
|---|---|---|---|---|---|---|---|
| | Month | Day | | | | | |
| 1 | 02 | 04 | 12 | 1 | M | 42 | .75 |
| 2 | 02 | 04 | 12 | 2 | M | 47 | .85 |
| 3 | 02 | 04 | 12 | 3 | M | 41 | .65 |
| 4 | 02 | 04 | 12 | 4 | M | 41 | .65 |
| 5 | 02 | 04 | 12 | 5 | F | 49 | .85 |
| 6 | 02 | 04 | 12 | 6 | F | 44 | .80 |
| 7 | 02 | 04 | 12 | 7 | F | 47 | .80 |
| 8 | 02 | 04 | 12 | 8 | F | 44 | .70 |
| 9 | | | | | | | . |
| 10 | 02 | 08 | 17 | 9 | M | 40 | .70 |
| 11 | 02 | 08 | 17 | 10 | M | 42 | .70 |
| 12 | 02 | 08 | 17 | 11 | M | 40 | .55 |
| 13 | 02 | 08 | 17 | 12 | M | 45 | .85 |
| 14 | 02 | 08 | 17 | 13 | M | 43 | .60 |
| 15 | 02 | 08 | 17 | 14 | F | 42 | .65 |
| 16 | 02 | 08 | 17 | 15 | F | 47 | .83 |
| 17 | 02 | 08 | 17 | 16 | F | 44 | .64 |
| 18 | | | | | | | |

jnd/fish Observer Program

**Figure 9-18 Form 9 - Biological Sampling Form (length/weight data)**

# PROHIBITED SPECIES SAMPLING



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## List of Priorities

- Collect data from prohibited species in your species composition sample.
- Collect and record crab measurements.
- Collect and record salmon and halibut length measurements.
- Collect and record halibut viabilities or injuries.
- Collect salmon scales.

## Introduction

Certain species cannot be retained when fishing in particular fisheries and are referred to as prohibited species. This group includes all Tanner crab species, all king crab species, all salmon species, Pacific halibut, and herring. In addition to data on the abundance of these species in the composition of commercial catches, observers are asked to collect measurements and other significant biological data from most of these animals, ***with the exception of herring***.

Just as the length measurements on target species help provide information on what populations are being targeted by fishing operations, the measurements of prohibited species provides information as to which parts of the populations of prohibited species are being caught as bycatch. Data collected on halibut is used to monitor the total prohibited species cap (PSC) for halibut. A total of 15% of the total halibut quota is reserved for groundfish fisheries bycatch. The assessment of viability is important because not every

halibut caught by groundfish vessels as bycatch are killed. Many halibut are released alive and remain a part of the stock. To estimate what percentage of the bycatch should be counted as dead, and therefore part of the halibut PSC, the International Pacific Halibut Commission (IPHC) relies on observer data to estimate what number of halibut captured are actually killed. Knowing the length as well as the viability shows the trends of how different sized halibut are affected by capture and handling.

## Forms Involved

Sex and length data from salmon and crab, halibut length and condition data, and crab egg presence will be recorded on the Length Frequency Form 7. Data from salmon scale collections will be recorded on Biological Sampling Form 9.

## Subsampling

All fish and crab listed on Form 7 or Form 9 must be identified to the species level, as biological data from unidentified salmon or crabs is useless. If there are too many crab or salmon in a haul, and you cannot sample them all, collect a random or systematic subsample of 20 to identify to species, sex, and measure these. If there are too many halibut in a haul or set, be sure to collect 20 per day to measure and assess for viability or injury. Refer to "Collecting Fish for Length and Otolith Samples" on page 9-2 for instructions on how to collect a random or systematic subsample.

## Tasks for Crab Data Collection

### Complete crab tasks in the following order of priority:

- Collect species composition data, identifying crab to species.
- For prohibited species only, sex the crab and check for eggs in the females.
- Measure crabs.
- Look for tagged crabs.

### Species Composition of Crab

In your species composition samples, identify all crab to species or species group. For the two prohibited species groups, Tanner and king crab, identify the crabs to species and sex, then record their numbers and weights on the 3US Form. If there are too many crab to identify, or too many to weigh or count, refer to "Subsampling" on page 10-2.

### Crab Measurements, Sex Determination, and Egg Presence

Other biological data such as measurements, determination of sex, and the presence of eggs should only be collected from Tanner crab and king crab species from within your prohibited species composition sample. The nine species of concern to the North Pacific Fisheries Management Council are: ***Chionoecetes bairdi*** Tanner crab, ***C. opilio*** Tanner crab, ***C. bairdi/opilio*** hybrid Tanner crab, ***C. angulatus*** Tanner crab, ***C. Tanneri*** Tanner crab, brown or golden king crab, blue king crab, red king crab, and Couesi king crab.

### Exceptions to the Guidelines:

**Measuring Crab in the Pollock Fishery**

All vessels fishing in the pollock fishery must be using pelagic gear. This definition includes a performance standard based on the number and size of crabs on board at any time. The presence of 20 or more of any species of crab indicates non-pelagic fishing. Observers are asked to complete the following: **1)** count and measure any crab in your composition sample and **2)** ***if you see more than 20 crab, begin measuring all the crab you find.*** Measure the non-prohibited crabs across the carapace. Do not sex the non-prohibited crabs or look for eggs.

## Sexing Crab and Checking for Eggs

Refer to Figure 10-1 and Figure 10-2 for the differences in the shape of the abdominal flap which indicate the sex of the crab. Sex each crab before measuring it.

- Female king or Tanner crab have an abdominal flap that completely covers the carapace bottom. It will be round and extend to the leg insertions on mature females. If you lift the flap slightly, you can determine if the females are carrying eggs.
- Male king and Tanner crabs have a V or U-shaped abdominal flap that does not cover the bottom of the carapace. When immature, the abdominal flap is shaped like a finger. When crabs are mature, the abdominal flap is more V- shaped in king crabs and U-shaped in Tanner crabs.

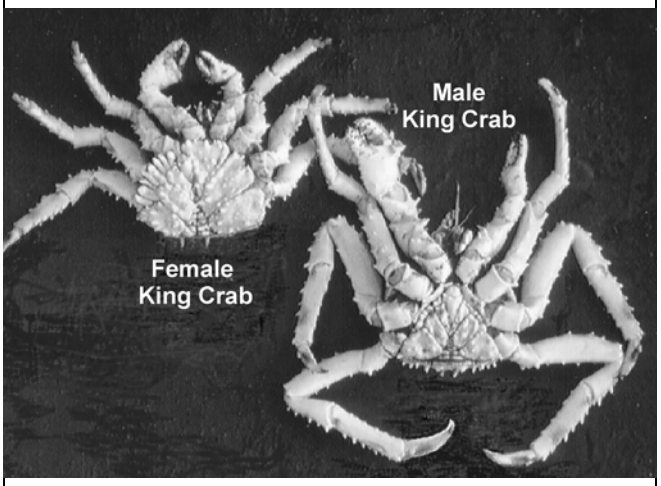
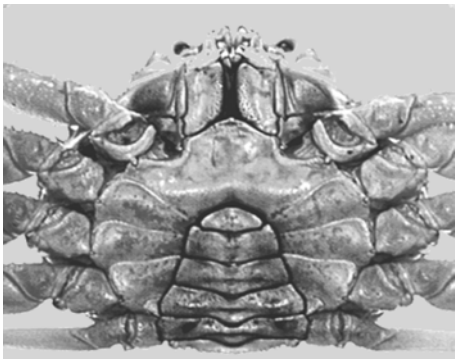
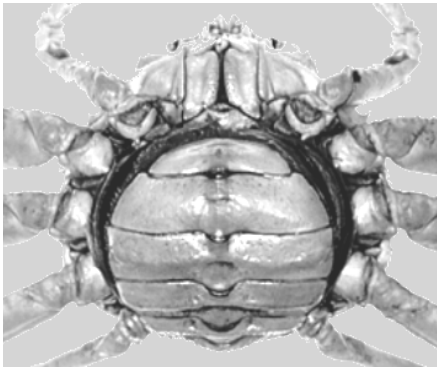



**Figure 10-1: Female and Male King Crab**



male Tanner crab



female (mature) Tanner crab

female (immature) Tanner crab

**Figure 10-2: Male and Female Tanner Crab**

## Measuring Crab

All crab must be measured using the calipers provided by NMFS. If you do not have calipers, do not measure crabs, as all other measurement techniques are invalid. Never use a tape measure or fish length strip for crabs since these are only accurate to the nearest centimeter.

Lay the crab on a flat surface and hold the body down with one hand while you work the calipers with the other hand. Spread the calipers across the top of the crab and close the arms until the very tip of the calipers is touching on the designated spots (see Figure 10-3.)

- King crab are measured from the right eye socket to the middle of the ***posterior margin of the dorsal carapace.*** Be careful not to let the caliper tip slip into the eye socket; keep the tip only at the socket rim.

•Tanner crab are measured across the carapace. Measure the width across the back, at the widest part of the carapace, but exclude any spines at the carapace edge (see Figure 10-3.)

- For hermit and sponge crab inside of their shell or sponge, measure the width at the widest point of the shell or sponge. On the Form 7 form make sure to indicate that these measurements were of the shells and not the actual crabs. If you are using ATLAS note this in your logbook.
- All other crabs should be measured in the same manner as Tanner crabs.

### Transferring Measurements

You will be given a plastic crab measuring form to record crab measurements. After measuring the crab and without moving the arms of the calipers, lay one arm of the caliper on the "start line" at the bottom of the plastic form and lay the other arm perpendicular to the start line on the plastic form. At this point make a pencil mark under the appropriate sex category. If the caliper arm falls directly on a line use the lower measurement. Use only this plastic sheet for crab lengths.

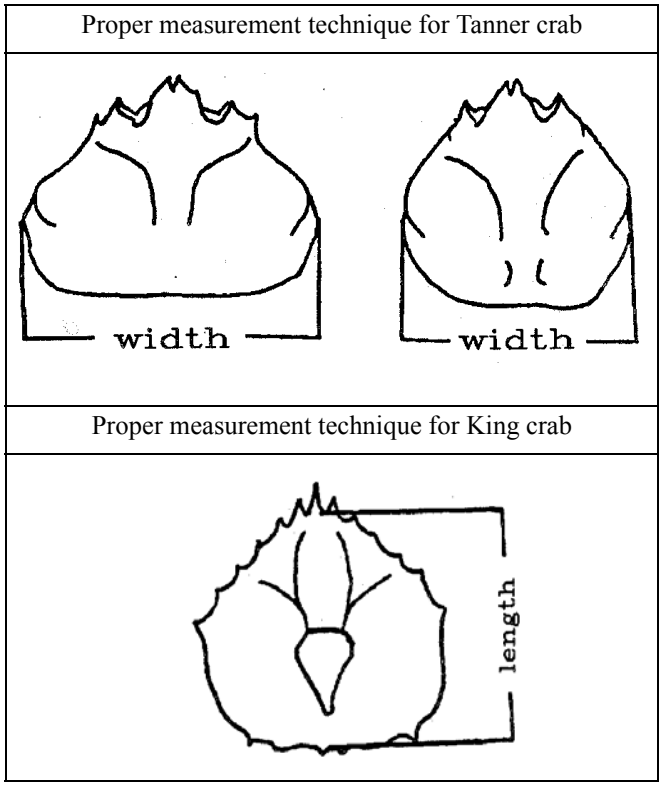



**Figure 10-3: Measurement Techniques for Crab**

The plastic crab measuring form for crabs is marked in 5 mm increments starting at 3 mm. Crab lengths read from this sheet will always end in digits 3 or 8. For example, all crabs 41 to 45 mm in size would be recorded as 43 mm, crabs 46 to 50 mm would be recorded as 48 mm.

### Recording Biological Data

Record the sex, presence of eggs (females only), and measurements by haul, species, sex, and presence of eggs on either the paper or electronic Form 7. This could result in a total of four lines on the Form 7 for each haul and species of crab: male; female without eggs; female with eggs; female, presence of eggs unknown. It is highly recommended that you record this raw data on your ATLAS deck form to assist you if any questions arise at the completion of your cruise.

## Check for Tagged Crab

Refer to "Tagged Crab" on page 11-1 for information on what sort of tags are used and what data to collect.

## Tasks for Halibut Data Collection

### Introduction

Complete halibut tasks in the following order of priority:

- Determine species composition.
- Measure halibut and assess viability or injury at the point of discard (a maximum of 20 per day) from sampled sets. These fish may be from either inside or outside your composition sample and **must** be representative of how the crew handles halibut.
- Check for tagged halibut.

Halibut management and careful release methods for longline vessels are discussed on page 6-12.

### Technique for Measuring Halibut

All halibut are measured by fork length; see the definition of fork length in your Species Identification Manual or see page 9-10 of this manual. Lay the halibut on the plastic length strip or on top of a tape measure. Never use the tape measure over the top of the fish and "sight down;" inaccuracies can be introduced as you move your head and hands. Do not obtain a curvilinear length.

### Species Composition

Count and obtain the total weight of Pacific halibut in your composition sample. Halibut are never sexed by observers for species composition and should only be sexed for certain special projects.

### Trawl and Pot Boat

**Measurements and Viability Assessment**

Viabilities without a corresponding length ***cannot*** be used, but lengths without viability ***can*** be used. The viability assessment is to determine if the condition of the halibut about to be returned to the ocean are excellent (code E), poor (code P), or dead (code D). For the Discard Condition Criteria use the dichotomous keys in "Key to Pacific Halibut Viability for Trawl Vessels" on page A-39 for trawlers and the dichotomous keys in "Key to Pot Condition Codes for Pacific Halibut" on page A-42 for pots. If the halibut is not assessed or you cannot tell the viability, record the condition as "U" and measure the length.

You may measure and assess viability on halibut from your species composition sample or from outside your composition sample. Viabilities must always be from a sampled haul or set. Use appropriate methods to insure that your sample for halibut length measurements and viabilities is a random or systematic subsample of all halibut in the catch. The only exception to this rule is for halibut found when whole hauling at a plant in the pollock fishery and you are proportioning halibut to unsampled hauls. These halibut should be listed on the Form 7 as if the haul was sampled.

The halibut that you collect for viability assessments must be handled in the same manner as the crew would normally handle the fish when you aren't sampling. Additionally, halibut viability must be taken at the exact point of discard since time and deck and handling procedures affect the viability. ***If you cannot gather representative halibut viability at the point of discard, do not collect these data!*** Document the circumstances in your logbook.

For large halibut, offset your length strip by twenty or more centimeters, or create a measuring device that is accurate to the nearest centimeter. For example, mark a piece of plywood or cardboard in centimeter increments. As you measure the fork length ignore the F and M for sexes on the top of the plastic length strip and write in E, P, D and/or U. Record the number for halibut of each length and viability code on the Length Frequency Form 7. Length estimates of halibut used to estimate weight are not recorded on the Form 7!

**Determining Viability of Halibut**

On trawl and pot vessels the guidelines listed below must be followed, or the data collection cannot be used.

- Halibut lengths and viability assessments must be from sampled hauls or sets.
- Halibut must be examined in hand and on both sides for a valid viability assessment. Never guess the condition of the halibut!
- The condition of all halibut must be determined at the point of final discard. You are trying to ascertain the condition of the animal when it enters the sea. The halibut viability you record must reflect the normal handling of the fish by the crew.

**Deciding Where and When to Sample for Viability**

**Example 1:** An observer on the factory trawler F/T Aurora Borealis has two possible locations in the factory where he could collect halibut to assess their condition. The first is at the conveyor leaving the live tank, and the second is at the discard area as halibut drop out the discard chute. Between the live tank door and the discard are several belts, some with inclines, that halibut have to pass over, falling back and getting squeezed and spined by other fish, until they reach the discard belt, some 30 minutes later. A halibut that seems to be in excellent condition when it exited the bin may end up in poor or dead condition by the time it is discarded. To determine how the fishing practices and conditions in the factory have affected halibut viability, the observer must choose the discard belt station for measuring halibut and assessing viability.

**Example 2:** An observer is on the shoreside catcher only vessel F/V Pit Bull and the crew normally sorts fish from the trawl alley. As they encounter halibut, they throw them over the side. The observer collects his entire basket sample, then tells the crew they can begin to sort. The observer should wait to pull out halibut from his sample until the crew begin to discard halibut from the trawl alley. If the observer were to collect halibut viability data immediately, his assessments would probably be better than what normal crew handling would result in. Another option would be for the observer to inform the crew to throw all halibut into a separate checker bin or tote instead of discarding them. The observer could then assess the viability of each halibut as it is thrown into the bin/tote.

- If you cannot assess halibut viability at the time of discard and your sample is not an indication of the normal handling practices of the crew, **do not** record halibut length and viability data at all.
- If you are on a catcher vessel delivering **unsorted** catch to a plant, assess and measure halibut at the plant, as this is the place of discard. If any halibut are sorted out at sea, assess them as they are discarded.

## Halibut on a Longliner

**Injury Assessments**

In order to assign mortality information to halibut bycatch, the IPHC needs an assessment of injuries to halibut caused by incidental take. These data are analyzed by the IPHC staff and used to estimate mortality rates for the following year. The halibut mortality rates have a direct impact on the duration of the longline fishery. As a result, you must be careful in conducting your assessments. ***The halibut you assess for injury must be handled in the same manner as crew normally handles halibut.*** You must collect halibut for the injury assessment in a random or systematic manner from sets sampled for composition.

It is usually best to collect halibut for injuries assessment from outside the tally period and therefore from outside your species composition sample. Only assess the level of injury to halibut that are landed and in your hands. ***Attempt to assess injury from a maximum of 20 halibut per day.*** Collect halibut for the injury assessment using a random sampling frame. The easiest method is to collect every fifth, tenth, or nth halibut during a randomly selected non-tally period. To complete the halibut injury assessment, measure the halibut, check for injuries using the key found in "Key to Longline Injury Codes for Pacific Halibut" on page A-46, and return the fish to the water.

Follow the rules listed below when assessing halibut injuries on a longliner:

- Only assess injuries of halibut from hauls sampled for species composition.
- Halibut used for the injury assessment must actually be ***measured.***
- Ensure that vessel personnel use the same release methods when you assess halibut injuries as they use during normal operations.
- Only assess injuries from halibut that are in your hands. These halibut must be landed by the crew.
- Ignore any injuries caused by the crew landing the halibut for the injury assessment, including gaff wounds to large animals.
- Over the duration of your cruise, obtain injury assessments of halibut landed by each rollerman.
- Only include fishing related injuries in your assessment.
- Use the dichotomous key on page A-46 to categorize the injury.
- See page 6-25 if your vessel is retaining halibut under and Individual Fishing Quota (IFQ)

Collect halibut injury assessments in a manner that reflects the normal operations of the vessel. Vessel personnel have an incentive to bias these data. Lower mortality rates, in effect, increase the amount of halibut that can be caught in a fishery before the fishery is closed. Be aware of how halibut are handled when you are not sampling and compare this to when you are sampling. Fully document any differences in your logbook, try to resolve any problems diplomatically, and contact NMFS as soon as possible about the problem.

### Check for Tagged Halibut

Refer to Figure 11-2 for information on what sort of tags are used and what data to collect from tagged fish.

## Tasks for Salmon Data Collection

### Introduction

Complete the following salmon tasks in order of priority:

- Identify the salmon in your species composition sample to one of the six species.
- Sex all salmon from your composition sample.
- Measure all salmon from your composition sample.
- Collect scales from salmon in your composition sample.
- Look for tagged salmon
- Collect scales from tagged salmon outside of your species composition sample.

### Species Composition

Determine the species of each salmonid in your composition samples and record the sexes, numbers, and weights for each species on the Species Composition Form 3US. The six species of salmon encountered in the North Pacific are: king (chinook), silver (coho), steelhead, sockeye (red), chum (dog), and pink (humpback) salmon.

### Sexing Salmon

There is no need to measure or sex salmon from outside of your species composition samples. Do not collect scales from salmon outside of your species composition unless they are tagged (see "Tagged Salmon" on page 11-2). Cut open all salmon in your composition sample. Salmon gonads are far forward in the body and immediately under the backbone. Make an incision on the salmon from the pectoral fins and across about mid way up from the belly, to see into the top of the peritoneal cavity near the head. The gonads will be two long tubes laying parallel to the backbone. Females, mature and immature, will have tubes containing granular eggs in sacs that are pink, yellow, or orange. Mature males will have smooth textured tubes of white or cream color. Immature males will have translucent white tubes that appear empty.

**Sexing Salmon for Terra Marine**

Some shoreside and floating processors retain delivered salmon bycatch for a food donation program called Terra Marine. If your vessel delivers to a plant participating in this program, it is preferred that you sex salmon with a cut from the anus to the isthmus so as not to damage the product.

## Length Measurement

Measure all salmon within your composition sample to the fork length (see "Measuring Fish" on page 9-10). As you encounter salmon in your sample, cut the fish to determine the sex, and then measure it using the plastic length strip. Record salmon length data on the Form 7. Do not measure salmon from outside of your species composition sample. The salmon recorded on the Form 7 must be the same salmon recorded on the 3US form.

The only exception to this rule is for salmon found when whole haul sampling for prohibited species at a plant in the pollock fishery and you are proportioning salmon to unsampled hauls. ***These salmon should be listed on the Form 7*** as if the hauls were sampled.

## Scale Sample Collection

Salmon scales are used to verify your species identification during your debriefing for every deployment. Salmon lose scales easily and lost scales are replaced with regenerated scales. Regenerated or lateral line scales are unreadable. To make sure you have usable scale samples, always collect at least 5 scales and never collect scales from the lateral line.

**Salmon scales**

Each group of scales taken from an individual is put into a paper envelope. Paper allows the scales to dry so they will not rot. Record the salmon's length, weight, etc., on the scale envelope and then transfer the data to Form 7s and Form 9s.

**Salmon Scale Sampling Guidelines**

- Collect salmon scales during every cruise you encounter salmon in your species composition samples.
- Only record data on the Form 7 and Form 9 from salmon that are within your salmon prohibited species composition sample, including whole haul samples at plants.
- Outside of your prohibited species composition sample, only collect scales from tagged salmon **but do not record the length and weight data on Form 7 or Form 9!** Refer to "Tagged Salmon" on page 11-2 for how to handle the data recording for tagged salmon outside your samples.
- Collect no more than 20 scale samples for each species, for the entire time you are deployed for a particular cruise number.
- Collect at least 5-10 scales preferably from the optimal "A" zone (see Figure 10-5). If scales cannot be found in the "A" zone then search for and collect scales from the "B" zone, then the "C" zone if necessary.
- To spread the collection over more time at sea, collect scales from the first 10 salmon per species you encounter in your salmon composition samples, then collect 10 more scale samples from salmon found in your salmon samples throughout your time at sea.

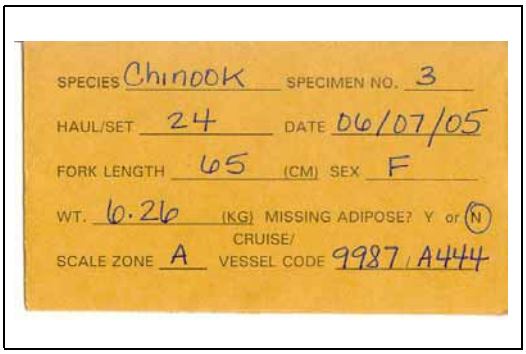



**Figure 10-4: Salmon Scale Envelope**

**If you are taking scales from salmon outside the composition samples, use the large manila envelopes with red writing. Data recorded on these large envelopes are not recorded on the Form 7 nor the Form 9.**

If your scales are coated with tissue or blood, or the sample is contaminated with other fish scales, it may be useless. Remember, your salmon rubbed against many other fish, even other salmon of different ages and species. To insure your hard work produces usable data, make sure your scales are clean. Here is the procedure:

1. Wipe the area on the fish where you plan to collect scales. This ensures no other fish scales will be mixed in with the individual's scales. It also removes slime, which causes scales to decompose in the scale envelopes.

2. Pluck salmon scales out of the flesh using the forceps or knife. Try to minimize mucus on the scales by plucking rather than scraping.

3. Open a salmon scale envelope and wipe the scales inside. Make sure you collect enough scales. Seal the envelope closed.

4. Weigh the salmon, determine the sex, and measure the length of the fish. Record all of the information on the scale envelope. Remember to include your cruise number and vessel code. Select and record a unique specimen number for the species (1-20 for kings, 1-20 for chums, etc).

5. Clean the forceps before collecting scales from another salmon.

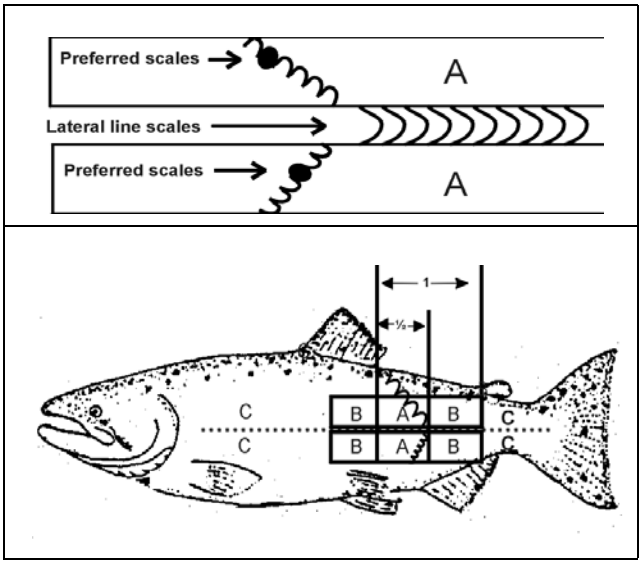


**Figure 10-5: Salmon Scale Collection Zones**

### Check for Tagged Salmon

Refer to "Tagged Salmon" on page 11-2 for information on what sort of tags are used and what data to collect.

For instructions on how to fill out the Form 9 Biological Data, see "Form 9 - Biological Sampling Form Instructions" on page 9-16.

ONLY RECORD SALMON SCALE DATA ON THE FORM 9 FROM SALMON FOUND IN YOUR SPECIEAS COMPOSITION SAMPLE (see Figure 10-6 on page 10-10)!

**Form 9 - Biological Sampling Form**

Page 1 of 1 for vessel / plant
(Number pages separately for each species and specimen type.)

Observer Name John Doe

Vessel / Plant Name Fishin' Impossible

Page 7 of 9 for transmission

| Cruise Number | Vessel Code | Year | Species Name | Species Code | Specimen Type | Sampling System |
|---|---|---|---|---|---|---|
| 8800 | A123 | 05 | Chum Salmon | 221 | 2 | 2 |

**DO NOT use arrows in form!**

| | Date | | Haul / Delivery Number | Specimen Number | Sex | Length | Weight (kg) |
|---|---|---|---|---|---|---|---|
| | Month | Day | | | | | |
| 1 | 02 | 04 | 10 | 1 | F | 62 | 3.30 |
| 2 | 02 | 04 | 10 | 2 | M | 63 | 3.20 |
| 3 | 02 | 04 | 10 | 3 | F | 59 | 2.80 |
| 4 | 02 | 04 | 10 | 4 | F | 75 | 6.20 |
| 5 | | | | | | | . |
| 6 | 02 | 04 | 11 | 5 | F | 57 | 2.40 |
| 7 | 02 | 04 | 11 | 6 | M | 55 | 2.30 |
| 8 | 02 | 04 | 11 | 7 | F | 62 | 3.50 |
| 9 | 02 | 04 | 11 | 8 | F | 66 | 4.20 |
| 10 | | | | | | | . |
| 11 | 02 | 04 | 12 | 9 | M | 60 | 3.70 |
| 12 | 02 | 04 | 12 | 10 | F | 65 | 4.00 |
| 13 | | | | | | | . |
| 14 | 02 | 05 | 13 | 11 | M | 63 | 3.70 |
| 15 | 02 | 05 | 13 | 12 | M | 71 | 5.00 |
| 16 | | | | | | | . |
| 17 | | | | | | | . |
| 18 | | | | | | | . |
| 19 | | | | | | | . |
| 20 | | | | | | | . |
| 21 | | | | | | | . |
| 22 | | | | | | | . |
| 23 | | | | | | | . |
| 24 | | | | | | | . |

National Marine Fisheries Service / North Pacific Groundfish Observer Program

**Start NEW form after faxing!**

**Figure 10-6: Form 9 - Biological Sampling Form (salmon scale data)**

# TAGGED FISH AND CRAB INFORMATION

When tagged fish or crabs are encountered, the tag (except from live King crab) and pertinent biological information should be collected. Do not interrupt your normal sampling to take this information unless it is convenient. If you are busy completing other tasks simply put the tagged fish or crab aside and collect the information after your sample is complete. Collecting information from tagged fish or crabs does not take precedence over other sampling duties, but is an important part of your job.

## List of Priorities

- Identify tagged organism to species.
- Collect pertinent biological data.
- Complete tagged fish information form.

## Introduction

Fish and crabs are tagged for a variety of reasons. Currently there is research being conducted on fish migration, stock separation, fishing related mortality, and population dynamics. These studies are being conducted by the International Pacific Halibut Commission, NMFS, the University of Washington, and the Alaska Department of Fish and Game. Data from tagged fish and crabs is vital to the success of these studies and observer data is an excellent way for fishery biologists to obtain this information.

Species that have been tagged include Atka mackerel, Pacific cod, Pacific halibut, pollock, sablefish, salmon, shortspine thornyhead, turbot, yellowfin sole, and king crab. These species may have an external tag on the dorsal surface or on the gill cover, or they may have an internal tag in the snout of the fish. Spaghetti tags are the most common type of external tag, but some fish may have disc-shaped tags.

When you arrive at a plant or vessel you should inform the crew that tagged fish or crabs should be saved for you. If vessel or plant personnel give you an external tag or an externally tagged animal you should write down the person's name and address so they can receive a reward for returning the tag. If you are given just the tag without the animal, collect as much information as possible about the animal. For example, find out what species the tag was from, where it was caught, what haul it was in. Observers cannot collect rewards for tags they submit, so if you find an externally tagged fish or crab in your sample list the captain as the person who found it.

## Electronic Tags

While spaghetti tags serve only to mark a fish, electronic tags capture data while they are on the fish. Most collect depth and water temperature, providing information about fish behavior and marine environmental conditions. These tags are very expensive and large monetary awards are usually offered for their return. Observers are not eligible for these awards. If you are given one of these tags by a crew member, make sure that you obtain all contact information required on the Tagged Fish and Crab Form!

## Tagged Crab

King crabs are tagged with external spaghetti tags which are found in the abdominal flap. If you find a live tagged king crab, record the pertinent information, but do not remove the tag. King crab should be released with the tag intact so they can be captured and identified again. If you find a dead king crab, remove the tag and return it to NMFS with the pertinent information.

After you have collected the necessary information from your specimen, you need to record it on the Tagged Fish Form (see Figure 11-1). For the most part, the form is self explanatory. Be clear and concise in your descriptions, and affix the tag to the form. Remember to include the tag serial number on the form. Often, tags are lost in processing and without a copy of this information, the rest of the data on the form are useless.

## Tagged Salmon

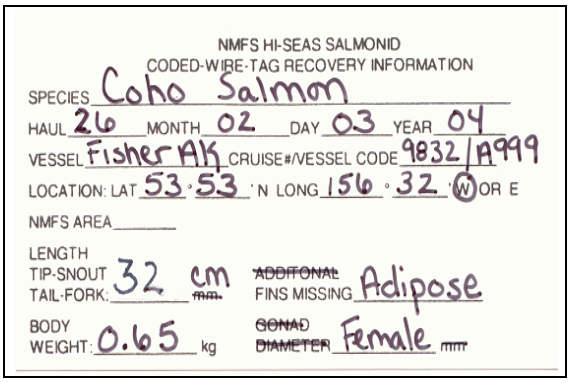
Tagged salmon usually have internal coded wire tags inserted into their snouts but may have external disc shaped tags as well. Coded wire tags are about 1 mm in length, have a distinct code, usually a series of slashes at different intervals engraved in them, and are inserted into the snout of an animal. Salmon with coded wire tags can be identified by a missing or clipped adipose fin. Collect scale samples from all tagged salmon (see "Scale Sample Collection" on page 10-8).

To remove the salmon snout, make a cut one centimeter behind the eye down through the head to the base of the upper jaw. You do not need to include the lower jaw since tags are placed in the upper snout.

Once you have removed the salmon snout, fill out the Coded-Wire-Tag Recovery Information label and affix the tag to the snout. For any salmon snouts collected from deliveries, fill out the snout tag with only the NMFS area where you think the salmon was caught, and not a latitude and longitude. Note whether the adipose fin was missing. In the "Gonad Diameter" field, just enter the sex of salmon. See the below example for how to complete these labels.

**You do not fill out a Tagged Fish Form for tagged salmon. The snout tag replaces the form**

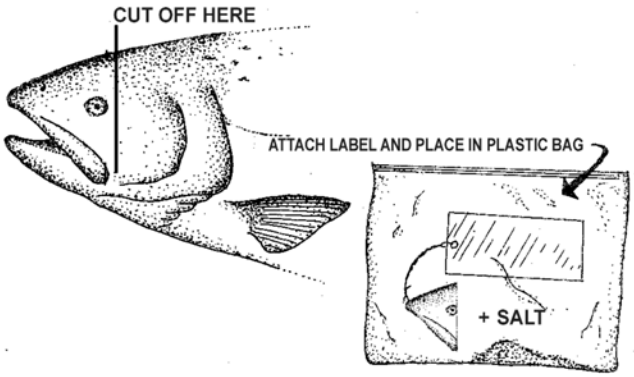
.



NMFS HI-SEAS SALMONID
CODED-WIRE-TAG RECOVERY INFORMATION

SPECIES Coho Salmon
HAUL 26 MONTH 02 DAY 03 YEAR 04
VESSEL Fisher AK CRUISE#/VESSEL CODE 9832 / A999
LOCATION: LAT 53 ° 53 ' N LONG 156 ° 32 ' W OR E
NMFS AREA _____
LENGTH
TIP-SNOUT / TAIL-FORK: 32 cm ~~mm~~ ~~ADDITONAL~~ FINS MISSING Adipose
BODY WEIGHT: 0.65 kg ~~GONAD DIAMETER~~ Female ~~mm~~

Place the snout in one of the bags you were issued and put several handfuls of table or rock salt in the bag. Periodically, drain off any liquid that accumulates in the bag and change the salt. If no salt can be found, you can freeze the snout.




***Remember to get frozen snouts out of the freezer before you disembark.***

## Tagged Fish and Crab Form Instructions

Complete a Tagged Fish and Crab form for every tag that you find or is given to you. Try to complete as much information as possible. If a crew member gives you only a tag (instead of the fish) ask him for the information needed.

The recipient's name and address are important fields on this form. Tagging agencies provide incentive gifts such as hats and t-shirts to encourage participation in these programs. Most programs using electronic tags offer monetary reward. The recipient's address should be a permanent address, not the address of a processing plant. Tag rewards are often sent 3-6 months after you turn in the paperwork!

# Tagged Fish and Crab Form

| Cruise No. | Vessel / Plant Code | Haul / Delivery No. | Gear Type |
|---|---|---|---|
| 9011 | A110 | 14 | Longline catcher vessel |

Observer Name: Chris P. Observer

Vessel / Plant Name: Fishy II NMFS Permit No. AK9966022A

Reward Recipient's Name John J. Skipper
(Vessel or plant personnel)

Reward Shipment Address: 555 W. 55th Ave.
Anchorage, AK 99513

Species: Sablefish Tag Prefix and Serial No.: BC96 22726
(e.g. PCA 00392)

Tagging Agency / Location: Seattle Auke Bay (Nanaimo) Shimizu IPHC Kodiak
Other

Date of Capture: 03-22-04 Time of Capture: 1430 Depth (F): 280

Capture Location: Latitude (N): 53°39.55' Longitude: 164°34.61' E / (W)

NMFS or ADF&G Area: (if lat / long is unknown)

Source of Capture Information: Vessel log
(e.g. vessel log, navigation equip., crew member, plant personnel, etc...)

Sex: Male Gonad Maturity (immature, mature, spawning) mature

Length (cm): 71 Weight (kg): 3.8

General Appearance (poor body condition, good body condition): good body condition

Condition of Tagging Wound (healthy healed tissue, open wound): open w/ no infection

Other Comments: only one otolith recovered - otolith vial #

Tape tag and otolith vial here:

**Figure 11-1 Tagged Fish and Crab Form (example)**

## Halibut

**If fish is alive:**

1. remove tag
2. measure fish
3. weigh fish if possible
4. note body condition
5. note condition of tagging wound
6. fill in remaining information on Tagged Fish and Crab Form

**If fish is dead:**

1. remove tag
2. measure fish
3. weigh fish if possible
4. collect otoliths, determine sex
5. note body condition
6. note condition of tagging wound
7. fill in remaining information on Tagged Fish and Crab Form

## Salmon

**If fish is alive or dead:**

1. measure fish
2. weigh fish
3. collect scales (see "Scale Sample Collection" on page 10-8)
4. determine sex
5. collect salmon snout
6. fill out a tagged salmon information tag and affix to salmon snout

## King Crab

**If crab is alive then:**

1. ***do not remove tag***
2. write down tag number
3. measure crab
4. weigh crab
5. determine sex
6. determine condition
7. release crab
8. fill in remaining information on Tagged Fish and Crab Form

**If crab is dead then:**

1. remove tag
2. measure crab
3. weigh crab
4. determine sex
5. fill in remaining information on Tagged Fish and Crab Form

## All Other Tagged Roundfish and Flatfish

**If fish is alive or dead:**

1. remove tag
2. measure fish
3. weigh fish
4. collect otoliths
5. determine sex
6. note body condition
7. note condition of tagging wound
8. fill in remaining information on Tagged Fish and Crab Form

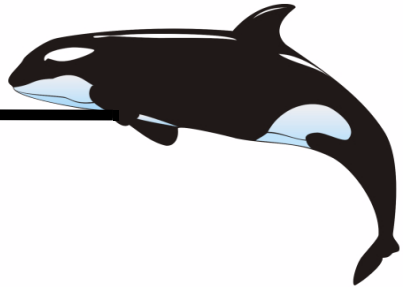
## Sharks

**If shark is alive or dead:**

1. remove tag
2. record recovery location
3. determine sex (sharks are sexually dimorphic and gender can be determined by external features)
4. note condition of tagging wound
5. fill in remaining information on Tagged Fish and Crab Form

**Figure 11-2 Duties for Tagged Fish and Crab**

# 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 18-19). The only specimen samples you should ever have in your possession are pinniped snouts or tissue samples from cetaceans. ***Do not collect bones, skulls or other 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 or northern fur seals are found dead in the catch, observers are required to collect the upper canine teeth, which are used for age and stock determinations. 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 actions:

**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 12-11.

**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.

### 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, tooth collection, tissue collection and photos taken.

**Determining Length of Dead Marine Mammals**

All dead marine mammals captured during fishing operations must be measured and, if possible, the sex determined.

**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.**

| Cruise Number | Vessel code | Year |
|---|---|---|
| 9263 | A110 | 05 |

**Form 10A - Marine Mammal Interaction Data**

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

| 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 | 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 (an adult and smaller whale - possibly juvenile) appeared and began feeding on the sablefish. over the course of 5 mags of 880 hooks each, I counted 48 fish lips and 15 fish heads. Individuals were present for the duration of the haul with closest approach at about 40 m. 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 17 | 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, captain steamed for two hours to another area and set gear there. We returned later to gear that had been set in the same area as haul 132 (the day before) and had no problems with whales.

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 01 | 3 | 163 | NORTHERN FUR SEAL | CU | Y | 1 | 4 | 1 | | | | | N |

Remarks: (see manual for list of required information)

Northern fur seal came up tangled in ground line. There were many scratches and a few puncture wounds caused by the hooks, but death appears to have been by drowning. Individual identified by external ears, long hind flippers, dark thick fur with a furred crown, and a short conical snout. Photos taken. See 10B for specimen data.

National Marine Fisheries Service / North Pacific Groundfish Observer Program

REV.02

**Figure 12-1 Form 10A - Marine Mammal Interaction Data**

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 12-2.

***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.

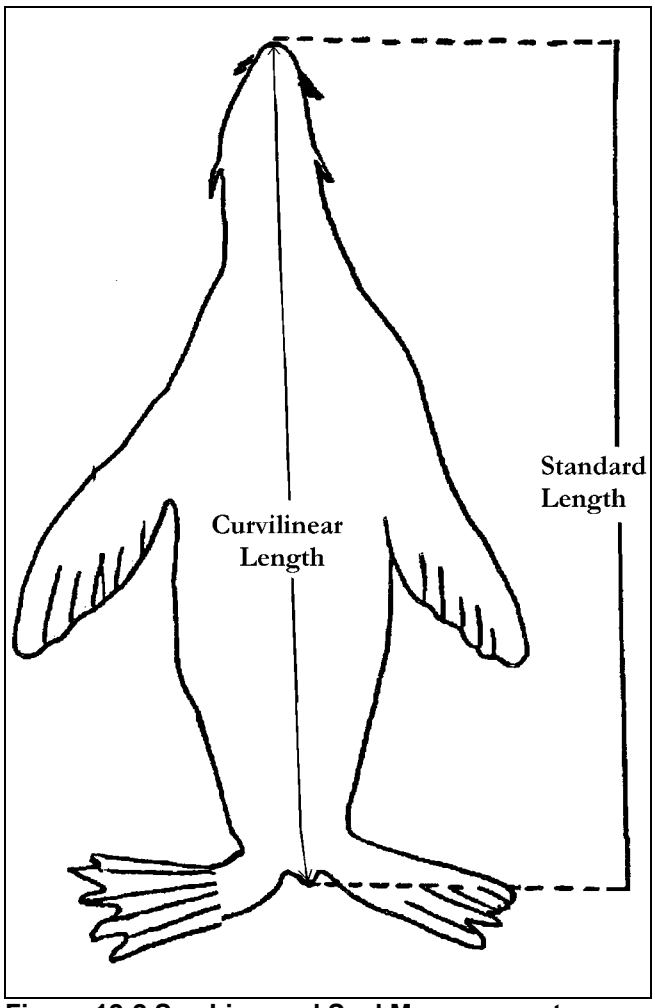


**Figure 12-2 Sea Lion and Seal Measurements**

**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.

Sexing of marine mammals is not difficult. See diagrams in Figure 12-3 to view the morphological differences between male and female pinnipeds and cetaceans.

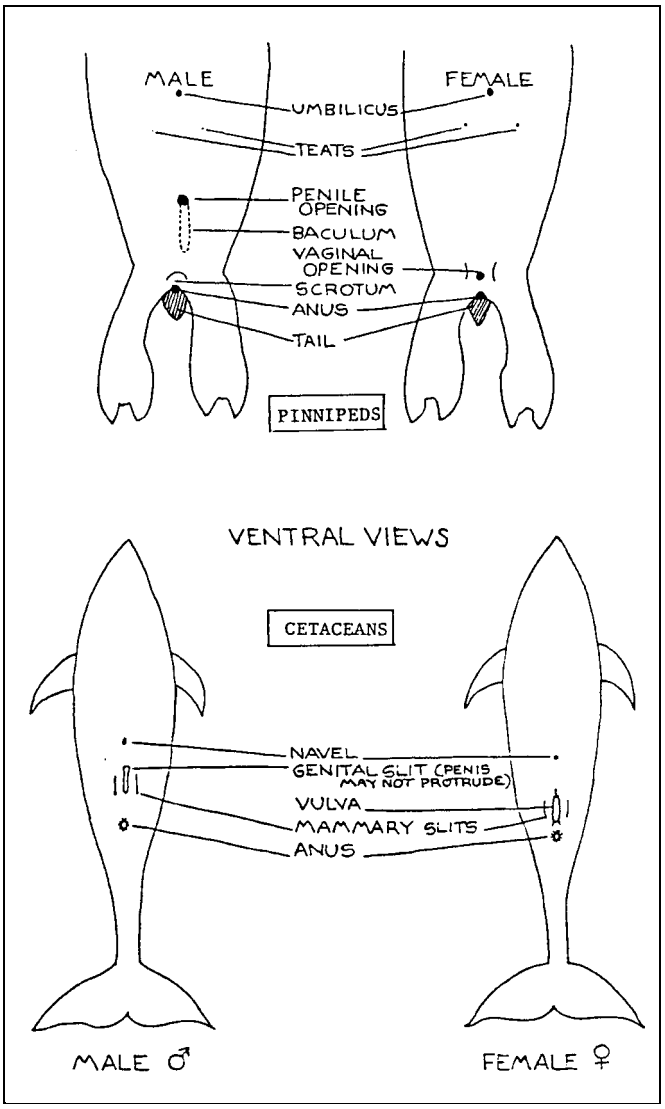


**Figure 12-3 Diagram of Pinnipeds and Cetacean Sex Differentiation**

**Collection of Pinniped Canine Teeth (except walrus)**

If a Steller sea lion or northern fur seal is caught and killed or found dead in the fishing gear you must collect the canine teeth of the animal. You should also collect the canine teeth from other dead pinnipeds, except walrus, when possible. Steller sea lions have been listed on the endangered species list for much of

the Bering sea, Aleutian Islands and much of the Gulf of Alaska. Data on these animals are greatly needed to try to determine the causes of this species' decline. The canine teeth can be used to determine age and, combined with your length data can help determine the general health of the sea lion population. Teeth from other pinnipeds may be used to aid species identification.

The end of the upper snout must be cut off without damaging the root of the canine teeth. The procedure for the collection of canine teeth from a pinniped is as follows:

1. Skin the snout using a sharp knife.

2. The roots of the canine teeth arch back. To ensure that the entire canine root is collected, you must cut the snout between the second and third post-canine teeth. Use a hacksaw to remove the snout. You should be able to obtain one from the vessel.

3. Preserve the snout by placing the snout within three of the plastic bags provided by NMFS and either freeze the specimen or salt it. The National Marine Mammal Laboratory (NMML) will later extract the teeth for study.

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

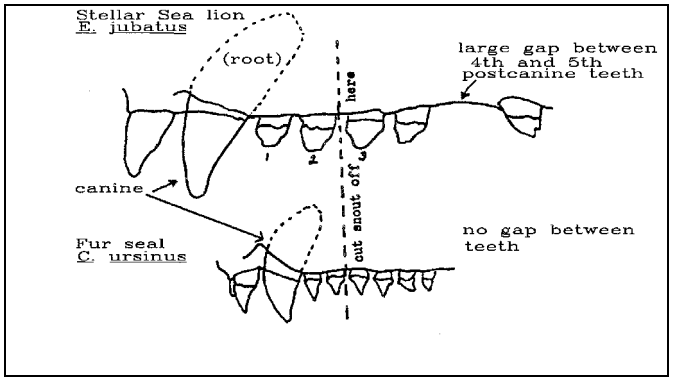


**Figure 12-4 Canine Teeth of Sea Lions**

**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.

**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.

**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 12-2) 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 12-2) 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? -** Record "Y" if you collected a tooth; otherwise, record "N". If you did not take a tooth or a snout from a pinniped, explain why not in the Remarks section.

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

| Cruise Number | Vessel code |
|---|---|
| 9263 | A110 |

**Form 10B - Marine Mammal Specimen Data**

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

Page 1 of 1

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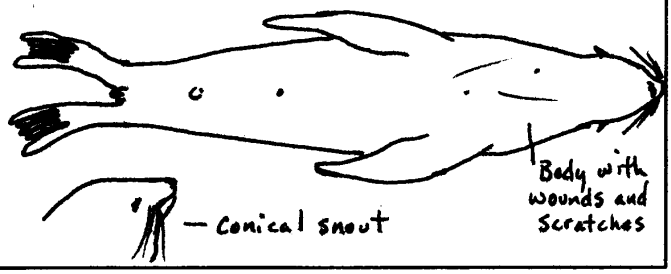
| Form 10A Interaction number | Specimen number | Haul or set number | Species name | Mammal code | Sex | Standard length in cm. | Curvilinear length in cm. | Tooth taken? | Photo taken? | Tissue taken? |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 1 | 163 | NORTHERN FUR SEAL | CU | M | 181 | | Y | Y | N |

Remarks: (see manual for list of required information)

Both canine teeth collected by cutting snout between 2nd and 3rd post-canine teeth. Snout frozen. Frames 1-7 on Marine Mammal Camera used for photos of seal.




| 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

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**Figure 12-5 Form 10B - Marine Mammal Specimen Data**

**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 tooth, snout, 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, Branded, and Tattooed Marine Mammals

The National Marine Mammal Laboratory and several other state and federal programs have projects tracking marine mammals. To do this, they may place a tag, brand, or tattoo on the marine mammal. Radio tags have been affixed to several Steller sea lions and elephant seals as well as several species of cetaceans. Inert ear tags have been placed on several species of pinnipeds. More common are brands and tattoos, usually the brand or tattoo can be found under the flippers or on the belly of the animal.

If you observe one of these animals, record the tag, brand, or tattoo 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 12-12) 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 northern fur seal or Steller sea lion, collect the snout; 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

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

Observer(s) JACKSON OBSERVER Vessel FISHNESS IV

year 05 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 Beaufort +/- water temp. ☒ flat ☐ good ☐ fair ☐ poor 1 +5.3 °C

species (common and/or scientific name) **Please fill out a form for each species** confidence ☒ sure ☐ likely ☐ unsure

HUMPBACK WHALE

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

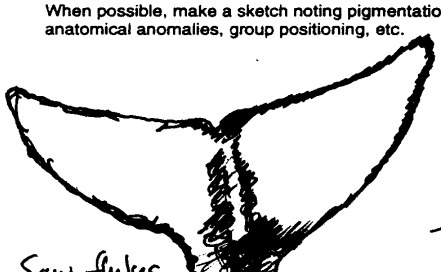
**Large cetaceans**
Blow visible from a distance
Breaching
Flipper slapping
Group feeding
Lob-tailing
Spy-hopping
Tail raised on dive
Side wake riding
Stern wake riding

**Pinnipeds**
Jug handle (flippers in air)
Porpoising (swimming fast, at least partially out of the water)
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) 1-6

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

cruise number and vessel code 9263 A110

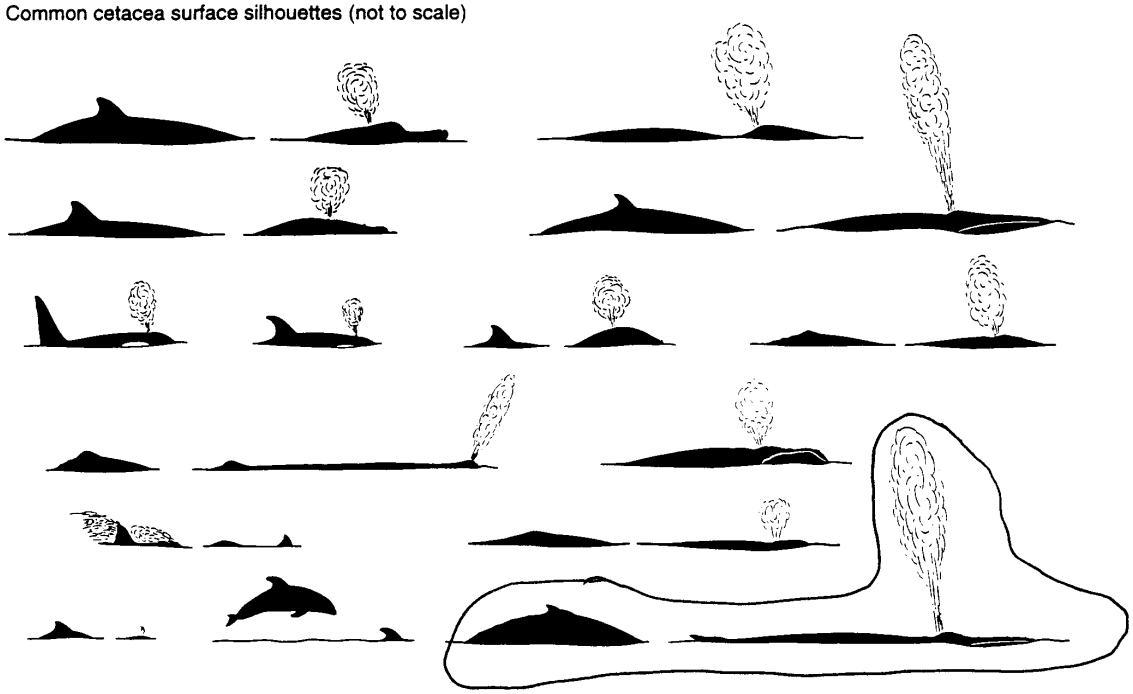
Form 11US: ver. IX.98: Balla, Harkness, Hill, Folkens, Lowell, Mizroch

See silhouettes on other side

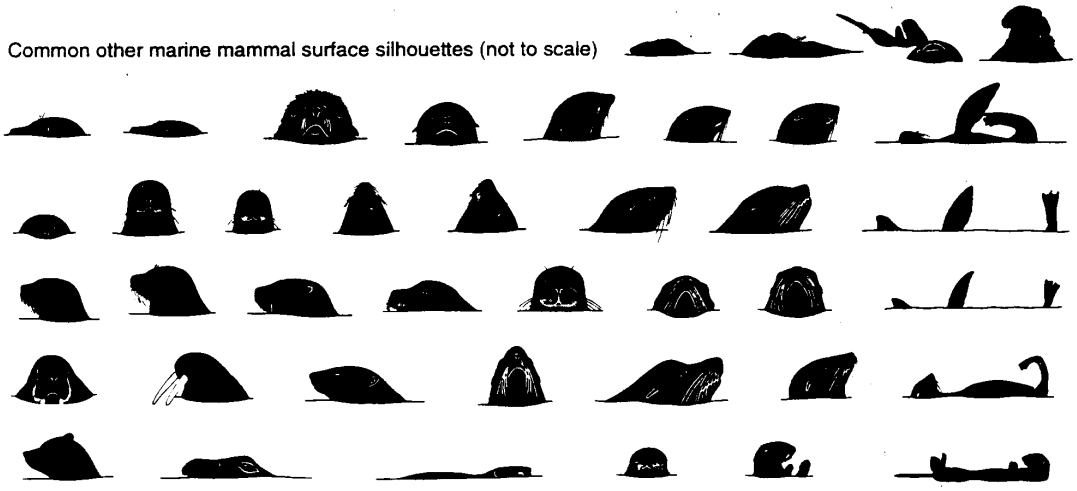
**Figure 12-6 Form 11US - Marine Mammal Sighting Form (front side)**

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 12-7 Form 11US - Marine Mammal Sighting Form (back side)**

## 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: $C° = (5/9)(F° - 32)$

**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 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 12-8 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.

| Small Cetaceans | Large Cetaceans | Pinnipeds |
|---|---|---|
| **Bow riding**-- Animals swim beside the bow or in the bow wave of a moving vessel.<br><br>**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).<br><br>**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.<br><br>**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.<br><br>**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.<br><br>**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.<br><br>**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.<br><br>**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.<br><br>**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.<br><br>**Spy-hopping**-- Whale is vertical or upright in the water and raises its head up out of the water, usually with its eye showing.<br><br>**Tail raised on dive**-- When diving, the whale's entire tail lifts completely above the water before going underwater. <br><br>**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.<br><br>**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.<br><br>**Rafting**-- A group of pinnipeds resting at the surface together.<br><br>**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.<br><br>**Vocalizing**-- Pinniped making directed noises at you or at another pinniped. |

**Figure 12-8 Marine Mammal Behavioral Descriptions**

# BIRD SIGHTINGS AND INTERACTIONS

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## List of Priorities

- Record takes of short-tailed albatross, red-legged kittiwakes, Steller's and spectacled eiders, and marbled and Kittlitz's murrelets.
- Rehabilitate injured endangered and "species of interest" seabirds.
- For dead endangered and/or "species of interest" seabirds, collect specimen.
- Record takes of all birds inside your species composition sample.
- Record takes of all banded and tagged birds.
- Record sightings of species of interest.
- Record other seabird mortality.

## Introduction

Seabirds in Alaska are managed by the U.S. Fish and Wildlife Service (USFWS), under the authority of the Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA). The National Marine Fisheries Service and the USFWS cooperate to obtain information on the mortality of birds in groundfish fisheries in the Gulf of Alaska and the Bering Sea. Of special interest are six species whose populations are very small, or are declining, referred to here as "species of interest."

**The "species of interest" are: short-tailed albatross, red-legged kittiwake, Steller's eider, spectacled eider, marbled murrelet and Kittlitz's murrelet.**

Endangered and threatened species status are federal designations of populations that may become extinct if steps are not taken to ensure their continued existence. Among the species of interest, the short-tailed albatross is endangered and the Steller's and spectacled eiders are threatened throughout their ranges.

In addition to recording incidental take, you may have the opportunity to record sightings of species of interest, report leg bands found on dead birds, document collisions of birds with the vessel superstructure, and report the methods vessels are using to reduce seabird bycatch. The collection of information on incidental takes of birds is critical, and is accomplished as part of your species composition sampling. Information on species of interest is also of high priority. All other bird duties are of low priority but the data are valuable if they can be collected.

Observer data are crucial for the management of seabirds by the USFWS. The USFWS is able to review data collected by observers by accessing the Observer Program's database and copies of appropriate observer logbook pages (Seabird Daily Notes), which are provided several times a year. NOAA Fisheries analyzes your data each year and completes estimates of total seabird incidental take by species. These data are reported annually to the North Pacific Fisheries Management Council through the Ecosystem Chapter of the Stock Assessment and Fishery Evaluation (SAFE) report and through other venues to make the data readily available to managers, scientists, the fishing industry and the environmental community.

## Incidental Take

Approximately 100 million marine birds of over 80 species occur in Alaskan waters. These birds spend most of their lives foraging at sea for small fish, squid, and crustaceans. Birds are attracted to fishing vessels because of the presence of readily available food in the form of offal, discard, and bait. The most likely seabird species to be caught in trawl gear are shearwaters and alcids (puffins, murres, etc.). The most likely seabird species to be caught in pots are murrelets and murres.

Birds taken during longline operations are attracted to baited hooks when the gear is set; they become hooked at the surface, are dragged underwater and drown. The most likely species to be caught in longline gear are northern fulmars and gulls, which constitute more than 70% of bird bycatch. The albatross species and dark shearwaters are also taken regularly, although in much lower numbers. Unidentified seabirds make up the third largest category behind fulmars and gulls.

## Injured Seabirds

In most cases the best course of action is to end the birds suffering by following the procedures for euthanizing seabirds(see "Protocols for Handling Injured or Sick Seabirds" on page A-63). It is your option to euthanize the bird and collect it as a specimen, attempt rehabilitation, or return the bird to the sea. Please note that rehabilitation of ***endangered and threatened*** species is a top priority, while caring for other species must not interfere with any other observer duties.

## Dead Bird Identification

Identification of marine birds in the Gulf of Alaska and Bering Sea is not easy - some closely-related species are virtually indistinguishable. The beached birds guide provided to you is a key developed specifically to identify dead seabirds in hand. This guide relies on the characteristics of the bill and feet, rather than plumage, which is often in a state of disarray.

Observers are asked to identify birds to the species level where possible. This is crucial for species of interest and those species that could be confused with species of interest (e.g., black-footed and Laysan albatross). In cases where you do not feel comfortable with your identification, use the appropriate species group. For example, you will not be able to identify immature gulls to species and should instead use the group code for "unidentified gull."

### Identifying Dead Birds

- With the seabird in hand, use the *Beached Birds: A COASST Field Guide* to identify the bird to the species level where possible.
- At a minimum, attempt to identify albatross, eiders, murrelets, and kittiwakes to species.
- If you cannot identify a bird to species, do not guess! Key it to the highest taxonomic group to which you are confident.
- Identify gulls, dark shearwaters, and murres to group - e.g., gull unid., dark shearwater unid., and murre unidentified.
- If the bird is a species of interest, or an unidentified albatross, eider, murrelet or kittiwake, follow the "Tag and Bag" procedures below.
- Retain banded or tagged seabirds, following the "Tag and Bag Procedures for Retained Seabird Specimens" on page 13-3.

- Complete a Seabird Species Identification Form for all new species seen, and for ***every*** species of interest encountered. Also complete this form for any unidentified seabird.
- Optional: take photos of dead seabird with personal camera, supplemental to completing a species ID form.

## Species Composition

Most of your bird observing tasks will involve your species composition samples. Generally, you will use your largest sample type to look for birds. For example, if you basket sampled for composition but whole haul sampled for prohibited species, your seabird sample type would likely be a whole haul. Birds in your samples are recorded like all other bycatch on the Species Composition Form 3US and ATLAS deck form.

Crewmen may try to throw birds overboard as quickly as possible; as there is a superstition that dead birds on a vessel are bad luck. Additionally, many longline fishers are concerned that catching a short-tailed albatross may close their fishery - providing an incentive for not reporting these birds. For more information on how the Endangered Species Act affects fisheries, see page 13-4.

### What To Do with Birds in your Samples

In addition to completing the steps outlined in the "Identifying Dead Birds" section, gather the following information on birds inside your composition samples.

1. Weigh each bird individually using your brass scales or a motion compensated platform scale. Drain as much water as possible from the carcass.

**Birds are much lighter than they appear. Weights over 5 kg are extremely doubtful!**

2. Look for leg bands, nasal tags, and radio tags. If the bird has any of these, see "Banded Birds" on page 13-7.

3. Find the code for each species or group in the species code list and record species, number, and weight information on the Species Composition 3US form.

4. For birds that drop off longline gear or are thrown overboard before you have a chance to weigh them, identify them as closely as you can and use an average weight from hauls where you were able to obtain weight for that species or group. If no other birds were caught from this group, estimate the weight as closely as possible - remember birds look much heavier than they really are! If you record an estimated weight, note clearly on the 3US or deck form that the weight was estimated, not measured.

5. If you see an albatross fall off the gear or thrown overboard and cannot positively identify it, you ***must send a text message or call the field office as soon as possible***. Document all circumstances and details associated with the drop-off or discard in your Seabird Daily Notes.

**Takes of unidentified albatross or short-tailed albatross must be reported to NMFS as soon as possible. Do not use the radio!**

## Tag and Bag Procedures for Retained Seabird Specimens

Seabird specimens are of high scientific value. The Program requests that you save any dead seabirds from your cruise, regardless of whether the catch was from inside or outside your sample. These specimens provide critical information such as geographic data, genetic make-up, age, sex and reproductive condition to a variety of data requestors, including museums, universities and government agencies.

Most cruises have no bird mortality. Of those that do, usually only one or two birds are taken. If you experience high seabird bycatch, please contact your inseason advisor for direction on which species to retain.

Follow the instructions below for retaining seabird specimens:

1. Stuff the mouth and throat of the bird with absorbent material (paper towels, cotton balls, etc.) and secure the beak closed.

2. Place the bird in a plastic bag.

3. For each specimen, record the following information on a tag: cruise number, vessel code, haul number, date of capture, latitude and longitude, species and any other pertinent information. All specimen information on the tag must match the information included in your Seabird Daily Notes.

4. Place tag in the bag and close the bag securely. Place this bag in a second bag and close tightly.

5. Place double-bagged bird in the freezer.

6. Retrieve birds when you reach port and take to a NMFS office!

7. If you are collecting a specimen of a species of interest or an unidentified albatross, eider, murrelet, or kittiwake, notify NMFS staff as soon as possible.

**NMFS has provided you with a bird specimen collection permit from the USFWS.**

## Species of Interest

The six species of interest fall into four groups of marine birds: albatross, kittiwakes, murrelets and eiders. These birds are of special interest because some of the populations are very small or are declining. Reliable and accurate identification, to the species level where possible, is the goal for birds in these groups. In addition, there are special requirements for the endangered or threatened bird species.

### Albatross

Three species of albatrosses occur in Alaskan waters: Laysan, black-footed, and short-tailed. The short-tailed albatross is an endangered species and it appears that the black-footed albatross are in decline. In 2001, the population estimates for each species were approximately: 2.3 million Laysan, 250,000 black-footed and 1,600 short-tailed. Observers are required, under the Endangered Species Act (ESA), to report all short-tailed albatross takes and to save all dead individuals for return to NMFS. You must report ***any*** catches of short-tailed albatross, not only those in your species composition sample. If you are at all unsure about your identification, ***bring the specimen back*** and experts at NMFS and the USFWS will determine the identification. Follow the procedures for collecting specimens on page 13-3. If you cannot bring back the entire carcass, ***bring back at least the head!***

The current ESA Biological Opinion allows for four short-tailed albatross mortalities over a two-year period in the groundfish longline fleet and two short-tailed albatross mortalities over a five year period for trawlers. Industry participants have mistakenly viewed this as a strict quota, that if exceeded would close the longline fishery. In actuality, if this level of take were to occur, NMFS would initiate consultation with the USFWS. Staff would reevaluate the take limit based on changes in albatross populations, fishing patterns, and other variables. While one possible result would be a fishery closure, other actions are much more likely, such as raising the mortality level or changing seabird avoidance requirements.

### Eiders

Four species of eiders occur in Alaskan waters. Two of these species, the spectacled and Steller's eiders, are listed as threatened under the ESA. Although these birds are highly unlikely to be taken by gear, they may strike vessels. Bird strikes and bird storms (numerous strikes in a short time period), seem to occur in association with bad weather, low ambient light, and the use of bright ship lights. You need to report all bird strikes involving spectacled and Steller's eiders. Include the following in your Seabird Daily Notes: the number of birds involved, species, sex (eiders are sexually dimorphic), weather conditions, time of strike and location (latitude and longitude). In addition, the ESA requires that you retain all carcasses that can be recovered. Follow the procedures for collecting specimens on page 13-3.

### Murrelets and Kittiwakes

Two species of kittiwakes and three species of murrelets commonly occur in Alaskan waters: black-legged and red-legged kittiwakes; and ancient, marbled, and Kittlitz's murrelets. Red-legged kittiwakes, marbled murrelets, and Kittlitz's murrelets are species of interest because of low or declining populations. Make every effort to identify dead kittiwakes and murrelets to species and, if possible, take photos. Retain marbled and Kittlitz murrelets, red legged kittiwakes, and any unidentified murrelet or kittiwake. Follow the procedures for collecting specimens on page 13-3.

