# North Pacific Groundfish Observer Program Manual 1998

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# Notes on Observer Manual

- Requirement for vessel personnel to notify Observer of gear retrieval.
  - Step 4: Proportioning delivery weights (Page 2-16)
    - The 3rd paragraph "Record your data in your logbook in a similar format." appears to introduce a level of uncertainty and confusion by inferring that there may be different formula for calculating a OTC by proportioning than the described method.
      - I think that the above quote is worded to allow for recording the same formula but in a different layout or "format" and the word "format" may cause the confusion.

  - Noon Positions (Page 2-22)
    - Are all groups (trainers, debriefers and editors) agreed on how they are to be recorded and corrected?

- Relationship of Haul form to all forms.
  - There are still problems with date miss match errors. And observers may be unclear of the relationship of the date and haul number of catch, species composition, length, age etc... data.
    - The sentence under item 15, Nets on bottom and Nets off bottom (Page 22-23) "All other sample data are tied to the haul form via date and haul numbers" is clear but perhaps it could also be placed in a different location as well, perhaps the introduction of the haul forms.

- 3 US & CM's
  - Vessel Responsibility and the RST. (Page 3-6)
    - My perception from reading logbooks while doing PKC work, indicates that there is a gap in the clarity of the need for vessel to alert observers to haul retrieval. Observers seem to struggle against a perception (held by crew, Captains , debriefers and themselves) that they are responsible for their being aware of haul retrieval. And failure to be aware at retrieval time is a failure to be a "good" observer.
    - The manual seems to be clear on the responsibility of the vessel.
    - Possible resolutions
      - A more effective or regular conveyance of this responsibility to vessels.
      - A increased awareness and information on how to deal with vessels not alerting the observer during training.
      - Follow up when observers have problems with being notified, with the emphasis on correcting the vessels behavior.

  - Species composition Sampling. (Page 3-8,9)
    - Item 4 reads: "For each sampled haul or set <u>there are seven groups</u> of species, to each of which you must apply one of three sampling methods."
      - Would it be clearer to say "there are 5-7 groups..."
    - Item 5 (Page 3-9) It looks to me as if it may be construed to infer that a representative from each group must be included in sample evan if it did not occur in a randomly selected sample.
  - Methods for collecting Species Composition Samples. (Page 3-10)
    - In the sentence "The sampling methods you choose depend on the diversity and size of the catch, the shipboard setup, and your time and energy.
      - The item "your time" does not seem to be appropriate, it would seem to me that this item undermines the assumption that each observer will work at all times with

the appropriate amount of energy and expend the appropriate amount of time for each duty.

- Basket sampling, Definition criteria (Page 3-10) The item:
  - "The sum of species weights **must** equal the sample weight."
  - might be more clear if **"by definition will"** was used instead of "**must**"

- A clear and concise matrix correlating vessel types with time of year, target fisheries, species, vip requirements and sampling methods would be very helpful.
  - To further elaborate on the " when to whole haul sample" item (Page 3-13.)
- Item 14 (Page 3-37)
  - The sentence : "If you whole-haul sampled for the species composition, the rounded sample weight must match the official total catch weight on the Form 2 US" Should read:
  - "If you whole-haul sampled for the species composition, the rounded sample weight **is the** official total catch weight on the Form 2 US."

- Halibut length collection (Page 4-5,6 )
  - Under :Length and Viability (L/V)
    - It is stated that halibut lengths & viabilities may or may not come from the halibut that were in 3 US sample.
    - It also states that Halibut length and viability data should not be recorded if no 3 US sample was done for that haul.
    - These points seem to often be missed. Lengths often occur from hauls where no 3 us composition data was taken and we currently do not discard these lengths.
    - Another exception to these points that is stated only through deduction is that although lengths can be recorded for fish from outside of a composition sample (if that haul was actually sampled) this can only happen if the species being lengthed was not whole haul sampled for composition.
      - This often happens because of arbitrary assigning of fish due to a proportioning method or other mysterious cause. The current practice in editing is to discard all lengths for a haul and species if there are more fish recorded on the 7 US than on the 3 US if that species was whole haul sampled.
    - It is also stated that length data with out viability data for Halibut is acceptable but viability data with out lengths is not. This seems to be a change to me?
  - A table describing the various conditions for these collection rules would be helpful .
  - Another idea is a key to observer sampling laid out as in a taxonomy key style.
    - I would bet that some observer has created such a key.
  - Length Frequency Sampling of Target (Page 4-12)
    - Paragraph 5, appears to say that fish from two different hauls can be recorded under one haul #?
- Long Line & Pot vessels.
  - Marine mammals item 4(Page 5-16 & Page 5-27)
    - Instructions for where to record mammal interaction and feeding looks wrong.
    -

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# 1 Introduction to the Observer Program

## Groundfish Fisheries and the Observer Program

Welcome to the National Marine Fisheries Service (NMFS) training course for North Pacific Groundfish Observers. Observer training takes place at the University of Alaska North Pacific Fisheries Observer Training Center and at the NMFS Alaska Fisheries Science Center in Seattle; the training offered at both locations is identical, and successful students become NMFS-certified groundfish observers.

Large-scale exploitation of eastern Bering sea groundfish stocks began in the 1930s with the initiation of the Japanese yellowfin sole fishery. Following the Second World War, fisheries in this region expanded as more countries became involved and additional species were targeted. By the early 1960s operations had extended into the Gulf of Alaska and off the coasts of Washington, Oregon, and California. Observers began collecting data aboard some foreign vessels in 1973 upon invitation of the host countries. During the first few years of the program, coverage levels were low and observers' primary responsibilities were to collect information on bycatch rates of halibut, crab, and salmon, and biological data for a range of species.

In 1977, the Magnuson Fishery Conservation and Management Act (MFCMA) was implemented to regulate fishing within the Exclusive Economic Zone (EEZ) of the United States. It was reauthorized in 1990

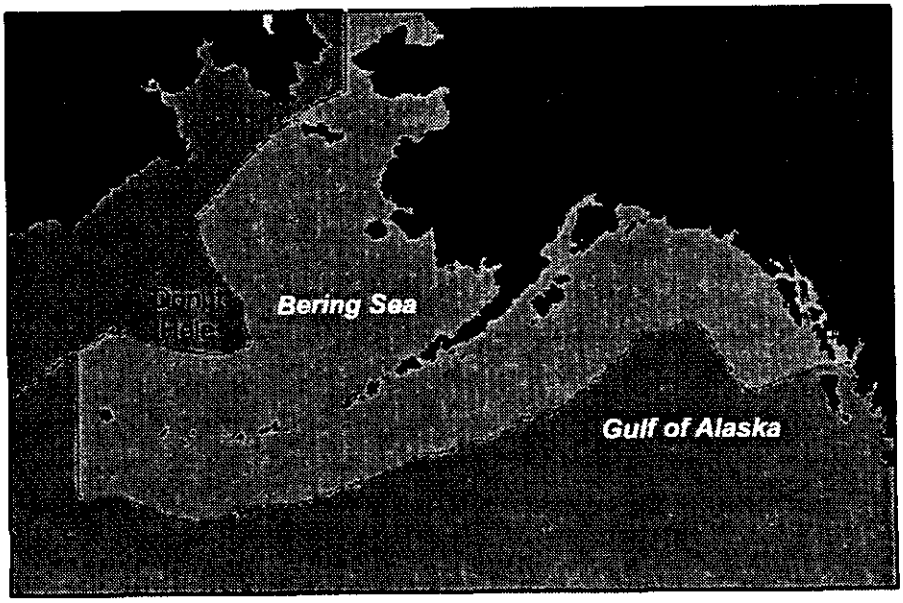



**Fig. 1-1**. Exclusive Economic Zone off Alaska

and again in 1996 as the Magnuson-Stevens Fishery Conservation and Management Act (or Sustainable Fisheries Act). MFCMA established eight fishery management councils to develop management plans for the nation's fishery resources. Among the fishery management plans developed by the North Pacific Fishery Management Council were those which regulate groundfish fisheries in the Gulf of Alaska and the Bering Sea/ Aleutian Islands Region. Since implementation of MFCMA, placement of observers in groundfish fisheries off Alaska has been achieved through provisions of these management plans.

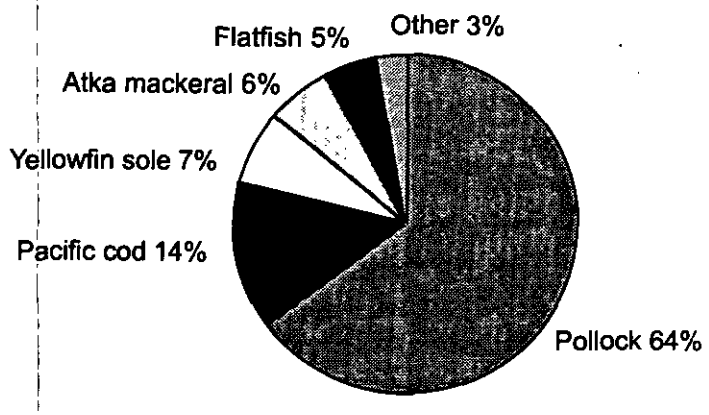



**Fig. 1-2.** 1996 Bering Sea/Aleutian Island Groundfish Catch

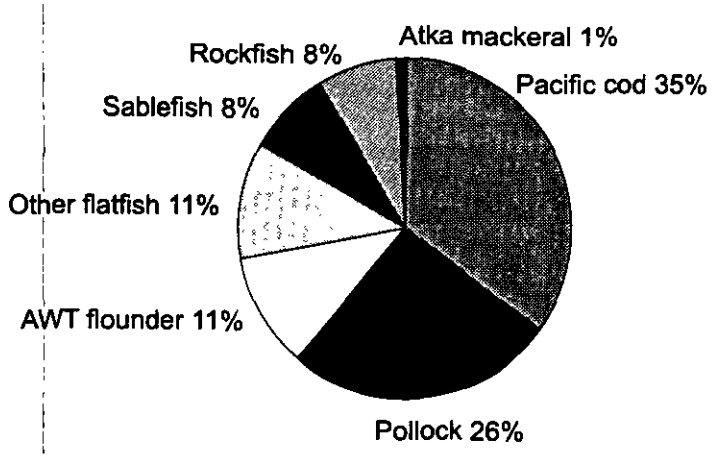



**Fig. 1-3.** 1996 Gulf of Alaska Groundfish Catch

When MFCMA was initiated, all groundfish fisheries in the EEZ off Alaska were conducted by foreign vessels. Direct U.S. participation began in 1978 through joint ventures where fish was harvested by U.S. fishing vessels and transferred to foreign factory ships for processing. All non-joint venture foreign fishing ceased in 1986 and all foreign fishing in these waters ended in 1991 when the U.S. industry had become large enough to harvest and process the total allowable catches for all groundfish species. The major groundfish species harvested in Alaska's EEZ are illustrated in **Figs. 1-2 and 1-3**.

As the fisheries have changed, so has the observer program. Coverage levels have increased and observer data has become increasingly important to the management of catch, bycatch, and prohibited species. The availability of data and samples collected by observers has allowed scientists at the Alaska Fisheries Science Center and elsewhere to develop and utilize sophisticated procedures for estimating age composition, stock abundance, and allowable biological catch. Observer data is now critical to inseason management, scientific research, documentation of fishery interactions with marine mammals and birds (including endangered species), and monitoring for compliance with certain fishery regulations.

Since 1990, when the Domestic Observer Program was fully implemented, 100 percent observer coverage has been required aboard all vessels greater than 124' length overall (LOA) harvesting groundfish in the EEZ off Alaska. Vessels of 60' - 124' LOA participating in these fisheries have a 30 percent observer coverage requirement. Shoreside plants processing groundfish harvested in the EEZ have observer coverage requirements linked to the quantities of fish they receive. This is the largest fishery observer program in the world. Each year we deploy 300 - 400 individuals to collect more than 30,000 observer days of data aboard approximately 400 vessels and at about 30 shoreside fish processing plants.

While NMFS recognizes that sampling and collection of data aboard commercial vessels and at fish processing plants is sometimes quite difficult, the quality and integrity of observer data is of paramount importance. The training should prepare you well for your work as an observer, and program staff will always be available to work with you to resolve problems as they arise. However, you will have to rely on your own resources to ensure that you collect the best possible data under difficult conditions. Most observers find the experience challenging and rewarding. We have great confidence in our observers and we are rarely disappointed in the work that they perform.

# Preparation and Departure

The North Pacific Fisheries Management Council (NPFMC) developed a comprehensive data-gathering program for the North Pacific groundfish fishery. In addition to vessel permitting and reporting requirements, it included a mandatory observer program. The Council and the National Marine Fisheries Service (NMFS) prepared an Observer Plan to implement the program in 1990. The Observer Plan has subsequently been incorporated into the Code of Federal Regulations at 50 CFR §679.50. Under these regulations, the NMFS Observer Program at the Alaska Fisheries Science Center in Seattle provides the operational oversight, certification training, definition of observer sampling duties and methods, debriefing of observers, and management of the data. Although the vessel and plant owners pay for the cost of the observers, the costs associated with managing the program are borne by the Federal government.

When fishing or processing companies require observer coverage, they sign up with an observer contractor which has been certified by NMFS. Contractors advertise and hire, insure, and make the logistical arrangements for observers. Certification training is provided by either the Observer Program in Seattle or the North Pacific Fisheries Observer Training Center (NPFOTC). The NPFOTC is operated through the Community and Technical College, University of Alaska Anchorage, funded by the Alaska Sea Grant College Program, University of Alaska Fairbanks.

Upon successfully completing a 3-week certification training course you will be issued sampling equipment and deployed to your vessel or plant assignment. Observer contracts typically last from one to three months and include from one to four observer assignments in that period. You will conclude your contract by turning in your equipment and debriefing at an Observer Program office, usually in Seattle. Observers who successfully complete their assignments are eligible for re-hire. Prior observers attend a 4 day re-certification briefing once per year, prior observers must attend a 1- or 4-day briefing. If it has been over 18 months since the last deployment, a 3-week training session is required.

## The Training Period

The first step in becoming an observer is a three week certification training offerred either at the Observer Program office in Seattle or at the NPFOTC in Anchorage. Training consists of familiarization with the groundfish fishery and its management, and regulations. Sampling duties and procedures are explained and practiced with dry lab scenarios. Lec-

tures are given on the identification of regional families and species of fish, crabs, marine mammals, and birds. Following the lectures on fish and crabs are laboratory sessions where identification skills are practiced and tested. A syllabus will be provided on the first day of training.

To pass observer certification training you must:

- Be on time, attend and participate in class every day (unless excused by the instructor)
- Complete all homework correctly, on time, and to the satisfaction of the instructor.
- Demonstrate safety and survival skills for life at sea (including a water session).
- Pass the species identification exam.
- Pass the written final exam.
- Demonstrate, to the instructor's satisfaction, the attitude and ability to perform an observer's duties, to work independently, and to act in a professional manner even under difficult circumstances.

Observer certification is performance based. It is not automatic and must be maintained with good work evaluations and re-certification briefings.

## What To Bring

### Personal Gear

Observers must provide their own clothing, rain gear, sleeping bag, and other items of a personal nature. Personal quarters are usually cramped. Limit your personal gear to one duffle bag. When going aboard a shoreside delivery vessel, experienced observers recommend taking only a day pack or knapsack of personal gear.

It is easy to over-pack, especially if you are a first-time observer. Follow this simple rule: one set of clothes for traveling, one set of clothes for working, and a second set of work clothes that are clean or being washed. This system will allow you to change your outer clothes about every three days and do laundry once per week. You may wish to take a set of sweats or casual clothes and extra underclothes.

Weather conditions can change dramatically during your deployment period, so plan to layer your clothing. Working on the deck of a vessel in Alaska is often cold and wet. Don't underestimate your need for hats, gloves, and thermal underwear when you pack. Choose materials that are

easily washed and cared for. Polypropylene socks and thermal underwear wash easily and will dry in a few hours.

**Observer Progam Sampling Gear**

### Personal Items Supplied by Observer

This list of recommended items is for a 60 - 90 day contract. The amount and type of heavy clothing is dependent on personal preference and time of year.

**Work clothes**—number and type:

- Rain gear - bib overall pants with suspenders and jacket with hood, medium to heavy weight material- 1 set
- Boots - knee high, not the lace up type, *flat* chevron sole, "Extra Tuffs" strongly recommended
- Gloves - rubber or facsimile with gauntlet. Heavy enough to withstand abrasive work but flexible enough to pick up a pencil and write. - 6 pair
- Glove liners - light polypropylene, or poly/cotton - 2 pair
- Shirts, polypropylene or wool - 2 (I light, I heavy)
- Shirts, cotton - 2, sweatshirt - I, T-shirts - 3
- Pants, 1 each - sweatpants, denim, & wool
- Hat, wool or polypropylene knit cap
- Thongs (flip-flops), for shower use - I
- Underwear, long-thermal - 2 pairs Underwear - 5 pairs
- Socks, wool or polypropylene - 3 pairs, cotton - 2 pairs
- Jacket, polypropylene fleece or pile, wool or synthetic - I

**Other items or articles**

- Sleeping bag and pillowcase - 1
- Towel, medium cotton - 2
- Toiletry articles
- Duffel bag - sturdy, medium size, old or inexpensive - I
- Small day pack or knapsack - 1
- Traveler's checks purchased with the cash advanced
- If corrective lenses are used for eyesight - a spare pair
- Felt/wool boot insoles for boots (not felt liners) - 2 pair
- Needle and thread, safety pins, and duct tape for repairs
- Camera and film
- Watch and travel alarm
- Medication for seasickness
- Vitamins
- Athelete's foot cream
- Hand cream
- Paperback books
- Small cassette player and tapes
- Water bottle (1 qt.) - to keep drinking water in your cabin

**Fig. 1-4.** Personal Items

NMFS provides observers with safety apparel, sampling equipment and forms (see **Figs. 1-5** and **1-6**). If you need different equipment, forms, or replacements for equipment during your deployment, the field offices in Dutch Harbor or Kodiak can usually re-supply you.

You are responsible for the transport and return of any sampling gear issued to you. Do not give away any gear or books! Equipment items marked on the Observer Program Sampling Gear list with an asterisk will have to be replaced by your contractor if they are not returned regardless of the condition or reason for loss. Your contractor may make you pay the replacement cost.

## OBSERVER PROGRAM SAMPLING GEAR

I understand that as an agent of my contractor, _____ (abbreviate contractor name), I am assuming responsibility for the satisfactory return of equipment issued to me by the NMFS Observer Program. I understand that the items I have been issued as shown below will be returned, (even if damaged) and/or designated items will be replaced regardless of reason for loss.

Date Out _____ Signature

_____

Date In _____ Name, please print legibly

_____

Please ensure all gear is marked "NMFS"
Asterisks (*) indicate items which must be replaced if not returned.

| | No. of Items | Circle New or Used | Item Description | | No. of Items | Circle New or Used | Item Description |
|---|---|---|---|---|---|---|---|
| * | ____ | N/U | baskets, 3 - 4 | * | ____ | N/U | calculator |
| | ____ | | basket lid | | ____ | | clipboards, 2 |
| | ____ | | rope, 20 ft. | | ____ | | shipping label |
| | ____ | | lubricant oil | * | ____ | N/U | 50 or 100 kg scale, |
| | ____ | | scouring powder | | ____ | | serial no. _____ |
| | ____ | | sponge, 2 | * | ____ | N/U | 12 kg scale, |
| | ____ | | length measuring board | | ____ | | serial no. _____ |
| | ____ | | plastic length-freq strip, 2 | * | ____ | N/U | 2 kg scale, |
| | ____ | | plastic data sheets, 3 | | ____ | | serial no. _____ |
| | ____ | | dividers, crab meas. | | ____ | | scale hooks, 3 |
| | ____ | | plastic crab meas. form | * | ____ | N/U | survival suit, serial no._____ |
| * | ____ | N/U | measuring tape reel, 15m or 30m | * | ____ | N/U | strobe light |
| * | ____ | N/U | fish gaff | * | ____ | N/U | life vest & whistle |
| | | | plastic bags, 10 | * | ____ | N/U | hardhat and chinstrap |
| | | | zip-top salmon snout bags, 5 | | | | |
| | | | scale envelopes, 30 | | | | |

CARDBOARD BOX WITH THE FOLLOWING:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ____ | | pencils, No. 2 yellow, - 3 | * | ____ | N/U | flashlight |
| | ____ | | drawing pencils, 3 | | ____ | | extra batteries, 4 |
| | ____ | | mechanical pencil | * | ____ | N/U | knife |
| | ____ | | mechanical pencil leads, 1 tube | * | ____ | N/U | forceps, 1 |
| | ____ | | pens, black, - 4 | * | ____ | N/U | scalpel handles, 2 |
| | ____ | | eraser stick | | ____ | | scalpel blades, 10 |
| | ____ | | block eraser | * | ____ | N/U | thumbcounter |
| | ____ | | hole reinforcements and tabs | | ____ | | 2 m tape measure |
| | ____ | | ruler | | ____ | | ear plugs 3 pr. |
| | | | thumbtacks & paperclips | | | | 3 vials for sab. tags & oto. |
| | | | rubber bands | | | | looseleaf rings, 3 |

ISSUED PUBLICATIONS:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ____ | | sampling manual | | | | |
| | ____ | | logbook | * | ____ | N/U | Eschmeyer, fish guide |
| | ____ | | binder of data forms | | ____ | | Species I.D. guide |
| | | | wallet folder for long forms | * | ____ | N/U | Marine mammal guide |

**Fig. 1-5.a.** Observer Program Sampling Gear Form (front)

SPECIAL PROJECT EQUIPMENT

STOMACH SAMPLING: Buckets, bags, etc. are issued by the stomach lab and these items should be returned to that lab when debriefing.

OTOLITH/SCALE COLLECTION:

____ otolith vials, 200, 100 per box
____ vial block, 1
____ plastic otolith form
____ cod knife
____ forceps (1 pr.)

FISH COLLECTION:

____ various plastic bags, manila and waterproof tags

OPTIONAL EQUIPMENT

CATCHER BOAT OBSERVERS:

* ____ N/U Mustang suit
* ____ N/U knee pads
____ leg wrap bands

LONGLINE OBSERVERS:

* ____ N/U Mustang suit
____ thumbcounters, 3 more
____ protective eyewear

WOC COASTAL HAKE OBSERVERS:

* ____ Miller & Lee ID book

OPTIONAL (ALL OBSERVERS):

____ twine or light cord
____ AC adaptor for calculator
____ cellophane tape
____ pencil sharpener
____ 1" looseleaf rings
____ Zak roe knife for sexing fish
* ____ Pacific Fishes of Canada, (an ID guide by Hart)
____ whetstone

Personal Gear Storage:

Please read and acknowledge with your signature: I understand that storage of flammable, hazardous, or illegal chemicals and substances is not permitted I understand also that the NMFS Observer Program does not guarantee the safety or security of the items I am leaving in storage.

Signed_____ Date_____

Number and description of items in storage, for example: 1 box and 1 suitcase. ( You do not need to list contents.)