## Seabird Avoidance Initiatives

In 1997, NMFS put into law the requirement that specified longline groundfish fishing vessels must use measures to avoid seabird bycatch. These steps were necessary to mitigate longline fishery interactions with the endangered short-tailed albatross and other seabird species. NMFS revised and improved these regulations based on research work completed in 1999 and 2000, and changes to seabird avoidance measures were implemented in February 2004. The regulations require that vessels using hook-and-line gear in the BSAI/GOA groundfish or Pacific halibut fishery must use the following avoidance measures:

- Vessels over 55 feet in length overall (LOA) are required to use paired streamer lines of specified performance and materials standards. The regulations allow for single or no streamer lines to be used only in the case of severe weather.
- Stop directed discharge (through chutes, pipes or other similar devices) of residual bait or offal from the stern of the vessel while setting gear.
- If offal is discharged while gear is being hauled, it must be in a manner which detracts seabirds from baited hooks - either aft of, or on the opposite side of, the hauling station.
- Prior to offal discharge, embedded hooks must be removed from offal.
- A Seabird Avoidance Plan must be onboard the vessel.

The Seabird Avoidance regulations listed here have been summarized. The complete regulatory requirements can be found in the Code of Federal Regulations at 50 CFR 679.24.

### Monitoring Avoidance Measures

One of an observer's duties aboard longline vessels is to monitor and record the types of seabird avoidance gear your vessel is using. Randomly check the gear setting operations and record what type of seabird avoidance gear is being used. For more information on how to record this information on the Observer Haul Form, see page 6-23.

A summary of seabird avoidance gear and performance standards begins on page 18-16. ***You are not asked to actually measure performance standards***. You are, however, asked to document whether the vessel is in compliance with meeting requirements to deploy streamer lines while setting their gear. You can best do this simply through a spot check of as many sets as possible, noting the number of streamer lines. There typically should be two but vessels can deploy either one or none depending on wind conditions. Document obvious deficiencies of seabird avoidance gear, differences between the seabird avoidance gear recorded in the vessel logbook and what you observe. If your observation of the gear differs than what is recorded in the logbook, talk with the captain. Document any explanations the captain provides for why avoidance measures were not followed. Follow the instructions beginning on page 18-2.

## Reducing Seabird Bycatch

Observers can play an important role in helping captains reduce seabird bycatch. An easy way to accomplish this is to let the captain know if you encounter seabird bycatch during your regular sampling duties. He may make adjustments to his seabird avoidance gear based on this information. This type of immediate feedback, if the captain is amenable, can be a good measure of performance of the seabird avoidance gear. If you have previously worked on a vessel that had effective seabird avoidance gear, you may assist other fishers by making recommendations based on your experience.

**You may pass along information on effective seabird avoidance gear, but protect the privacy of other vessels! Do not give vessel names or fishing operation information.**

Staff from NMFS, USFWS and Washington Sea Grant Program are also interested in your observations. These agencies have been actively involved with the fishing industry in trying to reduce fishing-related mortalities. Please record any information that you think would be helpful in your Seabird Daily Notes

| Code | Knots | Air | Sea Description |
|---|---|---|---|
| 0 | 0 | Calm Air | Sea like a mirror |
| 1 | 1-3 | Light Air | Ripples with the appearance of scales are formed, without foam crests. |
| 2 | 4-6 | Light Breeze | Small wavelets, still short, but more pronounced, crests have a glassy appearance but do not break. |
| 3 | 7-10 | Gentle Wind | Large wavelets; crests begin to break, foam of glassy appearance; perhaps white caps. |
| 4 | 11-16 | Moderate | Small waves, becoming longer, fairly frequent white caps |
| 5 | 17-21 | Fresh Wind | Moderate waves, taking a more pronounced long form; many white caps are formed (chance of some spray. |
| 6 | 22-27 | Strong Wind | Large waves begin to form; the white foam crests are more extensive everywhere (probably some spray) |
| 7 | 28-33 | Near Gale | Sea heaps up and white foam from breaking waves begins to be blown in streaks in the direction of the wind. |
| 8 | 34-40 | Gale | Moderately high waves of greater length; the foam is blown in well-marked streaks along the direction of the wind. |

**Figure 13-1 Beaufort Sea State Descriptions**

| Code | Knots | Air | Sea Description |
|---|---|---|---|
| 9 | 41-47 | Strong Gale | High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble, and roll over; spray may affect visibility. |
| 10 | 48-55 | Storm | Very high waves with long overhanging crests; the resulting foam is blown in dense while streaks along the direction of the wind; on the whole, the sea surface takes a white appearance; visibility affected. |
| 11 | 56-63 | Violent Storm | Exceptionally high waves, the sea is completely covered with long white patches of foam lying along the direction of the wind; all edges of the wave crests are blown into froth; visibility affected. |
| 12 | 64+ | Hurricane | The air is filled with foam and spray; sea completely white with driving sprays; visibility very seriously affected. |

**Figure 13-1 Beaufort Sea State Descriptions**

If you have information or observations that may be helpful to NMFS and the USFWS, such as the effectiveness of the avoidance gear, please record this in your Seabird Daily Notes.

## Other Seabird Interactions and Mortality

Not all incidental seabird mortality is caused by fishing gear interactions. Seabirds may be killed or injured by colliding with fishing vessels or parts thereof. Report such incidents in your Seabird Daily Notes or, if appropriate, on your Species of Interest Encounter forms.

### Vessel Strikes

Incidents of vessel strikes range from the occasional bird found on deck to flocks of birds hitting the ship, referred to as "bird storms." It appears that birds hit the vessel because they become confused, primarily at night during inclement weather, and when bright lights are being used.

### Seabird Interactions with Trawl Gear

On trawlers, observers have reported seeing birds strike the third wire cables, main cables or become entangled in the net wings. The third wire cables are part of the trawl sonar system that consists of a unit, often called the suitcase, attached to the headrope. The suitcase sends signals to the vessel via the third wire cable. Seabirds, attracted to a stream of offal or discard, may collide with this cable. Observers have reported some birds being seriously injured, with possibly broken wings. Collisions have been observed during both day and night. Some observers have documented dead birds wrapped around this cable near the suitcase.

Because of the potential for trawl gear interactions with short-tailed albatross, as well as other seabirds, NMFS and USFWS are interested in information regarding the magnitude of this problem. If you are on deck during gear retrieval, please check for seabirds wrapped around the third wire, main wire or caught in the net wings. Record these mortalities in your logbook.

## Documenting Seabird Interactions

All bird strikes and other mortalities from interactions with trawl gear (in and outside of your samples) that you are aware of should be reported, whether the haul was sampled or not. Use the form in the Seabird Daily Notes section of your Observer Logbook. A detailed example of how to approach documenting the information is included there as well.

**Notify your debriefer if you have Seabird Daily Notes. They will expedite getting your information to the data users at USFWS.**

In your Seabird Daily Notes, document the number and the species of bird, the weather conditions, the date and time, and the position (latitude and longitude) of the vessel. If the birds are alive, note any bands or tags, and release them (many species are unable to fly off of a deck and will need to be dropped over the rail). Thoroughly wet birds cannot fly or keep themselves warm! To rehabilitate these birds, see the protocols on page A-63. You ***must*** retain the bird specimen if the birds are dead and are unidentified albatross, short-tailed Albatross, spectacled or Steller's eider, or are banded or tagged. The program requests that you save all dead seabirds from your cruise, but if this is not possible, keep carcasses of other species of interest, such as murrelets and red-legged kittiwakes.

Intentional killing or maiming of seabirds sometimes occurs. If you see this, record the details in the Seabirds Daily Notes section of your logbook with all necessary information. This includes date, location, species, numbers, vessel name, crew members involved in the incident, and any other pertinent information. As with other violations, you must let the captain know at least once that you witnessed this violation. This will give him the opportunity to correct the behavior in the future.

## Banded Birds

Internationally, over one million birds are banded by government and scientific research institutions. Information from recovered bands are an important data source used in the management of migratory birds. In North America, the Bird Banding Laboratory (BBL) of the U.S. Geological Survey and the Banding Office of the Canadian Wildlife Service jointly manage the bird banding program in North America. Analysis of banding data allows calculation of important population parameters.

A tremendous cost is associated with banding efforts and only a small percentage of bands are ever recovered. Reporting recovered bands is extremely helpful to these researchers. Report any tagged or banded bird in your Seabird Daily Notes. Always include the complete tag/band number, colors and configuration of plastic bands, and which leg each band was on.

If the bird is dead, label and freeze it; if this is not feasible, remove the tag/band and return it to NMFS. The tag/band is used to determine rates of wear and

other information that contributes to data analysis. ***Even if you retain the bird specimen or bands, record all pertinent data in your logbook.***

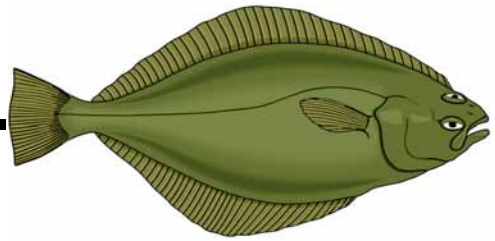
If the bird is alive, do not remove the band; record the complete tag/band number, colors and configuration of plastic bands, which leg each band was on, and the position and date of capture, then release the bird.

**Always wear heavy gloves when handling live birds.**

## Sightings of Species of Interest

In the course of fulfilling your duties, you will see many birds gathered around the vessel. The distributions of a few species are poorly known, and records of sightings are valuable. ***It is very important that you record sightings of short-tailed albatross.*** Sightings of the other species of interest are also valuable to marine ornithologists. Steller's eiders are commonly seen near ports and do not need to be reported when spotted there. Note any recorded sightings to your debriefer when you return.

Record each sighting in the Species of Interest Encounter Form in the Seabirds section of your logbook. If this section is filled, note the sighting in the Seabirds Daily Notes Section in the format of the "Sightings" form. Observers do not need to log sightings of non-sensitive species of birds (such as fulmars and gulls).



# STOMACH COLLECTION

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## Introduction

Each month, observers collect groundfish stomachs from the Bering Sea and the Gulf of Alaska. Stomach collections provide data on predation mortality of commercial stocks of fish and crabs, and are used to estimate the degree of this mortality.

The stomach project is assigned to specific vessels rather than to specific observers. Therefore, your participation in the project will depend upon the vessel to which you are assigned. The project is primarily assigned to vessels that have historically provided an adequate sampling platform for this project.

- Please read all instructions carefully.
- Stop by the stomach lab if you have questions.
- Contact the stomach lab when you return. You will have a short debriefing with stomach lab staff.

**Stomach Lab - Room 1093**
Chris Derrah (206)526-4238
Geoff Lang (206)526-4196
geoff.lang@noaa.gov

**Observers aboard catcher vessels may receive special instructions for completing stomach projects!**

## Formalin Handling Protocol for Observers

- Formalin is a relatively hazardous chemical and must be handled appropriately to ensure your safety. Stomach collections require only a small quantity of formalin and if these guidelines are followed your exposure will be well below established safe exposure levels.
- Read the (MSDS) before using formalin to understand its properties. You can find “Material Safety Data Sheet for 100% Formalin” on page A-68 and “Material Safety Data Sheet for 10% Formalin” on page A-71.
- ***ALWAYS*** wear gloves, rain gear and the goggles provided in the kit when using formalin.
- ***ALWAYS*** use formalin on an open deck. ***Do not*** use below decks or in your cabin.
- Inform captain and crew that you have formalin onboard, where it is stored, location of Material Safety Data Sheets (MSDS), potential hazards, and what to do in case of spill.
- If spilled, you have been provided with a small enough quantity to dilute with water and wash overboard.
- Add formalin to a bucket half-full with seawater, rather than adding seawater to the formalin. This will dilute the formalin quickly, and will prevent formalin from splashing on you.

- Use extreme caution when adding formalin to the bucket of seawater. Hold the bucket lid over as much of the bucket opening as possible while pouring the formalin, using it as a shield.
- If formalin comes into contact with your skin or eyes, rinse skin immediately and thoroughly with water for 15 minutes as per MSDS. Rinse eyes with saline provided in kit, then use on-board eye wash (if available) or water as needed to flush eyes for 15 minutes as per MSDS.
- If ingested, Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Seek medical attention as soon as possible as per MSDS.
- If overcome by fumes, move into fresh air. Administer oxygen if necessary and available, as per MSDS.

### Where to Keep Formalin Onboard

Formalin should be stored in a well ventilated space. Pure 100% formalin should be stored at or above $50°F$. Below $50°F$, a component precipitates out and the formalin loses potency. Pure formalin is a flammable material and should be stored in an appropriate flammable storage area until it has been diluted. Once diluted to a 10% solution, formalin can and should be stored on a weather deck. The solution will not freeze.

Store your bucket securely tied to an immobile object. Leave the bucket in place and carry samples to the bucket. This will avoid the potential of spilling formalin in the factory and will keep the formalin away from fish processing operations.

***Do not submerge your gloves in the formalin*** when you add samples to the bucket. If the samples float, use a pair of forceps or some other tool to submerge the samples. Rinse with water after formalin contact.

Anytime formalin gets spilled and/or inadvertently comes into contact with any object other than your samples, flush the object or area with plenty of water.

## Materials for Stomach Project

Observer Program field staff will provide this gear if it is not already available on your vessel.

- 1 liter formalin
- 1 5-gallon bucket
- 2 bucket lids (1 cut and 1 uncut)
- 2 large plastic bags
- Assorted sizes of specimen bags
- 100 specimen labels
- Specimen forms
- MSDS for 100% formalin
- MSDS for 10% formalin

Please return all unused forms, supplies, and the empty plastic formalin bottle to the stomach lab or to a NPGOP field office. Do not place unused sampling gear in a bucket with samples!

## Stomach Sampling

### Stomach Collection Procedure

1. Prior to the first haul from which you plan to collect stomachs, fill the white five gallon bucket half-full with sea water and add the contents of the one liter bottle of 100% formalin (37% formaldehyde) creating a 10% formalin solution (3.7% formaldehyde).

2. Seal with the cut lid. Add samples to this bucket as you collect them, one stomach per bag.

3. Collect stomach samples according to time of day and length of fish (see “Sample Stratification” on page 14-3).

4. Use the tally sheet on page 14-8 to keep track of the time and length categories that you need to fill.

You may sample fish from any haul, not just those sampled for composition.

Collect fish which do not show signs of net feeding or regurgitation. These signs include prey items (fresh or digested) in mouth or gill rakers or flaccid (loose and bloated) stomachs. (***Do not keep these!***)

Signs of “natural” stomachs include stomachs that are constricted tightly around the prey inside and naturally empty stomachs, which appear tight and contracted. (***Keep these!***)

**If a fish is discarded due to regurgitation, take the next fish in the basket. If the subsequent fish has food in its stomach, go**

**ahead and collect the specimen. If the subsequent fish has an empty stomach (naturally empty or regurgitated), discard it and go on to the next fish until a non-empty stomach is encountered. This special note applies only to the fish selected immediately after a regurgitation discard, because we don't want you to replace a regurgitated stomach with an empty stomach. A naturally empty stomach is a valid collection when not collected immediately following a regurgitated stomach.**

5. Determine the sex, fork length, and spawning condition of each fish and collect the stomach (see methods for individual species).

6. Record all information on the Specimen Form and Specimen Label as described in the "Labels and Records" on page 14-6.

7. Place each stomach in an individual cloth bag of the appropriate size, include a specimen label, and preserve.

Stop collecting when you have collected 80 stomachs or a full bucket that is loosely packed.

### Sample Stratification

Stratify the stomach collection by size of fish and time of collection (net off bottom/haul back time).

Figure 14-1 shows a chart with species length, time categories, and sample numbers. There are four length categories. For your particular species, see page 14-7 and fill in the appropriate length categories in the blanks provided. At the same time, fill in the lengths on the tally sheet on page 14-8, and use it as a guide.

Try to collect a minimum of 5 stomachs from a given size/time category in one haul and a maximum of 20 (i.e., all 4 size categories for a given time). Therefore, it is possible to complete the sampling for this project in as few as 4 hauls (20 stomachs per haul, 5 from each size category), as many as 16 hauls (5 stomachs per haul from 1 size category), or any number in between. Depending on the catch composition while you are sampling, it may take several weeks to fill all of the size/time categories.

You may have difficulty finding specimens for a particular time or size strata (especially if your boat targets large fish). If this happens, take more from the ones you are finding, or wait a few hauls if you think your vessel may catch a different size group.

The total number of samples requested is a maximum. If your bucket is full (i.e., loosely packed) before you have reached 80, ***stop collecting***. The number which will fit in a bucket will depend on the size and fullness of the stomachs collected.

### Determining Sex and Spawning Condition of Flatfish and Gadids

Give the abdomen a light squeeze. The extrusion of milt (male) or eggs (female) indicates a fish in spawning condition.

| | LOCAL TIME | | | | |
|---|---|---|---|---|---|
| Species length (cm) | 0101-0700 | 0701-1300 | 1301-1900 | 1901-0100 | Total samples/ length |
| 1 _____ | 5 | 5 | 5 | 5 | 20 |
| 2 _____ | 5 | 5 | 5 | 5 | 20 |
| 3 _____ | 5 | 5 | 5 | 5 | 20 |
| 4 _____ | 5 | 5 | 5 | 5 | 20 |
| Total samples/ time category | 20 | 20 | 20 | 20 | 80 |

**Figure 14-1 Stomach Tally Sheet**

## Method of Collecting Gadid Stomachs

1. To examine a stomach for regurgitation, first examine the mouth and gill rakers, then cut through the skin of the fish as shown in Figure 14-2. ***Be careful not to cut into the stomach***.

2. Open at incision and examine stomach, if there is no sign of regurgitation.

3. Excise stomach by cutting just anterior to the pyloric caeca and posterior to the gill chamber. Include all of the esophagus. Place stomach in bag with a specimen label and preserve.

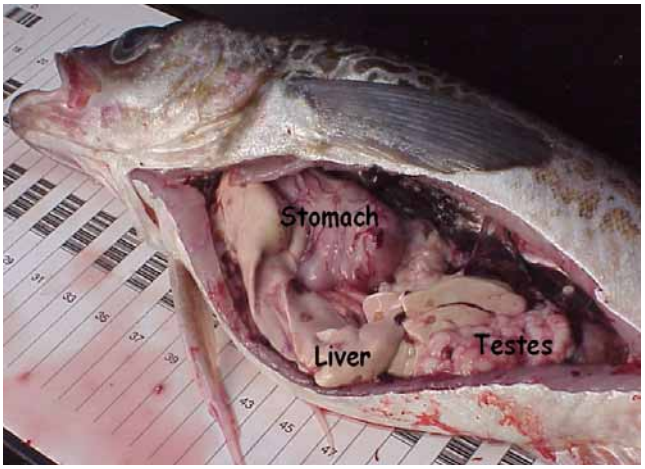


**Figure 14-2 Exposing the Stomach**

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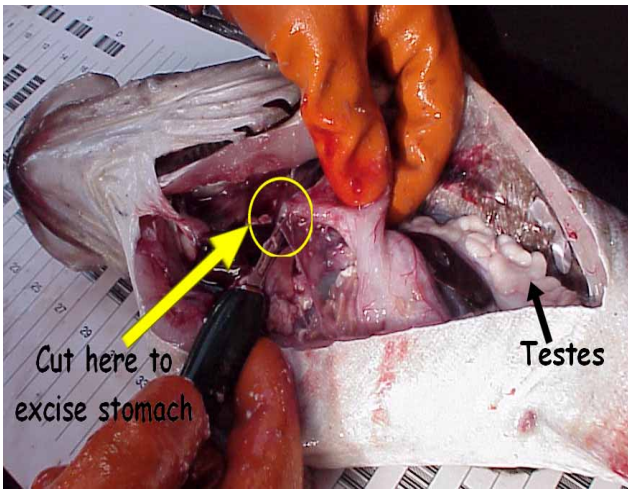



**Figure 14-3 Cut Posterior to Gill Chamber**

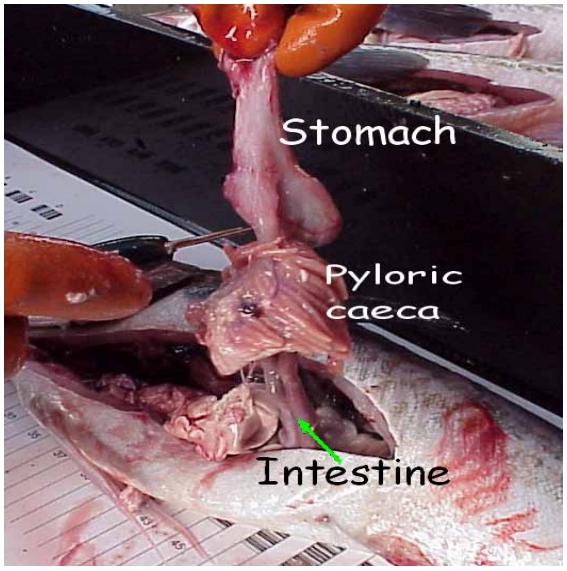



**Figure 14-4 Removing the Gadid Stomach**

**Method of Collecting Stomachs from Flatfish**

1. To examine stomachs for regurgitation, cut through the skin of the blind side (see Figure 14-5). (Be careful not to cut through the stomach).

2. Lift flap and examine body cavity, if there is no sign of regurgitation, keep the fish and continue with the collection process.

3. If the fish is less than 20 cm in length, remove the entire head along with the digestive tract attached and put it in a sample bag with specimen label and preserve.

4. If the fish is 20 cm or larger, remove the entire digestive tract from the beginning of the esophagus to the posterior end of the intestine just above the anus. Place the stomach with the intestine attached into a stomach bag with specimen tag and preserve.

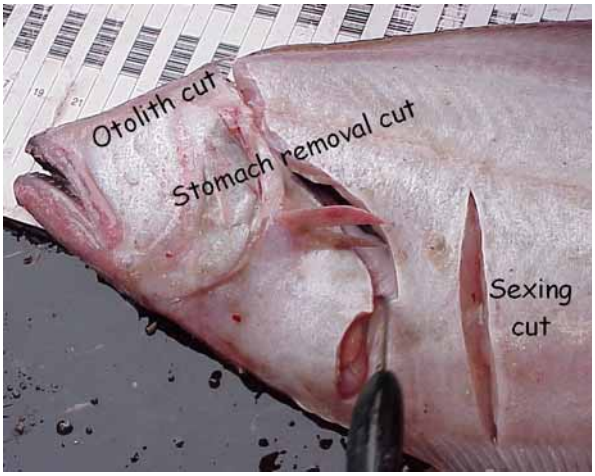



**Figure 14-5 First Cut for Flatfish Stomach Collection**

**For all of the large flatfishes (arrowtooth flounder, Greenland turbot, and Pacific halibut) remove only the stomach and leave the intestine behind. Make an incision posterior to the gill chamber and anterior to the pyloric caeca. Be aware that arrowtooth are prone to regurgitation.**

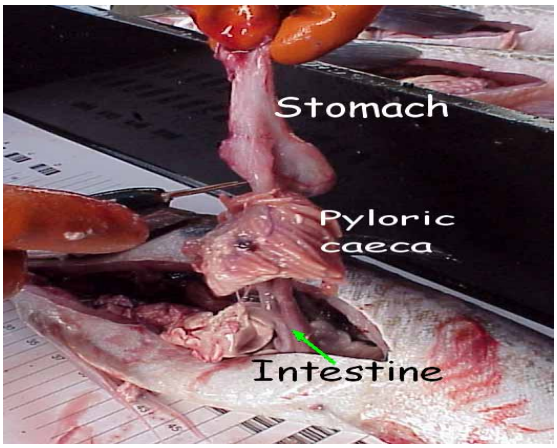



**Figure 14-6 Examining Stomach for Regurgitation**

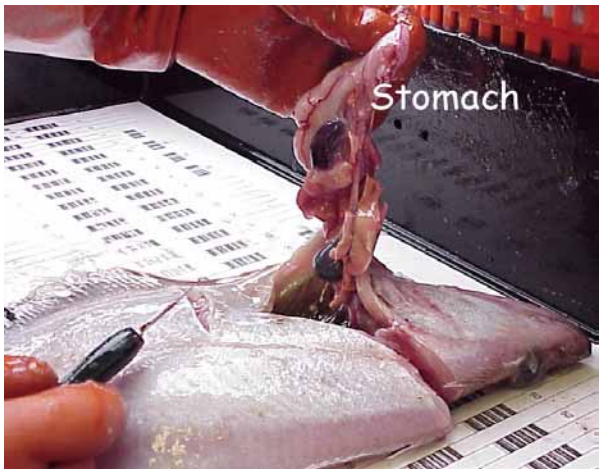



**Figure 14-7 Removing Stomach**

**Pacific Halibut**

Remember, stomachs from Pacific halibut (*Hippoglussus stenolepis*) are collected from the ***Bering Sea only***.

NMFS has been given permission to collect stomachs from Pacific halibut by the International Pacific Halibut Commission (see Figure 14-11). In order to prevent possible problems, adhere to the following guidelines.

First and foremost, ***no*** halibut will go to the freezer. ***No*** halibut will go to the galley. ***All*** halibut will go overboard after sampling. Make sure that you personally put the fish overboard after you have collected your stomach samples. No fillets, no cheeks!

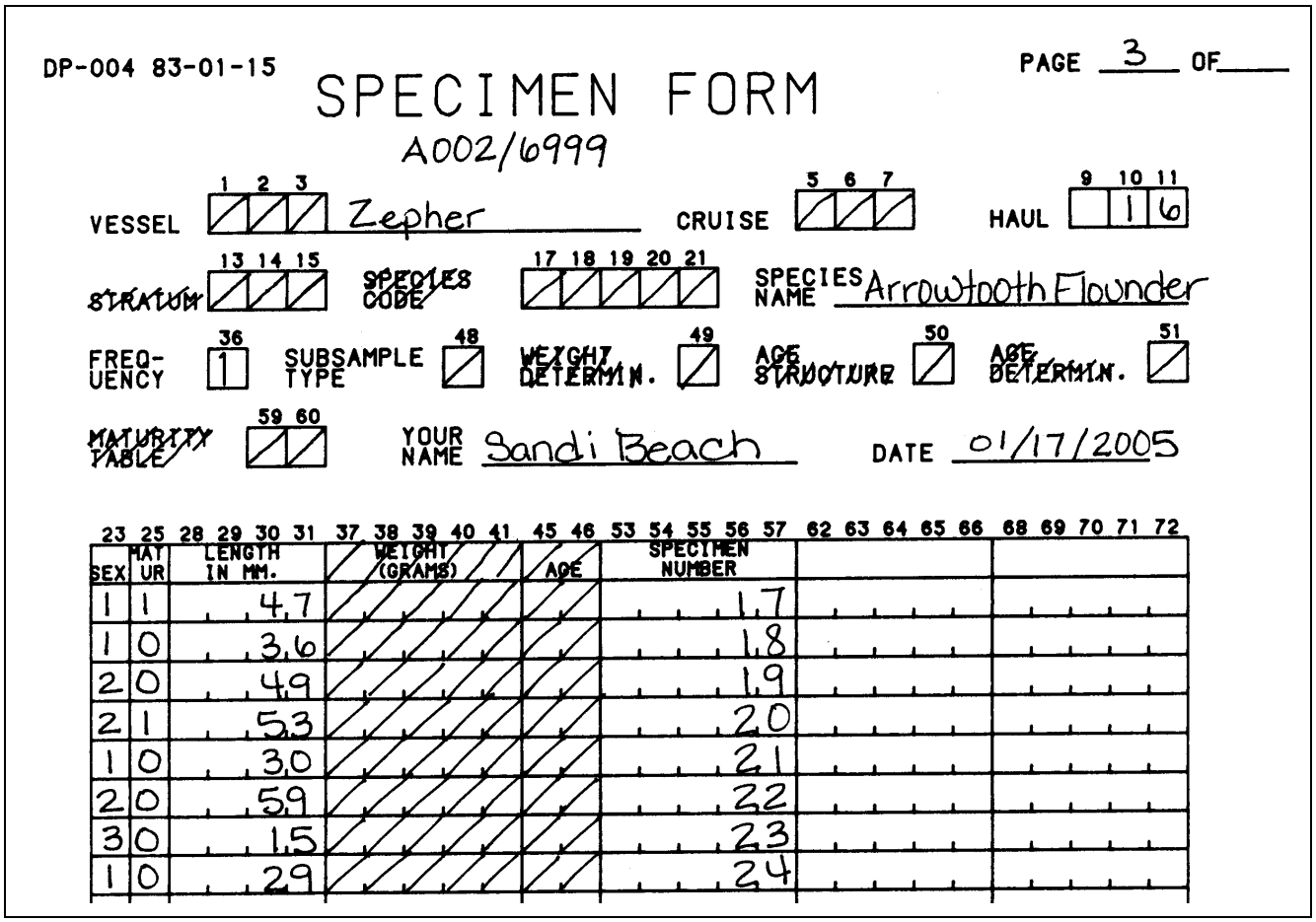
## Labels and Records

- Always use a pencil
- Fill out a Tally Sheet for your species (see Figure 14-1).
- Fill out a Specimen Form for each haul (see Figure 14-8).
- Fill out a Stomach Collection Label for each sample and place it in the bag with the stomach (see Figure 14-9).

**Specimen Form**

Record only the following where indicated (see Figure 14-8):

- Write your cruise number and vessel code at the top of each form
- Vessel name
- Haul number
- Specimen number (number assigned consecutively throughout the entire cruise to each sample as it is collected)
- Predator species name
- Your name
- Date
- Predator length in centimeters (fork length) *Note that the form asks for you to record in millimeters. Centimeters are acceptable!
- Predator sex **(1=male, 2=female, 3=juvenile)**
- Predator spawning stage **(1-spawning, 0=not spawning)**


DP-004 83-01-15

SPECIMEN FORM

PAGE 3 OF

A002/6999

VESSEL (1 2 3) Zepher CRUISE (5 6 7) HAUL (9 10 11) 16

STRATUM (13 14 15) SPECIES CODE (17 18 19 20 21) SPECIES NAME Arrowtooth Flounder

FREQUENCY (36) 1 SUBSAMPLE TYPE (48) WEIGHT DETERMIN. (49) AGE STRUCTURE (50) AGE DETERMIN. (51)

MATURITY TABLE (59 60) YOUR NAME Sandi Beach DATE 01/17/2005

| 23 SEX | 25 MATUR | 28 29 30 31 LENGTH IN MM. | 37 38 39 40 41 WEIGHT (GRAMS) | 45 46 AGE | 53 54 55 56 57 SPECIMEN NUMBER | 62 63 64 65 66 | 68 69 70 71 72 |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 4.7 | | | 17 | | |
| 1 | 0 | 3.6 | | | 18 | | |
| 2 | 0 | 4.9 | | | 19 | | |
| 2 | 1 | 5.3 | | | 20 | | |
| 1 | 0 | 3.0 | | | 21 | | |
| 2 | 0 | 5.9 | | | 22 | | |
| 3 | 0 | 1.5 | | | 23 | | |
| 1 | 0 | 2.9 | | | 24 | | |

**Figure 14-8 Specimen Form**

**Label**
Record the following where indicated

- vessel name
- haul number
- specimen number
- predator name
- predator length
- predator sex (M, F or U) and spawning condition

STOMACH COLLECTION LABEL

National Marine Fisheries Service, Trophic Interactions Lab
7600 Sand Point Way NE, Seattle, WA 98115-0070

VESSEL Zepher CRUISE 6999 HAUL 16

SPECIMEN NUMBER 19

LENGTH (CM) 49 SEX: M (F) U MATURITY: SP (NSP)

SPECIES IDENTIFICATION Arrowtooth flounder

COMMENTS naturally empty stomach.

COLLECTOR'S INITIALS S.B. PRESERVATIVE _____

☆GPO 1998 691-575

**Figure 14-9 Correctly Completed Stomach Collection Label**

## Species Lengths for Use in Sample Stratification

Fill in the blanks on your stratification chart and your tally sheet according to your species listed below:

| **Pacific cod, Pacific halibut, Greenland turbot, and arrowtooth flounder:** | |
|---|---|
| 1) <31 cm | 3) 51-70 cm |
| 2) 31-50 cm | 4) >70 cm |
| **walleye pollock:** | |
| 1) <30 cm | 3) 40-49 cm |
| 2) 30-39 cm | 4) >50 cm |
| **yellowfin sole:** | |
| 1) <20 | 3) 25-29 cm |
| 2) 20-24 cm | 4) >29 cm |
| **flathead sole:** | |
| 1) <21 cm | 3) 31-40 cm |
| 2) 21-30 cm | 4) >40 cm |
| **sablefish (Gulf of Alaska only)** | |
| 1) <50 cm | 3) 60-70 cm |
| 2) 50-60 cm | 4) >70 cm |

**Stomach Tally Sheet**

Time

| Size | 0101 - 0700 | 0701 - 1300 | 1301 - 1900 | 1901 - 0100 | Total |
|---|---|---|---|---|---|
| 1_____ | 5 | 5 | 5 | 5 | 20 |
| 2_____ | 5 | 5 | 5 | 5 | 20 |
| 3_____ | 5 | 5 | 5 | 5 | 20 |
| 4_____ | 5 | 5 | 5 | 5 | 20 |
| Total | 20 | 20 | 20 | 20 | 80 |

**Figure 14-10 Stomach Tally Sheet**

### When Your Sea Time Is Finished

Label the uncut lid with your name, vessel name, species collected, and year. Seal the bucket with the uncut lid.

Normally, you should return the full bucket to the field office. It is possible to leave it on the vessel, if arrangements have been made to do so through the Observer Program. ***Take your forms to debriefing!***

If you are the last observer on your vessel during the current sampling cycle, remove all stomach sampling gear and return it to the field office when you disembark. If you are unsure if this pertains to you, contact your inseason advisor.

During debriefing, show your debriefer your completed specimen forms. Then, contact the Stomach Lab so they can debrief you and collect your data forms. For debriefing contact: The Stomach Lab, Room 1093, Building 4, Alaska Fisheries Science Center, 7600 Sand Point Way N.E., Seattle, WA 98115. Phone: (206) 526-4238.

COMMISSIONERS:
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JOHN SECORD
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# INTERNATIONAL PACIFIC HALIBUT COMMISSION

ESTABLISHED BY A CONVENTION BETWEEN CANADA

AND THE UNITED STATES OF AMERICA

DIRECTOR
BRUCE M. LEAMAN

P.O. BOX 95009
SEATTLE, WA 98145-2009

TELEPHONE
(206) 634-1838

FAX:
(206) 632-2983

To Whom It May Concern:

The Alaska Fisheries Science Center, Resource Ecology and Fisheries Management Division (National Marine Fisheries Service) is authorized to capture and retain for scientific purposes up to 500 halibut (*Hippoglossus stenolepis*) per year in each of three areas, using research trawls, handlines, or longlines, during the calendar years 2001 through 2005. The place of and manner of capture will be determined in accordance with the Center's research plans concerning food habits and will include the areas of the eastern Bering Sea, Gulf of Alaska, and Aleutian Islands. Collection may be from research vessels or by research staff aboard domestic commercial fishing vessels. The principal investigator for this study is Dr. Pat Livingston.

Halibut obtained under this permit may not be retained for purposes other than scientific research and may not be sold. Halibut captured in excess of the limits specified in this permit must be returned to the sea with a minimum of delay and injury.

Bruce M. Leaman
Executive Director

**Figure 14-11 Halibut Specimen Collection Letter**

## Debriefing Questionaire

Your Name:

Vessel Name:

1. Did you have any problems in carrying out this project (lack of sufficient equipment, lack of time, etc.)?

2. How long did it take you to collect your samples from one haul?

3. Was it difficult to collect the expected number of samples from different size groups at different time periods?

4. Do you have any suggestions that would improve the sampling procedure for this project?

5. Do you have any suggestions that would make it easier for you to successfully complete this project?

6. Where were the buckets and formalin stored onboard? Did you have difficulty locating them?

# ATLAS INSTRUCTIONS

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## Introduction

The ATLAS program was developed to allow groundfish observers to send data from assignment stations directly to NMFS Alaska Fisheries Science Center in Seattle. This program enables NMFS to receive, analyze, and distribute data to those who need it for the management of the fishery during the fishing season. The ATLAS program also allows observers to obtain technical support while in the field via two way e-mail communications.

This manual will provide a basic understanding of the features provided with the ATLAS program and how to use them. It will be assumed that a rudimentary understanding of Windows already exists. Please inform an instructor if you need more computer training prior to departing for your vessel and a tutorial will be given during your regular observer briefing.

## Starting the ATLAS Program

Start the ATLAS program by choosing the NOAA logo icon.

This will open the ATLAS program. The next screen will be the Observer Data System security screen asking for a password. You will be given the password during your briefing or training. It is very important that you do not share this password with anyone else. With the password anyone may change any data on your computer without your knowledge. After typing in the password, point and double-click on the "Continue" button or hit the <Enter> key. You are now in the ATLAS Program.

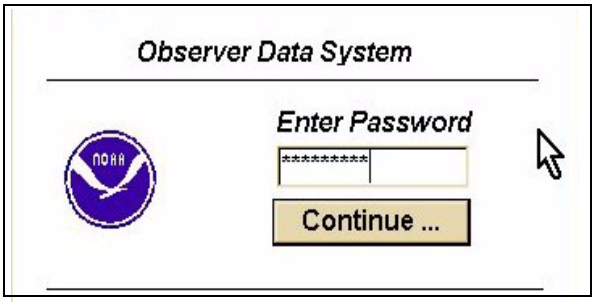



**Figure 15-1 Atlas Security Screen**

## Main Window

The first window of the program is the Main Window Figure 15-2. Once you have entered the required data into the data fields, this window will be the starting point for the rest of the program. The information required includes your First Name, Last Name, Cruise Number, Vessel Permit Number, Vessel Name, and ORC. For all but the Permit Number and Vessel Name you may enter the data by selecting the appropriate field, and typing in the information. You may move to other data fields by pressing the <Tab> key or by pointing and clicking on another field with the mouse.

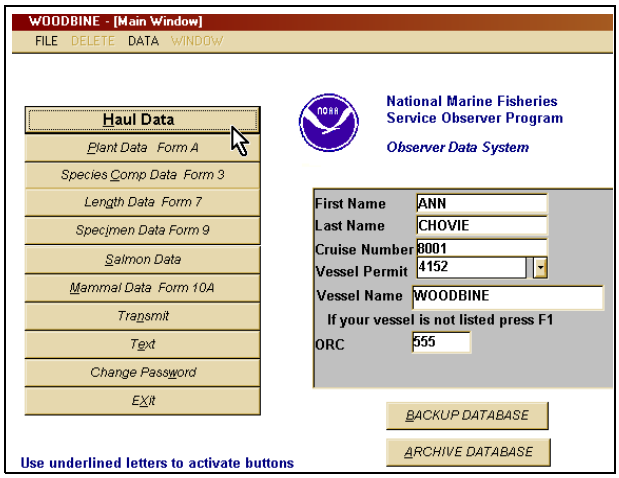



**Figure 15-2 Main Window**

You can find a drop-down list of vessel permit numbers and vessel names by choosing the drop-down list next to the *Vessel Permit* field. Select the name and permit number of your vessel from this list. If your vessel is not listed press the <F1> key on the top of the keyboard to enter "Unlisted Vessel," then contact NMFS in Seattle. The Permit number and vessel name of every vessel is also located in the back of the manual.

### The Main Window Command Buttons

The buttons in the Main Window correlate with most of the paper forms that have been used in the past. Choosing any of these Main Window command buttons will open the desired form. Data entry must start with the Haul Data Form or the Plant Data Form A. No other data may be entered until after either haul or set data has been entered.

| Title | Data Subject |
|---|---|
| Haul Data | Haul Information for Trawl, Pot, Longline |
| Plant Data Form A | Plant Delivery Information |
| Species Comp Data Form 3 | Species Composition Data |
| Length Data Form 7 | Length/Frequency Data |
| Specimen Data Form 9 | Length, Weight, and Sex Data for Age Structure and Salmon Scale Collections |
| Salmon Data | Salmon Retention Form Data |
| Mammal Data Form 10A | Marine Mammal Interaction Data |
| Transmit | For Transmitting Data to NMFS or a Disk |
| Text | For Creating and Reading Text Messages |
| Change Password | For Changing the Original Entry Password |
| Exit | For Closing the Program and Exiting to Windows Program Manager |
| Backup Database | For creating a daily copy of the database. |
| Archive Database | For creating a final copy of the database and deleting all data from the ship's computer. |

### Keyboard Shortcuts

Shortcut-keys may be used to carry out some commands by selecting and choosing command buttons. The shortcut-keys on the Main Window buttons can be identified by the underlined letter on each button. To use a shortcut, you need only to press an underlined letter's key. For example, to choose the button "Haul Data" from the Main Window, one needs only to press the <H> key.

In other areas, such as the Menu located at the top of every form, you may identify shortcut-keys by the underlined letters. For menu shortcuts you must press the <Alt> key and the letter's key at the same time. This will select and choose the specified item.

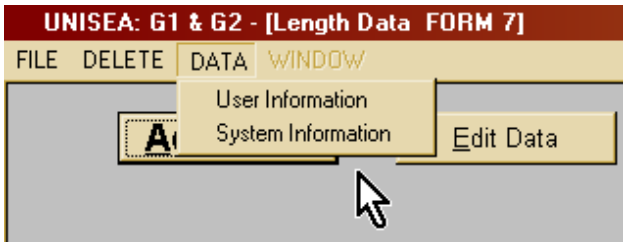



**Figure 15-3 Menu Selection**

### Keyboard Alternatives to the Mouse

The ATLAS program is like most Windows applications in that one may use the <Tab> and <Enter> keys in order to select and choose items on the screen. Generally the <Tab> key moves the cursor left to right or top to bottom while the <Shift>+<Tab> key moves the cursor in the reverse. On the Main Window, for example, use the <Tab> key to select the "Specimen Data Form 9" button and press the <Enter> key to choose it.

## Drop-down Lists

Many of the data fields will have drop-down lists. A drop-down list is a list of values which may be entered for the specific field. These fields may be identified by a down arrow located on the right side of the field. To use the drop-down list; select a field with a down arrow and press the <Alt> and ⇩ key simultaneously, or point and click on the down arrow with the mouse cursor. This reveals a list which you will be able to scroll through by pressing the⇩ or ⇧ keys, or by pointing and clicking on the scroll bar. Choosing the value may be accomplished by selecting the appropriate value, then pressing the <Enter> key, or by selecting the appropriate value with the mouse cursor and clicking.

## Command Buttons

On each form there is a selection of command buttons on the top of the form. There are four command buttons that are common for most of the forms. Choose any of the command buttons to save data from the entry windows to the database. In the case of Add Data, the program adds data to the database automatically. With the other command buttons, a window will appear asking whether you want to save the entered data or discard it. The program will then continue on with the function you have specified. These specifications hold true on all data entry forms; specific differences of each form will be discussed later in the chapter.

| | |
|---|---|
| Add Data | Choose this command button to continue adding data to a particular Set/ Haul. |
| New Haul | Choose this command button if more data are to be entered, but on a different haul/set. Choosing it will send you to the Haul/Set List window to start again. |
| Edit Data | Choose this command button in order to edit previously entered data. (see page 15-9). |
| Close | Choose this command button to exit the form and return to the Main Window. |

## The Haul List Window

Navigation within forms on the Atlas program is very similar on most form types. Once you have chosen a form from the Main Window, the Haul List Window will present you with a list of haul numbers. Select and choose the haul you wish to add data to by either:

- Pointing and clicking with the mouse on the appropriate haul in the list. Then pointing and clicking on the "Select Haul and Press Enter" button or
- Using the <Tab> key to select the list of hauls. Using the⇩ or⇧ keys to select the haul number you wish to work with, then pressing <Enter> to choose it.

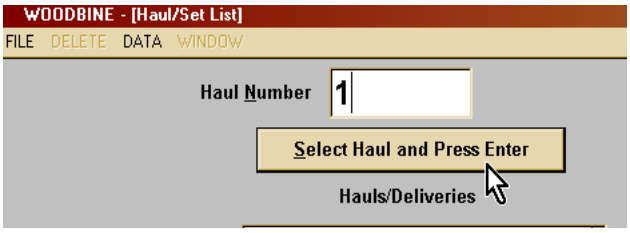



**Figure 15-4 Haul/Set Window List**

## Haul Data Form

Choose the "Haul Data" button, and a Haul window list will appear. Choose the "Add Data" button, an empty Data Entry Window will appear.

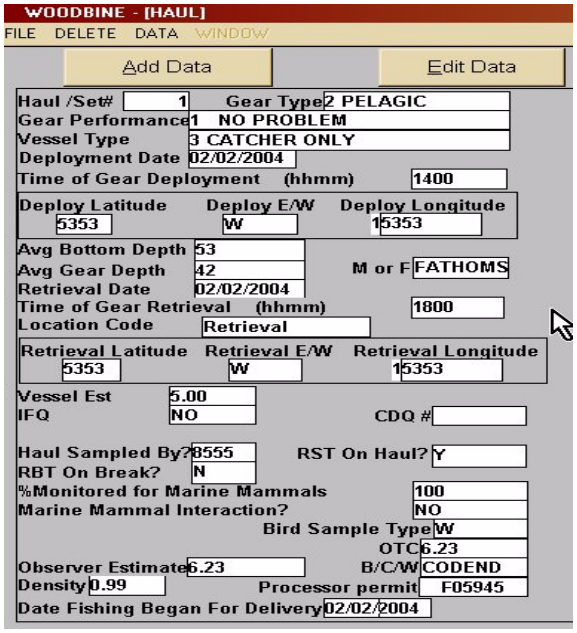



**Figure 15-5 Haul Data Form**

### Specifics on the Haul Data Form

There are some data fields which will automatically be filled in with the same data as the previous haul. The number "1" is automatically added into the Haul field the first time the program is run. Each time you choose the "Add Data" button, the resulting haul number is one number greater than the previous haul number. You may change the haul number simply by typing in a new number and moving to the next data field. The Date starts at 00/00/0000, again you may change data in this field by typing the correct date in the mm/dd/yyyy format. You may, in a similar manner, change all other data generated by the computer. You should enter the rest of the data in the same format as you are entering it on the actual Vessel and Observer Haul forms.

**There are no differences between the data entered on this form and the data recorded on the paper VHF/OHF. All data should match.**

### Non-fishing Day Positions

When a "0" is entered into the Haul field, a new screen will appear. The data fields on this form are Date, Location Code, Non-fishing Day Latitude, Non-fishing Day E/W, and Non-fishing day Longitude. All days on board a vessel must be accounted for, on days where there is no fishing you must enter a Non-fishing day position. Take a position at some point in the day and include a description of your vessel's activities in your logbook

## Species Composition Data Form

Before adding species composition data, you must have already entered haul or set data. Select the "Species Comp Data Form 3" button on the Main Window to begin adding composition data. You should now see the Haul List window (see Figure 15-4). Select and choose the haul you wish to add data to.

### Specifics on the Species Composition Form

There are certain areas in the program which deserve a more thorough explanation.

When entering data onto this form follow all the rules given for the 3US form, except for the following difference:

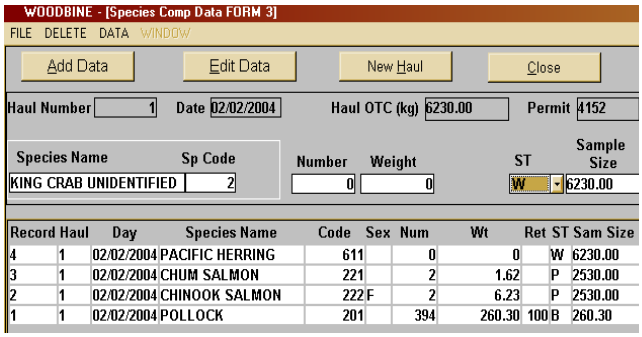



**Figure 15-6 Species Composition Data**

**Multiple Entries:** Multiple entries for a single species are permitted. This will allow you to copy your data directly from the Deck Forms into the computer without having to summarize the data. This means, when you have more than one entry on the Deck Form for one species, you are allowed to add each entry separately on the Species Composition form without having to summarize your data.

**Species Name field:** The Species Name may be entered in a myriad of ways:

1. Press the <Tab> key and skip the ***Species Name*** field, then enter the species code either directly or by the drop-down list. Once the code is entered, the species name will be entered automatically.

2. Type in part of the name, then select the drop-down list at the far right of the species name data field.

3. Type in the name of the species you wish to enter. (Note: You must enter the name exactly as it is on the species code list or it will not be accepted as a valid species name, i.e., Pacific Cod, not simply, Cod.)

**Species Code field:** The species Code field has a drop-down list or you may type in the species code directly.

**To help narrow your search remember that all flatfish are numbered in the 100's, roundfish in the 200's, and all rockfish in the 300's.**

**Number field:** The Number field must have an entry, and will only accept whole numbers.

**Weight field:** The Weight field must have an entry, and will only accept numbers to the nearest 0.01 kg.

**Sample Type field:** The ST field has a hidden drop-down list with different sample types, depending on the type of vessel you are on. For trawlers the choices given are W (for whole haul), P (for partial haul), B (for basket samples or subsamples), and X (presorted organisms). For longliners and pot boats the L (longline) or T (trap) should be selected. The other selections for these vessel types are for multiple sample sizes, which you should not be using.

**Sample Size field:** You may enter data into the Sample Size field only for partial haul samples. For whole haul samples, the OTC weight in kilograms is automatically entered into this field. Also, the weight of all the species with a sample type B is summed, and the summed total weight is placed in the sample size field. For Longliner/Pot sets the sample size is the number of skates or pots sampled and must be entered by the observer.

### Data Check and Verification

In order to increase data quality and reduce debriefing time a required data check has been implemented on the ATLAS program. After entering all the composition data for a particular haul or set you will be asked to enter a summed number and weight with a species code of 999. This is a data check and verification to help insure data quality. Enter a species code 999 in the SP code field. Add all the species numbers for all sample types and enter the summed number under the Number field. Sum all of the weights in every sample type in a set or haul to obtain a total weight. Enter this number into the weight field. If the summed numbers for all your species entered into ATLAS are not equal to the numbers entered into the 999 species row the program will not allow you to continue. If this is the case you must verify your numbers and weights again. ***Sum the numbers and weights on your deck forms*** once again, then double check the numbers you have entered into the computer. Re-enter the new value and continue.

## Plant Data Form A

Choose the "Plant Data Form A" button from the Main Window. Choose the "Add Data" button and an empty Data Entry Window will appear (see Figure 15-7). There are no differences between the data entered for this form and the data written on the actual Form A - Plant Delivery Form. All data should match.

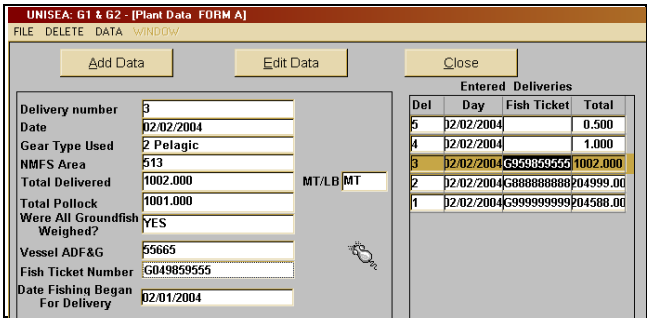


**Figure 15-7 Plant Data Form A**

### Specifics on the Plant Data Form

You must enter the first delivery number. Each time you choose the "Add Data" button, the resulting delivery number is one number greater than the previous delivery number. You may change the delivery number simply by typing in a new number and moving to the next data field. The ***Date, Gear Type Used,*** and ***Units (MT/LB)*** data fields will automatically be filled in with the same data as the previous haul. The date starts at 00/00/0000, again you may change data in this field by typing the correct date in the mm/dd/yyyy format. You may, in a similar manner, change all other data generated by the computer. You should enter the rest of the data exactly as it is written on the Form A- Plant Delivery Form.

**Plant observers using ATLAS must maintain and bring back paper copies of the Form A.**

## Length Data Form 7

Before adding length/frequency data, you must have already entered haul data. To begin, select the "Length Data Form 7" button on the Main Window. You should now see the Haul List window Figure 15-4. Select and choose the haul/deliveries you wish to add data to.

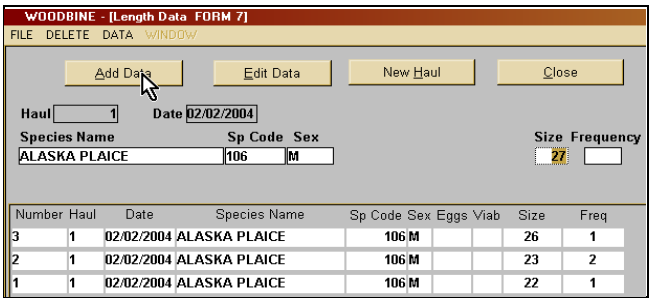


**Figure 15-8 Length Data Form 7**

### Specifics on the Length/Frequency Form 7

There are certain areas in the program which deserve a more thorough explanation:

**Species Name field:** Species Name may be entered in the same manner as the Species Composition form.

**Species Code field:** This field is exactly like the Code field for the Species Composition form.

**Eggs? field:** The Eggs? field is a hidden field and will only appear if a prohibited female crab, identified to species, is typed into the first three data fields.

**Injury / Viability fields:** Enter the appropriate code. Criteria and codes are listed in the Appendix beginning on page A-38.

Pressing the "Add Data" button will save data to the database and start a new length/frequency entry with the same Species Name, the same Code, the same Sex, and a length in the Length field one unit higher than the previous entry. If you have a number of lengths in consecutive order; Type in the first length and frequency of the series. Press the <Tab> key, the <Enter> key, and then the <Tab> key a second time. Type in the frequency of the next entry.

This may be continued until your lengths are no longer in consecutive order. To change the length, type in the desired length. To change data in the ***Species Name, Code***, and ***Sex*** data fields, point and click on the desired field, or use the <Shift> key and <Tab> key to move the cursor into the fields to the left. When in the desired field, simply type in the correct value. You should always double check your entries before moving on to another haul or form type.

## Specimen Data Form 9

Before adding specimen data, you must have already entered haul data. To begin, select the "Specimen" button on the Main Window. You should now see the Haul List window Figure 15-4. Select and choose the haul/deliveries you wish to add data to.

### Specifics on the Specimen Data Form 9

There are certain areas in the program which deserve a more thorough explanation:

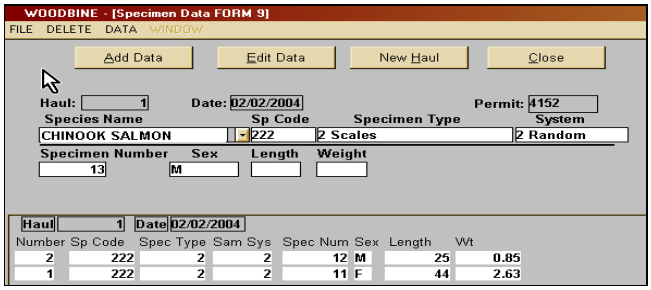



**Figure 15-9 Specimen Data Form 9**

**Species Name field:** Species Name may be entered in the same manner as that on the Species composition form.

**Species Code field:** Species Code may be entered in the same manner as that on the Species composition form.

**Specimen Type field:** The Specimen Type field has a hidden drop-down list which may be viewed by pointing and clicking on this field

**System field:** Always enter a "2" in this field for "Random". The other two options are from previous years and are no longer valid.

Pressing the "Add Data" button will enter the data into the database and start a new specimen entry with the same Species Name, Code, Specimen Type, System, and Sex as the previous entry. It will also place a number in the Specimen Number field one digit higher than the previous specimen number. To change any of the values, choose the data field you want to change, point and click on the field with the mouse or use the <Tab> key to navigate between fields, then type in the new data. As data are added to the database, they are listed below the data fields. You should always double check your entries before moving on to another haul or form.

## Salmon Data Form

Before adding salmon retention data, you must have already entered haul or delivery data. Select the "Salmon" button on the Main Window to begin adding data. You should now see the Haul List window Figure 15-4. Select and choose the haul/delivery you wish to add data to.

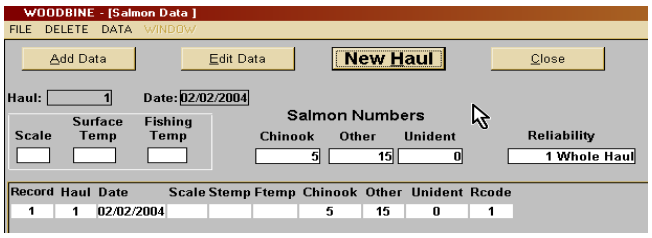



**Figure 15-10 Salmon Data**

## Specifics on the Salmon Data Form

There are certain areas in the vessel salmon retention form which deserve a more thorough explanation:

**Scale field:** The Scale field is for entering the temperature scale used either Fahrenheit or Celsius. This field contains a drop-down list which may be used.

**Surface Temp. field:** Data entered into the Surface Temp. field should be to the nearest 0.1 degree. All obtained data should be entered.

**Fishing Temp. field:** Data entered into the Fishing Temp. field should be to the nearest 0.1 degree. All obtained data should be entered.

**Reliability field:** The Reliability field has a drop-down list

Entering data on this form is very straight-forward, there can be only one entry per haul/delivery. For vessels any temperature data gathered should be entered, if you are only able to collect ***Surface temperatures***, enter them.

## Marine Mammal Data Form 10A

Before adding marine mammal data, you must have already entered haul data. Select the "Mammal Data Form 10A" button on the Main Window to begin adding data. You should now see the Haul List window Figure 15-4. Select and choose the haul you wish to add data to.

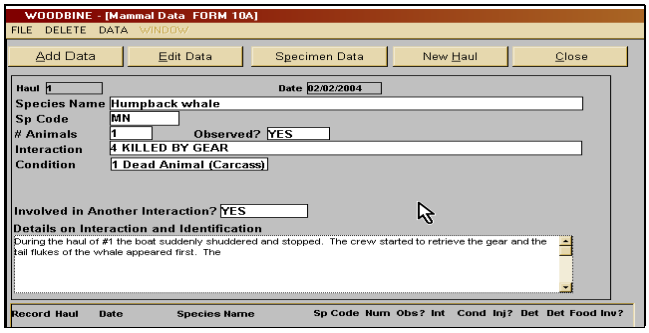



**Figure 15-11 Marine Mammal Data Form 10A**

## Specifics on the Marine Mammal Form

**Sp. Name field:** This field contains a drop-down list with both the species name and species code.

**Code field:** This field is automatically filled in when Sp. Name field is completed

**Interaction field:** This field contains a drop-down list which gives you the selection of different acceptable interactions and their codes.

**Condition field:** This field contains a drop-down list which gives you the selection of acceptable conditions and their codes.

**Injured? field:** 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 field:** Fill in this field only for deterrence interactions, interaction code 1. Otherwise leave this field blank. There is a drop-down list with a list of codes.

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

**Food Species field:** 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 from "Species Codes for Fish and Invertebrates" on page A-1 of the fish species that is being predated upon the heaviest. If there are more than one species that are being predated upon list the other species in the Remarks field.

**Involved in another interaction? field:** If this individual marine mammal or group of marine mammals was involved in other interactions listed on the Form 10A enter a "Y". If not enter a "N".

**Details on Interaction and Identification field:** This field must be filled in for each entry or the data cannot be used. You should type in all the required information listed on page 12-5. In the Details field, use the key combination of the <Ctrl> key and <Enter> key to start a new line.

### Differences from the Paper Form 10A

The main difference from the ATLAS Form 10A and the paper Form 10A is that there are no Interaction numbers. The computer automatically assigns interaction numbers when you make an entry and links them to the appropriate specimen entry on the Form 10B.

## Marine Mammal Specimen Form 10B

To add data to the Marine Mammal Specimen Form 10B, you must first have entered data to the Marine Mammal Data Form 10A. Choose the "Add Specimen Data" button on the Marine Mammal Data Form 10A to change to the Marine Mammal Specimen Form 10B. On the Marine Mammal Specimen Form 10B, choose the "Add Data" button to view the form (see Figure 15-12). The data needed for this form is exactly the same as that which is needed for the Form 10B.

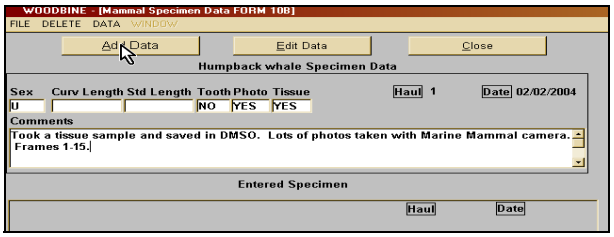



**Figure 15-12 Specimen Data Form 10B**

### Specifics on the Marine Mammal Specimen Form 10B

**Comments field:** Comments should be entered in as they are described on page 12-5. In the ***Comments*** field, use the key combination of <Ctrl> key and <Enter> key to start a new line. Tips on Entering Data: Marine Mammal Specimen Form

As data are entered to the Marine Mammal Specimen form, previously entered data are shown below the data fields. You should always double check your entries before moving on to another haul or form type.

## Editing in ATLAS

### Editing Data

Editing data is simply changing data previously typed or entered. Every time you delete an entry in a data field, add a forgotten entry into a data field, or update a previous entry, you are editing data. The method you use to change data depends on if you have saved the data to the database or not.

Prior to saving data onto the ATLAS database, you may change any entry in a data field by selecting the field you want to change and typing in the new entry.

After saving data to the database, you must use the editing function of this program to edit data. Data saved to the database can be seen either to the right of or below the Data Fields in each form Figure 15-13. You may start from either the main window or while you are working within a form:

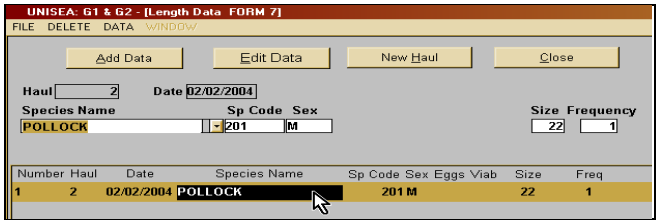



**Figure 15-13 Entered Data Window**

- You may start from the Main Window by choosing the form type. On the next screen, choose the appropriate haul from the Hauls List window. On the data form, select the appropriate data line from the entered data (of course you must have previously entered data), and choose the "Edit Data" command button.

- You may also start while working within a form. Select the appropriate data line from the entered data on the form, then select and choose the "Edit" data button. A new window will appear asking you to choose whether or not you wish to save or discard any data remaining in the data fields. Choose the appropriate response.

You may now edit data by selecting the field you wish to change, deleting the existing data, and entering the correct data. Data are added to the ATLAS database as if you were adding new information, i.e., selecting and choosing one of the command buttons on the top of the form.

### Deleting Data

To delete an entry already on the ATLAS Database, select and highlight the haul you wish to delete, point and click on the Delete menu item on the top of the screen. After clicking, you should see a drop-down list. To delete the record, point and click on the Delete Record selection. The program will then ask if you are sure you want to delete the record, choose OK to delete.

**On the Haul form deleting an entry will delete all data for that haul or set from every data form.**

## Text Messages

### Receiving Messages from NMFS

Any messages to you from NMFS will automatically be transmitted each time you connect with Seattle. Select the "Text" button in the main window to begin. If there are any incoming messages they will appear at the bottom of the screen with INCOMING listed in the ***Type*** field. Click on the message, then click on the "Edit/Read" button at the top center of the window.

### Recording Text Messages to Send

To record a text message click on the "Add" button and type your message in the ***Message Text:*** box. The screen will look like the screen in (Figure 15-14).

### Printing Incoming Text Messages

To print incoming messages use the mouse to point and click on the "Print Message" button on the bottom left of the Text window. The message will print on the Window's default printer.

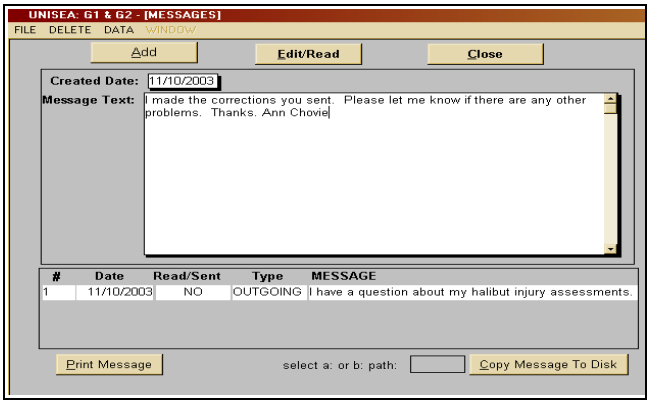



**Figure 15-14 Text Messages**

## Transmitting Data from Vessels Using INMARSAT A, B, Iridium, or Mini-M Communications

Most vessels that have the ATLAS program installed, use INMARSAT A, B, Iridium, or Mini-M communications to send data via satellite to their home offices. The ATLAS program uses the same communications system to send data to the NMFS offices in Seattle.

### Transmit Data Command Buttons Page

Select the "Transmit" command button, a screen such as the one in Figure 15-15 will appear. The Transmit Menu form lists the options for transmitting data.

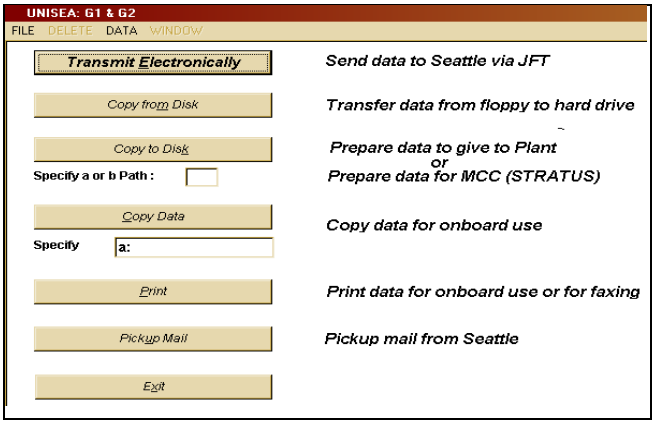



**Figure 15-15 Transmit**

| | |
|---|---|
| **Transmit Electronically**: | Transmits data from your vessel to and receives messages from Seattle. This option is for vessels that have the satellite communications capabilities to use Just File Transfer (JFT) software. |
| **Copy from Disk**: | This option is used by a Plant Observer to copy data off a floppy disk that contains shoreside vessel data. The data is copied off the floppy to the plant's computer that will be used for transmitting the data. |
| **Copy to Disk For Plants**: | Copies data to a floppy disk. This option will be used in combination with the Copy from Disk option. On a vessel without the capabilities to send data from at sea, you must first copy data to a disk, and then give the disk to the observer at the plant you are delivering to. Before copying data to a disk, you must specify which drive (a or b) the floppy disk is in. [In most computers it will be drive A:\.] |
| **Copy Data**: | Copies data (for use on the vessel) to a specified path, this could be to either the hard drive or a directory. You must first specify where you want the data to reside. Enter the pathway name into the data field located below the command button. For example, to specify a pathway to the "Observer" file on the C:\ drive, the pathway name would be C:\Observer. |
| **Print**: | Prints a paper copy of the ATLAS data you have entered. |

**Figure 15-16 Data Preparation and Transmission Options**

| | |
|---|---|
| **Pick Up Mail**: | Picks up mail sent to you from NMFS without transmitting anything to NMFS. **You must go to the Text window in order to view your mail**. |
| **Exit**: | Sends you to the Main Window. |

**Figure 15-16 Data Preparation and Transmission Options**

## Data Preparation and Transmission Page

Before data can be sent to Seattle, to a hard drive, to a disk, or to a printer; you must first specify which data you wish to send. After selecting one of the options on the Transmit Menu form, you will see a window such as the one below. There are three windows and five command buttons.

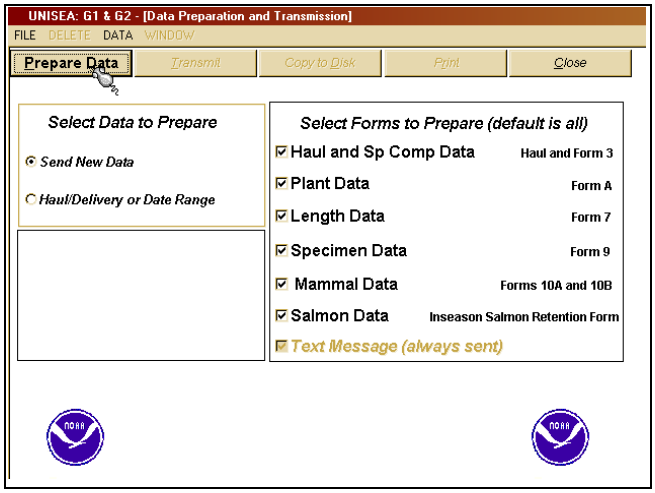



**Figure 15-17 Data Preparation and Transmission**

## Windows:

**Select Data to Prepare:** This window allows you to choose which data you wish to send:

1. Send New Data, the default option, will send all of the data you have entered into the database and have not yet transmitted. It will also send any data you have edited since you last prepared data.

2. Haul/Delivery or date Range, allows you to resend any data you have already sent. When this option is chosen the Data Selection window will appear.

**Data Selection Window:** This window allows you to select which dates or hauls/deliveries you wish to send to NMFS for previously transmitted data. There are two ways of selecting data to be sent;

1. In the ***Date Range*** data fields, you may enter the range of dates, ***Start to End,*** you wish to send. To send a single date enter the same date in both fields.

2. In the ***Haul Range*** data fields, you may enter the range of hauls/deliveries, ***Start to End,*** you wish to send. To send a single haul enter the same number in both fields.

**Select Data to Prepare Window:** This window allows you to select the type of data you wish to send to NMFS. A ☑ means that these data forms are to be sent. A ☐ means that these data forms will not be sent. Text data will always be sent.

You may place or remove a ✓ from the boxes by using either;

1. the mouse pointer to select the field, then click on it to add or remove a ✓, or

2. the <Tab> key or <Shift>+<Tab> key combination to select the field, and press the <space bar> key to add or remove a ✓.

## How to Send Data

First you must decide what type of transmission you want to perform. The buttons on the Transmit Menu form list your options Figure 15-15.

After entering the pathway and/or selecting the transmission mode, there are a few steps which must be followed on all transmission types:

1. Select the data you wish to send in the windows of the Data Preparation and Transmission form. Unless informed otherwise by NMFS staff you should always ***leave all the options in the default mode*** which is "Send New Data" in the Select Data to Prepare window and all of the forms checked in the Select Forms to Prepare window.

2. Before sending data, prepare the data to be sent. Preparing the data selects requested data from the database and compresses the specified files. Compressed files can be transmitted much faster. They also use less disc space when storing. Choose the "Prepare Data" command button to start compression. Wait for the program to inform you that the data has been prepared before continuing.

3. If you are sending the data to a disk, insert the blank floppy disk into the disk driver. If not, skip this step and go on to step 4.

4. Choose the appropriate command button, in the Data Preparation and Transmission window, to send the data. Once you hit Transmit, you will see two boxes appear at the bottom of the screen, titled "Files to be Transmitted," and "Files that Failed Transmission." If file names appear in the Failed Transmission box, you may need to try transmitting again, as all files didn't go through. If one or more files are not transmitted after multiple tries on different days, send a text message explaining this to NMFS.

Press the <Alt> key and the <Tab> key simultaneously ***after*** you see the JFT icon flash on the screen. The JFT Communications Window will then appear. This window allows you to monitor the transmission process.

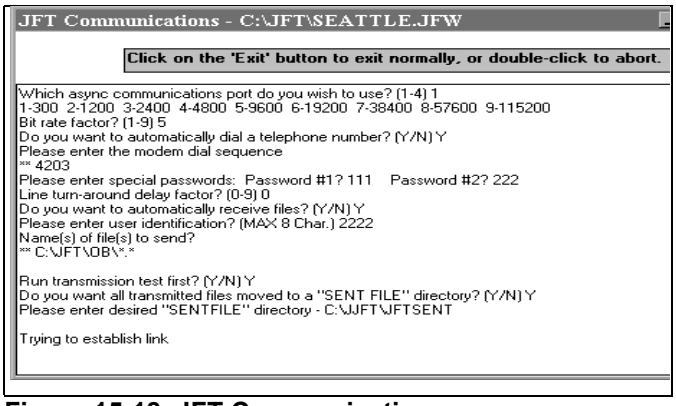



**Figure 15-18 JFT Communications**

5. Wait for the transmission to be complete then press <Enter>. You will be informed if there are any incoming messages (see "Text Messages" on page 15-10). When you are finished "Close" the Data Preparation and Transmission window. Choose "Exit" command button to navigate back to the Main window.

The program will not allow you to press an inappropriate button. For example, if you chose the "Print" command button in the Transmit Menu window, the "Transmit Data" button in the Data Preparation and Transmission window will be

"greyed," and you will not be able to choose it. If you wanted to choose this option, you must first close the Prepare and Transmit Data window, then select the appropriate button from the Transmit Menu window.

**After choosing the "Prepare Data" button the screen will blink, don't be alarmed this is normal operating procedure. Do not press anything until the program informs you that the data has been prepared.**

## Backing Up Data

### What is Backing Up Data Anyway?

Backing up data is, simply, making a separate copy of your database so the database is not lost if there is a problem with the computer's hard drive. It's like insurance, you hope you will never need it, but sure are happy you have it when you do. If there was a problem with the hard drive, you could easily transfer the data from the 3.5" backup disks back onto the hard drive, once it is back in operation, or bring the disks directly to NMFS in Seattle.

### When to Backup?

In an ideal world you would make backups after every data entry session. Knowing that making backups takes time and that time is one commodity that is at a premium at sea, we make it only a suggestion. We do require that you make back ups at least every day. Backing up your data may require more than one disc to capture all the data. Alternate between the two sets of disks each day. One or two disks should be used Mon, Wed, Fri and Sun and the another one or two for Tue, Thu, and Sat. Just remember, anything lost will need to be re-entered. Data should also be backed up onto the 3.5" disks when you have finished entering data for the last time on the vessel. This will be the copy you return with to NMFS.

### How to Backup?

1. Place a 3.5" disk into the floppy disk drive of the computer. The backup process will delete previous backup files on the disk.

2. Click on the "Backup Database" button in the Main Window Figure 15-2.

3. You must determine which drive your computer has specified as the 3.5" floppy disk drive. It will be either drive A or drive B. If you do not know, ask vessel personnel.

In most cases the 3.5" floppy disk drive will be drive A. If this is the case simply hit the Enter key or click on the "Yes" button when the screen below appears.

4. If the 3.5" floppy drive is drive B, click on the "No" button. This automatically chooses the B drive.

5. The computer will "blink" and a text screen will appear, be patient and wait until the entire process is over before attempting anything else. The computer will inform you when the backup is complete and will send you to the ATLAS Main Window.

For each different ***computer***, you work on, you should have a separate set of backup disks. Thus, if you work on a number of shoreside delivery vessels and only use one computer, only one set of backup disks are needed. If, on the other hand, you are on a number of catcher/processors, and use a different computer on each, a separate set of backup disks are needed for each computer.

## Archiving Data

### What is Archiving Data?

Archiving data is a final backup of the database and the deletion of all your data from the database. This is necessary because a build up of data from multiple observers will cause the computer to become slower as disc space becomes filled. To refresh the database after each observer and speed the processing time, everything must be removed from the database after each cruise. We want to make sure that you do not lose any data, therefore a final copy of the database is made before the database is emptied.

### When Should I Archive?

You should only attempt an archive ***after*** you have sent your final transmission to NMFS in Seattle and made a backup of the final data for each vessel. After an Archive, ***all of your data will be deleted,*** none of your data will remain on the computer.

***Do not archive until either;***

1. NMFS staff inform you that you need to archive, or

2. You have made your final data transmission, have made a final backup, and are leaving the vessel or plant for the final time.

### How to Archive?

1. Place a blank 3.5" disk into the floppy disk drive of the computer.

2. Click on the “Archive Database” button in the Main Window (see Figure 15-2).

3. Two cautionary windows will appear asking if you are sure you wish to archive the data. Click on the appropriate response, remember that all of your data will be deleted after the archive.

4. You must determine which drive your computer has specified as the 3.5" floppy disk drive. It will be either drive A or drive B. If you do not know, ask vessel personnel.

5. In most cases the 3.5" floppy disk drive will be drive A. If this is the case simply hit the Enter key or click on the “Yes” button when the screen below appears.

6. If the 3.5" floppy drive is drive B, click on the “No” button. This automatically chooses the B drive.

7. The computer will “blink” and a text screen will appear, be patient, and wait until the entire process is over before attempting anything else.

8. The computer will then inform you as to whether or not the database has been archived. If the archive has been successful then a box will appear asking you whether you wish to delete the data from the database. If you answer yes all data will be deleted from the computer. The program will then inform you when the Archive is complete and the ATLAS Main Window will appear.

If the archive has been unsuccessful, it will inform you of this and the Main Window will appear, please send a message to NMFS Seattle informing them of your difficulty.

## Updating ATLAS Program While At Sea

### For Windows 95

To update the version of ATLAS in Windows 95 or newer you must click on the Start button on the bottom left of the screen. A pop-up menu list will appear, select Programs. Another pop-up menu list will appear, select NOAA Observer Program. A third list will appear select the Update Icon and click. This program should only be activated if you are told to do so in a message received from NMFS Seattle. The screen will turn black for a few moments and then should return to the Windows 95 startup window.

## What You Need to Bring Back

You should bring the following back to NMFS in Seattle: the backup and archive copies of the ATLAS database on the 3.5" disks, the paper Vessel and Observer Haul and/or Plant Delivery forms, the paper marine mammal sighting forms (11US), the Deck Forms, the Species Identification Forms, your logbook, and any biological samples, i.e., salmon scales, otolith samples, cod stomachs, or any other special project material.

# FIRST DAYS ON BOARD

The very first thing you will need to do upon boarding a new vessel is to check for the US Coast Guard Commercial Fishing Vessel Safety Examination Decal (see page 17-2). These decals are valid for two years from the date indicated by the hole punch. You may not board a vessel that does not have a current decal. If the vessel does not have a current decal, inform the captain that you are not able to board the vessel without one and immediately inform your employer. Document the decal information in your logbook. (*Please note that the mothership Ocean Phoenix is not required to have this safety decal.)

Upon boarding the vessel, introducing yourself to the captain should be a priority. It's important at this meeting to set the tone for a friendly but business-like working relationship. If the captain is receptive, take this opportunity to mention the following points:

- Tell the captain that it is important for you to routinely see the ship's fishing logs.
- On catcher/processor vessels, inquire as to how to send the weekly catch messages if the observer ATLAS program is not installed, available, or is not functioning.
- Ask to be informed, in advance, of changes in the fishing schedule so that you may adjust your schedule accordingly.
- Ask to be notified if any marine mammals or short-tailed albatross are found in the catches, regardless of time of day. Request that these animals be held for your examination. Asked to be notified, if possible, of marine mammal and short-tailed albatross sightings.
- Before leaving the dock you should be given a safety orientation and you need to go through your safety checklist (see page 17-3). After this, if you have any questions or concerns that have not been addressed, ask the skipper. Notify your employer and report in your log any safety problems not resolved.

Remember, while the vessel is in port, the captain is usually busy and may not be receptive at this time. Do not be discouraged. Ample opportunity should be available to discuss your issues and concerns with the vessel captain while steaming to the fishing grounds.

**Vessels are required to provide observers with accommodations equivalent to those provided for officers or other management level personnel of the vessel.**

As quickly as possible, try adapting to the new surroundings by familiarizing yourself with the layout of the vessel and by meeting the people you will be working with. If the previous observer is available, ask that person to give you a tour and orientation of the vessel. Note key areas such as observer quarters, galley, wheel house, factory and sampling area. If the previous observer is not available, vessel personnel are frequently assigned to assist new observers with the familiarization process.

Before the vessel leaves port, make sure you have all of your personal items and sampling equipment onboard. Check your equipment before leaving port for lost or forgotten items. Contact the field offices if you require additional sampling equipment and forms. If you are prone to sea sickness, get as much critical presampling work done before leaving port.

It is important that the observer sampling station on board the vessel facilitates your objectives and goals. Questions you should ask yourself when considering an adequate sampling station are:

**A vessel is required to provide observers with a safe work area adjacent to the sample collection site.**

- Do you have access to unsorted catch?
- Is the collection site near the sampling station?
- Are there any tripping hazards?
- Do you have adequate room for storing your gear and samples?
- Is there a location in which you can secure a hanging scale; if not, do you need a flatbed scale from the field offices?
- Is there a work table or a comparable setup available for your use?
- Is there equipment nearby to adequately clean your gear and samples?

If you have the opportunity, you should view the vessel profile prior to deployment in Seattle or Anchorage, or visit the field offices.

## On a Catcher/Processor Trawler

In the first few days, familiarize yourself with life on board and initiate your work with the following:

- If your vessel will be using a flow scale, talk to the skipper to determine who will be responsible for testing the scale and how you can obtain haul by haul scale weights.
- When the deck is inactive, perhaps when the vessel is in port or steaming to the fishing grounds, make measurements which will aid you in estimating codend dimensions and bin volumes.
- Watch the net retrieval and handling. At this time, you can easily decide when and where you will need to take additional measurements. Also, use this time to improve methods for obtaining dimension measurements for codends and bins. Determine whether you require assistance from vessel personnel and enlist their aid.
- Determine the best location for observing the codend retrieval. Remember that the location needs to be in a place that will ensure your safety and allow a full view of the deck activities. Speak with the deck boss for assistance in determining where the best area is with your objectives and goals in mind. Watch how and where the codends are opened and how thick and fast the fish are dumped. Look to see if the crew does any sorting on deck.
- Observe the factory operations. Notice where the catch is being sorted, and what species and sizes are being retained. Follow the fish from the deck to the freezer. This is a good opportunity to determine what method would be suitable for obtaining information on the amount of catch that is discarded. Note what primary and ancillary products are being made. Be aware of all possible hazards.
- Get started with the most obvious methods for making catch weight estimations, for obtaining species composition data, and for collecting other biological samples. As time progresses, and you become comfortable with your duties, consider other methods or implement variations in your methods to improve your sampling and data quality.

## On Board A Catcher-only Trawler

Fishing operations are much simpler aboard a catcher-only vessel, but an observer has less opportunity to get oriented as only a few tows are made each trip.

- When the deck is inactive, perhaps when the vessel is in port or steaming to the fishing grounds, make measurements which will aid you in estimating codend dimensions.
- Watch the net retrieval and handling. At this time, you can easily decide when and where you will need to take additional deck measurements. Also, use this time to improve methods for obtaining dimension measurements for codends. Depending on the fishery, you may be using the trawl alley as a bin for volumetric estimates. This would be a good time to measure the trawl alley. Trawl alley measurements may also aid in obtaining codend dimensions. Determine whether you require assistance from vessel personnel and enlist their aid.
- Determine the best location for observing the codend retrieval. Remember that the location needs to be in a place that will ensure your safety and allow a full view of the deck activities. Take special note of hazardous or potentially hazardous areas. The captain or crew members may also have some advice on where possible hazardous situations exist.
- If you will be required to sample at a processing plant, you should locate the plant observer before or immediately after your first deployment, so they can provide an overview on the plant sampling station and typical sampling protocol, (see “SHORESIDE PLANTS AND FLOATING PROCESSORS” on page 8-1).
- Make a note of checker bins or other equipment that will be useful for collecting and storing samples. Space is limited on the smaller vessels so making use of all available resources is a necessity. You may realize at this point that you require an extra basket or two. You can obtain extra baskets or portable totes from the field offices.
- For the first retrieval, be prepared with sampling equipment ready and in hand. Use this time to observe the retrieval of the net and determine the most appropriate area and method for obtaining a catch estimate, depending on the fishery. Make the effort to measure the codend, or collect bin

volumetric dimensions of the catch. Watch how and where the codend is opened and how thick and fast the fish are dumped. Look to see if the crew does any sorting on deck. Observe what is retained and discarded. Observe where and how sorting occurs. By being aware of these situations, you will be able to determine the best method for obtaining discard information and be able to avoid sample bias.

## On a Longline Vessel

The fishing operations on longline vessels are different from trawl vessels. There are other considerations that should be addressed.

- It is important to be familiar with the units of gear, gear handling, and average number of sets per day. This information will assist you in setting up a routine to complete your duties. Speak with the captain or deck boss to obtain this information. This is also an excellent time to determine the best method of verifying the number of hooks per skate and to apply that method.
- Sampling for species composition requires an area for observing the gear retrieval and everything that is caught on the gear. This could be in the factory or on deck, depending on the vessel setup. You will also need to locate an area where you can collect, store, and weigh bycatch and target species. This means that you may have more than one sampling station. Remember, working on a longliner imposes many hazards. You need to be aware of all possible dangers and work accordingly.
- During the first gear retrieval, locate an area where you can observe the retrieval of the line and all organisms coming up on the line. You should be near enough to identify most fish to species, family, or to special species groups. Determine what species are being retained and discarded, both at the roller and in the factory. This is a good time to observe the rollerman and determine what type of control you will have over the collection of bycatch. Take into account the retrieval rate of the gear and the amount of gear set in order to conceive a sampling frame. Monitor the quality of gear reparation, as this affects overall gear performance.
- Although not required, you may want to ask the captain for his Seabird Avoidance Plan. NMFS and USFWS are working cooperatively with the longline fleet to reduce seabird mortality through effective avoidance gear.

## On a Pot Vessel

The fishing operations on pot vessels are similar to those on longline vessels, with few minor differences.

- It's important to be familiar with the units of gear, gear handling, and average number of sets per day. This information will assist you in setting up a routine to complete your duties. Determine hazardous work areas. Speak with the captain or deck boss to obtain this information. Determine the best method to verify the number of pots set per string.
- Sampling for species composition can be quite arduous due to the many hazards you need to be aware of as you are working. Pot vessels are small vessels with constant activity. You will need to set up your sampling station away from the gear retrieval area and all of the potential hazards that may occur in that area. Ask the vessel personnel where observers have historically sampled.
- Locate an area where you can observe the retrieval of the pots, yet remain safe of deck activity. Let the deck crew know what your objectives and goals are so they can work with you. Determine what species are being retained and discarded. Take into account the retrieval rate of the gear and the amount of gear set in order to conceive a sampling frame.

## The First Haul

**Observers are to be notified at least 15 minutes before fish are brought onboard, unless the observers specifically request not to be notified.**

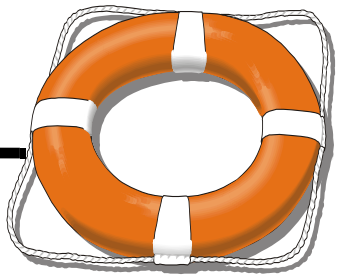
The first catch onboard is an excellent opportunity for you to work out a routine for collecting, sorting, weighing, and counting fish. This time allows you to determine what methods and techniques you will apply to collect species composition samples. Try to collect one or more baskets of fish. Practice collecting biological data from the target species and other species as required. Determine if and what extra assistance will be required to obtain biological data such as sexed length frequencies from the target

species and halibut viability assessments. Familiarize yourself with the species caught by using the species identification keys and field guides. Begin writing species description forms.

These guidelines are general, and are written for observers going to sea their very first time. These guidelines will also assist prior observers who are beginning a cruise onboard a vessel/fishery type with which they are not familiar. Remember that vessel and plant specific profiles are available. The profiles will facilitate and enhance your first days onboard your boat.

**Observers are allowed free and unobstructed access to navigation and communication equipment on request.**

# HEALTH AND SAFETY INFORMATION



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## List of Priorities

Your own safety is ***always your top priority*** when working on a vessel. In this chapter, you will find information on:

- how to familiarize yourself with safety equipment and procedures aboard commercial vessels;
- general safety precautions to take onboard and while you are performing your observer duties;
- how to deal with illness and sickness on board;
- how to transfer between vessels safely;
- how to respond to emergency situations; and
- what procedures to follow if you must abandon ship.

## Introduction

Commercial fishing has ranked “the most deadly occupation” in the United States since 1992, when the Bureau of Labor Statistics began publishing these data. Each year in Alaskan waters, an average of 34 fishing vessels and 24 lives are lost in the commercial fishing industry. Injury rates aboard commercial fishing vessels are also high. Slippery decks, heavy gear, and an inhospitable environment contribute to the hazardous working conditions.

The safety and survival material presented here and in observer training is only an introduction to these topics. There are many pamphlets, books, and videos that provide more detailed information about safety at sea, including the North Pacific Fishing Vessel Owners Association's ***Vessel Safety Manual***, and the University of Alaska's Marine Advisory Bulletin ***Beating the Odds on the North Pacific***. Both are available during training and are carried aboard many vessels.

***Safety is a personal responsibility***. Take every opportunity to learn as much as you can before an emergency occurs. Most fishing vessels are operated by safety-minded captains who realize the danger of

their occupation and consider safety in all they do. Use the knowledge and experience of the vessel's crew for guidance on safety on your vessel. They are concerned about the safety of observers, as guests on their vessel, and will make sure that dangers for you are minimized. No matter how cautious the crew is, it is ***your*** responsibility to keep yourself safe and know how to react in all emergency situations.

## Before You Board

Prior to boarding any vessel, check for the U.S. Coast Guard Commercial Fishing Vessel Safety Examination Decal. ***Do not board a vessel that does not have a current decal.*** Decals are valid for two years from the date indicated by the hole punches. If the vessel does not have a current decal, inform the captain that you are not able to board the vessel and immediately inform your employer and NMFS. Document both valid and invalid decal information in your logbook.

**Please note that the mothership Ocean Phoenix is an inspected vessel and is not required to have a safety decal.**

The Commercial Fishing Industry Vessel Safety Act (CFIVSA) of 1988 mandates certain safety equipment, instructions, and drills aboard vessels that operate beyond the boundary line (a federally designated line between points of land) or that carry more than 16 individuals. The CFIVSA applies to most North Pacific vessels on which observers are deployed (see "Federal Requirements for Commercial Fishing Industry - Vessels greater than 60 ft." on page 17-15).

In mid 1998, NMFS adopted regulations to ensure the adequacy and safety of fishing vessels carrying observers. Under 50 CFR Part 600, owners and operators of fishing vessels that carry observers are required to comply with U.S. Coast Guard safety regulations. A vessel is considered inadequate or unsafe if it does not comply with the regulations regarding observer accommodations or if it has not passed a USCG safety examination or inspection.

This rule applies to all vessels designated to carry an observer as part of any mandatory or voluntary Observer Program under the MSFCMA (Magnuson-Stevens Fisheries Conservation and Management Act), the Marine Mammal Protection Act, or any other U.S. law.

Prior to boarding a vessel for the first time, you must check the vessel for compliance with Coast Guard regulations. Complete your "Vessel Safety Checklist" form in your logbook (see Figure 17-1). Use the 'Issues to Address During A Safety Orientation' section as a reference for what questions to ask yourself while looking at safety gear. Please remember that all 'N' responses on the checklist require a comment in the "additional comments" section.

If you feel that you should not board the vessel because it is unsafe or inadequate for you to carry out your duties, contact your employer immediately. A vessel that would normally carry an observer, but is deemed unsafe, is prohibited from fishing without an observer. NMFS will require that the vessel pass a USCG safety examination or correct the deficiency that is causing it to be unsafe.unsafe

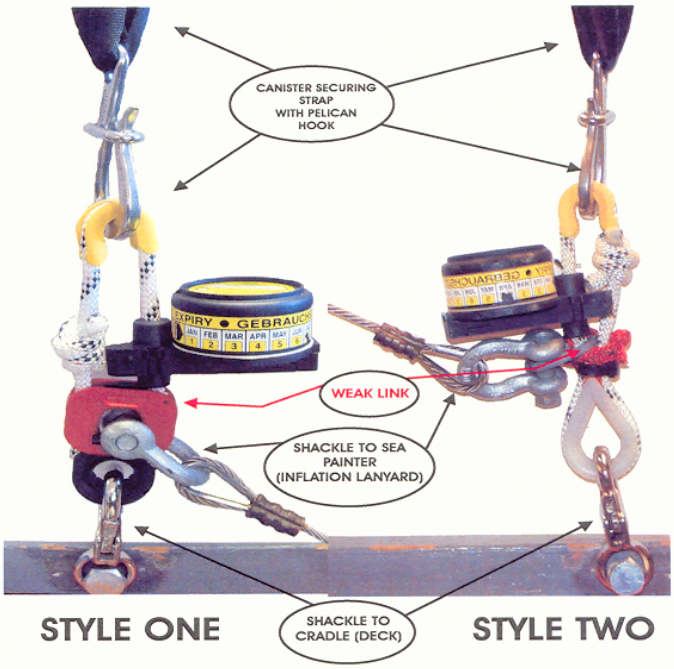
## Issues to Address During A Safety Orientation

Please reference the Federal Requirements for Commercial Fishing Industry Vessels pamphlet for more specific information

1. Check for safety inspection documentation. Look for a current USCG Commercial Fishing Vessel Safety Examination decal or ask for documentation. Record the authorization no. in the space provided. These decals are valid for two years from the month issued, indicated with the hole punch. You cannot board vessels which have an expired decal or if the decal will expire while you are aboard. Contact your employer and NMFS immediately if the vessel does not have a valid decal!

2. Locate the life raft(s). Is there enough life raft capacity for everyone aboard- including you? Are you assigned to a particular one? Can the raft(s) float free? Check the service due dates displayed on the canister. Life rafts are to be serviced annually with the exception of new life rafts which have 2 years before having to be serviced. Check the hydrostatic release. Is it installed

Check the USCG Commercial Fishing Vessel Safety decal or ask for documentation. Decal is valid 2 years from ISSUED date.




**LIFE RAFTS:**

Number of: 1

Total capacity: 8

# of crew & observer/s on board 7

Life raft(s) able to float free? (Y) N

Service Due sticker exp. date: 10 / 2005 (expires on date displayed)

Hydrostatic release exp. date: 10 / 2005 (exp. on date displayed)

Your raft assignment: only 1 raft

**EPIRB:** (Visual inspection only. Please leave all testing/handling to crew)

Location(s): Back side of wheelhouse

Battery not expired (expires on date displayed): (Y) N

Hydrostatic release not expired (expired on date displayed): (Y) N

Located in a float free location: (Y) N

NOAA Registration Sticker:

Exp. date: 11/2006 (expires on date displayed)

Registered to this vessel (name of vessel displayed): (Y) N

Alphanumeric code on sticker matches code on EPIRB: (Y) N

Signal tested (or asked to see station log in wheelhouse for most recent test. Signal should be tested monthly): (Y) N

**IMMERSION SUIT/PFDS:**

Available for everyone on board? (Y) N

Location(s): storage cabinet in back of wheelhouse

Functioning strobe on personal suit? (Y) N

**FIRE EXTINGUISHERS:**

Extinguisher(s) found in every main area/corridor? (Y) N

Extinguishers in 'good and serviceable condition' (gauge in the green, low amounts of rust, canister in good condition, unobstructed, hoses attached, service tags available)? (Y) N

**FLARES:** (ask captain for assistance)

Location(s): Box in wheelhouse

Expiration dates checked? (expires on date displayed) (Y) N

If checked, number of flares: 12

**LIFE RINGS/SLINGS:**

Number of: 4 life ring / 1 sling

Easily accessible?: (Y) N

Name of vessel displayed on each? (Y) N

Location(s): 1 on bow, 2 on stern, 2 on wheelhouse

**Figure 17-1 Vessel Safety Checklist from Observer Logbook**

**ADDITIONAL SAFETY CHECKS:**

Watertight doors - do they close properly? (Y) N

Hatches/passageways - are they unobstructed? (Y) N

Discussed safe places to work on deck and in factory with captain/crew? (Y) N

Discussed refrigerant leak procedures? Y (N)

Type of refrigerant used N/A

Discussed reporting/identifying inoperative alarm/fire systems? Y (N)

Did you hear the general alarm? (Y) N

Where will you go during emergencies: Wheelhouse

**FIRST AID MATERIALS:**

Location(s): Wheelhouse

Is there an individual trained in CPR/First Aid onboard? (Y) N

Who?: Captain - J. Smith

**RADIOS:**

How many SSB and VHF radios?: 2 SSB / 2 VHF

Are emergency call instructions posted? (Y) N

Were procedures for making an emergency call discussed? (Y) N

**SAFETY ORIENTATION:**

If you did not complete drills upon embarking the vessel, did the captain use this safety checklist to complete the required vessel safety orientation? Y (N)

Did the vessel conduct a safety orientation? (Y) N

Who gave the orientation? J. Smith - Captain

(Detail what was covered in the comment section below)

**EMERGENCY DRILLS AND DATE(S) CONDUCTED:**

Fire _____

Abandon Ship _____

Man Overboard _____

Vessel Flooding/stabilization _____

General alarm activation _____

Donning immersion suits _____

Radio/visual distress signals _____

Where the drills hands-on involving actual gear? Y (N)

Did you participate in the drills? Y (N)

Observer Name: Chris Observer

Cruise #: 9015

Observer Signature: Chris Observer

Date: 11/2/2005

Captain Name: JOHN SMITH

Captain Signature (optional): _____

Date: _____

*Did the vessel request a copy of the Checklist? (Y) N

*If so, where you able to supply them with a copy? (Y) N

Additional Comments: (All "N" responses require a comment) This vessel is a catcher-only boat - no refrigerant on board. Captain showed me engine room that is equipped with alarm - but I have no reason to be down there. No drills were held while I was on vessel. (Only on boat for 12 days.)

**Figure 17-2 Vessel Safety Checklist from Observer Logbook**

correctly? Has it expired? Please ask the captain or crew if you have any concerns regarding the rigging of the hydrostatic release.

3. Where are the Emergency Position Indicating Radio Beacon(s) (EPIRB)? Is there more than one? Are they in float-free locations? Check to see if the battery is expired. A sticker with the expiration date displayed will be located either on the actual EPIRB or the protective casing of the EPIRB. Are the hydrostatic releases expired? Check the NOAA registration sticker. This sticker is required of each vessel/EPIRB. Make sure it is registered to the vessel as the name will be noted on the sticker. Make sure the alphanumeric code on the actual sticker matches the registration code on the EPIRB. Check the expiration date on the sticker. The EPIRB tests must be recorded in a station log. Please ask the captain to see the log for the most recent test if one was not conducted for you.

4. Check the location of immersion suits and PFDs. Where are the immersion suits and PFDs located? Are there enough for everyone aboard? Are they accessible at all times? You will be issued an immersion suit and PFD as part of your NMFS sampling gear. Keep yours where you can get to it quickly. Take this opportunity to try your suit on again and check the zipper. Could you put the suit on in 60-seconds? Does the zipper need to be waxed?

5. Where are the flares located? Check the expiration dates. What types of flares does the vessel have?

6. Locate the fire extinguishers. Are they accessible? Are they in 'good and serviceable condition'? Check to see that the pressure gauge is in the green, there are low amounts of rust, that the overall condition of the canister is good, that it is in an unobstructed location with hoses attached, and that there is a presence of service tags (tags are not a USCG requirement). Did the crew tell you of special extinguishing systems in the engine room or other areas?

7. Check the location of life rings. Where are they? Are they accessible? Is there one on each side of the vessel? Are the lines free of tangles? Is the vessel name on the ring/sling?

8. Where do you go during emergencies? Find the station billet (commonly called the station "bill"), a posted placard describing the role of all hands on board (including the observer) in an emergency. Familiarize yourself with your role in each type of emergency addressed. As you walk through the vessel, make yourself aware of potentially hazardous areas. Identify the watertight doors, both on the interior and the outside. Can they be secured in case of heavy weather or other emergencies? Are any hatches or passageways blocked or difficult to get to? Ask the crew giving you the orientation to point out doors that must be kept closed during travel, gear retrieval, rough weather or other situations. Discuss safe places to work on deck and /or in the factory with the captain/crew and how to report/identify inoperative alarm/fire systems. What type of refrigerant is the vessel using and what do you do if there is a leak? Did you hear the general alarm? Ask the captain to demonstrate the general alarm. Does the vessel use different signals for different emergencies? If so, what are they?

9. Where are first aid materials kept? Is there a reference book on board? Who in the crew has had first aid and CPR training?

10. Where are the SSB and VHF radios located? How many are there? Are emergency call instructions posted nearby? Do you know the procedures for making an emergency call and how to operate the radio during the call? If not, ask the captain to show you how!

11. Did the individual giving your the safety orientation use this safety checklist to complete the required vessel safety orientation? Who gave the orientation? If you did not complete the drills upon embarking the vessel, you must be provided with a safety orientation and the following items need to be addressed along with the date(s) that each drill was conducted:

- survival craft embarkation stations
- fire/emergency/abandon ship signals
- immersion suit locations and donning instructions
- procedures for making a distress call
- essential actions required of each person in an emergency
- procedures for rough weather at sea
- procedures for anchoring
- procedures for recovering a person overboard
- procedures for fighting a fire

12. The vessel may request a copy of the checklist. Please sign it and make a copy from your logbook. ***You must keep the original***! If a copy machine is not available, either duplicate an original color version of the checklist onto a "black and white" version of the

checklist and tear that out of the logbook or let the captain know a copy can be mailed to the company, owner or vessel upon completion of your cruise.

## Embarking, Disembarking and Transferring Between Vessels

Wear a PFD at all times when on skiffs or other small vessels and while transferring between boats. When climbing, do not encumber yourself with heavy backpacks or baggage. Balance is important and both hands must be free during transfers. Use a day-pack and wear foot wear such as Xtra-Tuffs or athletic shoes that give sure footing. Time your actions with the movement of the boat, starting your climb up a ladder from the top of the up-and-down cycle to avoid being pinched against the ladder by a moving boat.

All baggage should be secured with lines and transferred via rope lines or cargo nets. Observer baskets and luggage have been lost overboard because they were thrown between ships without lines attached.

If you use a cargo net, transfer basket, or cage to board a vessel, make sure that a line is attached to the conveyance from both points for greater control and to reduce swinging. Maintain a crouched position to avoid back injury. Be sure to wear your hard hat in addition to your PFD when using this mode of transfer. Keep your arms, elbows, and fingers inside the conveyance when transferring.

You will normally board and disembark vessels at the dock, but transfers at sea sometimes may be necessary. Transfers between vessels are potentially hazardous, especially in rough weather. You must assume responsibility for deciding whether or not to transfer based upon your own evaluation of the sea conditions, transfer vessel, visibility, and distance to travel. An ADF&G crab observer and two crew members died when their small transport skiff overturned in rough water.

Never transfer via a small boat if you cannot see your destination. Do not transfer at dusk, in darkness, or in any other low visibility conditions. If boarding a small skiff or inflatable boat, make sure that the engine has been started and warmed up, and that there are oars stowed as a backup. Do not transfer when the sea state is two meters or more. Always be cautious, you cannot be forced into transferring against your better judgment by an anxious or impatient captain. Under "Vessel Responsibilities," 50 CFR §679.50(f), an operator of a vessel required to carry one or more observers must:

- Ensure that transfers of observers at sea via small boat or raft are carried out during daylight hours, under safe conditions, and with the agreement of observers involved.
- Notify observers at least three hours before observers are transferred, provide a safe pilot ladder and conduct the transfer to ensure the safety of observers during transfers.
- Provide an experienced crew member to assist observers in the small boat or raft in which any transfer is made.

## First Days on Board

When you board a vessel, regulations mandate that you receive a safety orientation. This may be as simple as crew members showing you around, but may include watching videos, donning immersion suits, or conducting drills. In addition to the required orientation, drills and instruction must be conducted involving each individual ***at least once a month***. You should participate in any drills and instruction.

Memorize the exit route from your cabin, the factory, the galley, and other locations where you spend a fair amount of time. Keep your survival suit where you can get to it quickly.

## Personal Health and Safety Aboard Vessels

Fishing vessels have many potentially dangerous areas. Be aware of your surroundings at all times and keep your eyes and ears tuned to what is going on. Your work hours and environment will be different than what your body is accustomed to. Drinking plenty of water and eating enough food are critically important in maintaining your health in this new environment.

## General Safety Precautions

Staying safe aboard a vessel includes more than safety equipment. Follow these guidelines to avoid injury and strain during your work activities:

- Avoid loose clothing or apparel with strings. Remove all jewelry prior to going out on deck or into the factory. Long hair should be tied back. These items could be caught in moving equipment.
- Don't run aboard ships, particularly up stairwells. Hold handrails in stairwells and on ladders. Slipping, tripping, and falling are the most common causes of observer injury.
- Step carefully over the combing rising from the bottom of metal doors and passageways, and beware of low overheads in vessel stairwells and on watertight doors.
- Lift correctly! When lifting, get as close as possible to the object, keep your back straight, and use your legs. On a moving vessel, this is critical because unexpected movements can strain your back. Don't be afraid to ask for assistance in moving heavy objects, such as full baskets.
- Fatigue and sleep deprivation suffered by the crew and yourself are threats to your safety. Be aware of the physical state of those around you—whether the person is on watch or in control of the gear. Fatigued individuals make mistakes that could affect you. Monotonous work, such as longline tally sampling, is difficult to do accurately and safely when you are tired. Follow the example of the crew and catch up on sleep when there are breaks in fishing.
- Eat well. Vegetarians (due to common meat-and-potato menus) and diabetics (due to odd eating schedules) need to be especially concerned about getting a proper diet. Dietary supplements or vitamins may be helpful if this is a concern for you.
- If you are not feeling well, use extra caution and reduce your time spent working.

## Working on Decks

- Wear a hard hat, personal flotation device and boots when on deck.
- Do not stay outside on the deck during rough seas. One observer was swept forward over a trawler's winches by waves sweeping up the stern ramp. When you are outside, remain in full view of a second party at all times.
- Watch for slick spots where the deck is wet, oily or frozen.
- Beware of trawl cables under strain, they have given way and have maimed and killed fishermen. Whenever a cable is subjected to tension, stand where a backlash will not hit you. If your sampling station is on deck, stop working and go to a safe place while trawl nets are being set or retrieved.
- Explain to the deck boss that you need to watch the haul-back to monitor for marine mammals and will need to go out on deck for codend measurements once the winches have stopped. Ask for advice on a safe place to stand. When nets are being hoisted off the deck, stand clear. Heavy nets have fallen near observers when the suspending cables parted.
- Watch for moving pots and, if possible, face the pot launcher while you work. Stay away from the bouy line when the crew is launching pots. Crewmen have been caught in a loop, or the “bite,” of the line and pulled overboard.
- Wear eye protection on longliners if you are near the moving hooks. Use a gaff to collect fish to protect your hands and keep your body further away from the moving line.

## Working in Factories

Factory processing areas are crowded with machinery, electrical lines, and conveyor belts. The maze of equipment often makes it difficult to get to your sampling area. Climbing over, under and around machinery on oily and wet floors, especially in rough weather, is extremely hazardous. Look carefully before stepping or grabbing for handholds.

When collecting samples off conveyor belts, do not try to pry out fish caught between two connecting belts, or grab for fish caught under a diverter board. Your finger or hand may get mangled in the machinery. If you need to retrieve these fish, make sure you stop the belt first.

Whenever you are in the factory, be aware of factory offal wash out around the scuppers and bilges. This rushing water can affect your balance. Lastly, watch for low beams, belts, hoses, and other equipment--observers frequently hit their heads in unfamiliar factories.

## Seasickness

One of the least pleasant aspects of going to sea is the possibility of seasickness. An individual's susceptibility to seasickness is highly variable. If you've experienced motion sickness in cars, planes, or amusement park rides, you may experience seasickness during your cruise. Most people feel some level of discomfort when they first go to sea.

Seasickness results when the signals your brain receives from the inner ear balance mechanism contradicts what your eyes are seeing. For example, inside the cabin of a rocking boat, the inner ear detects changes in linear and angular acceleration as the body bobs with the boat. But since the cabin moves with the passenger, the eyes register a relatively stable scene. Agitated by this perceptual incongruity, the brain responds with stress-related hormones that can lead to headache, dizziness, nausea and vomiting. Its effect can be magnified by strong smells (like diesel fumes or fish, which are part of daily life at sea).

Seasickness usually occurs in the first 12-24 hours after sailing. For most people, seasickness dissipates when the body becomes acclimated to the ship's motion (getting one's “sea-legs”). In rare cases, an individual may stay ill beyond the first couple of days at sea, regardless of sea state. If this occurs, dehydration may become life threatening if it leads to shock.

**The “Coast Guard cocktail” can help prevent seasickness. Mix 25 mg of Promethazine with 60 mg of Pseudoephedrine. Reduce the Pseudoephedrine to 25 mg if you feel jumpy.**

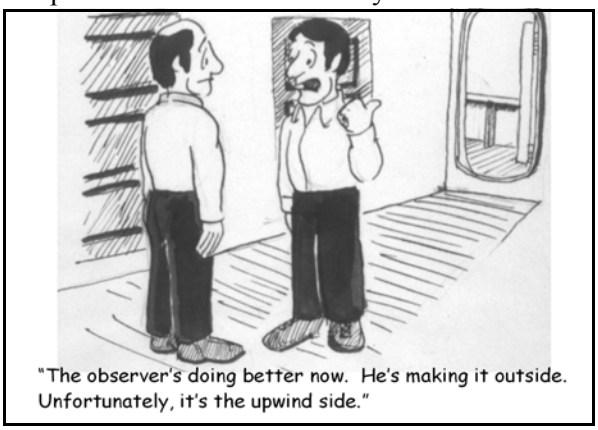
Take seasickness medication ***before*** you go to sea. There are several over-the-counter or prescription medications available to minimize seasickness. Antihistamines such as Dramamine (generic name dimenhydrinate) or Bonine (generic name meclizine) are effective and are available over-the-counter. These drugs cause drowsiness. A two part, prescription-only drug called “Coast Guard cocktail” is Promethazine, a seasick-preventing antihistamine coupled with Pseudoephedrine, which prevents drowsiness. Transderm Scop is another prescription-only motion sickness drug. It is a dime-sized adhesive patch that is worn behind the ear and delivers a continuous dose of scopolamine. Each patch lasts for 72 hours. The main side effects of the patch are dry mouth and occasionally blurry vision, but there is less drowsiness. Acupressure wristbands and eating crystallized ginger are other remedies used with varying success.

Seasick medications must be taken before the symptoms begin. Most take several hours to be absorbed in your system and may not work if you are already vomiting. Even if you doubt you will get seasick, you might want to take the medication before you board as a precaution.

If you should get seasick, take comfort in the fact that recovery is only a matter of time. All that is usually required for a complete recovery is some patience. Here are a few tips and considerations regarding seasickness:

- Continue eating foods such as crackers, dry toast, dry cereal, etc. Avoid food that is greasy, sweet or difficult to digest. Keeping something in your stomach may suppress nausea and eliminate painful “dry heaves.”
- Keep drinking fluids. Seasickness and related medications cause dehydration and headaches. Drink low-acid juices, clear soups and water. Avoid citrus juices, milk and coffee.
- Focus on the horizon to eliminate the visual conflict in your brain. If you must be inside, try to stay toward the middle or aft of the vessel.
- Keep working. Most people find that being busy on deck keeps their minds off their temporary discomfort. Also, the fresh air on deck may help speed recovery.

- Carry a plastic bag. This simple trick allows some peace of mind and eliminates some of the panic of getting sick. If you vomit over the side of a boat, be aware of the direction of wind and waves. Going to the leeward side will ensure that an unpleasant experience doesn't become any worse!


"The observer's doing better now. He's making it outside. Unfortunately, it's the upwind side."

- Above all, don't be embarrassed or discouraged. If you are sick, chances are that others are sick too. No one is immune to seasickness.

### Fish and Mammal Poisoning

Bacteria from fish may lead to infection in cuts, scrapes or punctures. To prevent this "fish poisoning," wash your hands thoroughly after sampling in hot, soapy water. Change your gloves often to keep them dry and discard any torn gloves. Treat ***all*** minor cuts, especially those on your hands, with an antiseptic such as Betadine to avoid infection from fish slime.

Be cautious whenever wading through fish on deck or in the factory. Fish spines, especially on rockfish, can penetrate rubber boots and cause painful wounds to the feet.

If a wound becomes red or swollen, soak it for 1/2 hour in very hot, soapy water at least three times a day. Dry and bandage the wound. Antibiotics are commonly prescribed for fish poisoning. Vessels very often carry antibiotics on board should they be needed. Never leave an infection untreated--the threat to your health can become much further-reaching than simply a pair of inoperative hands.

Take extra precautions against infection when collecting specimens from marine mammals. Because these mammals have similar biological systems to our own, organisms which infect them can infect us. "Seal finger" is a fungal infection of the hands which can easily be contracted by a scratch or bite.

### Fatigue

Lack of sleep is as much a part of observing as blue baskets and rain gear. However, sleep deprivation can cause serious problems. When you are tired, you are less likely to make good decisions or pay attention to hazards.

The only way to recover from sleep deprivation is to sleep uninterrupted for five to twelve hours. You may be able to get this amount of rest during offloads, weather days or while the vessel is steaming. During regular fishing operations, there are steps you can take to minimize the effects of sleep loss.

- Rotate your tasks. Try alternating weighing, measuring, tallying and doing paperwork. You are less likely to become bored and feel tired when doing a new task.
- Increase your physical activity. Just doing a few jumping jacks or push-ups helps increase circulation and oxygen intake - making you feel more alert.
- Allow for at least four hours of uninterrupted sleep each day. Supplement this with power naps. These should be either 20 or 90 minutes in duration so as not to disrupt your REM sleep.
- Have a small carbohydrate snack, such as an apple, muffin or cereal. Proteins will give you sustained energy throughout the day, but may exacerbate drowsiness because it is harder to digest.
- Use caffeine sparingly. This stimulant may mask the symptoms of sleep deprivation, but may also inhibit you from napping or falling asleep at the end of your busy day.
- If possible, avoid antihistamines, motion sickness medication and other drugs that may sedate you.

## Illnesses and Accidents on Board

**You must contact the NMFS each day an illness or injury prevents you from sampling for a whole day. Additionally, you must contact your employer if an illness or injury prevents you from sampling for more than three days!**

If you become ill on board, such as coming down with a severe cold or flu or seasickness that inhibits your work, you must inform your employer and NMFS of your situation. If your illness gets worse or continues to affect your work for more than three days, your assignment may need to be changed.

By regulation, each vessel must have at least one person onboard certified in first aid and CPR. If you are hurt on board, contact your employer and NMFS. If the accident is serious, the captain will contact the USCG who will respond as necessary.

## Emergencies on Board

### Man Overboard

Everyone has an active role in a man overboard emergency. If you witness someone falling over, you must both notify the person at the vessel controls and keep the victim in sight. According to the station bill, crew members are assigned specific tasks; for example, donning an immersion suit to be the rescue swimmer, launching a life boat, or throwing a life ring. As an extra set of eyes, the best role for you is to keep your eyes on and your arm pointing to the victim so as to aid the person at the controls.

### Cold-water Near Drowning

Cold-water near drowning is a phenomena that has been observed in cold waters such as the seas surrounding Alaska. Victims have been revived using CPR after being immersed in cold water for up to one hour. CPR is an exhaustive activity that requires more than one caregiver. The compression rate should be about 80 beats per minute in series of fifteen compressions, followed by two breaths. You are not required to be certified to apply CPR to a victim. It has been said that bad CPR is better than no CPR. Keep in mind that although a victim looks dead, s/he may be revived by this technique.

### Fire

**A fire needs heat, fuel and oxygen. Remove any one of these components to stop a fire.**

Ships carry large quantities of fuel and offer few places to go in the event of fire. Station bills give specific duties responding to a fire on board including who is in charge of the fire fighting team, and what equipment each person is responsible to gather. It is wise to know where fire extinguishers and exits are located in every area of the vessel -- especially those areas in which you spend time. Fire extinguishers only have short bursts of fire retardants, so back-up extinguishers should be located and brought to the fire as soon as the fire is discovered. To effectively use a fire extinguisher, fire in short bursts in a low, sweeping motion. Keep your body low so as to avoid smoke inhalation and heat. Do not attempt to fight anything but the smallest fire (a wastebasket, for example) on your own—sound the alarm immediately before you take action. After a fire, thorough inspection must be made of the area—including adjacent walls and rooms, to be sure the fire did not spread and will not flare up again.

### Flooding

When a vessel is taking on water, usually the crew has time to try and solve the problem. Malfunctioning pumps or leaks in through-hull fittings are not uncommon, and can usually be fixed with equipment on board. If the flooding condition worsens, the Coast Guard can drop pumps to a vessel via aircraft. Observers have a limited role in these types of vessel emergencies but should be prepared to assist if needed.

### Abandon Ship

The worst possible emergency requires you to give up your shelter—the vessel. Never abandon the ship unless you are sure that being on board the vessel is more dangerous than being in the water. Lives have been lost because ships have been abandoned too soon during fires or flooding. Knowing the nearest exits, mustering areas, life raft locations, immersion suit locations, EPIRB locations, and the emergency equipment available become critical factors in helping you survive an abandon ship emergency.

## Sending a May Day

A may day call is for a life threatening emergency. The emergency frequencies are VHF Channel 16 and 2182.0 kHz or 4125.0 kHz on single side band radios. VHF radios are for short range and SSB radios are for

long range communications (see Appendix M for more information on radios). Vessels are required to monitor these emergency frequencies at all times. Most radios have a red button that changes to the emergency frequency immediately. Near the radios, there will be a placard posted that describes MAYDAY calls. Be familiar with what constitutes a proper MAYDAY call:

- MAYDAY MAYDAY MAYDAY (say three times)
- Vessel name (said three times)
- Location
- Nature of emergency
- How many persons on board
- Vessel description
- What radio frequency is being used

## Immersion Suits

Immersion suits (often called survival suits) have helped save hundreds of lives because they provide excellent hypothermia protection. The vessel to which you are assigned is required to carry an immersion suit for all persons aboard. You will be issued a suit by NMFS as part of your safety gear.

Proper fit is vital for an immersion suit to protect you effectively. Try on your immersion suit prior to every cruise! The Observer Program has several brands and sizes--enough options for you to find the very best fitting suit possible. When trying on your suit, wear normal work clothes that you will be wearing at sea.

### Quick Donning Technique

Practice putting on your immersion suit. The Observer Program requires trainees to don the suit in ***one minute*** or less, but the faster you are in an emergency, the better! Practice putting on your suit in different situations, such as in the dark.

1. Sit down and work your legs into the suit. If you take your boots off, bring them with you, you'll need them on shore. Or, slip plastic bags over your boots, allowing your feet to slide easily into the suit.

2.Roll up onto your knees. Put your weak arm into the suit first, then pull the hood over your head. If you have long hair, tuck it into the hood well. If you wear glasses, decide whether you are going to put them in a pocket or wear them.

3. Hold the suit below the zipper with one hand and grab the zipper lanyard with your other hand. Lean back to straighten the zipper and pull up. Secure the face flap. ***Do not inflate the air bladder until you are in the water.***

4.Jump into the water only as a last resort. Ease yourself into the water if at all possible. If jumping, protect your head by placing your inboard arm over your head. Cross your feet to protect from floating debris. Inflate your air bladder once in the water. It provides additional flotation and keeps your head out of the water.

## Life Rafts

Your assigned vessel will have enough life rafts or life boat capacity for all aboard. Life rafts are stored in canisters that allow them to float free and automatically inflate if the vessel sinks. It is much better to manually launch and inflate the raft if there is time. Know where the rafts are stored, how to remove them from the cradle, where to launch them, and how to inflate them (see Figure 17-4).

## EPIRBS

The vessel will have at least one EPIRB (Emergency Position Indicating Radio Beacon) mounted in a float-free bracket that will be automatically activated in the event of sinking. The signal is received by satellite, and in new styles, will identify the sender. It is important to know where the EPIRB is mounted and how to activate it manually. In the event of an abandon ship emergency it is an item you want to take with you. Someone will be assigned that duty on the station bill. Be sure to locate the EPIRB(s) on your vessel and read the directions on how to activate them

## Personal Flotation Devices (PFDs)

No matter how careful you are, you cannot guarantee that you won't end up in the water. NMFS issues all observers personal flotation devices. The Observer Program has several types of PFDs to choose from, including life vests, inflatable suspenders and Mustang suits. During the winter months, you'll find that PFDs will help keep you warm as well as safe. In the summer, you may choose to take the inflatable suspenders because they add little bulk and are easy to work in.

**The best PFD is the one you wear.**

If NMFS-provided PFDs don't work for you, consider purchasing one. Mustang, Stormy Seas, and other manufacturers make comfortable, versatile PFDs that are incorporated into rain gear, jackets, belts or vests. Let NMFS know your needs. Changes to the PFDs provided can change based on your feedback!

## Survival Kits

A personal survival kit can take up very little space in an immersion suit, yet greatly enhance your ability to survive. Think of the seven steps to survival and choose items that may help you. Items such as a knife, dental floss (a strong multi-purpose line), plastic garbage bags, matches, signal mirrors, a compass, hard candy, or bouillon cubes are small items that fit in a zip-lock bag and could save your life. Vessels may have an emergency bag stored and a person named in the station bill to bring it.

## EMERGENCY ASSIGNMENTS

| POSITION | ABANDON SHIP<br><br>Go To & Bring | FIRE<br><br>Go To & Bring | PERSON OVER-BOARD<br><br>Go To & Bring | FLOODING<br><br>Go To & Bring |
|---|---|---|---|---|
| Captain | wheelhouse, radio maneuver vessel | wheelhouse, radio maneuver vessel | wheelhouse, radio maneuver vessel | wheelhouse, radio maneuver vessel |
| 1st Mate | life raft, immersion suit | Fight fire | Throw ring, lookout | Plug hole, pump |
| Deckboss | life raft, immersion suit | Assist in fire fighting | wheelhouse, radio maneuver vessel | Assist plugging hole and pumping |
| Deckhand | Communicate, EPIRB, count crew | Communicate, bound-ary person, remove hazards, get survival gear | Communicate, assist where needed | Communicate, assist where needed, secure hatches |
| Observer | debarkation station, immersion suit | wheelhouse, immersion suit | Lookout, assist where needed | debarkation station, immersion suit |

**Figure 17-3 Example of a Station Bill**

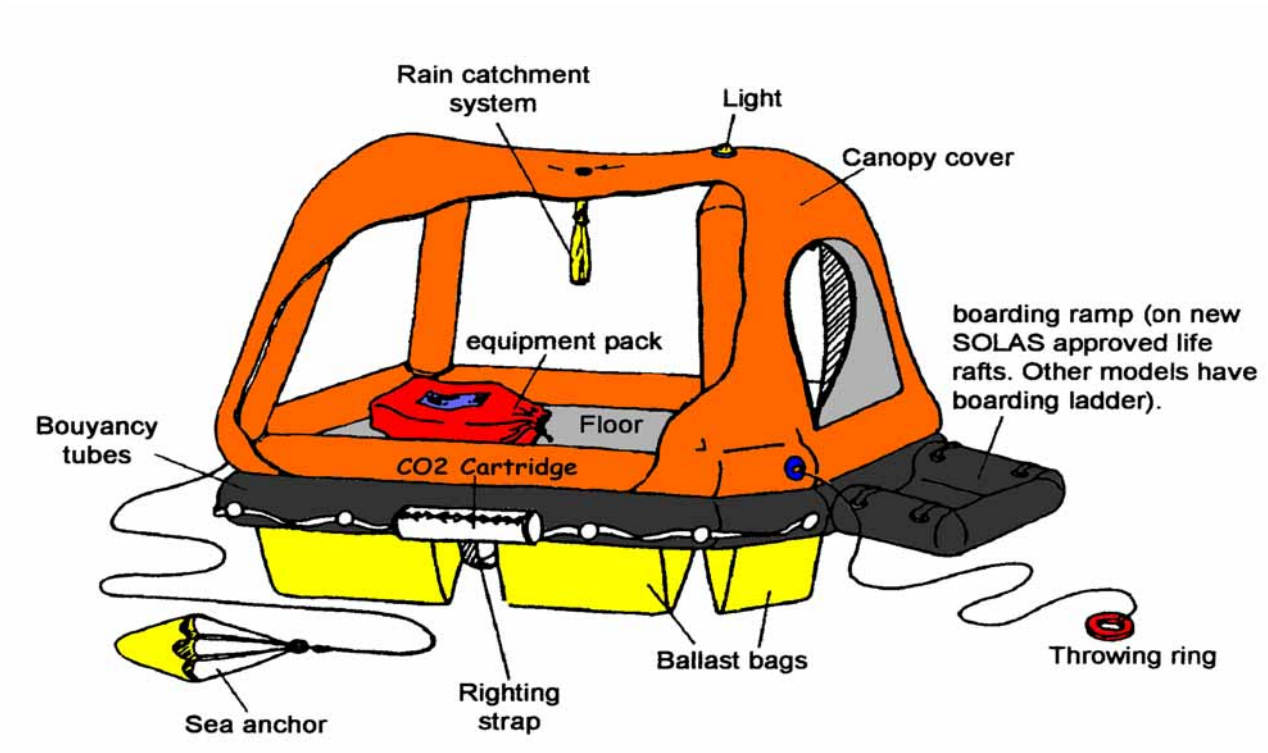



**Figure 17-4 Life Raft and Equipment**

## The Seven Steps to Survival

The Seven Steps to Survival were assembled by the USCG from personal experiences of those who survived emergency situations. Committing the seven steps to survival to memory should be one of your goals in learning how to survive at sea. Every time your situation changes—boarding a raft, reaching land, etc.—the seven steps begin again.

**1. Recognition**

Quickly recognize the seriousness of the situation and that your life is in danger. Hesitation or denial may cost your life, especially in the harsh environment of Alaska.

**2. Inventory**

Stop and assess the situation. Decide what you have that will help you survive and what are the hindrances. Inventory equipment, weather, your skills, injuries, and your mental condition. Doing so will help you to make good decisions that will help you survive.

**3. Shelter**

Your biggest enemy in Alaska is the cold. Shelter can be clothing, an immersion suit, a raft, or an overturned vessel—anything that protects you against the loss of your body heat. Water takes heat away from your body 25 times faster than air, so shelter should keep you as dry as possible. High heat loss areas, including the head and neck, need to be protected most. The added buoyancy of a PFD helps keep your head and neck out of water, therefore conserving heat. In a shore survival situation, the seven steps start over again and shelter is your first priority after you inventory the situation. It takes hours to construct adequate shelter on shore and you must do so as soon as possible.

**4. Signals**

Anything that attracts attention and conveys a message is a signal. Radios, EPIRBs, and flares are signals carried by vessels. Immersion suits have lights attached. If abandoning ship, anything that can be tossed overboard may help an aircraft spot your position. ***Anything that makes you bigger, brighter, or different from your surroundings is a signal***, so attempt to gather items which float from a sinking ship. In a shore survival situation, three of anything (fires, buoys, immersions suits on the beach) is an internationally recognized distress signal.

**5. Water**

It is recommended that humans drink two liters of water per day to stay healthy. You can live without water for only a few days, and will suffer dehydration from the onset of any abandon ship emergency. Life rafts have limited rations of water, so it is try to gather as much as possible before abandoning ship, if time permits. Have a strategy for gathering extra water in an emergency. ***Never drink sea water or urine.***

**6. Food**

You can go without food much longer than without water. Never eat food without water! Your body requires water to digest food. Life rafts have limited food rations. In a shore survival situation, many types of edibles can be found near shore. Almost any animals or green plants in the intertidal zone are edible, but avoid mussels or clams, they may cause paralytic shellfish poisoning.

**7. Play**

Studies have shown that mental attitude makes a positive difference in a survival situation. Play is anything that keeps you occupied and prevents your mind from dwelling on the difficulties you are facing. Play could be reading, telling jokes or stories, completing a task, improving your shelter—anything that keeps your mind active and focused.