**Fig. 1-5.b.** Observer Program Sampling Gear Form (back)

| Vessel Data Forms for 3 months: | | Plant Sampling Forms for 3 months: | |
|---|---|---|---|
| **No.** | **Type** | **No.** | **Type** |
| 20 | Form 1US (for longliners) | 15 | Form A Plant Delivery |
| 20 | Form 2US | 20 | Form A Delivery Composition |
| 150 | Form 3US (for trawlers) | 20 | Form 3US |
| 150 | Form 3US (for longliners) | 45 | Form 7US |
| 20 | Rockfish Species Description | 30 | Form 9US |
| 20 | Flatfish Species Description | | |
| 15 | Misc.Species Description | | |
| 45 | Form 7US | | |
| 30 | Form 9US (obs. collecting age structures) | | |
| 5 | Form 9US (other obs.) | | |
| 3 | Form 10US | | |
| 10 | Form 11US | | |
| 40 | Catch message Form A | | |
| 25 | Catch Message Form B | | |
| 15 | Salmon Retention Form(s) | | |
| 5 | Plain white paper for misc. fax messages | | |
| 3 | Tagged Fish Form | | |

**Fig. 1-6.** Form Types and Quantities Issued

## Care of Sampling Gear

**Remember—others must use this gear after you. Proper care of equipment will make all our work easier.**

The sampling gear that you receive may not be new, but it should be in good working order. Most gear is expected to be used for several observer contracts. Therefore, we depend on you to take care of and maintain the equipment. All gear given to you will be examined upon return to see that it is in good condition before it is checked in. Facilities are available for cleaning gear at Observer Program offices or at the OTC. *All* metal parts must be clean, free of rust, and oiled. Here are a few tips for shipboard maintenance that should help make your job easier:

1. Protect your gear from loss overboard and from theft. Do not leave gear such as baskets and scales on the weather deck unless there is no alternative and they are well secured. Stow all sampling gear when you are finished and inform the skipper and crew not to borrow or use your gear without your permission.

2. Keep all paper products and small, loose equipment (e.g., pencils, pens, thumbtacks, scissors, counters) in plastic bags throughout your trip.

3. Try to keep your calculator, stopwatch, and thumb counters as dry as possible. Wipe the steel tape measure down with an oiled cloth after use. Books should always be protected from water and slime.

**Prepare a known weight to be used later to check your scale adjustment.**

4. Check the weighing scales every day before sampling. Keep the scales cleaned and oiled. Adjusting screws must be kept coated with grease. The scales have steel springs inside that can rust. Oil must be squirted up inside the scales.

5. Rinse and oil the metal 2 meter tape measure and thumb counters each day when used. On the thumb counters, the plastic viewing window may need to be removed to clean and oil the inside. (Be careful to keep oil away from plastic forms, since a pencil will not mark on an oily surface).

During gear check out, calibrate your scales using the instructions and standard weights provided. Then prepare a known weight by selecting items that may be easily assembled later (i.e., a basket, wheels, books, or a water jug). List the items weighed and their total weight. This known weight may then be used later to check your scale adjustment or to check the accuracy of shipboard scales.

Pack your sampling gear forms in the blue sampling baskets for transport to and from the vessel. The baskets may be exposed to salt spray. Therefore, sensitive items should be packed in plastic bags. Before checking in your baggage at the airport, remove the wheels from the baskets to avoid losing them and fouling the airline conveyors. You will want to have a plastic bag handy to carry the wheels in.

## Deployment

Vessel assignments are arranged by your contractor with the vessel company. Logistic arrangements are also made by your contractor. Though you may express a preference for a vessel type, you must be willing and able to accept any assignment.

While in training, be prepared for changes in ship assignments and departure times. Some observers wait for their vessel assignment longer than was originally planned, so be prepared for this eventuality, and be patient. Your return date may also be affected by vessel schedules. Notify your contractor before leaving if you have any pressing dates soon after your expected return (such as the beginning of a school quarter).

## Travel to the Ship

### Shipment of Gear

You will be carrying your sampling equipment with you to the various ports. If traveling by plane, the baskets are transported as part of your personal luggage. Excess baggage costs may be avoided by careful planning and keeping the number of personal items and equipment at a minimum. Extra baggage is usually $35 - $40 for each bag over two. A bag over 70 pounds will typically incur a charge of $70 - $80. The usual procedure is to pay cash for the amount of excess baggage at the time of check-in, so remember to allocate enough cash to pay the excess baggage charges for your return flight.

Do not ship your baggage unaccompanied. You cannot do your job without your gear. If you get separated from your luggage, initiate a luggage search from your end immediately. ***Do not board a vessel without your luggage even if you are told it can be brought out to you later.***

On the flight to the embarkation port, carry the observer training manual in your carry-on luggage. (Some extra sampling supplies are kept at Kodiak and Dutch Harbor but manuals are not easily replaced.) On the return journey from the ship, pack your manual and carry the completed data forms with you. If these forms are lost, your whole trip is wasted.

### Expenses Incurred While Traveling

Before departure your contractor will inform you on accounting procedures for expenditures. It is a good idea to save all receipts for excess baggage charges, taxis, hotels, meals, and other legitimate expenses. Retain any unused airline tickets and turn them in to your contractor upon your return. Be cautious in spending your travel advance. Costs are high in Alaska and observers are frequently delayed, both in getting on ships and while in port between assignments.

Most establishments in Dutch Harbor and Kodiak accept credit cards and there are ATMs available for cash withdrawals from personal accounts. Some outlying ports such as St. Paul and Akutan will not have ATMs and may not accept credit cards. Your contractor will usually inform you ahead of time to take extra cash to those ports.

### Transport to Port

Normally, airplane flights are arranged so that an observer arrives at port at least one day in advance of the vessel departure. This is necessary because the weather is often bad in certain parts of Alaska, and flights can be postponed. Delays caused by inclement weather may be unavoidable,

but it is important that you not cause delays by missing flights. Allow extra time for the transport and check-in of your equipment. If you do miss flight, notify your contractor.

Upon arrival at the embarkation port, follow your contractor's logistics instructions and stay in contact. Let your contractor or agent know of your wherebouts so that they can contact you if there is a last-minute change in plans. The Observer Program has offices in Dutch Harbor and Kodiak where you can get help if there is a problem (see Appendix A) and your contractor may have a permanent contact in port to help with logistics.

### Logistics and Your Schedule

Be aware that fishing schedules are often changed by weather, mishap, vessel breakdown, or fishing success and that these events may affect your schedule. If you find out that your ship's schedule is changing unexpectedly, call or send a message to your contractor explaining the matter. *Do not make changes in your schedule yourself.* Observer coverage of vessels is a large logistic "net." Movement in one part affects the whole and your contractor has a logistical perspective that you cannot see.

# An Observer's Life On Board

## Schedule and Workload

As an observer you will be working long hours. Ten to twelve hour work days are normal. *When* you work is dependent on fishing and delivery schedules and, on trawlers, a pre-determined random selection of hauls. So, your schedule is seldom "routine." Observers are expected to work seven days a week the majority of the time.

## Standards of Observer Conduct 50 CFR §679.50(h)(2)(ii)

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 diligently perform their assigned duties.

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

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:

   a) Engaging in excessive drinking of alcoholic beverages;

   b) Engaging in the use or distribution of illegal drugs; or

   c) Becoming physically or emotionally involved with vessel or processing facility personnel.

[**Note**: Behaviors contrary to these standards or the intent of these standards are grounds for the decertification. Falsification of observer data will be grounds for decertification and may be a basis for prosecution.]

## Conflict of Interest Standards, 50 CFR §679.50(h)(2)(i)

Observers:

1. May not have a direct financial interest, other than the provision of observer services, in a North Pacific fishery, including but not limited to, vessels or shoreside facilities involved in the catching or processing of the products of the fishery, concerns selling supplies or services to these vessels or shoreside facilities, or concerns purchasing raw or processed products from these vessels or shoreside facilities.

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.

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

4. May not solicit or accept employment as a crew member or an employee of a vessel or shoreside processor in a North Pacific fishery while under contract with an observer contractor.

Provisions for remuneration of observers under this section do not constitute a conflict of interest under this paragraph.

## Special Caution on Deportment

As a fishery observer:

1. You must abide by the most stringent standards of conduct if there are differences between those of your employer and NMFS.

2. When conflicts or sampling problems occur that affect your ability to get unbiased samples of the catch (presorting of fish for example), you may be able to usually work it out by talking with the crewmen, factory foreman, or deck boss. If this doesn't help, ask the captain to help you. If the problem is not resolved, contact an

Observer Program office. Document the problem and your efforts at each stage.

**Your conduct must be above reproach at all times. Anything that damages your character in the eyes of the public—now or later—is detrimental to your effectiveness on the job.**

3. Maintain a friendly but professional demeanor toward vessel personnel. Remember that, as an observer, you are highly visible. Before acting in any given situation, be mindful of the sensitivity of your position. Tactful, mature handling of problems is expected. Remember, you are on the job 24 hours a day.

4. Do not offer, even if asked, any authoritative advice on what a vessel can and cannot do according to the fishing regulations. Refer the skipper to the Code of Federal Regulations (CFR) or to the NMFS Regional Office in Juneau.

5. Consumption of alcoholic beverages by observers at sea is prohibited. When in port, keep your alcohol consumption to a very low level. Observers are not allowed to be intoxicated while deployed. If the vessel or shoreside facility maintains a stricter alcoholic beverage policy for its employees, then the observers must comply with that policy.

6. Observers should never accept gifts, (even of fish to take home), as this may appear to compromise your impartiality. You may not accept payment for any work you do for the vessel (or plant, company, owner, or operator) during your employment as an observer. Any act that could be *construed* as acceptance of a bribe, such as responding favorably to an offer of *future* employment, must be avoided.

7. Sexual activity with vessel or plant personnel while deployed as an observer is prohibited and is grounds for decertification. If NMFS-certified observers develop relationships with members of the industry they are assigned to observe, the respect and professional credibility of the individual involved and all observers is eroded. *This program's credibility rides with each observer.*

**Observers after you will be subject to the precedents you set.**

8. As an observer you must abide by all rules and regulations relating to the conduct of the host vessel. You will not use, for any purpose other than obtaining required data, any species that the governing federal or state permit prohibits the vessel from fishing for or retaining, including especially salmon, halibut, crab, marine mammals, and birds. (This includes eating them in the ship's mess, if served.) Do not accept or transport any item violating laws relat-

ing to endangered or protected species unless a permit to do so has been issued to you. No specimen materials may be taken from walrus.

## Communications

While deployed as an observer, it is common to feel as if you are "way out on a limb." Trying to communicate with your contractor and/or NMFS can be frustrating at times. Patience, perspective, and maturity will be needed. Please remember that you are employed as a professional and all your communications should reflect this. Contact numbers for your reference are in Appendix A.

Observers will not receive mail through NMFS. To receive mail you must make arrangements with your contractor, the place where you are staying, or use general delivery.

Do not send or expect to receive any personal messages while at sea except in case of emergencies. Before you depart, give your contractor phone numbers and addresses of whom to contact in case of emergencies or drastic changes in your scheduled return. Any person listed should be notified to contact anyone else who should know of the change in plans or emergency. If a family emergency should arise at home, relatives should contact your hiring contractor.

## Accommodations

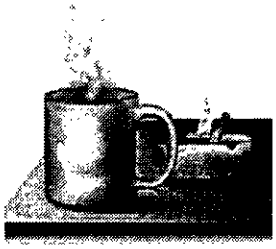
Under 50 CFR §679.50(f), an operator of a vessel required to carry one or more observers must provide accommodations and food that are equivalent to those provided for officers, engineers, foreman, deck bosses or other management level personnel of the vessel. They must maintain safe conditions on the vessel.

Yet, conditions (i.e., cleanliness and upkeep, safety, comfort of quarters, quality of food, general attitude, and good personnel management) vary widely depending on the ship type and size, company and skipper's policies, and the vessel's fishing success. Only a few generalities on what to expect can be made so you must be flexible.

Crews' quarters range from one to twelve per room. Catcher/processors will usually arrange separate quarters by sex, but on catcher boats and small longline vessels, women observers may be quartered with men.

Petty theft may occur on some vessels. It is a good idea to have a small lock on your bag or at least to keep your valuable items, such as tape players and cassettes, out of sight when not in use.

Showers and laundry facilities (or laundry service by a steward) are normally available on larger vessels. Some vessels have limited water supplies so showers and laundry may be restricted at times. Smaller vessels may not have a shower, and laundry is done by hand or waits until you return to port.



Catcher/processor vessels will have cooks and regular meals available. Shoreside delivery vessels *may* have a designated "cook" and a meal may be prepared on the way to the fishing grounds, but once fishing has begun, the galley will probably be left open for you to just help yourself. If the fishing pace is hectic, you may find yourself caught up in a routine of little-or-no-sleep and surviving on coffee, candy and pop until the return trip to port. Cigarette smoking inside is the rule rather than the exception.

Guidelines developed from experience are: show respect to others and it will be returned to you. Be a good neighbor. One way to accomplish this is to try to remain clean and neat. Clean up after yourself. Do your best to maintain your sense of humor.

## Illness and Accidents Aboard

According to 46 CFR 28.210, each vessel must have at least one individual certified in first aid and one (or the same) person certified in CPR. Each vessel that operates with more than 16 individuals on board has to have two persons certified in first aid and CPR and, with more than 49 aboard, four persons have to be certified in first aid and CPR. Where an injury or illness is not immediately life threatening, we recommend that you do not get involved in providing any type of treatment to crewmembers. However, if vessel personnel need additional assistance that you feel you can lend, or an injury is life threatening, and you are the first responder, you should:

- not interfere with the first aid that is being given by others,
- follow directions given by the Captain, follow accepted and recognized emergency care procedures, and only do what any reasonable, prudent person would do under the circumstances,
- do not act without the informed consent of the patient, or if that is not possible, the Captain;
- do not leave the patient or stop first aid until relieved by a qualified and responsible person.

When a crew member is seriously injured or ill, it is up to the captain to decide when (or if) to return to port. Interim treatment and the decision to interrupt fishing can be aided by calling the U.S. Coast Guard and relaying symptoms to a medic or doctor. If it is you or another observer who may need hospitalization, have the U.S. Coast Guard also notify your contractor and an Observer Program office and keep us advised.

***If you become ill,*** such as coming down with a severe cold or flu that inhibits your work, *you must inform your contractor and NMFS* of your situation. If your illness gets progressively worse or continues to affect your performance over more than three days, your assignment may need to be changed.

### Seasickness

Seasickness often hampers observers at the beginning of a cruise, but give it time—most of the effects of seasickness disappear after a few days. Seasickness occurs because:

> *information about the vertical line as it is received by the eyes is forever clashing with the information assimilated by our sense of position and sense of balance. When it comes to a conflict of sensations like this, the visual system almost always dominates. ...This perceptual conflict is one of the causes of seasickness. With time, however, one learns to perceive the 'perpendicular' which arises from the movements of the boat and the direction of gravity. Thus the body maintains its balance when upright and learns to ignore the conflicting visual data afforded by the interior of the boat and the horizon outside the window.*
>
> *Movements with low frequency and greater amplitude are more likely to make us ill than movements with a high frequency and smaller amplitude... Head movements in addition to the external motion stimuli serve to precipitate discomfort... There are additional factors besides movement which can precipitate the syndrome."*[1]

Indigestible stomach contents, unpleasant fumes or cooking smells, and anticipatory fear will trigger seasickness. The symptoms are nausea, headache, drowsiness, and depression. This is *normal*, it's just difficult to live with. Remember, no one ever dies of seasickness, but what can be a danger is weakness, so you must make yourself drink water or some non-acidic juice and try to eat some mild food (soda crackers are often recommended) to keep up your strength.

**Take seasickness medication along even if you don't plan on using it.** Dramamine and Triptone are trade names of the drug dimenhydrinate. This is a form of antihistamine which commonly causes drowsiness. Driving and hazardous activities are not recommended when taking these medications. Advertised as their less drowsy formula, Dramamine II is meclizine hydrochloride, as is Antivert and Bonine. Meclizine is also an antihistamine but the drowsy side-effect is likely to be less and it's beneficial effect lasts longer. Marezine is the trade name of cyclizine; another antihistamine which may be restricted as a prescription drug. Taking capsules of powdered ginger is an herbal remedy for soothing nausea without sedative side effects. Sea Bands are two elastic bands each with a plastic bead that you wear with the bead centered on the inside of each wrist. This is the acupressure point for relieving nausea. These may alleviate mild cases or help those who wish to avoid medication.

The U.S. Coast Guard formerly used meclizine with moderate success. Then some research by the U.S. Coast Guard "found that a combination of two drugs, promethazine hydrochloride (an antihistamine, trade name Phenergan), and Ephedrine sulfate (a decongestant), was by far the most effective treatment available. Similar tests on U.S. Navy and U.S. Air Force personnel corroborated the Coast Guard's results. The recommended dosage is 25 mg of each drug one to two hours prior to the onset of motion stress, and at six-hour intervals as needed thereafter."[2] Promethazine hydrochloride is a prescription drug that may cause drowsiness and should not be used by pregnant women (which is the case for all the drugs mentioned here). Ephedrine sulfate may aggravate existing cases of hypertension. Neither drug can be taken within 12 hours after ingesting alcohol. It is recommended that you take one dose of a motion sickness medication, as directed, before you leave the dock because taking the medication afterward will at least delay or may nullify effectiveness.

In addition, here are some guidelines for getting through a bout of seasickness actively. Stadler states that these actions will speed up the process of re-adaption:

- *Try not to think about seasickness, put it out of your mind, force yourself to think of other things.*
- *Take heart and build up your confidence.*
- *Practice releasing the tension in your muscles; as soon as you begin to feel apprehensive try and relax (desensitization).*
- *Avoid unpleasant smells (especially tobacco, damp clothing, and vomit). Stay away from the galley*
- *Below deck: lie down, keep your eyes closed. In the saloon: fix your eyes on a freely suspended object.*

- *Seek out cool, fresh air and take calm, deep breaths. Where possible, keep away from enclosed spaces, go up on deck.*
- *Reduce the amplitude of the motion stimuli: keep amidships or astern, avoid the fo'c'sle berth.*
- *Try not to sit and let yourself be rocked passively back and forth with the motion of the boat. When standing, avoid leaning against anything, stand erect and make active compensatory movements to keep your balance.*
- *Try to move your head as little as possible. 'Lock' onto the horizon; watch the swell and anticipate the movement of the waves*
- *Participate in the normal duties on board.*
- *At all events see a job through to the end, do not give up on it.*

Determine that you will persevere through the mental and physical discomfort due to seasickness, do not dwell on fear. It is simply a matter of adjustment. If severe discomfort persists for more than five days let your contractor know. They can arrange for the vessel to drop you off onto a transport boat or at the nearest port, but this is done only for extreme cases.

# Sampling Duties For Observers

Since ship design and procedures vary from ship to ship, in many fisheries it will be your responsibility to select the best sampling methods to obtain the needed data. In the following sections, the methods of sampling will be outlined. To use any of the prescribed sampling methods, you are expected to devise and apply good, statistically sound, fish collection techniques to the best of your ability.

## Observer Duties and Priorities

Your duties as an observer are listed below in order of priority. It is not a list of your daily activities. For instance, several times each day vessel observers will sample for catch composition. Taking information on a marine mammal caught during fishing operations is a rare event but it takes precedence over compostion sampling whenever it occurs. Each of your duties will be explained in detail in this manual.

1. Daily, record total fishing effort and estimated catch weights. All other data are linked to this information. Make an independent estimate of catch weight for as many hauls or gear retrievals as possible.

2. Record incidental take of every Short-tailed Albatross (not just in sampled sets), and salvage the specimens. For any marine mammal catch, record species, numbers, condition, and circumstances. Collect canine teeth if appropriate.

3. Sample selected hauls or sets for species composition. Record incidental take of seabirds and monitor for marine mammal interactions or incidental catch if possible.

4. Weekly or more often, as required, send a summary of fishing catch and effort, and catch composition information to the Observer Program office.

5. Document any compliance problems are you aware of.

6. For each haul or set sampled, gather and record additional biological data on prohibited species.

7. For each haul or set sampled, take samples of the target species for sex and length data.

8. Complete work on special projects if assigned. Examples of projects are: otolith collection, stomach content samples, fish collection, etc.

9. Record sample calculations and daily notes in your observer logbook as requested.

10. Record any sightings of marine mammals in fishing areas.

Prior to contract completion, you must complete the debriefing process, which includes: an electronic report for the work on each vessel, turning in the data and logbook during an interview with an Observer Program staff member, making corrections as directed, and turning in cleaned gear and any specimens. This process normally takes one to three days from your initial interview, but during peak debriefing periods you may have to wait up to two weeks.

## First Days On Board

As quickly as possible, try adapting to the new surroundings by meeting people and making preparations for work. In the hours before your vessel leaves the dock, or on the way to the fishing grounds, you should meet with the captain. Cooperation from the captain, mates, and crew is essential for you to obtain the information and unbiased samples you need. 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 you want to routinely see the ship's fishing logs.
- On catcher/processor vessels, inquire as to how to send the weekly catch messages.
- Ask to be informed, in advance, of changes in the fishing schedule so that you may adjust your schedule accordingly.
- If you would like to take pictures of the bridge, decks, or factory, request the captain's permission. You do not need permission to photograph fish, birds, marine mammals, etc. as that is considered part of your duties.
- Ask to be notified if any marine mammals are found in the catches; request that any marine mammal catch be held for your examination. Ask to be notified, if possible, when sightings of marine mammals are made.
- Before leaving the dock you should be given a safety orientation and you need to go through your safety checklist (see Section 8,

Safety and Survival). After this, if you have any questions or concerns that have not been addressed, ask the skipper. Notify your contractor and report in your log any safety problems not resolved.

**On a catcher/processor trawler** in the first few days, familiarize yourself with life on board and initiate your work with the following:

1. When the deck is inactive, perhaps on the way to the fishing grounds, make measurements which will aid you in estimating codend dimensions. Then watch the net retrieval and handling. Decide when and where you will need to take additional measurements and who to enlist for help.

2. 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 and whether different hauls are mixed in the tanks.

3. Notice where the catch is being sorted. What species and sizes are being retained? What is the destination of each line of fish? What products are being made?

**By regulation 50 CFR§ 679.50(f) a vessel is required to provide observers with a safe work area adjacent to the sample collection site.**

4. Consider the location of your sampling station. You have to collect your sample prior to any sorting. You should not have to haul baskets of fish from your collection site long distances or up or down stairs to your sampling area. For your sampling station you need a place where you can have a few baskets of fish around you and a place to hang your scale. Adequate lighting will be necessary and you'll need to locate the nearest hose for cleaning yourself and your gear.

5. Try collecting one or more baskets of fish. Familiarize yourself with the species being caught, start writing species descriptions and practice using the keys. Practice sexing the target species and or other species that will have to be sexed for your work.

6. Work out routines for sorting, weighing, and counting fish.

7. Get started with the most obvious methods for making catch weight estimations and determining sample weights. Then after your work is underway, consider variations or other methods which may improve your sampling.

**On board a catcher-only trawler** the operation is much simpler but an observer has less opportunity to get oriented as only a few tows are made each trip. Find or rig a place to weigh fish. Ask where the last observer

sorted and weighed fish. Ask what species they'll be keeping, what will be tossed over, and get an idea how diverse the catch will be. If they sort on deck, ask which fish go where. Let the skipper and crew know you'll need to take a few quick measurements of the net. Make any deck measurements you can before fishing begins.

As retrieval begins, get yourself and your sampling tools ready. When fish are dumped, watch what's happening all around you as you go to grab a couple baskets of catch. Learn quickly where you can be and where not to be! Watch how they handle the catch. Then you can get some identification and sexing work done while figuring out and practicing your sampling methodology for the next tow.

**On a longline vessel**, to get an idea of the number of sets per day and units of gear per set, look at the fishing log and talk with the skipper. Familiarize yourself with the line handling procedure and find a place where you can observe the retrieval at the rail. Find out what they're keeping and what is knocked off the line. Watch the action of the hooks and the use of gaffs as you consider how you are going to collect and set aside bycatch. Set up your sampling equipment and collect and examine fish for species identification. Work with the processing crew to determine whether you will be able to sex some of the target species as you measure them for length frequency each day.

**On a pot fishing vessel**, watch the retrieval process and determine where your sampling station should be. Ask where the last observer on board worked. You need to work close to where pots are emptied but out of the way of crew and equipment handling pots. You need to know where to dump bycatch after sampling it. Work with the processing crew to determine whether you will be able to sex some of the target species as you measure them for length frequency each day.

## General Instructions for Data Forms

You may need to be inventive to overcome sampling problems, but when entering data from the plastic on-deck sampling forms onto paper forms or the at-sea data entry program, all creativity must cease. Data from hundreds of cruises a year are processed, analyzed, and summarized, and there is no way to footnote data from a particular cruise after they are entered. Refer to specific directions and examples for each form. If you do need to make a note to alert us to make a decision on some of the data, place the comment on a portion of the form which is not keypunched.

Paper form entries must be neat - all the numbers should be precisely printed in conventional Arabic numbers so that they are readily legible.

Sloppy forms multiply the number of keypunch mistakes and sometimes require guesswork to interpret. Use a sharpened *pencil*, not a pen, to fill out all forms so that erasures can be neat if changes have to be made. Brackets and arrows (refer to example forms) can be used to indicate that the numbers in a column are to be repeated. Ditto marks *cannot* be used to repeat a number in key punch columns. Enter numbers to the right margin (right justification) in wide data fields of the forms.

### Cruise Numbers And Vessel Codes

A cruise number is assigned for each observer contract and the Observer Program also assigns a vessel code to each boat. The cruise number and vessel code combination identifies each observer's work assignments individually. The vessel code is for our program use only and does not have anything in common with the ADF&G boat number, the permit number or the processor code. Each of these identifiers has a specific use and you must carefully record the appropriate identifier. Cruise numbers and vessel codes will be given to you at the end of observer training or during pre-trip briefings. ***Maintain separate sets of each form type for each boat*** and mark your name and the ship's name on the first page of each type of form for each boat or plant.

### Multiple Cruise Numbers

There are two instances when you would have to use more than one cruise number for a trip:

**Sampling over the change to a new year** — If you are sampling in December and continue to work on that assignment into the new year, you will be assigned a new cruise number for the new year's data. As of January 1st, 0000 hours, start a new set of each of the forms with page number one and a new cruise number.

**More than one type of gear** — If a vessel uses two different types of gear such as a trawl net and cod pots, either simultaneously or one after the other, separate cruise numbers will be assigned for each gear type. Keep separate sets of data forms for the samples from each gear type: separate catch summary forms (Forms 2US and 1US), separate sets of catch composition forms, etc. Sample catches from each type of fishing each day it occurs. These instructions **do not** pertain to the different types of trawl nets but only to trawl versus longline versus pot gear, etc.

### Page Numbering

Forms are numbered in the upper right-hand corner with the phrase "page ___ of ___." This system helps to keep the forms in order and alerts us to any missing pages. Keep a separate set of data forms for each boat or plant worked. Each type of form (i.e., Forms 2US or 3US) within that set

will have its own consecutive page numbering. Enter the first number as you do the daily forms and fill in the second number after the sampling work for that boat or plant is complete. For example, if you used 58 Form 3USs on a boat, then the first sheet will be page 1 of 58 and the last sheet will be page 58 of 58. Form 9USs are further subdivided by species so that you may have a page 1 of 10 for king salmon scales, a page 1 of 3 for coho salmon scales on one boat and then a page 1 of 5 for king salmon scales on your second boat.

### Use Alaska Local Time

Use Alaska Local Time (ALT) and dates in your work. From the last Sunday in April through the summer to the last Sunday in October, entries should be made according to daylight-saving time. Times must be recorded according to the 24-hour system (e.g., noon = 1200, midnight = 0000)

### Decimal Places in Computations and the Rounding Rule

On our data forms, most weight entries require data to two decimal places. Leave a floating or full-field setting on your calculator and do not use values rounded to less than four places in your calculations. In your observer logbook, note on the first page of calculations and each time it changes, the number of decimal places used in computations. For logbook documentation record:

- the procedure or formula used,
- original weights (or numbers) labeled as to units and species and,
- the results to four decimal places.

Example: Proportioning Delivery Weight to Individual Hauls. (Note: derivation of the delivery weight must be detailed previously.)

| Haul No. | Deck Estimate | | | Delivery Wt. (All spp.) | Proportioned Delivery Wt. |
|---|---|---|---|---|---|
| 1 | 45.57 mt | ÷ 154.27 mt | x | 145.4567 mt = | 42.9666 mt |
| 2 | 30.12 | | | | 28.3993 |
| 3 | 53.22 | | | | 50.1796 |
| 4 | 25.36 | | | | +23.9112 |
| | 154.27 mt | | | | 145.4567 mt (math check) |

If in Haul 1 above, the ratio of deck estimates was rounded, 45.57 ÷ 154.27 = 0.30 x 145.4567 = 43.40 mt. Compare this to 42.9666 mt —an obiviously different value!

**Fig. 1-7.** Example of Proportioning Delivery Weight to Individual Hauls

*"Rules concerning numbers of significant digits resulting from the application of the arithmetic operations are available but somewhat impractical. In most statistical work, it is best to carry more figures, say not less than two extra, into the final computations than seem necessary and then to round the result to a meaningful number of digits, relative to the accuracy of the original measurements."*[3]

For density calculations, dimension measurements of sampling container other than the Program's standard blue basket should be read to 0.01 meter. (The volume to use for the blue baskets is given, see Section 2.) Measurements of tanks and bins should be made to 0.1 meter. The weights from the fifty kilogram scale may be read to 0.2 kilogram. Nearly all weight data are entered to two decimal places, so it makes sense to keep all intermediate calculations, such as average weights of fish, out to at least four decimal places (or preferably full field all the way through) and only round to a meaningful (or required) number of decimals for the final data entry.

**Observer Program Rounding Rule:**
Greater than or equal to 5 is rounded up,
less than 5 is rounded down.

Example: rounded to two decimal places: 0.52499 = 0.52

**Fig. 1-8.** Observer Program Rounding Rule

Note: When rounding, look *only* at the first digit to the right of the place you are rounding off to. In the example above, since we are rounding off to the hundredths, look only at the 4 and thus leave the 2 as it is. We would not look at the 9 and change the 4 to a 5 and continue to round the 2 to a 3 thus getting an answer of 0.53.

Reminder: to increase a number by a percent, divide the number by 100% minus the percent. Do *not* multiply the number by 100 plus the percent. Example:

120 is 70% of what number? 120/ 0.70 = 171.43, **correct.**
Do *not* multiply 120 x 1.30; 120 x 1.30 = 156 **incorrect!**

## Observer Logbook Entries

Completing an observer logbook is a requirement. As with your data forms, this documentation is the property of the NMFS and anything which you record may be released with your name (after debriefing) to the vessel owner upon their request. You should assume that your logbook is a public document. Do not use it as a personal diary or make inappropriate remarks, such as, personal frustrations or offhand, slanderous, or sarcastic comments.

The observer logbook sections are:

1. Sampling area diagram
2. Catch estimates / Calculations
3. Trawl observer's sampling record
4. Communications record
5. Scale Verification
6. Seabird record
7. Daily notes

Do not make comments in your logbook on non-work-related subjects such as the race, color, age, religion, or sexual orientation of any crewperson. Do not characterize people, particularly in derogatory terms. This will only be taken as an indication of *your* bias. Instead, substantiate your observations by describing factually and impartially what you saw, what happened, and what was said. *Do record* anything which affects you personally or your work.

*Appropriate* entries for daily notes section include: safety problems, possible fishing violations, any difficulties you may be having, what circumstances dictated your choice of total catch estimation method and sampling method, notes for your final report answers, notes on your assigned special project, comments on unusual catch, details on sorting criteria, processing, product types, or record keeping.

Documentation is a detailed description of a situation and/or an event. Avoid the use of hedging phrases such as, "I think" or "I believe." Use definitive language such as "I saw" or "I heard." Though the problem may be repetitive, it is necessary to describe each occurrence or event in specific detail. (Refer to Section 10, Regulations, under "Steps To Take If You Suspect A Violation.") If the problem is a violation, a citation can be made for each occurrence. Statements describing a problem as occuring "throughout the cruise" are of much less use to enforcement personnel. Description of an event right after it happens is more valuable than documentation at a later date. Hindsight can be colored by subsequent events, and details which could be important are forgotton in time. Your orginal notes will be filed in an archive for years as a reference and may be needed as evidence.

For these reasons, all written comments should be in ink, and any events that are recorded should be in chronological order. If a correction must be made, draw a line through the incorrect word(s) instead of erasing or blackening them out. Do not use any correction fluid or tape. Do not tear out any pages or parts of pages. When making a diagram or documenting a calculation, **label each part** properly. Use your logbook for **all** original calculations. **Do not use scratch paper** and then copy entries into your log. Take special care to safeguard it against loss and tampering.

## Confidentiality of Observer Data

The information you collect as an observer is handled under federal rules governing the confidentiality of fisheries statistics. Also, observers are bound by standards of behavior indicated in the Code of Federal Regulations at 50 CFR 679.50(h) not to disclose collected data and observations made on board the vessel. Certain data collected by observers are allowed to be released by NMFS to the public. If asked by vessel personnel about another vessel you were on, explain that just as you cannot talk about this vessel after you get off it, you cannot discuss your previous experiences on other vessels.

All data collected by observers are the property of the U.S. government. No observer can retain, copy, or release any data or reports unless granted express permission by the Observer Program Task Leader. This includes information used as part of a school project, thesis paper, articles for publication, or interviews with news media. The NMFS also reserves the right to review for accuracy the draft of any article or publication concerning your observer experiences.

## Vessel Personnel's Access to Observer Data

The skipper may ask to have access to your haul or set summary data, composition data, length frequency data, and/or catch messages. It is Observer Program policy that upon request, a skipper is given access to these data for his or her vessel. Allow the skipper to view, photocopy or fax to the company office the requested data forms.

Providing access to data maintained on other forms is not necessary. We ask that you keep the contents of your observer logbook confidential due to the nature of its contents. Among the reasons for keeping the logbook confidential are:

- it may contain confidential information that pertains to other vessels.
- it may contain information that would place you in an uncomfortable position.
- if access is provided, you may find it difficult to later deny access if you record something that is confidential
- providing access to your logbook may cause difficulties for future observers who choose not to provide access.

The particular data forms which an individual skipper wants to see will vary from vessel to vessel. Work with the skipper to find convenient times for providing access to your data. If your vessel is using observer sampling data to calculate vessel logbook entries, you may be asked to provide daily access to your data.

You may find that you are being unreasonably pressured to complete your data entries. If the skipper wants the data *now* but you were just about to sample the next haul, explain that you will get to it as soon as possible (but your first obligation is to your work). Try to work out a compromise and propose a convenient time schedule for both of you. If you find the situation is becoming impossible to deal with, notify the Observer Program. In your message, ask for the Program staff to help you in establishing a schedule for the skipper to use to access your data forms.

Note: Using your sampling data or an extrapolation of it to fill out the vessel logs is permissible for the captain but the observer must not assume additional responsibility by doing any extrapolations for, or making any entries in, the vessel log.

## *References*


[1] Michael Stadler Ph.D., Psychology of Sailing (Camden, Maine: International Marine Publishing Co., 1987), p. 57 - 74.

[2] Wayne Haack, Motion Sickness (Sea Kayaker magazine, Summer 1986).

[3] Robert G. D. Steel and James H. Torrie, Principles and Procedures of Statistics With Special Reference to the Biological Sciences (New York: McGraw-Hill Co., 1960), p.30.

# 2 Trawl Fishing and Catch Information

### Priority and description

The collection of fishing and total catch information is the number one priority for your work in the Observer Program. The primary observer duties associated with the collection of this information are the independent estimation of catch weight for as many hauls as possible, and the determination of Official Total Catch (OTC ) and collection of effort data for every haul.

### Uses of the Data

The vessel and gear type, date, time of day, location, gear depth, and total catch are the basic pieces of information fishery managers need to monitor and control the harvest. Although fishing effort and product information is reported to NMFS by vessel and plant operators, observer data on total catch provides an independent weight estimate of the commercial harvest. Observer total catch estimates and catch composition data (described in the next section, "Species Composition of the Catch") are combined to estimate total catch by species. More effective management programs are designed when there is a strong foundation of fishery research. Knowing where, when, and in what amounts a species is caught is the starting point for study of its life history, stock size, and ecosystem relationships.

**From this section, you should learn:**

- How to make volumetric estimates of total catch:
  - Codend volume estimates
  - Bin volume estimates
- How to estimate density to convert catch volumes to catch weights
- How to determine Official Total Catch (OTC)
- How to complete the Trawl fishing and catch information form 2US

This section applies to catcher only trawlers, catcher processor trawlers, and motherships taking unsorted codends. If you are assigned to a floating processor (i.e., a vessel that routinely pumps fish from the holds of catcher boats) or to a shoreside processing plant, you record fishing and catch information on Form A, the Plant Delivery Form (refer to page?). If you are aboard a longline or pot fishing vessel, you record this information on Form 1US (see page?).

## Introduction

The *collection of fishing and total catch information is your highest priority* work. Most of the fishing information you will need (i.e., tow location, time, and depth) is recorded in the vessel logbook that the skipper fills out for NMFS. You will copy this information daily for your Haul Summary Form 2US. Total catch estimates for each haul are made by you independently and you also record the vessel personnel's estimate of total catch from the vessel log. Total catch refers to the weight of everything caught in the net, even if part or all of the net is subsequently dumped. Your independent total catch estimates are made from the volume of fish in a codend or fish bin (or tank). Catch volume is converted to catch weight with an estimate of density (i.e., weight per unit volume) which you estimate from samples you take. You are expected to independently estimate catch weight for as many hauls as possible. Finally, you obtain the *best* estimate of total catch weight available for every haul and record it as the Official Total Catch, or OTC. You will use your judgement and the guidelines provided in this section in deciding which source provides the most accurate OTC for a haul. The source of catch estimates used for OTC may vary during a cruise. This estimate is called "official" because in all subsequent uses of haul data, the OTC is the haul weight used.

In the following sections, you will learn how to estimate catch weight independently by volumetric methods and how to estimate density to convert volumetric estimates to weight. Then you will learn how to determine which catch estimate to use as OTC. Finally, you are provided with instructions on recording the fishing information from the vessel logbook for your Haul Summary Form 2US.

## Observer Estimates of Total Catch Weight

Codend on deck

Make an **independent, non-biased and substantiated** estimate of total catch weight for as many tows as possible. Total catch weight estimates are made by measuring the volume of the catch and multiplying the volume by a density factor that is either prescribed for a given fishery or estimated from a subsample of the catch. There are two volumetric methods: codend measurement and bin volume measurement. You may use either or both of these methods on a given vessel. These methods are described in detail below, but there are a three rules which apply to both types of estimates.

**Rules for making volumetric estimates of total catch weight**

1. You must make or verify each component of the estimate. Do not make any total weight estimates simply "by eye." If you use a preexisting diagram, marks on the deck, or markings in a fish bin, check them for accuracy. To substantiate your estimate, note your methodology and all dimensions and calculations in your logbook.

2. The following formula is always used to determine catch weight from volume and density:

   **Catch weight (mt) = Volume ($m^3$) x Density ($mt/m^3$)**

   Given this general formula, the specific options for volumetric estimates by vessel type are:

   - Catcher Boats: Make volume estimates (a) of checker bins, (b) of codends or (c) of codend sections added together. Convert the catch volume to a weight estimate using your density sampling data or the density specified by the Observer Program.

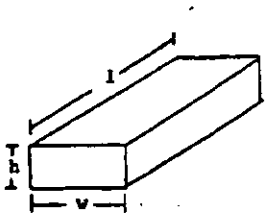
   - Catcher/Processors: Make volume estimates (a) of live tanks or holding bins or (b) of codends. Convert the volume to catch weight as stated above.

3. Record your total catch estimates on Form 2US whether or not you believe it to be a good estimate of total catch. Vessel catch weight estimates from the logbook do not have to equal or even approximate yours for a given haul. If there are differences between your catch estimates and the vessel estimates and the skipper is concerned, use that as an opening for a discussion about how vessel personnel make their estimates. Make notes of this type of conversation and your findings in your log. Even catches weighed after delivery to a plant may not equal your catch weight estimates, because by then the catches may have been sorted or the plant scale may be tared for "water weight" or other factors.

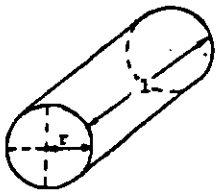
## Observer estimates of codend volume

To make a codend volume estimate of total catch weight, there are four steps. First, you decide which geometric shape the codend most closely approximates. Second, you make measurements of the codend length, height, and width. Third, you insert your measurements in the volume formula for the geometric shape you have chosen to estimate the codend volume. Fourth, you multiply the codend volume by the appropriate density factor to determine catch weight.

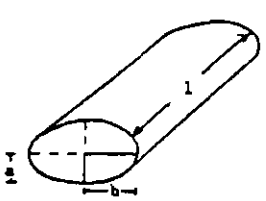
**Step 1: Determining the appropriate geometric shape**
Whether the whole codend is pulled onto the trawl deck before fish are spilled, or only a few sections at a time are on deck, the first step of estimating is to decide which geometric shape the codend most closely resembles: a rectangular solid, a cylinder, an ellipsoidal solid, a semi-ellipsoidal solid, or perhaps a combination of two of these shapes. When the net is very full, the most appropriate formula to use may be the one for a cylinder. Catches that do not fill the codend to capacity may be flat on top but may fill the trawl "alley" width. A rectangular solid formula would work well in that case. Nets of two to twelve mt may look more like a pear. Use your judgement to estimate what the dimensions would be if you could "square it up."



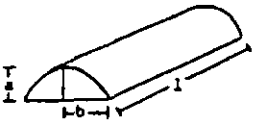

Rectangular solid
Volume = height x width x length
V = hwl




Cylinder
Volume = $\pi$ x radius$^2$ x length
V = $\pi r^2 l$




Ellipsoidal solid
Volume = $\pi$ x short radius x long radious x length
V = $\pi$abl




Semi-ellipsoidal solid
Volume = $^1/_2$ $\pi$abl
V = $^1/_2$ $\pi$abl

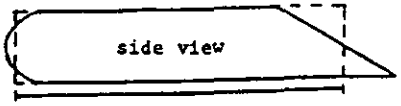


**Fig. 2-1.** Volume Calculations. Allowances can be made for irregular shapes or partially filled portions of the net by the way in which the measurements are taken.

**Step 2: Measuring codend length, width, and height**

You will need to measure the length, width and height of the codend to use with the most appropriate geometric formula for volume. Look for and verify measurement marks that may have been made by previous observers along the trawl alley length; measure the alley width. Look for and verify height marks on posts or a gantry. Remember when sighting across a codend to a reference mark for height, your eye level should be level with the top of the codend (as much as possible). You can also gauge codend height based on your height with boots on (e.g., at your shoulder or nose). When a codend is pulled up a few sections at a time, the best place to gauge the height of the codend may be the top of the ramp where the codend breaks over onto the deck. If a dimensional measurement varies, take a measurement at several points and average them. Where a codend dimension is greater or less than a pre-measured distance, take actual measurements of the difference whenever possible. If you cannot, then estimate the differences by eye and record and label this information as such in your observer log.

**Be careful, never stand next to a codend. You could get pinned by it against the side of the trawl alley—codends slide and roll.**

**Be ready to step on deck as soon as the winch cables are relaxed.**

One measurement difficulty you may encounter is when the codend is very large. On vessels less than 125 feet in length, it is common that a full codend will be longer than the trawl deck. Large codends can only be emptied several sections at a time while the remainder hangs off the stern ramp, still in the water. To determine codend volume in this situation, you will have to measure the codend in sections. Codends have reinforcing cables or "expansion straps" around their circumference which can help you divide the codend into sections. These straps and also riblines (see **fig. 2-2**) will usually limit extreme bulges and the volume of fish between some straps will be similar. Similar sections of the codend can be added as a consistent unit of volume. This can be added to the volume of odd sized sections of the codend (usually at each end) for a total codend volume. *Do not measure volume of codend sections on only one catch and after that simply count the number of full bands.* Like any mesh bag, when the net is very full, the mesh will expand and bulge and there will be more tonnage per section.

**Wear your hard hat on deck!**

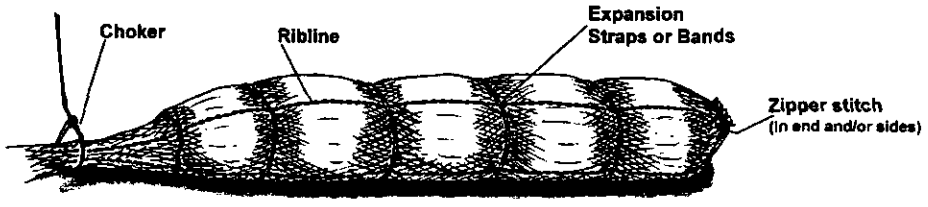



**Fig. 2-2.** Codend on Deck

**Steps 3 and 4: Calculating codend volume and catch weight**
In your logbook, record the dimensions of the codend for each catch and calculate the volume in cubic meters using the appropriate geometric formula. Then multiply the volume times the density to obtain the metric tonnage of the catches. (Methods for estimating density are described on page 2-9)

**Vessel responsibility and codend volume measurement**
It is part of the vessel's responsibility to notify you 15 minutes before fish are brought on board, to allow you free and unobstructed access to the trawl or working decks, and to provide reasonable assistance in measuring decks and codends (refer Section 10, Regulations, "Observer Section on Vessel Requirements). Do your part by planning the most efficient method for taking your measurements. The deck crew wants to empty the codend as quickly as possible. Talk to the skipper and the deck boss after you have looked the situation over. They may have some good suggestions from working with previous observers that you should consider. If you need assistance, having one of the deck crew help you regularly will help everyone.

## Observer estimates of bin volume

There are four steps to making a bin volume estimate of total catch weight. First, measure the empty bin to determine its floor area. Second, measure the average height of fish in the full bin. Third, determine the volume of fish in the bin by multiplying the known floor area of the empty bin by the average height of fish. Fourth, multiply the total fish volume from all bins containing a given haul by fish density to determine catch weight for the haul.

**Step 1: Measuring the empty bin**
On many ships, observers estimate catch weight by the volume of fish in a bin—also termed a live tank, holding tank (e.g., surimi vessels) or checker bin (e.g., catcher boats). Measure the bin into which the fish will be emptied to obtain the floor area in meters squared. If the fish bin is shaped like a rectangle or square, it will be relatively easy to calculate the volume—simply multiply the floor area (length x width) by the measured height of fish (described in step 2). However, many fish bins are irregularly shaped, in which case the floor area of the bin must be broken into sections that can be easily measured. **Fig. 2-3** shows how one fish bin was broken into shapes easily calculated or measured to obtain floor area.

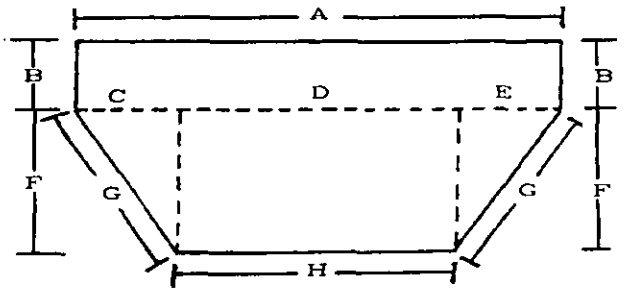



**Fig. 2-3.** Fish Bin Floor Area. In this example the fish bin was broken into shapes that are easily calculated or measured to obtain floor area.

***Useful Formulas You May Need***

Area of a circle = $\pi r^2$

*Circumference* = $2\pi r$ ($\pi = 3.1416$)

Area of a square or rectangle = length x width (In diagram above: A x B)

Area of a triangle = 1/2 base x height (in diagram above: 1/2 E x F)

Length of triangle's hypotenuse in diagram above: $C^2 + F^2 = G^2$ and sq. rt. $G^2 = G$

**Note:** Surface area multiplied by height = volume

For bin floors with a conical shaped depression: Volume of a right angle cone = $1/3\pi r^2 h$

**Step 2: Measuring the height of fish in the bin**

The height of fish in the bin is the third dimension needed to calculate volume. If an unmarked bin is sided with metal plate, ask if you can use some paint to make a height gauge at four places on the sides. If the floor of a bin is a half cylinder and/or is sloping, it may be easiest to determine the volume up to a level line. Then mark the sides of the bin from that level to the top in increments of 10 cm. To determine an average height of fish, it is best to measure the height of fish at four or more points in the bin. Height gauges painted on the sides of tanks below deck might be read by standing on the trawl deck and looking down into the tank through the hatch(es). From the processing deck you can probably see in over the sides or through a viewing port. With deck bins, some observers have improvised a calibrated "dip stick" to measure fish depth at several points.