## Summary

You will learn much about sea safety and survival from the vessel personnel, who probably have many years of sea experience among them. However, ***the ultimate responsibility is upon you to survive.*** It is easy to think "this will never happen to me" and "the skipper will know what to do," but those thoughts may cost you your life. Take the time to learn as much as you can, and consider what your actions will be in emergency situations. Visualize yourself and your actions in emergency scenarios in the factory, on deck, in your bunk, or anywhere you spend time. Having thought about an emergency will make your actions more automatic, and the time saved may save your life. Your life is worth far more than any data you could collect in the fishery.

| Federal Requirements for Commercial Fishing Industry - Vessels greater than 60 ft. | |
|---|---|
| **General Requirements** | |
| Documentation & Official Number<br><br>46 CFR 67-69 | • Must be measured and documented, documentation must be on board<br>• Hailing/home port, and official number must be displayed in 4 inch letters on both bows.<br>• Official number must be 3 inch letters and attached to integral interior structure member. |
| Operator License<br><br>46 U.S.C. 8304 | • The master, mate, and engineers on the vessel of 200 gross tons or more must have appropriate USCG license and operate within the limitations of the licenses. |
| Commercial Fishing Vessel Safety Inspection Requirements<br><br>50 CFR 679.50, 33 CPR Chapter I, 46 CFR Chapter I, 46 CFR 28.710, 46 CFR U.S.C. 3311 | • Must have a valid Commercial Fishing Vessel Safety Decal issued within the past 2 years that certifies compliance with regulations found in 33 CFR Chapter I and 46 CFR Chapter I.<br>• Must have a valid certificate of compliance issued pursuant to 46 CFR 28.710<br>• Must have a valid certificate of inspection pursuant to 46 U.S.C. 3311. |
| **Navigational Requirements** | |
| Compass<br><br>46 CFR 28.230 | • Each vessel must be equipped with an operable magnetic steering compass with a compass deviation table at the operating station. |
| Electronic Position Fixing Devices<br><br>46 CFR 28.260 | • Vessels 79 feet or more in length must be equipped with an electronic positioning fixing device such as SAT NAV, GPS, LORAN, OMEGA, or RDF that is capable of providing accurate fixes for the area of operation. |
| Navigation and Anchor Lights | • Must be used from sunset to sunrise and when there is limited visibility. |
| Navigation Information<br><br>46 CFR 28.225 | • Current corrected charts of the appropriate areas and scale for safe navigation.<br>• Current corrected copy (or applicable extract) of the U.S. Coast Pilot, USCG Light List, National Ocean Service Tide Tables and National Ocean Service Current Tables. |
| Anchor and Radar Reflectors<br><br>46 CFR 28.235 | Vessels operating with more than 16 individuals on board:<br>• Each vessel must be equipped with appropriate anchor(s) and chain(s), cable, or rope.<br>• Nonmetallic hull vessels must be equipped with a radar reflector unless it is a vessel rigged with gear that can provide a radar signature at six miles. |
| Radar and Depth Sounding Devices<br><br>46 CFR 28.400 | Vessels with 16 or more individuals that have had their keel laid or major conversion on or after September 15, 1991:<br>• Each vessel must be fitted with a general marine radar system for surface navigation with a radar screen mounted at the operating station.<br>• Each vessel must be fitted with a suitable echo depth sounding device. |

| Communications Requirements | |
|---|---|
| Communications Equipment<br><br>46 CFR 28.245,<br><br>46 CFR 28.375,<br><br>33 CFR 26.03,<br><br>47 CFR 80 | • Each vessel must be equipped with VHF radiotelephone communication equipment operating within 156-162 Mhz band.<br>• If a vessel is operating more than 20 miles from the coastline in waters near Alaska it must also be equipped with radiotelephone communication equipment operating within the 2-27.5 Mhz band. A cellular telephone or satellite communication system, servicing the area of vessel operation, is also acceptable to meet the requirements of this paragraph.<br>• A radio transceiver installed on board before Sept. 15, 1991, operating on 4-20 Mhz band may continue to be used to meet the requirements for vessels operating more than 100 miles from the coastline in Alaskan waters.<br>• All communications equipment must be operable from the vessel's operating station and must comply with FCC requirements, including a Ship Radio Station License.<br>• Each vessel must be equipped with an emergency source of power that is independent of the main power supply, outside of the main machinery space, and capable of providing power to communications equipment for at least 3 continuous hours. |
| **Emergency Requirements** | |
| Personal Flotation Devices (PFD)<br><br>46 CFR 28.105, 46 CFR 28.110,<br><br>46 CFR 28.135, 46 CFR 28.140 | • CG approved immersion suit with 31 square inches of retroreflective tape on the front and back of each side.<br>• Must have CG approved PFD light.<br>• Must be marked with the name of the vessel, owner of device, or the individual to whom it is assigned. |
| Ring Buoy<br><br>46 CFR 28.115 & 46 CFR 28.135 | • Vessels less than 65 feet must have 1 orange Ring Life Buoy at least 24 inch in size, with 60 feet of line, and marked with name of vessel.<br>• Vessels greater than 65 feet must have 3 orange Ring Life Buoys at least 24 inch size with 90 feet of line, marked with the name of the vessel. |
| Safety Protection Device (SPD) | • Vessels less than 65 feet must have a whistle that is audible for 1/2 minute.<br>• Vessels over than 65 feet must have a whistle that is audible for 1 minute. |
| Survival Craft<br><br>46 CFR Tables 28.120 (a) | • Between shore & 12 miles off coastline - inflatable buoyant apparatus.<br>• Between 12-20 miles off coastline - inflatable liferaft.<br>• Between 20-50 miles off coast line - inflatable liferaft with SOLAS B pack.<br>• Beyond 50 miles off coastline - inflatable liferaft with SOLAS A pack. |

| | |
|---|---|
| Stowage of Survival Craft<br><br>46 CFR 28.125 | • Each inflatable liferaft that is required to be equipped with a SOLAS A or B equipment pack must automatically inflate if the vessel sinks.<br>• Each inflatable liferaft must be kept readily accessible for launching or be stowed so they will float free if the vessel sinks.<br>• Each hydrostatic release unit in a float free arrangement must have a CG approved number starting with 160.062. |
| Launching of Survival Craft<br><br>46 CFR 28.310 | Vessels with 16 or more individuals that have had their keel laid or major conversion on or after September 15, 1991:<br>• A gate or other opening must be provided in deck rails, lifelines, or bulwarks adjacent to the stowage location of each survival craft which weighs more than 110 pounds, to allow the survival craft to be manually launched. |
| Embark Stations<br><br>46 CFR 28.395 | Vessels with 16 or more individuals that have had their keel laid or major conversion on or after September 15, 1991:<br>• Each vessel must have at least one designated survival craft embark station (more if necessary) that is readily accessible from each accommodation space and work space.<br>• Each embark station must be arranged to allow the safe boarding of survival craft. |
| Means of Escape<br><br>46 CFR 28.390 | Vessels with 16 or more individuals that have had their keel laid or major conversion on or after September 15, 1991:<br>• Each space used by an individual on a regular basis or which is generally accessible to an individual must have at least two widely separated means of escape. At least one of the means of escape must be independent of water tight doors. Means of escape include normal exits and emergency exits, passageways, stairways, ladders, deck scuttles and windows. |
| Visual Distress Signals<br><br>46 CFR 28.145 | • Vessels operating more than 3 miles from shoreline are required to carry 3 parachute flares, 6 hand flares, and 3 smoke signals.<br>• Vessels operating within 3 miles of the coastline are required to carry night and day visual distress signals. Night signals can be one electric distress light or 3 CG approved flares. Day signals can be either one distress flag or 3 CG approved smoke signals. |
| EPIRB<br><br>46 CFR 28.150 & 46 CFR 25.26 | • Vessels operating beyond coastal waters are required to have an FCC type accepted category 1, float-free, automatically activated, 406 Mhz EPIRB.<br>• Each EPIRB must be marked with vessel name and type II retroreflective material (46 CFR 28.135). |

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| General Alarm<br><br>46 CFR 28.240 | • A general alarm system (suitable for notifying individuals on board) is required with a contact marker at the operating station. The general alarm must be capable of notifying individuals in any accommodation or work space. Under certain circumstances (defined at CFR 28.240), a public address system that is audible in all work spaces meets regulatory requirements.<br>• In noisy work spaces, a flashing red light is required.<br>• The general alarm system must be tested prior to getting underway and at least once each week while underway. |
| Emergency Instructions<br><br>46 CFR 28.265 | • As applicable, emergency instructions are required for: survival craft embarkation stations and personnel assignments; fire, emergency, and abandon ship signals; immersion suit location and donning information; procedures for making distress calls; list of each individual's emergency and specially established procedures. Specific details and posting requirements are found at 46 CFR 28.265. |
| Instruction, Drills, and Safety Orientation<br><br>46 CFR 28.270, 46 CFR 28.275 | • The master or individual in charge of each vessel must ensure that drills are conducted and instruction is given to each individual on board at least once a month.<br>• No individual may conduct the drills or provide the instructions required by this section unless that individual has been trained in the proper procedures for conducting the activity.<br>• Drills and instructions are to include: abandoning the vessel, fire fighting, man overboard recovery, stabilizing vessel after unintentional flooding, launching survival craft, and recovery of life and rescue boats, donning immersion suits, PFD's, fireman's outfits and breathing apparatus, radio and visual distress calls and signals, activating the general alarm and reporting of inoperative alarms and fire detection systems.<br>• Drills must be conducted on board the vessel as if there were an actual emergency and must include participation by all individuals on board.<br>• Viewing of videotapes followed by discussion led by a person familiar with the subjects can be used for instruction requirements but not as a substitution for drills or for the safety orientation.<br>• The master must ensure that all individuals who have not received the above instruction or participated in the drills receive a safety orientation before the vessel may be operated. This safety orientation must explain the emergency instructions required by 46 CFR 28.265 and cover the specially established procedures. listed above. |
| High Water Alarms<br><br>46 CFR 28.250 | • Alarms are to be both visual and audible and installed at the operating station.<br>• Alarms are to indicate high water in each of the following normally unmanned areas: a space with a through-hull fitting below the deepest load water line, a machinery space bilge, bilge well, shaft alley bilge, or other space subject to flooding from sea water piping within the space, a space with a non-watertight closure such as a space with a non-water tight hatch on the main deck. |

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| Bilge Systems<br><br>46 CFR 28.255 | • All vessels must be equipped with a bilge pump capable of draining any watertight compartment, other than tanks and small buoyancy compartments, under all service conditions.<br>• If a portable bilge is used to meet this requirement, a suitable suction hose and discharge hose must be provided that will reach the bilges of all watertight compartments it must serve and ensure overboard discharge. The portable pump must be capable of dewatering each space at a rate of at least 2 inches of water depth per minute. |
| Casualties and Injuries<br><br>46 CFR 28.080, 46 CFR 28.090 | • If any of the following incidents occur, the master or other vessel representative must, as soon as possible, contact the nearest USCG Marine Safety Office and submit written report CG-2692 within five days:<br>• groundings,<br>• loss of main propulsion or primary steering,<br>• loss of life,<br>• injury which requires professional medical treatment beyond first aid and renders the victim unfit to perform vessel duties,<br>• any damage over $25,000, any occurrence affecting the seaworthiness of the vessel such as; fire, flooding, or the failure of or damage to fixed fire extinguishing systems, lifesaving equipment, auxiliary power generating equipment or bilge pumping systems. |
| Injury Placard<br><br>46 CFR 28.165 | • A placard, at least 5 X 7" stating the requirements of reporting injuries to vessel operator or agent as defined by US law, 46 U.S.C. 10603 must be posted in prominent place. |
| First aid Equipment and Training,<br><br>46 CFR 28.210 | • Each vessel must have on board a first aid manual and medicine chest of a suitable size in a readily accessible location.<br>• Vessel with more than 2 individuals must have at least 1 individual certified in first aid and at least 1 individual certified in CPR or 1 individual certified in both.<br>• Vessels with more than 16 individuals on board must have at least 2 individuals certified in first aid and at least 2 individuals certified in CPR. Individuals certified in both may be counted against both requirements.<br>• Vessels with more than 49 individuals on board must have at least 4 individuals certified in first aid and at least 4 individuals certified in CPR. Individuals certified in both may be counted against both requirements. |
| **Fire Control Requirements** | |
| Fire extinguishers<br><br>46 CFR 28.155 & 46 CFR 28.160 & 46 CFR 25.30 | • Vessels over 65' are required to have USCG approved fire extinguishers in each of the following locations: Pilot house, service spaces, galleys, paint lockers, accessible baggage and storage rooms, workshops and similar spaces, engine room, auxiliary engine room, auxiliary spaces, and generator spaces.<br>• **NOTE:** Specifics on the type of extinguishers, number per location, and legal description of spaces where extinguishers are required can be found at 46 CFR 28.155 & 46 CFR 28.160 & 46 CFR 25.30. |

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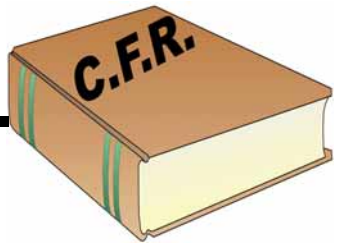
| Fire Pumps, Fire Mains, Fire Hydrants, and Fire Hoses.<br><br>46 CFR 28.316 | Vessels with 16 or more individuals that have had their keel laid or major conversion on or after September 15, 1991:<br>• Vessels >36' must be equipped with a self-priming, power driven fire pump connected to a fixed piping system.<br>• Specific requirements regarding locations and specifications for fire mains, fire hydrants, and fire hoses can be found at 46 CFR 28.316. |
| Fireman's Outfits and Self-contained Breathing Apparatus<br><br>46 CFR 28.205 | • Vessels equipped with refrigeration units using ammonia must be equipped with at least 2 self-contained breathing apparatus with spare air bottles for each.<br>• If the vessel has more than 49 individuals on board, at least 2 firemen's outfits, stowed in widely separated locations, are required. A fireman's outfit consists of one pressure demand open circuit MSHA/NIOSH approved self-contained breathing apparatus with a 30 minute air supply and a full face piece, one lifeline with a belt or suitable harness, one flashlight, a rigid helmet, boots, gloves, protective clothing, one fire axe, and a spare air bottle. |
| **Miscellaneous Requirements** | |
| Guards for Exposed Hazards 46 CFR 28.215 | • Suitable hand covers, guards, or railings must be installed on or near machinery that can cause injury to personnel, such as gearing, chain or belt drives, and rotating shafting. This is not meant to restrict necessary access to the fishing equipment such as winches, drums, or gurdies.<br>• Internal combustion engine exhaust pipes within reach of personnel must be insulated or otherwise guarded to prevent burns. |
| Watertight and Weathertight integrity<br><br>46 CFR 28.560 | • Each opening in a deck or a bulkhead that is exposed to weather must be fitted with a weathertight or watertight closure devise. |
| Pollution Prevention<br><br>33 CFR 151, 33 CFR 155 | • Vessels are required to post oil pollution and garbage placards, and to have a written solid waste management plan that describes procedures for collecting, processing, storing, and discharging garbage, and the designated person in charge of carrying out the plan. Restrictions on dumping can be found at 33 CFR 151, 33 CFR 155. |
| Sexual Abuse Act of 1986<br><br>46 CFR U.S.C. 10104 | • It is the responsibility of the master to report to the USCG any complaints of sexual offenses, including aggravated sexual abuse, sexual abuse, sexual abuse of a minor or ward, or sexual contact per 46 CFR U.S.C. 10104. |




# REGULATIONS AND COMPLIANCE

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## Overview of Federal Groundfish Regulations

Federal fisheries regulations in the Bering Sea and Gulf of Alaska are developed by the North Pacific Fisheries Management Council (Council), approved by the U.S. Department of Commerce and administered by the National Marine Fisheries Service. In addition to fisheries regulations, commercial fishers are also required to abide by many other regulations, such as those authorized by the Marine Mammal Protection Act and the Endangered Species Act.

Groundfish regulations in the Bering Sea and Gulf of Alaska are designed to conserve groundfish stocks and to protect established halibut, herring, crab and salmon fisheries. Regulatory tools used to manage the fisheries include fishing area designations, fishing seasons, gear limits, catch quotas and bycatch quotas.

These regulations are enforced by the NOAA Fisheries Office of Law Enforcement (OLE), Alaska Enforcement Division (AED) and the Coast Guard. The AED works cooperatively with other local, state, and federal enforcement agencies as well. AED Special Agents work closely with the Observer Program to protect both observers and the resource.

## The Observer's Role in Regulatory Compliance

Observer responsibilities require observers to report accurately any observations of suspected violations of regulations relevant to the conservation of marine resources or their environment. However, the observer's role in monitoring compliance with fisheries regulations is quite different from the role of an OLE Special Agent. Observers are not enforcement agents and are not empowered to issue citations or take any enforcement action. Observers must not advise the crew of regulations, interpret regulations or ensure that the crew complies with regulations. As an observer, you are only responsible for monitoring the activities aboard your assigned vessels, informing the captain of violations you witness and documenting all potential violations in your logbook and to complete affidavits.

In the past, some observers have misinterpreted their role in fisheries enforcement by either exceeding their assigned duties or by demonstrating a lackadaisical attitude about enforcement. Either of these patterns of behavior could place your certification in jeopardy. If you have any questions regarding your role in fisheries enforcement, contact an Observer Program staff member.

This chapter contains excerpts of regulations which are pertinent to your work as an observer. Please note that

this manual does not contain the entire text of any regulation. If a fisher has a question regarding the intent, scope or applicability of a regulation, refer him to the Alaska Enforcement Division in Juneau.

## Steps to Take if You Suspect a Violation

Common sense and good judgment should prevail if you suspect that a violation has occurred on your vessel or at your plant. Your role is straightforward: observe, inform and document. The actions you take will depend upon the type of suspected violation, the circumstances under which it occurred, and the actions and demeanor of vessel or plant personnel. Gathering facts and documenting a suspected violation should be done as part of your routine duties.

### Observe

Routine observations of all activities aboard a vessel is your first step in recognizing a possible compliance infraction. You may notice an obvious violation, such as a crew member presorting halibut or discarding plastic bags overboard, but other violations may need more research. You may need to double check your measurements, calculations, and methods, check scale calibrations, logbook entries and production figures. Ask the skipper, plant manager, or other personnel to clarify any questions you have. By asking questions you may determine that no violation has occurred. You can contact Observer Program staff or AED personnel to see if a particular action would be considered a violation.

### Inform

If you think a violation has occurred, notify the vessel's captain (or the plant manager) as soon as possible. Informing the captain of potential violations is expected by the Program unless the captain or manager has failed to respond to previous reports, or you feel that it may lead to a potential harassment situation. In these cases, document your reasons for not reporting the incident in your Daily Notes section of your logbook. Informing the captain of a problem provides them with an opportunity to correct the problem and prevent violations from recurring. Effective communication with the skipper/plant manager requires familiarity with the regulations, good judgment and tact. Organize the facts and approach the skipper or manager in a calm and reasonable manner.

The skipper/manager's response will shape how the violation eventually is handled. In many cases, the problem will be remedied immediately. If he or she ignores your statements and the violations continue, good documentation is required for AED to deal with the problem. You are in the best position to advise NMFS on the circumstances of the violation and the apparent intent of the skipper/ manager.

If the problem continues, and interferes with your ability to do your job, contact the NMFS Observer Program in Seattle and your contractor by phone, fax or text message. They will contact the vessel and deal with the problem directly. Some actions by the Program or AED may wait until you disembark the vessel.

### Document

Suspected violations should be documented in your logbook under the Daily Notes section. Remember that your logbook may be used as evidence. Your documentation must be thorough and factual. Subjective comments should be left out, as they may jeopardize an enforcement case. All written comments must be in ink, and events should be recorded in chronological order. Good documentation contributes to your credibility as a witness and author of an affidavit.

All logbook entries of suspected violations should contain the following basic elements:

**Who:** Identify the vessel or plant by name, permit number and vessel type.

- Identify the individuals involved by first and last name, position (skipper, engineer, deckhand, etc.) and function or duties--especially if related to a suspected violation.
- Identify who was notified and the nature of their reaction.

**What:** Describe the events and circumstances in narrative form.

- Include what made you suspicious.
- Detail what was discovered when you looked into the matter.
- Describe what occurred (or didn't) as a result of your discussions with the captain and crew.
- Use direct quotes whenever possible.
- Record each instance of a suspected violation.

**When:** Identify the exact or approximate time of the suspected violation - hour, day, month, year.

- Document the haul or delivery number if appropriate.

**Where:** Identify your vessel's position or the plant location at the time of the suspected violation.

- Include latitude/longitude or statistical reporting area. If a vessel's exact position is not know, use the closest approximation from the last haul or non-fishing day position.
- Describe where on the vessel (or at the plant) the suspected violation occurred. Draw a diagram identifying the area specifically, if applicable.

**Why:** Try to determine why the suspected violation occurred. Include your own observations and conversations with the crew members that substantiate why the violation may have occurred. Be as objective as possible and cite factors which may provide mitigating or aggravating information. Consider the following questions:

- Could the problem be due to a mistake, such as a mathematical or transcription error in the logbook?
- Were there circumstances beyond the control of vessel or plant personnel which may have played a factor, such as severe weather, mechanical breakdowns, or injuries?

If you feel the suspected violation was intentional, on whose orders, or with whose knowledge, do you think it was done, and why? Document the reasons you think the act was intentional, especially in cases of sample interference. Sometimes casual comments by crew members can give insight into the motive behind a suspected violation.

**How:** Describe the effect the possible violation had on your ability to perform your observer duties. If harassment or intimidation are involved, describe how these actions made you feel.

### Documenting Issues in your Logbook

If the vessel or plant you are covering is charged with a violation, all parties concerned will have a legal right to inspect your logbook or any other evidence known to exist. It is important to make your entries factual and to avoid personal opinions. Do not use your logbook to blow off steam. Statements such as, "the deck boss is a slob," are irrelevant to whether a fisheries violation has been committed.

When documenting fishing violations, it is important to remain unemotional about the violation. However, if you are ***experiencing harassment or intimidation, it is critical that you document your feelings and emotions*** surrounding the incident.

When you write an affidavit, it will be much easier if you have taken the time to document the violation as outlined above. Well documented cases are more likely to be prosecuted.

In view of the importance of your logbook and other types of documentation, you should take ***special care to safeguard them against loss and tampering***.

## Regulations Applying to Observers

Federal groundfish observers are not exempt from laws or regulations. Observers who falsify data, accept bribes, or conspire with someone to do the same may face criminal charges and jail time. Observers who violate the Standards of Observer Conduct may face suspension and/or decertification. The collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States. As such, false data reports and observer misconduct issues are dealt with seriously by OLE and the NPGOP. Standards of Observer Conduct from CFR 679.50(j)(2) can be found on page 2-2.

## Regulations Protecting Observers

NMFS strives to promote a safe and harassment-free work environment for observers that will ultimately contribute to the collection of high quality data. The responsibility is placed mainly upon your employer and the vessel's personnel and is of upmost importance to the Groundfish Observer Program. However, various harassment scenarios involving observers have occurred at sea and at shoreside facilities. Regulations prohibiting various forms of harassment are outlined below.

As stipulated in 50 CFR 600.725, "it is unlawful for any person to do any of the following:

- Harass or sexually harass an authorized officer or an observer.
- Assault, oppose, impede, intimidate or interfere with a NMFS-approved observer aboard a vessel.
- Prohibit or bar by command, impediment, threat, coercion, or refusal of reasonable assistance, an observer from conducting his or her duties aboard a vessel.

In addition to the general prohibitions specified above, it is unlawful to do any of the following: (50 CFR 679.7 Prohibitions (g) Groundfish Observer Program):

1. Forcibly assault, resist, impede, intimidate, sexually harass, bribe or interfere with an observer.

2. Interfere with or bias the sampling procedure employed by an observer, including physical, mechanical, or other sorting or discarding of catch before sampling.

3. Tamper with, destroy, or discard an observer's collected samples, equipment, records, photographic film, papers, or personal effects without the express consent of the observer.

4. Prohibit or bar by command, impediment, threat, coercion, or by refusal of reasonable assistance, an observer from collecting samples, conducting product recovery rate determinations, making observations or otherwise performing the observer's duties.

5. Harass an observer by conduct that has sexual connotations, has the purpose or effect of interfering with the observer's work performance, or otherwise creates an intimidating, hostile, or offensive environment. In determining whether conduct constitutes harassment, the totality of the circumstances, including the nature of the conduct and the context in which it occurred, will be considered. The determination of the legality of a particular action will be made from the facts on a case-by-case basis.

6. Fish for or process fish without observer coverage required under §679.7 Subpart E.

7. Require, pressure, coerce, or threaten an observer to perform duties normally performed by crew members, including but not limited to, cooking, washing dishes, standing watch, vessel maintenance, assisting with the setting or retrieval of gear, or any duties associated with the processing of fish, from sorting the catch to the storage of the finished product.

## Harassment

The most serious forms of harassment are assaults and sexual assaults. These cases are rare, but can occur. An assault or sexual assault of an observer is a criminal offense. To ensure your safety, the vessel captain or plant manager must be notified immediately as well as the local, state or federal authorities if this ever occurs. NOAA Fisheries Special Agents will respond immediately upon being notified and will work with other authorities to ensure your safety. If you are at sea, contact NMFS as soon as possible.

Second to your safety is the preservation of evidence. This may include gathering physical evidence and statements from witnesses. While this may be a painful and unpleasant process for you, these actions are necessary to ensure your future safety and the safety of other observers by bringing the perpetrator to justice.

**Sexual Harassment**

Sexual harassment is a form of sex discrimination that violates Title VII of the Civil Rights Act of 1964. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitutes sexual harassment when submission to, or rejection of, this conduct explicitly or implicitly affect an individual's employment, unreasonably interferes with an individual's work performance, or creates an intimidating, hostile, or offensive work environment.

Sexual harassment can occur in a variety of circumstances, including, but not limited to the following:

- The victim as well as the harasser may be a man or a woman. The victim does not have to be of the opposite sex.
- The victim does not have to be the person harassed, but could be anyone affected by the offensive conduct.
- Unlawful sexual harassment may occur without economic injury to the victim.
- The harasser's conduct must be unwelcome.

Sexual harassment is unwelcome behavior of a sexual nature. Privacy is greatly reduced onboard a vessel, and interactions can become intense more quickly. Sexual harassment may include sexist remarks or behavior, or sexual advances which result in a tense and

unproductive work environment. Examples of sexual harassment might include: suggestive sounds or gestures, sexual remarks about your clothing, body or sexual orientation, leering or ogling, persistent sexual comments and jokes, or constant brushing against or touching a person's body.

**Unalaskans Against Sexual Assault & Family Violence is a support service in Dutch Harbor. If you need to speak to someone confidentially about a harassment case, they can be contacted at 1-800-47U-SAFV.**

Sexual harassment is unwanted attention in a nonreciprocal relationship (relationships with vessel and plant personnel are prohibited under observer standards of conduct). In most normal interpersonal relationships, an individual can exercise free choice in deciding to develop a relationship based on mutual caring and respect. These elements are absent in sexual harassment.

Sexual assaults have occurred on fishing vessels at sea. If you feel harassed, report it before the problem escalates.

**Intimidation**

Intimidation is another form of harassment. Intimidation is an emotional response to someone's actions toward you. Most common is a captain or crew member directing his anger toward you verbally. Some people can ignore this behavior, while others are affected immediately and for some time afterward. If you experience an incident that upsets you or causes you to avoid the public areas of a vessel or plant, this person's behavior may have intimidated you. You have a right as an observer to work in an environment free from this kind of harassment.

**What to Do if You Experience Harassment**

If you experience harassment in any form, confront it directly and document it completely. By reporting harassment, you are protecting the next observer on board, as well as yourself.

**Report any cases of harassment to the Observer Program or NOAA Fisheries Alaska Enforcement Division as soon as possible. The agency is unable to help you with problems they are unaware of.**

Follow these steps:

1. Say no. Tell the harasser that his/her comments, actions or advances are unwanted and that you want them stopped. Remember that you are the judge of whether another person's actions negatively affect you.

2. Don't fight fire with fire. Keep your behavior professional and avoid being baited by the poor treatment of others. Make sure that your verbal and non-verbal messages to stop are clear.

3. Document the incidents from the very beginning. Even if you are unsure at first if you are experiencing harassment, record the details. They may provide you with the full story if the situation escalates. In your logbook, describe the situation, including who, what, where and when. Detail your attempts to end the harassment and the response you receive.

4. If the problem continues, report it to the skipper. Tell him the full story, explain that it is affecting your work, and request that he take steps to end the problem. Most skippers do not want trouble on the boat, and if you indicate to him that trouble is brewing, he should take appropriate action. Document any further incidents and the skipper's actions.

5. If the harassment is not taken care of by the skipper, or if your problem is with the skipper, report the offense to NMFS and your employer at the first opportunity. If there is no resolution, your employer will make arrangements for you to leave the vessel.

6. If you are concerned for your immediate well being on board, use the ORC code given to you in training to contact NMFS via catch messages.

## Observer Procedures During Coast Guard Boarding

The U.S. Coast Guard makes periodic boardings of fishing vessels to check for fisheries and safety violations. If the Coast Guard boards your vessel, introduce yourself. After that, remain in the background and let the boarding party know where you can be found. Do not join in any discussions between boarding party members and vessel personnel. The Coast Guard or NMFS agent has certain objectives to accomplish in every boarding. If your assistance is needed, they will ask for it.

If the boarding party has questions or requests your assistance, be cooperative. Most Coast Guard officers are not biologists and you may be of assistance in identifying species of fish and invertebrates in bins, processing areas or freezer holds.

Make sure your logbook and paperwork are in order in case the boarding party wishes to inspect them. ***Do not give away your original forms or your logbook!*** Make copies as needed. If your vessel has no copy machine ask if copies can be made on board the Coast Guard vessel. If this is not a possibility, the Coast Guard may make handwritten copies or you may refer them to the Observer Program Office for copies of inseason data.

If you have information on suspected or actual violations, or other problems, you may or may not wish to relay them to the boarding party. Use your judgement to decide if a potential violation would best be reported to the boarding party or saved for debriefing. If a vessel is issued a ticket immediately based on your report, you may be in an awkward position after the Coast Guard leaves. The Coast Guard is aware that observers may or may not choose to advise them of witnessed violations dependent on the situation.

If you have no information for the boarding party but someone in the boarding party wishes to question you, find a private location for your conversation. On occasion, an uninformed boarding party member may ask you questions in front of vessel personnel. Should this happen, defer the questions until you can speak in private. If that doesn't work, ask if they will accept a written statement from you. If you are questioned in private, answer all questions completely and honestly.

Your role in a Coast Guard boarding is as a source of objective information for the boarding party. The boarding party will conduct their own inspections and investigations, and they may or may not require your assistance. You should cooperate fully, and not hamper the investigation.

### Coast Guard Role in Homeland Security

The U.S. Coast Guard was given additional duties after the September 11, 2001 terrorist attacks. They are now required to obtain information on all vessels that could transport foreign nationals into the country. Prior to entering a port, each vessel must submit the full name, date of birth, nationality, passport number or mariner's documentation number and position or duty on the vessel, as applicable, of each crew and passenger. Observers have reported being asked for their social security numbers rather than passport numbers. The Observer Program has an agreement with the USCG that any picture ID, such as a driver's license or your observer ID, will suffice and that social security numbers are not needed. Bag searches may also occur and if there are any problems please contact NMFS and your observer provider.

## Debriefing

If you have witnessed and documented a suspected violation, bring this up with your debriefer. You may be asked to clarify your notes in your logbook, or to write an affidavit, a formal legal statement describing what you saw. Details for your affidavit come from the Daily Notes section of your logbook.

### Completing Affidavits

If you submit an affidavit, it will be forwarded to a AED special agent, who may contact you directly. Provide the Observer Program with a reliable phone number or e-mail address so they may reach you. Your responsibility as a groundfish observer regarding suspected violations may require a simple phone call with AED, but could result in a court appearance, if a violation is prosecuted. You are required to cooperate with AED and NOAA Fisheries General Counsel while this process is underway.

Not all affidavits submitted by observers result in prosecution of a fishing company. Often, the AED will send a certified letter to a fishing company informing them of the reported violation and that future problems may develop into an enforcement action. Minor violations are dealt with by a Summary Settlement System which can levy a fine of up to $5,000 on a vessel. This form of response to a violation does not have to go through the court system, it is similar to a traffic ticket. More serious violations can end up in court.

If your affidavit is not acted upon, it will still be added to a database, which could establish a pattern of behavior and eventually result in prosecution. However, without complete, objective documentation of a suspected violation, AED has no background to

pursue an investigation. Your detailed notes are the best source of the facts and the intent of the incident.

## Partial Summary Of Federal Groundfish Fishing Regulations For The U.S. EEZ Off Alaska.

### Introduction

This summary of regulations is intended to provide observers with a working knowledge of regulations as they apply to groundfish observer duties. Full regulations are presented in the Code of Federal Regulations (50 CFR 600 and 679) which implement the Fisheries Management Plans (FMP) for the Gulf of Alaska and the Bering Sea and Aleutian Islands areas. These have been simplified and reorganized for observer convenience. ***This is not a complete summary, nor is it quoted verbatim from federal law.*** For additional information on these regulations and information of recent changes contact the National Marine Fisheries Service (NMFS) offices.

In many cases, copies of the various CFR's are available in local libraries, and State or Federal Court Buildings. Supplementary changes to regulations will be available at offices of the National Marine Fisheries Service. Substantive supplementary changes to groundfish, marine mammal, safety, and marine pollution regulations will be published in the Federal Register. Current information on news releases, fishery closures, restricted area maps and regulations may also be obtained through the Alaska Regional (AKR) Office. To aid the public in accessing this information, the AKR provides public access at the following internet address, http://www.fakr.noaa.gov.

This summary does not supersede, amend, or detract from federal regulations or law as printed in the Federal Register or the Code of Federal Regulations. This summary does not, nor is it intended to create any rights, substantive or procedural (enforceable at law by any party in any matter, civil or criminal) and it may not be relied on for any such purpose. This summary is for general informational purposes only.

### Scope of Regulations §679.1

This summary contains fishing regulations implementing the FMP's for the federal groundfish fisheries of the Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) areas. These regulations are codified in Title 50 of the Code of Federal Regulations, Part 679 and in Title 16 of the United States Code Annotated, Chapter 38. This summary does not address U.S. commercial fishing for Pacific halibut, salmon, king and Tanner crab with the exception of incidental bycatch while fishing for groundfish. It also does not cover commercial fishing for scallops. Regulations governing halibut fishing are codified in 50 CFR, Part 301. Federal regulations governing salmon fishing are codified in 50 CFR, Parts 210 and 674. Commercial groundfish fishing within Alaska State waters (0-3 nautical miles offshore) and internal waters of the State of Alaska is managed by the Alaska Department of Fish and Game (ADF&G). Regulations governing such fisheries can be obtained from ADF&G.

### General Prohibitions §600.725, §679.7

It is unlawful for any person to:

- Fail to submit to a USCG safety examination when required by NMFS pursuant to Sec. 600.746.
- Fail to display a Commercial Fishing Vessel Safety Examination decal or a valid certificate of compliance or inspection pursuant to Sec. 600.746.
- Fail to provide to an observer, a NMFS employee, or a designated observer provider information that has been requested pursuant to Sec. 600.746, or fail to allow an observer, a NMFS employee, or a designated observer provider to inspect any item described at Sec. 600.746.
- Conduct any fishing contrary to a notice of inseason adjustment. These include:
  - Closure, extension, or opening of a season in all or part of a management area.
  - Closure of statistical areas or portions thereof, to directed fishing for specified groundfish species.
  - Modification of allowable gear to be used in all or part of a management area.
  - Adjustment of Total Allowable Catch and Prohibited Species Cap limits.
- Exceed the bycatch rate standard for red king crab or halibut as specified by the Program to Reduce Prohibited Species, also called the Vessel Incentive Program.
- Deploy trawl, longline, single pot and line, or jig gear where directed fishing for, or retention of groundfish by vessels using that gear is prohibited.

- Operate a vessel in the "inshore component in the GOA" as defined in §679.2 without a valid inshore processing endorsement on the vessel's Federal fisheries or Federal processor permit.
- Operate a vessel as a "stationary floating processor" in the "inshore component of the GOA" as defined in §679.2, and as a catcher/processor in the BSAI during the same fishing year.
- Operate a vessel as a "stationary floating processor" in the "inshore component in the GOA" as defined in §679.2, and as an AFA mothership in the BSAI during the same fishing year.
- Operate any vessel in the GOA in more than one of the three categories included in the definition of "inshore component in the GOA" in §679.2 during the same fishing year.
- Use a stationary floating processor with a GOA inshore processing endorsement to process pollock or GOA Pacific cod harvested in a directed fishery for those species in more than one single geographic location during a fishing year.

### Fishing in the Donut Hole

It is unlawful for any person to:

- Fish in the Donut Hole from a vessel for which a Federal fisheries permit has been issued pursuant to §679.4 during the year for which the permit was issued.
- Possess within the EEZ fish harvested from the Donut Hole on board a vessel for which a Federal fisheries permit has been issued pursuant to §679.4 during the year for which the permit was issued.

### Observer Health and Safety §600.746

An observer is not required to board, or stay aboard, a vessel that is unsafe or inadequate as described in this section.

A vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions if it does not comply with the applicable regulations regarding observer accommodations or if it has not passed a USCG safety examination or inspection.

A vessel that has passed a USCG safety examination or inspection must display one of the following:

- A current Commercial Fishing Vessel Safety Examination decal, issued within the last 2 years
- A certificate of compliance issued pursuant to 46 CFR 28.710; or
- A valid certificate of inspection pursuant to 46 U.S.C. 3311.
- Upon request by an observer, a NMFS employee, or a designated observer provider, a vessel owner/operator must provide correct information concerning any item relating to any safety or accommodation requirement prescribed by law or regulation. A vessel owner or operator must also allow an observer, a NMFS employee, or a designated observer provider to visually examine any such item.

**Pretrip safety check**

Prior to each observed trip, the observer is encouraged to briefly walk through the vessel's major spaces to ensure that no obviously hazardous conditions exist. In addition, the observer is encouraged to spot check the following major items for compliance with applicable USCG regulations: Personal flotation devices/immersion suits, ring buoys, distress signals, fire extinguishing equipment, emergency position indicating radio beacon (EPIRB), survival craft.

More information on vessel safety regulations and a detailed safety checklist can be found in the Health and Safety chapter, beginning on page 17-1.

**Corrective measures**

If a vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions, NMFS may require the vessel owner or operator either to:

- Submit to and pass a USCG safety examination or inspection; or
- Correct the deficiency that is rendering the vessel inadequate or unsafe before the vessel is boarded by the observer.

The requirements of this section apply both at the time of the observer's boarding, at all times the observer is aboard, and at the time the observer is disembarking from the vessel.

A vessel that would otherwise be required to carry an observer, but is inadequate or unsafe for purposes of

carrying an observer and for allowing operation of normal observer functions, is prohibited from fishing without observer coverage.

**Marine Casualties**

The following incidents must be documented in your logbook and discussed inseason (if you feel unsafe while at sea) or during your debriefing interview:

- fire
- flooding
- man overboard (MOB)
- collision
- grounding
- loss of power
- loss of steering
- any crew injury beyond regular first aid
- gas leaks (ammonia and freon)
- lack of safety drills if on board for at least 30 days

You are required to complete an affidavit for each incident of a marine casualty. These affidavits are usually prepared during final debriefing. The more details you have documented in your logbook, the easier completing these affidavits will be.

## Prohibited Species §679.21

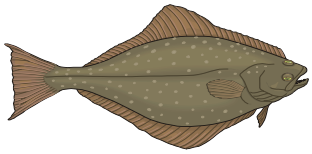
Retention of prohibited species is unlawful unless authorized by other applicable law, including the regulations of the International Pacific Halibut Commission (IPHC).

Prohibited species include:

- Pacific salmon (all species)
- steelhead trout
- Pacific halibut
- Pacific herring
- Tanner crab (all species)
- king crab (all species)
- Any groundfish species in any area where the total allowable catch of that species is zero or any groundfish species declared prohibited by a notice of closure.

The operator of each vessel must sort its catch as soon as possible after retrieval of the gear and return all prohibited species or parts thereof to the sea immediately with a minimum of injury regardless of its condition, after allowing sampling by an observer. Observer sampling includes when salmon are to be retained for counting and the collection of biological data. It shall be presumed that any prohibited species found on board a vessel subject to these regulations was caught and retained in violation of these regulations.

Halibut



With respect to halibut caught with hook-and-line gear deployed from a vessel fishing for groundfish, except for vessels fishing for halibut as prescribed in § 300.62, the following actions are prohibited:

- Fail to release the halibut outboard a vessel's rails;
- Release the halibut by any methods other than:
  - Cutting the gangion;
  - Positioning the gaff on the hook and twisting the hook from the halibut;
  - Straightening the hook by using the gaff to catch the bend of the hook and bracing the gaff against the vessel or any gear attached to the vessel;
- Puncture the halibut with a gaff or other device.
- Allow the halibut to contact the vessel, if such contact causes, or is capable of causing, the halibut to be stripped from the hook.

**If fishing Pacific halibut under an IFQ, the minimum legal size that can be retained is 82 cm. Discarding legal sized halibut is considered high-grading, which is a violation.**

Crab

It is prohibited to have on board at any particular time, 20 or more crab of any species which have a carapace width of more than 1.5 inches (38 mm) at the widest dimension during the following situations:

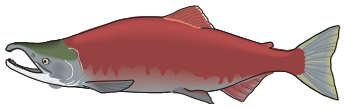
- When participating in a non-CDQ directed fishery for pollock using trawl gear in the BSAI.
- When participating in a directed fishery for pollock using trawl gear when directed fishing for pollock with non pelagic trawl gear is closed in the GOA.

Salmon

It is prohibited to:

- Discard any salmon taken incidentally in a BSAI or GOA directed groundfish fishery by vessels using trawl gear until notified by a NMFS-certified observer that the number of salmon has been determined and the collection of any scientific data or biological samples has been completed.
- Retain or possess prohibited species, defined at §679.21(b)(1), except as permitted to do so under the prohibited species donation program as provided by § 679.26 of this part, or as authorized by other applicable law.

## Salmon Retention Regulations §679.21(C)



Mothership processor vessels and shoreside processing facilities that are exempt from obtaining observer coverage during a month under § 679.50(c) are exempt from mandatory retention of salmon under this paragraph.

The operator of a vessel and the manager of a shoreside processor must not discard any salmon or transfer or process any salmon under the Prohibited Species Donation program if the salmon were taken incidental to a directed fishery for BSAI groundfish by vessels using trawl gear until the number of salmon has been determined by an observer and the collection of any scientific data or biological samples from the salmon has been completed.

Operators of vessels carrying observers onboard and whose fishing operations allow for sorting of groundfish catch for salmon must retain all salmon bycatch from each haul in a separate bin or other location that allows an observer free and unobstructed physical access to the salmon to count each fish and collect any scientific data or biological samples. Salmon from different hauls must be retained separately in a manner that identifies the haul from which the salmon were taken.

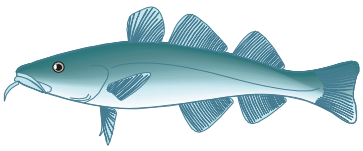
Operators of vessels not carrying observers onboard or whose fishing operations do not allow for sorting of groundfish catch for salmon must ice, freeze, or store in a refrigerated saltwater tank all salmon taken as bycatch in trawl operations for delivery to the processor receiving the vessel's groundfish catch.

Processors receiving groundfish harvested in a directed fishery for groundfish using trawl gear must retain all salmon delivered by each trawl vessel during a weekly reporting period in separate bins marked with the vessel's name and ADF&G fish ticket number(s) for each delivery until a NMFS-certified observer has counted each salmon and collected any scientific data or biological samples from the salmon delivered to the processor by that vessel. Processors without an observer present must store whole salmon in an iced or frozen state until an observer is available to count each fish. Salmon must be stored at a location that allows an observer free and unobstructed physical access to each salmon.

Operators of vessels and managers of shoreside processing operations that are required to retain salmon must designate and identify to the NMFS-certified observer onboard the vessel or at the shoreside operation a crew person or employee to be responsible for sorting, retention, and storage of salmon. Upon the request of the NMFS-certified observer, the designated crew person or employee also is responsible for counting salmon and taking biological samples from retained salmon under the direction of the observer.

Salmon must be returned to Federal waters as soon as is practicable, with a minimum of injury, regardless of condition, following notice by a NMFS-certified observer that the number of salmon has been determined and the collection of any scientific data or biological samples has been completed.

## Improved Retention/Improved Utilization (IR/IU) §679.27



The owner or operator of a vessel must comply with the IR/IU program set out in this section while fishing for groundfish in the GOA or BSAI, fishing for groundfish in waters of the State of Alaska that are shoreward of the GOA or BSAI, or when processing groundfish harvested in the GOA or BSAI.

The following species are defined as “IR/IU species” for the purposes of this section:

- Pollock (GOA and BSAI)
- Pacific cod (GOA and BSAI)

- Shallow-water flatfish species complex (GOA only)

Minimum Retention

1. For catcher vessels (any gear type):

- If directed fishing for an IR/IU species is open, you must retain on board all fish of that species brought on board the vessel until lawful transfer.
- If directed fishing for an IR/IU species is prohibited, you must retain on board all fish of that species brought on board the vessel up to the maximum retainable amounts for that species until lawful transfer.
- If retention of an IR/IU species is prohibited you must retain on board no fish of that species.

2. Catcher/processors and motherships

- If directed fishing for an IR/IU species is open, you must retain on board a primary product from all fish of that species brought on board the vessel until lawful transfer.
- If directed fishing for an IR/IU species is prohibited, you must retain on board a primary product from all fish of that species brought on board the vessel up to the point that the round-weight equivalent of primary products on board equals the MRA amount for that species until lawful transfer.
- If retention of an IR/IU species is prohibited, you must retain on board no fish or product of that species.

3. Any action intended to discard or release an IR/IU species prior to being brought on board the vessel is prohibited. This includes, but is not limited to, bleeding codends and shaking or otherwise removing fish from longline gear.

4. Any product from an IR/IU species may not be discarded at sea, unless such discarding is necessary to meet other requirements of this part.

5. The retention requirements of this section apply to all IR/IU species brought on board a vessel, whether harvested by that vessel or transferred from another vessel. At-sea discard of IR/IU species or products that were transferred from another vessel is prohibited.

6. IR/IU species may be used as bait provided that the deployed bait is physically secured to authorized fishing gear. Dumping of unsecured IR/IU species as bait (chumming) is prohibited.

7. The retention and utilization requirements of this section do not apply to incidental catch of dead or decomposing fish or fish parts that were previously caught and discarded at sea.

Minimum Utilization

If you own or operate a catcher/processor or mothership, the minimum utilization requirement for an IR/IU species harvested in the BSAI is determined by the directed fishing status for that species according to the following:

1. If directed fishing for an IR/IU species is open, then your total weight of retained or lawfully transferred products produced from your catch or receipt of that IR/IU species during a fishing trip must equal or exceed 15 percent of the round-weight catch or round-weight delivery of that species during the fishing trip.

2. If directed fishing for an IR/IU species is prohibited, then your total weight of retained or lawfully transferred products produced from your catch or receipt of that IR/IU species during a fishing trip must equal or exceed 15 percent of the round-weight catch or round-weight delivery of that species during the fishing trip or 15 percent of the MRA amount for that species, whichever is lower.

3. If retention of an IR/IU species is prohibited, then your total weight of retained or lawfully transferred products produced from your catch or receipt of that IR/IU species during a fishing trip must equal zero.

## Groundfish Observer Program §679.50

The purpose of the Groundfish Observer Program is to allow observers to collect Alaska fisheries data deemed by the Regional Administrator to be necessary and appropriate for management compliance monitoring and research of groundfish fisheries and for the conservation of marine resources or their environment.

### Vessel Responsibilities

An operator of a vessel required to carry one or more observers must:

Accommodations and food
Provide at no cost to observers or the United States, accommodations and food on the vessel for the observer(s) that are equivalent to those provided for officers, engineers, foremen, deck bosses or other management level personnel of the vessel.

Safe conditions
Maintain safe conditions on the vessel for the protection of the observers including adherence to all U.S. Coast Guard and other applicable rules, regulations, or statutes pertaining to safe operation of the vessel.

Have on board:
1. A valid Commercial Fishing Vessel Safety Decal issued within the past 2 years that certifies compliance with regulations found in 33 CFR Chapter I and 46 CFR Chapter I; or

2. A certificate of compliance issued pursuant to 46 CFR 28.710; or

3. A valid certificate of inspection pursuant to 46 U.S.C. 3311.

- Ensure that the communication equipment on motherships that is used by observers to enter and transmit data is fully functional and operational

Vessel position
Allow observers access to, and the use of, the vessel's navigation equipment and personnel, on request, to determine the vessel's position.

Access
Allow observers free and unobstructed access to, the vessel's bridge, trawl or working decks, holding bins, processing areas, freezer spaces, weight scales, cargo holds, and any other space that may be used to hold, process, weigh, or store fish or fish products at any time.

Prior notification
Notify observers at least 15 minutes before fish are brought on board, or fish and fish products are transferred from the vessel, to allow sampling the catch or observing the transfer, unless the observers specifically request not to be notified.

Records
Allow observers to inspect and copy the vessel's daily fishing logbook, daily cumulative production logbook, product transfer forms, and any other logbook or document required by regulations. Observers are also allowed to inspect and copy printouts or tallies of scale weights, scale calibration records, bin sensor readouts, and production records.

Assistance
Provide all other reasonable assistance to enable observers to carry out their duties, including, but not limited to, assisting observers in measuring decks, codends, and holding bins; providing the observers with a safe work area adjacent to the sampling collection site; when requested by observers, assisting in collecting bycatch, assisting in collecting and carrying baskets of fish; and allowing observers to determine the sex of fish when this procedure will not decrease the value of a significant portion of the catch.

Transfer at sea
Ensure that transfers of observers at sea via small boat or raft are carried out during daylight hours, under safe conditions, and with the agreement of observers involved.

Notify observers at least 3 hours before observers are transferred, such that the observer can collect personal belongings, equipment, and scientific papers.

Provide a safe pilot ladder and conduct the transfer to ensure the safety of observers during transfers.

Provide an experienced crew member to assist observers in the small boat or raft in which any transfer is made.

### Shoreside Processor Responsibilities
The manager of the shoreside processor facility must:

Safe conditions
Maintain safe conditions at the shoreside processing facility for the protection of observers by adhering to all applicable rules, regulations, or statutes pertaining to safe operation and maintenance of the processing facility.

Operations information
Notify the observers, as requested, of the planned facility operations and expected receipt of groundfish prior to the receipt of those fish.

Access
Allow observers free and unobstructed access to the shoreside processor's holding bins, processing areas, freezer spaces, weight scales, warehouses, and any other space that may be used to hold, process, weigh, or store fish or fish products at any time.

Document access
Allow observers to inspect and copy the shoreside processor's Daily Cumulative Production Logbook, transfer logbook, and any other logbook or document required by regulations; printouts or tallies of scale weights; scale calibration records; bin sensor readouts; and production records.

Assistance
Provide all other reasonable assistance to enable the observer to carry out his or her duties, including, but not limited to, assisting the observer in moving and weighing totes of fish, cooperating with product recovery tests, and providing a secure place to store baskets and sampling gear.

## Observer Data Transmission

In October 2003, NMFS issued a final rule enhancing timely communication by increasing the number of vessels using the ATLAS at-sea data transmission application (termed the "Observer Communication System, OCS, in the regulation). Vessels that are required to carry at least one observer at all times must now also have the ATLAS software, the hardware specified and the ability to transmit observer data directly to NMFS.

### Observer Use of Equipment

Vessels and shoreside processors must facilitate transmission of observer data by allowing observers to use the vessel's communication equipment and personnel, on request, for confidential entry, transmission, and receipt of work-related messages, at no cost to the NMFS-certified observers or the nation.

### Hardware and Software

Vessels required to have the OCS must make available for use by the observer a personal computer in working condition that contains a full Pentium 120 Mhz or greater capacity processing chip, at least 32 megabytes of RAM, at least 75 megabytes of free hard disk storage, a Windows 9x or NT compatible operating system, an operating mouse, and a 3.5-inch (8.9 cm) floppy disk drive. The associated computer monitor must have a viewable screen size of at least 14.1 inches (35.8 cm) and a minimum display settings of 600 X 800 pixels. The computer equipment specified must be connected to a communication device that provides a point-to-point modem connection to the NMFS host computer and supports one or more of the following protocols: ITU V.22, ITU V.22bis, ITU V.32, ITU V.32bis, or ITU V.34. Personal computers utilizing a modem must have at least a 28.8 kbs Hayes-compatible modem.

Catcher/processors, motherships, catcher vessels and shoreside or floating processors specified must have the data entry software provided by the Regional Administrator installed for use by the observer.

## Groundfish and Halibut CDQ Fisheries

The time required for the level 2 observer to complete sampling, data recording, and data communication duties shall not exceed 12 hours in each 24-hour period, and, the level 2 observer is required to sample no more than 9 hours in each 24-hour period.

In a multi-species CDQ fishery a mothership or catcher/processor using trawl gear must have at least two level 2 observers aboard the vessel, at least one of whom must be certified as a lead level 2 observer.

In the pollock CDQ fishery a mothership or catcher/processor using trawl gear must have at least two NMFS-certified observers aboard the vessel, at least one of whom must be certified as a lead level 2 observer.

A catcher/processor using hook-and-line gear must have at least two level 2 observers, unless NMFS approves a CDP authorizing the vessel to carry only one lead level 2 observer. At least one of the level 2 observers must be certified as a lead level 2 observer.

A catcher/processor using pot gear must have at least one lead level 2 observer.

A catcher vessel equal to or greater than 60 ft using trawl gear, except a catcher vessel delivering unsorted codends to a processor or another vessel, must have at least one level 2 observer.

Non trawl catcher vessel equal to or greater than 60 ft must meet the following requirements:

- If the vessel operator selected Option 1 for CDQ catch accounting, then at least one level 2 observer must be aboard the vessel.
- If the vessel operator selected Option 2 for CDQ catch accounting, then at least one lead level 2 observer must be aboard this vessel.

Haul Designation

Catcher/processor trawl vessel operators fishing in a CDQ fishery may assess the species composition prior to designating a haul as CDQ, AFA, or open access. According to the policy written by the Regional Office, the operator must notify the observer that catch ***may*** be CDQ prior to the tow being landed. Once the operator has notified the observers that catch may be designated as CDQ they are obligated to have a functional observer sampling station and weigh the catch on the flow scale. If during processing, the operator decides that the catch should accrue against their AFA quota, the open access quota, or another CDQ group they have a two hour period to record that information in the logbook provided at 50 CFR 679.5(a)(14)(iv).

CDQ hauls brought on board by motherships designated as CDQ hauls must be processed as a CDQ haul because of the possible conflict with record keeping and reporting requirements of the catcher vessels delivering to the motherships.

## AFA C/P and Mothership Vessels

The owner or operator of a listed AFA C/P or mothership must provide at least two NMFS-certified observers, at least one of which must be certified as a lead level 2 observer for each day that the vessel is used to harvest, process, or take deliveries of groundfish. More than two observers are required if the observer restriction (c)(5)(iii) of this section would otherwise preclude sampling as required under §679.3(a)(1).

The owner or operator of an unlisted AFA C/P must provide at least two NMFS-certified observers for each day the vessel is used to engage in directed fishing for pollock in the BSAI, or takes deliveries of pollock harvested in the BSAI. At least one observer must be certified as lead level 2 observer. When an unlisted AFA C/P is not engaged in directed fishing for BSAI pollock and is not receiving deliveries of pollock harvested in the BSAI, the observer coverage requirements at paragraph (c)(1)(iv) of this section apply.

All groundfish landed by listed or unlisted AFA C/P or received by AFA motherships must be weighed on a NMFS-certified scale and made available for sampling by a NMFS-certified observer. The owner and operator of a listed AFA C/P or mothership must ensure that the vessel is in compliance with the scale requirements described at Sec. 679.28(b), that each groundfish haul is weighed separately, and that no sorting of catch takes place prior to weighing.

The owner and operator of a listed or unlisted AFA C/P or AFA mothership must provide an observer sampling station as described at Sec. 679.28(d) and must ensure that the vessel operator complies with the observer sampling station requirements described at Sec. 679.28 (d) at all times that the vessel harvests groundfish or receives deliveries of groundfish harvested in the BSAI or GOA.

## AFA Inshore Processor Requirements

All groundfish landed by AFA catcher vessels engaged in directed fishing for pollock in the BSAI must be sorted and weighed on a scale approved by the State of Alaska as described in Sec. 679.28 (c), and be made available for sampling by a NMFS certified observer. The observer must be allowed to test any scale used to weigh groundfish in order to determine it's accuracy.

## Prohibitions Specific to AFA Fisheries

It is unlawful for listed AFA C/Ps to process any groundfish that was not weighed on a NMFS-approved scale that complies with the requirements of §679.28(b). Catch may not be sorted before it is weighed and each haul must be sampled by an observer for species composition.

It is unlawful for unlisted AFA C/Ps to process groundfish harvested in the BSAI pollock fishery that was not weighed on a NMFS-approved scale that complies with the requirements of §679.28(b). Catch may not be sorted before it is weighed and each haul must be sampled by an observer for species composition.

It is unlawful for an AFA mothership to process any groundfish without an observer sampling station as described at §679.28(d). A valid observer sampling station inspection report must be on board at all times when an observer sampling station is required.

## Observer Provider Responsibilities

For each observer employed by an observer provider, either a written contract or a written contract addendum must exist that is signed by the observer and observer provider prior to the observer's deployment that contains the following provisions:

- That the observer comply with the Observer Program's drug and alcohol policy,
- That all the observer's in-season catch messages between the observer and NMFS are delivered to the Observer Program at least every 7 days, unless otherwise specified by the Observer Program.
- That the observer completes in-person mid-deployment data reviews, unless:
  - exempted by the Observer Program, or
  - the observer is not in a port with a field office, so one is completed by phone, fax or through e-mail
- The observer inform the observer provider prior to the time of embarkation if he or she is experiencing any new mental illness or physical ailments or injury since submission of the physicians statement that would prevent him or her from performing their assigned duties.

Responsibilities and duties of observer providers include but are not limited to the following:

1. Providing an observer's salary, benefits and personnel services in a timely manner.

2. Providing all logistics to place and maintain the observers aboard the fishing vessels or at the site of the processing facility. This includes all travel arrangements, lodging and *per diem*, and any other services required to place observers aboard vessels or at processing facilities.

3. Ensuring that the following deployment conditions are met, unless alternative arrangements are approved by the Observer Program Office:

- Observers must not be deployed on the same vessel or at the same shoreside processor for more than 90 days in a 12 month period.
- A deployment cannot exceed 90 days.
- A deployment cannot include assignments to more than four vessels and/or shoreside processors.
- An observer provider must not move an observer from a vessel or floating or shoreside processor before that observer has completed his or her sampling or data transmission duties.

4. Maintaining communications with observers at sea and shoreside facilities. Each observer provider must have an employee responsible for observer activities on call 24 hours a day to handle emergencies involving observers, or problems concerning observer logistics, whenever observers are at sea, stationed at shoreside facilities, in transit, or in port awaiting boarding.

5. Ensuring that observers complete debriefing as soon as possible after the completion of their deployment and at locations specified by the Regional Administrator.

6. Ensuring all data, reports, and biological samples from observer deployments are complete and submitted to NMFS at the time of the debriefing interview.

7. Ensuring that all sampling and safety gear are returned to the Observer Program Office and that any gear and equipment lost or damaged by observers is replaced according to NMFS requirements.

8. Providing the following to the Observer Program Office by e-mail or by fax.

- Copies of "certificates of insurance" that name the NMFS Observer Program Leader as a "certificate holder." The certificates of insurance shall verify the following coverage provisions and state that the insurance company will notify the certificate holder if insurance coverage is changed or cancelled:
- Maritime Liability to cover "seamen's" claims under the Merchant Marine Act (Jones Act) and General Maritime Law ($1 million minimum).

- Coverage under the U.S. Longshore and Harbor (USL&H) Worker's Compensation Act ($1 million minimum).
- States Workers' Compensation as required.
- Commercial General Liability with contractual endorsements optional.

9. Reports of observer harassment, concerns about vessel or processor safety, or observer performance problems must be submitted within 24 hours after the observer provider becomes aware of the problem.

10. Observer provider must assign observers without regard to any preference by representatives of vessels and shoreside facilities based on observer race, gender, age, religion, or sexual orientation.

11. An observer provider must verify that a vessel has a valid USCG safety decal before an observer may get underway aboard the vessel. One of the following acceptable means of verification must be used to verify the decal validity:

- an employee of the observer provider, including the observer, visually inspects the decal aboard the vessel and confirms that the decal is valid according to the decal date of issuance, or
- the observer provider receives a hard copy of the USCG documentation of the decal issuance from the vessel owner or operator.

## Trawl Gear Definitions §679.2

***Non pelagic trawl*** means a trawl other than a pelagic trawl.

***Pelagic trawl*** means a trawl that:

1. has no discs, bobbins, or rollers;

2. has no chafe protection gear attached to the foot rope or fishing line;

3. has no flotation other than floats capable of providing up to 200 pounds (90.7 kg) of buoyancy to accommodate the use of a net-sounder device; (note: floats on or in the codend are permitted);

4. has no more than one fishing line and one foot rope for a total of no more than two weighted lines on the bottom of the trawl between the wing tip and the fishing circle; and

5. has no metallic component except for connectors (e.g., hammerlocks or swivels) or a net-sounder device aft of the fishing circle or weights on the wing tips.

***Breast line*** means the rope or wire running along the forward edges of the side panels of a net, or along the forward edge of the side rope in a rope trawl.

***Fishing circle*** means the circumference of a trawl, intersecting the center point on the fishing line and perpendicular to the long axis of a trawl.

***Fishing line*** means a length of chain or wire rope in the bottom front end of a trawl to which the webbing or lead ropes are attached.

***Foot rope*** means a chain or wire rope attached to the bottom front end of a trawl and attached to the fishing line.

***Headrope*** means a rope bordering the top front end of a trawl.

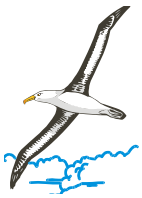
## Marking of Longline Gear

All longline marker buoys carried aboard or used by any vessel regulated under this part shall be marked with the following:

- the vessel's name; and
- the vessel's Federal fisheries permit number; or
- the vessel's ADF&G vessel registration number.

The required markings are to be in characters at least four inches high by one half inch wide, in a contrasting color, and visible above the water line. These markings are to be maintained in good condition, so they are clearly visible.

## Seabird Avoidance Gear and Methods For Longliners



Operators of hook-and-line vessels fishing for groundfish in the BSAI and the GOA must use some seabird avoidance measures. In February 2004, NMFS implemented changes to the seabird avoidance regulations, based on research work completed in 1999 and 2000. If there are additional changes, you will be notified by your trainer or briefer.

Larger vessels (greater than 55 ft LOA) must deploy a minimum of two streamer lines while setting hook-and-line gear. For stern-setting vessels, streamer lines must be deployed one on each side of the main

groundline. Preferably, both streamer lines will be deployed prior to the first hook being set. At least one streamer line must be deployed before the first hook is set and both streamers must be fully deployed within 90 seconds. An exception to this standard would exist in conditions of wind speeds exceeding 30 knots, where it would be acceptable to fly a single streamer from the windward side of the vessel. In winds exceeding 45 knots, the deployment of streamer lines would be discretionary.

Streamer line specifications

1. Streamer lines must be a minimum of 300 ft long.

2. Streamers must be spaced every 16.4 ft.

3. Streamers must be of brightly colored, UV protected plastic tubing or 3/8 inch polyester line or material of an equivalent density.

4. An individual streamer must hang attached to the mainline to 0.25 m above the waterline in the absence of wind.

Other seabird avoidance requirements

- Directed discharge (through chutes, pipes, or other similar devices suited for purpose of offal discharge) of residual bait or offal from the stern of the vessel while setting gear is prohibited.
- Prior to offal discharge, embedded hooks must be removed from offal.
- A Seabird Avoidance Plan is required onboard the vessel.

The proposed seabird avoidance measures would apply to the operators of vessels using hook-and-line gear as follows:

1. Pacific halibut in the IFQ and CDQ management programs (0 to 200 nm),

2. IFQ sablefish in EEZ waters (3 to 200 nm) and waters of the State of Alaska (0 to 3 nm), except waters of Prince William Sound and areas in which sablefish fishing is managed under a State of Alaska limited entry program (Clarence Strait, Chatham Strait), and

3. Groundfish (except IFQ sablefish) with hook-and-line gear in the U.S. EEZ waters off Alaska (3-200 nm).

## Groundfish Pots Requirements

Each pot used to fish for groundfish must be equipped with a biodegradable panel at least 18 inches in length that is parallel to, and within 6 inches of, the bottom of the pot, and which is sewn up with untreated cotton thread of no larger size than No.30. Each pot used to fish for groundfish must also be equipped with rigid tunnel openings that are no wider than 9 inches and no higher than 9 inches, or soft tunnel openings with dimensions that are no wider than 9 inches.

## Program to Reduce Prohibited Species Bycatch Rates §679.21

While participating in BSAI and GOA trawl fisheries, a vessel's bycatch rate at the end of a fishing month shall not exceed bycatch rate standards referenced in this section. This program is also known as the Vessel Incentive Program (VIP) and is based on observer data.

**Bycatch rates for halibut and red King crab**

The bycatch rate for halibut is the ratio of the total round weight of halibut, in kilograms, to the total round weight, in metric tons, of allocated groundfish species.

The bycatch rate for red king crab is the ratio of the number of red king crab to the total round weight, in metric tons, of allocated groundfish species.

### Vessel Incentive Program Fisheries

Bycatch rate standards are set by fishery. Please note that these target categories are unique to the Vessel Incentive Program. They are not necessarily consistent with targeting categories that are defined for directed fisheries or for prohibited species allocations.

Bering Sea and Aleutian Island Region

- mid-water pollock
- yellowfin sole
- bottom pollock
- other trawl -- all other fishing with trawl gear that does not qualify as mid-water pollock, yellowfin sole, or bottom pollock

Gulf of Alaska

- mid-water pollock
- other trawl -- all other fishing with trawl gear that does not qualify as mid-water pollock

### Bycatch Rate Standards

Prior to January 1 and July 1 of each year, the Regional Administrator will publish a notice in the Federal Register specifying bycatch rate standards for the fisheries identified above that will be in effect for specified seasons within the 6-month periods of January 1 through June 30 and July 1 through December 31, respectively. Bycatch rate standards will remain in effect until revised by a notice in the Federal Register. The Regional Administrator may adjust bycatch rate standards as frequently as he considers appropriate.

**The Council is currently reviewing the VIP and may phase out this program in the future. You'll be informed by your briefer if changes occur during the 2004 fishing year.**

Bycatch rate standards for a fishery and adjustments to such standards will be based on the following information and considerations:

- the previous year's average observed bycatch rates for that fishery;
- immediately preceding season's average observed bycatch rates for that fishery;
- the bycatch allowances and associated fishery closures.
- anticipated groundfish harvests for that fishery;
- anticipated seasonal distribution of fishing effort for groundfish; and
- other information and criteria deemed relevant by the Regional Administrator.

### Vessel Bycatch Rates

For the purposes of this program observed data collected for each haul sampled during a day will include the date, position where trawl gear was retrieved, total round weight of groundfish (mt) sampled by species or species group, total round weight of halibut, in kilograms, and total numbers of red king crab that were in the portion of the haul that was sampled.

### Observer Sampling Procedures

NMFS will randomly predetermine the hauls to be sampled by an observer during the time the observer is on a vessel.

An observer will:

- take samples at random from throughout the haul,
- take samples prior to sorting of the haul by crew for processing or discarding of the catch.
- sample a minimum of 100 kilograms of fish from each haul sampled.
- report to NMFS, on at least a weekly basis, the data for sampled hauls.
- allow the vessel operator to see all observed data that the observer submits to NMFS. (Vessel operators may see all of their vessel's data, except your logbook.)

### Bycatch Rate Calculations

At the end of each fishing month during which an observer sampled at least 50 percent of a vessel's total number of trawl hauls retrieved (as recorded in the vessel's daily logbook), the Regional Administrator will calculate the vessel's bycatch rate. This bycatch rate is based on observed data for each fishery (as described previously in this section) to which the vessel was assigned for any weekly reporting period during that fishing month. Only observed data that has been checked, verified, and analyzed by NMFS will be used to calculate vessel bycatch rates for purposes of this section.

The halibut bycatch rate of a vessel for a fishery during a fishing month is a ratio of halibut to groundfish that is calculated by using the total round weight of halibut, in kilograms (for red king crab or chinook salmon bycatch rate, the total number is used) in samples during all weekly reporting periods in which the vessel was assigned to that fishery and the total round weight of the groundfish in metric tons in samples taken during all such periods.

A vessel has exceeded a bycatch rate standard for a fishery if the vessel's bycatch rate for a fishing month exceeds the bycatch rate standard established for that fishery.

## Regulations Concerning Taking of Marine Mammals (Excerpts taken from 50 CFR 216 and 229)

### Definitions (§216.3)

Marine mammals means those specimens of the following orders, which are morphologically adapted to the marine environment, and whether alive or dead, and any parts thereof, including but not limited to, any

raw dressed or dyed fur or skin: Cetacea (whales and porpoises), Pinnipedia (seals and sea lions), other than walrus.

Take means to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill, any marine mammal. This includes, without limitation, any of the following:

- The collection of dead animals, or parts thereof; the restraint or detention of a marine mammal, no matter how temporary;
- tagging a marine mammal; or
- the negligent or intentional operation of aircraft or vessel, feeding or attempting to feed a marine mammal in the wild, or the doing of other negligent or intentional acts which result in the disturbing or molesting of a marine mammal.

Feeding is defined as "offering, giving, or attempting to give food or nonfood items to marine mammals in the wild. It includes operating a vessel or providing other platforms from which feeding is conducted or supported. It does ***not*** include the routine discard of bycatch during fishing operations or the routine discharge of waste or fish by-products from fish processing plants or other platforms if the discharge is otherwise legal and is incidental to operation of the activity."

### Prohibited taking (§216.11)

Except as noted below, it is unlawful for:

- any person, vessel, or conveyance subject to the jurisdiction of United States to take any marine mammal on the high seas, and
- any person, vessel, or conveyance to take any marine mammal in waters under the jurisdiction of United States.

### Prohibited uses, possession, transportation, and sales (§216.13)

It is unlawful for:

- Any person to use any port, harbor or other place under the jurisdiction of the United States for any purpose in any way connected with the prohibited taking or unlawful importation of any marine mammal or marine mammal product; or
- Any person subject to the jurisdiction of the United States to possess any marine mammal taken in violation of the MMPA or these regulations, or to transport, sell, or offer for sale any such marine mammal product made from any such marine mammal.
- Any person subject to the jurisdiction of the United States to use in a commercial fishery, any means or methods of fishing in contravention of regulations and limitations issued by the Secretary of Commerce for that fishery to achieve the purposes of this MMPA.
- Any person to violate any term, condition, or restriction of any permit issued by the Secretary.

**Collection of certain marine mammal parts (§216.26)**

- Any bones, teeth or ivory of any dead marine mammal may be collected from a beach or from land within 1/4 of a mile of the ocean. The term ocean includes bays and estuaries. (***NOTE:*** walrus are managed by the State of Alaska and have management regulations that apply to the retention of their body parts. Observers often ask if they can keep walrus tusks that come up in the gear. ***Observers may not keep tusks or any other part of a walrus that are retrieved in commercial fishing gear.***)
- Marine mammal parts so collected may be retained if registered within 30 days with an agent of NMFS, or an agent of the Bureau of Sport Fisheries and Wildlife.

### Prohibitions (§229.3)

Except as noted below, it is unlawful to take any marine mammal incidental to commercial fishing operations.

In addition, it is unlawful to (1) take any California sea otter; or (2) intentionally lethally take any Steller sea lion, any Alaskan sea otter, any cetacean, any depleted species (including the Pribilof Island population of Northern fur seal), or any endangered or threatened marine mammal. If the use of firearms or other means to deter marine mammals results in an injury or mortality of a marine mammal, the taking is presumed to be intentional lethal taking.