**Steps 3 and 4: Calculating bin volume and catch weight**

The floor area of the fish bin (a constant) multiplied by the height of fish from that catch equals the bin volume. If the floor of the bin was irregular and you determined bin volume up to a certain level (as described above), the volume to that level would be added as a constant to the level area

times the average depth from that level to the top. Alternatively, the tank sides could be marked from the top down so you can calculate the volume of air above the fish (also termed ullage) and subtract that from the "full bin" volume. Be aware of overhead structures that may reduce the volume capacity of a bin when it is filled above a certain point.

Again, the volume times density (described in the next section on page 2-9) equals the catch weight. Remember that if the catch from a given haul was put into more than one bin, you must add the volumes of each bin to get a total catch volume, which is multiplied by density to get a total catch weight.

**Potential volume biases**

Be aware of the following factors which may affect your measurements, and record any that you encounter in your logbook. On trawlers, bin volume estimates may be more precise than codend volume estimates if the fish holding bins are well marked and fully accessible. However, excessive water in bins results in inaccurate volume estimates. Excessive water means enough water to float the fish. Codend volumes may be a better alternative for observer catch weight estimates if bins are not accessible for measurements, have excessive seawater in them, or do not hold the entire catch. However, large and/or irregularly shaped codends are very difficult to measure accurately. Make sure that all of your measurements are as precise as possible no matter which volumetric method you choose, and record the details of your methods in your logbook.

## Density estimation

Catch weight = volume x density

Catch density, the factor used to convert catch volume to catch weight, is either prescribed for a given target fishery or estimated from a sample of the haul. In this section, you will learn when to use the prescribed density, and when to estimate density. You will also learn methods for estimating density.

**~~Prescribed density vs. estimated density~~**

The density factor is ~~presently prescribed for relatively pure pollock fisheries. If your vessel's catches are ≥ 95% pollock, use a density~~ of 0.93 mt/m$^3$ to convert ~~your~~ volumes to weights. ~~When bycatch in pollock hauls exceeds 5%, and in all other fisheries, sample the catch to estimate density.~~

IF POLL. IS ≥ 50% BY WT. USE DENSITY 1.02 CODEND/.98 BIN

**Methods for estimating density**

Density is determined from weight divided by volume; therefore, you must measure both the volume and weight of a sample of catch to estimate density. Since it may be difficult to measure the volume of the catch sample itself, you can determine the volume of the container you will fill with the sample. Measure the volume of any simply shaped container that holds five hundred kilograms or less (half a cubic meter). If the only small-volume container available is a blue Observer Program basket, use a minimum of four baskets to calculate density.

**Estimating volume**

First, determine the volume of your container to a standard fill level. Measure your container using the same methods you would use to measure the volume of a fish bin (described above); container volume is floor area times fill height. Mark your standard fill level on your container so that you always use the same fill level. If you are using the Observer Program's blue baskets to estimate density, the volume to the bottom of the handle has been calculated for you (**Fig. 2-4.**). Be careful to fill the baskets or other container to the same level consistently. One centimeter difference in the height of fish in the basket or other container for a given weight can change the resultant density value by several percent. This in turn, changes the volume to weight conversion of a codend by several *tons*!

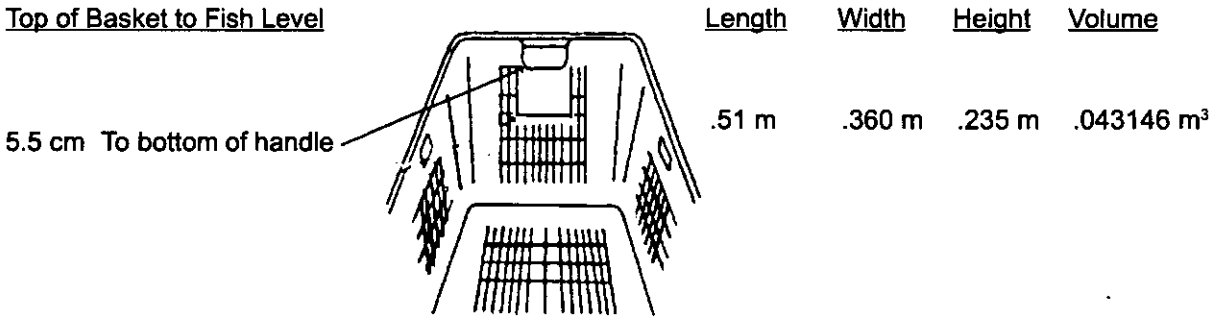



**Fig. 2-4.** Standard Blue Basket Top. Fill to the bottom of the handle when using the Observer Program's standard blue basket.

The way you fill your container is as important as filling to the right level, especially if the container is small in relationship to the species in the catch. Examine the way that fish are laying in your container. It is important to minimize the spaces between the fish. For instance, if you have very large fish in your basket, such as Pacific cod or turbot, they may not be laying flat on top of each other as they would in a large fish bin. The density of the fish in the basket will be less than catch density because

there is more space between the fish and less compaction in the basket. It *is* appropriate to *arrange or settle* the fish into the container to minimize the interstitial spaces *but do not compact or smash* the fish in an attempt to duplicate the force in the codend. A better solution is to find a larger container or have one built.

**Measuring weight and estimating density**
After estimating the total volume of the density sample, sum the total weight of the catch sample. If you weighed the sample in observer baskets, remember to subtract the total weight of the empty baskets. Divide the total sample weight by the total sample volume to obtain the density value for that haul.

Remember these important points:

- take a random sample of unsorted catch
- Settle or arrange fish to minimize interstitial spaces
- fill your container consistently to the same level.

You may calculate average density values for the day to use for observer catch weight estimates for hauls not sampled for species composition.

## Official Total Catch (OTC) Weight Determination

It is your responsibility to record the best estimate of total catch weight for each haul your vessel makes during your entire cruise as the Official Total Catch (OTC) on Form 2US. In general, if you have made an independent estimate of haul weight, that is usually the considered the best estimate of OTC for that haul. However, you may be on board a vessel such as a catcher processor or mothership where you are unable to obtain independent estimates for every haul to determine OTC, or there may be better options for OTC (such as scale weights) than your volumetric estimate of catch weight for a each haul. As you gain experience and familiarity with different situations, you may change the option you use to obtain the best estimate of official total catch; but always document in your logbook how you determined OTC.

In this section, you will learn what options you have for determining the OTC aboard different vessel types, and how to select the best option. The options for catcher/processor trawler OTC determination are discussed first, and then the more complex options for catcher-only trawler OTC determination are presented.

## OTC determination for catcher/processor trawlers

**Options List:**

1. Use your volumetric estimate of total catch weight as OTC for every haul.

2. Use your volumetric estimate of total catch weight for OTC when available and record the vessel estimate of total catch weight as OTC for the remainder of the catches.

3. If your vessel is equipped with a motion-compensated belt conveyor scale ("flow scale"), contact an Observer Program office to determine whether you should use the scale weights as OTC.

### Description of Options

**Option 1—Observer estimates as OTC**: The observer makes volume estimates of all catches from the bins and/or from the codend, and calculates weight with a density value. An average density value may be used for hauls not sampled for density. We expect 100% observer estimates used as OTC in situations where two observers are aboard a single vessel.

**Option 2—Observer's and vessel estimates**: Observer's volumetric total catch weight estimates are recorded as OTC when available, and the vessel's estimate is recorded as OTC for the remaining catches not estimated by the observer. The skipper or mate on watch will commonly make a deck estimate by visually estimating the weight of the fish. He or she may base his/her estimate on the net capacity specifications or on the live tank capacity. This estimate made by vessel personnel is required to be reported in the NMFS Fishing Log as "Estimated Round Weight of Catch."

**Option 3—Weighed By The Vessel**: A few vessels are equipped with motion-compensated belt conveyor scale (flow scale) systems installed prior to the catch sorting stations. These are a potentially accurate source of haul weight. The NMFS Alaska Regional Office is developing rules for certification testing of these scales. If your vessel has a flow scale which is set up to weigh catch before sorting, contact an Observer Program office to ask whether you should use the flow scale weights as OTC.

## OTC determination for catcher-only trawlers

**Options List:**

1. In pollock, or other pure catch fisheries, *you can proportion the round weight of fish your vessel delivered* to the individual hauls. Then, for each haul, add the weight of any catch discarded at sea to the proportioned delivery weight for that haul.

2. *Use your volumetric estimates* of total catch weight for OTC in fisheries other than pollock that typically have a more diverse composition.

3. Use *a combination* of your volumetric estimates of total catch weight for OTC when available and the vessel estimates of total catch weight for OTC for the remainder of the catches.

4. If your vessel is equipped with a motion-compensated belt conveyor scale ("flow scale"), contact an Observer Program office about whether you should use the scale weights as OTC.

### Description of options

**Option 1—Proportioning plant delivery weights:** For total catch weight of catcher-only vessels targeting pollock (or other pure-catch species), observers usually use a proportioned delivery weight when there is little or no sorting at sea. This is because most of the catch is *actually weighed* at the plant. There are five steps to obtaining OTC from proportioned delivery weights. First, the catch weights must be estimated by a *consistent* method at sea. Second, the weight of catch discarded at sea must be estimated. Third, the total delivery weight is obtained from the plant. Fourth, the proportion of the total delivery weight assigned to each haul is determined using the catch weights estimated at sea. Finally, the estimated weight discarded from each haul is added to the proportioned delivery weight to determine the OTC for each haul.

***Step 1: Estimating total catch weights by a consistent method at sea***

To use estimated haul weights to proportion the total plant delivery weight, it is important that the haul weights are estimated using a consistent method. This means that **all** of the haul weights you plan to use to for proportioning are estimated the same way. There are three haul weight estimate types you may use for proportioning plant delivery weights:

- Use your observer volumetric estimates of haul weight if you made them for all hauls.
- If you were not able to make observer estimates, use the vessel's estimates of catch weight to proportion delivery weights. If vessel estimates are inconsistent estimations of relative haul weight (i.e., a

mixture of estimates that are over and under *your* approximation of relative haul weight), you have a third option.

- As a last resort, make a count of the number of codend expansion bands that are full of fish for all hauls as a means of estimating the relative haul weights.

Use only one source of catch estimates for proportioning a delivery. For example, if four hauls make up a delivery, do not proportion the delivery weight using the vessel estimate for hauls 1 and 2 and your observer estimate for hauls 3 and 4. For subsequent deliveries, if you decide that another estimate would be a better basis for proportioning, use the better option. Note your reasons for changing your method in your logbook.

***Step 2: Estimating discards on catcher vessels***

The amount of discard may range from a few undesirable fish pulled out by the crew to a large portion of the catch dumped from the deck. Therefore you have several options for accounting for discarded catch:

1. Discarded catch weight (of fish and any other organisms) can be weighed if the amount is less than one-half metric ton (500 kg), and the crew helps by putting it aside for you to weigh.

2. If fish to be discarded are all put into a small holding bin or tote, they might accumulate to a measurable depth, so that you could estimate discard weight with a volume to weight ratio. (To use a bin volume method to calculate the weight of discarded fish, refer to Observer Estimates, page 2-7.)

3. If one undesirable species is prevalent, you may be able to count that part of the discard. To determine average weight of the discarded species, take a random sample of about 50 or more individuals. Multiply their average weight by the total number to estimate the discard weight of that species. Then, weigh any other discard and add it in for a total discard weight. This method can be extended to two prevalent discarded species. ***Do not rely on crew members*** to count fish they are throwing overboard; they are not employed to make accurate counts!

4. If the last catch of a trip is used to top off the holding tanks, large amounts of catch are sometimes dumped back in the water. Do your best to estimate the discard tonnage by codend volume or use an estimate made by the deck boss or skipper. (Record in your logbook whose estimate was used.) If a large amount of fish is dumped at sea, subtract the estimate of the discard weight ***before*** using the at-sea catch estimate for proportioning.

***Step 3: Obtaining delivery weights***

Groundfish catch "landed" in Alaskan ports from state and federal waters off Alaska is required to be reported to the State of Alaska via a fish ticket system. A fish ticket is required for each delivery. Fish tickets are a record of deliveries for processors and a receipt of delivery for fishermen. Use fish tickets only to obtain delivery weight when you need it for OTC. ADF&G personnel edit fish tickets extensively before passing them on for data entry. Editing corrections take place well after you have used the ticket data so you may see errors. Also, you need to be extremely careful to interpret the information you get from the tickets correctly. Please note the following points:

1. Completion of fish tickets is often delayed. If you are instructed to board another vessel or to return for debriefing, coordinate with the plant observer to get the information or inform your contractor that you need to get fish ticket information before you leave.

2. Condition codes: Do not assume that ticket weights are always for whole fish - if bled fish are delivered, the weight on the fish ticket will be for the bled fish. When processed weights are listed, calculate an estimate of the whole fish weight by dividing the product weight by the appropriate product recovery ratio (refer to Appendix J). Always check the condition code. Condition codes are equivalent to the "product codes" listed in Appendix K of this manual.

3. Not all species weights listed on the fish ticket are delivery weights. Condition code 98 indicates that the species was discarded at sea. Do not include weights coded as 98 in a summation for delivery weight.

4. Figures recorded for crab, halibut and salmon may be numbers of organisms rather than weights.

5. Do not assume that the weights (or species identification) of fish discarded by the processor are correct (condition code 95 and 99). Processors pay very little attention to discard figures. They generally weigh the discarded fish as a group and record it on the ticket but do not include this weight in the total delivery weight of "money fish." The composition of this discard is generally reported as waste fish or miscellaneous flatfish and may be composed of several species.

6. The total weight at the bottom of the ticket is probably only the weight of fish paid for. Learn the condition codes used for your vessel's deliveries and sum the weights of only delivered fish. Add the weights of crab, halibut, or salmon delivered if they are not included. (You will be weighing them for your samples.)

PURCHASER

## ALASKA DEPARTMENT OF FISH & GAME
### GROUNDFISH TICKET

PLEASE REFER TO CODE LISTS PRINTED ON THE FRONT INSIDE COVER OF EACH BOOKLET

DO NOT WRITE IN THIS SPACE

G96 01072

Vessel Name

Fishery

Name

Permit Number

CDQ No. (if applicable)

ADF&G

Date Trip Began

PROCESSED INSIDE 3 MILES

Proc. Code 97

Date Landed

Company

Dutch
PORT OF LANDING OR VESSEL TRANSSHIPPED TO

07
TYPE OF GEAR USED

Finished 4/26 @ 5:25

**STATISTICAL AREA WORKSHEET**

| AREA | % | AREA | % |
|---|---|---|---|
| 655430 | 100 | | |
| | | | |
| 517 | 100 | | |
| | | | |

| SPECIES | CODE | STAT AREA | COND CODE | POUNDS | PRICE | AMOUNT |
|---|---|---|---|---|---|---|
| SABLEFISH | 710 | | | | | |
| Pollock | 270 | | 98 | 4500 | | Ø |
| Other Fact | 120 | | 98 | 3000 | | Ø |
| Halibut | 200 | 27 Fish | 98 | | | Ø |
| FLATHEAD SOLE | 122 | | | | | |
| ROCK SOLE | 123 | | 01 | 5 | .015 | .08 |
| YELLOW FIN SOLE | 127 | | | | | |
| ARROWTOOTH FLOUNDER | 121 | | | | | |
| GREENLAND TURBOT | 134 | | | | | |
| Pac Cod | 110 | | 03 | 1455 | .04 | 58.20 |
| P. COD (GRAY) | 110 | | 03 | 21,891 | .16 | 3502.56 |
| POLLOCK | 270 | | 01 | 35 | .04 | 1.40 |
| Pollock | 270 | | 01 | 11 | .015 | .17 |

| SPECIES | CODE | STAT AREA | COND CODE | POUNDS | PRICE | AMOUNT |
|---|---|---|---|---|---|---|
| DEMERSAL ROCKFISH | | | | | | |
| None | | | 99 | | | |
| PELAGIC ROCKFISH | | | | | | |
| SLOPE ROCKFISH | | | | | | |
| PACIFIC OCEAN PERCH | 141 | | | | | |
| THORNYHEAD ROCKFISH | 143 | | | | | |
| ATKA MACKEREL | 193 | | | | | |
| LING COD | 130 | | | | | |
| SQUID | 875 | | | | | |
| OTHER GROUNDFISH | | | | | | |
| | | | | 23,397 | | $3562.41 |

NOT SOLD - PERSONAL USE - 95

| SPECIES | POUNDS | SPECIES | POUNDS | SPECIES | POUNDS |
|---|---|---|---|---|---|
| | | | | | |

Permit Holder's Signature *

Fish Received By

FISH DELIVERED HEREIN WERE CAUGHT IN COMPLIANCE WITH STATE LICENSING LAWS AND STATE LABOR LAWS AND REGULATIONS

**Fig. 2-5.** ADF&G Groundfish Ticket

7. The three digit ADF&G species codes are the same as *report group codes* used for observer weekly catch reports. They are not the species codes that you will use when coding species composition data.

   Some plants have had a policy of subtracting a percentage of the delivery weight to adjust it for water in the weighing hopper. If you suspect this, document what you've heard and look at the weighing hopper yourself to see if there is water in with the fish. Record your observations. Ask the plant personnel if there is a standard percentage for water weight being used. You should still use the fish ticket information as the delivery weight.

***Step 4: Proportioning delivery weights***

The total delivery weight is proportioned back to individual hauls using the haul weights estimated at sea. First, the at-sea estimates of haul weight are totaled. Then, the ratio of each at-sea estimated haul weight to the totaled estimated weight is multiplied by the delivery weight to assign a delivered weight to that haul:

| |
|---|
| $\frac{\text{at-sea estimate of haul 1 wt.}}{\text{total of at-sea wt. estimates}}$ x delivery wt. = proportioned delivery wt of haul 1 |

This process is described in detail in the "Species Composition Sampling" section. An example of proportioning a delivery weight is also given in **fig. 1-7**.

Record your data in your logbook in a similar format. Label your numbers. Remember, choose a consistent at-sea haul weight estimate type for proportioning delivery weight (step 1, above).

***Step 5: Calculating OTC***

For the total catch estimate of each haul, you will add the estimate of discard weight back in (see example on page ?).

| |
|---|
| Proportioned delivery wt. + discard at sea = OTC |

**Option 2—Observer's estimate as OTC:** Use your volumetric estimates of catch weight for OTC when:

- catches are sorted at-sea, i.e., most non-pollock fisheries
- in a pollock fishery when discard weights are unknown or are inaccurate, or

- in a pollock fishery when delivery weights are not obtained or are inaccurate

Do not assume that if your estimate is different from the vessel's by more than a few metric tons, there must be something wrong with *your* estimate! Just do your best to check your work as a routine part of good sampling methodology.

**Option 3—Observer's and vessel estimates:** Observer's volumetric total catch weight estimates are recorded as OTC when available, and the vessel's estimate is recorded as OTC for the remaining catches not estimated by the observer. In non-pollock fisheries, particularly when there are more than three tows per day, you may not be able to estimate every haul. Then using the vessel estimate is appropriate. Ask the skipper how he or she makes estimates of catch weight. In a pollock fishery, if the catches are sorted at sea and the amount of at-sea discard cannot be quantified, using deck estimates (yours or the vessel's) may be a better alternative than using proportioned delivery weight for OTC.

**Option 4—Catch Weighed at sea:** If your vessel has an motion-compensated belt conveyor scale (flow scale) *which weighs the catch at sea before sorting* (which is rare), this may be an accurate source of haul weight. The NMFS Alaska Regional Office is developing rules for certification testing of the accuracy of flow scales. If your vessel has a flow scale which is set

FORM 2US - HAUL FORM FOR U.S. TRAWLERS

Page 3 of _____ for vessel

| Cruise number | Vessel code | Year | Full name of catcher boat | ADF&G # |
|---|---|---|---|---|
| 4011 | A110 | 97 | Aleutian Challenger | 50570 |
| 534 | | | | |
| ORC | | | | |

Observer name Jane Observer

Vessel name Sea Peace

Page _____ of _____ for transmission

| Plant/Processor name | Location | Processor code # |
|---|---|---|
| Best Seafoods | Dutch Harbor | F0909 |
| | | |
| | | |
| | | |

| Hauls sampled for composition | Date: Month | Date: Day | Haul # | Monitored for MMT (Y/N) | Gear type | Gear performance | Vessel type | Location code | Haul or Delivery position: Latitude (N) | E or W | Longitude (100) | Fishing times in ALT: Nets on bottom | Nets off bottom | Fishing duration (minutes) | Average fishing depth | Average bottom depth | M or F | Avg. speed (knots) | Official Total Catch in metric tons | Observer's Total Catch Estimate in metric tons | B or C | Density used in mt. per cubic meter | Vessel's Total Catch Estimate in metric tons | Catcher boat's ADF&G # | Processor code | CDQ/IFQ number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✓ | 09 | 17 | 101 | Y | 1 | 2 | 3 | R | 5838 | W | 7624 | 2315 | 0525 | | 130 | 130 | F | 3.5 | 16.00 | . | | . | 16.00 | | F0909 | |
| ✓ | ↓ | ↓ | 102 | Y | 1 | 1 | 1 | 1 | 5837 | ↓ | 7630 | 0610 | 0920 | | 135 | 135 | F | ↓ | 8.22 | 8.22 | C | .88 | 7.50 | | ↓ | |
| * ✓ | ↓ | ↓ | 103 | Y | 1 | 5 | ↓ | ↓ | 5838 | ↓ | 7627 | 1015 | 1145 | | 140 | 145 | F | ↓ | 0.00 | 0.00 | C | . | 0.00 | | ↓ | |
| ✓ | 09 | 17 | 104 | Y | 1 | 1 | 3 | R | 5838 | W | 7624 | 1635 | 1830 | | 138 | 138 | F | 3.5 | 18.64 | 18.64 | C | .90 | 20.00 | | F0909 | |
| | | | | | | | | | | | | | | | | | | . | . | . | | . | . | | | |
| | 09 | 18 | 0 | | | | N | 5353 | W | 6631 | | Delivery to Best Seafoods | | | | | | . | . | . | | . | . | | | |
| | | | | | | | | | | | | | | | | | | . | . | . | | . | . | | | |
| | | | | ↑ A CATCHER VESSEL ↑ | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | ↓ CATCHER/PROCESSOR TAKING OUTSIDE DELIVERIES ↓ | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 08 | 31 | 0 | | | | N | 5726 | W | 6553 | | No Fishing - Rough Weather | | | | | | . | . | . | | . | . | | | |
| | | | | | | | | | | | | | | | | | | . | . | . | | . | . | | | |
| ✓ | 09 | 01 | 48 | Y | 1 | 1 | 1 | R | 5759 | W | 6531 | 2215 | 0045 | | 50 | 50 | F | 3.5 | 22.34 | 22.34 | C | .89 | 20.00 | | | |
| ✓ | ↓ | ↓ | 49 | Y | 1 | 1 | 1 | R | 5751 | W | 6531 | 0730 | 0915 | | 52 | 52 | F | 3.5 | 17.53 | 17.53 | C | .87 | 15.00 | | | |
| ✓ | ↓ | ↓ | 50 | N | 1 | 1 | 1 | R | 5751 | W | 6554 | 1000 | 1218 | | 68 | 70 | F | 4.0 | 43.21 | 43.21 | C | .98 | 35.00 | | | |
| ✓ | 09 | 01 | 51 | Y | 1 | 1 | 1 | R | 5746 | W | 6551 | 1440 | 1730 | | 66 | 70 | F | 4.0 | 54.41 | 54.41 | C | .93 | 58.00 | | | |
| | | | | | | | | | | | | | | | | | | . | . | . | | . | . | | | |
| | 09 | 02 | 52 | N | 1 | 9 | 2 | R | 5746 | W | 6550 | | 0730 | 120 | 70 | 75 | F | 4.5 | 44.24 | 44.24 | C | .93 | 45.00 | 50570 | | |
| | | | | | | | | | | | | | | | | | | . | . | . | | . | . | | | |

* Zipper opened

Revised 1/1/97

**Fig. 2-6.** Form 2US - Haul Form for U.S. Trawlers

up to weigh catch before sorting, contact an Observer Program office to ask whether you should use the flow scale weights as OTC.

## Instructions for Haul Form 2US

Most information needed for Form 2US is available from the NMFS Fishing Logbook. Vessel personnel sometimes make mistakes in their log entries so be sure to examine what the data represent and be sure that it is reasonable. If you don't understand an entry or believe you may have found a mistake, ask a question of the mate or skipper on watch. Though you never change or make any entries in the vessel log, you may need to correct the information for your Form 2US if it is wrong or not recorded according to the following instructions. Check carefully to see that the data are reasonable and that no errors are made in copying the data to the forms.

Haul information is the basis of all the rest of the data gathered aboard a vessel. If these data are not complete and correct, the rest of the data you collect cannot be used. Start your entries with the day you board the vessel and end them on the day you disembark with all your gear. ***All of the tows made while you are aboard must be recorded on your haul form whether you sampled them or not.***

Key points to note in completing Form 2US are:

1. **Heading:** Use the cruise number and vessel code given to you in training or briefing. For "Year" enter only the last two digits, such as "98."

2. **ORC:** When transmitting Form 2US data to the Observer Program via fax, you will need to enter an Observer Routing Code (ORC) number in the box above the date and haul number columns. Enter one ORC code per transmission. The ORC is a three-digit security code entry which will be explained to you during training.

3. **Hauls sampled for composition:** Place check marks in the first column to indicate which hauls you sampled for species composition.

4. **Date:** Enter leading zeros only in dates and times. Skip a line between each day's entries.

5. **Haul number:** All tow retrievals must be recorded and assigned a number. Haul numbers must be unique and should be sequential and ascending. (See "Note for mothership observers" page ?, for exceptions). Except for "0," there can be no duplicate haul numbers within

the data set for each vessel. Enter "0" for haul number for each non-fishing day.

Observers on pair trawlers and mixed gear types may need to skip haul numbers and if this is done, a general explanation should be written on the head of the form and a specific explanation on a separate line at each occurrence.

6. **Monitored for marine mammals:** Enter a "Y" or "N" to indicate which hauls were randomly selected and monitored.

7. **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 trawl gear not listed, please contact the Observer Program for directions.

   Gear code 1 - Non-pelagic trawl - any trawl net towed by one vessel which does not meet the configuration specified for a pelagic trawl net (see Section 10, Regulations, under "Definitions").

   Gear code 2 - Pelagic trawl net - Defined in the fishing regulations (see Section 10, Regulations, under "Definitions").

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

   Gear code 5 - shrimp trawl

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

   1 - no problem
   2 - problem--crab pot was in the haul
   3 - problem--net hung up on some bottom obstacle (vessel had to back down)
   4 - problem--net ripped
   5 - problem--other problem, put a note of explanation on a non-keypunched part of the Form 2US.
   6 - problem—trawl net or codend lost
   9 - shortwiring occurred.

   "Shortwiring" means to haul in the main wire to bring the net up out of the fishing level but not out of the water. The trawl doors may or may not be brought up to the stern. The vessel continues to tow to keep the

fish corralled in the net until haulback. The towing speed may be reduced. Shortwiring may be done by a catcher boat for a mothership to hold the fish in good condition until delivery, may be done to keep the warp cables from tangling when turning the ship around, or may be done to raise the net to see the amount of catch.

9. **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). This vessel caught and processed its own catch on this tow. Catch is stored in a *freezer hold* aboard.

   2 - Mothership. This vessel received **unsorted** catch in a codend transferred from a catcher vessel on this tow.

   3 - Catcher-only vessel. This vessel caught its own fish and retained it for delivery to a processor (shore-based or "floater"). On board, the catch is kept on ice or in refrigerated seawater (RSW) tanks, not frozen.

   4 - A mothership or catcher/processor is receiving this tow as **sorted** (or *potentially* sorted) catch from a catcher vessel. Catch was transferred by brailer or by pumping; any method other than by codend transfer. (Sorted catches should not be sampled by the observer.)

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

   *If a catcher/processor (c/p) vessel also acts as a mothership, fill out only one set of 2US forms as shown in the bottom half of the example Form 2US above.* The two types of vessel operation are distinguished by the vessel type entry.

10. **Location code:** Enter R if the location is a retrieval position, and N for noon position entries on days at sea when no tows were completed. (See item 11. below.) Observers on motherships should obtain and record retrieval positions if at all possible. If retrieval positions are not available from the catcher boats, enter "D" and the position of the mothership at the time of delivery. The location entered ***must*** correspond to the location code type.

    [Note for Mothership observers: Deliveries of catch will often not be made in the order in which the nets were retrieved on the various catcher boats. The retrieval time determines the date of the catch just as with catcher/processor vessels, but on the Form 2US for a

mothership, the fishing times will not necessarily be sequential. Record catches in order of delivery *or* retrieval time as long as each catch is attributed to the correct date and the *dates* are sequential. The only lines of data on Form 2US which may require reordering are those for deliveries around 0000 hours.]

11. **Noon positions:** For all non-fishing days enter "0" in the haul number column, a location code "N," and the position of the vessel at noon, Alaska Local Time (ALT). On the remainder of the line, comment on the reason there was no fishing. *All days aboard must be accounted for with fishing positions or, if no fishing, a noon position.* Each delivery or day in port must be noted on a line of 2US. 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.

For days spent in these ports, use these coordinates for the noon position:

| Port | Latitude | Longtitude |
|---|---|---|
| Kodiak | 57° 42' | W152° 15' |
| Sandpoint | 55° 19' | W160° 33' |
| Akutan | 54° 08' | W165° 31' |
| Dutch Harbor | 53° 53' | W 166° 31' |

**Fig. 2-7.** Coordinates for Noon Position

12. For mothership observers, information on gear type and performance, retrieval location, fishing times and/or fishing duration, fishing and bottom depth, and average towing speed has to be obtained from the catcher boat skipper. Contact the skipper on the VHF radio after the delivery when they are no longer busy coordinating the delivery maneuvers.

13. **Haul or Delivery position:** Record the latitude and longitude of the ***haul retrieval position*** - (i.e., the location of the ship when the winches begin bringing in the cable). For a mothership the location entered may be a delivery position if retrieval positions are not available. Check recorded positions to make sure they are reasonable (e.g., 58°63′ does not exist). Double check positions that indicate large movements if you have not been aware of any. Plot a few positions on a chart yourself to verify that they correspond to where you believe

yourself to be. One hundred+ degrees of longitude is a given, so do not enter the "1." Record only the following digits (see form example). Each haul must have a position. On non-fishing days at sea, record ALT noon position in these columns.

14. **Nets on bottom and Nets off bottom:** Nets on bottom refers to the time that the net first reaches the fishing level and the winches stop paying out cable. Nets off bottom refers to the time when net retrieval is begun. ("Bottom" in this context refers to the fishing level rather than the ocean floor.) All 2400-hour notations should be entered as 0000 hours. If this occurs in the "nets off bottom" time, the date should be changed accordingly. Double check haul times to see if they are reasonable times for your vessel. For example, an overlap in haul times for two hauls is not possible.

15. A haul is assigned to a day according to the nets off bottom time (the time the net is begun to be retrieved from the fishing level), which is not necessarily the same day the net was set or the day that you sample. Thus, hauls with nets off bottom before 0000 hours are attributed to the previous day and hauls with nets off bottom on or after 0000 hours are assigned to the next day. Be certain that you attribute hauls to the correct days. All other sample data are tied to the Haul Form via date and haul numbers.

/ Mothership observers: if you cannot get retrieval times from a catcher boat, estimate the day of retrieval to the best of your ability.

16. **Fishing duration:** You do not need to enter fishing duration for trawl effort unless:

    - a catcher boat is splitting a catch and the fishing effort also has to be divided (call the Observer Program's Seattle office for instruction),
    - you cannot get one or both of the fishing times,
    - or shortwiring occurs. If the fishing duration is substantially less than the difference between the on and off bottom times (by ten minutes or more), record only the duration and off bottom time.

17. **Average fishing depth and Average bottom depth, M or F:** It is important to record both depths as that will indicate whether the net was fishing on or off the bottom. Record depths to the nearest whole number. Depths can be logged in either fathoms (more likely) or meters. *Record both depths in the same unit of measure and label it as fathoms (F) or meters (M).*

18. **Average speed:** Record the average trawl speed to tenths of a knot. Trawl speed is not recorded in the NMFS vessel logs so ask the bridge personnel for this information. Ask whether they ever change their average speed of towing and under what conditions. Be mindful that changes in gear, area, depth or target may require a change in average towing speed.

19. **Official total catch (OTC):** according to your judgement, this is the *best* estimate of total catch weight available for each haul. It is the fresh, uncut (round) weight, including all species whether utilized or not. There must be an entry of OTC for every haul recorded on the Form 2US, made to two decimal places. Refer to page ?. Occasionally, large items like a crab pot, large amounts of mud, a boulder, a large shark or a dead walrus are caught. If the large item is an organism, include it as part of the catch weight and it must be recorded in the species composition data as well (refer to Form 3US instructions, item 10, page ?). If it's not an organism, it's weight should be included either in *both* the OTC and the composition data *or in neither* place.

20. **Observer's Total Catch Estimate, B or C:** On a trawler, this is your estimate of the volume of fish in a codend or fish bin (or tank) multiplied by an estimate of density. Make estimates of as many of the catches as possible. Record the weight estimate to two decimal places. Enter "B" or "C" in the next column to indicate whether this estimate is taken from a bin or codend volume.

21. **Density used:** Record the density value used in calculating the observer's estimate. There should at least be an entry when there is an observer estimate. Record the density to two decimal places. Record all density sampling data and calculations in your observer logbook.

22. **Vessel's Total Catch Estimate:** Record the "Estimated Round Catch Weight" from the vessel's NMFS log. If necessary, convert the estimate to metric tons. There should be an entry for every haul.

23. **Catcher Boat's ADF&G # and List of Catcher Boats:** This column and the box at the top of the form are *for mothership observers only*. If you are on a catcher/processor which does not take outside deliveries or if you are on a catcher-only vessel, leave these areas blank.

    If you are on a mothership, the name of each catcher boat which delivers *only needs to be listed once* in the box at the top of the first page (or second page if there are six or more catchers) of the Form 2US for that mothership. Then the catcher boat's ADF&G number

identifies for each delivery which boat did the fishing. If a catcher/ processor operates as a mothership and also fishes for itself, enter the catcher boat's ADF&G number when appropriate and leave the lines for self-made hauls blank in that column.

24. **Processor Code:** If you are on a catcher vessel (c/v), enter the processor code for each haul and make one list of the processor names, locations, and codes at the top of the form. Observers on c/p and mothership vessels should not make any entries in this column or box. Catcher vessel observers need to look up the name of the processing plant listed alphabetically in Appendix E.

    Write the name of each processor delivered to, its location, and the corresponding code only once in the box. Make this list at the top of only the first page or two of catcher vessel 2US forms. Catcher vessel observers then record the appropriate processor code for every haul entered on Form 2US.

    If fish from different tows are mixed in the tanks and the delivery is sold in part to one processor and the remainder to another, the catch of the entire trip is attributed to the processor that got *most* of the delivery.

25. **CDQ/IFQ number:** (Community Development Quota/ Individual Fishing Quota) Observers on vessels participating in CDQ must identify which tows are to be attributed to CDQ quota by entering the appropriate CDQ number. Refer to the vessel log. The number they record has the format: CDQ, then two digits for year, and a two digit identifier (e.g., CDQ9753). On Form 2US, the observer should just enter C and the last two digits (e.g., C53). The list of CDQ partnerships, their numbers and associated vessels is in Section 6.

    If your vessel is attributing their catch to an Individual Fishing Quota enter "IFQ" in this column. (At this time, only longline vessels are given IFQ.)

26. Any notes, or comments (other than notes for non-fishing days) should be written in the margins or footnoted to the back of the form or the observer's log.

# 3 Species Composition Sampling & Catch Messages

## Species Composition of the Catch

### Priority and description

Species composition sampling is third in the Observer Programs' priority list, after the measurement of total catch weight and the collection of data on any endangered species caught by the fishing gear. Species composition sampling involves the collection of catch samples from a selected haul to estimate the proportion of each species caught in the entire haul.

### Uses of the data

Fisheries managers need to know the fishing mortality, or how much has been caught, of each species. The total catch estimate for each species is based on the results of your species composition sampling in conjunction with vessel reports of production. This information is used by inseason managers to make fishery closures as well as by scientists for a suite of analyses on the fish and fisheries.

**From this section, you should learn:**

- How to select hauls to sample aboard trawl vessels
- Observer Program methods for collecting species composition samples:
  - Basket sampling
  - Whole haul sampling
  - Partial haul sampling
- How to apply Observer Program sampling methods in specific situations
- How to complete the species composition sampling form 3US

## How to Select Hauls to Sample for Species Composition

*The RST designates which hauls trawler observers must sample.*

In this section, you will learn your options for selecting hauls to be sampled, when to use each option, the two types of random sample table (RST), how to use the RST to select hauls, how to use the break table on catcher processors and motherships, how to fill out your observer sampling record, what to do if your sampling schedule is too rigorous, and vessel responsibilities relating to haul selection. A list of frequently asked questions (FAQs) is included at the end of the section.

### Options for haul selection

There are two options for selecting the hauls to sample for species composition on a trawler during your cruise:

1. Sample **all** of the hauls; or
2. Use the Observer Program's Random Sample Table (RST).

If it is not possible to sample all of the hauls on your vessel, species composition data must be taken from a random selection of hauls. This ensures it will be legally and scientifically defensible. To this end, we have developed a random sample table which trawl observers are required to use.

### When all hauls should be sampled

In pollock fisheries, observers aboard catcher-only trawlers should sample every haul. The Observer Program has determined that catcher vessels in pollock fisheries make relatively few hauls each day, so that sampling all of the hauls is feasible. If you are in a different fishery and/or on a different type of vessel, sampling all hauls is feasible only if the vessel makes three or fewer hauls per day.

### When to use the Random Sample Table (RST)

If there is any doubt in your mind that you will be able to sample **all** of the hauls that your vessel brings aboard during your cruise, you must use the RST to determine which hauls to sample. It will be necessary to use the RST to select hauls in nearly all fisheries except for the catcher vessel pollock fishery described above. You are **required** to use the RST in Bering Sea yellowfin, rock sole, and other flatfish fisheries. The bottom line is, ***you will almost always use the RST to select hauls to be sampled***.

### Vessel type and versions of the RST

There are two versions of the random sample table, one for catcher vessels and one for catcher/processors and motherships. Look at the title of the table to be sure you are using the correct one for the vessel you are on. The difference between these tables is the number of hauls skipped.

Catcher boat tables always have only one haul skipped; catcher/processor and mothership tables have one or two hauls skipped between sampled hauls. In addition, observers on catcher/processors (c/p) and motherships (ms) have a break table to use if needed. Instructions for using both tables follow; the random sample tables will be discussed first, followed by the break table and how to integrate both tables on a catcher/processor or mothership. Be sure you have a complete understanding of the random sample and break tables before you are deployed.

### How to use the RST

In the RST the bold-faced rows of type indicate the number of consecutive hauls you sample. The normal-faced type rows are the number of consecutive hauls you do not sample. During training you will be instructed how to determine your starting point on the table. From that 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 continue at the top of the next column. If you reach the end of the table (Z,Z) continue on at the top of the table (A,A). (The following is an example of a catcher/processor RST, because there are either 1 or 2 hauls off between sampled hauls; the catcher vessel RST is used the same way.)

Start using the random sample table from your first sampled haul. Sample only the hauls designated by the RST.

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | **2** | **3** | **2** | **4** | **4** | **2** | **3** | **2** | **4** | **3** | **4** | **2** | **4** | **2** | **4** | **3** | **2** | **3** | **4** | **3** | **4** | **4** | **2** | **3** | **2** | **4** |
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 |
| **B** | **4** | **3** | **4** | **4** | **3** | **2** | **3** | **2** | **3** | **3** | **2** | **3** | **2** | **2** | **3** | **2** | **3** | **2** | **4** | **3** | **2** | **4** | **2** | **2** | **3** | **2** |
| | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 |
| **C** | **2** | **4** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **2** | **4** | **3** | **3** | **2** | **3** | **4** | **3** | **3** | **2** | **4** | **2** | **3** | **2** | **2** | **4** | **3** |
| | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| **D** | **4** | **4** | **3** | **4** | **4** | **4** | **3** | **4** | **4** | **4** | **4** | **3** | **4** | **3** | **3** | **2** | **4** | **2** | **2** | **2** | **2** | **3** | **3** | **2** | **3** | **3** |
| | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 |
| **E** | **3** | **3** | **3** | **2** | **2** | **3** | **4** | **2** | **4** | **2** | **4** | **3** | **3** | **3** | **2** | **4** | **2** | **2** | **3** | **4** | **2** | **2** | **4** | **2** | **4** | **4** |
| | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |
| **F** | **4** | **4** | **4** | **4** | **4** | **3** | **3** | **2** | **3** | **2** | **2** | **2** | **3** | **2** | **2** | **2** | **2** | **4** | **2** | **3** | **4** | **4** | **4** | **4** | **3** | **2** |
| | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 2 |

**Fig. 3-1.** Example of a Random Sample Table

### How to use the break table on c/p and ms vessels

Break tables were designed to give observers a six-hour break each day if normal vessel operations did not permit adequate break time. They were developed in response to the difficulty observers were having in keeping up with the many catches landed on motherships and during flatfish fishing. The break table can only be used by observers on catcher/ processors or motherships.

If the vessel *averages* less than four hauls per day, you should disregard the break table but still follow the random sample table. Also, if the 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.

You can ignore the break table you are issued or just use it occasionally, when needed. If you use it, track each day on the break table, whether the break time is taken or not. For example, if your break schedule is not used for two days, just record the dates on two lines and use the time on the third line for a break on the third day.

The break table is made up of three columns of cells. Each cell consists of a space for the date and gives a break starting-time for each day. As with sampling data, 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 Random Sample Table and check to see when you could 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.

| | | |
|---|---|---|
| DATE _____ 0400 | DATE _____ 0800 | DATE _____ 1600 |
| DATE _____ 1300 | DATE _____ 0100 | DATE _____ 0900 |
| DATE _____ 0400 | DATE _____ 0700 | DATE _____ 0400 |
| DATE _____ 1800 | DATE _____ 1300 | DATE _____ 1300 |
| DATE _____ 1500 | DATE _____ 1600 | DATE _____ 0500 |

**Fig. 3-2.** Example of a Break Table

Although neither the break table nor the random sample table is particularly difficult to follow, when you put the two together things can get a little confusing until you focus on the haul retrieval time. If a break is to be taken and it is to start one minute *after* the retrieval time of a haul to be sampled, sample the haul. If a break starting time occurs one minute *before* the haul retrieval time of a haul to be sampled, don't sample, take your break. At the completion of the break period you should re-enter the

random sampling table. If you are in the middle of sampling when your break starts, finish that sample first, then begin your six-hour break. Hauls retrieved during an observer's six hour break continue to be counted against the random sample table.

### Break table summary:

- Take breaks only on days when you need them.
- If the retrieval time of a sampled haul is before your break time, complete your sample before taking the six hour break.
- Break for six hours.
- Sample the next "on" haul whose retrieval time is after the six hour break.

### Trawler Observer Sampling Record

All observers on trawlers are required to fill out the Trawler Observer Sampling Record in your logbook. In your table list: the haul number of each haul made, whether it was designated as an "on" or "off" haul, and your place in the table (column and row). Also include whether you were on break, whether you did or did not sample it, and the start and end times of your samples. Finally, when an "on" haul is not sampled, we need to know the reason. In your Vessel Survey (the debriefing report) we ask for comments on your difficulties, if any, with using this sampling scheme.

| Haul No. | RST On/Off | Col. Row | Break On/Off | Sampled Y/N | Samp. Time Start | Samp. Time End | Reason for "On" Haul Not Sampled |
|---|---|---|---|---|---|---|---|
| 34 | on | H/C | | Y | 1630 | 1825 | |
| 35 | on | H/C | | Y | 2005 | 2200 | |
| 36 | on | H/C | | N | | | Break |
| 37 | off | | on | N | | | |
| 38 | on | H/D | on | N | | | Break continued |
| 39 | on | H/D | | Y | 0715 | 0930 | |

**Fig. 3-3.** Example of an Observer Sampling Record

### Sampling schedule too rigorous?

1. If your vessel is a catcher/processor or mothership, use the break table each day or on some days as needed.

2. Reduce the sampling time by reducing the sample size of one or more hauls in the series. Sampling a catch on a c/p vessel should usually take two to three hours. If you are spending more than three hours per sample you will not be able to stick to the table when four or more hauls per day are being landed. If you were sampling the entire catch

for prohibited species, try cutting back to a smaller sample size so that all designated hauls in the series can be sampled. It is more important to have good sample collection technique, smaller samples and stick to the random sample table than to sample the whole catch and sample fewer hauls.

3. It is important that you look ahead at your schedule and plan to make best use of your rest time. For example, if the table dictates that you have a four on, one off, four on schedule, get more rest *before* this series and plan on getting paperwork, chores, and meals done in between samples so you have as large a block of rest time in between the sets of four sampling hauls as possible. Consider altering your sampling method (described in the next section). Is it practical to whole haul sample a series of four hauls or will you need to basket sample some to complete the set?

**Key Points:**
- On a c/p or ms, use the break table.
- Reduce your sample size.
- Plan ahead.
- Skip an "on" haul, when necessary.

4. If you get caught in an unworkable situation you can, if necessary, skip one of the hauls in the series to be sampled but then complete the *remainder* of the sample series, counting the unsampled haul as part of the block. As in the example of a four on, one off, four on series, if you need to rest for two hauls, you should sample four hauls, rest for two, and sample *three* hauls to complete the series. If it is necessary to skip sampling hauls on a continuing basis, get in contact with an Observer Program office for advice.

## Vessel Responsibility and the RST

The random sample table (RST) was designed to randomize the selection of hauls to be sampled by an observer. Working a random schedule can be difficult at times due to our natural biorhythms, i.e., you may wish to sleep through the night. However, 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 vessel personnel to make sure they understand that you must be notified of haulbacks. If problems with notification continue, be sure to document this in your logbook and during debriefing.

## Frequently Asked Questions on Using the RST:

1. *I am supposed to sample 4 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?* 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 random

sampling table. To re-enter, check the fishing schedule against the random sample table to see when the next "on" haul will be retrieved.

**Hauls retrieved during a break continue to be counted against the RST.**

2. *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 set for four hours. Do I sample this haul?* 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.

3. *Can I skip breaks and only take them on a few days when I need to?* Yes. On the table though, record the date of each day whether or not a break was taken. Note: you cannot accumulate break time by skipping a day and taking a longer break or more than one break on a following day.

4. *Can I sample more hauls than those indicated on the random sample table?* No, do not sample additional hauls to the ones designated by the RST unless you can sample **all** the hauls your vessel takes on.

5. *My break is over and the haul currently being processed is an "on" haul and is about half processed. Can I basket sample from the remaining portion?* No, because you were not present to verify that no presorting of the catch occurred. So, you will have more hours off in addition to the six hour break.

6. *Suppose a break is just over but the next haul retrieved is an "off" haul, resulting in a longer break than I need. Should I stick to the random sample table and not sample?* Yes, you must sample only the designated hauls, resulting in a longer break than the six hours scheduled. Tomorrow you may not need to take a break period.

7. *I was just assigned to a different vessel (or, my vessel just completed a delivery and is resuming fishing). How does this affect the random sample table?* If you are assigned to a new vessel or when fishing resumes after a delivery, continue from where you left off in the table. Begin using the table with your next sampled haul. If you left off in the middle of a sampling block, continue with that block. If you just finished a sampling block, or if you're in the middle of a non-sampling block, go to next sampling block as you begin your next trip.