## Marine Mammal Fishery Interaction Regulations § 229

- Marine mammals killed during fishing operations which are readily accessible to crew members must be brought aboard the vessel for biological processing, if feasible and if requested by the observer. Marine mammals designated as biological specimens by the observer must be retained in cold storage aboard the vessel, if feasible, until retrieved by authorized personnel of NMFS.
- Any marine mammal incidentally taken must be immediately returned to the sea with a minimum of further injury and may only be retained if authorized by an observer, by condition of the Exemption Certificate, or by a scientific research permit that is in possession of the operator.

### Fishery Classification and List of Fisheries:

Commercial fisheries are classified according to their annual impact on marine mammal stocks, as defined by the number of serious injuries and mortalities relative to the stocks Potential Biological Removal (PBR). The status of all marine mammal stocks in U.S. waters, and each stock's serious injury and mortality rate relative to PBR, has been reviewed by NMFS biologists and other marine mammal scientists. A list of fisheries has been developed, classifying fisheries according to the following criteria.

Category I

A commercial fishery that frequently causes mortality or serious injury of marine mammals such that it, by itself is responsible for the annual removal of 50 percent or more of any stock's PBR level.

Category II

A commercial fishery that occasionally causes mortality or serious injury of marine mammals is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's PBR level and that is by itself responsible for the annual removal of between 1 and 50 percent, exclusive, of any stock's PBR level.

Category III

A commercial fishery that has a remote likelihood of causing incidental mortality and serious injury of marine mammals is one that collectively with other fisheries is responsible for the annual removal of: (1) ten percent or less of any marine mammal stock's PBR level, or (2) more than 10 percent of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's potential biological removal level.

### Reporting Requirements:

Vessel owners or operators engaged in any commercial fishery must report all incidental mortality and injury of marine mammals in the course of commercial fishing operations to the Assistant Administrator, or appropriate Regional Office, by mail or other means, such as fax or overnight mail specified by the Assistant Administrator. Reports must be sent within 48 hours after the end of each fishing trip during which the incidental mortality or injury occurred, or, for non vessel fisheries, within 48 hours of an occurrence of an incidental mortality or injury. ***An observer's report to NMFS does not replace this notification requirement!***

## Regulations Concerning Steller Sea Lions (excerpts from §679.22 and §223.202)

Regulations apply to all human activities, including commercial fishing, near Steller (northern) sea lions at-sea and near some of the islands where they breed.

Shooting at or near any Steller sea lion for any reason is prohibited in U.S. waters. Fishermen may use other means which do not result in injury or death to the animal to deter sea lions from interfering with their gear.

Fishing vessels are not permitted to enter within 3 nautical miles of Steller sea lion rookery sites west of 150° W longitude. Trawling cannot be conducted within 10 nautical miles of Steller sea lion rookery sites during any part of the year. Trawling cannot be conducted with 20 nautical miles of the rookeries on Akun, Akutan, Sea Lion Rock, Ugamak, Seguam, and Agligadak rookeries from January 20 to April 15.

This section does not prohibit a vessel in transit from passing through listed straits, narrows, or passageways, if the vessel proceeds in a continuous transit and maintains a minimum of 1 nautical mile from the rookery site. Longline and pot vessels may fish within the 10 and 20 mile boundaries, but may not enter inside of 3 nautical miles. Detailed maps and lists of these areas are available from NMFS in Juneau.

The Secretary of Commerce is empowered to place observers on any fishing vessel in order to monitor the accidental capture of sea lions in fishing gear. No more than 675 sea lions may be killed accidentally each year during fishing operations west of 141° W longitude.

Violations of laws protecting Steller sea lions are subject to severe civil and criminal penalties including vessel forfeiture, fines of up to $25,000, and imprisonment for up to one year for each violation.

These regulations are due to the designation of the Steller sea lion as threatened throughout its range under the Endangered Species Act on April 5, 1990; and the designation of the western stock (west of 144° W) as endangered on June 4, 1997. These designations are based on declines of 63% since 1985 and 82% since 1960 in observed counts on certain Alaskan rookeries that are in the primary range of the species.

These closures are intended to further reduce any effects that groundfish trawling may have on the Steller sea lions, particularly to their foraging success. The 10 nautical mile closure is based on the average distance traveled by foraging female Steller sea lions during the summer reproductive period. Maintenance of the buffer zones in the non-breeding season is primarily intended to protect juvenile sea lions. Juvenile sea lions are likely to be the most susceptible to prey depletion, since they are less adept predators than adults. These young animals are also less likely to swim far from their rookery of birth, particularly during their first year. Thus, near shore zones proximal to rookeries are likely to be important feeding areas throughout the year.

## Marine Pollution (MARPOL) Regulations

The International Convention for the Prevention of Pollution From Ships (MARPOL) and five annexes are international agreements that were designed to halt at-sea disposal of wastes. MARPOL Annex V specifically prohibits the at-sea disposal of all plastics. It also eliminates the discharge of other types of vessel generated garbage to specific distances from land. The at-sea disposal restrictions apply to commercial and publicly owned vessels of all sizes and classes.

Vessels complying with MARPOL Annex V have three options for dealing with wastes. 1) non-plastics can be disposed of at sea within the legal restrictions, 2) they can incinerate wastes onboard the vessel, or 3) they can hold the wastes for shoreside disposal at port.

Plastic debris has been a concern of the NMFS since the early 1980's. Studies conducted in the North Pacific have linked debris generated by commercial ground fishing vessels with detrimental impacts to fish, seabirds, and marine mammals. Fur seals and Steller sea lions have been shown to be vulnerable to entanglement in netting, rope, and packing strap discards. Entanglement in debris is thought to contribute to mortality of individuals through starvation, suffocation, infection in resulting wounds, exhaustion, bleeding, drowning, and possibly increased predation. Studies conducted by the NMFS, National Marine Mammal Laboratory indicate entanglement may be contributing to the decline in northern fur seal population. In addition to entanglement in netting and plastic wastes, other species are also affected by ingestion. Stomach analysis of some seabirds and fish have found indigestible plastics.

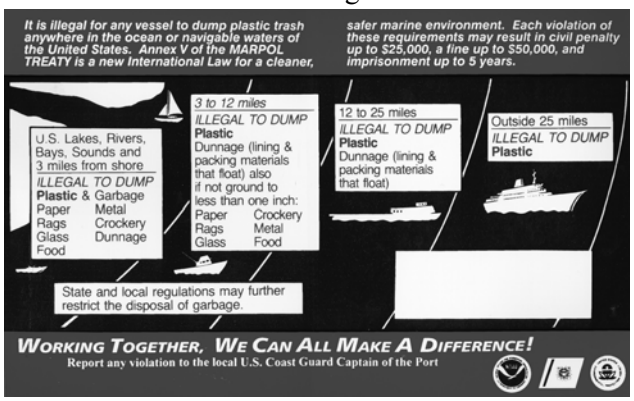
## Vessel Operator Obligations

Regulations require U.S. recreational and other vessel operators, if their vessel is 26 feet or more in length, to affix one or more placards to their vessel. These placards warn against the discharge of plastic and other forms of garbage within the navigable waters of the United States, and specify discharge restrictions beyond three miles from shore. The placard must also note that State and local regulations may further restrict the disposal of garbage.

### Placards

Operators shall ensure that one or more placards are displayed in prominent locations and in sufficient numbers so that they can be observed and read by the crew and passengers.

Each placard must be at least 9 inches wide and 4 inches high, made of durable material, and lettered with letters at least 1/8 inch high.




## Waste Management Plans

The regulations require U.S. recreational and other U.S. vessel operators, if their vessel is 40 feet or more in length and engaged in commerce or equipped with a galley and berthing, to carry a Waste Management Plan if the vessel operates, or is certified to operate, beyond three nautical miles from shore.

The Waste Management Plan must be in writing and describe procedures for collecting, processing, storing, and properly disposing of garbage in a way that will not violate regulatory requirements. It must also designate the person who is in charge of carrying out the plan.

## Marina Obligations

Ports and terminals that conduct business with a commercial vessel must be capable of receiving garbage from the vessel when it docks. Recreational boating facilities, capable of providing wharfage or other services for ten or more recreational vessels, must also provide adequate garbage reception facilities for any vessel that routinely calls. If a marina or terminal does not want to be directly involved in garbage collection and disposal, local firms may be retained to provided the service at the marina or terminal. Vessels must be conducting business with the facility or marina in order to qualify for the service. Terminals and marinas would not be expected to provide reception services to a vessel whose sole reason for docking was to offload its garbage. The marina or terminal can charge vessel operators reasonable fees for providing the reception service.

## Reporting Violations

Vessels denied the ability to offload their garbage wastes at marinas or other terminals should contact the closest U.S. Coast Guard Captain of The Port or Marine Safety Office. Any US citizen may report observations of dumping in violation of Annex V at these same offices. NOTE: Observers reporting a potential MARPOL V violation will complete a questionnaire or affidavit during the debriefing process.

# THE MID-CRUISE AND FINAL DEBRIEFING

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## List of Priorities

- Schedule and attend, with all your data, a mid-cruise debriefing with NMFS staff.
- Near the end of your cruise, complete, organize and prepare all your data and specimens for final debriefing.
- Schedule a final debriefing through your employer.
- Complete a vessel survey for each vessel of your deployment.
- Participate in a final debriefing interview with NMFS staff.
- Make any needed corrections and resubmit your data.

## Introduction

The success of the North Pacific Groundfish Observer Program depends on the quality of data collected by observers. The data submitted both in electronic and paper format serves as the backbone of fisheries management in the North Pacific as well as provides insight into the entire ecosystem. The importance of these data requires that observers consistently follow program guidelines and employ scientifically valid methods to collect the data. In order to ensure these methods are consistent with our training, and the data collected are sound, NMFS requires that observers participate in both a mid-cruise and final debriefing. The mid-cruise debriefing will assess your work while in the field. Following your cruise, you will participate in a "final debriefing" with a NMFS staff member and prepare a final report for each vessel assignment. A conscientious attitude in collecting the data as well as at sea completion and checking of the data will improve the quality of the data and expedite this process.

## Mid-cruise

This debriefing, occurring early on in your deployment, provides the opportunity for both the observer and NMFS staff to assess the data collected up to that time, the methods employed, and any difficulties that you have encountered in your assignments. This is also an opportunity to discuss future vessel assignments and discuss any questions that have come up since your last training or briefing.

### Where Do I Go for my Mid-cruise Debriefing?

**All Program offices are often staffed outside of regular business hours. If you can't make it in during the times listed, call ahead. Staff will usually be able to accommodate your schedule. See "Contact Addresses and Numbers" on page A-48.**

If you are in Kodiak, Dutch Harbor or Anchorage during working hours, it is not necessary to call in advance. These offices are staffed Monday through Friday from at least 9:00 a.m. to 5:00 p.m. with

variable hours on Saturday and Sunday. Stop by the field office and let a staff member know that you are there for a mid-cruise debriefing. You must bring your logbook, all data collected up to that point, as well as completed species id forms with you in order to complete a mid-cruise. In addition, prepare a list of questions that have come up during any of your assignments. This is the greatest opportunity during the season for you to discuss these issues and obtain answers.

NMFS staff are occasionally available in other ports (e.g.: Akutan, Sand Point, King Cove) for mid-cruise debriefing. Your employer will have contact information for these NMFS staff if they are available at these ports.

### What Do I Do if the Office Is Closed?

If your vessel is in town during off hours or on weekends, or you are passing through Anchorage, you should contact the office for a mid-cruise. All NMFS offices have answering machines and you may leave a message stating your name, vessel, estimated duration in town, how you can be contacted and the estimated time and date that you will be available for a mid-cruise.

### Am I Required To Have a Mid-cruise Debriefing?

All observers on their first and second contract are required to have a mid-cruise debriefing. All other observers, ***unless specifically exempted from a mid-cruise during their previous evaluation***, must complete an in-person, mid-deployment data review if they travel through a location where Observer Program staff are available. This debriefing is not an option and must be completed in order to fulfill your responsibilities as an observer. If you are unsure if a mid-cruise debriefing is necessary, ask your employer or stop in to the field station. At the field station, a NMFS staff member will review your data or schedule a future appointment as necessary. This debriefing is helpful for all observers and a short time spent in the field office could save you invaluable amounts of time at your final debriefing.

### When Do I Have a Mid-cruise Debriefing?

Observers need to report for their mid-cruise debriefing early on in their assignment. Observers on catcher only vessels (trawl, longline and pot) should schedule this debriefing after the first couple of deliveries while those on catcher processors should report during their first off-load.

### What Do I Do If I Can't Get To a NMFS Field Office?

On rare occasions, observers are unable to arrange a meeting time. In this case, and only as a last resort, answer the following questions and fax them to one of the field offices or the main office in Seattle (see "Contact Addresses and Numbers" on page A-48).

1. Please describe how the official total catch (OTC) was determined. If the observer estimate was used, how was the OTC determined when no estimate was made? How often are you making observer estimates (i.e., two of every four hauls... etc.?)

2. Describe in detail how the observer estimate was made. Trawler observers: describe the collection technique you used to get fish for density. What was the average density value and predominant species in the catch? If certified bins were used, were there any difficulties? If no observer estimates were made, explain why.

3. Explain in detail the sampling methods(s) you used on this vessel. Describe your sampling area, how you collected samples, and if there were any difficulties. What methods did you employ to ensure the least amount of sample bias using random sampling techniques?

4. Did you obtain sexed length frequencies? Please describe methods used and any difficulties you encountered sexing fishes. Also describe how halibut viabilities and lengths were collected. If none were collected, please explain why.

5. Please describe anything that has affected your ability to effectively conduct your work. Have you been able to complete any special projects or other assignments?

## Final Debriefing

### At Sea Preparation

The final debriefing does not take place until the end of your last assignment, but there are many things you can do to prepare for this process. This section provides many suggestions on how to check and organize your

data. ***Reading and following this section while at sea will simplify and expedite your debriefing.***

**Data check:** While you are at sea, check your work on a regular basis. The more accurate your work upon returning, the faster you will be finished with debriefing. Consult your manual continuously while doing paperwork and be sure the forms are filled in properly. The examples in the manual represent a complete "set" of data and show how forms are interlinked as well as the correct format for each. See Figure 19-1 below for forms required by assignment.

**Logbook:** Maintaining entries in your logbook while at sea is a requirement. Inside the front cover (in ink) you need to put your name, cruise number and employer. List your ship's and/or plant names (for each assignment) and respective vessel or plant code. Complete factory/deck and plant diagrams for all assignments. Clearly label all calculations throughout the logbook including all mathematical formulas. Keep daily notes of sampling activities for each vessel. This will be especially helpful in recalling details if your cruise involves multiple vessel assignments.

Observers who have witnessed fisheries violations may be instructed during debriefing to write an affidavit, a formal legal statement describing what you saw. If you encounter violations they must be documented in your logbook with references to any data that supports these violations. Refer to "Steps to Take if You Suspect a Violation" on page 18-2 for more information.

**Reports:** Prior to the debriefing interview, you will be completing an electronic report for each vessel that you were assigned. Completing the report in the back of the logbook for each vessel while on board will help you complete the electronic report when you return.

***Be sure that all your catch messages are complete and have been sent. Failure to do this could delay your debriefing.***

| Paper Forms | Vessels Using Paper | Using ATLAS | |
|---|---|---|---|
| | | Vessels | Plant |
| Form Plant Delivery Form | | | X |
| Vessel Haul Form | X | X | |
| Observer Haul Form | X | X | |
| Raw Data Deck FormS | X | X | X |
| Form 3US Species Composition | X | | |
| Form 7 Length Frequency of Measured Species | X | | |
| Form 9 Biological Sampling Form | X | | |
| Species ID Form | X | X | X |
| Special Project Forms, Tagged Fish Forms | X | X | X |
| Marine Mammal Forms (10A, 10B) | X | | |
| Marine Mammal Form (11US) | X | X | X |

**Figure 19-1 Paper Forms Required by Assignment**

All of these forms should be filled out at sea and completed prior to your debriefing interview. Keeping up with your work becomes especially important if you are deployed on more than one vessel or plant. Keep in mind that some corrections will affect data on other forms and those too, need to be corrected. Conduct cross referencing of all forms to be sure that the correct data is recorded on each form type. Also, if you were on more than one ship and/or plant, the data from each will need to be kept separately. Do not mix the data together: number the pages separately for each vessel/ plant and form type.

The following is a list of data and form entry checks for you to make. Completing these will help you to fix mistakes prior to your final debriefing. This list is not all inclusive. Refer to the respective section of each form type for more instructions. ***Correcting mistakes before the debriefing improves data quality, demonstrates professionalism and speeds the debriefing process.***

Check All Forms For:

- Your name and vessel name on the first page of each form type
- Pages numbered properly, no skipped or duplicate numbers
- Every page has your cruise number and vessel code
- Leading zeros are present only for dates, times, and haul weights of zero weight (0.00 on Vessel Haul Form and Observer Haul Form)
- All fields with pre-printed decimals have numbers listed to two decimal places
- All repeat fields (arrows and brackets) are complete and have the same number at the top and bottom.
- Your handwriting is clear and legible.

Check Observer and Vessel Haul Forms For:

- Every day on the vessel has an entry: this includes the day you boarded and disembarked and all days in between
- Non-fishing days have a noon position with a haul number of zero; notes are made as to the reason the vessel was not fishing.
- No duplicate haul/set numbers
- All haul/set numbers in consecutive order
- No decimals other than those already printed on the page
- For longliners, "# of hooks per segment" and total hooks in a set are in whole numbers
- Every haul has an OTC recorded

Check Vessel Haul Form for:

- Set and retrieval positions are recorded for all hauls/sets
- Positions have no minutes greater than 59
- For trawlers, no overlapping of gear deployment and gear retrieval times between hauls (except on motherships)
- Retrieval times of 0000 are attributed to the next day
- Depths are rounded to whole numbers and fishing depths are never deeper than bottom depths
- "F" or "M" is recorded for every depth recorded
- For motherships, full name of catcher boat and the ADF&G #s are completed in box at top of page
- For each delivery to a mothership, the delivering catcher boat's ADF&G# is recorded
- A "Y" or "N" is recorded in the IFQ column
- CDQ numbers are recorded with the letter "C" followed by the two digits of the CDQ group number (found in the vessel logbook)

Check Observer Haul Form for:

- For catcher boats, plant/processor name, location, and processor permit #s are completed in box at top of the page
- For catcher boats, processor permit is filled out for each haul
- For catcher boats, date fishing began for delivery is completed for every haul.

Check Plant Form A's For:

- Make sure that all mandatory information is on the forms. If information is missing, explain the circumstances on the form.
- Weights of the target species must be converted to round weight if fish were processed at sea.
- ADF&G numbers must be listed for each of the delivering catcher vessels.
- For date of delivery, record the date the delivery was completed.
- Every day at the plant must be recorded with the date and any sampling activity.
- The entire fish ticket number must be listed for each delivery including the year in two digits and any letter.

Check Species Composition Form 3US For:

- Haul numbers correspond with dates and hauls listed on the VHF
- Species names match species codes
- No species codes are listed twice except for different sexes of prohibited species or if one is recorded with a "X" sample type and the other with a "B" or "P" sample type
- No species codes are listed without corresponding data
- Sex codes are included only for salmon, Tanner and king crab species
- If sex is unknown, the sex field is left blank
- Entries exist for each of the prohibited species groups (tanner crab, king crab, Pacific halibut, salmon and herring) whether they were found in the sample or not
- A weight for every number and a number for every weight are listed, and zeros are recorded only for prohibited species groups not found in your sample
- Only "1" is in the number column for species code 900 (Miscellaneous) and species code 899 (decomposed fish), no matter what the true number
- Sample types are in descending order of sample weight and lines are skipped between sample types
- Sample weights are recorded for each line of entry
- Whole haul sample weights match or round to the OTC recorded on the OHF
- Decimal points are distinct and recorded to no more than two decimal places
- All weights are in kilograms
- Accurate keypunches of numbers, weights and species codes are on the top line
- Percent retained numbers are entered for all non prohibited species and are whole numbers

Check Length Form 7s For:

- Hauls are listed in ascending order
- Species codes match species names
- Species name, species code, and haul numbers are recorded for every line of data
- Whole haul sampled species numbers sum to the same number listed on the 3US
- No decimal places exist for lengths or frequencies
- No size groups have been transposed with the frequency
- Lengths are recorded in ascending order
- There are no lengths with a frequency of zero
- There are no duplicate lengths for the same cruise, vessel date, haul, species, sex code, and eggs code
- Correct keypunch check sums are on each line: ***double check your sums!***
- All crab unit measurements end in "3" or an "8"
- Sex codes are recorded for each species on every line
- Halibut have condition codes of "E," "P," "D," or "U" for trawl or pot vessels, and injury codes of "1," "2," "3," "4," or "9" for longline vessels
- Halibut have sex codes of "U"
- Dates listed for haul match corresponding date on the VHF or Form A

Check Specimen Form 9s For:

- Specimen type and sampling system are entered on every page
- Each species and specimen type is on a separate set of pages with separate page numbering
- All specimens have a date, a haul number, a specimen number, a sex, a length and a weight
- There are no duplicate specimen numbers for the same species and specimen type
- Skipped scale specimen numbers are noted with an explanation
- All entries on the Form 9 must have a corresponding entry on the Form 7

Check Marine Mammal Form 10s For:

- If a marine mammal interacted with the vessel, crew or gear (including preying on catch or being fed) or was caught, killed, harassed or deterred, there is an entry on the 10A
- If you have photos or specimen data, there is an entry on the 10B
- The "Remarks" block includes: features used in identifications; details of the incident; for specimen data, methods of measuring or sexing; for an animal or specimen, its condition

Check Marine Mammal Form 11s For:

- Make sure all the non-shaded boxes are complete, including cruise # and vessel code
- Identifying characteristics are described in detail
- For repeated sightings on the same day, you have at least one sighting form per day

## Debriefing

The final debriefing occurs after the completion of your last vessel assignment. Most likely, this will take place in the Seattle or Anchorage NMFS office, though

field debriefings are sometimes possible. The debriefing process consists of the following parts: completion of electronic vessel report for each vessel, a debriefing interview, gear check-in, a data check, correction of errors, filling out the post-debriefing questionnaire and a final check out. The time to complete this process is variable. Beginning with the debriefing interview, observers should expect to spend approximately two to five days to complete the debriefng process. ***Do not make plane reservations until you are sure that your data has been finalized.***

At the end of the debriefing, you will receive an evaluation of your work and performance. This evaluation will include a list of specific assessed points covering a variety of aspects pertinent to your overall deployment, as well as comments addressing overall effort in completing duties, level of documentation of activities, and any issues of note that encountered during your debriefing. The evaluation will also include a recommendation (see "Briefings" on page 19-7) for your next briefing requirement.

### Scheduling

Once you have disembarked from your last vessel, your employer will contact the Observer Program Office and schedule an appointment for the electronic vessel survey. When you have completed a survey for each vessel to which you were assigned, you will be scheduled for a debriefing interview. Observer Program staff will do its part to make sure your debriefing is as thorough as necessary and completed in a reasonable amount of time. Each observer can help expedite this process by being prepared for debriefing and keeping their employer and NMFS informed of any difficulties in attending and completing the debriefing process. Remember, ensuring the data are of high quality is the main purpose of the debriefing process.

### Vessel Survey

The electronic vessel survey is completed before the scheduled interview. This survey is done for each vessel of your deployment and serves as the most detailed and accurate description of your cruise. The survey is in multiple choice format with some of the questions requesting further comment. ***Detailed answers to these questions are important.*** These data are used by many different groups including future observers, fishery managers, your debriefer and other NMFS staff (enforcement, data editing, etc.) Any comments unclear or incomplete will be reviewed and corrected during the interview. Once again, thoroughness in this step will expedite debriefing! After completion of the vessel survey, you must leave all your data, your printed vessel surveys, and logbook in the debriefing office.

### Interview

The interview will be scheduled when you complete the vessel survey, or soon thereafter as debriefing staff become available. During the interview, your debriefer (who has already reviewed your survey) will ask you to clarify or elaborate on any issues not fully addressed in the vessel survey. In addition, each set of data forms will be reviewed in terms of completeness, accuracy, and format.

At this time, both you and the debriefer have the opportunity to discuss your time at sea, your sampling methods, and the resulting data. The most important aspects of the interview are honesty and willingness to discuss problems and difficulties. Tell your debriefer if you feel you could not sample adequately. Your feedback makes staff aware of vessel specific sampling difficulties and can help the next observer deployed on that vessel. In the end, responses in the vessel survey will explain and support the respective data collected as well as provide a detailed and accurate description of each vessel assignment. Remember, the interview is designed to be a productive process beneficial for both the observer and the debriefer. Professional conduct through cooperation, candor and effort is expected from all debriefing observers.

The data you transmitted to Seattle from sea will also be available to your debriefer. An error report of the data is produced and spot checks of the data are performed by the debriefer. The main purpose of the computer error check is to compare data between form types, search for missing data, and flag questionable entries. This report will be reviewed during the interview and all corrections will be made at that time. In addition, all forms will be checked and compared with the electronic data.

Any specimens collected during the cruise must also be prepared and submitted during the debriefing process. Salmon scales need to be mounted for confirmation of species: for each species, place five scales from five

specimens in a zip lock bag. Otolith vials should be filled with the appropriate solution and each box set labeled. All tagged salmon snouts need to be salted (if not already). Any halibut, sablefish or other tags are submitted with the corresponding tagged fish form.

Special project data are also submitted at this time. Observers who completed stomach projects or special projects may be asked to meet briefly with the data user. Fish collections need to be reviewed by your debriefer and labeled with the species name, haul number, date captured, your name and cruise number, and the vessel code.

## Evaluations

An Observer's work and performance are evaluated at the completion of each cruise. This evaluation serves two purposes. First, it provides a summary of the work performed, your effort and the quality of the data. Second, it serves as a tool for future deployments by giving recommendations, suggestions and identifying areas of needed improvement. ***Areas of greatest importance are the compliance throughout the contract with established protocols and an understanding of sampling concepts.***

The evaluation is based on many factors.

- sampling methods employed
- documentation and communication.
- preparedness for debriefing
- problem solving skills
- overall effort

Based on this evaluation, each vessel is assigned a rating score (see criteria). A score of 0 on any vessel signifies, for that vessel, the expectations of the Observer Program have not been met. Based on the severity of the problems, there are several different courses of action. Along with a score, observers will receive a written evaluation. If a 0 is given, this evaluation should detail the area(s) of your work or performance that were unacceptable. The purpose of this evaluation is to provide you with a tool to improve performance on future cruises.

If the debriefing staff agrees that severe deficiencies in the work or lack of understanding of concepts is large, the observer may be recommended for suspension and/ or decertification. This process is governed by the Code of Federal Regulation (CFRs) which dictates that in order to preserve the integrity of the data collected, NMFS must certify only responsible and qualified observers. Any action taken such as suspension or decertification is necessary in order to adhere to this policy.

Observers who make an honest effort, follow instructions from training and briefing, and show a willingness to fulfill their responsibilities do not have to be concerned about this procedure. Most cases of suspension and decertification involve severe conceptual errors, poor conduct, or falsification of data. A copy of the CFRs which include all Observer Program regulations and procedures can be obtained from any NMFS staff member.

Observers who receive a score of 1 have met the expectations of the Observer Program. This means that proper sampling methods were applied and protocols in terms of collection of data were followed. Observers who receive a score of 1 will also receive a written evaluation which describes the work that was done and may include some suggestions to apply during a subsequent cruise.

### Briefings

Observers who have successfully completed their first contract must attend a briefing before each subsequent deployment. Briefings assigned are either 1, 2 or 4 days in length, depending on previous work and performance:

- **4-Day:** Each observer must attend one annual 4-day briefing prior to the first contract in each calendar year. In addition, observers who have subsequently demonstrated conceptual errors and/ or difficulty in fish identification will be must attend a four day briefing. This briefing covers changes in sampling protocol, regulations, data forms, etc. Time is allocated for reviewing fish and bird identification and observers must successfully pass a species identification test in order to be recertified. Other topics include enforcement and random sampling techniques. This briefing is an opportunity to ask questions, familiarize yourself once again with the manual, and review recommendations from your last evaluation.

- **2-day:** This briefing is for observers who may need some review but do not need the detail provided in a 4-day briefing.
- **1-Day:** One day briefings are designed for observers in good standing who have shown no conceptual errors or difficulties in species identification. This briefing covers recent changes in sampling protocol and regulations, reviews sampling priorities and provides the opportunity for observers to ask vessel and/or fishery specific questions.

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# Appendix A. Species Codes for Fish and Invertebrates

| Code | Common Name | Scientific Name |
|---|---|---|
| **106** | Alaska Plaice | *Pleuronectes quadrituberculatus* |
| **610** | Anchovy, Northern | *Engraulis mordax* |
| **55** | Anemone, Sea - unidentified | Actiniaria |
| **43** | Ascidians, Sea Squirt, Tunicate | Urochordata |
| **204** | Atka Mackerel | *Pleurogrammus monopterygius* |
| **48** | Barnacles | Cirripedia |
| **770** | Barracudina - unidentified | Paralepididae |
| **203** | Black Cod (Sablefish) | *Anoplopoma fimbria* |
| **27** | Brachiopod, Lampshell - unidentified | Brachiopoda |
| **54** | Bristleworm (Polychaete unidentified) | Annelida |
| **32** | Bryozoans | |
| **604** | Capelin | *Mallotus villosus* |
| **44** | Chiton - unidentified | Amphineura |
| **29** | Clams, Mussels, Oysters, Scallops | Pelecypoda |
| **211** | Cod, Arctic | *Boreogadus saida* |
| **203** | Cod, Black (Sablefish) | *Anoplopoma fimbria* |
| **202** | Cod, Pacific | *Gadus macrocephalus* |
| **209** | Cod, Pacific Tomcod | *Microgadus proximus* |
| **208** | Cod, Saffron | *Eleginus gracilis* |
| **214** | Codling - unidentified (See also Flatnose, Pacific) | Moridae |
| **833** | Coral, Red Tree | *Primnoa willeyi* |
| **32** | Corals - unidentified | |
| **37** | Crab, Arctic Lyre (Rounded Carapace) | *Hyas coarctatus* |
| **6** | Crab, Blue King | *Paralithodes platypus* |
| **11** | Crab, Box | *Lopholithodes foraminatus* |
| **8** | Crab, Brown (Golden) King | *Lithodes aequispina* |
| **49** | Crab, Cancer | *Cancer pregonensis* |
| **16** | Crab, Couesi King | *Lithodes couesi* |
| **39** | Crab, Decorator | *Oregonia gracilis* |
| **12** | Crab, Dungeness | *Cancer magister* |
| **841** | Crab, Fuzzy | *Acantholithodes hispidus* |
| **7** | Crab, Hair (Horsehair) | *Erimacrus isenbeckii* |
| **15** | Crab, Hermit - unidentified | Paguridae |
| **2** | Crab, King Crab - unidentified | *Lithodes* & *Paralithodes* |

* If you encounter these species, please bring a specimen back to NMFS

**Species Codes for Fish and Invertebrates**

| Code | Common Name | Scientific Name |
|---|---|---|
| **14** | Crab, Lithodid unidentified (Brown, Couesi or Golden) | *Lithodes* spp. |
| **9** | Crab, Lyre - (Sharp Spined Carapace) | *Hyas lyratus* |
| **840** | Crab, Lyre - unidentified | *Hyas* spp. |
| **17** | Crab, *Paralomis Multispina* | *Paralomis multispina* |
| **38** | Crab, *Paralomis Verrilli* | *Paralomis verrilli* |
| **13** | Crab, Red King | *Paralithodes camtschatica* |
| **842** | Crab, Rhinoceros | *Rhinolithodes wosnessenskii* |
| **31** | Crab, Scaled | *Placetron wosnessenskii* |
| **19** | Crab, Tanner -- Angulatus | *Chionoecetes angulatus* |
| **4** | Crab, Tanner -- Bairdi | *Chionoecetes bairdi* |
| **5** | Crab, Tanner -- Opilio | *Chionoecetes opilio* |
| **47** | Crab, Tanner -- Bairdi/Opilio Hybrid | *Chionoecetes* hybrid |
| **18** | Crab, Tanner -- Tanneri | *Chionoecetes tanneri* |
| **3** | Crab, Tanner Unidentified | *Chionoecetes* spp. |
| **23** | Crab, Telmessus | *Telmessus cheiragonus* |
| **1** | Crab - unidentified (Family Unknown) | |
| **53** | Crinoids - unidentified | Crinoidea |
| **144** | Dab, Longhead | *Limanda proboscidea* |
| **679** | Daggertooth | *Anotopterus pharao* |
| **899** | Decomposed Fish | |
| **690** | Dreamer - unidentified | Oneirodidae |
| **250** | Eelpout - unidentified | Zoarcidae |
| **253** | Eelpout, Twoline | *Bothrocara brunneum* |
| **251** | Eelpout, Wattled | *Lycodes palearis* |
| **91** | Egg Case, Skate | |
| **34** | Eggs, Snail | Gastropoda |
| **601** | Eulachon (Candlefish) | *Thaleichthys pacificus* |
| **901** | Fish - unidentified | Osteichthyes |
| **100** | Flatfish - unidentified | Pleuronectiformes |
| **210** | Flatnose, Pacific (Codling) | *Antimora microlepis* |
| **146** | Flounder, Arctic * | *Liopsetta glacialis* |
| **141** | Flounder, Arrowtooth | *Atheresthes stomias* |
| **145** | Flounder, Bering | *Hippoglossoides robustus* |
| **149** | Flounder, Kamchatka/Arrowtooth - unidentified | |
| **147** | Flounder, Kamchatka | *Atheresthes evermanni* |

* If you encounter these species, please bring a specimen back to NMFS

| Code | Common Name | Scientific Name |
|---|---|---|
| **142** | Flounder, Starry | *Platichthys stellatus* |
| **390** | Greenling - unidentified | *Hexagrammos* spp. |
| **392** | Greenling, Kelp | *Hexagrammos decagrammus* |
| **393** | Greenling, Rock | *Hexagrammos lagocephalus* |
| **391** | Greenling, Whitespotted | *Hexagrammos stelleri* |
| **80** | Grenadier, (Rattail) - unidentified | Macrouridae |
| **82** | Grenadier (Rattail), Giant | *Albatrossia pectoralis* |
| **430** | Gunnel - unidentified | Pholidae |
| **77** | Hagfish - unidentified | Myxinidae |
| **206** | Hake, Pacific | *Merluccius productus* |
| **101** | Halibut, Pacific | *Hippoglossus stenolepis* |
| **611** | Herring, Pacific | *Clupea harengus pallasi* |
| **350** | Idiotfish (Shortspine Thornyhead) | *Sebastolobus alascanus* |
| **902** | Invertebrate - unidentified | |
| **33** | Isopod - unidentified | Isopoda |
| **207** | Jack Mackerel | *Trachurus symmetricus* |
| **35** | Jellyfish - unidentified | Scyphozoa |
| **900** | Kelp -- miscellaneous | |
| **608** | King-of-the-Salmon (Ribbonfish) | *Trachipterus altivelis* |
| **75** | Lamprey - unidentified | Petromyzontidae |
| **785** | Lancetfish, Longnose | *Alepisaurus ferox* |
| **700** | Lanternfish - unidentified | Myctophidae |
| **52** | Leech - unidentified | Hirudinea |
| **45** | Limpet - unidentified | |
| **603** | Lingcod | *Ophiodon elongatus* |
| **525** | Lumpsucker - unidentified | Cyclopteridae |
| **531** | Lumpsucker, Smooth | *Aptocyclus ventricosus* |
| **530** | Lumpsucker, Pacific Spiny | *Eumicrotremus orbis* |
| **204** | Mackerel, Atka | *Pleurogrammus monopterygius* |
| **207** | Mackerel, Jack | *Trachurus symmetricus* |
| **199** | Mackerel, Pacific (Chub) | *Scomber japonicus* |
| **774** | Manefish | *Caristius macropus* |
| **289** | Melamphid - unidentified | Melamphaeidae |
| **900** | Miscellaneous - unidentified (rocks, mud, garbage, etc) | |
| **29** | Mussels, Clams, Oysters, Scallops | Pelecypoda |

***** If you encounter these species, please bring a specimen back to NMFS

**Species Codes for Fish and Invertebrates**

| Code | Common Name | Scientific Name |
|---|---|---|
| **25** | Nudibranch (Sea Slug) | Nudibranchiata |
| **60** | Octopus - unidentified | Octopoda |
| **61** | Octopus, Pelagic | Vampyromorpha |
| **297** | Opah | *Lampris guttatus* |
| **295** | Oreo, Oxeye | *Allocyttus folletti* |
| **29** | Oysters, Clams, Mussels, Scallops | Pelecypoda |
| **301** | Pacific Ocean Perch | *Sebastes alutus* |
| **762** | Paperbones, Scaly - unidentified | Notosudidae |
| **452** | Poacher, Sturgeon | *Podothecus acipenserinus* |
| **450** | Poacher - unidentified | Agonidae |
| **201** | Pollock (Walleye Pollock) | *Theragra chalcogramma* |
| **54** | Polychaete - unidentified (Bristleworm, Leech) | Annelida |
| **765** | Pomfret - unidentified | Bramidae |
| **750** | Prickleback - unidentified | Stichaeidae |
| **205** | Prowfish | *Zaprora silenus* |
| **280** | Ragfish | *Icosteus aenigmaticus* |
| **99** | Ratfish, Spotted | *Hydrolagus colliei* |
| **80** | Rattail, (Grenadier) - unidentified | Macrouridae |
| **82** | Rattail (Grenadier), Giant | *Albatrossia pectoralis* |
| **90** | Ray, (Skate) - unidentified | Rajiformes |
| **563** | Ribbonfish - unidentified | Trachipteridae |
| **353** | Rockfish, Aleutian Scorpionfish * | *Adelosebastes latens* |
| **306** | Rockfish, Black * | *Sebastes melanops* |
| **316** | Rockfish, Blue * | *Sebastes mystinus* |
| **302** | Rockfish, Bocaccio | *Sebastes paucispinis* |
| **351** | Rockfish, Broadbanded Thornyhead * | *Sebastolobus macrochir* |
| **332** | Rockfish, Brown | *Sebastes auriculatus* |
| **314** | Rockfish, Canary | *Sebastes pinniger* |
| **346** | Rockfish, China | *Sebastes nebulosus* |
| **327** | Rockfish, Copper * | *Sebastes caurinus* |
| **345** | Rockfish, Dark (was Dark Dusky) | *Sebastes ciliatus* (was *S.* sp. cf. *ciliatus*) |
| **311** | Rockfish, Darkblotched | *Sebastes crameri* |
| **330** | Rockfish, Dusky (was Light Dusky) | *Sebastes variabilis* (was *S. ciliatus*) |
| **317** | Rockfish, Gray * | *Sebastes glaucus* |

* If you encounter these species, please bring a specimen back to NMFS

| Code | Common Name | Scientific Name |
|---|---|---|
| **313** | Rockfish, Greenstriped | *Sebastes elongatus* |
| **323** | Rockfish, Harlequin | *Sebastes variegatus* |
| **352** | Rockfish, Longspine Thornyhead | *Sebastolobus altivelis* |
| **303** | Rockfish, Northern | *Sebastes polyspinis* |
| **301** | Rockfish, Pacific Ocean Perch (POP) | *Sebastes alutus* |
| **335** | Rockfish, Pygmy * | *Sebastes wilsoni* |
| **343** | Rockfish, Quillback | *Sebastes maliger* |
| **308** | Rockfish, Red Banded | *Sebastes babcocki* |
| **324** | Rockfish, Redstripe | *Sebastes proriger* |
| **309** | Rockfish, Rosethorn | *Sebastes helvomaculatus* |
| **307** | Rockfish, Rougheye | *Sebastes aleutianus* |
| **304** | Rockfish, Sharpchin | *Sebastes zacentrus* |
| **326** | Rockfish, Shortraker | *Sebastes borealis* |
| **354** | Rockfish, Shortraker/Rougheye unidentified | *S. borealis* or *aleutianus* |
| **350** | Rockfish, Shortspine Thornyhead | *Sebastolobus alascanus* |
| **310** | Rockfish, Silvergray | *Sebastes brevispinis* |
| **315** | Rockfish, Splitnose | *Sebastes diploproa* |
| **328** | Rockfish, Stripetail | *Sebastes saxicola* |
| **349** | Rockfish, Thornyhead unidentified | *S. alascanus* or *altivelis* |
| **329** | Rockfish, Tiger | *Sebastes nigrocinctus* |
| **300** | Rockfish - unidentified | Scorpaenidae |
| **331** | Rockfish, Vermilion * | *Sebastes miniatus* |
| **305** | Rockfish, Widow | *Sebastes entomelas* |
| **322** | Rockfish, Yelloweye | *Sebastes ruberrimus* |
| **320** | Rockfish, Yellowmouth | *Sebastes reedi* |
| **321** | Rockfish, Yellowtail | *Sebastes flavidus* |
| **240** | Ronquil - unidentified | Bathymasteridae |
| **200** | Roundfish - unidentified | |
| **203** | Sablefish (Black Cod) | *Anoplopoma fimbria* |
| **221** | Salmon, Chum (Dog) | *Oncorhynchus keta* |
| **222** | Salmon, Chinook (King) | *Oncorhynchus tshawytscha* |
| **223** | Salmon, Coho (Silver) | *Oncorhynchus kisutch* |
| **225** | Salmon, Pink (Humpback) | *Oncorhynchus gorbuscha* |
| **224** | Salmon, Sockeye (Red) | *Oncorhynchus nerka* |
| **226** | Salmon, Steelhead (Ocean-run Rainbow Trout) | *Oncorhynchus mykiss* |

* If you encounter these species, please bring a specimen back to NMFS

**Species Codes for Fish and Invertebrates**

| Code | Common Name | Scientific Name |
|---|---|---|
| **220** | Salmon - unidentified | *Oncorhynchus* spp. |
| **40** | Sand Dollars, Sea Urchins | Echinoidea |
| **670** | Sand Lance, Pacific | *Ammodytes hexapterus* |
| **136** | Sanddab - unidentified | Bothidae |
| **144** | Sanddab, Longhead | *Limanda proboscidea* |
| **137** | Sanddab, Pacific | *Citharichthys sordidus* |
| **239** | Sandfish, Pacific | *Trichodon trichodon* |
| **614** | Sardine, Pacific | *Sardinops sagax* |
| **607** | Saury, Pacific | *Cololabis saira* |
| **29** | Scallops, Clams, Mussels, Oysters | Pelecypoda |
| **353** | Scorpionfish, Aleutian * | *Adelosebastes latens* |
| **400** | Sculpin - unidentified | Cottidae |
| **402** | Sculpin, Bigmouth | *Hemitripterus bolini* |
| **409** | Sculpin, Crested | *Blepsias bilobus* |
| **440** | Sculpin -- *Myoxocephalus* unidentified | *Myoxocephalus* spp. |
| **418** | Sculpin, Irish Lord - unidentified | *Hemilepidotus* spp. |
| **55** | Sea Anemone - unidentified | Actiniaria |
| **41** | Sea Cucumber - unidentified | Holothurioidea |
| **689** | Sea Devil - unidentified | Ceratiidae |
| **59** | Sea Mouse | *Aphrodita aculeata* |
| **42** | Sea Onions - unidentified | *Boltenia* spp. |
| **58** | Sea Pen, Sea Whip - unidentified | Pennatula |
| **57** | Sea Potato - unidentified | *Halocynthia* spp. |
| **25** | Sea Slug - unidentified | Nudibranchiata |
| **56** | Sea Spider - unidentified | Pycnogonida |
| **43** | Sea Squirts, Onions, Potatoes, Tunicates | Urochordata |
| **40** | Sea Urchins, Sand Dollars | Echinoidea |
| **58** | Sea Whip, Sea Pen - unidentified | Pennatula |
| **54** | Sea Worms (Polychaetes) - unidentified | Annelida |
| **242** | Searcher | *Bathymaster signatus* |
| **900** | Seaweed - miscellaneous | |
| **606** | Shad, American | *Alosa sapidissima* |
| **65** | Shark - unidentified | Squaliformes, etc. |
| **69** | Shark, Blue | *Prionace glauca* |
| **68** | Shark, Brown Cat | *Apristurus brunneus* |

* If you encounter these species, please bring a specimen back to NMFS

| Code | Common Name | Scientific Name |
|---|---|---|
| **62** | Shark, Pacific Sleeper (Mud) | *Somniosus pacificus* |
| **67** | Shark, Salmon | *Lamna ditropis* |
| **78** | Shark, Sixgill | *Hexanchus griseus* |
| **64** | Shark, Soupfin | *Galeorhinus galeus* |
| **66** | Shark, Spiny Dogfish | *Squalus acanthias* |
| **63** | Shark, Thresher | *Alopias vulpinus* |
| **70** | Shrimp - unidentified | Arthropoda |
| **88** | Skate, Alaska | *Bathyraja parmifera* |
| **85** | Skate, Aleutian | *Bathyraja aleutica* |
| **97** | Skate, Bering | *Bathyraja interrupta* |
| **94** | Skate, Big | *Raja binoculata* |
| **163** | Skate, Commander | *Bathyraja lindbergi* |
| **92** | Skate, Deepsea * | *Bathyraja abyssicola* |
| **95** | Skate, Longnose | *Raja rhina* |
| **165** | Skate, Mud | *Bathyraja taranetzi* |
| **161** | Skate, Okhotsk * | *Bathyraja violacea* |
| **166** | Skate, Roughshoulder * | *Raja badia* |
| **89** | Skate, Roughtail | *Bathyraja trachura* |
| **159** | Skate - Soft Snout unidentified | *Bathyraja* spp. |
| **167** | Skate - Stiff Snout unidentified | *Raja spp.* |
| **90** | Skate - unidentified | Rajiformes |
| **164** | Skate, Whiteblotched | *Bathyraja maculata* |
| **162** | Skate, Whitebrow | *Bathyraja minispinosa* |
| **212** | Skilfish | *Erilepis zonifer* |
| **602** | Smelt - unidentified | Osmeridae |
| **604** | Smelt, Capelin | *Mallotus villosus* |
| **601** | Smelt, Eulachon (Candlefish) | *Thaleichthys pacificus* |
| **605** | Smelt, Rainbow | *Osmerus mordax* |
| **613** | Smelt, Surf | *Hypomesus pretiosus* |
| **30** | Snail - unidentified | Gastropoda |
| **34** | Snail, Eggs | |
| **36** | Snail, Empty Shell | |
| **500** | Snailfish - unidentified | Liparidae |
| **559** | Snipe Eel - unidentified | Nemichthyidae |
| **109** | Sole, Butter | *Isopsetta isolepis* |

* If you encounter these species, please bring a specimen back to NMFS

| Code | Common Name | Scientific Name |
|---|---|---|
| **118** | Sole, C-O | *Pleuronichthys coenosus* |
| **117** | Sole, Curlfin | *Pleuronichthys decurrens* |
| **110** | Sole, Deepsea | *Embassichthys bathybius* |
| **107** | Sole, Dover | *Microstomus pacificus* |
| **108** | Sole, English | *Parophrys vetulus* |
| **103** | Sole, Flathead | *Hippoglossoides elassodon* |
| **116** | Sole, Hybrid * | *Inopsetta ischyra* |
| **108** | Sole, Lemon | *Parophrys vetulus* |
| **112** | Sole, Petrale | *Eopsetta jordani* |
| **105** | Sole, Rex | *Glyptocephalus zachirus* |
| **104** | Sole, Rock Sole unidentified | *Lepidopsetta* sp. |
| **120** | Sole, Northern Rock Sole | *Lepidopsetta polyxystra* |
| **121** | Sole, Southern Rock Sole | *Lepidopsetta bilineata* |
| **114** | Sole, Roughscale * | *Clidoderma asperrimum* |
| **115** | Sole, Sand | *Psettichthys melanostictus* |
| **111** | Sole, Slender | *Lyopsetta exilis* |
| **140** | Sole, Yellowfin | *Limanda aspera* |
| **26** | Sponge - unidentified | Porifera |
| **270** | Squaretail, Smalleye | *Tetragonurus cuvieri* |
| **50** | Squid - unidentified | Decapoda |
| **51** | Squid, Giant | *Moroteuthis robusta* |
| **20** | Starfish - unidentified | Asteroidea |
| **21** | Starfish, Basket | *Gorgonocephalus* spp. |
| **22** | Starfish, Brittle | Ophiuroidea |
| **24** | Starfish, Sunstar | *Solaster* spp. |
| **226** | Steelhead | *Oncorhynchus mykiss* |
| **230** | Sturgeon - unidentified | *Acipenser* spp. |
| **810** | Sunfish, Ocean | *Mola mola* |
| **113** | Tonguefish, California | *Symphurus atricauda* |
| **807** | Tubeshoulder - unidentified | Searsiidae |
| **43** | Tunicates, Ascidians, Sea Squirts | Urochordata |
| **102** | Turbot, Greenland | *Reinhardtius hippoglossoides* |
| **805** | Viperfish - unidentified | Chauliodontidae |
| **757** | Warbonnet, Decorated | *Chirolophis decoratus* |
| **899** | Waste -- Decomposed Fish | |

* If you encounter these species, please bring a specimen back to NMFS

| Code | Common Name | Scientific Name |
|---|---|---|
| **762** | Wearyfish, (Paperbones) - unidentified | Notosudidae |
| **540** | Whalefish, unidentified | Cetomimidae |
| **779** | Wolffish, Wolf-eel - unidentified | Anarhichadidae |
| **780** | Wolf-eel | *Anarrhichthys ocellatus* |
| **781** | Wolffish, Bering | *Anarhichas orientalis* |
| **760** | Wrymouth, Giant | *Delolepis gigantea* |
| **783** | Wrymouth, Dwarf | *Lyconectes aleutensis* |

* If you encounter these species, please bring a specimen back to NMFS

## Appendix B. Species Code List - Seabirds

| Code | Common Name | Scientific Name |
|---|---|---|
| 852 | Albatross, Black-footed | *Phoebastria nigripes* |
| 851 | Albatross, Laysan | *Phoebastria immutabilis* |
| 850 | Albatross, Short-tailed * | *Phoebastria albatrus* |
| 849 | Albatross - unidentified | *Diomedeidae* spp. |
| 883 | Alcid - unidentified | *Alcidae* spp. |
| 893 | Auklet/Murrelet - unidentified | |
| 895 | Auklet, Rhinocerous | *Cerorhinca moncerata* |
| 998 | Bird - unidentified | Aves |
| 861 | Cormorant - unidentified | *Phalacrocoracidae* spp. |
| 866 | Eider, Common | *Somateria mollissima* |
| 863 | Eider, King | *Somateria spectabilis* |
| 864 | Eider, Spectacled ** | *Somateria fischeri* |
| 865 | Eider, Steller's ** | *Polysticta stelleri* |
| 854 | Fulmar, Northern | *Fulmarus glacialis* |
| 846 | Grebe - unidentified | Podicipedidae |
| 884 | Guillemot - unidentified | *Cepphus* spp. |
| 878 | Gull, Glaucus | *Larus hyuperboreus* |
| 879 | Gull, Glaucus-winged | *Larus glaucescens* |
| 877 | Gull, Herring | *Larus argentatus* |
| 874 | Gull - unidentified | *Laridae* spp. |
| 871 | Jaeger/Skua - unidentified | *Stercorariidae* spp. |
| 876 | Kittiwake, Black-legged * | *Rissa tridactyla* |
| 875 | Kittiwake, Red-legged * | *Rissa brevirostris* |
| 898 | Land Bird - unidentified | |
| 844 | Loon - unidentified | Gaviidae |
| 889 | Murre, Common | *Uria aalge* |
| 888 | Murre, Thick-billed | *Uria lomvia* |
| 887 | Murre - unidentified | *Uria* spp. |
| 893 | Murrelet/Auklet - unidentified | |
| 896 | Murrelet, Kittlitz's | *Brachyramphus brevirostris* |
| 894 | Murrelet, Marbled | *Brachyramphus marmoratus* |
| 854 | Northern Fulmar | *Fulmarus glacialis* |
| 853 | Petrel/Shearwater - unidentified | *Procellariidae* spp. |
| 868 | Phalarope -unidentified | *Phalaropodidae* spp. |
| 891 | Puffin, Horned | *Fratercula corniculata* |

| Code | Common Name | Scientific Name |
|---|---|---|
| 892 | Puffin, Tufted | *Fratercula cirrhata* |
| 890 | Puffin -unidentified | *Fratercula* spp. |
| 897 | Seabird - unidentified | |
| 855 | Shearwater, Dark unidentified | *Puffinus* spp. |
| 853 | Shearwater/Petrel -unidentified | *Procellariidae* spp. |
| 857 | Shearwater, Short-tailed | *Puffinus tenuirostris* |
| 856 | Shearwater, Sooty | *Puffinus griseus* |
| 867 | Shorebird -unidentified | Charadriiformes |
| 871 | Skua/Jaeger -unidentified | Stercorariidae |
| 858 | Storm Petrel -unidentified | Hydrobatidae |
| 880 | Tern -unidentified | *Sterninae* spp. |
| 848 | Tubenoses -unidentified | Procellariiformes |
| 862 | Waterfowl -unidentified | Anseriformes |

Please note occurrences of "Species of Interest" in the seabird section of your logbook.

* Note in logbook whether these animals are:
- adult (A)
- sub-adult (S)
- immature (I)
- unknown (U)

** Note in logbook whether these animals are:
- male (M)
- female (F)
- unknown (U)

For more information, refer to the "Beached Birds" guide provided by NMFS.

## Appendix C. Species Code List - Marine Mammals

| Code | Common Name | Scientific Name |
|---|---|---|
| **CU** | Northern Fur Seal | *Callorhinus ursinus* |
| **EJ** | Steller (Northern) Sea Lion | *Eumetopias jubatus* |
| **ZC** | California Sea Lion | *Zalophus californianus* |
| **UO** | Unidentified Otariid * | |
| **OR** | Walrus | *Odobenus rosmarus* |
| **PV** | Harbor Seal | *Phoca vitulina* |
| **PL** | Spotted Seal (Larga Seal) | *Phoca largha* |
| **PH** | Ringed Seal | *Phoca hispida* |
| **PF** | Ribbon Seal | *Phoca fasciata* |
| **EB** | Bearded Seal | *Erignathus barbatus* |
| **MA** | Northern Elephant Seal | *Mirounga angustirostris* |
| **US** | Unidentified Phocid * | |
| **UP** | Unidentified Pinniped * | |
| **EL** | Sea Otter | *Enhydra lutris* |
| **PX** | Dall's Porpoise | *Phocoenoides dalli* |
| **PP** | Harbor Porpoise | *Phocoena phocoena* |
| **DD** | Common Dolphin | *Delphinus delphis* |
| **LO** | Pacific Whitesided Dolphin | *Lagenorhynchus obliquidens* |
| **LB** | Northern Right Whale Dolphin | *Lissodelphis borealis* |
| **SC** | Striped Dolphin | *Stenella coeruleoalba* |
| **TT** | Bottlenose Dolphin | *Tursiops truncatus* |
| **SB** | Rough Toothed Dolphin | *Steno bredanensis* |
| **GG** | Risso's Dolphin | *Grampus griseus* |
| **SL** | Spinner Dolphin | *Stenella longirostris* |
| **SA** | Spotted Dolphin (Central Pacific) | *Stenella attenuata* |
| **SG** | Spotted Dolphin (Eastern Pacific) | *Stenella attenuata* |
| **LH** | Frasier's Dolphin | *Lagenodelphis hosei* |
| **UD** | Unidentified Dolphin/Porpoise | |
| **GM** | Shortfin Pilot Whale | *Globicelphala macrorhynchus* |
| **FA** | Pygmy Killer Whale | *Feresa attenuata* |
| **PC** | False Killer Whale | *Pseudorca crassidens* |
| **OO** | Killer Whale | *Orcinus orca* |
| **DL** | Beluga | *Delphinapterus leucas* |
| **PM** | Sperm Whale | *Physeter macrocephalus* |

**Species Code List - Marine Mammals**

| Code | Common Name | Scientific Name |
|---|---|---|
| **BE** | Baird's Beaked Whale | *Berardius bairdii* |
| **ZX** | Goosebeak Whale | *Ziphius cavirostris* |
| **MS** | Bering Sea Beaked Whale | *Mesoplodon stejnegeri* |
| **ER** | Gray Whale | *Eschrichtius robustus* |
| **MN** | Humpback Whale | *Megaptera novaeangliae* |
| **BA** | Minke Whale | *Balaenoptera acutorostrata* |
| **BX** | Bryde Whale | *Balaenoptera edeni* |
| **BB** | Sei Whale | *Balaenoptera borealis* |
| **BP** | Fin Whale | *Balaenoptera physalus* |
| **BL** | Blue Whale | *Balaenoptera musculus* |
| **BG** | Black Right Whale | *Balaena glacialis* |
| **BM** | Bowhead Whale | *Balaena mysticetus* |
| **MM** | Narwhal | *Monodon monoceros* |
| **UX** | Unidentified Small Whale | |
| **UZ** | Unidentified Large Whale | |
| **UW** | Unidentified Whale | |
| **UC** | Unidentified Cetacean * | |
| **ZZ** | Unidentified Mammal | |

* The following characteristics define animals belonging to these groups.

**Otariid:** This family includes fur seals and sea lions. They have visible, cartilaginous ears, large foreflippers and their hind flippers can be turned under the body. Their flippers are partially furred and they have three claws on their hindflippers, and none on their foreflippers. Males have scrotal testes.

**Phocid:** These are the true seals. They have no external cartilaginous ears, their small foreflippers are used for guidance only, and their hind flippers cannot be turned under the body. Their flippers ar fully furred and five claws on each. Males have internal testes.

**Pinniped:** This group includes otariids, phocids and the walrus, which has characteristics from both families.

**Cetacean:** This class includes all whales and porpoises. The body is streamlined with the tail developed into horizontal flukes used for propulsion.

# Appendix D. Weights, Measures, and Conversions

## Abbreviations

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| inch | in | millimeter | mm | quart | qt | grams | g | |
| foot | ft | centimeter | cm | liter | L | kilograms | kg | |
| mile | mi | meter | m | minute | min | metric ton | mt | |
| fathoms | f | kilometer | km | pounds | lbs | farenheit | ° | F |
| nautical mile | nm | | | | | Celcius | ° | C |

## Conversions

1 in = 2.540 cm
1 cm = 10 mm = 0.3937 in
1 ft = 0.3048 m = 0.1667 f
1m = 3.2808 ft = 0.5468 f
1 f = 6 ft = 1.829 m
1000 m = 1 km = 0.6214 mi
1 lb = 0.4536 kg
1 mt = 1,000 kg

1 L = 1.0567 qt
F° = (1.8 x C°) + 32C° = 5/9(F° - 32)
1 mi = 5,280 ft = 1.609 km = 0.86899 nm = 880 f
1 nm = 1.15078 mi = 1 min lat = 1.852 km = 1,012.6859 f = 1,852 m
1 f = 0.0009875 nm = 0.0011364 mi

total catch wt. in lbs x 0.4536= total catch wt. in kg

### Area, Volume and Product Formulas

Number of Product Units x Average Unit Weight = Total Weight of Product

Product Weight ÷ Recovery Rate = Whole Weight of fish used to make the product

Product Weight x Conversion Factor = Whole or Fresh Weight of fish used for product

Area of a circle = $\pi r^2$ Circumference = $2\pi r$ ($\pi$ = 3.1416)

Area of a square or rectangle = length × width

Area of a triangle = $1/2 \times$ base × height

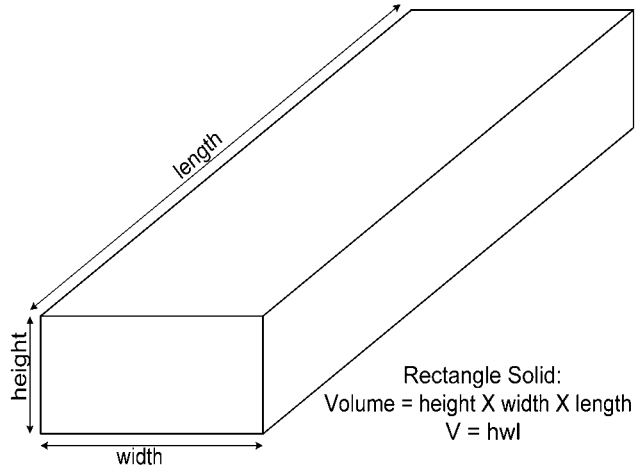
Volume of a right angle cone = $1/3 \times \pi r^2 h$

Volume of a Sphere = $\frac{4}{3} \times \pi \times r^3$

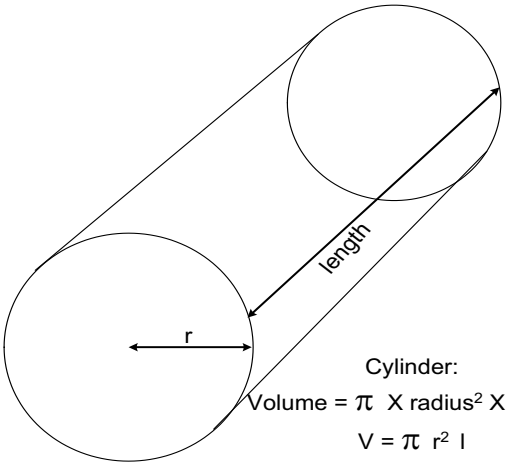
Length of the triangle hypotenuse "c" where a and b equal the length of the opposite two sides:

$a^2 + b^2 = c^2$ and $\sqrt{c^2} = c$

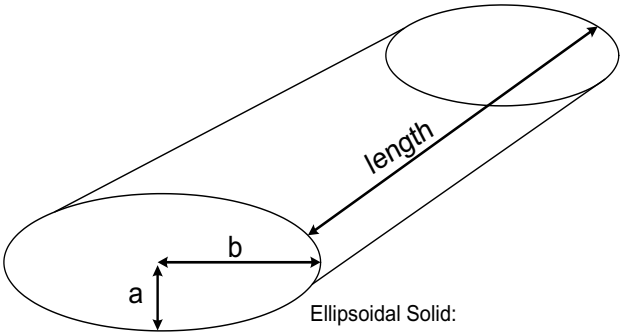
## Commonly Used Shapes for Determining Bin and Codend Volumes



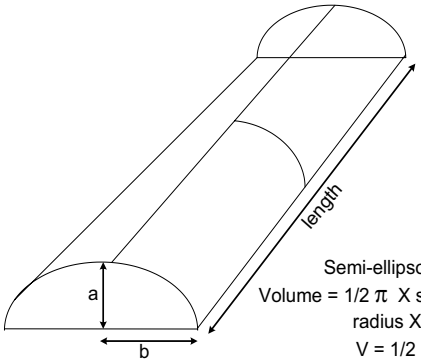

Rectangle Solid:
Volume = height X width X length
V = hwl



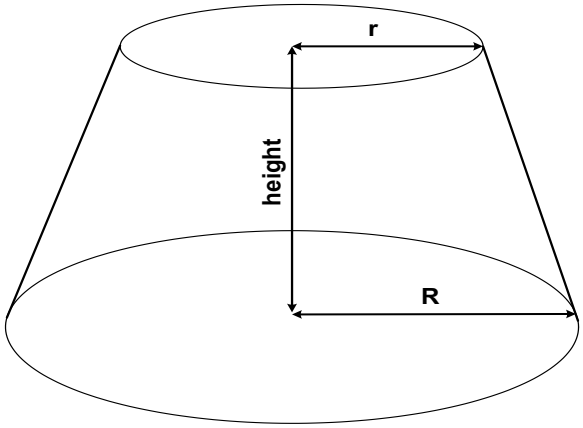

Cylinder:
Volume = $\pi$ X radius$^2$ X length
V = $\pi$ $r^2$ l



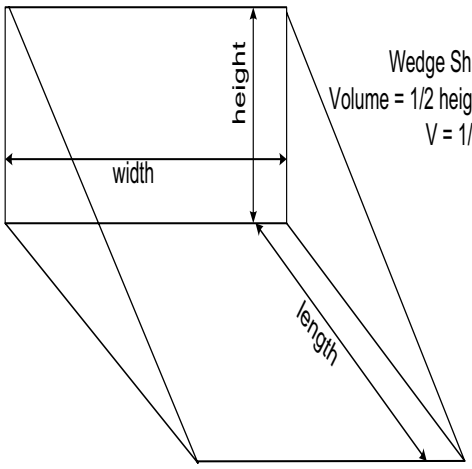

Ellipsoidal Solid:
Volume = $\pi$ X short radius X long radius X length
**V = $\pi$ a b l**



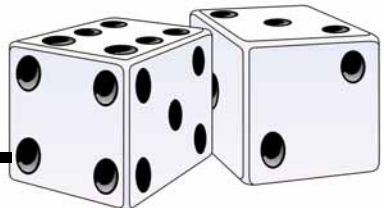

Semi-ellipsoidal Solid:
Volume = 1/2 $\pi$ X short radius X long radius X length
V = 1/2 $\pi$ a b l




Right Circular Cone:
V = 1/3 $\pi$( $R^2$ + rR + $r^2$) height




Wedge Shaped Solid:
Volume = 1/2 height X width X length
V = 1/2 h w l



# Appendix E. Random Number Table

| | col. 1 to 5 | col. 6 to 10 | col. 11 to 15 | col. 16 to 20 | col. 21 to 25 | col. 26 to 30 | col. 31 to 35 | col. 36 to 40 | col. 41 to 45 | col. 45 to 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 6 7 2 4 | 0 5 8 7 5 | 1 1 9 6 7 | 9 7 4 8 2 | 6 6 4 1 2 | 8 7 2 1 0 | 1 0 5 1 1 | 6 5 3 8 8 | 2 5 6 3 4 | 9 4 5 7 6 |
| 2 | 0 8 3 5 4 | 9 6 2 0 8 | 2 5 9 9 4 | 9 6 2 6 8 | 2 5 0 9 5 | 6 3 9 5 2 | 4 5 4 3 9 | 3 5 6 8 9 | 0 6 2 8 0 | 3 8 8 2 4 |
| 3 | 8 4 8 8 4 | 4 1 4 0 3 | 7 8 4 6 8 | 3 4 3 9 4 | 2 9 3 2 8 | 3 6 8 5 5 | 3 2 2 0 1 | 7 1 0 2 1 | 9 5 2 4 0 | 7 5 0 2 6 |
| 4 | 1 0 4 3 7 | 1 6 3 1 5 | 2 8 7 6 8 | 2 2 8 5 2 | 7 6 0 4 5 | 0 2 9 1 0 | 8 5 7 0 8 | 7 5 5 7 9 | 2 8 7 3 3 | 2 9 3 5 7 |
| 5 | 6 4 5 9 2 | 5 4 8 9 6 | 4 2 3 2 1 | 2 6 5 5 3 | 4 0 2 0 1 | 1 1 6 1 6 | 1 0 8 2 5 | 2 5 8 7 0 | 7 9 7 8 5 | 5 9 9 9 8 |
| 6 | 3 0 3 5 0 | 8 5 1 0 5 | 3 7 3 2 1 | 7 1 7 9 9 | 9 9 1 3 6 | 8 3 4 5 5 | 1 9 9 4 7 | 9 3 9 9 5 | 8 9 9 0 1 | 1 2 9 2 5 |
| 7 | 1 8 2 6 0 | 5 7 7 4 2 | 9 6 2 2 3 | 1 9 6 7 5 | 5 8 7 1 3 | 4 9 5 1 1 | 8 2 6 1 9 | 3 6 3 5 2 | 4 5 3 1 2 | 6 3 9 6 0 |
| 8 | 2 5 9 2 5 | 5 7 1 4 5 | 4 6 7 6 5 | 1 3 2 3 7 | 3 6 2 2 5 | 4 0 8 6 0 | 7 1 4 8 8 | 3 8 2 3 1 | 2 7 6 0 1 | 6 3 8 5 4 |
| 9 | 9 8 5 8 5 | 6 7 5 3 5 | 3 8 9 4 6 | 7 4 0 4 6 | 1 4 3 6 2 | 9 1 6 8 8 | 4 4 7 3 2 | 2 0 9 0 9 | 5 8 8 4 8 | 2 4 7 9 4 |
| 10 | 2 4 4 8 8 | 0 6 0 2 6 | 4 8 8 3 4 | 3 7 1 7 7 | 0 4 1 2 4 | 0 6 0 8 7 | 1 0 1 7 7 | 9 0 1 7 1 | 5 0 9 9 5 | 4 0 6 0 6 |
| 11 | 6 9 9 8 2 | 8 8 6 6 6 | 5 3 2 9 3 | 4 0 2 7 2 | 7 0 3 2 0 | 7 1 5 3 1 | 8 5 3 9 3 | 7 1 0 0 6 | 7 7 8 4 5 | 1 5 5 6 7 |
| 12 | 6 6 6 3 6 | 9 2 7 7 5 | 0 7 5 4 9 | 7 7 9 7 8 | 7 5 7 3 5 | 7 8 4 6 8 | 6 8 7 4 7 | 7 2 9 6 7 | 3 0 7 9 5 | 7 2 3 1 7 |
| 13 | 8 4 0 2 1 | 1 9 5 0 1 | 5 0 3 6 0 | 6 2 0 1 2 | 2 9 7 4 4 | 0 7 2 5 0 | 5 8 1 1 0 | 5 7 5 8 5 | 9 3 9 2 2 | 5 1 3 7 7 |
| 14 | 5 6 1 4 3 | 4 6 2 0 6 | 5 8 9 0 5 | 3 2 6 7 9 | 4 7 9 9 1 | 2 6 8 9 2 | 3 2 1 5 6 | 3 5 6 0 6 | 6 5 8 9 4 | 3 3 3 5 4 |
| 15 | 9 6 0 4 9 | 0 0 3 7 7 | 3 2 2 9 7 | 8 8 9 0 6 | 6 3 5 6 2 | 2 8 9 1 6 | 7 3 2 6 7 | 7 5 0 2 6 | 2 8 0 1 7 | 0 6 2 6 4 |
| 16 | 7 7 2 2 2 | 1 2 9 0 4 | 5 1 4 5 3 | 9 4 6 5 9 | 6 6 1 1 7 | 7 9 0 6 2 | 5 7 5 4 4 | 7 0 9 6 8 | 5 1 8 9 6 | 6 5 9 6 4 |
| 17 | 3 3 0 5 2 | 5 0 6 3 7 | 4 7 5 9 3 | 8 7 7 4 1 | 4 1 8 3 6 | 7 6 6 3 8 | 9 3 1 4 0 | 0 2 7 2 3 | 5 7 8 2 8 | 8 9 5 7 0 |
| 18 | 4 7 3 3 7 | 0 3 2 0 8 | 8 6 3 0 0 | 7 4 6 3 1 | 8 5 5 6 5 | 0 2 8 1 2 | 3 3 0 5 9 | 7 7 7 8 4 | 6 8 0 2 2 | 7 5 3 1 6 |
| 19 | 8 1 2 4 4 | 4 6 8 2 3 | 2 2 4 8 4 | 3 5 3 0 0 | 7 5 2 3 3 | 7 5 2 4 5 | 8 5 4 9 1 | 3 5 7 2 4 | 3 0 5 7 9 | 5 5 8 0 4 |
| 20 | 8 2 6 0 2 | 8 5 9 6 4 | 6 3 3 6 4 | 8 3 5 4 6 | 6 6 4 8 9 | 5 2 6 5 6 | 1 0 3 0 1 | 5 5 4 4 6 | 8 8 8 4 5 | 8 9 8 3 6 |
| 21 | 1 4 7 8 5 | 0 5 3 4 5 | 9 5 6 3 4 | 6 7 9 0 3 | 0 6 2 6 2 | 9 6 5 6 3 | 4 7 9 7 0 | 9 5 5 7 3 | 6 1 1 1 9 | 3 3 7 4 9 |
| 22 | 5 0 9 5 8 | 2 3 9 1 8 | 4 8 1 1 6 | 9 0 4 3 3 | 0 7 7 1 2 | 4 2 7 8 7 | 9 7 0 5 7 | 0 1 7 1 8 | 7 3 8 4 7 | 4 0 5 8 4 |
| 23 | 4 5 2 2 8 | 1 0 9 9 8 | 3 4 9 3 5 | 2 8 0 0 4 | 7 2 1 8 1 | 8 8 9 3 6 | 0 0 1 1 0 | 4 5 4 2 2 | 9 3 5 3 8 | 3 8 6 1 0 |
| 24 | 0 5 7 7 6 | 6 7 6 4 8 | 3 8 6 1 5 | 0 4 7 4 8 | 1 5 2 4 0 | 3 8 3 4 7 | 2 1 8 7 9 | 9 0 1 2 4 | 2 8 6 6 6 | 3 6 4 3 4 |
| 25 | 2 2 3 1 6 | 2 7 5 6 9 | 1 3 9 5 9 | 3 8 4 7 7 | 8 5 8 9 8 | 9 6 3 5 4 | 1 5 7 2 7 | 8 1 8 1 1 | 5 6 2 9 1 | 3 9 3 8 1 |
| 26 | 1 5 4 7 3 | 7 8 7 7 1 | 5 1 4 3 0 | 6 3 7 4 7 | 6 0 0 7 7 | 1 8 2 8 5 | 5 4 2 3 0 | 8 8 0 0 5 | 6 6 8 4 7 | 0 0 1 0 7 |
| 27 | 2 2 8 4 7 | 0 5 0 0 0 | 6 9 8 2 6 | 3 0 5 9 0 | 6 6 1 3 7 | 8 9 4 9 4 | 3 8 0 3 3 | 5 1 4 0 7 | 0 4 0 1 6 | 5 1 8 9 6 |
| 28 | 9 1 4 0 2 | 7 5 5 0 4 | 2 7 6 1 8 | 7 5 8 2 6 | 5 9 3 8 2 | 5 3 6 8 1 | 5 9 6 9 3 | 0 8 9 2 2 | 3 6 1 0 2 | 3 1 8 1 4 |
| 29 | 8 0 0 1 6 | 1 4 2 8 0 | 0 9 5 2 6 | 3 3 5 3 2 | 0 0 8 4 2 | 7 7 7 7 4 | 1 7 3 0 6 | 3 0 7 7 6 | 6 3 0 1 7 | 0 0 9 3 1 |
| 30 | 3 6 2 8 4 | 6 9 6 6 8 | 6 6 1 8 3 | 8 7 9 0 5 | 9 3 1 8 1 | 6 0 1 5 9 | 7 3 9 9 7 | 3 0 3 5 4 | 5 5 6 3 6 | 0 6 7 6 6 |
| 31 | 0 7 9 2 8 | 1 0 3 4 7 | 9 2 9 0 3 | 6 8 7 2 6 | 0 8 1 4 6 | 1 6 0 0 0 | 3 0 1 7 6 | 0 2 4 5 7 | 0 3 1 7 4 | 0 4 7 4 0 |
| 32 | 5 0 8 3 3 | 1 6 4 1 5 | 7 6 5 4 4 | 4 5 3 6 3 | 4 9 7 6 0 | 6 7 6 0 9 | 3 1 9 7 5 | 9 2 5 2 6 | 1 1 2 1 7 | 5 7 7 3 6 |
| 33 | 1 9 2 7 9 | 8 1 4 8 8 | 4 0 1 6 1 | 4 7 2 5 8 | 6 9 9 5 9 | 7 4 6 3 5 | 2 7 0 4 5 | 5 7 5 8 1 | 1 2 1 7 3 | 6 3 5 8 4 |
| 34 | 1 7 7 3 8 | 1 4 0 4 9 | 6 2 1 0 9 | 4 7 4 4 0 | 3 9 5 1 1 | 7 3 7 8 3 | 6 1 8 8 5 | 4 8 1 0 4 | 6 0 6 2 4 | 6 8 5 8 0 |
| 35 | 7 9 3 4 8 | 3 6 2 4 9 | 8 3 0 2 2 | 9 4 1 9 8 | 0 0 2 3 4 | 7 0 0 4 6 | 2 0 6 1 9 | 9 1 8 5 9 | 7 4 9 6 7 | 2 2 5 2 4 |
| 36 | 0 7 5 7 9 | 4 3 8 7 1 | 6 2 4 6 4 | 6 5 1 2 0 | 4 0 7 9 1 | 7 5 9 9 7 | 6 9 4 4 4 | 7 0 6 1 4 | 1 9 5 3 3 | 4 2 0 2 9 |
| 37 | 5 1 4 2 1 | 8 8 1 7 9 | 5 5 0 8 6 | 9 1 9 6 4 | 5 0 2 8 9 | 2 0 6 9 5 | 6 1 6 9 6 | 3 9 3 7 9 | 5 9 4 9 7 | 2 5 5 5 0 |
| 38 | 5 3 5 8 9 | 6 1 8 2 1 | 9 7 6 3 4 | 2 2 3 1 1 | 3 8 6 2 8 | 7 5 2 4 8 | 5 4 4 8 5 | 1 3 1 1 4 | 0 4 9 1 4 | 7 9 0 2 3 |
| 39 | 2 0 6 5 5 | 1 8 9 1 1 | 6 7 9 7 7 | 6 1 3 0 5 | 0 6 9 0 7 | 8 8 3 3 8 | 4 8 1 7 7 | 1 9 2 1 5 | 3 8 7 4 5 | 1 7 1 6 3 |
| 40 | 6 9 7 2 0 | 7 9 0 3 7 | 2 4 5 6 1 | 3 7 4 2 6 | 8 0 6 9 2 | 9 3 0 2 3 | 9 9 5 8 4 | 8 7 4 4 5 | 1 0 0 3 5 | 0 9 2 9 0 |
| 41 | 8 8 7 6 8 | 5 4 9 9 6 | 0 8 6 7 0 | 7 5 3 0 4 | 0 1 0 3 0 | 2 4 9 4 5 | 6 7 4 4 0 | 5 6 7 7 3 | 5 6 4 0 2 | 1 7 5 1 8 |
| 42 | 9 2 8 8 6 | 0 5 6 4 0 | 5 7 9 3 7 | 8 8 7 5 5 | 2 8 1 4 0 | 3 0 7 8 9 | 9 8 0 1 2 | 2 3 1 4 2 | 1 0 9 0 0 | 7 7 9 0 2 |
| 43 | 9 9 1 6 9 | 2 8 2 3 9 | 2 6 8 0 1 | 7 1 4 6 9 | 0 5 5 5 0 | 1 8 3 5 4 | 8 7 0 5 8 | 8 5 8 4 1 | 2 5 0 1 4 | 0 2 0 6 9 |
| 44 | 7 5 4 9 5 | 6 7 1 5 0 | 5 1 5 0 9 | 1 8 2 3 6 | 1 1 1 7 9 | 5 5 2 8 5 | 4 2 4 2 3 | 0 1 9 1 3 | 1 6 4 2 2 | 8 5 9 4 2 |
| 45 | 4 5 0 7 8 | 0 5 4 0 3 | 4 4 8 8 3 | 1 3 6 2 4 | 4 6 6 1 6 | 5 5 2 0 2 | 0 5 7 1 7 | 5 7 7 2 0 | 9 9 1 9 1 | 3 4 1 3 0 |
| 46 | 7 6 0 8 8 | 6 8 7 3 6 | 5 3 7 7 5 | 9 9 6 6 2 | 3 6 1 9 2 | 8 5 2 8 1 | 6 8 2 3 0 | 2 9 5 4 6 | 7 2 9 6 0 | 6 5 0 0 5 |
| 47 | 6 1 3 5 8 | 8 1 5 6 7 | 9 5 7 7 2 | 2 8 9 4 5 | 1 9 6 9 5 | 2 0 6 9 1 | 6 2 6 1 4 | 0 6 0 7 9 | 7 6 4 0 2 | 9 9 5 2 3 |
| 48 | 7 9 0 8 0 | 7 4 0 3 0 | 6 6 5 1 7 | 2 5 4 0 5 | 2 8 0 1 5 | 3 9 9 9 2 | 2 1 8 7 1 | 5 8 1 9 5 | 7 6 9 1 6 | 2 1 9 8 8 |
| 49 | 2 4 3 6 4 | 5 6 5 3 2 | 2 0 9 1 7 | 9 8 5 8 3 | 5 5 4 9 4 | 1 2 1 9 2 | 9 5 5 1 9 | 7 4 8 5 5 | 7 1 3 3 0 | 7 6 2 7 9 |
| 50 | 7 4 6 5 4 | 1 5 7 4 8 | 0 0 8 3 1 | 3 0 2 2 4 | 0 9 9 6 2 | 6 7 1 7 7 | 5 4 2 4 2 | 5 6 1 6 6 | 1 6 6 9 0 | 1 4 2 0 3 |

## Appendix F. Product Recovery Rates (PRR)

Product recovery rate (PRR) represents that proportion of an organism that is used for product. The PRR is also referred to as the recovery ratio. Recovery rates can be used for estimating the fresh weight of a catch from the tonnage of product produced. The following equation can be used for estimating round weight from product weight. ***Remember to add in discards.***

(product weight ÷ recovery rate)= round weight (before processing)

Recovery rates are commonly expressed as a percent or as a ratio. Headed and gutted cod may have a recovery ratio of 0.62 to 1, or 62% recovery, while fish frozen whole would have a recovery ratio of 1.00 to 1, or 100% recovery. The weight of product divided by the weight of the fish before processing is the recovery ratio. The fish weighed before processing should be sorted to species and be of the size and condition needed for the product.

(product weight ÷ round weight)= product recovery rate

The product weight as defined here assumes 100% efficiency in production. If fifty fish are weighed before processing, the product weight should represent the product from all fifty fish. If the product weight is less, because of loss along the production line, the result should be called an efficiency ratio rather than a product recovery ratio.

A wide range of recovery rates are used to describe the utilization of different species in a variety of products. The type of processing, the size of the fish, the area and season of the year, the experience of the processing crew, and the vessel type all have a bearing on the recovery rate of a particular species.

A conversion factor is a number which can be multiplied times the product weight to obtain the round weight (whole weight of the fish). ***A conversion factor is always greater than 1*** (for example, the conversion factor of surimi weight to pollock weight may be 6.67). To convert a conversion factor to a recovery rate, take the reciprocal of the conversion factor, (i.e., divide the number l by the conversion factor).

From "Product Codes and Description" on page A-19

| FMP Group | NMFS Group Codes | Product Code | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3 | 4 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 30 | 31 | 32 | 36 | 37 |
| P. cod | 110 | 0.98 | 0.85 | 0.63 | 0.57 | 0.47 | 0.44 | --- | 0.45 | --- | 0.05 | 0.05 | --- | 0.05 | --- | 0.01 | 0.45 | 0.35 | 0.25 | 0.25 | --- | 0.15 | 0.50 | 0.17 | --- | 0.43 |
| SWF | 119 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| Oflat | 120 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| arrowtooth | 121 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| flathead | 122 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| rock sole | 123 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| Dover | 124 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| rex | 125 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| YFS | 127 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | 0.18 | --- | 0.17 | --- | --- |
| turbot | 134 | 0.98 | 0.90 | 0.80 | 0.72 | 0.65 | 0.62 | 0.48 | --- | --- | 0.08 | --- | --- | --- | --- | --- | 0.32 | 0.27 | 0.27 | 0.22 | --- | --- | --- | 0.17 | --- | --- |
| thornyhead | 143 | 0.98 | 0.88 | 0.55 | 0.60 | 0.50 | --- | --- | --- | --- | --- | --- | 0.20 | 0.05 | 0.05 | 0.05 | 0.40 | 0.30 | 0.35 | 0.25 | --- | --- | --- | 0.17 | --- | --- |
| sculpins | 160 | 0.98 | 0.87 | --- | 0.50 | 0.40 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.17 | --- | --- |
| Atka | 193 | 0.98 | 0.87 | 0.67 | 0.64 | 0.61 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.15 | --- | 0.17 | --- | --- |
| pollock | 270-A* | 0.98 | 0.80 | 0.70 | 0.65 | 0.56 | 0.50 | 0.25 | --- | --- | 0.07 | --- | 0.15 | --- | --- | --- | 0.35 | 0.3 | 0.3 | 0.21 | 0.16 | 0.16 | 0.22 | 0.17 | --- | 0.43 |
| | 270-B ** | 0.98 | 0.80 | 0.70 | 0.65 | 0.56 | 0.50 | 0.25 | --- | --- | 0.07 | --- | 0.15 | --- | --- | --- | 0.35 | 0.3 | 0.3 | 0.21 | 0.16 | 0.17 | 0.22 | 0.17 | --- | 0.43 |
| smelts | 510 | 0.98 | 0.82 | --- | 0.71 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.38 | --- | --- | --- | --- | --- | 0.17 | --- | --- |
| eulochon | 511 | 0.98 | 0.82 | --- | 0.71 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.38 | --- | --- | --- | --- | --- | 0.17 | --- | --- |
| capelin | 516 | 0.98 | 0.89 | --- | 0.78 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.17 | --- | --- |
| sharks | 689 | 0.98 | 0.83 | --- | 0.72 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.3 | 0.3 | 0.25 | --- | --- | --- | 0.17 | --- | --- |
| skates | 700 | 0.98 | 9.00 | --- | --- | 0.32 | --- | --- | --- | 0.32 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.17 | --- | --- |
| sablefish | 710 | 0.98 | 0.89 | --- | 0.68 | 0.63 | 0.50 | --- | --- | --- | --- | --- | --- | 0.05 | --- | --- | 0.35 | 0.3 | 0.3 | 0.25 | --- | --- | --- | 0.17 | --- | --- |
| octopus | 870 | 0.98 | 0.81 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.17 | 0.85 | --- |
| squid | 875 | 0.98 | 0.69 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.17 | 0.75 | --- |
| rockfish | --- | 0.98 | 0.88 | --- | 0.6 | 0.5 | --- | --- | --- | --- | --- | --- | 0.15 | 0.05 | 0.05 | 0.1 | 0.4 | 0.3 | 0.33 | 0.25 | --- | --- | --- | --- | --- | --- |

* Standard pollock surimi rate during January through June

** Standard pollock surimi rate during July through December

## Appendix G. Product Codes and Description

| Code | Description | Code | Description |
|---|---|---|---|
| 1 | Whole fish/food fish (PRR = 1.00) | 31 | Minced fish |
| 2 | Whole bait fish (PRR = 1.00) | 32 | Fish meal (meal from whole fish or fish parts, includes bone meal) |
| 3 | Bled only (throat slit to allow blood to drain) | 33 | Fish oil |
| 4 | Gutted only (head on, belly slit and viscera removed) | 34 | Milt (in sacs, or testes - ancillary product only) |
| 6 | H & G, with roe | 35 | Stomachs (includes all internal organs - ancillary product only) |
| 7 | H & G, Western cut (head removed ***in front*** of pectoral girdle) | 36 | Octopus/squid mantles (flesh after removal of viscera and arms) |
| 8 | H & G, Eastern cut (head removed ***behind*** pectoral girdle) | 37 | Butterfly (split, no backbone, head removed, fillets still attached) |
| 10 | H & G, tail removed (usually a Western cut with tail also removed) | 41 | Whole fish destined for off site fish meal (PRR=1.00) |
| 11 | Kirimi (head, gut and tail removed by cuts perpendicular to spine) | 51 | Whole fish with ice and slime (IFQ sablefish only) |
| 12 | Salted and split | 54 | Gutted, head on with ice and slime (IFQ halibut and sablefish only) |
| 13 | Wings (from skates, side fins are cut off next to body) | 57 | H & G, Western cut with ice and slime (IFQ sablefish only) |
| 14 | Roe only (eggs, either loose or in sacs or skeins | 58 | H & G, Eastern cut with ice and slime (IFQ sablefish only) |
| 15 | Pectoral girdle only (collar bone and associated bones, cartilage and flesh) | 86 | Donated prohibited species destined for food bank |
| 16 | Heads (heads only, regardless where severed - ancillary product only) | 92 | Whole fish used for bait onboard. Not sold. (PRR = 1.00) |
| 17 | Cheeks (muscles on sides of head - ancillary product only) | 93 | Whole fish damaged by observer's sampling procedures (PRR = 1.00) |
| 18 | Chins (lower jaw (mandible), muscles and flesh - ancillary product only) | 95 | Whole fish for personal use or consumption (not sold or used as bait) (PRR = 1.00) |
| 19 | Belly (flesh in region of pelvic and pectoral fins and behind head - ancillary product only) | 96 | Discard, decomposed fish. Flea or parasite infested fish, decomposed or previously discarded fish. (PRR 0.0) |
| 20 | Fillets with skin and ribs | 97 | Other retained product (description and PRR must be provided) |
| 21 | Fillets with skin, no ribs | 98 | Discards at sea. Groundfish and prohibited species discarded by vessels |
| 22 | Fillets, with ribs, no skin | 99 | Whole fish, discard onshore |
| 23 | Fillets, skinless/boneless | | |
| 24 | Deep skin fillets | | |
| 30 | Surimi (paste from any of the fish flesh and additives) | | |

## Appendix H. NMFS Species and Group Codes Used in Vessel Logbooks

| Species or Group Code | Species or Group Description |
|---|---|
| 193 | Atka mackerel |
| 121 | Arrowtooth flounder and/or Kamchatka flounder |
| 870 | Octopus |
| 110 | Pacific cod |
| 270 | Pollock |
| 122 | Flathead sole |
| 123 | Rock sole (includes northern, southern and unidentified rock soles) |
| 124 | Dover sole |
| 125 | Rex sole |
| 127 | Yellowfin sole |
| 134 | Turbot (Greenland) |
| 143 | Thornyheads (all *Sebastolobus* species) |
| 160 | Sculpins |
| 511 | Eulachon |
| 516 | Capelin |
| 689 | Sharks (general) |
| 700 | Skates (general) |
| 710 | Sablefish |
| 875 | Squid |
| Group Code 118 | Shallow water flatfish complex (SWF) in the Gulf of Alaska include: yellowfin sole, rock soles, English sole, starry flounder, butter sole, Alaska plaice and sand sole. |
| Group Code 120 | Other Flatfish (OFLAT) (All flatfish without a separate code (e.g: petrale sole) |
| 130 | Lingcod (non-allocated species) |
| 136 | Northern rockfish |
| Group Code 168 | Demersal shelf rockfish (canary, china, copper, quillback, rosethorn, tiger and yellow-eye) |
| Group Code 169 | Pelagic shelf rockfish (dusky, yellowtail and widow) |
| Group Code 144 | Slope rockfish (aurora, blackgill, Bocaccio, chilipepper, darkblotch, green-striped, harlequin, pygmy, redbanded, redstripe, sharpchin, shortbelly, silvergray, splitnose, stripetail, vermillion, and yellowmouth) |
| 141 | Pacific ocean perch |
| 151 | Rougheye rockfish |
| 152 | Shortraker rockfish |

## Appendix I. Alaska Department of Fish and Game Fish Ticket Codes

| Code | Species | Code | Species | Code | Species | Code | Species |
|---|---|---|---|---|---|---|---|
| 110 | cod, Pacific (gray) | 158 | rockfish, redstrlpe | 400 | salmon, roe | | **Shellfish** |
| 121 | flounder, arrowtooth | 159 | rockfish, darkblotched | 410 | salmon, chinook | 810 | clam, butter |
| 122 | sole, flathead | 160 | sculpin, general | 420 | salmon, sockeye | 812 | clam, surf |
| 123 | sole, rock | 166 | rockfish, sharpchin | 430 | salmon, coho | 815 | clam, geoduck |
| 124 | sole, dover | 167 | rockfish, blue | 440 | salmon, pink | 820 | clam, cockle |
| 125 | sole, rex | 170 | sardine, Pacific | 450 | salmon, chum | 830 | clam, razor |
| 126 | sole, butter | 175 | rockfish, yellowmouth | 511 | smelt, eulachon | 840 | clam, little-neck |
| 127 | sole, yellowfin | 176 | rockfish, harlequin | 515 | smelt, surf | 842 | clam, eastern softshell |
| 128 | sole, english | 177 | rockfish, blackgill | 516 | smelt, capelin | 850 | scallop, weathervane |
| 129 | flounder, starry | 178 | rockfish, chillipepper | 521 | Arctic char | 851 | scallop, pink (or calico) |
| 130 | lingcod | 179 | rockfish, pygmy | 531 | Dolly Varden | 855 | blue mussel |
| 131 | sole, petrale | 180 | shad | 540 | trout, steelhead | 860 | abalone |
| 132 | sole, sand | 181 | rockfish, shortbelly | 600 | lamprey, Pacific | 870 | octopus |
| 133 | plaice, Alaska | 182 | rockfish, splitnose | 625 | jellyfish | 875 | squid |
| 134 | turbot, Greenland | 183 | rockfish, stripetail | 680 | sturgeon, general | 890 | snails |
| 135 | rockfish, greenstripe | 184 | rockfish, vermilion | 689 | shark, general | 892 | urchin, red sea |
| 136 | rockfish, northern | 185 | rockfish, aurora | 690 | shark, salmon | 893 | urchin, green sea |
| 137 | rockfish, bocaccio | 191 | greenling, rock | 691 | shark, spiny dogfish | 895 | sea cucumber |
| 138 | rockfish,copper | 192 | greenling, whitespot | 692 | shark, Pacific sleeper | 899 | coral |
| 141 | perch, Pacific Ocean | 193 | greenling, atka mackerel | 700 | skate, general | 900 | crab,box |
| 142 | rockfish, black | 194 | greenling, kelp | 701 | skate, longnose | 910 | crab, Dungeness |
| 143 | rockfish, thornyhead | 200 | halibut | 710 | sablefish (blackcod) | 921 | crab, red king |
| 145 | rockfish, yelloweye | 210 | eels or eel-like fish | 714 | ratfish | 922 | crab, blue king |
| 146 | rockfish,canary | 211 | wrymouths | 715 | skilfish | 923 | crab, brown king (golden) |
| 147 | rockfish, quillback | 212 | hagfish, Pacific | 720 | albacore | 924 | crab, scarlet king (couesi) |
| 148 | rockfish, tiger | 213 | grenadier (rattail) | | **Forage Fish** | 931 | crab, Tanner, bairdi |
| 149 | rockfish, China | 214 | grenadier (giant) | 206 | Pacific sand fish | 932 | crab, Tanner, opilio |
| 150 | rockfish,rosethorn | 215 | prowfish | 207 | gunnel | 933 | crab, Tanner, grooved (tanneri) |
| 151 | rockfish,rougheye | 216 | lumpsucker | 208 | prickleback | 934 | crab, Tanner, triangle (angulatus) |
| 152 | rockfish,shortraker | 220 | saury, Pacific | 209 | bristlemouth | 940 | crab, korean horsehair |
| 153 | rockfish,redbanded | 230 | herring, Pacific (directed fishery) | 772 | lanternfish | 951 | crab, multispina |
| 154 | rockfish,dusky | 235 | herring, Pacific (bycatch) | 773 | deep-sea smelt | 953 | crab, verrilli |
| 155 | rockfish, yellowtail | 250 | tomcod, Pacific | 774 | Pacific sand lance | 961 | shrimp, pink |
| 156 | rockfish, widow | 260 | Pacific Flatnose | 800 | krill | 962 | shrimp, sidestripe |
| 157 | rockfish, silvergray | 270 | pollock, walleye | | | 963 | shrimp, humpy |
| | | | | | | 964 | shrimp, coonstripe |
| | | | | | | 965 | shrimp, spot |

# Appendix J. Processor Code List

| Processor code | Processor | Location |
|---|---|---|
| F05470 | 10th & M Seafoods | Anchorage |
| F27101 | Adak Seafoods | Adak |
| M04285 | Alaska Challenge | |
| F05504 | Alaska Custom Seafoods Inc. | Homer |
| F18716 | Alaska Fishermen's Direct | Kodiak |
| F05343 | Alaska Fresh Seafoods Inc. | Kodiak |
| F05388 | Alaska General Processors | Ketchikan |
| F05945 | Alaska Glacier Seafood Co. | Juneau |
| M03794 | Alaska Ocean | |
| F05342 | Alaska Pacific Seafood | Kodiak |
| M03230 | Alaska Packer | |
| F26239 | Alaska Sea Farms | Sitka |
| F05429 | Alaska Seafood Co. Inc. | Juneau |
| M04598 | Alaskan Leader | |
| F05528 | Alaskan Leader Fisheries | Kodiak |
| F05797 | Alaskan Premier Seafoods | Hyder |
| F06372 | Alaskan Premium Cod Association/Harbor Fish | Kodiak |
| M02018 | Alaskan Rose | |
| F05334 | Aleutian Dragon Fisheries | Chignik |
| M02924 | Alliance | |
| F05320 | Alyeska Seafoods Inc. | Unalaska |
| M03681 | American Dynasty | |
| M02760 | American Enterprise | |
| M01879 | American No. 1 | |
| M04055 | American Triumph | |
| F26238 | Anderson's Alaska Specialty Seafood | Homer |
| F05394 | Annette Island Packing Co. Cold Storage | Metlakatla |
| F05397 | Aquatech | Anchorage |
| M05314 | Arctic Enterprise | |
| M03396 | Arctic Fjord | |
| F06247 | Arctic Salmon Inc. | Bethel |
| M03381 | Arctic Sea | |
| F03978 | Arctic Star | |
| M02943 | Arctic Storm | |
| F26039 | Ardolino Aquatic Seafoods Farms | Anchor Point |
| M03694 | Arica | |
| F06229 | Arrowac Fisheries Inc. | Homer |

| Processor code | Processor | Location |
|---|---|---|
| F05424 | Arrowac Fisheries Inc. | Bellingham |
| F05303 | Atka Pride Seafoods Inc. | Juneau |
| F06053 | Auction Block (The) | Homer & Seward |
| F05309 | Barge Unisea | St. Paul Island |
| M00528 | Ocean Alaska | |
| F05482 | Bell's Seafood | Haines |
| F18671 | Bering Pacific Producers | False Pass |
| F05437 | Bellingham Cold Storage | Bellingham |
| F03531 | Bering Star | |
| F18592 | Big Blue Fisheries | Sitka |
| F05415 | Big Dipper Seafoods Inc. | Valdez |
| M05040 | Blue Fin | |
| M05361 | Blue Wave | |
| F05380 | Bornstein Seafoods Inc. | Bellingham |
| F05935 | Buy N Pack Seafoods | Hoonah |
| F05463 | Cannery Row Inc. | Cordova |
| M02110 | Cape Horn | |
| F05444 | Carlson Seafoods | Anchorage |
| F07096 | Cherrier Fisheries | Kenai |
| F05327 | Chignik Pride Fisheries | Chignik |
| M03242 | Clipper Endeavor | |
| M04463 | Clipper Epic | |
| M02718 | Clipper Surprise | |
| M05319 | Clipperton | |
| F05520 | Coal Point Trading Co. | Homer |
| F05435 | Coastal Cold Storage | Petersburg |
| M04092 | Constellation | |
| F06009 | Cook Inlet Processing | Seward |
| F05321 | Cook Inlet Processing | Kodiak |
| F06117 | Cook Inlet Processing | Nikiski |
| F05364 | Cook Inlet Processing | Nikiski |
| F06293 | Copper River Fine Seafoods | Cordova |
| F25164 | Cossack Caviar | Haines |
| M02695 | Crest | |
| F05298 | Deep Creek/ Custom Packing Inc. | Ninilchik |
| M02815 | Deep Sea Harvester | |
| M04635 | Defender | |
| F05542 | Dejon Delights | Haines |
| F03877 | Discovery Star | |

| Processor code | Processor | Location |
|---|---|---|
| F05318 | Dragnet Fisheries Co. Inc. | Kenai |
| F06012 | E.C.Philips | Craig |
| F05376 | E.C.Philips | Ketchikan |
| F06178 | Eat Me Seafoods | Craig |
| F05312 | Emerald Is. Gourmet Seafoods | Anchorage |
| M03360 | Endurance | |
| M05822 | Enterprise | |
| M04111 | Excellence | |
| F05383 | FAVCO | Anchorage |
| F26030 | Fish Factory | Homer |
| F05386 | Fishhawk Fisheries Inc. | Astoria |
| F06067 | Flopping Fresh | Homer |
| F26254 | Fresh Fish Company Inc. | Sitka |
| F06152 | Fresh and Frozen Seafoods | Ketchikan |
| F05373 | Glacier Village Supermarket Inc.; Jerry's Meats | Juneau |
| F05372 | Glacier Village Supermarket Inc. - Super Bear | Juneau |
| F18606 | Global Seafoods | Dutch Harbor |
| F27989 | Global Seafoods | Kodiak |
| M01607 | Golden Alaska | |
| M00367 | Golden Fleece | |
| F07115 | Great Alaska Fish | Homer |
| F05484 | Great Pacific Seafoods Inc. | Anchorage |
| F06224 | Haines Fisheries Inc. | Haines |
| M03348 | Highland Light | |
| F06003 | His Catch Value/Added Seafood | Homer |
| F05335 | Hoonah Cold Storage | Hoonah |
| F05638 | Horst Seafood Inc. | Juneau |
| F05565 | Howsers Supermarket Ltd. | Haines |
| F05332 | Icicle Seafoods | Homer |
| F05407 | Icicle Seafoods | Bellingham |
| F05300 | Icicle Seafoods | Petersburg |
| F05299 | Icicle Seafoods (Seward Fisheries) | Seward |
| F05490 | Icy Straits Seafoods Inc. | Juneau |
| M03259 | Independence | |
| F05466 | Inlet Fish Producers Inc. | Kenai |
| F05419 | Inlet Salmon | Kenai |
| F07112 | Inlet Salmon | Naknek |
| M03870 | Island Enterprise | |
| F28695 | Island Seafoods | Kodiak |
| F05462 | J&R Fisheries | Seward |

| Processor code | Processor | Location |
|---|---|---|
| F05602 | J.R. Fish Co Inc. | Wrangell |
| F05476 | Jon-k Seafoods Inc. | Juneau |
| F05302 | Kachemak Bay Seafood | Homer |
| F05398 | Kachemak Fish Packers | Homer |
| F05521 | Kake Fisheries Inc. | Kake |
| F07127 | Kake Foods | Kake |
| F05439 | Katch Seafoods Inc. | Homer |
| M01996 | Katie Ann | |
| F05421 | Kell-nor Fisheries | Everett |
| F05494 | Kenai Custom Seafoods | Kenai |
| F05645 | Kingfisher Seafoods Co | Unalaska |
| M03671 | Kodiak Enterprise | |
| F07091 | Kodiak Seafood Processing | Kodiak |
| F05535 | Kodiak Smoking & Processing | Kodiak |
| M03367 | Legacy | |
| M07021 | M/V New West | |
| M05167 | Miss Kimberly | |
| F07111 | Mitkof Cannery | Petersburg |
| F05546 | Nautilus Foods | Valdez |
| M03475 | Neptune | |
| F05400 | New West Fisheries Inc. | Bellingham |
| F05365 | Nor-freeze Inc. | Seattle |
| F05353 | Norquest Seafoods Inc. | Craig |
| F06238 | Norquest Seafoods Inc. | Chignik |
| F05338 | Norquest Seafoods Inc. | Cordova |
| F05336 | Norquest Seafoods Inc. | Ketchikan |
| F05337 | Norquest Seafoods Inc. | Petersburg |
| F05662 | North Alaska Fisheries Inc. | Anchorage |
| F05341 | North Pacific Processors | Cordova |
| M03261 | Northern Eagle | |
| M00661 | Northern Glacier | |
| M04063 | Northern Hawk | |
| M03896 | Northern Jaeger | |
| F04078 | Northern Victor | |
| F05420 | Northport Fisheries Inc. | Everett |
| M05294 | Norton Sound | |
| F27325 | Ocean Beauty Seafoods Inc. | Gibson Cove, Kodiak |
| F05370 | Ocean Beauty Seafoods Inc. | Kodiak |
| F05518 | Ocean Beauty Seafoods Inc. | Seattle |
| F05369 | Ocean Beauty Seafoods Inc. | Cordova |

## Processor Code List

| Processor code | Processor | Location |
|---|---|---|
| F05431 | Ocean Beauty Seafoods Inc. | Petersburg |
| F05443 | Ocean Beauty Seafoods Inc. | Naknek |
| F05364 | Ocean Beauty Seafoods | Nikiski |
| F27324 | Ocean Beauty Seafoods | Seward |
| M02134 | Ocean Peace | |
| M03703 | Ocean Phoenix | |
| M03442 | Ocean Rover | |
| M05119 | Omnisea | |
| F05349 | Osterman Fish | Dutch Harbor |
| F05543 | Pacific Choice Seafoods Co. | Charleston |
| M03357 | Pacific Glacier | |
| F04686 | Pacific Producers | |
| F05344 | Pacific Salmon Company Inc. | Seattle |
| F05442 | Pacific Star Seafoods Inc. | Kenai |
| F05921 | Pelican Seafoods | Pelican |
| F05357 | Peter Pan Seafoods Inc. | Valdez |
| F05358 | Peter Pan Seafoods Inc. | King Cove |
| F05300 | Petersburg Fisheries | Petersburg |
| F05339 | Pioneer Food Corp. | Unalaska |
| F05301 | Point Adolphus Seafoods | Gustavus |
| F06109 | Port Graham Seafoods Inc. | Port Graham |
| F05333 | Prime Alaska Seafoods Inc. | Unalaska |
| F05423 | Prime Select Seafood Inc. | Cordova |
| F05827 | Pristine Seafood Co. | Sitka |
| M03629 | Provider | |
| M01190 | Pursuit | |
| F05925 | R & J Seafoods | Kasilof |
| F05438 | Resurrection Bay Seafoods L.L.C. | Seward |
| F05313 | Royal Aleutian Seafoods Inc. | Dutch Harbor |
| F05304 | Sahalee of Alaska Inc. | Anchorage |
| F05460 | Salamatof Seafoods Inc. | Kenai |
| F05465 | Samer-i Seafoods | Anchor Point |
| M03231 | Sea Alaska | |
| F06232 | Sea Catch Inc. | Seattle |
| F05950 | Sea Hawk Seafoods Inc. | Valdez |
| M02757 | Sea Legend | |
| F05523 | Sea Level Seafoods Inc. | Wrangell |
| F05955 | Sea World Fisheries Ltd. | Ketchikan |
| F05371 | Seafood Producer Cold Storage Inc. | Sitka |
| F05432 | Seafood Producers Cooperative | Sitka |

| Processor code | Processor | Location |
|---|---|---|
| F06233 | Seafreeze Ltd. Partnership | Seattle |
| M03245 | Seattle Enterprise | |
| F07093 | Sitka Select Seafoods | Sitka |
| F05359 | Sitka Sound Seafoods | Yakutat |
| F05346 | Sitka Sound Seafoods | Sitka |
| F06244 | Smoki Foods Inc. | Seattle |
| F03592 | Snopac | Adak |
| F07124 | Snug Harbor Seafoods | Seward |
| F06163 | Sound Seafood | Girdwood |
| F05354 | Specialty Fish Products | Anchorage |
| M03414 | Starbound | |
| M05362 | Stellar Sea | |
| F25854 | Superior Seafood | Sitka |
| F05952 | T & L Specialty Meats And Seafood Inc. | Sitka |
| F27991 | Taku Fisheries | Juneau |
| M03229 | Tempest | |
| F05436 | The Salmon River Smokehouse | Gustavus |
| M04616 | T-mike | |
| F26247 | Togiak Fisheries | Togiak |
| F05464 | Toksook Bay Fishermen's Bldg. | Toksook Bay |
| F07061 | Tonka Seafoods | Petersburg |
| F05350 | Trans-aqua International Inc. | Kasilof |
| F27990 | Trident Seafoods (Star of Kodiak) | Kodiak |
| F05305 | Trident Seafoods Corp. | Sand Point |
| F05306 | Trident Seafoods Corp. | Akutan |
| F05307 | Trident Seafoods Corp. | St. Paul Island |
| F05327 | Trident Seafoods Corp. | Chignik |
| F05392 | True World Seafoods | Kodiak |
| M03004 | U.S. Enterprise | |
| M02800 | U.S. Intrepid | |
| F05696 | Unalaska Seafood Co. | Unalaska |
| F05310 | Unisea Inc. - Dutch Harbor | Dutch Harbor |
| F99999 | Unknown Location | |
| M03796 | Vin Ce | |
| F05414 | Wards Cove Packing Co. | Kodiak Island |
| F05409 | Wards Cove Packing Co. | Excursion Inlet |
| F05376 | Wards Cove Packing Co. DBA E.C. Phillips & Son | Ketchikan |
| F05560 | Wards Cove Packing Company | Elfin Cove |

| Processor code | Processor | Location |
|---|---|---|
| F05348 | Wards Cove Packing Company - Alitak | Kodiak |
| F05375 | Wards Cove Packing Company Kenai Operation | Kenai |
| F05488 | Washington Crab Producers Inc. | Westport |
| F07185 | Wayward Wind Seafoods | Eagle River |
| F05347 | Western Alaska Fisheries Inc. | Kodiak |
| M03590 | Western Sea | |
| F05323 | Westward Seafoods Inc. | Dutch Harbor |
| F05956 | Wild Fish | Juneau |
| M04152 | Woodbine (floater) Alaska Fish Company | Dutch Harbor |
| F05600 | Woodbine (shoreside plant) Alaska Fish Company | Dutch Harbor |
| F05308 | Wrangell Fisheries Inc. | Wrangell |
| F06258 | Wrangell Seafoods Inc. | Wrangell |
| F05315 | Yamaya Seafoods | Anchorage |
| M03116 | Yardarm Knot | |
| F05891 | Yki Fisheries Inc. | Yakutat |

# Appendix K. Vessel/Plant Names and Codes

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| P044 | 10TH & M SFDS | | | 5470 |
| A586 | A J | 150 | 599164 | 3405 |
| P094 | ADAK PLANT | | | 6374 |
| A559 | AIREDALE | 130 | 521431 | 3374 |
| A573 | ALASKA BEAUTY | 98 | 544967 | 2046 |
| A416 | ALASKA CHALLENGER | 105 | 597377 | 3387 |
| A366 | ALASKA DAWN | 90 | 978517 | 4615 |
| A030 | ALASKA DESTINY | 245 | 556069 | 3258 |
| P021 | ALASKA FRESH SFDS | | | 5343 |
| A068 | ALASKA JURIS | 238 | 569276 | 2443 |
| A222 | ALASKA MIST | 174 | 586179 | 2833 |
| A115 | ALASKA OCEAN | 376 | 637856 | 3794 |
| P016 | ALASKA PACIFIC SFDS | | | 5342 |
| A298 | ALASKA PATRIOT | 185 | 513392 | 3816 |
| A088 | ALASKA PIONEER | 196 | 555645 | 3308 |
| A072 | ALASKA RANGER | 200 | 550138 | 3400 |
| A238 | ALASKA ROSE | 111 | 610984 | 516 |
| A585 | ALASKA SPIRIT (LL/ Pot) | 98 | 605674 | 4105 |
| A117 | ALASKA SPIRIT (Trawl) | 221 | 554913 | 3819 |
| A499 | ALASKA TRADER | 132 | 567664 | 3693 |
| A286 | ALASKA TROJAN | 124 | 609369 | 1089 |
| A264 | ALASKA VICTORY | 227 | 569752 | 4093 |
| A009 | ALASKA VOYAGER | 220 | 536484 | 4093 |
| A108 | ALASKA WARRIOR | 215 | 590350 | 3423 |
| A155 | ALASKAN | 73 | 510811 | 2010 |
| A431 | ALASKAN BEAUTY | 105 | 590340 | 5133 |
| A033 | ALASKAN COMMAND | 184 | 599383 | 3391 |
| A306 | ALASKAN ENTERPRISE | 151 | 595760 | 3006 |
| P063 | ALASKAN I | 246 | 605691 | 3532 |
| A309 | ALASKAN LEADER | 150 | 971836 | 4598 |
| A564 | ALASKAN PRIDE | 120 | 566399 | 2036 |
| A475 | ALASKAN SHORES | 124 | 603879 | 4583 |
| A065 | ALDEBARAN | 132 | 664363 | 901 |
| A181 | ALEUTIAN | 68 | 227566 | 2256 |
| A488 | ALEUTIAN BALLAD | 97 | 656806 | 4458 |
| P003 | ALEUTIAN DRAGON FISHERIES | | | 5334 |
| A076 | ALEUTIAN ENTERPRISE | 142 | 664123 | 1016 |
| A287 | ALEUTIAN LADY | 165 | 504762 | 4102 |
| A546 | ALEUTIAN MARINER | 118 | 602229 | 495 |
| A662 | ALEUTIAN NO. 1 | 118 | 611139 | 3687 |
| A391 | ALEUTIAN ROVER | 128 | 517272 | 5282 |
| A627 | ALEUTIAN SPRAY | 98 | 522870 | 427 |
| A025 | ALEUTIAN TRAWLER | | | 776 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A381 | ALICIA JEAN | 101 | 967014 | 5571 |
| P030 | ALITAK | | | |
| P020 | ALKOD | | | |
| P005 | ALL ALASKAN | | | |
| P064 | ALL ALASKAN (Floater) | 340 | 248773 | 3677 |
| A449 | ALLIANCE (LL) | 100 | 623876 | 2956 |
| A563 | ALLIANCE (Trawl) | 107 | 622750 | 2924 |
| A182 | ALLSTAR | 62 | 578815 | 2111 |
| A323 | ALMIGHTY | 99 | 558548 | 2804 |
| A302 | ALOMA | 67 | 623611 | 2802 |
| A692 | ALPINE COVE | 76 | 1113073 | 26728 |
| A199 | ALRITA | 73 | 248401 | 52 |
| A300 | ALSEA | 124 | 626517 | 2811 |
| A377 | ALSKA | 63 | 553667 | 1562 |
| A038 | ALYESKA | 122 | 560237 | 395 |
| P010 | ALYESKA SEAFOODS | | | 5320 |
| A424 | AMATULI | 110 | 511315 | 3227 |
| A487 | AMBITION | 95 | 618713 | 466 |
| A376 | AMERICAN BEAUTY | 123 | 613847 | 1688 |
| A587 | AMERICAN CHALLENGER | 106 | 633219 | 4120 |
| A478 | AMERICAN CHAMPION | 183 | 527411 | 2974 |
| A074 | AMERICAN DYNASTY | 272 | 951307 | 3681 |
| A292 | AMERICAN EAGLE | 120 | 558605 | 434 |
| A064 | AMERICAN EMPRESS | 306 | 942347 | 3408 |
| A056 | AMERICAN ENTERPRISE | 210 | 594803 | 2760 |
| A032 | AMERICAN NO. 1 | 160 | 610654 | 1879 |
| A622 | AMERICAN STAR | 154 | 959935 | 4586 |
| A262 | AMERICAN TRIUMPH | 285 | 646737 | 4055 |
| A436 | AMERICAN VIKING | 126 | 550276 | 2309 |
| A422 | AMERICAN WAY | 100 | 662562 | 2099 |
| P049 | ANDERSON SFDS | | | |
| A386 | ANDRONICA | 99 | 622780 | 4560 |
| A148 | ANITA J | 130 | 560532 | 1913 |
| A534 | ANNA MARIE | 86 | 524384 | 1627 |
| A126 | ANNETTE | 68 | 562157 | 1430 |
| A505 | ARCTIC DAWN | 96 | 634806 | 4676 |
| A303 | ARCTIC EAGLE | 126 | 967106 | 4555 |
| P060 | ARCTIC ENTERPRISE | 339 | 248169 | 5314 |
| A055 | ARCTIC EXPLORER | 155 | 936302 | 3388 |
| A069 | ARCTIC FJORD | 275 | 940866 | 3396 |
| A002 | ARCTIC II | 115 | 678235 | 3008 |
| A633 | ARCTIC LADY | 122 | 604215 | 2841 |
| A447 | ARCTIC MARINER | 125 | 618374 | 4582 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A555 | ARCTIC ORION | 155 | 596653 | 3686 |
| A569 | ARCTIC SEA | 135 | 596137 | 3381 |
| P100 | ARCTIC STAR (Plant) | 258 | | |
| A054 | ARCTIC STORM | 334 | 903511 | 2943 |
| A677 | ARCTIC VENTURE | 124 | 1087790 | 7161 |
| A439 | ARCTIC WIND | 123 | 608216 | 5137 |
| A013 | ARCTURUS | 132 | 655328 | 533 |
| A317 | ARGOSY | 124 | 611365 | 2810 |
| A103 | ARICA | 186 | 550139 | 3694 |
| A204 | ARROW | 70 | 223621 | 97 |
| P054 | ARROWAC FISHERIES | | | 5424 |
| A523 | ATKA ENTERPRISE | 190 | 555416 | 4629 |
| P099 | ATKA PRIDE SEAFOODS | | | |
| A517 | ATLANTIC HARVESTER | 81 | 298089 | 4739 |
| A294 | ATLANTICO | 98 | 524452 | 625 |
| A305 | ATLAS | 350 | 282733 | 4009 |
| A467 | AUGUSTINE | 90 | 635397 | 3093 |
| A630 | AURIGA (Pot) | 156 | 298691 | 4585 |
| A044 | AURIGA (Trawler) | 193 | 639547 | 2889 |
| A048 | AURORA | 193 | 636919 | 2888 |
| A256 | AUROUS | 117 | 270744 | 3585 |
| A674 | AUTUMN DAWN | 112 | 259779 | 4619 |
| A492 | BAGATELL | 136 | 515712 | 4165 |
| A165 | BALLAD | 67 | 590537 | 2017 |
| A457 | BALLYHOO | 167 | 501812 | 1921 |
| A127 | BALTIC SEA | 61 | 564342 | 2913 |
| A562 | BARANOF | 180 | 598508 | 1248 |
| A448 | BARBARA J | 110 | 648690 | 4979 |
| A693 | BARWELL | 88 | 265952 | 2189 |
| A638 | BAY ISLANDER | 86 | 521200 | 1193 |
| A307 | BEAUTY BAY | 127 | 959086 | 4533 |
| A454 | BELAIR | 91 | 221429 | 1904 |
| A684 | BELLA-K | 130 | 631084 | 2929 |
| A180 | BERING EMPIRE | 150 | 636416 | 3858 |
| A005 | BERING ENTERPRISE | 183 | 610869 | 3003 |
| P098 | BERING PACIFIC SFDS - FALSE PASS | | | 18671 |
| A364 | BERING PROWLER* | 124 | 973006 | 4540 |
| A285 | BERING ROSE | 111 | 624325 | 515 |
| A502 | BERING SEA | 114 | 554126 | 3380 |
| P065 | BERING STAR(Plant) | 199 | 597734 | 3531 |
| A437 | BERING STAR (Pot) | 108 | 593310 | 4658 |
| A530 | BETTY LEE | 65 | 595427 | 2336 |
| A515 | BIG BLUE | 77 | 601825 | 1907 |
| A518 | BIG VALLEY | 92 | 515719 | 2412 |
| A548 | BILLIKIN | 135 | 550190 | 277 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A528 | BLAZER | 73 | 973389 | 4486 |
| A459 | BLUE ACE | 131 | 569573 | 4529 |
| A642 | BLUE ATTU | 137 | 624429 | 4377 |
| A516 | BLUE DUTCH | 180 | 642653 | 3376 |
| A464 | BLUE FIN | 120 | 546234 | 5040 |
| A356 | BLUE FOX | 85 | 979437 | 4611 |
| A691 | BLUE GADUS | 152 | 580852 | 2090 |
| A120 | BLUE ICE | 82 | 600875 | 2402 |
| A104 | BLUE NORTH | 167 | 604676 | 3339 |
| A355 | BLUE PACIFIC | 168 | 569927 | 4618 |
| P066 | BLUE WAVE | 200 | 509280 | 5361 |
| A463 | BOLD CONTENDER | 66 | 620497 | 617 |
| A432 | BOUNTIFUL | 165 | 593404 | 278 |
| A484 | BOUNTY HUNTER | 113 | 982587 | 4961 |
| A006 | BRISTOL EXPLORER | 180 | 647985 | 3007 |
| A660 | BRISTOL LEADER | 167 | 106051 | 6323 |
| A651 | BRISTOL MARINER | 125 | 608397 | 5448 |
| P067 | BRISTOL MONARCH | 121 | 255409 | 1237 |
| A374 | BRISTOL STORM | 126 | 270392 | 3726 |
| A620 | BRITTANY | 106 | 600856 | 5127 |
| P057 | BROOKS ALASKAN | | | 5360 |
| A535 | BUCCANEER | 76 | 558467 | 1106 |
| A289 | BULLDOG | 141 | 583974 | 4106 |
| A327 | CAITLIN ANN | 103 | 960836 | 3800 |
| A472 | CALIFORNIA HORIZON | 90 | 590758 | 412 |
| A393 | CAPE CROSS (LL) | 46 | 257536 | 4690 |
| A198 | CAPE FLATTERY | 71 | 241146 | 589 |
| A077 | CAPE HORN | 158 | 653806 | 2110 |
| A326 | CAPE KIWANDA | 76 | 618158 | 1235 |
| A398 | CAPE OMMANEY | 85 | 246336 | 3770 |
| A339 | CAPRICE | 86 | 565511 | 1912 |
| A663 | CAPTAIN BANJO | 88 | 602316 | 6343 |
| A271 | CAPT'N ART | 83 | 544628 | 1945 |
| A322 | CARAVELLE | 86 | 583916 | 3402 |
| A192 | CAROL M | 61 | 225374 | 2259 |
| A404 | CASCADE MARINER | 101 | 557441 | 3699 |
| A369 | CENTAURUS | 149 | 530652 | 5780 |
| A231 | CHANDALAR | 70 | 632162 | 5747 |
| A661 | CHELISSA | 70 | 617797 | 6222 |
| A200 | CHELSEA | 70 | 224464 | 2187 |
| A359 | CHELSEA K | 150 | 976753 | 4620 |
| A687 | CHESAPEAKE | 67 | 231395 | 2164 |
| P004 | CHIGNIK PRIDE FISHERIES | | | 5327 |
| A028 | CHRISTINA | 58 | 262160 | 2284 |
| A395 | C-LADY | 65 | 509980 | 1185 |
| A057 | CLIPPER ENDEAVOR | 124 | 633593 | 3242 |
| A580 | CLIPPER EPIC | 172 | 619796 | 4463 |