## Species Composition Sampling

In this section, you will learn the general guidelines for species composition sampling including vessel responsibilities, the three methods for collecting species composition samples (basket, whole haul, and partial haul sampling), methods for processing your sample and identifying species, applications of sampling methodology in specific situations, and how to fill out the species composition sampling form 3US.

### General guidelines for species composition sampling

Sampling the species composition of the catch is one of the highest priority duties of an observer. Species composition samples must be collected such that any organism from any part of the catch has an equal probability of being included in your sample. *Never* make a visual appraisal of the composition and then pick a representative sample based on your judgement. When sampling, the relative amounts of species in your sample will not necessarily reflect their proportion in the haul. However, the Observer Program database contains many samples taken within an area/week, and reflects the relative species proportions over time.

To guide you in species composition sampling, please consider the following:

1. Strive to collect unbiased samples from throughout the set or tow.

2. Allocate your time appropriately. Maximize your sample size according to the amount of time you can afford for a haul. Keep in mind your schedule according to the Random Sampling Table, the scope of your duties, and priorities.

3. The weight of catch which you sort through is the "sample weight." You must be present to sort, or directly supervise the sorting, of **all** of every sample. If you see or suspect that the sorting of your sample is not completely thorough, reduce your sample size and/or change your sampling method until you can control the sorting. You must ensure that the fish passing by you are not too deep or moving too quickly for you or those you are supervising to sort. Document which hauls may have incomplete information and discuss this with your debriefer after your return from sea.

4. For each sampled haul or set there are seven groups of species, to each of which you must apply one of three sampling methods.

*Groups:* king crab, herring, Tanner crab, halibut, salmon, other (non-prohibited) bycatch, and the target species

*Methods:* basket, whole haul, and partial haul sampling (described in detail below)

5. You cannot sample for some species and not others; you cannot leave out any component of the catch. If you are sampling a catch for prohibited species, you must also sample for target and other bycatch and vice versa.

6. Use any of the combinations of sample methods shown in the four examples of Form 3US. Note that you cannot have two sample weights assigned to one sample type within a haul. For example, you cannot have two basket samples with different sample weights or have two different sample weights, both labeled as "P."

7. Any partial or whole haul sample must also have a weighed (basket sample) with it. If you whole or partial haul sample for prohibited species, a basket sample is taken for all target and bycatch species. If you whole and/or partial haul sample for all species, a basket sample must be taken for the one or two predominant species.

8. You cannot have two sample weights for any one species or species group. For example, if you whole haul sample for salmon, you cannot have salmon in your basket sample.

9. Sort the sample according to species or species groups. Weigh and count each species group. If you cannot, because they are too numerous or too heavy, you must at least count them all and weigh some of them or vice versa. ***Do not estimate both the number and the weight of any species.***

## Vessel responsibility and species composition sampling

Remember that under 50 CFR §679.50(f) it is a requirement of the vessel to "provide unobstructed access to the vessel's trawl or working decks, holding bins, processing areas, weight scales, ...and any other space that may be used to hold, process, weigh, or store fish ...at any time."

In addition, they must "provide all other reasonable assistance to enable observers to carry out their duties, including, but not limited to: measuring decks, codends, and holding bins; providing the observers with a safe work area adjacent to the sample collection site; collecting bycatch when

requested by the observers; collecting and carrying baskets of fish when requested by observers."

Finally, under 50 CFR §679.50(g), it is unlawful for any person to "interfere with or bias the sampling procedure employed by the observer, including physical, mechanical, or other sorting or discarding any catch before sampling." Refer to page? for a complete list of regulations.

Talk to the vessel personnel to make sure they understand that you must be provided unobstructed access to unsorted catch and reasonable assistance with sampling. If problems with access and assistance arise and persist, be sure to document this in your logbook and during debriefing.

### Methods For Collecting Species Composition Samples

There are three basic approaches to collecting a species composition sample on a trawl vessel: basket sampling, whole haul, or partial haul sampling. Each sample method is really a function of sample size. The basket sample is usually a small proportion of the haul, minimally 300 kg, and some form of basket sampling is incorporated in all sample methods. A whole haul is the entire haul. A partial haul sample is a relatively large proportion of the entire haul. The sampling methods you choose depend on the diversity and size of the catch, the shipboard setup, and your time and energy. Use a combination of methods where appropriate to obtain the best data.

Within the description of each sample type below, you will find the criteria which define the sample method, when to use of the sample method, how to obtain species composition samples using the sample method, and potential biases to be aware of when using the sample method.

## Basket Sampling

### Definition criteria:

- All sample organisms are weighed on your observer scales or the certified scale at a processing plant. Vessel-operated motion compensated and conveyor flow scales are not included.
- The sum of the species weights must equal the sample weight.

In the course of your work as an observer you will be collecting baskets of fish for various purposes. However, when employing "Basket" sampling for species composition, this means that ***your sample is an unbiased, random selection of organisms which are actually weighed.*** Weights based on average weight multiplied by the number are not acceptable.

Weights of halibut taken from the Length/Weight Table are not acceptable unless the halibut are larger than 1 m.

A basket sample is ***not*** necessarily a sample collected and weighed with baskets. A variety of containers are used to collect and weigh the sample: brailers, checker bins, totes and hoppers. Weighed or "basket" sample sizes may range from the total catch weight to the weight of fish in one basket.

The Observer Program's *minimum* sample size for species composition is 300 kg, which should be exceeded whenever possible. If it is difficult for you to routinely get sample sizes of 300 kg or more, discuss this with a Program staff member. Record an explanation in your logbook for each sample weight of less than 200 kg. Data from small samples can usually still be used as long as the sample was collected in a random, unbiased manner. Be sure to record under "Daily Notes" in your logbook any difficulties you encounter.

### When to basket sample:

- A sample of the predominant species is needed to accompany a whole and/or a partial haul sample, or
- the catch is diverse in composition and no species have been sorted from the catch, or
  - the available time or the situation does not permit whole or partial haul sampling, or
  - you are sampling a Bering Sea flatfish catch where the Vessel Incentive Program (VIP) stipulates that observers must use the basket sample method. Refer to page 3-29.

### How to basket sample on a c/p:

To collect samples, various methods are used to avoid unconscious selection for certain sizes or certain species. On catcher/processor vessels, a good method is to hold the basket where unsorted fish are falling from the live tank hatch to a conveyor belt, or from one conveyor belt to another. If you choose this method, make sure that any large fish falling off the conveyor are included in your sample, even if they don't fit in your basket. Alternatively, the conveyor bringing fish from the live tank to the sorters could be stopped just long enough for all the fish from a predetermined point to point to be removed. Yet another technique is to find or design a diverter board for the conveyor belt. This is a board hinged into the side of the conveyor belt trough capable of diverting the fish flow along the conveyor belt, allowing the catch to spill off the conveyor belt into a basket.

On catcher/processors it commonly takes an hour or several hours for all of the fish to be emptied from the bins to the factory and sometimes you do not have many baskets available and/or the sampling space is limited. Therefore it is recommended that you collect only two or three baskets at a time and do this at intervals during the haul processing. This also allows you to gather your samples effectively from different parts of the catch.

### How to basket sample on catcher boats:

On catcher boats observers usually work on the trawl deck. If the fish are dumped onto the deck for sorting, as is commonly the case in a cod fishery, you might partition off a section of the catch on deck with a board or shovel, then sort, count and weigh *all* the catch in the section. On some catcher boats the fish are dumped into checker bins (compartments on either side of the trawl deck). If they are not filled with too much fish, you could sort, count and weigh all the catch dumped into one of these checkers. The disadvantage of this is that the sample comes from only one part of the catch. Different bins should be used for other hauls or the same bin should be filled from different parts of the codend on other hauls.

The best way to fill baskets is to "catch" the fish as they are moving from point A to point B by inserting a basket into the flow or diverting the fish into a basket. It may be possible to get samples directly from the codend by getting assistance from a crewman on the deck to hold a basket into the flow of fish as they fall from the net onto the deck but also consider your safety. If you choose this method, make sure that any large fish falling out of the codend are included in your sample, even if they don't fit in your basket.

If the catch is piled in a deck bin or the trawl alley, do not select your sample by shoveling fish into the blue baskets—shovels are size selective. The baskets are also size selective and should not be used as scoops. It may be possible to use the shovel or a bin board to section off part of the fish on deck which you then shovel into your baskets. Look at the sides of the trawl alley for hatches which can be raised to allow catch in the alley to spill through into a side pocket for sampling. If this can be done with small amounts of catch several times, the sample will more likely come from different parts of the catch.

The rim of an overturned basket or a hatch cover in the deck might be used as a sampling circle. Any organism touching, or inside of the circle, is part of the sample. This will only work if the fish are not too deep and are not sliding around while you are collecting them. Again, try to take your sample from different parts of each catch.

**Potential sample bias:**
Examine your basket sample collection methods for potential bias.

- Take samples from different parts of the catch or processing time. Ideally the parts of the catch sampled should be chosen using a random selection method. Some species, such as rockfish and crabs, tend to be found at the head end of the net while other species, such as flatfish, tend to concentrate at the bottom of the codend. By choosing samples from randomly selected parts of the catch, all of these species are given an equal probability of appearing in your sample.
- As the fish are pumped from a net; dumped onto a deck, into a bin, or as they pass through a hatch onto a conveyor belt; physical and mechanical sorting may take place - random sampling will compensate for this.
- Selecting fish for your sample by hand or using even a broad blade shovel is very size selective. Not looking at the fish while you grab or shovel them doesn't mitigate this problem. Even using a basket as a crude scooping tool is size selective. Instead, select a clearly defined area and remove all of the fish from it.
- Sample before any active sorting by crew members (or by machines) takes place.

## Whole-Haul Sampling

**Definition criteria:**

- The sample weight equals the OTC
- At the sorting point you can see every organism in the catch pass by you.
- You sort, or supervise the sorting of, the sample organisms from the whole catch.
- Count and/or weigh all whole haul sampled organisms sorted out.
- Take a subsample of at least the predominant species.

**When to whole haul sample:**

**Consider that 1% bycatch in a 50 mt haul is 500 kg, which is about thirteen 40 kg baskets of bycatch!**

When your vessel is fishing pollock in Alaska or Pacific whiting (hake) off Washington and Oregon, hauls may have less than 1% bycatch. In these fisheries, if you are aboard a catcher/processor or mothership, you should whole haul sample for prohibited species catch whenever possible. When working aboard a catcher-only vessel in pollock fisheries you must basket sample at sea for target and bycatch species and whole haul sample for prohibited species during delivery to the processor.

### How to whole haul sample (c/p and ms vessels):

When whole-haul sampling on a c/p or mothership for all species groups, the entire *unsorted* catch must pass by you at one point and you must be able to see and pull out all whole haul sampled organisms for counting and weighing later. You cannot weigh the whole catch but you do *sort through all of it.* The sample weight, when rounded, is equivalent to the Official Total Catch weight. On catcher/processor vessels, if processing is very slow, you may have to change to some other sampling method if sorting the entire catch will take too long, leaving no time for other duties.

You must be present *at all times* to sort or supervise the sorting of bycatch when whole haul sampling. If you are working along with the crew, make sure they know that you are sampling and that they know what species you need to have set aside for you. Do not have crew simply count a whole haul sample species for you and then rely on their counts multiplied by an average weight. ***You must have direct, visual supervision of anyone helping you to gather sampling data.***

Whole haul sample species that have been sorted out of the catch must be counted and weighed. Enter their numbers and weights on Form 3US first with a sample type designation of "W." If you are whole haul sampling for only prohibited species, that part of composition sampling is complete. If you are sorting out *all* bycatch, everything but the target (or predominant) species should be counted and weighed.

**Within the whole haul, a basket sample of one predominant species of average size, must be at least 80 kg.**

Now take a smaller, weighed or "basket" sample of the predominant species using the methods outlined in the basket sampling section. *If there is only one predominant species of average size (e.g., 30 - 50 cm pollock), take a minimum of 80 kg which is two or three baskets of fish.*

### How to whole haul sample when two species predominate:

The method of sorting the whole haul for all bycatch may be expanded to include the situation of whole haul sampling when two species dominate the catch weight. A predominant species in the catch is not necessarily a species the vessel was targeting on. For example, when fishing for pollock, vessels will occasionally tow through clouds of jellyfish or a school of herring, and when fishing for Atka mackerel, they will sometimes pick up lots of brittle stars. If more than two species (other than prohibited species) each make up a significant proportion of the catch weight, as is often the case in cod and flatfish fisheries, you must basket sample for target and all bycatch.

Refer to the Form 3US example for haul 50 on page 3-30. In this example, a majority of the catch is comprised of pollock and jellyfish. Although there are lots of other species, the combined weight of other

**A basket sample to determine relative percentage of two species must be at least 200 kg.**

bycatch is very small. The procedure in this case is to sort out anything that is not pollock or jellyfish from the entire haul and identify, count and weigh it. Take a basket sample of the mixed catch of pollock and jellyfish (remove any other species), to determine their relative percentage by weight. Count and weigh them and record these data as sample type "B" on Form 3US. A basket sample to determine relative percentage of two species must be of a minimum of 200 kg.

### Potential sample bias:

Note that under CFR §679.7 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." When you are whole haul sampling, interference includes:

- presorting of catch by crew
- on c/v's: pumping the net and restricting the size of fish landed by the use of grinders and/or a small transfer tube diameter.
- mechanical sorting by the use of grids or other forms of sorters on deck hatches.
- dumping undesirable catches or portions of catch back to sea before they can be sampled.
- due to layout, if not all fish holding bins can be sampled, catches can be selectively placed, discouraging the sampling of a catch or part of a catch.
- running a conveyor belt too fast, or too deep in fish.

Look for and recognize the sources of sample bias. You probably will not be able to see the effects of bias in individual samples, but you may see the occasional fish caught by mechanical sorting, or slipping by you on the belt. Report conditions which may be affecting your samples in your logbook and final report. You may not be able to avoid or compensate for sample bias but it needs to be identified and documented.

If interference appears to be deliberate, talk to the skipper about the problem (refer Section 10, Regulations, under "Steps To Take if You Suspect a Violation"). To the best of your ability, quantify the amount of fish involved each time it occurs. Notify Observer Program or Enforcement personnel of problems if you can do so without putting yourself in a difficult position on board.

## Partial Haul Sampling

### Definition criteria:

- Sorting the bycatch or prohibited species from the whole haul would be too much to handle or take too long because the catch is large and/ or because the processing rate is slow, but you are able to sample a larger portion of the catch than you could weigh.
- Sample weight is usually determined by volume conversion or the tally method (see explanation below)
- At the sorting point you can see every organism in the sample.
- You sort out and then count and/or weigh all the partial haul sampled species.
- Take a subsample for at least the predominant species

### When to partial haul sample:

Whole haul sampling may not be possible when you are faced with a haul containing large numbers of non-target species (bycatch), an unreasonably long processing time, extremely large hauls, or insufficient access to the entire haul. Sampling only a portion of the haul is an alternative. The sampling procedure is the same as when whole-haul sampling, but the sample species are collected from only a portion of the haul and your sample weight is less than the Official Total Catch weight.

### How to partial haul sample:

The two methods used to determine partial haul sample size are the bin volume method and the tally method (see below). Visual estimates such as "about ½ or ¼ of the catch" are not allowed. One exception is if your catcher vessel dumps part of a codend at sea (i.e., unsorted catch). Even when you sample the whole delivery, you have only sampled part of the catch. In these cases, the partial haul sample weight is calculated by proportioning the delivery weight instead of using bin volume or the tally method. *If you use a partial haul sample method, record all sample weight calculations in your logbook.* Bin volumes are the preferred method on trawlers.

1. **Bin Volume:** The most accurate, and easiest, way of estimating sample weight is by determining the volume of fish sampled from a bin. This is done by measuring the difference in the height of fish in the bin at the beginning and end of the sampling period. Multiply the difference in the height measurements by the area and then multiply that volume by the density, to determine the sample weight.

| Sample Weight Using Fish Volume: |
| --- |
| Fish Height (m) x Floor area ($m^2$) x Density ($kg/m^3$) = Sample Weight (kg) |

Refer to "Observer's Total Catch Estimates" in Section 2 for instructions on measuring the amount of fish in a bin. You **cannot** use this method if:

- you have not measured or verified the measure of the bin,
- you cannot see into the bin well enough to accurately determine fish depth,
- there is standing water in the bin sufficient to float the catch load, or
- unknown amounts of additional fish are added to the bin during your sampling period.

Remember, fish tend to stratify in a bin, and if you frequently partial haul sample you need to sample from different parts of the bin or hold. If sampling from all parts of the catch cannot be done in each sample, then sample different parts of the catch over several hauls. Ideally you could number the parts of a deck, the bins, or segments of processing time and use a random selection method for the part(s) to be sampled.

When partial haul sampling, sort the sample species from the sample weight. Count and weigh the sorted organisms by species. A weighed or basket sample must be taken of the one or two predominant species when whole or partial haul sampling.

If you are whole haul sampling for some prohibited species and at the same time partial haul sampling for other species, any whole haul sample species that occur in the partial haul sample must be removed. If they were in the bin when a volume estimate was made, subtract the weight of whole hauled species from the bin volume sample weight. Whole haul sampled species may not be included in the species list or in the sample weight of partial haul sampled species.

2. **Tally Method:** Tallying fish is the primary method for sampling aboard a longline vessel and may be employed on trawlers too. On a trawler, when working beside a conveyor belt only distinctive or large fish such as cod can reliably be counted as they pass by. Smaller, numerous fish like pollock should only be tallied if the conveyor belt can be stopped while you count and remove bycatch.

**Be Careful: average weight = weight ÷ number, not the other way around!**

To tally sample, make an accurate count of the prevalent species and *collect all other sample species* for sorting, counting and weighing later. Just before and/or after these tally periods, gather a random sample of the tallied species to determine average weight. ***Collect a minimum of 50 fish for average weight.***

Record only the entries for the sorted (non-tallied) species under sample type "P" for partial haul sampling. The sample for average weight of the tallied species is recorded as a weighed, or basket

| Tally sample weight = (# of tallied fish x avg. wt.) + sorted species wt. |
|---|

sample, sample type "B." Record the number of fish tallied on the worksheet at the top of the form.

When sampling for prohibited species only, the tally method cannot be used to determine a partial haul sample weight. Getting a tally sample weight is dependent on accounting for the weight of all the fish sorted. When sampling only for prohibited species, other bycatch is not also pulled out and weighed.

### Potential sample bias:

Sources of sample bias listed above for whole haul sampling also apply to partial haul sampling:

- grinders on net pumps,
- grids on deck hatches,
- dumping catches back to sea from the deck,
- presorting by crew,
- using live tanks which can't be sampled,
- running conveyor belts too fast and/or too deep

In addition, other sources of sample bias are:

- If there is a crewman pushing fish from the deck or live tank to your sampling point, there is potential bias.
- There are two conveyor belts emptying a live tank and a crew member is pushing fish to one belt or the other prior to your sampling point.
- Restricted openings exist which fish must funnel through prior to your sampling point. Commonly these are trawl alley or tank hatches.
- Incline conveyor belts prior to your sampling point will cause sample bias.

You may not be able to circumvent all sources of sample bias. You are expected to observe and document their existence, effects, and what corrective measures (if any) you were able to take.

**Partial haul sampling methods not to be used:** There have been other methods for deriving a partial haul sample weight used in the past which are *no longer acceptable*. Sometimes a difficult situation calls for creativity. If your solution doesn't clearly fit methods described in this manual, contact an Observer Program office for authorization.

For example, on some c/p vessels there may be two conveyor belts emptying fish out of one live tank. If you monitor one of the two belts until the tank was empty, you *cannot assume* you sampled one-half of the haul. The speed of the belt and the depth of fish on the belt are too variable to use this generality. Using the tally method would be more appropriate. There are also vessels that divide their catch among two or more bins. If the catch fills two bins of equal size and you sample an entire bin you cannot assume that you sampled one-half the haul. Calculating an actual bin volume is required. Another method which is not acceptable is timing either a crewman or a machine in an attempt to use fish processed per minute.

### Summary of Sample Types

Basket sampling is the most common means of sampling when the catch is diverse. When the catch is "pure" or predominately one species, the best choice may be to sample the whole haul to determine composition. If the composition is more diverse but there are few prohibited species, you can whole or partial haul sample for prohibited species and basket sample the rest of the catch.

For several fisheries, the sampling method is prescribed (See "Applying Sampling Methods in Specific Situations," below). In others it is up to you to decide which of the available methods provides the most accurate information in your particular situation. If you feel you must deviate from the methods described in this manual, contact an Observer Program office for consultation before acting. This consultation will ensure you are sampling within Program guidelines. Document your procedures fully.

## Sample Processing: Species Identification, Counts, and Weights

### Species Identification

All commercially important fish and crab must be identified to species. Please refer to the list of report groups for Bering Sea catch messages on page ?. In this list, all the allocated categories, (those other than NON), can be considered commercially important and should be identified to species with four exceptions from the "Other Fish" category. From the Other Fish category, only sharks, eulachon and capelin need to be identified to species. All prohibited fish and crabs must be identified to species. Observers should prioritize the correct identification of species of commercial interest, such as flatfish and rockfish, rather than spending time on fish such as eelpouts or sculpins.

To verify identifications, ***each observer is required to fill out species description forms*** for the first sighting during a contract of any fish, whether keyed out to species or just to family. There are separate forms for rockfish, flatfish and other, or miscellaneous species. These forms will be kept on file. ***For subsequent cruises, prior observers will only be required to fill out species i.d. forms for:***

- flatfish - descriptions may be brief if you already have a form on file for that species
- all rockfish species, for each contract worked and
- any species or family for which you do not have a form on file.

On species composition forms, do not use categories such as "flatfish unidentified" or "rockfish unidentified" unless the fish has been mangled to the point that that is all that *can* be determined. If you have been unable to identify, for example, two species of rockfish, keep the data for the two species separate by labeling them "rockfish A" and "rockfish B" and fill out a species description form in complete detail (and collect a specimen to bring back if possible). If you are able to determine their identity later (perhaps with a staff member's help during debriefing) then substitute the species name and code in place of "rockfish A" and "rockfish B" on your forms. If you do not get a positive i.d. on them later, then you must group them under "rockfish unidentified" and combine their numbers and weights.

Most of the species of the non-allocated report group (except for the prohibited species) have been listed simply by family in the Species Code List, Appendix B. Example families are: eelpouts, poachers, greenlings, lumpsuckers, pricklebacks and rattails. (Note: sculpins have been grouped into four genera. If you are not sure which genus a sculpin belongs to or you do not have time to key it out, then use the "sculpin - unident." code.)

If you **have** the interest or knowledge **and** the time, and you would like the information on these non-target fish listed by species in your data, fill out a species description form. When your identification is verified by a staff member, they will give you the appropriate species code.

### Processing your sample: counting and weighing

Once the sample has been taken, there are two ways to handle the weighing of the species groups. One method is to *sort the sample before weighing, then weigh* each species group, count the number of individuals making up each group, and total the weights of each group to obtain the total sample weight.

A second method may be more practical when one species is most prevalent in the sample. In this method, *the unsorted fish are weighed, then* you sort the sample by species. Count and weigh the bycatch species groups. The weight of the predominant species group can be obtained by subtracting the total weight of the bycatch species groups from the total sample weight. Divide the total predominant species weight by their average weight to obtain an estimate of their number.

With organisms such as brittle stars or jellyfish it might be easiest to weigh them all and use their average weight to estimate of their number. Try to sub-sample at least fifty organisms for average weight. For basket sampling remember:

- the weight of a species group may only be obtained by actually weighing or by subtraction of actually weighed fish.
- do not use halibut weight taken from the Length/Weight Table (unless the fish are longer than one meter), and
- a species weight may not be obtained using their average weight multiplied by their number.