## Vessel/Plant Names and Codes

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A227 | CLIPPER EXPRESS | 142 | 236979 | 3385 |
| A153 | CLIPPER SURPRISE | 124 | 628555 | 2718 |
| P068 | COASTAL STAR | 311 | 594619 | 5293 |
| A101 | COHO | 71 | 622773 | 1230 |
| A125 | COLLIER BROTHERS | 89 | 593809 | 2791 |
| A168 | COLUMBIA (LL/Pot) | 81 | 223578 | 2741 |
| A279 | COLUMBIA (Trawl) | 123 | 615729 | 1228 |
| A150 | COMMODORE | 133 | 914214 | 2657 |
| A666 | CONFIDENCE | 90 | 523762 | 4980 |
| A616 | CONSTELLATION (Pot) | 127 | 604998 | 5781 |
| A283 | CONSTELLATION (Trawler) | 150 | 640364 | 4092 |
| A269 | CONSTITUTION | 73 | 211928 | 302 |
| A641 | CONTROLLER BAY | 88 | 942350 | 5530 |
| P028 | COOK INLET PROC.-KODIAK | | | 5321 |
| P062 | COOK INLET -SEWARD | | | |
| P032 | COOK INLET-KENAI | | | 5364 |
| A179 | COOLIDGE | 62 | 227211 | 1119 |
| A623 | CORNELIA MARIE | 136 | 957458 | 5178 |
| A280 | COURAGEOUS | 180 | 606117 | 1276 |
| A157 | CREST | 134 | 238060 | 2695 |
| A163 | DAILY | 54 | 219557 | 256 |
| A267 | DAWN | 86 | 532081 | 5 |
| A670 | DECEPTION | 126 | 640956 | 5031 |
| P006 | DEEP CREEK CUSTOM PAC | | | 5298 |
| A067 | DEEP PACIFIC | 124 | 640128 | 2872 |
| A304 | DEEP SEA HARVESTER | 168 | 627840 | 2815 |
| A358 | DEFENDER (Trawl) | 200 | 554030 | 3257 |
| A486 | DEFENDER (Trawl) | 120 | 665983 | 4635 |
| A270 | DEFIANT | 66 | 619236 | 2198 |
| A363 | DENALI | 80 | 506043 | 5418 |
| A408 | DESTINATION (Pot) | 109 | 632374 | 5329 |
| A288 | DESTINATION (Trawler) | 180 | 571879 | 3988 |
| A647 | DESTINY | 100 | 590962 | 4177 |
| A421 | DETERMINED | 111 | 600071 | 1114 |
| P069 | DISCOVERY STAR | 160 | | 3877 |
| A578 | DOLPHIN | 86 | 249021 | 3424 |
| A082 | DOMINATOR | 124 | 602309 | 411 |
| A017 | DOMINION | 66 | 620062 | 642 |
| P070 | DONA KAREN MARIE | 369 | 681105 | 4107 |
| A254 | DONA MARTITA | 152 | 651751 | 2047 |
| P058 | DORY SFDS | | | 5517 |
| A672 | DR. K | 99 | 615699 | 7113 |
| P031 | DRAGNET FISHERIES CO. | | | 5318 |
| A250 | DUSK | 86 | 550418 | 4 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A558 | EAGLE (Longline) | 77 | 917711 | 4013 |
| A189 | EAGLE (Pot) | 83 | 508600 | 1174 |
| P019 | EAGLE FISHERIES L.P. | | | |
| A669 | EARLY DAWN | 108 | 591603 | 4571 |
| A584 | EASTBOUND ONE | 144 | 299124 | 4183 |
| A241 | ECHO BELLE | 84 | 617234 | 1974 |
| A185 | ECLIPSE | 72 | 226744 | 878 |
| A027 | EL DAN | 72 | 626786 | 915 |
| A014 | ELIZABETH F | 90 | 526037 | 823 |
| A147 | EMERALD QUEEN | 140 | 648911 | 3787 |
| A619 | ENDURANCE (Trawler) | 98 | | 1594 |
| A220 | ENTERPRISE (LL/Pot/ Trawl) | 78 | 557952 | 2579 |
| A639 | ENTERPRISE (Trawler) | 120 | 657383 | 5822 |
| A217 | EVENING STAR (Longline) | 65 | 248539 | 200 |
| P071 | EVENING STAR (Plant) | 166 | 570891 | 3530 |
| A567 | EXCALIBUR I I | 76 | 636602 | 410 |
| A291 | EXCELLENCE | 367 | 967502 | 4111 |
| A388 | EXITO | 126 | 273458 | 5091 |
| A160 | EXODUS | 94 | 598666 | 1249 |
| P027 | FAROS SFDS | | | 5459 |
| A423 | FARRAR SEA | 100 | 973143 | 5478 |
| A443 | FARWEST LEADER | 101 | 606083 | 3226 |
| A503 | FIERCE ALLEGIANCE | 166 | 588849 | 4133 |
| A588 | FIERCE CONTENDER | 166 | 589883 | 4110 |
| A331 | FIERCE SEA | 166 | 642407 | 4119 |
| P072 | FORT YUKON | | | 368 |
| A334 | FORUM STAR | 97 | 925863 | 4245 |
| A553 | FRONTIER EXPLORER | 135 | 975015 | 4450 |
| A100 | FRONTIER MARINER | 135 | 951440 | 3672 |
| A107 | FRONTIER SPIRIT | 135 | 951441 | 3673 |
| A508 | GEORGE ALLEN | 78 | 528842 | 4764 |
| A260 | GINNY C | 65 | 251357 | 3088 |
| A659 | GLACIER BAY | 154 | 600325 | 5325 |
| A083 | GLADIATOR | 124 | 598380 | 1318 |
| P096 | GLOBAL SEAFOODS - KODIAK | | | 27989 |
| A640 | GOD'S WILL | 85 | 513397 | 2808 |
| A070 | GOLD RUSH | 93 | 521106 | 1868 |
| A255 | GOLDEN ALASKA | 305 | 651041 | 1607 |
| A297 | GOLDEN DAWN | 149 | 604315 | 1292 |
| A343 | GOLDEN FLEECE | 104 | 609951 | 367 |
| A149 | GOLDEN PISCES | 98 | 599585 | 586 |
| A671 | GOLDEN SABLE | 100 | 625096 | 5001 |
| A557 | GRAND DUCHESS | 114 | 625876 | 2228 |
| A259 | GRANT | 68 | 225264 | 289 |
| A382 | GREAT PACIFIC | 124 | 608458 | 511 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| P050 | GREAT PACIFIC SFDS | | | 5483 |
| A139 | GREEN HOPE | 88 | 609993 | 685 |
| A433 | GRUMPY J | 82 | 514665 | 1232 |
| A453 | GUARDIAN | 99 | 972714 | 4627 |
| A689 | GUIDING STAR | 94 | 530653 | 527 |
| A206 | GULF MAIDEN | 72 | 514505 | 1591 |
| A102 | GUN-MAR | 172 | 640130 | 425 |
| A037 | HALF MOON BAY | 122 | 615796 | 249 |
| A372 | HANDLER | 126 | 970937 | 5480 |
| A314 | HARMONY I | 82 | 604477 | 638 |
| A019 | HARVESTER ENTERPRISE | 188 | 584902 | 2732 |
| A333 | HAZEL LORRAINE | 89 | 592211 | 523 |
| A444 | HERITAGE | 68 | 582098 | 5744 |
| A552 | HI SEAS I | 84 | 599405 | 3891 |
| A040 | HICKORY WIND | 81 | 594154 | 993 |
| A389 | HIGH SPIRIT | 95 | 982610 | 4803 |
| A316 | HIGHLAND LIGHT | 270 | 577044 | 3348 |
| A347 | HOLY CROSS | 79 | 515144 | 1203 |
| P087 | HOONAH COLD STORAGE | | | 5335 |
| A171 | HOOVER | 62 | 228381 | 1969 |
| A544 | HORIZON | 148 | 586183 | 1301 |
| A308 | HUSKY | 132 | 586918 | 3375 |
| A529 | HUSTLER | 72 | 606821 | 4238 |
| A542 | ICELANDER | 100 | 563421 | 2730 |
| P014 | ICICLE SFDS -HOMER | | | 5332 |
| P045 | ICICLE SFDS SEWARD | | | 5299 |
| P034 | ICICLE SFDS-PBURG | | | 5300 |
| A451 | ICY POINT | 105 | 554355 | 4996 |
| A320 | ILSE | 58 | 298563 | 3415 |
| A242 | IMMIGRANT | 61 | 509415 | 3541 |
| P073 | INDEPENDENCE (Floater) | 356 | 237743 | 3259 |
| A221 | INDEPENDENCE (Longline/Pot) | 78 | 552513 | 792 |
| P025 | INT'L SFDS OF ALASKA, INC. | | | 5392 |
| A477 | INTREPID EXPLORER | 124 | 988598 | 4993 |
| A143 | IRENE H | 82 | 520337 | 2899 |
| A194 | IRENE'S WAY | 83 | 629033 | 2827 |
| A225 | ISLAND ENTERPRISE | 304 | 610290 | 3870 |
| P056 | ISLAND SFDS | | | 5631 |
| A252 | JADE ALASKA | 115 | 553592 | 1139 |
| A473 | JAMIE MARIE | 90 | 932586 | 4999 |
| A645 | JEANINE KATHLEEN | 58 | 972086 | 4195 |
| A243 | JEANOAH | 82 | 530164 | 1497 |
| A690 | JENNIFER A | 103 | 597611 | 10446 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A113 | JESSICA B | 78 | 675561 | 3398 |
| A257 | JOANN MARIE | 60 | 533613 | 1285 |
| A142 | JUDI B | 92 | 562772 | 1695 |
| A481 | JUDY MAE | 34 | 281526 | 4677 |
| A483 | JUNO | 116 | 260614 | 3691 |
| A561 | KAARE | 75 | 236664 | 4456 |
| P053 | KAKE FISHERIES | | | 5521 |
| A195 | KAMILAR | 66 | 629244 | 362 |
| A536 | KAMISHAK QUEEN | 76 | 611551 | 1528 |
| P048 | KANAWAY SFDS | | | |
| A466 | KARI MARIE | 123 | 664175 | 4178 |
| A232 | KARIEL | 66 | 626555 | 3759 |
| A664 | KARIN LYNN | 127 | 592291 | 5384 |
| A311 | KARLA FAYE | 163 | 960004 | 4520 |
| A173 | KATHERINE | 86 | 599072 | 3583 |
| A078 | KATIE ANN | 296 | 518441 | 1996 |
| A653 | KATIE K | 108 | 552364 | 3354 |
| A460 | KATRINA EM | 101 | 607434 | 1980 |
| A164 | KEMA SUE | 80 | 589000 | 1701 |
| A226 | KESIA DAWN | 66 | 629009 | 274 |
| A414 | KETA | 97 | 576029 | 5330 |
| A549 | KEVLEEN-K | 104 | 517481 | 4769 |
| A201 | KILKENNY | 75 | 510076 | 3248 |
| A266 | KING AND WINGE | 96 | 212014 | 1850 |
| P088 | KINGFISHER SEAFOODS CO. | | | 5645 |
| A402 | KISKA SEA | 124 | 965726 | 4179 |
| A130 | KJEVOLJA | 110 | 612616 | 1632 |
| A410 | KODIAK | 111 | 600072 | 1109 |
| A105 | KODIAK ENTERPRISE | 275 | 579450 | 3671 |
| A385 | KODIAK QUEEN | 145 | 507891 | 603 |
| A566 | KONA WIND | 81 | 934764 | 4373 |
| A379 | KONA-KAI | 108 | 669025 | 2342 |
| A646 | KRISTEN GAIL | 114 | 618791 | 1686 |
| A514 | KRISTIANA | 69 | 247187 | 576 |
| A210 | KRISTINE | 61 | 248470 | 806 |
| A681 | KUSTATAN | 100 | 959432 | 5489 |
| A468 | LABRADOR | 133 | 284504 | 4589 |
| A679 | LADY ALASKA | 138 | 972591 | 4978 |
| A678 | LADY ALEUTIAN | 116 | 640544 | 5474 |
| A526 | LADY GRACE | 78 | 227284 | 4271 |
| A442 | LADY GUDNEY | 98 | 615085 | 4285 |
| A407 | LADY KODIAK | 112 | 972646 | 4893 |
| A513 | LADY L | 80 | 511617 | 4190 |
| A336 | LADY OF GOOD VOYAGE | 78 | 597603 | 2074 |
| A537 | LADY SELKET | 87 | 959092 | 4680 |
| A490 | LAST FRONTIER | 99 | 667407 | 4962 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A202 | LAURA | 93 | 508622 | 1571 |
| A035 | LEGACY | 132 | 664882 | 3367 |
| A493 | LESLIE LEE | 91 | 584873 | 1234 |
| A330 | LET'S GO | 71 | 609344 | 476 |
| A175 | LEVIATHAN | 62 | 224443 | 1991 |
| A351 | LILLI ANN | 141 | 976538 | 4569 |
| A582 | LILLIAN S | 90 | 210075 | 2671 |
| A632 | LINDY | 77 | 227167 | 357 |
| A397 | LIN-J | 80 | 538018 | 1705 |
| A140 | LISA JO | 82 | 511692 | 1565 |
| A650 | LISA MARIE | 78 | 1038717 | 6172 |
| A313 | LISA-MELINDA | 81 | 584360 | 4506 |
| A116 | LONE STAR | 86 | 520494 | 213 |
| A174 | LORELEI I I | 63 | 251968 | 1257 |
| A253 | LUALDA | 63 | 259740 | 1665 |
| A485 | MAGNUM | 118 | 529675 | 4113 |
| A299 | MAHALO | 83 | 598642 | 1817 |
| A170 | MAJESTIC | 60 | 223177 | 38 |
| A315 | MAJESTY | 106 | 962718 | 3996 |
| A015 | MAR DEL NORTE | 86 | 523219 | 435 |
| A625 | MAR DEL SUD | 110 | 524524 | 1287 |
| A079 | MAR PACIFICO | 96 | 524001 | 1674 |
| A476 | MARATHON | 87 | 596156 | 1191 |
| A158 | MARCY J | 97 | 517024 | 2142 |
| A010 | MARGARET LYN | 123 | 615563 | 723 |
| A637 | MAR-GUN | 113 | 525608 | 524 |
| A636 | MARK I | 98 | 509552 | 1242 |
| A176 | MASONIC | 70 | 228492 | 1279 |
| A624 | MELANIE | 102 | 512191 | 1934 |
| A114 | MELISSA BETH | 77 | 677261 | 3397 |
| A216 | MEMORIES | 65 | 251934 | 2264 |
| A489 | MESSIAH | 79 | 610150 | 6081 |
| A346 | MICHELLE RENEE | 98 | 966996 | 4131 |
| A272 | MIDDLEPOINT | 83 | 661543 | 3427 |
| A470 | MIDNITE SUN | 85 | 548491 | 3060 |
| A122 | MILKY WAY | 72 | 599711 | 3038 |
| A551 | MISS ANNGEL | 72 | 607807 | 2860 |
| A219 | MISS BERDIE | 80 | 913277 | 3679 |
| A406 | MISS BLU | 68 | 538250 | 708 |
| A236 | MISS CONCEPTION | 69 | 533411 | 171 |
| A029 | MISS CORINNE | 58 | 607659 | 1314 |
| A205 | MISS JANE | 84 | 543021 | 2603 |
| A325 | MISS LEONA | 86 | 522643 | 1482 |
| A244 | MISS LINDA | 59 | 559778 | 507 |
| A479 | MISS SARAH | 103 | 921578 | 4989 |
| A141 | MISS TIFFANIE | 70 | 646374 | 2265 |
| A649 | MISTY DAWN | 107 | 926647 | 5946 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A321 | MONRAD FARSTAD | 80 | 550564 | 4161 |
| A137 | MORIAH | 75 | 556529 | 1489 |
| A053 | MORNING STAR | 148 | 610393 | 208 |
| A112 | MS. AMY | 90 | 920936 | 2904 |
| A568 | MS. JULIET | 75 | 550828 | 1698 |
| A631 | MUIR MILACH | 86 | 611524 | 480 |
| A230 | NANCY H | 85 | 268442 | 2998 |
| A425 | NEAHKAHNIE | 109 | 599534 | 424 |
| A387 | NEPTUNE | 203 | 604812 | 3475 |
| A213 | NETTIE H | 58 | 553680 | 2202 |
| A648 | NEW LIFE | 79 | 504299 | 6182 |
| A106 | NEW STAR | 188 | 285304 | 3491 |
| A440 | NEW VENTURE | 100 | 565816 | 1137 |
| P074 | NEW WEST FISHERIES | | | 5400 |
| A215 | NIGHTWATCH | 74 | 575942 | 854 |
| A539 | NIP 'N TUCK | 66 | 611459 | 2340 |
| A579 | NO QUARTER | 51 | 681410 | 4948 |
| A415 | NOR' QUEST | 110 | 609064 | 3425 |
| A245 | NORCOASTER | 62 | 563617 | 181 |
| A003 | NORDIC EXPLORER | 115 | 678234 | 3009 |
| A455 | NORDIC FURY | 110 | 542651 | 1094 |
| A655 | NORDIC MARINER | 106 | 591077 | 6191 |
| A087 | NORDIC STAR | 123 | 584684 | 428 |
| A683 | NORDIC VIKING | 131 | 608399 | 6202 |
| P061 | NORQUEST (SILVER LINING) | | | 5336 |
| P095 | NORQUEST SEAFOODS | | | 6238 |
| P090 | NORQUEST SEAFOODS INC. | | | 5338 |
| A688 | NORSEMAN | 108 | 553713 | 5128 |
| A533 | NORSKA | 70 | 629262 | 1734 |
| A209 | NORTH | 62 | 223635 | 68 |
| A427 | NORTH AMERICAN | 110 | 566067 | 4091 |
| A132 | NORTH CAPE | 123 | 950038 | 3692 |
| A368 | NORTH COMMAND | 174 | 500871 | 5675 |
| A507 | NORTH PACIFIC | 96 | 511698 | 4851 |
| P007 | NORTH PACIFIC PROCESS | | | 5341 |
| A412 | NORTH POINT | 85 | 296653 | 5389 |
| A498 | NORTH SEA | 126 | 606565 | 3382 |
| A572 | NORTH STAR | 112 | 512076 | 948 |
| A521 | NORTHERN | 69 | 226833 | 307 |
| P075 | NORTHERN ALASKAN | | | 864 |
| A062 | NORTHERN AURORA | 155 | 596308 | 1613 |
| A532 | NORTHERN BELLE | 85 | 615387 | 4639 |
| A041 | NORTHERN EAGLE | 341 | 506694 | 3261 |
| A352 | NORTHERN EMPIRE | 194 | 566573 | 4587 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A275 | NORTHERN ENTERPRISE | 166 | 629978 | 3005 |
| A001 | NORTHERN GLACIER | 201 | 663457 | 661 |
| A282 | NORTHERN HAWK | 341 | 643771 | 4063 |
| A080 | NORTHERN JAEGER | 336 | 521069 | 3896 |
| A357 | NORTHERN LADY | 138 | 930157 | 3363 |
| A413 | NORTHERN MARINER | 110 | 556251 | 4543 |
| A405 | NORTHERN MARINER | 73 | 958549 | 3741 |
| A133 | NORTHERN PATRIOT | 152 | 637744 | 2769 |
| A634 | NORTHERN PRINCE | 53 | 563437 | 5912 |
| A329 | NORTHERN SPIRIT | 90 | 613825 | 3736 |
| P059 | NORTHERN VICTOR | 379 | 248959 | 4078 |
| A007 | NORTHWEST EXPLORER | 162 | 609384 | 3002 |
| A524 | NORTHWEST MARINER | 106 | 625268 | 4580 |
| A426 | NORTHWESTERN | 126 | 587816 | 4973 |
| A583 | NORTHWYN | 80 | 250121 | 4336 |
| A312 | NORTON SOUND | 136 | 936017 | 5294 |
| A673 | NOTORIOUS | 120 | 291882 | 4185 |
| A390 | NOWITNA | 135 | 608699 | 2222 |
| A635 | NUKA ISLAND | 105 | 604208 | 1959 |
| A491 | NUNIVAK | 86 | 264094 | 506 |
| A403 | OBSESSION | 107 | 603285 | 2212 |
| A049 | OCEAN ALASKA | 107 | 623210 | 528 |
| A629 | OCEAN HARVESTER (Longline) | 72 | 524908 | 649 |
| A240 | OCEAN HARVESTER (Pot/Trawl) | 108 | 549892 | 5130 |
| A522 | OCEAN BALLARD | 114 | 974507 | 4573 |
| P023 | OCEAN BEAUTY SFDS-KODIAK | | | 5370 |
| P055 | OCEAN BEAUTY-CORDOVA | | | 5369 |
| A233 | OCEAN CAPE | 98 | 583721 | 1615 |
| A183 | OCEAN DAWN | 80 | 550890 | 1936 |
| A004 | OCEAN EXPLORER | 155 | 678236 | 3011 |
| A417 | OCEAN FURY | 124 | 586441 | 5368 |
| A152 | OCEAN HOPE I | 92 | 652395 | 1640 |
| A020 | OCEAN HOPE I I I | 96 | 652397 | 1623 |
| A154 | OCEAN HUNTER | 88 | 622324 | 1964 |
| A373 | OCEAN LEADER | 120 | 561518 | 1229 |
| A501 | OCEAN OLYMPIC | 156 | 592441 | 4940 |
| A110 | OCEAN PEACE | 219 | 677399 | 2134 |
| A090 | OCEAN PHOENIX | 688 | 296779 | 3703 |
| P076 | OCEAN PRIDE | | | 4319 |
| A237 | OCEAN PROWLER | 155 | 632751 | 3336 |
| A136 | OCEAN ROVER | 256 | 552100 | 3442 |
| A340 | OCEAN SPRAY | 80 | 517100 | 815 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A550 | OCEAN STORM | 166 | 602654 | 3355 |
| A497 | OCEAN TEMPEST | 156 | 509743 | 3723 |
| A081 | OCEANIC | 122 | 602279 | 1667 |
| A268 | OLYMPIC | 168 | 599434 | 2834 |
| P077 | OMNISEA | 323 | 247493 | 5119 |
| A129 | ONE OCEAN | 74 | 926699 | 3097 |
| A296 | ORION | 80 | 530292 | 1769 |
| P089 | OSTERMAN FISH | | | 5349 |
| A281 | PACESETTER | 114 | 576391 | 3750 |
| A161 | PACIFIC | 74 | 226539 | 3758 |
| A310 | PACIFIC ALLIANCE | 105 | 612084 | 2816 |
| A156 | PACIFIC BREEZE | 90 | 591887 | 3700 |
| A474 | PACIFIC CHALLENGER | 104 | 518937 | 657 |
| A063 | PACIFIC EXPLORER | 155 | 678237 | 3010 |
| A456 | PACIFIC FURY | 110 | 561934 | 421 |
| A039 | PACIFIC GLACIER | 276 | 933627 | 3357 |
| P078 | PACIFIC HARVESTER | | | |
| A109 | PACIFIC KNIGHT | 185 | 561771 | 2783 |
| A570 | PACIFIC MAIDEN | 69 | 598959 | 1520 |
| A465 | PACIFIC MARINER | 126 | 560501 | 4581 |
| A519 | PACIFIC MIST | 87 | 293053 | 1923 |
| A097 | PACIFIC MONARCH | 166 | 557467 | 2785 |
| A509 | PACIFIC PEARL | 162 | 614930 | 276 |
| A574 | PACIFIC PRINCE | 149 | 697280 | 4194 |
| P079 | PACIFIC PRODUCERS | | | |
| A554 | PACIFIC RAM | 77 | 589115 | 4305 |
| A658 | PACIFIC SOJOURN | 72 | 664245 | 751 |
| A026 | PACIFIC STAR | 79 | 633001 | 2781 |
| A686 | PACIFIC STORM | 82 | 604146 | 2797 |
| A462 | PACIFIC SUN | 121 | 604581 | 3648 |
| A096 | PACIFIC TRAWLER | 132 | 664799 | 3349 |
| A441 | PACIFIC VENTURE | 102 | 523423 | 3238 |
| A169 | PACIFIC VIKING | 127 | 555058 | 422 |
| P080 | PALISADES | 155 | 536355 | 3852 |
| A419 | PANDAD | 70 | 512414 | 270 |
| A235 | PARAGON I I | 110 | | 371 |
| A576 | PATHFINDER | 180 | 591678 | 4306 |
| A277 | PAVLOF | 166 | 597532 | 3406 |
| A399 | PEGASUS (LL/Pot) | 72 | 567048 | 952 |
| A191 | PEGASUS (Trawler) | 96 | 565120 | 1265 |
| A011 | PEGGY JO | 99 | 502779 | 979 |
| A435 | PEGGY ROSE | 68 | 614537 | 304 |
| P035 | PELICAN SEAFOODS, INC. | | | 5385 |
| A335 | PERSEVERANCE | 87 | 536873 | 2837 |
| A434 | PERSISTENCE | 76 | 581823 | 5381 |
| P015 | PETER PAN SFDS-KING COVE | | | 5358 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| P046 | PETER PAN SFDS-VALDEZ | | | 5357 |
| A471 | PHOENIX | 104 | 250687 | 2855 |
| A162 | PHOENIX | 75 | 507268 | 2469 |
| A144 | PISCES | 33 | AK403 3 | 378 |
| A420 | POINT OMEGA | 72 | 525825 | 1937 |
| A665 | POLAR LADY | 105 | 609940 | 5123 |
| P081 | POLAR QUEEN | 151 | 523613 | 4104 |
| A626 | POLAR SEA | 104 | 589317 | 4590 |
| A207 | POLARIS | 76 | 210966 | 51 |
| A396 | POLESTAR | 103 | 960839 | 5390 |
| A094 | POSEIDON | 117 | 610436 | 1164 |
| A249 | PREDATOR (LL/Pot) | 63 | 589907 | 2844 |
| A337 | PREDATOR (Trawl) | 90 | 547390 | 1275 |
| P040 | PRIBOLOF ISLAND PROC. | | | |
| P093 | PRIME ALASKA SFDS | | | 5333 |
| A541 | PRO VISION | 92 | 552625 | 2905 |
| A342 | PROGRESS | 114 | 565349 | 512 |
| A075 | PROSPERITY | 137 | 615485 | 3361 |
| A328 | PROVIDENCE | 70 | 682689 | 2420 |
| A016 | PROWLER | 115 | 623837 | 1622 |
| P024 | QUEEN - EAST PT KODIAK | | | 5326 |
| A273 | QUEST | 65 | 604314 | 438 |
| A186 | RACHEL K | 63 | 575123 | 3735 |
| A571 | RANGER | 86 | 249514 | 3895 |
| A193 | RAVEN | 92 | 629499 | 1236 |
| A089 | REBECCA B | 77 | 677263 | 2817 |
| A034 | REBECCA IRENE | 140 | 697637 | 1610 |
| A652 | REBEL | 98 | | 3689 |
| A392 | RED BARON | 73 | 262690 | 373 |
| A685 | RELIANCE | 165 | 516256 | 5393 |
| A265 | REPUBLIC | 86 | 211802 | 221 |
| A208 | RESOLUTE (LL) | 72 | 223688 | 46 |
| A098 | RESOLUTE (Trawler) | 240 | 553631 | 3702 |
| A560 | RESPONSE | 125 | 561289 | 4209 |
| P051 | RESURRECTION BAY SFDS | | | 5438 |
| A469 | RETRIEVER | 133 | 598975 | 4588 |
| A187 | ROCKY B | 66 | 614651 | 1042 |
| A338 | ROGUE | 86 | 944290 | 4138 |
| A654 | ROLLO | 107 | | 5449 |
| A319 | ROSELLA | 90 | 509579 | 2861 |
| P047 | ROYAL ALEUTIAN SFDS | | | 5313 |
| A134 | ROYAL AMERICAN | 105 | 624371 | 543 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A188 | ROYAL ATLANTIC | 124 | 559271 | 236 |
| A021 | ROYAL BARON | 97 | 260803 | 540 |
| A301 | ROYAL ENTERPRISE | 203 | 615663 | 4134 |
| A480 | ROYAL QUARRY | 82 | 520953 | 626 |
| A430 | ROYAL VIKING | 108 | 542375 | 5455 |
| A159 | RUFF & REDDY | 90 | 514964 | 651 |
| A621 | SAGA | 107 | 606800 | 5792 |
| P052 | SAHALEE OF AK | | | 5304 |
| A229 | SAN PEDRO PRIDE | 80 | 549506 | 4205 |
| A384 | SAVAGE | 71 | 648797 | 4100 |
| A380 | SCANDIES ROSE | 130 | 602351 | 5456 |
| A500 | SEA PRODUCER | 167 | 284437 | 1922 |
| P097 | SEA ALASKA | | | 3231 |
| A370 | SEA ERN | 112 | 504144 | 4652 |
| A667 | SEA FISHER | 148 | 296512 | 20 |
| A131 | SEA MAC | 87 | 525516 | 1043 |
| A458 | SEA QUAIL | 82 | 248228 | 2734 |
| A676 | SEA ROVER | 108 | 546728 | 7133 |
| A482 | SEA STAR | 104 | 521201 | 439 |
| A123 | SEA STORM | 123 | 628959 | 420 |
| A166 | SEA VALLEY I I | 66 | 625137 | 2853 |
| A628 | SEA VENTURE (Pot) | 104 | 525572 | 2122 |
| A556 | SEA VENTURE (Trawler) | 65 | 531117 | 4539 |
| A643 | SEA WARRIOR | 99 | 563829 | 3072 |
| A061 | SEA WOLF | 143 | 609823 | 1652 |
| P082 | SEABOARD BARGE | | | |
| A290 | SEABROOKE | 109 | 614410 | 3035 |
| A121 | SEADAWN | 124 | 548685 | 2059 |
| A276 | SEAFISHER | 230 | 575587 | 3835 |
| P091 | SEAFOOD PRODUCERS COOPERATIVE | | | |
| A050 | SEAFREEZE ALASKA | 297 | 517242 | 2733 |
| A045 | SEATTLE ENTERPRISE | 270 | 904767 | 3245 |
| A258 | SEATTLE STAR | 138 | 250464 | 2008 |
| A495 | SEAWIND | 166 | 610220 | 3704 |
| A318 | SEEKER | 98 | 924585 | 2849 |
| A218 | SEMIDI | 65 | 214876 | 724 |
| A172 | SEYMOUR | 82 | 210939 | 283 |
| A644 | SHAMAN | 110 | 558637 | 602 |
| A496 | SHELIKOF | 150 | 597967 | 3705 |
| A429 | SHELLFISH | 94 | 506986 | 290 |
| A617 | SIBERIAN SEA | 137 | 975853 | 4578 |
| A345 | SIERRA SEAS | 65 | 249822 | 3029 |
| A367 | SILENT LADY | 150 | 529872 | 5328 |
| A246 | SILVER CHALICE | 72 | 598904 | 328 |
| A504 | SILVER SPRAY | 116 | 964016 | 4101 |
| A111 | SISU | 83 | 585708 | 2731 |
| P026 | SITKA SOUND-SITKA | | | 5346 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| P037 | SITKA SOUND-YAKUTAT | | | 5359 |
| A511 | SJOVIND | 180 | 587409 | 3990 |
| P083 | SNOPAC | | | 3592 |
| A411 | SNUG HARBOR | 78 | 948313 | 3940 |
| A203 | SOJOURN | 67 | 626614 | 1157 |
| A284 | SONNY BOY | 79 | 546375 | 2537 |
| A531 | SOUND PACER | 80 | 948793 | 4664 |
| A197 | SOUTHEAST | 66 | 694038 | 1798 |
| A365 | SOUTHERN SEAS | 66 | 950624 | 4333 |
| A512 | SOUTHERN WIND | 141 | 625927 | 1696 |
| A145 | SOVEREIGNTY | 152 | 651752 | 2770 |
| A024 | SPEEDWELL | 167 | 594754 | 2329 |
| P036 | ST. ELIAS OCEAN PRODUCTS | | | |
| A135 | ST. JANET | 73 | 516881 | 2104 |
| A211 | ST. JOHN I I | 65 | 245779 | 485 |
| A581 | ST. JUDE | 86 | 917554 | 4210 |
| A394 | STAR OF THE SEA | 65 | 633592 | 3337 |
| A091 | STARBOUND | 240 | 944658 | 3414 |
| A022 | STARFISH | 123 | 561651 | 1167 |
| A151 | STARLITE | 123 | 597065 | 1998 |
| A138 | STARWARD | 123 | 617807 | 417 |
| P039 | STELLAR SEA | | | 5362 |
| A060 | STORM PETREL | 123 | 620769 | 1641 |
| A184 | STORMBIRD | 90 | 656842 | 1751 |
| A494 | SUNDANCER | 64 | 634057 | 4659 |
| A452 | SUNRISE | 89 | 238918 | 5759 |
| A543 | SUNSET | 65 | 223408 | 333 |
| A092 | SUNSET BAY | 122 | 598484 | 251 |
| A401 | SUNWARD | 65 | 251957 | 2075 |
| A682 | SUSITNA | 85 | 603312 | 1901 |
| A577 | SYLVIA | 60 | 226282 | 3107 |
| A018 | TAASINGE | 73 | 547210 | 912 |
| P012 | TAKU SMOKERIES | | | 27991 |
| A540 | TAMAR | 80 | 617170 | 4665 |
| A400 | TANI RAE | 90 | 542076 | 5158 |
| A251 | TARKA I I | 60 | 557686 | 444 |
| A668 | TEMPEST | 83 | 506261 | 3479 |
| A461 | TERRIER | 78 | 667475 | 4827 |
| A263 | THOR | 68 | 224713 | 1628 |
| A418 | TIME BANDIT | 114 | 973238 | 4984 |
| A051 | TONQUIN | 105 | 258868 | 2570 |
| A234 | TOPAZ | 80 | 575428 | 405 |
| A178 | TORDENSKJOLD | 75 | 209487 | 592 |
| A378 | TOTEM | 79 | 542086 | 3330 |
| A247 | TRACY ANNE | 95 | 904859 | 2823 |
| A428 | TRAILBLAZER | 133 | 596514 | 3343 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A239 | TRASK | 73 | 246520 | 1909 |
| A124 | TRAVELER | 109 | 929356 | 3404 |
| A031 | TREMONT | 124 | 529154 | 2018 |
| A228 | TRIDENT (LL) | 64 | 622186 | 662 |
| P018 | TRIDENT SFDS KODIAK | | | 27990 |
| P001 | TRIDENT SFDS-AKUTAN | | | 5306 |
| P038 | TRIDENT SFDS-SAND POINT | | | 5305 |
| P092 | TRIDENT SFDS-ST PAUL | | | 5307 |
| A332 | TRIONFO | 64 | 625449 | 2988 |
| A565 | TUCANA | 85 | 622875 | 4374 |
| A362 | TUXEDNI | 109 | 513354 | 3589 |
| A043 | U.S. ENTERPRISE | 224 | 921112 | 3004 |
| A066 | U.S. INTREPID | 185 | 604439 | 2800 |
| A023 | U.S. LIBERATOR | 161 | 611520 | 372 |
| A047 | UNIMAK | 185 | 637693 | 3369 |
| P041 | UNIPAC | | | 5311 |
| P008 | UNISEA BARGE | | | 5309 |
| P009 | UNISEA: G1 & G2 | | | 5310 |
| A575 | URSA MINOR | 88 | 590767 | 1948 |
| P029 | URSIN SFDS 511 SHEL. | | | |
| A118 | VAERDAL | 124 | 611225 | 2123 |
| A618 | VALIANT | 111 | 522574 | 5717 |
| A438 | VAN ELLIOTT | 76 | 524557 | 1575 |
| A012 | VANGUARD | 94 | 617802 | 519 |
| A177 | VANSEE | 87 | 210906 | 61 |
| A446 | VEGA | 90 | 516479 | 332 |
| A261 | VERNON | 50 | 220310 | 3646 |
| A510 | VESTERAALEN | 124 | 611642 | 517 |
| A409 | VIEKODA BAY | 102 | 939078 | 4593 |
| A212 | VIGOROUS | 67 | 250226 | 937 |
| A341 | VIKING | 93 | 606625 | 3665 |
| A093 | VIKING | 144 | 565017 | 1222 |
| A167 | VIKING EXPLORER | 124 | 605228 | 1116 |
| A525 | VINCE | 82 | 679775 | 3796 |
| A657 | VIXEN | 98 | 1063312 | 6210 |
| A086 | WALTER N | 95 | 257365 | 825 |
| P042 | WARDS COVE-ALITAK | | | 5348 |
| P033 | WARDS COVE-KODIAK | | | 5414 |
| A196 | WESTERLY | 72 | 507754 | 1286 |
| P022 | WESTERN AK FISHERIES | | | 5347 |
| A128 | WESTERN DAWN | 113 | 524423 | 134 |
| A274 | WESTERN ENTERPRISE | 166 | 629826 | 3268 |

| Vessel Code | Vessel or Plant Name | Len. ft. | USCG # | NMFS Permit # |
|---|---|---|---|---|
| A675 | WESTERN QUEEN | 166 | 284906 | 2647 |
| P084 | WESTERN SEA | | | 3590 |
| A214 | WESTERN STAR | 80 | 612319 | 2511 |
| A383 | WESTERN VIKING | 101 | 507161 | 5131 |
| A445 | WESTLING | 108 | 633577 | 2150 |
| A095 | WESTWARD I | 135 | 615165 | 1650 |
| P013 | WESTWARD SFDS-DUTCH HARBOR | | | 5323 |
| A278 | WESTWARD WIND | 160 | 595289 | 3274 |
| A545 | WILD THING | 98 | 620343 | 4284 |
| A248 | WINDJAMMER | 75 | 515274 | 2076 |
| A538 | WINONA J | 69 | 645410 | 1433 |
| A547 | WIZARD | 156 | 594470 | 4532 |
| A190 | WONIYA | 72 | 636605 | 1979 |
| P085 | WOODBINE | | | 4152 |
| A520 | YAKUTAT | 78 | 211859 | 3930 |
| P086 | YARDARM KNOT | 323 | 250424 | 3116 |
| A099 | YUKON QUEEN | 166 | 509115 | 3616 |
| A527 | ZACHERY R | 66 | 532084 | 1981 |
| A146 | ZENITH | 124 | 628313 | 440 |
| A450 | ZOLOTOI | 98 | 625095 | 3016 |

The following vessel names recently changed. You may need to look up vessel profiles by the former name.

Cascade Mariner formerly the Cascade.

Tremont formerly the Alaskan Rose.

Kari Marie formerly the Grizzly.

Adak Plant formerly Norquest Seafoods-Adak.

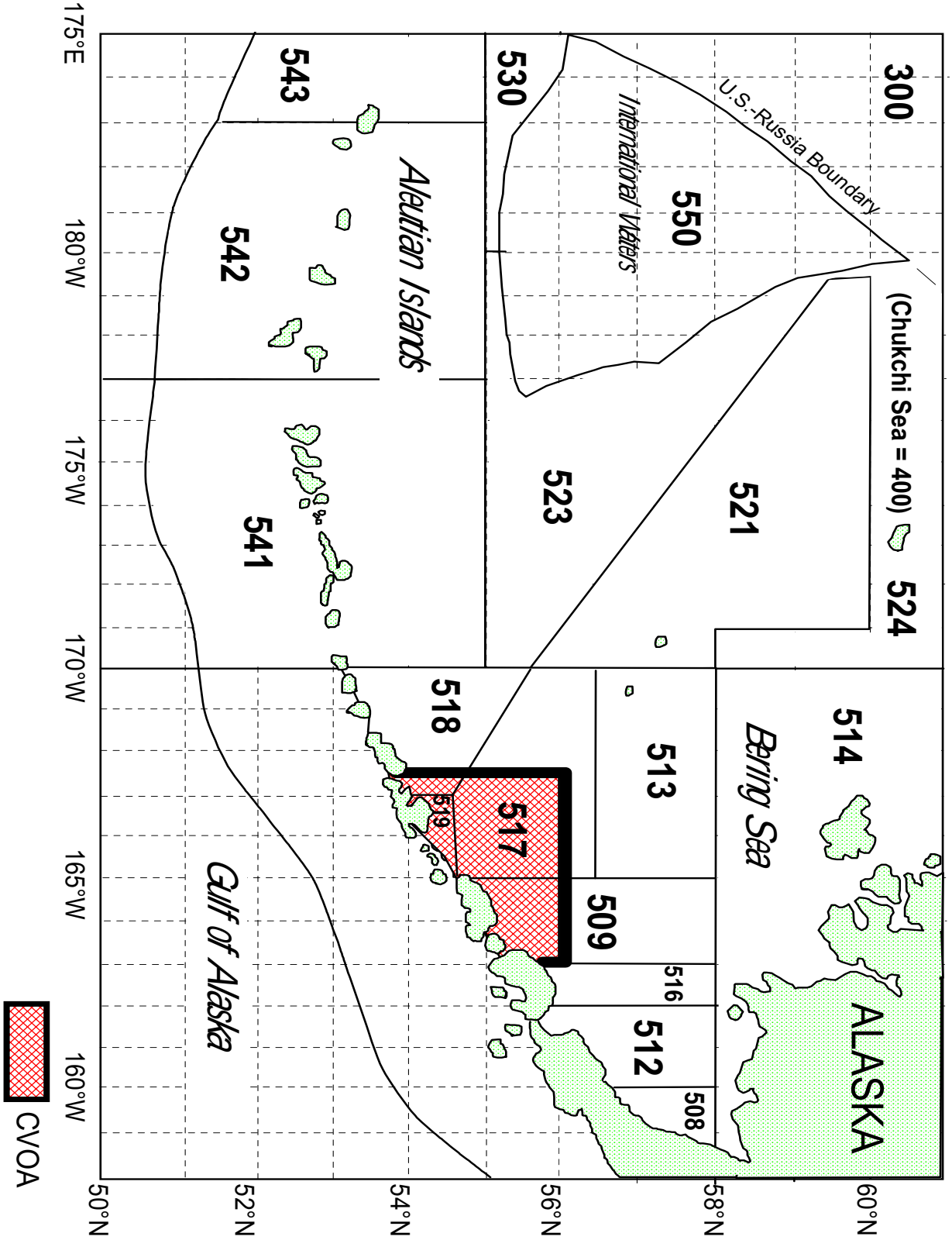
Ocean Alaska formerly the Beagle.

Northern Mariner formerly the Northern Cascade.

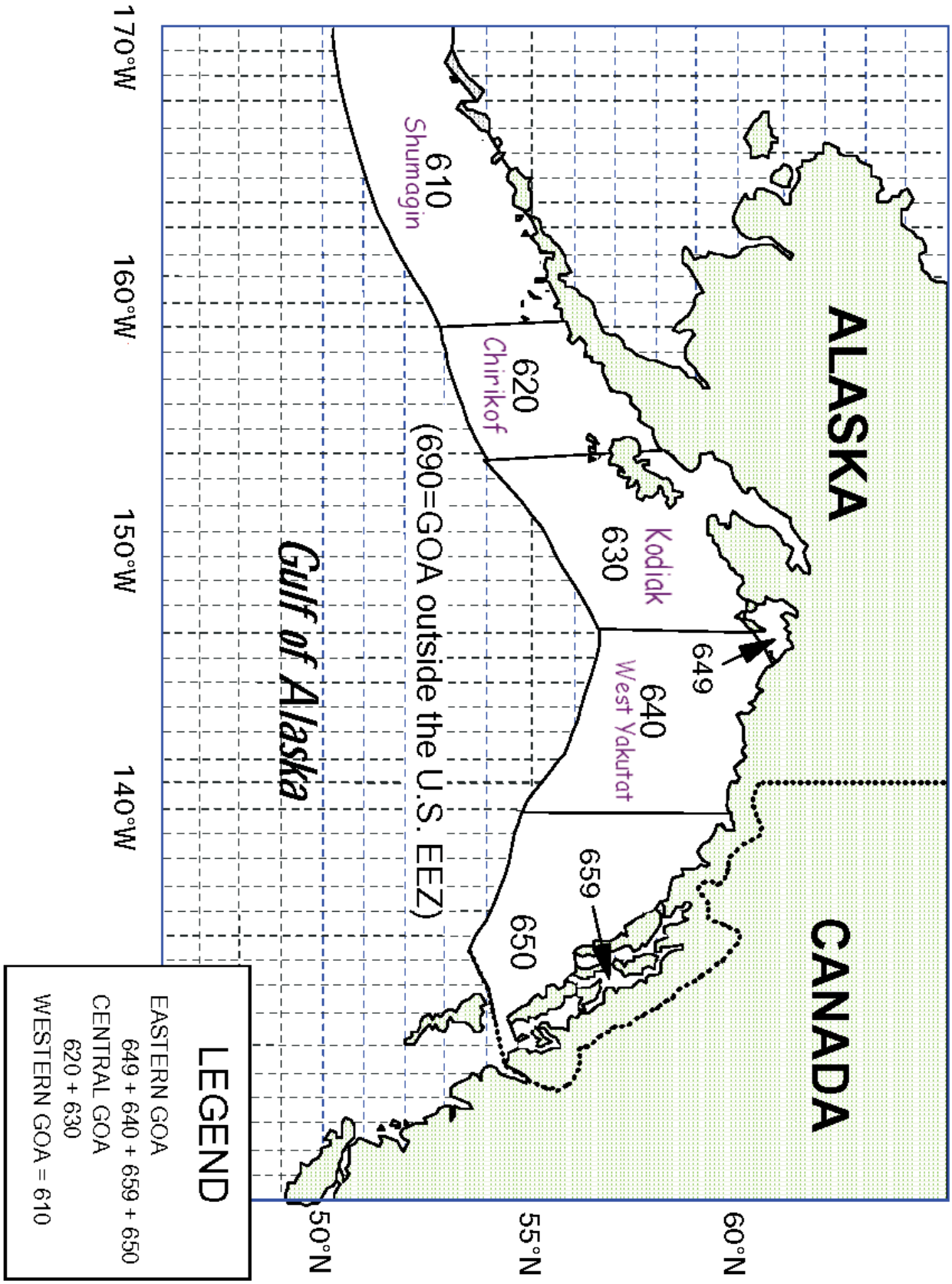
Arctic Star (plant) formerly the Bering Star.

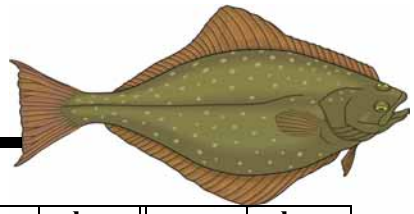
Blue Ace formerly the Storfjord

## Appendix L. NMFS Reporting Areas for the Bering Sea and Aleutian Islands



## Appendix M. NMFS Reporting Areas for the Gulf of Alaska





## Appendix N. Halibut Length to Weight Table

| cm. | kg. | cm. | kg. | cm. | kg. |
|---|---|---|---|---|---|
| 10 - 12 | .01 | 54 | 1.72 | 94 | 10.34 |
| 13 - 14 | .02 | 55 | 1.82 | 95 | 10.70 |
| 15 - 16 | .03 | 56 | 1.93 | 96 | 11.07 |
| 17 | .04 | 57 | 2.05 | 97 | 11.45 |
| 18 | .05 | 58 | 2.16 | 98 | 11.83 |
| 19 | .06 | 59 | 2.29 | 99 | 12.23 |
| 20 | .07 | 60 | 2.41 | 100 | 12.64 |
| 21 | .08 | 61 | 2.55 | 101 | 13.05 |
| 22 | .09 | 62 | 2.69 | 102 | 13.47 |
| 23 | .11 | 63 | 2.83 | 103 | 13.91 |
| 24 | .12 | 64 | 2.98 | 104 | 14.35 |
| 25 | .14 | 65 | 3.13 | 105 | 14.80 |
| 26 | .16 | 66 | 3.29 | 106 | 15.26 |
| 27 | .18 | 67 | 3.45 | 107 | 15.73 |
| 28 | .21 | 68 | 3.62 | 108 | 16.21 |
| 29 | .23 | 69 | 3.80 | 109 | 16.71 |
| 30 | .26 | 70 | 3.98 | 110 | 17.21 |
| 31 | .28 | 71 | 4.17 | 111 | 17.72 |
| 32 | .32 | 72 | 4.36 | 112 | 18.24 |
| 33 | .35 | 73 | 4.56 | 113 | 18.77 |
| 34 | .38 | 74 | 4.76 | 114 | 19.32 |
| 35 | .42 | 75 | 4.98 | 115 | 19.87 |
| 36 | .46 | 76 | 5.19 | 116 | 20.44 |
| 37 | .50 | 77 | 5.42 | 117 | 21.01 |
| 38 | .55 | 78 | 5.65 | 118 | 21.60 |
| 39 | .60 | 79 | 5.89 | 119 | 22.20 |
| 40 | .65 | 80 | 6.13 | 120 | 22.81 |
| 41 | .72 | 81 | 6.38 | 121 | 23.43 |
| 42 | .76 | 82 | 6.64 | 122 | 24.07 |
| 43 | .82 | 83 | 6.91 | 123 | 24.71 |
| 44 | .88 | 84 | 7.18 | 124 | 25.37 |
| 45 | .95 | 85 | 7.46 | 125 | 26.04 |
| 46 | 1.02 | 86 | 7.75 | 126 | 26.72 |
| 47 | 1.10 | 87 | 8.05 | 127 | 27.41 |
| 48 | 1.17 | 88 | 8.35 | 128 | 28.12 |
| 49 | 1.25 | 89 | 8.66 | 129 | 28.83 |
| 50 | 1.34 | 90 | 8.98 | 130 | 29.56 |
| 51 | 1.43 | 91 | 9.31 | 131 | 30.31 |
| 52 | 1.52 | 92 | 9.64 | 132 | 31.06 |
| 53 | 1.62 | 93 | 9.99 | 133 | 31.83 |

| cm. | kg. | cm. | kg. | cm. | kg. |
|---|---|---|---|---|---|
| 134 | 32.61 | 175 | 77.45 | 216 | 153.18 |
| 135 | 33.41 | 176 | 78.89 | 217 | 155.49 |
| 136 | 34.22 | 177 | 80.35 | 218 | 157.82 |
| 137 | 35.04 | 178 | 81.83 | 219 | 160.18 |
| 138 | 35.87 | 179 | 83.33 | 220 | 162.56 |
| 139 | 36.72 | 180 | 84.85 | 221 | 164.97 |
| 140 | 37.59 | 181 | 86.39 | 222 | 167.40 |
| 141 | 38.46 | 182 | 87.94 | 223 | 169.85 |
| 142 | 39.35 | 183 | 89.52 | 224 | 172.33 |
| 143 | 40.26 | 184 | 91.11 | 225 | 174.84 |
| 144 | 41.18 | 185 | 92.73 | 226 | 177.37 |
| 145 | 42.11 | 186 | 94.36 | 227 | 179.93 |
| 146 | 43.06 | 187 | 96.01 | 228 | 182.51 |
| 147 | 44.02 | 188 | 97.39 | 229 | 185.11 |
| 148 | 45.00 | 189 | 99.11 | 230 | 187.75 |
| 149 | 45.99 | 190 | 101.10 | 231 | 190.40 |
| 150 | 47.00 | 191 | 102.83 | 232 | 193.09 |
| 151 | 48.02 | 192 | 104.58 | 233 | 195.80 |
| 152 | 49.06 | 193 | 106.36 | 234 | 198.53 |
| 153 | 50.12 | 194 | 108.16 | 235 | 201.29 |
| 154 | 51.18 | 195 | 109.97 | 236 | 204.08 |
| 155 | 52.27 | 196 | 111.81 | 237 | 206.90 |
| 156 | 53.37 | 197 | 113.67 | 238 | 209.74 |
| 157 | 54.49 | 198 | 116.00 | 239 | 212.61 |
| 158 | 55.62 | 199 | 117.45 | 240 | 215.50 |
| 159 | 56.77 | 200 | 119.37 | 241 | 218.43 |
| 160 | 57.93 | 201 | 121.32 | 242 | 221.38 |
| 161 | 59.11 | 202 | 123.28 | 243 | 224.35 |
| 162 | 60.31 | 203 | 125.27 | 244 | 227.36 |
| 163 | 61.53 | 204 | 127.28 | 245 | 230.39 |
| 164 | 62.76 | 205 | 129.32 | 246 | 233.45 |
| 165 | 64.01 | 206 | 131.37 | 247 | 236.54 |
| 166 | 65.27 | 207 | 133.45 | 248 | 239.66 |
| 167 | 66.55 | 208 | 135.55 | 249 | 242.80 |
| 168 | 67.83 | 209 | 137.67 | 250 | 245.98 |
| 169 | 69.17 | 210 | 139.82 | | |
| 170 | 70.51 | 211 | 141.99 | | |
| 171 | 71.86 | 212 | 144.18 | | |
| 172 | 73.23 | 213 | 146.39 | | |
| 173 | 74.62 | 214 | 148.63 | | |
| 174 | 76.02 | 215 | 150.89 | | |

# Appendix O. Halibut Condition Criteria For Trawl Bycatch

**The criteria are listed in order of importance.**

**Excellent: Fish is alive, showing no stress, and injuries, if any, are slight.**

1. External injuries.
   - Superficial nicks or cuts on body.
   - Little (<10% of fin area) or no fraying of dorsal and anal fin.
   - Hemorrhaging (redness) of skin on white side limited to 5-10% of surface area.
2. Operculum pressure.
   - Fish is able to close operculum tightly for at least 5-10 seconds.
   - Muscle tone and physical activity.
   - Strong and lively, perhaps flopping around on deck if provoked.
   - Fish can tightly clench its jaw.
3. Bleeding.
   - No bleeding observed.
4. Gills and gill color.
   - Deep red in color.

**Poor: Fish is alive, but showing signs of stress.**

1. Injuries are apparent.
   - Body abrasions have damaged the skin but skin is still present, not missing.
   - Cuts and lacerations in body extend through skin just into flesh and are not deep.
   - Between 10 and 50% of dorsal and anal fins are frayed.
   - Slight bleeding from fin edges.
   - Approximately 10-25% of skin on white side of fish shows hemorrhaging.
2. Operculum pressure.
   - Fish closes operculum weakly and not sustained.
3. Muscle tone or physical activity.
   - Weak, intermittent movement. May respond if stimulated or provoked.
   - Body is limp, but not in rigor mortis.
4. Bleeding.
   - Blood is continually flowing from gills, but not profusely.
5. Gills and gill color.
   - Deep to bright red in color.

**Dead: No sign of life or, if alive, likely to die from severe injuries or suffocation.**

1. Injuries are apparent.
   - Body cavity ripped open.
   - Internal organs exposed and damaged.
   - Cuts and lacerations in body extend deeply into the flesh.
   - Sediment in mouth.
   - Hemorrhaging in skin on 25% or more of white side.
2. Operculum pressure.
   - Fish does not close operculum.
3. Muscle tone and physical activity.
   - No sign of muscle tone (limp) or fish is in rigor (stiff).
   - Physical activity absent or limited to fin ripples or twitches.
   - Little, if any, response to stimuli.
   - Jaw is hanging open.
4. Bleeding.
   - Blood is flowing freely and continuously in large quantity from a torn or severed gill arch, or a body injury.
5. Gills and gill color.
   - Gills appear washed out, e.g., dull red, pink, or white in color.

## Appendix P. Key to Pacific Halibut Viability for Trawl Vessels

### Codes: Excellent = E, Poor = P, Dead = D, Unknown = U

**1a.** Fish is alive ..... Go to 2a
**1b.** Fish is dead when sorted from the catch ..... code **DEAD**
*Fish is in rigor and lifeless, even if no apparent injuries. Gills appear washed out, i.e., dull red, pink, or white in color. Mouth may contain sediment.*

**2a.** Body of fish appears uninjured, or has only minor injuries ..... Go to 3a
**2b.** Injuries to fish are significant and obvious..... code **DEAD**
*Body cavity is ripped open, exposing internal organs. Body tissue may be torn or ripped in a rough, ragged manner. Red hemorrhaging observed on 25% or more of the white side.*

**3a.** Fish is able to close operculum when stimulated ..... Go to 4a
*Operculum is closed strongly or weakly, but pressure is evident. Operculum may not stay closed for long, though pressure may last up to 5 seconds or longer.*
**3b**. Fish cannot close operculum, even when stimulated ..... code **DEAD**

**4a.** Fish displays activity and has muscle tone ..... go to 5a
*Fish displays a minimal amount of activity, especially when stimulated. May be able to clench jaw tightly.*
**4b.** Fish exhibits no muscle tone ..... code **DEAD**

**5a.** Fish is not bleeding, or only slightly bleeding, if at all ..... go to 6a
**5b.** Blood is flowing freely and continuously in large quantity (profusely) ..... code **DEAD**
*Bleeding is coming from a torn or severed gill arch, or a body injury.*

**6a.** Body injuries are minimal, perhaps difficult to find..... go to 7a
*May consist of superficial nicks or cuts on body. Less than 10% of dorsal and anal fin area is frayed.*
**6b.** Body injuries are readily apparent..... code **POOR**
*Skin is damaged with abrasions. Cuts and lacerations in body extend through the skin and just barely into the flesh (not deeply). Dorsal and anal fin area is frayed between 10-50% Fin edges may be bleeding. Roughly 10-25% of the white side of fish shows red hemorrhaging.*

**7a.** Operculum pressure is strong and sustained..... go to 8a
**7b.** Operculum pressure is weak and not sustained..... code **POOR**

**8a.** Fish is strong and lively, displaying good muscle tone ..... go to 9a
*Fish is flopping around the deck, hard to control. Jaw may be tightly clenched, difficult to open.*
**8b.** Fish appears weak..... code **POOR**
*Movement is intermittent, perhaps occurring when provoked or stimulated. Body is limp.*

**9a.** Fish is bleeding from gills ..... code **POOR**
*Blood is flowing continuously, slow and steadily, but not profusely. Gills are deep to bright red in color.*
**9b.** No bleeding observed ..... code **EXCELLENT**
*Gills are deep red in color.*

# Appendix Q. Halibut Condition Criteria For Pot Bycatch

**The criteria are listed in order of importance**

**Excellent: Fish is alive, showing no stress, and injuries, if any, are slight.**

1. External injuries.

- Superficial nicks or cuts on body.
- Little (<10% of fin area) or no fraying of dorsal and anal fins.
- Hemorrhaging (redness) of skin on white side limited to 5-10% of surface area.

2. Operculum pressure.

- Fish is able to close operculum tightly for at least 5-10 seconds.

3. Muscle tone and physical activity.

- Strong and lively, perhaps flopping around on deck if stimulated.
- Fish can tightly clench its jaw.

4. Bleeding.

- No bleeding from gills, body, or fins observed.

5. Gills and gill color.

- Deep red in color.

6. No penetration of the body or head by sand fleas. No predation by crabs.

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body, but can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.

**Poor: Fish is alive, but displaying physical injuries and signs of stress.**

1. External injuries are apparent.

- Body abrasions have damaged the skin but skin is still present, not missing.
- Cuts and lacerations in body extend through skin just into flesh and are not deep.
- Between 10 and 50% of dorsal and anal fins are frayed.
- Slight bleeding from fin edges.
- Approximately 10-25% of skin on white side of fish shows hemorrhaging.

2. Operculum pressure.

- Fish closes operculum weakly and not sustained.

3. Muscle tone or physical activity is weak.

- Intermittent body movement. May respond if stimulated.
- Body appears limp, but not in rigor mortis.

4. Bleeding.

- Blood is not flowing profusely, but is oozing continuously from fin edges or body wounds.

5. Gills and gill color.

- Gills are deep to bright red.

6. No penetration of the body or head by sand fleas. No crab predation.

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body, but can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.
- No damage to the fish from crabs, if any, in the pot.

**Dead/Fleas: No sign of life or, if alive, likely to die from injuries or predation.**

1. External and internal injuries.

- Body cavity may be ripped open.
- Internal organs may be exposed and damaged.
- Body tissue may be torn or ripped in a rough, ragged manner.
- Hemorrhaging in skin on 25% or more of white side.

2. Operculum pressure.

- Fish does not close operculum.

3. Muscle tone and physical activity.

- No sign of muscle tone (limp) or fish is in rigor (stiff)
- Physical activity absent or limited to fin ripples or twitches.
- Little, if any, response to stimuli.
- Jaw may be open and slack.

4. Bleeding.

- Blood is flowing profusely from fin edges or body.

5. Gills and gill color.

- Gills appear washed out, e.g., dull red, pink, or white in color.

6. Sand fleas have penetrated the body via the eyes, fins, or anus. Crab predation may also occur.

- Membrane surrounding eye may be partially or completely eaten by sand fleas.
- Dorsal and/or anal fin membranes may be eaten away, leaving fin rays exposed. Skin on the body is separated from tissue where sand fleas have eaten.
- Crabs in the pot may also have attacked and eaten the “dead” fish.

# Appendix R. Key to Pot Condition Codes for Pacific Halibut

**Codes: Excellent = E, Poor = P, Dead = D, Unknown = U**

**1a.** Fish is alive ..... Go to 2a
**1b.** Fish is dead when sorted from the catch..... code **DEAD**
*Fish is in rigor and lifeless, even if no apparent injuries. Gills appear washed out, i.e., dull red, pink, or white in color.*

**2a.** No penetration of the body or head by sand fleas..... Go to 3a
*Membranes surrounding eyes and anus are intact, without any holes from sand fleas. A few sand fleas my be seen on body and can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g. <10) sand fleas are found on the body.*
**2b.** Sand fleas have penetrated the body via the eyes, fins, or anus ..... code **DEAD**
*Membrane surrounding eye may be partially or completely missing. Dorsal and/or anal fin membranes may be eaten away, leaving fin rays exposed. Skin on the body is separated from tissue where sand fleas have eaten.*

**3a.** No predation of the fish's body by crabs in the pot is noted ..... Go to 4a
**3b.** Predation by crabs has occurred ..... code **DEAD**
*Crabs in the pot may have attacked and eaten the fish.*

**4a.** Body of fish appears uninjured, or has only minor injuries..... go to 5a
**4b.** Injuries to fish are obvious and significant..... code **DEAD**
*Body cavity is ripped open, exposing internal organs. Body tissue may be torn or ripped in a rough, ragged manner. Red hemorrhaging observed on 25% or more of the white side.*

**5a.** Fish is able to close operculum when stimulated ..... go to 6a
*Operculum is closed strongly or weakly, but pressure is evident. Operculum may not stay closed for long, though pressure may last up to 5 seconds or longer.*
**5b.** Fish cannot close operculum, even when stimulated ..... code **DEAD**

**6a.** Fish displays activity and has muscle tone ..... go to 7a
*Fish displays a minimal amount of activity, especially when stimulated. May be able to clench jaw, perhaps tightly.*
**6b.** Fish exhibits no muscle tone ..... code **DEAD**
*Physical activity absent or limited to fin ripples or twitches. Little, if any response to stimuli. Jaw is hanging open and is slack.*

**7a.** Fish is not bleeding, or only slightly bleeding, if it all ..... go to 8a
**7b.** Blood is flowing freely and continuously in a large quantity (profusely)..... code **DEAD**
*Bleeding is coming from fin edges or a body injury.*

**8a.** Body injuries are minimal, perhaps difficult to find..... go to 9a
*May consist of superficial nicks or cuts on body. Less than 10% of dorsal and anal fin area is frayed. Hemorrhaging of skin on white side limited to < 10% of surface area.*
**8b.** Body injuries are readily apparent..... code **POOR**
*Skin is damaged with abrasions. Cuts and lacerations in body extend through the skin and just barely into the flesh (not deeply). Dorsal and anal fin area is frayed between 10-50%. Fin edges may be bleeding slightly. Roughly 10-25% of the white side of fish shows red hemorrhaging.*

**9a.** Operculum pressure is strong and sustained.....go to 10a
*Fish should be able to close operculum for at least 5-10 seconds.*
**9b.** Operculum pressure is weak and not sustained.....code **POOR**

**10a.** Fish is strong and lively, displaying good muscle tone .....go to 11a
*Fish is flopping around the deck, hard to control. Jaw may be tightly clenched, difficult to open*.
**10b.** Fish appears weak.....code **POOR**
*Movement is intermittent and of short duration, perhaps occurring when provoked or stimulated. Body appears limp, not in rigor mortis.*

**11a.** Fish is bleeding from fin edges or body.....code **POOR**
*Blood is oozing continuously from fin edges or body wounds. Gills are deep to bright red in color.*
**11b.** No bleeding observed ..... code **EXCELLENT**
*Gills are deep red in color. Fins are not bleeding.*

# Appendix S. Halibut Injury Criteria For Longline Bycatch

### The criteria are listed in order of importance

**Minor injuries: Injuries, if any, are slight and inconsequential to health of the fish.**

1. Injuries around the mouth from the hook and hook removal are slight.

- A hook entrance/exit hole around the jaw or in the cheek.
- The lip (skin covering the external portion of the jaw) may be torn and hanging.
- The hook and some length of residual gangion may be hanging from the mouth if the gangion was cut.

2. Very little bleeding, if any.

- Bleeding is seen only in the area surrounding the jaw.
- Bleeding may have stopped, or may be continuing very slowly a few drops at a time.

3. No penetration of the body or head by sand fleas.

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body and can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.

**Moderate injuries: Injuries are present, but are not severe.**

1. Injuries may have been inflicted to the jaw, cheek, eye, or body.

- Lower jaw may be broken into 2 pieces at the snout, but each is still attached at the base of the jaw.
- Jaw is torn on one side or the other, possibly extending through the cheek.
- Hook may have punctured the eye or eye socket.
- Wounds on head and abdomen limited to surface scratches on skin.
- No wounds of any kind to abdominal organs. Abdominal cavity wall not punctured.
- Wounds in body consist of puncture holes in skin, with possibly a flesh tear.

2. Bleeding is occurring but not from gills.

- Blood may be seen around mouth and jaw.
- Blood is not flowing profusely, but is oozing continuously.

3. No penetration of the body or head by sand fleas.

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body and can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.

**Severe injuries: Severe life-threatening injuries can be seen.**

1. Injuries to the head and/or jaw have occurred. Any of the following will be present, individually or in combination:

- Skin on head (forward of preopercle) is ripped and torn deeply, exposing tissue and internal organs.
- Side of the head, possibly including the jaw, has been torn loose and missing from the fish.
- Lower jaw has been torn away and is missing.
- No wounds of any kind to abdominal organs. Abdominal cavity wall not punctured.

2. No penetration of the body or head by sand fleas.

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body and can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.

**Dead/Fleas/Bleeding: Fish is lifeless, sand flea predation, severe bleeding.**

1. Fish is already dead when brought to the surface on the gear

- Fish is in rigor and lifeless, even if no apparent injuries.
- Gills appear completely devoid of blood (light pink or white in color).

2. Marine mammals have taken bites out of the fish

- Usually taken out of the back of the fish or from the abdominal cavity.

3. Sand fleas have penetrated the body via the eyes, fins, or anus.

- Membrane surrounding eye may be partially or completely missing.
- Dorsal and/or anal fin membranes may be eaten away, leaving fin rays exposed. Skin on the body is separated from tissue where sand fleas have eaten.

4. Bleeding is severe, especially from the gills.

- Blood is flowing freely and continuously in large quantity.
- Bleeding is occurring from a torn or severed gill arch.

5. Internal organs are damaged, possibly by a gaff.

- Abdominal cavity wall is punctured or torn.
- Viscera are visible and exposed, and may be protruding.

# Appendix T. Key to Longline Injury Codes for Pacific Halibut

**Codes: 1 = Minor, 2 = Moderate, 3 = Severe, 4 = Dead/Sand Fleas/Bleeding, 9 = Unknown**

**1a.** Fish is alive ..... Go to 2a
**1b.** Fish is dead when brought to the surface on the gear ..... code **DEAD**
*Fish is in rigor and lifeless, even if no apparent injuries. Gills appear completely devoid of blood (light pink or white in color).*

**2a.** Body shows no signs of marine mammal predation ..... Go to 3a
*Fish's body is intact. Flesh my be torn, but no missing tissue.*
**2b.** Body is missing pieces of flesh ..... code **DEAD**
*Pieces of tissue are missing from predation by marine mammals. Missing pieces are typical of bites from sea lions or other large marine mammals.*

**3a.** No penetration of the body or head by sand fleas ..... Go to 4a
*Membranes surrounding eyes and anus are intact, without any holes from sand fleas. A few sand fleas may be seen on body and can be wiped off with your hand. Typically, no penetration occurs when only a few (e.g. <10) sand fleas are found on the body.*
**3b.** Sand fleas have penetrated the body via the eyes, fins, or anus ..... code **DEAD**
*Membranes surrounding eye may be partially or completely missing. Dorsal and/or anal fin membranes may be eaten away, leaving fin rays exposed. Skin on the body is separated from tissue where sand fleas have eaten.*

**4a.** No wounds of any kind to abdominal organs. Abdominal wall not punctured ..... go to 5a
**4b.** Abdominal organs are damaged, possibly by a gaff ..... code **DEAD**
*Abdominal cavity wall is punctured or torn. Viscera are visible and exposed, and may be protruding.*

**5a.** Fish is not bleeding from gills (but may be bleeding from elsewhere) ..... go to 6a
**5b.** Fish is bleeding from gills ..... code **DEAD**
*Bleeding is occurring from a torn or severed gill arch.*

**6a.** Fish is not bleeding at all, or bleeding is minor to moderate (not from gills) ..... go to 7a
*Blood may be seen around mouth and/or jaw. Blood may be oozing continuously, or bleeding may be continuing very slowly a few drops at a time, or bleeding may have stopped.*
**6b.** Bleeding is severe ..... code **DEAD**
*Blood from any source is flowing freely and continuously in large quantity.*

**7a.** Injuries to head and/or jaw are minor to moderate, but no structures are missing ..... go to 8a
**7b.** Major injuries to head and jaw, resulting in missing pieces ..... code **SEVERE**
*Side of the head, possibly including the jaw, has been torn loose and missing from the fish, and/or lower jaw has been torn away and is missing.*

**8a.** Wounds to the head (forward of preopercle and above cheek and jaw) are only surface scratches on the skin ..... go to 9a
**8b.** Skin on head (forward of preopercle) is ripped and torn deeply ..... code **SEVERE**
*Internal organs are likely exposed.*

**9a.** Eye or eye socket is not punctured ..... go to 10a
**9b.** Eye or eye socket is punctured ..... code **MODERATE**

**10a.** No wounds to the body are evident ..... go to 11a
**10b.** Wounds in body consist of puncture holes in skin, with possibly a flesh tear ..... code **MODERATE**

**11a.** Lower jaw is significantly damaged ..... code **MODERATE**
*Lower jaw may be broken into 2 pieces at the snout, but each is still attached at the base of the jaw. Jaw may be torn on one side or the other, possibly extending through the cheek.*
**11b.** Damage to lower jaw, if any, is slight..... code **MINOR**
*Injuries include the hook entrance/exit hole around the jaw or in the cheek, or a tear in the cheek. A piece of the lip may be torn and hanging from the jaw. If the gangion was cut, the hook and some length of residual gangion may be hanging from the mouth.*

# Appendix U. Contact Addresses and Numbers

**North Pacific Groundfish Observer Program (Seattle, Washington)**

During work hours, staff members will accept collect calls. After-hours, voice mail accepting collect calls is available at (206) 526-4240. Leave a message, even if only to tell us you are trying to reach us.

**Address**

NMFS Observer Program,
7600 Sand Point Way NE
Seattle, WA 98115-0070

**Data Receiving Lines:**

Fax: (206) 526-4066 or 526-4207
Standard A, B mini-M, or Iridium for ATLAS (206) 526-4121

**Staff Lines:**

Training & Debriefing: (206) 526-4192
ATLAS software or communication questions:
(206) 526-4240
Gear Room Bldg. 33: (206) 526-6827

**Anchorage Field Station**

**Physical Address**

Federal Building Annex
222 W. 8th Ave., Suite A41
Anchorage, AK 99513

Phone: (907) 271-1313

Fax: (907) 271-1315

**Enforcement**

Observers who have enforcement issues to discuss should call Mark Kirkland with NMFS Enforcement in Anchorage at (907) 271-4922. He is the primary enforcement officer for Observer reported issues.

There is also a Kodiak Enforcement Office which can be reached at (907) 486-3298 and a Dutch Harbor Enforcement Office which can be reached at (907) 581-2061

**Dutch Harbor Field Station**

**Physical Address**

FTS Office Complex, Suite 104
Dutch Harbor, AK 99692

Phone: (907) 581-2060 or (907) 581-2063

Fax: (907) 581-2066

**Mailing Address**

P.O. Box 920225
Dutch Harbor, AK 99692

VHF Channel 16: Monday - Friday 0900-1700

**Kodiak Field Station**

**Address**

NMFS Observer Program
301 Research Court
Kodiak, AK 99615

Phone: (907) 481-1770

Fax: (907) 481-1771

**North Pacific Fisheries Observer Training Center (OTC) (Anchorage, AK)**

| **Address** | |
|---|---|
| 707 A St.<br>Suite 207<br>Anchorage, AK 99501 | Phone (907) 257-2770<br><br>Fax (907) 257-2774 |

**Alaska Regional Office**

| **Address** | |
|---|---|
| National Marine Fisheries Service<br>P.O. Box 21668<br>Juneau, AK 99802-1668 | Phone: (907) 586-7228<br>This office will accept collect calls from observers on matters directly related to observer work. They will not answer "quota remaining" or "fishery closure" questions.<br>Fax: (907) 586-7465 |

**International Pacific Halibut Commission (IPHC)**

| | |
|---|---|
| Gregg Williams<br><br>E-mail: gregg@iphc.washington.edu | Phone: (206) 634-1838 ext. 209<br>Please contact Gregg with questions regarding halibut viability or injury assessments. |

**U.S. Coast Guard**

| | | |
|---|---|---|
| Anchorage | Charlie Medlicott | (907) 271-6725 |
| Kodiak | Lt. Matt Jones | (907) 487-5750 |
| Unalaska (Dutch Harbor) | Rotational Staff | (907) 581-3466 |

# Appendix V. Radio Instructions

The radios that you will encounter most often are ***VHF***-FM (Very High Frequency Modulation), used for short-range vessel-to-vessel and vessel-to-shore communication, and HF-***SSB*** (High Frequency-Single Side Band), used for communication when the stations are out of VHF range with each other. Both types offer certain special advantages, and each requires a specific operating procedure.

## VHF Radios

In the United States, the VHF band is broken up into 71 channels, with a frequency range of from 156.000 to 163.000 MHz, including six WX (Weather) channels. By law, all operating VHF stations are required to have at least three of these channels: channel 6, channel 16, and at least one other working channel.

Channel 6

(156.300 MHz) is the Intership Safety Channel, used for intership safety purposes, search-and rescue (SAR) communications with ships and aircraft of the U.S. Coast Guard, and vessel movement reporting within ports and inland waterways. This channel must not be used for non-safety communications.

Channel 16

(156.800 MHz) is the International Distress, Safety, and Calling Channel (Intership and Ship-to-Coast). This channel must be monitored at all times the station is in operation (except when actually communicating on another channel). This channel is also monitored by the U.S. Coast Guard, Public Coastal Stations, and many Limited Coastal Stations. Calls to vessels are normally initiated on this channel. Then, except in an emergency, you must switch to a working channel. I***t is against FCC regulations to conduct business on this channel.*** In addition, vessels calling must use their assigned call sign at the beginning and end of each transmission.

Channel22A

(157.100 MHz) is the US Coast Guard Liaison Channel. This channel is used for communications with Coast Guard ships, aircraft, and coastal stations after first establishing contact on channel 16. Navigational warnings and, where not available on WX channels, Marine Weather forecasts are also broadcast on this frequency.

## SSB Radios

To communicate over distances beyond twenty miles, you need to use satellite communication or a medium-to-high frequency radiotelephone referred to as Single Side Band (SSB) radio. All ship SSE radiotelephones must be capable of operating ***Frequency 2182 kHz, the international distress and calling frequency***, and at least 2 other frequencies. Frequency 2670 kHz is only used for communicating with the Coast Guard and should not be used for other purposes.

When using SSB radiotelephone, you must observe radio silence at Frequency 2182 kHz, the emergency channel, for 3 minutes immediately after the hour and the half-hour. The purpose of radio silence on the emergency hailing channel is to clear the airwave for weak or distant distress signals. No radio silence is used on the VHF emergency channel.

Every ship and all Coast Guard stations continually listen to the emergency frequencies. These channels cannot be used for other communication and extraneous conversation is illegal and dangerous. The emergency channels are:

- VHF Channel 16 (international distress channel)
- VHF Channel 13 (for ships to use to avoid collisions, cannot be used to contact the USCG shore stations)
- SSB Frequency 2182 (international distress frequency)

If you are required to send an emergency message or relay information to the Coast Guard, use the following procedures:

- When trying to establish communications, repeat the USCG Station's name and your name at least twice.

- Use radio punctuation words ("over," "clear," "out," "roger," "say again," "standing by," and "break"). Radios transmit in only one direction at a time and these words signal your intentions to the receiving station. Speak directly into the microphone, speaking loudly, slowly and distinctly.
- To be clear when using letters (for call signs or other codes), use the phonetic alphabet:

| | |
|---|---|
| A = Alpha | N = November |
| B = Bravo | O = Oscar |
| C = Charlie | P = Papa |
| D = Delta | Q = Quebec |
| E = Echo | R = Romeo |
| F = Foxtrot | S = Sierra |
| G = Gulf | T = Tango |
| H = Hotel | U = Uniform |
| I = India | V = Victor |
| J = Juliet | W = Whiskey |
| K = Kilo (keelo) | X = X-ray |
| L = Lima (leema) | Y = Yankee |
| M = Mike | Z = Zulu |

- Upon completing a transmission, sign off by identifying your vessel and using the words "clear" or "out." If you expect to resume contact soon with the same station, use the phrase "standing by."

**A correctly sent message would be as follows:**
**You (on VHF Channel 16):** Coast Guard Station Kodiak, Coast Guard Station Kodiak. This is the fishing vessel Starry Flounder, Whiskey Tango Zulu four, one, nine, zero. This is the fishing vessel Starry Flounder, Whiskey Tango Zulu four, one, nine, zero on channel sixteen, over.

**C.G.:** *Fishing vessel Starry Flounder this is Coast Guard Station Kodiak shift and answer on channel eleven, out.*

**You (now on VHF Channel 11):** Coast Guard Station Kodiak. Coast Guard Station Kodiak. This is the Starry Flounder on channel eleven, over.

**C.G.:** *Fishing vessel Starry Flounder, this is Coast Guard Station Kodiak. Send your traffic, over.*

**You:** Kodiak this is the Starry Flounder, I am the observer relaying a message for the captain. A crewman has a badly crushed arm and needs hospitalization. Can you evacuate the crewman? Over.

**C.G.:** *Vessel Starry Flounder, this is Kodiak. Affirmative. What is your current position? Over.*

**You:** Kodiak this is the Starry Flounder. Position is five-five degrees five-zero minutes north, one-five-seven degrees, two-four minutes west, over.

You would continue to provide information as requested by the Coast Guard until they end the communications by ending their final message with "out."

# Appendix W. Beam Balance Flatbed Scale Care and Maintenance

Flatbed scales are available from the Kodiak and Dutch Harbor field offices. They are particularly helpful on small vessels that have no convenient location to hang a 50 kg Salter scale. Although useful, these scales are delicate and expensive. They require proper care and maintenance to survive your deployment.

### Before You Use the Scale

As with all scales issued to you the flatbed scale must be checked for accuracy before going into the field. Be sure to check the scale at 10Kg., 20Kg. and 35Kg. Record the results of this test in your logbook. This should serve to familiarize you with the operation of the scale.

### Field Care and Use of Flatbed Scales

The Beam Balance Flatbed Scale is likely the most valuable piece of equipment issued to observers. It is important that it be treated as such to ensure its longevity. A few simple precautions and light maintenance can easily prevent irreparable damage to your scale. By following these steps the life span of these flatbed scales can be improved, and provide observers with high quality equipment. ***Thanks for doing your part!***

1. Lock both the platform and the beam balance at all times when the scale is not in use. The motion of the boat keeps the scale "working" whenever it is not locked, which can wear out the scale. Lock the platform using the black knob on the right side of the scale. Turn the lever back to lock the platform and forward to unlock. To lock the beam in place use the lever that pivots up under the right side (near the balance indicator).

2. Always protect the scale from impact damage. Even seemingly moderate impacts to the balance or the unlocked platform can damage the floating hangers under the scale. Once these hangers are damaged the precision of the scale is forever and irreparably compromised. Do not drop baskets of fish onto the platform. ***Do not throw fish into baskets on the platform.*** Fill your baskets and then place them on the platform.

3. Keep the scale as clean and dry as possible. These scales are not designed for the marine environment. Corrosion of the internal hangers, zero adjustment and poise weights are the leading cause of scale damage. Rinse the scale off when finished with it, ***preferably with fresh water***, and store it in a dry location until its next use.

4. Lubricate the scale often. Lubricate the poise weight bars, the zero adjustment and the floating hangers under the scale with a light oil as often as possible. This will reduce corrosion and improve the performance of the scale.

5. Move the zero adjustment daily. The zero adjustment assembly (located on the top left side of the balance beam) is the first part of the scale to fail due to corrosion. The weight and screw are prone to seize together. Be sure to move it at least five full turns every day to prevent this. Lubricate it often with a product such as WD-40 or LPS, commonly found on boats.

**?** If you have any questions about the use or care of your flatbed scale please consult a staff member.

### Returning the Scale

Before checking-in the scale, ***rinse it well with fresh water***. The scale will need to be retested upon your return. Test the scale at 10, 20 and 35 kg and record the results in your logbook. Check the results against the NMFS acceptable accuracy range. If your scale does not fall within acceptable limits be sure to note this in your logbook and bring it up during your debriefing.

# Appendix X. Flatfish Species Description Form

## Flatfish Species Description Form

Vessel name:_____ Vessel code:_____

Species common name: _____

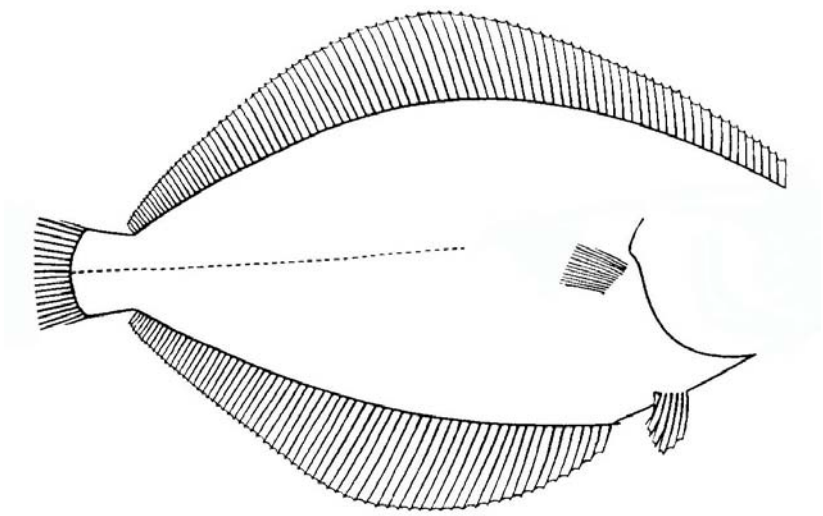
Observer:_____ Cruise:_____

Haul #:_____ Fork length:_____

Specimen collected? _____ Weight:_____

Complete the diagram below using the specimen in your hand. Include:

1. mouth, showing the size
2. preopercle and tail shape
3. eyes, size and position
4. lateral line shape
5. ADB size
6. distinctive markings or structures (spots, distinctive scales, etc.)



Field characteristics used in recognizing this species:

_____

_____

_____

_____

(OVER)

## Flatfish Species Description Form

Right-eyed or Left-eyed? RIGHT LEFT

Pelvic fins symmetrical around abdominal ridge? YES NO

Describe the lateral line, including presence/absence of ADB, length of ADB, and shape of lateral line over the pectoral fin:_____

_____

_____

Can the dorsal eye be seen from the blind side? YES NO

Describe the color of the blind side:_____

Where does the maxilla end relative to the lower (ventral) eye?

_____forward of orbit _____below posterior part of orbit

_____below anterior part of orbit _____beyond the orbit

_____below mid-eye

The posterior margin of the preopercle is: ANGLED ROUNDED

Is the anal spine present? YES NO

Gill rakers on first arch:

| Eyed side | Blind side |
|---|---|
| _____Upper | _____Upper |
| _____Lower | _____Lower |
| _____Total | _____Total |

Gill rakers on upper part of second arch (if arrowtooth or Kamchatka):_____

# Appendix Y. Rockfish Species Description Form

## Rockfish Species Description Form

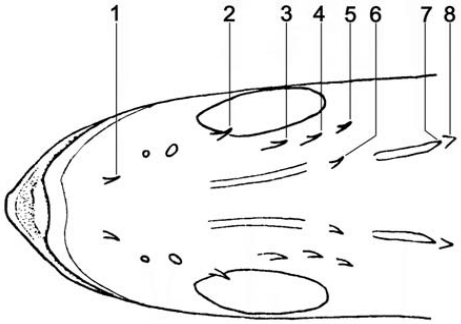
| | |
|---|---|
| Vessel name:_____ | Vessel code:_____ |
| Species common name: _____ | |
| Observer:_____ | Cruise:_____ |
| Haul #:_____ | Fork length:_____ |
| Specimen collected? _____ | Weight:_____ |

Which color category is this specimen?_____

Head spine strength (circle one):

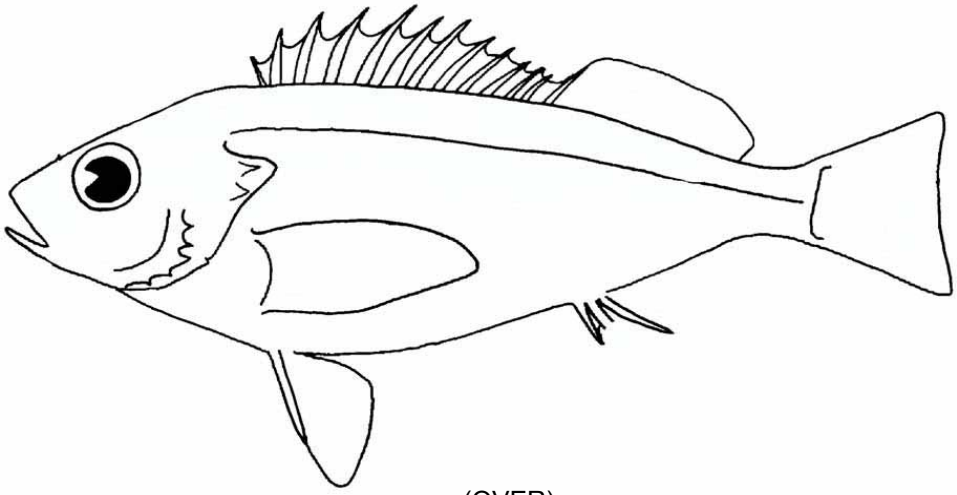
WEAK STRONG

Circle the numbers of all head spines present:




Draw the characteristics you used to identify this species, including the following:

1. Symphyseal knob
2. Maxilla
3. Anal fin spine and membrane
4. Pigment pattern



(OVER)

## Rockfish Species Description Form

Is a symphyseal knob present? If so, describe it:_____

Dark blotches on body? – (Draw these on front of form)

_____None _____Bars extending below lateral line

_____Above lateral line only _____Dispersed all over body

Markings on opercle? – (Draw these on front of form)

_____None _____Diffuse opercular blotch

_____Bars radiating from eye _____Distinct opercular blotch

Peritoneum color:_____

Describe the anal fin slant relative to body axis and relative length of anal spines:

_____

_____

_____

Are suborbital spines present? (and if so, how many?):_____

Coloration and other field characteristics important in recognizing this species:

_____

_____

_____

_____

# Appendix Z. Miscellaneous Species/ Crab Description Form

## Miscellaneous Species Description Form

Vessel name:_____ Vessel code:_____

Species common name: _____

Observer:_____ Cruise:_____

Haul #:_____ Fork length:_____

Specimen collected? _____ Weight:_____

**FISHES:**

How many dorsal fins does the fish have? 1 2 3

Is an adipose fin present? YES NO

Pelvic fins? Present Absent

Pelvic fin position: abdominal thoracic jugular

Describe the caudal peduncle (if present) and caudal fin shape:

_____

_____

Describe the lateral line(s) if present:

_____

_____

Draw the fish here:

Field characteristics important in recognizing this species:

_____

_____

_____

_____

## Crab Species Description Form

| | |
|---|---|
| Vessel name:_____ | Vessel code:_____ |
| Species common name: _____ | |
| Observer:_____ | Cruise:_____ |
| Haul #:_____ | Carapace size:_____ |
| Specimen collected? _____ | Weight:_____ |

**CRABS:**

How many pairs of walking legs does the crab have?_____

Describe the carapace shape as well as any spines, bumps, hairs, or decorations present on the carapace and legs:_____

_____

_____

Draw the crab here, including a full view of the carapace as well as a detailed view of the rostrum:

Field characteristics important in recognizing this species:

_____

_____

_____

# Appendix AA. Skate Species Description Form

**Skate Species Description Form**

Vessel name:_____ Vessel code:_____

Species common name: _____

Observer:_____ Total length:_____

Cruise:_____ Precaudal length:_____

Haul #:_____ Tail length:_____

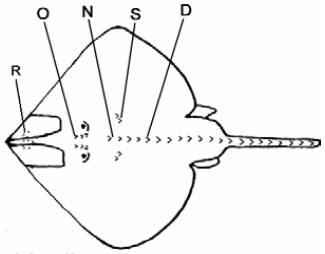
Specimen collected? _____ Weight:_____

Which series of thorns are present?

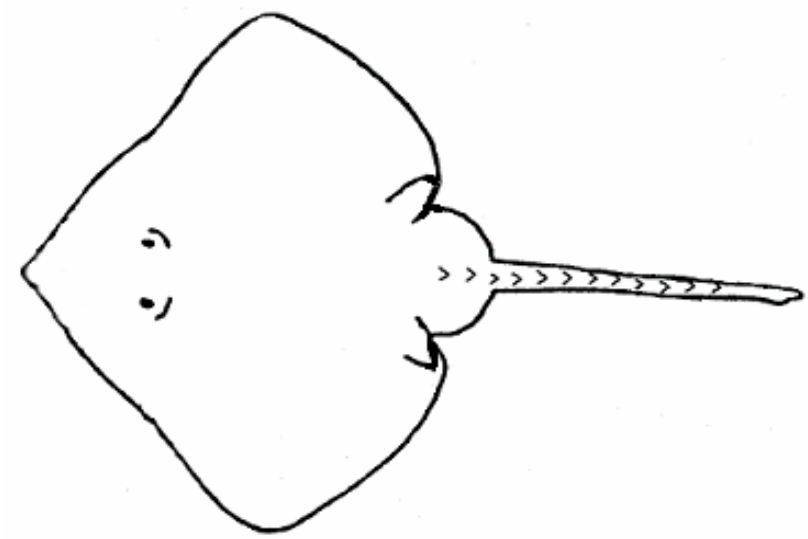
____ Rostral ____ Scapular

____ Orbital ____ Mid-dorsal

____ Nuchal




Draw the thorns and any distinctive pigment patterns on this diagram:



Additional field characteristics used to identify this species:

_____

_____

_____

(OVER)

## Skate Species Description Form

What is the dorsal coloration of the skate?

| | |
|---|---|
| uniform brown or gray | dark with light blotches |
| uniform black | dark with white “eyebrows” |
| other:_____ | |

What is the ventral coloration of the skate?

| | |
|---|---|
| uniform light | light, with dark tail |
| uniform dark | dark, with white areas |
| other:_____ | |

Describe the pattern of denticles on the dorsal (upper) and ventral (lower) surface:

_____

_____

_____

_____

# Appendix BB. Seabird Species Description Form (for Dead Birds)

Cruise #: _____

Species common name: _____ Vessel code: _____

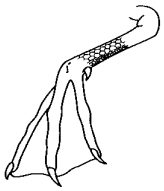
Date: _____ Haul # **OR** Lat / Long: _____

Specimen collected: Y N Drop off location: _____ Photos taken? Y N

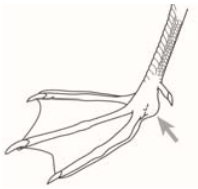
Length of bird - measure straight line from the tip of bill to longest tail feather: _____ cm

**Foot type:** (Circle one or describe)

3 webbed toes

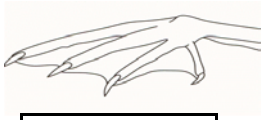


3 webbed toes, 4th minute, flat heel



3 webbed toes, 4th minute, swollen heel

3 webbed toes; 4th toe free, with fleshy flap

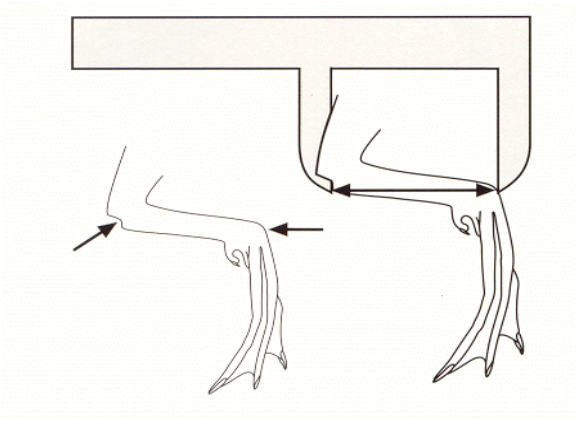


4 webbed toes

Other foot type, describe and draw: _____

_____

**Tarsus measurement:** (For all tubenoses and unidentified birds)



The tarsus or leg measurement is the long bone connecting the ankle to the foot. It is measured diagonally across the bone from the middle groove of the ankle joint to the top edge of the foot.

Tarsus length: _____ mm

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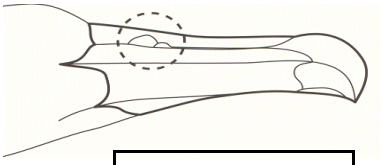
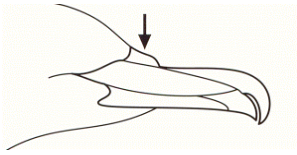
**Revised 11/06/03**

**Bill shape:** (Circle one or describe)

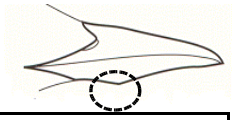


Hooked bill
Nasal tubes on side

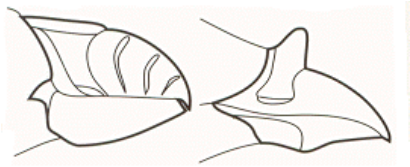


Hooked bill
Nasal tubes on top

Hooked bill
Arch on lower mandible



Dark, smooth, pointed bill; arch on lower mandible



Orange, with grooves, horn or bump

Duck-like bill with feathers

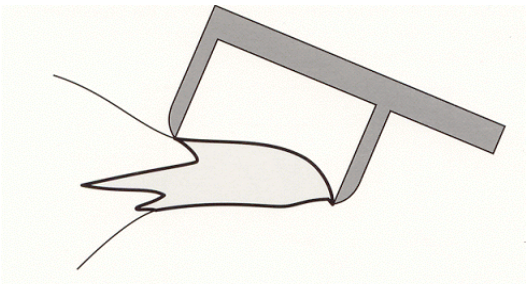
Duck-like bill with knob

Other bill shape, describe and draw.

_____

_____

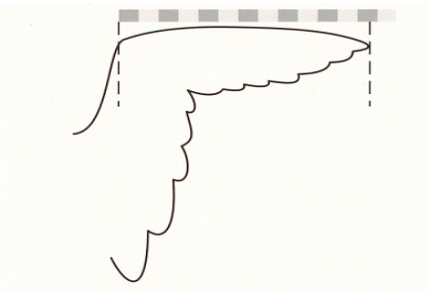
**Bill measurement**: (All birds)



Bill length or exposed culmen, is the straight-line distance between the tip of the bill and the point where the bill meets the skin or feathers of the forehead. Place one end of the dividers at the tip of the bill and measure the diagonal distance to the forehead feathers.

Bill length: _____ mm

**Wing chord measurement:** (All birds)



In a relaxed folded wing, the wing chord is the distance between the wrist bend and the tip of the longest primary feather. Do not stretch out the wing. For accuracy, gently lay the wing against the ruler (do not flatten) and line the end of the ruler up with the wrist.

Wing chord length: _____ cm

**Additional identifying characteristics or notes:**

_____

_____

_____

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# Appendix CC. Protocols for Handling Injured or Sick Seabirds

Safety First! Be very careful when handling live birds. Heavy rubber protective gloves are advised. All birds have sharp beaks and strong jaws that can cause serious injury.

If you encounter an injured or sick ***endangered or threatened*** seabird species follow the protocols outlined below and contact your inseason advisor or NMFS staff as soon as possible.

All other seabirds can be treated using these same protocols. However, this is lowest in priority of your observer duties and does not require notifying NMFS personnel.

## Seabird Handling Safety

Do not attempt to recover a sick or injured seabird when it is not safe. Seabirds may become aggressive if they feel threatened. Seabirds carry diseases that are transmissible to humans. Avoid contact with bodily fluids. When handling seabirds, keep them at or below your waist protecting your face. Clean and treat all cuts and scratches. Wash hands thoroughly after handling seabirds.

## Oiled Seabirds

Properly cleaning oiled seabirds is a highly specialized and labor intensive process. These birds cannot be properly cared for at sea. Even slightly oiled birds stand little chance of recovery. Your best course of action is to euthanize and collect the seabird, unless it is an ESA species. If you have an ESA species, assess it's condition and contact your inseason advisor. If you are not comfortable euthanizing the bird you may return it to the sea. Please record these instances in your logbook and relay them to your debriefer. Euthanizing the bird and saving the carcass supports U.S. Fish and Wildlife bilge oil monitoring and compliance programs. The specimen will be further valued by supporting other scientific uses as well. Most importantly, you end the birds suffering. Please euthanize the seabird, wrap it in aluminum foil, and save it following the bag and tag instructions (see "Tag and Bag Procedures for Retained Seabird Specimens" on page 13-3)

## Injured or Sick Birds

For apparently minor injuries (e.g.: small lacerations, web tears, minor stunning, etc..), release the bird if:

- you are so advised, or
- the bird meets ***all*** the following release criteria.

### Release Criteria

1. Bird can stand and walk using both feet.

2. Bird can flap both wings and there is no apparent wing droop.

3. Bird is alert, active, holds it head up and reacts to stimuli (motion, light, etc....).

4. Bird is not bleeding freely.

5. Wing and tail feathers have not been lost and are in good condition.

6. Bird is waterproof (water beads up on feathers).

***Retain birds that do not meet all of these criteria!***

### Rehabilitating Seabirds

Take the following steps to rehabilitate the seabird:

1. Wear gloves, eye protection, and rain gear.

2. Capture the bird without jeopardizing the safety of yourself or the crew and place it in box or container. The bird should not have enough room to further injure itself.

3. Do not restrict a live bird from opening its bill with tape or a rubber band, etc.

4. Ensure adequate ventilation of the container.

5. Never put a bird in an overly warm place (e.g.: engine room) or use external heat sources to dry a wet bird (e.g.: hair dryer, space heater, etc..).

6. Treat a wet bird by gently blotting excess water from the bird with paper towels.

7. Keep bird inside the container in a quiet, dry place and minimize handling.

8. For species of interest, contact your inseason advisor or NMFS staff immediately. Record recovery location (latitude and longitude), time, persons

involved and why and how the bird was recovered. Also record when the bird eats or drinks.

9. Place a container of cool, fresh water with the bird, if the possibility of spilling is minimal.

10. Place absorbent material in the bottom of the container to minimize contact with feces. Replace the material when soiled.

11. Food may be offered if the bird is alert. Try offering a hard-boiled egg or small pieces of fish liver.

12. Release species of interest birds only when advised to do so.

13. Release all other seabird species when all "Release criteria" are met.

### Transporting Sick or Injured Birds

Sick or injured species of interest may need to be transported. You will get specific care and transport instructions when you contact NMFS staff.

## Sacrificing Birds

If the bird is seriously injured, sick, suffering, oiled or appears to be dying and it ***is not*** a threatened or endangered species, you may euthanize the bird. For threatened or endangered species, attempt to contact NMFS staff before proceeding with euthanization. Note any band or tag information in your logbook.

### Field Procedures for Sacrificing Birds

Administer euthanasia away from the crew. The preferred field methods for euthanizing birds are cervical dislocation (breaking the neck) and decapitation.

**Cervical Dislocation**

Place the bird's head, bottom of the bill down, on a flat, solid surface. Place a solid rod (stick, dowel, etc.) on the neck directly behind the head. Holding the rod firmly on the neck, seize the body in the other hand, and give a quick, definite and strong yank backwards without letting the head move. You should feel the neck stretch and break. A slow or tentative motion will not work. It may help to pull the bird's body up as well as backward. The bird may shudder or tremble for a minute. Repeat the procedure if necessary.

**Decapitation**

Wear gloves to reduce contact with bodily fluids. Use a large, heavy knife or axe. Cut through the neck in one stroke. This procedure is quick and minimizes suffering.

**Retaining Euthanized Specimens**

For all species of interest, follow the "Tag and Bag Procedures for Retained Seabird Specimens" on page 13-3, unless advised otherwise. For all other species, discard at sea, unless advised otherwise.

# Appendix DD. Material Safety Data Sheet for DMSO

## Section 1: Chemical Product and Company Identification

**MSOS Name:** Dimethyl Sulfoxide

**Catalog Numbers:** S79994REAG, BP231 I, BP231 4, BP231-1, BP231-4, BP2311, BP2314, BP2314 001, BP2314 002, BP2314001, BP2314002, BP2620100, 0128 1,01284,0128500,0128-1,0128-4,0128-500,01281,01284, 0128500,01361,0136-1,01361, NC9529973, NC9530475, NC953 1964, NC9750632, XXBP23120BLI, XXBP23120LI, XXBP23120LI/SP, XXEP231ET4LI

**Synonyms:** Methyl Sulfoxide; DMSO; Sulfinylbis (Methane).

**Company Identification:** Fisher Scientific I Reagent Lane, Fairlawn, NJ 07410. For information, call: 201-796-7100. **Emergency Number:** 201-796-7100

For CHEMTREC assistance, call: 800-424-9300. For International CHEMTREC assistance, call: 703-527-3887

## Section 2: Composition, Information on Ingredients

| CAS# | Chemical Name | % | EINECS# |
|---|---|---|---|
| 67-68-5 | Methane, Sulfinylbis | 100 | 200-664-3 |

Hazard Symbols: XI
Risk Phrases: 22 36/38

## Section 3: Hazards Identification

**Emergency Overview:** Harmful if swallowed. Irritating to eyes and skin. Hygroscopic.

### Potential Health Effects

**Eye:** Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. May cause chemical conjunctivitis.
**Skin:** May cause irritation with burning pain, itching and redness. Substance is rapidly absorbed through the skin. Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause garlic smell on the breath and body.
**Inhalation:** May cause respiratory tract irritation. Can produce delayed pulmonary edema. **Chronic:** Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage. Effects may be delayed.

## Section 4: First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
**Skin:** Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. DO NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
**Inhalation:** Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. DO NOT use mouth-to-mouth resuscitation.
**Notes to Physician:** Treat symptomatically and supportively

## Section 5: Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

**Extinguishing Media:** Cool containers with flooding quantities of water until well after fire is out. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

## Section 6: Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Do not flush into a sewer. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation.

## SECTION 7: HANDLING AND STORAGE

Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

## SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### PERSONAL PROTECTIVE EQUIPMENT

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
**Skin:** Wear appropriate protective gloves to prevent skin exposure.
**Clothing:** Wear appropriate protective clothing to prevent skin exposure.
**Respirators:** A respiratory protection program that meets OSHA's 29 CFR:1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Physical State** | liquid | **Appearance** | clear |
| **Odor** | slight, sulfur- or garlic-like | **pH** | not available |
| **Vapor Pressure** | 0.4 mm Hg at 20 | **Vapor Density** | 2.7 (air = 1) |
| **Evaporation Rate** | not available | **Viscosity** | 1.lcp @ 27 deg |
| **Boiling Point** | 189 deg C | **Freezing Point** | 18.45 deg C |
| **Autoignition Temp.** | 215 deg C | **Flash Point** | 95 deg C |

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Physical State** | liquid | **Appearance** | clear |
| **Explosion Limits (upper)** | 42.00 vol % | **Explosion Limits (lower)** | 2.60 vol % |
| **Decomp. Temp.** | > 200 deg C | **Solubility** | soluble |
| **Specific Gravity** | 1.10 10g/cm3 | **Molecular Formula** | C2H60S |
| **Molecular Weight** | 78.13 | | |

## SECTION 10: STABILITY AND REACTIVITY

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions. Conditions to Avoid: Incompatible materials, excess heat, strong oxidants.
**Incompatibilities with Other Materials:** Strong oxidizing agents, strong acids, strong bases.
**Hazardous Decomposition Products:** Carbon monoxide, oxides of sulfur, carbon dioxide.
**Hazardous Polymerization:** Has not been reported.

## SECTION 11: TOXICOLOGICAL INFORMATION

RTECS#: CAS# 67-68-5: PV6210000
LD50/LC50: CAS# 67-68-5: Draize test, rabbit, eye: 500 mg/24H Mild; Draize test, rabbit, skin: 500 mg/24H Mild; Oral, mouse: LD50 = 7920 mg/kg; Oral, rat: LD50 = 14500 mg/kg; Skin, rat: LD50 = 40 gm/kg.
Carcinogenicity: Methane, Sulfinylbis- -Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
Other Studies: No information available.
See actual entry in RTECS for complete information.

## SECTION 12: ECOLOGICAL INFORMATION

Other: For more information, see “Handbook of Environmental Fate and Exposure Data.”

## SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

## SECTION 14: TRANSPORT INFORMATION

US DOT No information available; Canadian TDG No information available.

## SECTION 15: REGULATORY INFORMATION

### US Federal

TSCA CAS# 67-68-5 is listed on the TSCA inventory. This material does not contain any Class 2 Ozone depletors. Clean Water Act: No information available.
OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

### State

Methane, Sulfinylbis- is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California: No Significant Risk Level: None of the chemicals in this product are listed.

### Canada

CAS# 67-68-5 is listed on Canada's DSL List. CAS# 67-68-5 is listed on Canada's Ingredient Disclosure List.

## SECTION 16: ADDITIONAL INFORMATION

MSDS Creation Date: 12/12/1997 Revision #4 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. How- ever, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary dam- ages, howsoever arising, even if the company has been advised of the possibility of such damages.

# Appendix EE. Material Safety Data Sheet for 100% Formalin

## SECTION 1: CHEMICAL PRODUCT AND COMPANY INFORMATION

**MSDS Name:** Formaldehyde Solution 37%

**Catalog Numbers:** S74337, S74338, S80018-2, BP530-25, BP530-500, BP53025, BP531-25, BP53 1-500, F75P20, F75P4, F77 20, F77 200, F7720, F77200, F77200LC, F7720LC, F77P 20, F77P 4, F77P20, F77P4, F79 I, F79 20, F79 200, F79 4, F79 500, F791, F7920, F79200, F794, F79500, F79J4, F79P 20, F79P 4, F79P20, F79P4, NC9475399, S74337MF, S74338MF

**Synonyms**: None.

**Company Identification:** Fisher Scientific I Reagent Lane, Fairlawn, NJ 07410. For information, call: 201-796-7100. **Emergency Number:** 201-796-7100

For CHEMTREC assistance, call: 800-424-9300 For International CHEMTREC assistance, call: 703-527-3887.

## SECTION 2: COMPOSITION, INFORMATION ON INGREDIENTS

| CAS# | Chemical Name | % | EINECS# |
|---|---|---|---|
| 50-00-0 | Formaldehyde | 37 | 200-001-8 |
| 67-56-1 | Methyl alcohol | 15 | 200-659-6 |
| 7732-18-5 | Water | 48 | 231-791-2 |
| Not avail. | Odor mask | 0.0-1.1 | unlisted |

Hazard Symbols: T
Risk Phrases: 1023/24/25 344043

## SECTION 3: HAZARDS IDENTIFICATION

**Emergency Overview:** Flammable. Toxic by inhalation, in contact with skin and if swallowed. Causes burns. Possible risks of irreversible effects. May cause sensitization by skin contact.

**Potential Health Effects**

**Eye:** Causes eye irritation. May cause chemical conjunctivitis and corneal damage.

**Skin:** Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May cause cyanosis of the extremities.

**Ingestion:** May be fatal or cause blindness if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May cause central nervous system depression.

**Inhalation:** Inhalation of high concentrations may cause central nervous system effects characterized by nausea, head- ache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause asthmatic attacks due to allergic sensitization of the respiratory tract. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause burning sensation in the chest.

**Chronic:** Repeated exposure may cause skin discoloration and thickening and nail decay. Repeated inhalation is associated with nasal and nasopharyngeal cancer.

## SECTION 4: FIRST AID MEASURES

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.

**Skin:** Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse. Destroy contaminated shoes.

**Ingestion:** Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

## SECTION 5: FIRE FIGHTING MEASURES

**General Information:** As in any fire, wear a flash back. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

## Section 6: Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

## Section 7: Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well- ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Keep containers tightly closed.

## Section 8: Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary..

## Section 9: Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Physical State** | liquid | **Appearance** | not available |
| **Odor** | none reported | **pH** | not available |
| **Vapor Pressure** | not available | **Vapor Density** | > 1.0 |
| **Evaporation Rate** | not available | **Viscosity** | not available |
| **Boiling Point** | 212 deg F | **Freezing Point** | 32 deg F |
| **Autoignition Temp.** | not available | **Flash Point** | 122 deg F |
| **Explosion Limits (upper)** | not available | **Explosion Limits (lower)** | not available |
| **Decomp. Temp.** | not available | **Solubility** | soluble in water |
| **Specific Gravity** | not available | **Molecular Formula** | Mixture |
| **Molecular Weight** | not available | | |

## Section 10: Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, ignition sources, excess heat, oxidizers.

## Section 11: Toxicological Information

RTECS#: CAS# 50-00-0: LP8925000; CAS# 67-56-1: PC1400000; CAS# 7732-18-5: ZC0110000

LD50/LC50: CAS# 50-00-0: Draize test, rabbit, eye: 750 ug/24H Severe; Draize test, rabbit, eye: 750 ug Severe; Draize test, rabbit, eye: 10 mg Severe; Draize test, rabbit, skin: 2 mg/24H Severe; Draize test, rabbit, skin: 50 mg/24H Moderate; Inhalation, mouse: LC50 = 454 gm/rn3/4H; Inhalation, rat: LC50 = 203 mg/rn3; Oral, mouse: LD50 = 42 mg/kg; Oral, rat: LD50 = 100 mg/kg; Skin, rabbit: LD50 = 270 uL/kg. CAS# 67-56-1: Draize test, rabbit, eye: 40 mg Moderate; Draize test, rabbit, eye: 100 mg/24H Moderate; Draize test, rabbit, skin: 20 mg/24H Moderate; Inhalation, rat: LC50 = 64000 ppm/4H; Oral, mouse: LD50 = 7300 mg/kg; Oral, rabbit: LD50 = 14200 mg/kg; Oral, rat: LD50 = 5628 mg/kg; Skin, rabbit: LD50 = 15800 mg/kg. CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.

Carcinogenicity: Formaldehyde - ACGIH: A2 suspected human carcinogen; California: carcinogen; initial date 1/1/88; NIOSH: occupational carcinogen; NTP: Suspect carcinogen; OSHA: Possible Select carcinogen; IARC: Group 2A carcinogen. Methyl alcohol- Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. Water- Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Neurotoxicity: No data available.
Mutagenicity: No data available.
Other Studies: No data available.

## SECTION 12: ECOLOGICAL INFORMATION

## SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

## SECTION 14: TRANSPORT INFORMATION

US DOT Shipping Name: FORMALDEHYDE, SOLUTIONS, FLAMMABLE; Hazard Class: 3; UN Number: UNl198; Packing Group: III; Canadian TDG No information available.

## SECTION 15: REGULATORY INFORMATION

### US Federal

TSCA CAS# 50-00-0, CAS# 67-56-1 and CAS# 7732-18-5 are listed on the TSCA inventory. This material does not contain any Class 2 Ozone depletors.

Clean Water Act: CAS# 50-00-0 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CW A. None of the chemicals in this product are listed as Toxic Pollutants under the CWA. OSHA: CAS# 50-00-0 is considered highly hazardous by OSHA.

### State

Formaldehyde can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts. Methyl alcohol can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts. Water is not present on state lists from CA, PA, MN, MA, FL, or NJ. The following statement(s) is (are) made in order to comply with the California Safe Drinking Water Act: WARNING: This product contains Formaldehyde, a chemical known to the state of California to cause cancer. California No Significant Risk Level: CAS# 50-00-0: no significant risk level = 40 ug/day.

### Canada:

CAS# 50-00-0, CAS# 67-56-1 and CAS# 7732-18-5 are listed on Canada's DSL List. CAS# 50-00-0 and CAS# 67- 56-1 are listed on Canada's Ingredient Disclosure List. CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

## SECTION 16: ADDITIONAL INFORMATION

MSDS Creation Date: 7/12/1999 Revision #6 Date: 08/02/2000

The information above is believed to be accurate and represents the best information currently available to us. How- ever, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

# Appendix FF. Material Safety Data Sheet for 10% Formalin

## Section 1: Chemical Product and Company Identification

**MSDS Name:** 10% Buffered Formalin

**Catalog Numbers:** SF99 20, SF99 4, SF9920, SF994

**Synonyms:** None.

**Company Identification:** Fisher Scientific 1 Reagent Lane, Fairlawn, NJ 07410 For information, call: 201-796-7100. **Emergency Number:** 201-796-7100

For CHEMTREC assistance, call: 800-424-9300. For International CHEMTREC assistance, call: 703-527-3887

## Section 2: Composition, Information on Ingredients

| CAS# | Chemical Name | % | EINECS# |
|---|---|---|---|
| 50-00-0 | Formaldehyde | 37 | 200-001-8 |
| 67-56-1 | Methyl alcohol | 15 | 200-659-6 |
| 7732-18-5 | Water | 48 | 231-791-2 |
| 127-09-3 | Sodium Acetate | 1.2-2.0 | 204-823-8 |

Hazard Symbols: None Listed.
Risk Phrases: None Listed.

## Section 3: Hazards Identification Emergency

**Emergency Overview:** Not available.

### Potential Health Effects

**Eye:** Causes eye irritation.
**Skin:** Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re- exposure to this material.
**Ingestion:** Cannot be made non-poisonous. May cause central nervous system depression, kidney damage, and liver damage. Causes gastrointestinal irritation with nausea, vomiting and diarrhea.
**Inhalation:** Causes respiratory tract irritation. May cause allergic respiratory reaction.
**Chronic:** May cause cancer according to animal studies. May cause reproductive and fetal effects.

## Section 4: First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
**Skin:** Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.
**Ingestion:** Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give any- thing by mouth to an unconscious person. Get medical aid.
**Inhalation:** Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

## Section 5: Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHAINIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.

## Section 6: Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section.

## Section 7: Handling and Storage

**Handling:** Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Do not get in eyes.

**Engineering Controls:** Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

## Section 8: Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

## Section 9: Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Physical State** | liquid | **Appearance** | not available |
| **Odor** | none reported | **pH** | not available |
| **Vapor Pressure** | not available | **Vapor Density** | not available |
| **Evaporation Rate** | not available | **Viscosity** | not available |
| **Boiling Point** | not available | **Freezing Point** | not available |
| **Autoignition Temp.** | not available | **Flash Point** | 194 deg F |
| **Explosion Limits (upper)** | not available | **Explosion Limits (lower)** | not available |
| **Decomp. Temp.** | not available | **Solubility** | soluble in water |
| **Specific Gravity** | not available | **Molecular Formula** | Mixture |
| **Molecular Weight** | not available | | |

## Section 10: Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures. Conditions to Avoid: Incompatible materials, excess heat.

**Incompatible with Other Materials:** Strong oxidants.

**Hazardous Decomposition Products:** Irritating and toxic gases. Hazardous Polymerization: Has not been reported.

## Section 11: Toxicological Information

RTECS#: CAS# 50-00-0: LP8925000; CAS# 67-56-1: PC1400000; CAS# 127-09-3: AJ4300010; CAS# 7732-18-5: ZCOIIOOOO

CAS# 50-00-0: Draize test, rabbit, eye: 750 ug/24H Severe; Draize test, rabbit, eye: 750 ug Severe; Draize test, rabbit, eye: 10 mg Severe; Draize test, rabbit, skin: 2 mg/24H Severe; Draize test, rabbit, skin: 50 mg/24H Moderate; Inhalation, mouse: LC50 = 454 gm/m3/4H; Inhalation, rat: LC50 = 203 mg/m3; Oral, mouse: LD50 = 42 mg/kg; Oral, rat: LD50 = 100 mg/kg; Skin, rabbit: LD50 = 270 uL/kg. CAS# 67-56-1: Draize test, rabbit, eye: 40 mg Moderate; Draize test, rabbit, eye: 100 mg/24H Moderate; Draize test, rabbit, skin: 20 mg/ 24H Moderate; Inhalation, rat: LC50 = 64000 ppm/4H; Oral, mouse: LD50 = 7300 mg/kg; Oral, rabbit: LD50 = 14200 mg/kg; Oral, rat: LD50 = 5628 mg/kg; Skin, rabbit: LD50 = 15800 mg/kg. CAS# 127-09-3: Draize test, rabbit, eye: 10 mg Mild; Draize test, rabbit, skin: 500 mg/ 24H Mild; Inhalation, rat: LC50 = >30 gm/m3/IH; Oral, mouse: LD50 = 6891 mg/kg; Oral, rat: LD50 = 3530 mg/kg; Skin, rabbit: LD50 = >10 gm/kg. CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.

Carcinogenicity: Formaldehyde - ACGIH: A2 - suspected human carcinogen; California: carcinogen; initial date 1/1/88; NIOSH: occupational carcinogen; NTP: Suspect carcinogen; OSHA: Possible Select carcinogen; IARC: Group 2A carcinogen Methyl alcohol - Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. Sodium Acetate - Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. Water - Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No data available.
Specific Development Abnormalities: craniofacial and musculoskeletal, ipr-mouse TDLo = 240 mg/kg.
Reproductive Effects: Formaldehyde effects on Fertility: male index, itt-rat TDLo=400 mg/kg; post-implantation mortality, ims-mouse TDLo=259 mg/kg.

Paternal Effects: spermatogenesis, orl-rat TDLo=200 mg/kg; testes/sperm duct/ epididymis, ipr-rat TDLo=80 mg/kg.
Neurotoxicity: No information available.
Mutagenicity: Formaldehyde DNA Damage: human fibroblast 100 umol/L DNA Inhibition: human cell types 210 umol/L. Unscheduled DNA Synthesis: rat cell types 50 umol/L. Gene Mutation in Mammalian Cells: human lymphocyte 130 umol/L.
Other Studies: No data available.

## SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: Atlantic salmon LC50=173 uL/L/96H; Catfish (fresh water) TLm=32pprn/24H; Flounder (salt water) TLm=100-330 ppm/48H; Fathead minnowLC50=10-100 uL/L/96H; Rainbow trout LC50= 168mg/L/48H; Zebrafish LC50=41mg/L/96H; Water flea LC50=52 mg/L/24H. Cas# 50-00-0: LC50(96Hr.) rainbow trout = 0.12 mL/L; flowthrough bioassay; LC50(96Hr.) fathead minnow = 24.1 mg/L; flowthrough conditions; LC50 (96Hr.) bluegill = 0.10 mg/L; Flow-through conditions; EC50 (96Hr.) water flea = 20 mg/L; EC50 (30 min) photobacterium phospherum = 3.00-10.2 mg/L; Microtox.

## SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

## SECTION 14: TRANSPORT INFORMATION

US DOT Shipping Name: AVIATION REGULATED LIQUID, N.O.S (10% FORMALIN); Hazard Class: 9; UN Number: UN3334; Packing Group: No information available; Canadian TDG No information available.

## SECTION 15: REGULATORY INFORMATION

### US Federal

TSCA CAS# 50-00-0, CAS# 67-56-1, CAS# 127-09-3 and CAS# 7732-18-5 are listed on the TSCA inventory. This material does not contain any Class 2 Ozone depletors. Clean Water Act: CAS# 50-00-0 is listed as a Hazardous Substance under the CW A. None of the chemicals in this product are listed as Priority Pollutants under the CW A. None of the chemicals in this product are listed as Toxic Pollutants under the CWA. OSHA: CAS# 50-00-0 is considered highly hazardous by OSHA.

### State

Formaldehyde can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts. Methyl alcohol can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts. Sodium Acetate is not present on state lists from CA, P A, MN, MA, FL, or NJ. Water is not present on state lists from CA, PA, MN, MA, FL, or NJ. The following statement(s) is (are) made in order to comply with the California Safe Drinking Water Act: WARNING: This product contains Formaldehyde, a chemical known to the state of California to cause cancer. California No Significant Risk Level: CAS# 50-00- 0: no significant risk level = 40 ug/day.

### Canada

CAS# 50-00-0, CAS# 67-56-1, CAS#127-09-3 and CAS# 7732-18-5 are listed on Canada's DSL List. CAS# 50-00-0 and CAS# 67-56-1 are listed on Canada's Ingredient Disclosure List. CAS#127-09-3 and CAS# 7732-18-5 are not listed on Canada's Ingredient Disclosure List.

## SECTION 16: ADDITIONAL INFORMATION

MSDS Creation Date: 7/12/1999 Revision #6 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. How- ever, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary dam- ages, howsoever arising, even if the company has been advised of the possibility of such damages.

## Appendix GG. NMFS-Permitted Contractors for the North Pacific Groundfish Observer Program

Alaskan Observers, Inc. (AOI)
130 Nickerson, Suite 206
Seattle, WA 98109
Phone: (206) 283-7310
Fax: (206) 283-6519
E-mail: aoistaff@alaskanobservers.com
www.alaskanobservers.com

NWO, Inc.
654 5th Avenue South #203
Edmonds, WA 98020
Phone: (425) 673-6445
Fax: (425) 673-5995
E-mail: ngrdfobs@aol.com

Saltwater, Inc. (SWI)
733 N. Street
Anchorage, AK 99501
Phone: (907) 276-3241
Fax: (907) 258-5999
E-mail: Mary@saltwaterinc.com
www.saltwaterinc.com

TechSea International
2360 W. Commodore Way
Seattle, WA 98199
Phone: (206) 285-1408
Fax: (206) 285-1535
E-mail: techsea@speakeasy.net
www.TechSea.com

# GLOSSARY

**A - B**

ABC - “Acceptable Biological Catch” - the annual harvest level that a stock can sustain to maintain the maximum sustainable yield (MSY)

Aft - towards the stern or back end of a vessel

Allocation - distribution of the opportunity to fish among user groups or individuals; sometimes based on historical harvest amounts

Amidships - midway between the bow and stern of a ship, or on the centerline

Anchor/Buoy lines - Sections of line that join the groundline and anchors on the bottom of the ocean to the buoys or “bags” on the surface.

Athwart ships - side-to-side across a ship, perpendicular to the centerline

Autobaiters - A piece of machinery that cuts bait into strips and places the strips on the hooks as the groundline is being set.

Bag - the codend or another name for a buoy.

Bait bags/jars - Containers filled with ground bait that are hung inside pots to attract fish.

Basket sample - when the amount of catch which was sampled by the Observer is actually weighed. Basket sample weight may be as small as 100 kg or less, or as large as the OTC weight.

Beam - width of a ship

Benthic - living in direct relation with the bottom

Bias- Tending to yield one outcome more frequently than others. Factors affecting the randomness of a sample, including possible mechanical sorting of catch by an incline belt, or purposeful presorting by a crew member, will introduce bias.

Bight - a loop or turn in a line

Bin - a large compartment built into a ship for holding fish. Also called live tank, refrigerated seawater tank (RSW tank), lobby.

Bleeder/Sorter - Crewman assigned to sort bycatch out of the catch, and to cut the “throat” of the cod.

Block/Hydro/Hauler - Hydraulically driven wheel into which the groundline is placed during gear retrieval. As the wheel spins the groundline is drawn on board.

Boat Share - the percentage of the gross which goes to the vessel owner

Bobbin - a round, rubber or steel roller used in the footrope of a bottom net to protect the net from damage

Bosun - person in charge of a ship’s rigging, anchors, cables and deck crew

Bottom - (1) ocean floor, (2) fishing depth, or (3) a ship hull. Which meaning to apply must be taken from context.

Bow - the front section of a boat or ship

Bowline - a type of knot used to form an eye in the end of a rope

Brailer - a type of netting that is attached to a crane and used to transport fish and other materials from one vessel to the dock or to another vessel

Breech - a behavioral characteristic of some marine mammals such as humpback whales, where they rise vertically out of the water, and then with most of their body above the surface, they fall to their back or side

Bridge - the control center of a ship

Bridle - wire attached to the headrope, footrope or side panel of a net, by which the net is towed

Bulkhead - a wall separating compartments of a ship

Bulwarks - the upper section of the side plating of a ship, which extends above and around the upper deck

Bycatch- Anything caught in fishing operations that is not the target species, such as other fish species, prohibited species, marine mammals, seabirds, invertebrates, and inert objects.

**C**

Capstan (gypsy) - an upright, spool-shaped, power rotational cylinder around which cables or hawsers are wound

Carrying capacity - the number of organisms the resources of an area can support

Catch - the amount of fish caught (retained or not)

Catch Per Unit Effort (CPUE) - the number of fish caught per amount of effort (effort is generally a combination of gear type, gear size and length of time the gear is used); CPUE can be used as a measurement of relative abundance of a caught species

Catcher boat - vessel that is used for catching fish and that does not process (freeze) fish on board

Catcher/processor - vessel that is used for, or equipped to be used for, catching fish and processing (freezing) fish products

Chaffing gear - protective carpeting (or strands of nylon forming a carpet pile) on the outer, underside of the trawl net to keep it from catching and ripping on obstacles on the bottom

Chief - the engineer; responsible for care of engines and deck machinery

Choker, choke strap - a loop of wire or rope used to cinch off the net or codend

Chopper - Machine used to grind frozen herring or squid for bait or the person assigned this duty.

Cleat - a heavy piece of wood or metal having two horns around which ropes may be made fast or belayed, usually secured to a fixed object such as the dock or deck

Coded wire tag - small tag (3mm) etched with binary code that are inserted into the snout of fishes for later identification

Codend - the end “bag” of a trawl net where the majority of the fish are collected and held

Coiler - Person or machine that is designated to coil line as it is retrieved by the block.

Combi - A piece of machinery through which the groundline, gangions, and hooks move during gear retrieval. The combi mechanically places hooks into the magazine racks allowing the gangions and groundline to be hung in an orderly fashion. This term may also refer to a crew member that works both in the factory and on the deck of a factory vessel.

Combing - a low partition that separates the trawl deck from the side pockets

Companionway - entrance/stairway from deck to fo'c'sle and engine room

Compliance - being in accordance with the fishing regulations

Composition - In the groundfish Observer Program, this refers to the makeup of harvested species in a catch, and the sample you collect.

Cookie (disc) - a flat, round piece of rubber with a hole in the center strung on a wire rope or chain to protect it from abrasion and to stir up a mud cloud. Used on non-pelagic trawl gear.

Crucifier - A pair of rollers or steel pegs which stand vertically with only enough room for the groundline to pass between. During gear retrieval the groundline passes between the rollers and the hooks are pulled out of the fish.

**D - E**

Demersal - dwelling at or near the bottom

Directed fishing - targeting or fishing for a species quota

Disembark - to get off a vessel

Diver/Trailer buoys - A small buoy attached to the main buoy with a length of line. The diver buoy “trails” behind the main buoy and allows a larger target for grappling.

Dogs - Metal hooks that are hydraulically controlled to secure a pot to a launcher.

Donut Hole - The isolated area in the Bering Sea surrounded by waters under the jurisdiction of Alaska and Russia. This area is considered international waters and is generally closed to commercial fishing.

Door - a large steel or alloy structure attached to each main wire (in front of the net) to spread the net horizontally by means of hydrodynamic and friction forces

Draft - vertical distance from keel to waterline of a ship

Drop-off - Those organisms that fall or are knocked off of a hook prior to their being landed.

Drum - a metal spool or cylinder around which cable, etc. is wound

Drumhead - the top of a capstan, into which bars are inserted for leverage in turning it

Ebb tide - outgoing tide

EEZ - “Exclusive Economic Zone” - the term for the 200 mile jurisdiction zone, in which a nation has exclusive fishing rights, formerly called the FCZ

Embarkation - to board a vessel

EPIRB - “Emergency Position Indicator Radio Beacon”

Expansion straps (container lines) - a series of lines running around the circumference of a codend to provide strength and help maintain the shape of the bag

**F**

Fathom - a measure of length or depth equal to six feet

Fingers/Triggers - Small plastic strips located in the tunnel of a pot which allow fish to enter a pot but not exit.

Fishfinder - an electronic device for locating schools of fish under a vessel

Fishing line - a length of chain or wire in the bottom, front end of a net between the footrope and the bolsh line

Fishing mortality - Removal (deaths) of fish from a population due to fishing activity.

Flatfish - fish which are laterally compressed and orient themselves in the water with their lateral surfaces or sides towards the surface and bottom

Flatlink - a piece of cut or cast hardware, generally oblong in shape, with leg diameter smaller in certain areas to allow attachment of a G-hook; used where wires must be connected and disconnected frequently

Flood tide - incoming tide

Fo'c'sle (from: forecastle) - the forward part of a ship where sailor's quarters are located

Footrope - on a non-pelagic net, a series of bobbins, tires or discs strung on chain or wire rope attached to the bottom front of a bottom net to protect the net from damage. On a midwater net, the rope or wire running along the front, bottom edge of the net.

Forward - towards the bow of a vessel

Fresh weight - the weight of the whole fish (or animal) as it was when alive. Also called round weight, whole weight.

FUS - “Fully Utilized Species” - a designation given to bycatch species whose quota has been taken while other directed fisheries are permitted to continue. Fully Utilized Species must be discarded from the catch like prohibited species.

**G**

Galley - ship's kitchen and/or mess hall

Gallows - structure from which trawl blocks are hung; separate units port and starboard

Gangion - The length of line that connects the hook to the groundline. It is often only two to three feet long.

Gantry - a frame structure, usually at the aft of a vessel, which supports pulleys (blocks) used in setting and retrieving trawl nets

Gas bladder - a sac filled with air or similar gases in the body cavity of a fish. May or may not be attached to the throat by a duct.

G-hook - a piece of cut or cast iron hardware in the shape of a “G”, used with a flatlink where wires must be connected and disconnected frequently

Gill rakers - bony tooth like structures on the anterior edges of the gill arches. For protection or straining out food.

Gilson - a single hookline (as distinguished from a multiple block) used to assist in setting, hauling and moving gear on deck

Groundline/Mainline - The length of line to which all of the hooks are attached. This line is the “backbone” of the gear

Gunnel or Gunwale - the upper edge of the side of a boat

Gurdy - special winch for hauling of longlines or trolling lines

Gypsyhead - a metal drum with a smooth concave surface, usually mounted on a winch. Several wraps of line around the gypsy provide enough friction while it is turning to raise heavy loads smoothly because the line slips and is easily controlled, like the friction on a clutch plate.

**H - K**

Halibut excluder - A divider located in the tunnel of a pot that restricts the size of the opening.

Harvest - the total amount of fish caught and retained from an area over a period of time

Hatch - an opening in a deck or bulkhead of a ship

Haul - a catch of fish from one tow of a net or longline

Haulback - when the vessel lifts the net out of the fishing depth

Hawser - any large rope (generally five inches or more in circumference) used primarily for towing, mooring or hauling

High grading - when a vessel puts up product but later discards it overboard in favor of a more valuable product

Hook - Usually a three pronged grappling hook used to snag the trailer buoy line.

Hook Counts - The average number of hooks per segment of gear.

Horn Off - To knock organisms off of a hook using the butt of a gaff.

I-beam - a steel beam shaped like an “I” in cross section

Incidental catch or species - catch taken while fishing for the primary purpose of catching a different species

Intermediate - a gradually tapered section, generally of small mesh, between the back body of a trawl and the codend

Joint Venture - a cooperative fishing/processing effort between vessels of different nationalities

Knot - a measure of time multiplied by distance, equaling speed. One knot equals one nautical mile (6080 feet) in one hour.

**L - O**

Landings - the total amount of fish unloaded at a buying station by commercial fishermen or brought to shore by recreational fishermen; landings are reported at the points at which fish are brought to shore or delivered to an at-sea processing facility

Launcher - Hydraulic lift, usually located on the port side of a vessel, used to “launch” pots over the side of the vessel and to adjust the angle of the pot when it is being emptied.

Lay - the direction in which the strands of a rope are twisted (right or left) or the degree of tightness with which they are twisted (soft, medium, hard, etc.)

Lazaret - a storage place between the decks of a ship

Lee, Leeward - the side protected from the wind, opposite the “windward” side

Live Tanks - tanks or bins on factory trawler vessels where the catch is dumped prior to sorting or processing

Lobby - another name for a fish bin on a catcher/processor

Magazine - (Mag) A term used to describe a segment of gear within a set containing up to as many as ten thousand hooks. The length of this segment of gear is dictated by the length of the magazine rack on which the hooks and groundline are hung.

Magazine rack - (Mag rack or Rails) A piece of equipment onto which hooks are slid. The gangions and the groundline then hang from the hooks. This equipment functions in a similar fashion to a coat hanger on a closet rod.

Main Wires - the two large cables used to connect the trawl net to the vessel while fishing

Master - fishing master and/or captain

Mothership - a processing vessel at-sea (under way) whose fish come from catcher boat's deliveries

Motion Compensated Flow Scale - a scale built into a conveyor belt; the scale maintains a running tally of weight moving across the belt, in addition to comparing it to a constant weight in order to compensate for vessel movement

Motion Compensated Platform Scale - an electronic flatbed scale with a constant weight load cell which allows for compensation of the vessel's movement

MSY - “Maximum Sustainable Yield” - an estimate of the largest average annual catch or yield that can be taken over a significant period of time from each stock under prevailing ecological and environmental conditions. Since MSY is a long term average, it need not be specified annually.

Mustang suit - Insulated and waterproof coveralls worn in the cold months while sampling on deck.

Net reel - a hydraulic drum on the deck on which the net and most of the rigging are wound

Otter trawl - the type of net gear used on stern trawlers

Otterboard - another name for a trawl door

OY - “Optimum Yield” - the harvest level for a species that achieves overall benefits including economic, social and biological considerations

Overcapitalization - a level of investment resulting in a non-economically productive fishing effort level (too much effort may drive down economic profits)

Overfishing - harvesting at a rate that will exceed the management goal; an amount of fishing mortality that jeopardizes the capacity of a fishery to produce MSY on a continuing basis (MSFCMA definition); an over-fishing level (OFL) is determined for every species or species group for which there is a TAC

**P**

Panel - Mesh netting attached to a square metal frame. Two large panels and four smaller panels are attached to a heavy steel frame box to form the six sides of a pot.

Partial haul sampling - when less than the Official Total Catch (OTC) weight was sampled (sorted) by the Observer. The sample weight is estimated by volume, tally, or proportioning delivery weight.

Pelagic - midwater

Peritoneum - the lining of the gut cavity

Pew, Pew stick - a sharp-ended pole which is used to skewer fish and toss them to another location

Pick/"Running the hook" - Hook connected to the end of the boom which is attached to the bridle and is used to lift a pot onto the launcher as the pot is being retrieved.

Plotter - Electronic mapping device that displays the local area and the vessel's position on it. The plotter allows skippers to record the area of a string and also the number of pots in a string on a digital map display.

Pod - a school of marine mammals; such as seals, whales or dolphins

Population - The total of individuals occupying an area or making up a whole. When sampling aboard a trawler, a population is defined as the catch from a single haul.

Porthole - a window in the hull or the outside bulkhead of a ship

Pot Tie - A short piece of line used to tie pots together when they are stacked on deck.

Predominant species - species which are the most abundant in the catch - not necessarily the target species

Presorting - the segregation and/or removal of any item(s) or organism(s) from the catch prior to the point where an Observer is collecting a sample

Prohibited species or prohibited species groups - Species whose allowable retention is zero. Salmon, herring, halibut, king crab, and Tanner crab are always prohibited in North Pacific open access groundfish fisheries. For vessel operators, prohibited species include the above and any other species declared prohibited by a notice of closure.

Prohibited species sampling - the weight of groundfish catch sorted by the Observer to determine only the numbers and weights of salmon, herring, halibut, king crab, and tanner crab present

PSC - "Prohibited Species Catch" - a harvest limit usually placed on halibut, salmon, crabs or other species which must be discarded in the groundfish fisheries

**R**

R.D.F. - Radio direction finder

Radio Call Sign - four letters and/or numbers which are an international identifier of a vessel. The International Radio Call Sign (IRCS) is painted in large letters on the side of each vessel and on the deck of the flying bridge.

Random - Relating to a set, each of whose elements have an equal probability of occurring in a sample. These elements are chosen as sample units in a manner which eliminates subjectivity.

Random sample frame - The population divided into independent countable units.

Regenerated scale - a fish scale which has grown in to replace one that was lost. Regenerated scales are useless for aging a salmon, but can be used to identify it to species.

Reserve - a portion of quota set aside at the beginning of the fishing year to allow for uncertainties in preseason estimates of DAP catch

Riblines - heavy lines or chains that run down the length of the trawl net to strengthen it

Roller - A device made up of one or more metal pins that spin allowing the groundline to be pulled up and over the rail of a vessel during retrieval such that tension and friction on the line is reduced.

Roller station/pit - Term used to describe the area where fishermen stand while retrieving the line and gaffing fish coming in over the roller.

Rollerman - A crewman who stands in the roller station and monitors the retrieval of the gear. The rollerman lands any commercially valuable fish and excludes any non-commercially valuable fish from being landed.

Rostrum - a pointed, calcareous, median extension on the anterior end of crab carapaces

Round weight - the weight of the whole fish (or animal) as it was when alive, synonymous with fresh weight and whole weight

Roundfish - fish that orient themselves in the water with the dorsal side towards the surface and ventral side towards the bottom

RSW - refrigerated sea water, usually referring to a tank for holding fish

RSW Tanks - holding tanks or bins that use refrigerated sea water to keep fish fresh until delivery

“Run pots” - A phrase used interchangeably with “retrieve pots.” It is the phrase used in the vessel logbook to indicate the number of pots that have been retrieved from a string.

**S**

Sample size - The portion of the population that is sampled.

Sample type - The method used to select part of a population. This includes basket, whole haul, partial haul, and the pre-sorted “X” sample types.

Sample weight - The actual weight in kilograms of a composition sample.

Sampling - The process of selecting part of a population for the purpose of determining the parameters, or characteristics, of the whole population. Composition sampling refers to taking samples of a haul in order to determine the fishing mortality of species occurring in the sample.

Scupper - a hole in the bulwarks which allows water to drain from the deck

Segment of Gear - In this manual a segment of gear refers to the standard unit the vessel uses for measuring gear. This could refer to a mag, skate, tub, or coil of gear.

Set - The entire length of groundline from the first hook to the last hook, also referred to as a “string” of gear.

Sheave - a wheel with a grooved rim, such as is mounted in a pulley block to guide the rope or cable

Shot - A pre-measured length of buoy line, usually 10 to 20 fathoms long. Normally there are two set lengths, a “Long” shot and a “Short” shot. When setting a string, the skipper will tell the crew how many shots to tie to a pot for various bottom depths.

Skate - a length of longline gear, usually 100 fathoms or 600 feet long

Skate bottom - a fabric square with lines on the corners to tie it into a bundle once a longline “skate” has been coiled onto it

Skate or Mag markers - Markers in the groundline that separate the sections of gear. These may be fluorescent tape woven onto the line, knots, line splices, carabineers, or magazine (mag) clips.

Skates/Tubs/Coils - Terms used to describe the smaller segments of gear within a set or a magazine.

Spatial - Referring to a unit of space used in random sampling. For example: a third of a bin, or a section of trawl alley, are spatial units.

Species composition sample - to sort a defined weight of catch such that each organism sampled for is grouped by family or by species and to determine the number and weight of the organisms in each group

Spring line - a mooring line attached amidships

SSB - “Single Side Band” radio used for long distance contact

Stack - This term is used on pot vessels to refer to pots stacked on the back deck.

Starboard - the right side of a ship (when one is looking forward)

Stern - the aft or back end of a vessel

Stern ramp (slip) - a sloping ramp in the stern of a trawler between the deck and the water line, through which the net is set and hauled

Stern trawler - any of various sized fishing vessels which trawl a conical shaped mesh net through the water, haul it up a ramp through the stern of the ship, empty, and process the catch to make a wholesale fish product. These vessels may fish for a month or more at sea without support.

Stock - a grouping of fish usually based on genetic relationship, geographic distribution and movement patterns; managed as a unit of fish

Stock assessment - an evaluation of the size and/or health of a predefined population including all activities that fishery biologists do to describe the conditions or status of a stock; the result is a report on the health of a stock and recommendations that would maintain or restore the stock

String - Pots deployed individually and are not attached to one another in any way. This term refers to pots set at a similar time in a similar area and depth. What a skipper calls a string varies considerably between vessels. Strings are analogous to sets.

Sub-sample - the weight of catch designated by the Observer which weighs less than the sample weight and is processed for a supplemental task to determining the composition of a haul, such as sampling for average weight

Surimi - minced fish meat paste usually produced from pollock

**T - Z**

Table - Some vessels have a sorting table on the back deck that pivots on one axis. The contents of a pot are dumped onto the table, and the table is swung out of the way to re-launch the pot.

TAC - “Total Allowable Catch” - annual recommended harvest levels based on biological, economic and social factors that is still within the range of the ABC

Taper - to cut webbing according to a given formula for fitting into a trawl

Tare - a deduction from gross weight to obtain net weight. Usually made to allow for the weight of a container.

Target species - Vessel personnel will generally call the species they wish to catch the target species. For Observer Program purposes, target species is what the vessel claims as their target. The Sustainable Fisheries Division of the NMFS Alaska Region uses delivery and production data to determine target fishery, which may differ from what the vessel claims as their target.

Temporal - Referring to a unit of time used in random sampling. For example: one hour of processing time, or systematic intervals of ten minutes, are examples of temporal units.

Trawl - a cone shaped net, towed through the water to catch fish

Trawl Alley - the central passage on a trawl vessel where the codend is placed after haulback

Trawl Doors - often referred to as “doors,” these are two metal plates, each attached to a main wire, designed to keep the mouth of the net open while fishing

Trip - the time period from when the vessel leaves harbor until it returns to harbor to offload product or catch

Tuning/Overhauling gear - Term used to describe the work involved in straightening hooks, replacing gangions, or splicing the damaged groundlines.

Tunnel - Short mesh-lined openings on two or three sides of a pot. These are the entrances to the trap. Fish and crab are able to swim in but are unable to make their way back out due to the fingers/triggers.

Under way - vessel in forward motion, running. According to Coast Guard regulation, a vessel is under way if it is not at anchor or at dock, so a vessel adrift is technically under way.

Vessel Code - a code used only by the Observer Program to identify a ship

Warp (main wire) - the cables on a trawler which run from the main winches to the trawl doors on the net

Weighed sample - a “basket” sample. The catch sampled by the Observer is weighed on a scale.

Whole haul sample - the entire catch was sorted, or the sorting was supervised, by the Observer

Winch - a hydraulic machine with one or more drums on which to coil rope, chain, or cable for hauling or hoisting

Wing - the sides off a trawl net near the opening, usually with larger mesh than the rest off the net

Wrister - a coated cloth tube worn on the arm, extending from the elbow and covering the wrists. Keeps arms warm and dry. Fish blood and slime are more easily washed out from these than from shirt sleeves.

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