## Applying Sampling Methods in Specific Situations

Now that you understand the basic sample types, you will need to understand how to apply them in the field. The following situations may help clarify the differences between the methods, and give you more information on special situations you may encounter.

In this section, you will learn how to incorporate multiple sample methods for a single haul, what to do when hauls are mixed on catcher/processors, and how to sample deliveries made to plants by catcher vessels and proportion the plant data to each haul. You will also learn specific sampling techniques for pollock fishery catcher vessels, flatfish or Pacific cod fisheries, and vessels participating in the Vessel Incentive Program (VIP).

### Three Sample Types (W, P, & B) In One Haul

Using all three sample types to sample one haul is more to keep track of than most observers want to tackle but this type of sampling is employed occasionally on catcher/processors targeting pollock. It may occur when, for instance, the observer starts to whole haul sample for all species and then discover there is too much bycatch to handle. (This observer would have to have measurable fish bins and have taken an initial depth reading.)

The observer stops sorting for all bycatch and takes a bin depth reading to determine the partial haul sample weight. The observer then decides to continue to sample the whole haul for only prohibited species. [The observer at this point *could* decide to just partial haul sample for all species and avoid the rest of this discussion!] When sampling is done, the observer may have some prohibited species which were found in the partial haul bin volume(s) and some which were found in the rest of the haul. From careful notes on the plastic sheet, the observer has to be able to tell these apart.

***Once the partial haul sample weight is calculated based on bin volume, the weight of whole haul sample species which were found in the partial haul sample will have to be subtracted from the partial haul sample weight.*** Of course, whole hauled species *numbers and weights* are all listed under "W" sample type and cannot be listed under partial haul sampling either. The weighed sample of the dominant species will be listed last, as a basket sample.

Be sure to record notes and your calculations on this type of sampling in your logbook as your debriefer will need to ask you questions to determine if you have done this type of sampling correctly. It can be seen that where whole haul sampling is requested for prohibited species, that utilizing three sample weights is not too difficult conceptually. It is just important to keep in mind:

- whole haul sampled species may not be included in the species list or in the sample weight of partial haul sampled species, and
- the weighed sample of the dominant species must be listed as a basket sample.

## Mixing of Hauls On Catcher/Processor Vessels

A special sampling problem exists when hauls are being mixed in the factory live tanks of catcher/processors or motherships. We would prefer that hauls not be mixed. The first course of action listed below involves the cooperation of vessel personnel in the prevention of haul mixing, and is preferred. However, if you find yourself in a situation where hauls are already mixed, you may resort to the second or third alternatives.

1. Is it feasible to keep the hauls separate? Look at the arrangement and capacities of the fish bins and consider the frequency and tonnage of the fish being delivered. Ask the captain if it is possible to keep the hauls separate. If several bins empty onto the conveyor belt from which you are sampling at one time, ask the factory manager if he could arrange for only one bin to be emptied at a time while you are sampling.

2. If the fish are thoroughly mixed before you start, take a larger sample (double the normal size if possible) from the combined hauls. Then divide the sample data proportionally by haul weight and enter the data as two separate samples. Adjust the species data as necessary to preserve their actual average weight. Haul by haul information is a convenient and necessary way of dividing up the data, but if the hauls are from the same area, vessel and time period, it is not critical that the fish are attributed to the exact haul they were caught in.

3. If you had already been sampling for awhile and a new catch is dumped on top of the one you were working on, finish your sample and attribute it all to the haul you started on.

### Sampling Catcher Vessel Plant Deliveries

The first time your catcher vessel delivers to a plant, make a point of meeting with the plant observer before sampling to have them show you around and familiarize you with the operation. Find out how you can leave messages for the plant observer. You will need to arrange for them to spell you when you need a break, get the sample data they collected for you, or send your catch messages to Seattle.

Plant observers need to keep informed as to which boats have observers and vessel delivery schedules so they can meet observers coming in. You must stay aboard or at least in close contact with your vessel until it is off-loaded to insure you don't miss any of the delivery sorting. Delivery schedules and locations can change with little notice when the pressure is on to get back to fishing. *If your boat delivers and is heading back out to*

*sea before you are done sampling, you have to get a plant observer to finish for you or stay with the catch until your sampling is completed.* It is a top priority for a plant observer to assist you with your sampling but if a plant observer is not available, you are ultimately responsible for sampling your vessel's catches. Stay with the catch you need to sample and notify your contractor of the situation.

Proportion the weight and number of prohibited species found in the delivery sampling to the respective tows based on relative catch weight as estimated at sea. For each prohibited species, add the proportioned numbers and weights from the delivery sorting to the data for those sorted out at sea for a total for each sample. See an example of proportioning below. It is a rare circumstance but if each catch is dumped into a separate RSW tank and there is no mixing, it may be evident which hauls the prohibited species came from at the plant.

If you did not basket sample all hauls at sea, due to weather or illness, sample the delivery for prohibited species as usual. Proportion the prohibited species data to all the hauls and simply discard prohibited species data for the hauls not sampled at sea. Remember, you cannot record composition sample data for some species and not others.

## Proportioning Plant Data

This is an example of proportioning the data collected at a plant to obtain OTC and prohibited species incidental catch data on a per-haul basis. This is the typical method used by observers on catcher-only vessels in pollock fisheries.

**Step 1: Basket sample each haul at sea for the composition of target and bycatch species.** Use this sample as a back-up prohibited species sample by noting which (if any) prohibited species occurred in the basket sample. Record numbers, weights, and appropriate biological data from any prohibited species sorted out of the catch at sea (see Fig. 3-4).

| | At-Sea Discards | Vessel Esimate of Total Catch |
|---|---|---|
| **Haul 1** | One 3.3 kg male chum salmon (not in sample) | 40 mt |
| **Haul 2** | 52.0 kg of jellyfish | 55 mt |
| **Haul 3** | 10 mt unsorted catch dumped at sea because tanks were full | 20 mt (before dumping) |

**Fig. 3-4.** Example At-Sea Discards per Tow

**Step 2: Sample for prohibited species at the plant.** Collect prohibited species by monitoring the sorting belt. Record delivery weights for *all* species other than prohibited ones. Convert weights in pounds to kilograms using 1 kg = 2.2046 lb.

In the example shown below ( Fig. 3-5), 20 chum salmon were subsampled. Scale samples were taken from the first ten chum salmon as these were the first ones of the cruise. The other ten were sampled for sex, weight and length data. On your plastic sheet you have them listed:

| Specimen No. | Sex | Length (*cm*) | Weight (*kg*) | |
|---|---|---|---|---|
| 1 | F | 62 | 3.3 | |
| 2 | M | 63 | 3.2 | |
| 3 | F | 59 | 2.8 | |
| 4 | F | 75 | 6.2 | |
| 5 | F | 57 | 2.4 | |
| 6 | M | 55 | 2.3 | |
| 7 | F | 62 | 3.5 | |
| 8 | F | 66 | 4.2 | Haul 1: 2 males 5.5 kg, 6 females 22.4 kg |
| 9 | M | 60 | 3.7 | |
| 10 | M | 63 | 3.7 | |
| | M | 71 | 5.0 | |
| | F | 53 | 2.2 | |
| | M | 75 | 6.2 | |
| | F | 66 | 3.9 | |
| | F | 57 | 2.6 | |
| | M | 69 | 4.7 | |
| | M | 57 | 2.4 | |
| | M | 58 | 2.4 | Haul 2: 7 males 24.4kg, 3 females 8.7 kg |
| | F | 64 | 3.5 | |
| | F | 66 | 5.7 | Haul 3: 2 females 9.2 kg |

**Fig. 3-5**. Example of Subsampling.

**Step 3: Proportion prohibited species found at the plant to the individual hauls.** The estimates used for proportioning can be observer estimates, vessel estimates, or band counts. To be consistent, use only one of these three types of estimates for hauls of a single trip. In the example below the ratios are from the skipper's estimates of delivered catch.

| | | |
|---|---|---|
| Haul 1: | 40 mt | For Haul 3: 20 mt was recorded in the log minus the 10 mt dumped at sea, unsorted. |
| Haul 2: | 55 mt | |
| Haul 3: | 10 mt | |
| total | 105 mt | |

The at-sea discards (salmon and jellyfish) from Hauls 1 and 2 were not subtracted from the total catch estimates used for the proportioning because they would not greatly affect the proportions. The codend dumping in Haul 3 was a large portion of the haul, so the estimated discard was subtracted . It is important that you note in your log whether the vessel's estimate does or does not include the tonnage discarded.

Use the relative catch weight to distribute the weight of delivered species to the hauls.

| Delivered Species | Totals | | Haul 1 (40/105 mt) | Haul 2 (55/105 mt) | Haul 3 (10/105 mt) |
|---|---|---|---|---|---|
| | No | Weights (kg) | | | |
| Pollock<br>Broken pollock | | 180627.32<br>163.51 | | | |
| Bycatch | | 542.60 | | | |
| " | | 86.50 | | | |
| " | | 54.60 | | | |
| " | | 114.80 | | | |
| Non prohib. totals | | 181589.33 | 69176.89 kg | 95118.22 kg | 17294.22 kg |
| Chum, subsample | 20 | | (8 fish) | (10 fish) | (2 fish) |
| Chum, remainder | 64 | 217.62 | 24 @ 81.61 kg | 34 @ 115.61 kg | 6 @ 20.40 kg |
| King salmon | 1 | 4.50 | | 1 @ 4.50 kg | |
| Halibut | 3 | 14.20 | 1 @ 3.60 kg | 2 @ 10.60 kg | |
| **Discard At Sea** | | | chum: 1 M @ 3.3 kg | jellyfish, 52.00 kg | 10000.00 kg |

**Fig. 3-6.** Example of Obtaining Relative Weight Catch

Numbers of fish are proportioned, rounded to whole numbers, and then individuals are assigned to hauls accordingly. Individuals must have the same assigned haul number for any other data taken such as length, viability, or specimen samples. When individuals are not weighed, as with the 64 chum salmon, weights are apportioned by multiplying the number by the average weight.

**Step 4: Complete Form 3US and calculate OTC.** Enter prohibited species data on Form 3US. For any prohibited species where some were sorted at sea and some were found at the plant, the data will have to be combined. For example Haul 1 this applies to male chum salmon.

For the OTC of each haul, add the proportioned, non-prohibited delivery weight, the prohibited species weight and the weight of any catch discarded at sea.

Haul 1: 69176.89 kg + 5.5 + 22.4 + 81.6 + 3.6 + 3.3 = 69293.3 kg or 69.29
Haul 2: 95118.22 kg + 24.4 + 8.7 + 115.61 + 4.5 + 10.6 + 52.0 = 95334.03 or 95.33 mt
Haul 3: 17294.22 kg + 9.2 + 20.40 + 10000 kg discard = 27323.82 kg or 27.32 mt

Haul 1 and 2 are whole haul samples for prohibited species, Haul 3 is a partial-haul because the fish dumped at sea were not sampled (sample weight is 10 mt less than OTC).

### Catcher Boat Sampling In Pollock Fisheries

Catcher boat observers should basket sample at sea for target and non-prohibited bycatch and then whole haul sample the delivery at the processing plant for prohibited species. Salmon bycatch is a very contentious issue in pollock fisheries and it is difficult to adequately sample only part of a delivery. Therefore vessel and plant observers must carefully coordinate their work to whole haul sample deliveries for prohibited species.

When basket sampling at sea, do not let the crew grab *any* fish prior to the point at which you take your sample. Then, your basket sample can be used as a back-up sample for prohibited species if something unexpected happens at the plant. Make a note of any prohibited species that occur in your basket samples to separate them (if necessary) from ones that may be pulled from the rest of the catch and sampled prior to discard at sea.

If part of the catch could be spilled into a checker bin or other measurable volume, a partial haul sample at sea might be possible. It is understood that the weather and sea conditions can make on-deck sampling miserable and dangerous at times. As possible then, keep your sample size high to

better represent the true composition of bycatch in the haul. These data are important for long term stock assessment analyses.

Typically, the crew will sort out the obvious prohibited species at sea and you will need to count, weigh, and measure them. You must work in a place where you can supervise their sorting to be confident that you have not missed any prohibited species being tossed out. If there was an unusually high incidental catch of a prohibited species being sorted at sea, you could just count them and then sample for and apply an average weight to estimate their total weight As the ship delivers its catch, it will be necessary to sort the off-load only for the prohibited species. Do not attempt to do your composition sampling at the plant.

Some Bering Sea catcher boats have sorting belts below deck and do a rough sort of their catch at sea. Whole haul sampling on catcher boats, even if only for prohibited species, is not thorough enough. Do not attempt to whole haul sample at sea. Sort the delivery at the processor. You will need the plant observer to help you.

Sometimes catcher boat skippers dump large amounts of catch at sea. If fish were in the net they must be recorded as catch. It is very important that you estimate the amount of catch discarded to the best of your ability. If part of a codend was dumped at sea, though the whole delivery was sampled, that haul will have to be listed as a partial haul sample for prohibited species. The partial haul sample weight would be based on the delivery weight. Note: this means none of the species in the catch were 100% retained. If this happens, refer to instructions for percent retained on page ?.

### Sampling Flatfish Or Pacific Cod Fisheries

Sampling flatfish or Pacific cod fisheries differs from the pollock fishery in these ways:

- the catch sizes tend to be smaller and can usually be landed and dumped all at one time.
- tows are more frequent; there may be five or more tows per day.
- the catch composition is usually diverse, and
- the bycatch of prohibited species is much higher than in pollock fisheries.

Due to the diversity of catch, basket sampling, at least for the target and non-prohibited bycatch species, is the logical choice of sampling method. Usually the only variation possible is whether or not you can increase your sample size for prohibited species. Whole or partial haul sampling for prohibited species is preferred in these fisheries but is not usually feasible.

Due to the circumstances listed above and sampling requirements, basket sampling *for all species* is the most common and an appropriate choice for sampling method. ***Basket sampling for all species is mandatory for Bering Sea flatfish fisheries*** (see "The Vessel Incentive Program (VIP)," below).

### The Vessel Incentive Program (VIP)

The Vessel Incentive Program was designed to encourage trawl vessels with high bycatch rates of 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 exceed the bycatch standards for the target fisheries in which they participate may be subject to penalties for not taking appropriate measures to reduce their individual bycatch rates. (Refer also to "Program to Reduce Prohibited Species Bycatch" on page ?.)

Occasionally a fishery will 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 are "dirty" (i.e., those with 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 dirty hauls. The VIP encourages skippers to use fishing strategies to reduce their bycatch such as, more selective gear, moving to another area, or not fishing at night.

Observer's catch message data is used to calculate the bycatch rates of halibut and red king crab by VIP target fisheries. The NMFS regional office in Juneau posts the rates for all trawl vessels on the fisheries Bulletin Board Service. The rates are posted by means of a personal identification number (PIN) which is used to protect the identity of the vessel. 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.

**The VIP and Observer Sampling:** A special rule was made for observer sampling on vessels targeting Bering Sea flatfish. If you are in the Bering Sea and yellowfin sole, rock sole and/or flatfish other than arrowtooth flounder or Greenland turbot appear to be the dominant species groups in your catch, ***you must basket sample for species composition of all species***.

In this fishery, no whole or partial haul sampling is allowed for any species. *It is important that you follow the Random Sample Table.* The Sampling Record in your logbook must be complete, including your reasons for skipping any haul. While we would like you to maximize your sample size, following the RST is more important. When sampling, watch for pre-sorting of the catch and document thoroughly in your logbook any intimidation or hindrance to your sampling.

Do not calculate prohibited species bycatch rates for vessel personnel. You are not provided with details regarding the computation of bycatch rates and a vessel operator might not be held responsible if you provide faulty information. The vessel operator 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, the bycatch rates, or how to calculate their own rates, do not advise them. Refer them to the contact numbers listed on page ? of the fishing regulations section for information.

FORM 3US--SPECIES COMPOSITION FOR TRAWLERS
Worksheet

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| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | Yellowfin | | | | | |
| Wt. of above: | 86.2 | | | | | |
| No. weighed: | 306 | | | | | |
| Avg. weight: | .2817 | | | | | |

Other calc.& comments: 3 halibut presorted from deck by crewman who "didn't know I was going to sample." - See daily log. Estimates: 90cm and 2@ 150cm Additional 15 minute sampling - found 3 more halibut for 7US

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 4011 | A110 | 97 | 09 | 01 | 48 |

ST = Sampling Type
B = basket
P = partial haul
W = whole haul

| Species name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Sample weight in kg. w/ decimal | % Retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 999 | X | 1017 | 330.63 | X | 290 |
| King crab | | 2 | B | 10 | 0 | 330.63 | |
| Herring | | 611 | | 1 | .3 | | |
| Bairdi Tanner crab | M | 4 | | 1 | .32 | | |
| Bairdi Tanner crab | F | 4 | | 6 | 1.89 | | |
| Halibut | | 101 | | 0 | 0 | | |
| Salmon | | 220 | | 0 | 0 | | |
| Yellowfin sole | | 140 | | 900 | 253.4 | | 100 |
| P. Cod | | 202 | | 6 | 8.6 | | 100 |
| Flathead sole | | 103 | | 15 | 13.36 | | 0 |
| Rock sole | | 104 | | 30 | 6.1 | | 90 |
| Alaska plaice | | 106 | | 4 | 2.4 | | 0 |
| Skate | | 90 | | 1 | 5.1 | | 0 |
| Sculpin | | 400 | | 3 | 2.0 | | 0 |
| Poacher | | 450 | | 3 | .5 | | 0 |
| Starfish | | 20 | | 9 | 1.9 | | 0 |
| Arrowtooth fl. | | 141 | | 4 | 5.8 | | 0 |
| Pollock | | 201 | | 33 | 28.95 | ↓ | 0 |
| Lyre crab | | 840 | B | 1 | .01 | 330.63 | 0 |

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**Fig. 3-7a.** Form 3US—Species Composition For Trawlers

FORM 3US–SPECIES COMPOSITION FOR TRAWLERS
Worksheet

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| | | | | | |
|---|---|---|---|---|---|
| Species: | YFS | Hbt | | | |
| Wt. of above: | 82.2 | 45.6 | 119.37 kg. | | 44.02 kg |
| No. weighed: | 305 | 12 + 1 | estimated 200 cm + 1 | measured @ 147 cm = 14 | |
| Avg. weight: | .2695 | | | | |

Other calc.& comments: Monitoring belt for prohibs & collecting & setting aside baskets of fish. Sorting baskets when belt is stopped. Sub-sampled bairdi for measuring

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 4011 | A110 | 97 | 09 | 01 | 49 |

ST = Sampling Type
B = basket
P = partial haul
W = whole haul

| Species name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Sample weight in kg. w/ decimal | % Retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 999 | X | 1739 | 650.43 | X | 278 |
| King Crab | | 2 | W | 0 | 0 | 175300 | |
| Herring | | 611 | | 0 | 0 | | |
| Tanner crab Unident | | 3 | | 562 | 89.5 | | |
| Bairdi | M | 4 | | 32 | 5.44 | | |
| Bairdi | F | 4 | | 59 | 8.70 | | |
| Opilio | M | 5 | | 3 | .43 | | |
| Opilio | F | 5 | | 1 | .17 | | |
| Halibut | | 101 | | 14 | 208.99 | | |
| Salmon | | 220 | W | 0 | 0 | 175300 | |
| Pollock | | 201 | B | 37 | 29.6 | 337.2 | 0 |
| Yellowfin | | 140 | | 994 | 267.9 | | 100 |
| Cod, Pacific | | 202 | | 8 | 15.3 | | 100 |
| Rock sole | | 104 | | 15 | 5.7 | | 78 |
| Flathead sole | | 103 | | 2 | 1.1 | | 0 |
| Arrowtooth | | 141 | | 3 | 5.2 | | 0 |
| Ak Plaice | | 106 | | 5 | 2.3 | | 0 |
| Skate | | 90 | | 1 | 8.3 | | 0 |
| Sunstar | | 24 | B | 3 | 1.8 | 337.2 | 0 |

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**Fig. 3-7b.** Form 3US

FORM 3US–SPECIES COMPOSITION FOR TRAWLERS

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Worksheet

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

Other calc.& comments: Switched to pollock fishing, non-pelagic (bottom) gear. Partial by Bin volume.

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 4011 | A110 | 97 | 09 | 01 | 50 |

ST = Sampling Type
B = basket
P = partial haul
W = whole haul

| Species name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Sample weight in kg. w/ decimal | % Retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 999 | X | 286 | 267.1 | X | 297 |
| King Crab | | 2 | P | 0 | 0 | 21709.2 | |
| Herring | | 611 | \| | 1 | .3 | \| | |
| Tanner Crab | | 3 | \| | 0 | 0 | \| | |
| Halibut | | 101 | \| | 0 | 0 | \| | |
| Chum Salmon | M | 221 | \| | 1 | 3.2 | \| | |
| Arrowtooth Flounder | | 141 | \| | 1 | 2.0 | \| | 0 |
| Flathead sole | | 103 | \| | 5 | 3.0 | \| | 0 |
| P. Cod | | 202 | \| | 4 | 6.2 | \| | 100 |
| Eelpout | | 250 | \| | 12 | 13.1 | \| | 0 |
| Shortsp. Thornyhead | | 350 | V | 6 | 6.1 | V | 100 |
| Yelloweye rockfish | | 322 | P | 1 | 4.6 | 21709.2 | 0 |
| Pollock | | 201 | B | 176 | 173.8 | 228.6 | 97 |
| Jellyfish | | 35 | B | 79 | 54.8 | 228.6 | 0 |

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**Fig. 3-7c.** Form 3US

FORM 3US--SPECIES COMPOSITION FOR TRAWLERS

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Worksheet

| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | Salmon shark | | | | | |
| Wt. of above: | Consensus | estimate | = 200lb | or | ~90.0 Kg | |
| No. weighed: | | | | | | |
| Avg. weight: | | | | | | |

Other calc.& comments: Herring & Tanner crab were partial haul sampled 'cause I wasn't sure I'd see them in the rest of the sorting. Partial by bin volume.

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 4011 | A110 | 97 | 09 | 01 | 51 |

ST = Sampling Type
B = basket
P = partial haul
W = whole haul

| Species name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | Sample weight in kg. w/ decimal | % Retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | X | 999 | X | 163 | 233.2 | X | 199 |
| Salmon shark | | 67 | W | 1 | 90.0 | 54408.0 | 0 |
| King crab | | 2 | W | 0 | 0 | — | |
| Halibut | | 101 | W | 0 | 0 | ↓ | |
| Salmon | | 220 | W | 0 | 0 | 54408.0 | |
| | | | | | | | |
| Herring | | 611 | P | 0 | 0 | 18922.5 | |
| Tanner crab | | 3 | P | 0 | 0 | ↓ | |
| P. Cod | | 202 | P | 11 | 30.0 | | 100 |
| Jellyfish | | 35 | P | 29 | 24.4 | ↓ | 0 |
| Flathead sole | | 103 | P | 4 | 1.5 | 18922.5 | 0 |
| | | | | | | | |
| Pollock | | 201 | B | 118 | 87.3 | 87.3 | 99 |

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**Fig. 3-7d.** Form 3US

## Form 3US Instructions — for Species Composition Data

***Instructions for each field of entry, from left to right:***

1. Enter the **date, and haul number**. (The cruise number and vessel code will normally be given to you during training or briefing.) Remember, the date of the sample should correspond to the information on Form 2US. The date should thus be the day the trawl began to be hauled in, which may not be the date you sampled it.

2. Group your species composition samples by the sample size and enter data from the **largest sample first**. Skip a line between sample types (see examples).

3. **List prohibited species first.** Usually these groups have the largest sample weight. Each of the five prohibited species groups must be represented on each form because it's necessary to have some indication of how much catch was monitored for each. The groups are: king crab, herring, Tanner crab, halibut, and salmon. If no individuals of a species group are observed, then enter the group name, species code (use codes 2, 611, 3, 101, 220), sample type, sample weight, 0 for the number, and 0 for the weight. (See Form 3US examples.)

4. List each **species** or species group **by their common name** and the corresponding code from the Species Code List on 4 - 1. Look up a species under its group name--rockfish, sculpin, sole, etc. Most fish, especially the commercially important species, should be identified to species, if possible. See also the section on Species Identification which precedes the Code List.

5. Each **species code may only be listed once** for each haul except those listed also by sex — salmon, king and Tanner crab. You cannot have two sample weights for any species.

6. **Tanner crab, king crab, or salmon** should be listed separately by species and by sex whenever possible. Once identified to species, determine the sex and **record an "M" or "F."** Leave the column for sex blank when it could not be determined or was not attempted. Do not sex halibut or herring even if they are dead. Do not enter data by sex for any other species.

7. **Sub-sampling:** If large quantities of a species group are seen, it is permissible to take a random subsample of the group and record the subsample by species (and crab or salmon by sex). Then, either count or weigh the rest of the group and apply an average weight (from your

subsample totals) to get the weight or number. ***Do not*** *extrapolate species composition from the subsample to the whole group.* Record the remaining ones as unidentified, such as, Tanner crab unidentified.

Make sure that no individual is recorded twice on the forms (none of the subsample should be reported in the larger group of unidentified individuals). See the Form 3US example for haul 49, Tanner crab, as an illustration of how to record the data in this type of a subsample situation.

8. For occurrences of **decomposed fish** (sp. code 899) and/or **miscellaneous** items (code 900) in your samples, record the total weight, not a weight by species or by item, and record the **number as "1"** because total numbers and thereby, average weights, are not needed.

   Decomposed or waste fish are those obviously in a state of decomposition as evidenced by a breakdown of skin and muscle. Decomposing fish must be distinguished from damaged but fresh fish. Damaged fish must be coded and listed along with undamaged fish of the same species. Miscellaneous items are garbage, debris, fishing gear, wood, seaweed and other such items that may occur in your samples. Decomposed fish and miscellaneous items are reported under the "non-allocated" category in catch messages.

9. Sometimes a vessel will accidentally pick up a **crab pot** that has been snagged by the fishing gear. This incident would be recorded as a gear performance code two on Form 2US (see instructions for the form). If the crab pot occurs in a sample, it would be a miscellaneous item (Code 900). **Do not count any crab** that may be in a crab pot as part of your sampling for the incidence of king and Tanner crab. The crab were caught by the pot, the pot was caught by the fishing gear. Note the incident in your logbook and include a description of the pot, any identifying numbers, and describe the contents.

10. **Occasionally a large item** like a 55 gallon drum or a large shark will be caught. If the large item is an organism, it must be included in both the Official Total Catch (OTC) and the composition data (3US). On Form 3US enter the code, number, and estimated weight of the organism as a whole haul sample—sample weight equal to OTC. If it's not an organism, its weight should either be included in both OTC and on Form 3US or in neither place. An entry of this type will not be used during the fishing season, so a large item may have a different sample weight than other bycatch (even in a Bering Sea flatfish fishery which has special rules). It is possible, in this case only, there may be two

sample weights for one species group. Also, it should not be included in catch message data unless all species are whole haul sampled.

11. **Indicate sampling type** or method for each species listed. For species that were whole-haul sampled, use "W"; for partial haul sampling, use "P"; for basket (or actually weighed) sampling data use "B."

12. **Species number and weight:** Every number must have a weight and every weight must have a number. All weights must have a well-defined decimal point and one or two places following the decimal. Even if you feel the weight cannot be accurately read to a tenth of a kilogram, it is required to enter at least a trailing zero after the decimal point. **Do not enter any weight to more than two decimal places.** If something weighs less than 0.01 kg, ignore it.

13. **Estimated weights** sometimes have to be recorded when large items such as a shark or a crab pot occur in the catch you're sorting. The estimation method should be explained at the top of the form. Estimated and actual weights may be added to obtain the total weight of a species in your sample, such as halibut. (Note: For halibut there is a length/weight relationship that can aid you in estimating the weight of large individuals, refer to the Appendix page ?. Length/weight relationships cannot be predicted for other species.)

14. **Sample weight** *is the amount of catch sorted through* from which the species listed were found. Enter the sample weight for each species, using a well-defined decimal point and one or two digits following the decimal. If you whole-haul sampled for the species composition, the rounded sample weight must match the official total catch weight on the Form 2US.

15. **Percent Retained** is a rough estimation of the round weight (before processing) of each species kept divided by the weight of that species caught in the sampled haul. Retention applies to organisms kept for any reason such as: consumption, processing, delivery, souvenirs, or home pack. *For halibut, salmon, herring, king or Tanner crab, leave this column blank.* For all other species in your sample, an entry is required. The methods for approximating these values are explained below. Express this estimate as a whole number, to the nearest whole percent. While one or more target species may be near or at 100, many species caught will all be discarded and their percent retained is zero. (~~The sum of the Percent Retained column should not add up to 100!~~)

16. **Complete the keypunch check (line 999 at the top of each form)** by adding all the figures in each of the Number, Species weight, and Percent Retained columns and entering the sum of each column on the top line. The sums serve a valuable role as a keypunch check and it's important that you double check your summations.

17. Record on the **worksheet, at the top of the form**, any raw data such as samples for average weight that might otherwise be lost because an extrapolated figure is entered on the keypunched portion of the form. Use the worksheet for:

_ average weight sample data and results to 3 or 4 decimal places.
_ numbers and weights of presorted fish (see also page ?)
_ estimation method of other organisms too large to weigh, see example 1.
_ total number tallied of a predominant species.

18. **Note in the comments** section anything unusual about the catch or sampling. If you changed your method or sample size, what caused this? If the composition changed because the vessel switched to a different fishery, make a note. Comment when there is no correlation of length data on Form 7US with the crab or halibut data on Form 3US.

## Estimating Percent Retained

The percent retained represents the round weight of a species kept on board divided by the weight of that species caught in a tow or set. Round weight refers to the weight of the whole fish before processing. Use the round weight of fish retained even if only part of the fish is utilized as product. Estimate the percentage retained for each species listed in your composition samples except prohibited species (even if prohibited species are retained).

Percent retained by species is often difficult to estimate because of the variability in discarding that occurs on vessels, and the many different places discard takes place. Recognizing these limitations, we want you to make an approximation based on what you see happening on your particular vessel. Because this is an approximation, corresponding time and effort given to obtaining it should be minimized and complex mathematical approaches to this task avoided.

When making an estimate of the percentage of fish being retained, avoid basing your estimate on relative *numbers* of fish. Remember that this figure is a percentage of *weight*. If small fish are being discarded and the larger ones retained, the weight percentage of retained fish is greater than their percentage by number.

Take all discard into consideration in estimating percent retained. If a trawler dumps a significant portion of any sampled haul back into the sea before sorting, then none of the species groups of that haul were 100 percent retained. For example, if 30 mt of an 80 mt net were dumped, then no more than 5/8ths or 63% of each species group should be reported as retained. If fish are falling off the belts in the factory beyond the observer sampling station and are later washed out of the vessel, these too should be considered as discard. To provide guidance, the following are acceptable methods to determine percent retained by species for the major gear types:

**Catcher/Processor Trawlers:** In most instances, this estimate will only be a visual approximation based on your best judgement and observations of what is going on in the factory. For this figure, it is acceptable to make your best guess. In some cases, however, the vessel may have sorting guidelines which are applied consistently such as a minimum size limit for pollock, for example. In these cases, it is acceptable to apply the rule to your composition sample, using sample data to estimate the percent retained.

In making your approximation on a catcher/processor, if any part of a fish is retained then the entire fish is counted as retained. A cursory look at factory production figures, followed up by further investigation, might make you aware that a particular species group is sometimes utilized when you thought it was always discarded.

If a c/p vessel puts up product but days later discards it overboard in favor of a more valuable product (high grading), it is not necessary to try to revise earlier figures for percent retained of the discarded product. Just make a note of it in your daily log.

**Catcher-only Trawlers**: Observers on catcher-only vessels must consider everything that is delivered to the processor as retained, regardless of whether the processor later discards it, or gives it back to the catcher to take back out to sea for discard. With that distinction, the methods are the same as a catcher-processor trawler.

# Catch Messages

### Priority and Description

For vessel observers, to send the fishing and catch information and a summary of your catch composition data to the Observer Program's Seattle office is the fourth priority for your work. It follows in priority to the collection of these data and the collection of specimens and information from any endangered species caught in the fishing gear. Transmit the fishing, catch, and composition information weekly or more often as required. If you are observing at a processing plant, this section does not apply to you. Refer to the instructions in the plant sampling section of this manual on page 7.6-1.

### Use of the data:

Catch message data is critical to the real-time estimation of the catch of groundfish and prohibited species during fishing seasons. Observer catch data is used to ensure that the catches remain within the quotas established by the NPFMC. Catch messages also allow the Observer Program to stay in touch with the status of each observer. It is critical that observer catch messages are sent on time. Late or incorrect messages could cause some fisheries to close early, or over fishing to occur.

**From this section, you should learn:**

- what information to send
- where and when to send messages
- what to do if you have a problem with catch message transmission
- how to complete Forms CMA and CMB
- how to format 'typed' catch messages
- how to make corrections to messages already sent.

## Entry and Transmission of Catch Messages

For vessel observers, a catch message contains fishing, catch, and your species composition sampling data. Catch messages are sent to the Observer Program office in Seattle by Standard A or Standard C satellite transmission or via regular telephone lines ashore. You may be:

- entering your data onto paper forms for fax transmission,
- typing the catch message data from the paper forms onto a computer terminal, or
- entering it into the Computerized Observer Message System (COMS) software.

The COMS software is being phased out in 1998 and being replaced with ATLAS.

ATLAS is a new data handling system in which you record your sampling data onto a thin plastic deck sheet and then type the raw information directly into an AtSea data transmission program which replaces the need for most of the paper forms. The ATLAS software mimics the paper forms and during training or briefing you will receive a packet of instructions and an orientation to this system.

For catch messages sent using a fax, the typed message format, or COMS you will need to transmit fishing and catch data from Form 1US (for longline or pot vessel observers) or Form 2US. Then Catch Message Form A (CMA) will summarize the species composition data for each sampled haul. Finally, Catch Message Form B (CMB) will provide data specifically on the samples for prohibited species. If you are aboard a trawler, you will include a marine mammal catch report on Form CMB. Instructions for the Forms CMA and CMB follow in this section.

*Catch messages are critical and must be sent on time.* If your catch messages are not being received, the Observer Program can suspend your observer certification. A vessel without certified observer coverage may not legally continue to fish. Do not start new samples or trips until the catch message has been sent. If you have no data for the week, the catch message is not ready, there is a difficulty in transmission, or other problem, call or send us a message informing us of your situation. ***We want to hear from you every week even if no fishing occurs.*** When asked to repeat a message, please do so immediately. In your logbook, record all your transmissions in the Communications Record and keep a copy of all messages received.

If there was no fishing and therefore you have no catch report for a week, type a text message or send us a fax. Your message should include: your

name, vessel name, and the week ending date; then a note such as, "Boarded vessel (month/day), still in port, no catch report this week." Alternatively, you could fax us your Catch Summary (Form 1US or 2US) with a line of entry accounting for each day.

### The Report Week

For Alaska waters, ***the report week is SUNDAY through SATURDAY***, ALT. Observers on catcher/processors, motherships and at plants must send us your data on the following Sunday or Monday. Observers on catcher-only vessels are to send their messages after each delivery. However, when trips are short (1 to 2 days) consolidate transmissions to two per week. Catcher-only vessel data may lag one trip (or at the most, one week) behind. Catcher boat observers transmit their messages from the processor delivered to. If your catcher-only trawler, longliner or pot vessel will be making longer trips of 10 to 12 days, call or send us a message to let us know when to expect your catch report message.

***Send catch messages to: North Pacific Groundfish Observer Program, Seattle***

- E-mail for Satelite Standard C: ATLAS.mail@NOAA.gov
- Satelite Standard C: country code 582, mobile no. 430349910
- Satelite Standard A for COMS: (206) 526 - 6301
- Satelite Standard A for ATLAS: (206) 526 - 4203
- Fax: (206) 526-4066 or 526-4207, backup: 526-6723 and 526-4004
- Phone for communications questions: (206) 526-4240, Glenn A. Campbell.
- During working hours, program staff members will accept collect calls.
- After-hours, voice mail is available at (206) 526-4205. Leave a message even if only to tell us you are trying to reach us. The voice mail message tells the operator that you can leave collect calls.

### The utilization of vessel computers by observers

Observers have been utilizing vessel computer resources for several years to send condensed catch messages. With the implementation of the ATLAS program, observers will be utilizing these computer resources more than in the past and we are expecting that vessels will cooperate and provide ready access.

NMFS regulated the industry in 1996 requiring minimum computer resources on processing vessels for use by the observer. The required computer was intended for the use by observers for their data entry and transmission purposes. This does not preclude the vessel from also using the computer for their own purposes. However, for you to succeed in your job, we are expecting that the computer will be reasonably available to you throughout the day to enter and transmit the data.

Should you encounter problems getting access to the computer for your data entry, please contact the Observer Program as soon as possible and

we will work with the company to solve the problem. Please document these problems in your logbook.

### If satellite communications are not functioning

If you are aboard a catcher/processor or mothership which does not have functional satellite communications, please contact an Observer Program office via radiotelephone and report the following:

1. Your name
2. Vessel name
3. ORC code
4. Nature of the communications problem

As it is impractical to send the entire catch message by voice communications, we are only requesting the information listed above. If you have only been able to contact the Observer Program via radiotelephone, it is imperative that you send your entire catch message as soon as you arrive on shore.

Atmospheric conditions will often interfere Single Side Band (SSB) communications in the daytime. In daytime hours, if your vessel is close enough to Dutch Harbor or Kodiak to use VHF, it may be easier to contact one of our field offices in those ports. If you are too far out to sea to use VHF, you may be able to get a SSB call through at night to a marine operator to contact the Observer Program's Seattle office. After working hours you will be leaving your message on voice mail. The ship is required to pay for the call if it is only possible to get a call through at night. Not reporting or waiting until you return to port is not an option.

You must remember that all radiotelephone conversations are *public;* anyone can listen in. Discussing personal or sensitive information is inappropriate. For information on the use of radiotelephones, refer to Appendix P Radio Communications.

### *Fax transmissions*

When preparing a message for fax transmission, your message must be written in larger than normal, block printing. Your letters and numbers must be written in **black,** crisp lines. For text messages or questions sent via fax, use unlined, white paper.

If your fax messages are not getting through to our office, try sending your messages to the other numbers listed above and in the appendix; four fax lines are available. If the fax machine indicates your transmission is not being received, send a question to us through the vessel's company office. We will attempt to solve the problem from our end. If vessel personnel

can send messages to their office, they should be able to send your messages directly to our offices as well. Catch message data is ***not*** to be routed through the company office. Call or transmit a message to Observer Program offices in Seattle, Kodiak, or Dutch Harbor if you are having difficulties.

### Questions and Corrections

You can ask questions or send information relating to your work at any time. Questions about your work or responsibilities and information about transmission problems are commonly received by the Seattle office. Text messages should be written carefully—be clear, concise, and professional. If you have questions about sampling, include parameters such as target species, average catch weight, composition, and your method for determining OTC to help us understand your situation. Realize that you may not receive an answer for several days even though answering your questions is a top priority for us. We commonly have 100 or more observers at sea at any one time. It takes time for messages to be received and for replies to be formulated and sent. If vessel personnel want to find out how much quota is remaining or when a fishery is going to close, we cannot answer those questions. Vessel personnel should call the Alaska Regional Office (907-586-7229).

If you have a correction to data you have already sent, make the correction and resend the catch message. If you are faxing your catch message, circle "Resubmission of Message" at the top of the Form CMA and circle the correction. For corrections to catch messages in the typed message format or when using a data entry program, you also make the correction and resend the message. Indicate what has changed with a text message.

Pertinent information may include:

- Your name and Vessel name
- Correction for Week Ending Date (month, day)
- Haul or Set number:
- Original entry:
- Corrected entry:

Cruise # 4011 Vessel code A110 Vessel Name Sea Peace CMA - SPECIES COMPOSITION Page 5 of _____ for vessel

(Weekly Message) or Resubmission of Message

Observer Name Jane Observer Page 2 of 4 for transmission Fax /Telex # 482-9356

| GROUP ABBREVIATIONS | | Prohib | Yell | Cod | Flat | Bsole | OFlat | Oth | Non | Arrow | Poll | Orock | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES GROUP CODES | | 900 | 127 | 110 | 122 | 123 | 120 | 100 | 999 | 121 | 270 | 139 | | | | |
| HAUL NUMBER | TOTAL SAMPLE WEIGHT IN KG | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE |
| 48 | 330.63 | 2.51 | 253.4 | 8.6 | 13.36 | 6.1 | 2.4 | 7.1 | 2.41 | 5.8 | 28.95 | 0 | | | | |
| 48 | % of group retained | 0 | 100 | 100 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 49 | 337.2 | 0 | 267.9 | 15.3 | 1.1 | 5.7 | 2.3 | 8.3 | 1.8 | 5.2 | 29.6 | 0 | | | | |
| 49 | % of group retained | 0 | 100 | 100 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 50 | 21709.2 | 3.5 | 0 | 6.2 | 3.0 | 0 | 0 | 0 | 5207.57 | 2.0 | 16476.23 | 10.7 | | | | |
| 50 | % of group retained | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 97 | 57 | | | | |
| 51 | 18922.5 | 0 | 0 | 30.0 | 1.5 | 0 | 0 | 0 | 24.4 | 0 | 18866.6 | 0 | | | | |
| 51 | % of group retained | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | 0 | | | | |

**Two Sets of Calculations For Haul 50**

**Weight of Dominant (Target) Report Group:**

Sample wt. - wt. of bycatch = wt. of dominant species.
21709.2 kg - 38.5 kg bycatch = 21670.7 kg pollock & jellyfish

173.8 kg pollock ÷ 228.6 kg basket sample = .7603 or 76% pollock.
Pollock made up 76% of the basket sample weight and jellyfish was about 24%.

21670.7 kg x .7603 = 16476.23 kg pollock in sample weight
21670.7 kg x .2397 = 5194.47 kg jellyfish in sample weight.

**% Retained for Other rockfish report group:**

Thornyheads were all retained 6.1 kg x 1.00 = 6.1 kg
Yelloweye were all discarded 4.6 kg x 0 = 0 kg retained

weight retained, 6.1 kg / (6.1kg + 4.6 kg) = 57 % retained for "orock" group.

**Fig. 3-8.** Example of CMA - Species Composition Form

## Form CMA Instructions

For each haul sampled, enter the information from Form 3US on two lines of Form CMA according to the following instructions. *Do not make an entry line for hauls or sets not sampled for composition.*

1. **Page Numbering:** Use the blanks "Page ____ of ____ for vessel" in the upper right corner to consecutively number the combined Forms CMA *and* CMB for a vessel. The Form CMAs and CMBs should be compiled in the same sequence in which the forms were transmitted. The Forms CMA and CMB are two parts of a whole unit of catch message forms for the boat so their page numbering is combined.

   If you are faxing your catch message: On the second heading line, in the "Page ____ of ___ for the Transmission," enter the total number of pages that you are transmitting, including the haul or set forms, so we can verify that we've received all of your pages.

2. **Fax/telex number:** Write the fax number of your vessel so we can contact you with questions, if necessary. If you are on a catcher-only vessel, enter the fax number of the plant where you can be reached. A telex number is no longer relevant.

3. **Circle "Weekly Message."** For various reasons, you may be sent a message from the Observer Program office in Seattle asking you to resend catch message forms. If you are re-sending the same message or sending a correction, circle "Resubmission of Message." If you are making a correction, circle the correction on the paper form. If you are transmitting your catch message via the typed message format, COMS or ATLAS, also send a text message identifying what is changed.

4. **Report group abbreviations and codes:** Categorize each species you have recorded on Form 3US into a regional report group. There are two lists of catch message report groups and their corresponding codes following these form instructions. One list is for catch species of the Bering Sea and the other is for the Gulf of Alaska. If you sample catches from both regions in one report week, separate your data into two sets of catch message forms, by region. If your vessel is fishing in the Aleutian Island chain east of 170° W longitude, you may need to plot your vessel's retrieval positions on the map in **fig. 3-14** to determine in which region your hauls or sets were made.

   *Write the report group abbreviations and codes* across the tops of the columns. For subsequent samples, additional report groups may need

to be added. Be sure to go back and "zero fill" as necessary, refer to item 7 below. *For each set of forms for a week (or trip), all pages of CMA must have the same report groups, in the same order.*

5. **Haul or Set number:** For each haul or set sampled, enter the haul or set number on two lines in the first column. No lines of entry are needed for hauls or sets not sampled. Days of no fishing or sampling are accounted for on the Forms 1US or 2US.

6. **Sample weight:** Enter the sample weight of your species composition sample (in kilograms) from Form 3US. If you have two or more sample types, enter the weight sampled *for bycatch.*

7. **Kg. in sample:** Enter the weight or sum of weights for each report group (in kilograms) from the sample data on Form 3US. *If some or all of the prohibited species groups were sampled from a larger sample weight than the non-prohibited bycatch, weights of those species are not entered on Form CMA, but are entered on Form CMB instead.*

   If no members of a particular report group were seen, you must enter a zero in that column ("zero fill"). (See Form CMA example.)

   If you have whole or partial haul sampled for bycatch, the weight of the target or dominant species will have to be obtained by subtraction. See Form CMA example, haul 51.

   | Sample weight - weight of bycatch = weight of dominant species. |
   |---|

   If there are two dominant species in a whole or partial haul sample (e.g., see Haul 50, on Form CMA) the weight of the dominant species, obtained as shown above, has to be proportioned. Proportion the weight of the dominant species based on their relative weight in the basket sample (on Form 3US) to obtain a weight for each.

8. **Check your entries:** Add the report group weights across the line. The sum of these weights must equal the species composition sample weight for bycatch exactly.

9. **Percent of group retained:** For each sampled haul or set, on the second line enter the haul number again in the first column. Then enter the percentage by weight of each species or species group retained. For an explanation of what is the percent retained and how to estimate it, refer to page 3-38. Report groups consisting of a single species will have the same percent retained as recorded on Form 3US.

For report groups with multiple species, you will have to calculate a new estimate of percent retained as follows:

Report group consists of species *A* and *B*.
Species *A* weight in sample x percent retained = weight retained for species *A*
Species *B* weight in sample x percent retained = weight retained for species *B*

$$\frac{\text{Weight retained for species } A + B}{\text{Weight in sample for species } A + B} = \text{percent retained for report group}$$

List the percentage as a whole number. A value of 100 indicates that all of the fish from that species group were retained from that haul. A value of 0 indicates that the entire species group was discarded. If there is no entry for a report group for a sample, enter a zero in the percentage retained line as well (zero fill). For the prohibited species report group, always enter zero for percent retained on Form CMA even if your vessel is a longliner retaining halibut. Initial instructions for percent retained are in manual Section 3, page 3-38 for trawl vessels and in Section 5 page 31 for longline and pot vessel observers.

## Catch Message Forms—When to Start A New Set

For each vessel you sample aboard, compile and number all Forms CMA and CMB together in the order in which they are sent. For transmission, catcher/processor and mothership observers start each week's data (Sunday - Saturday) on a new set of these forms. Catcher vessel observers start new pages of Forms CMA and CMB for each fishing trip. Even if a fishing trip starts in one report week and ends in the next (goes past midnight, Saturday), report the hauls for that trip together in one catch report, on one pair of forms.

Start a new set of Forms CMA and CMB if one of the following changes:

- the **year**, or the **vessel** you're assigned to
- **report week** - (Sunday through Saturday, ALT) except catcher boat observers who report by trip.
- **region** - Bering Sea and Aleutian Islands, Gulf of Alaska, or Washington and Oregon Coast
- **vessel type** - as when a catcher/processor acts as a mothership or vice versa. (On Form 2US only the Vessel type code would change but separate sets of catch message forms would be needed for the sample data of each Vessel type.)

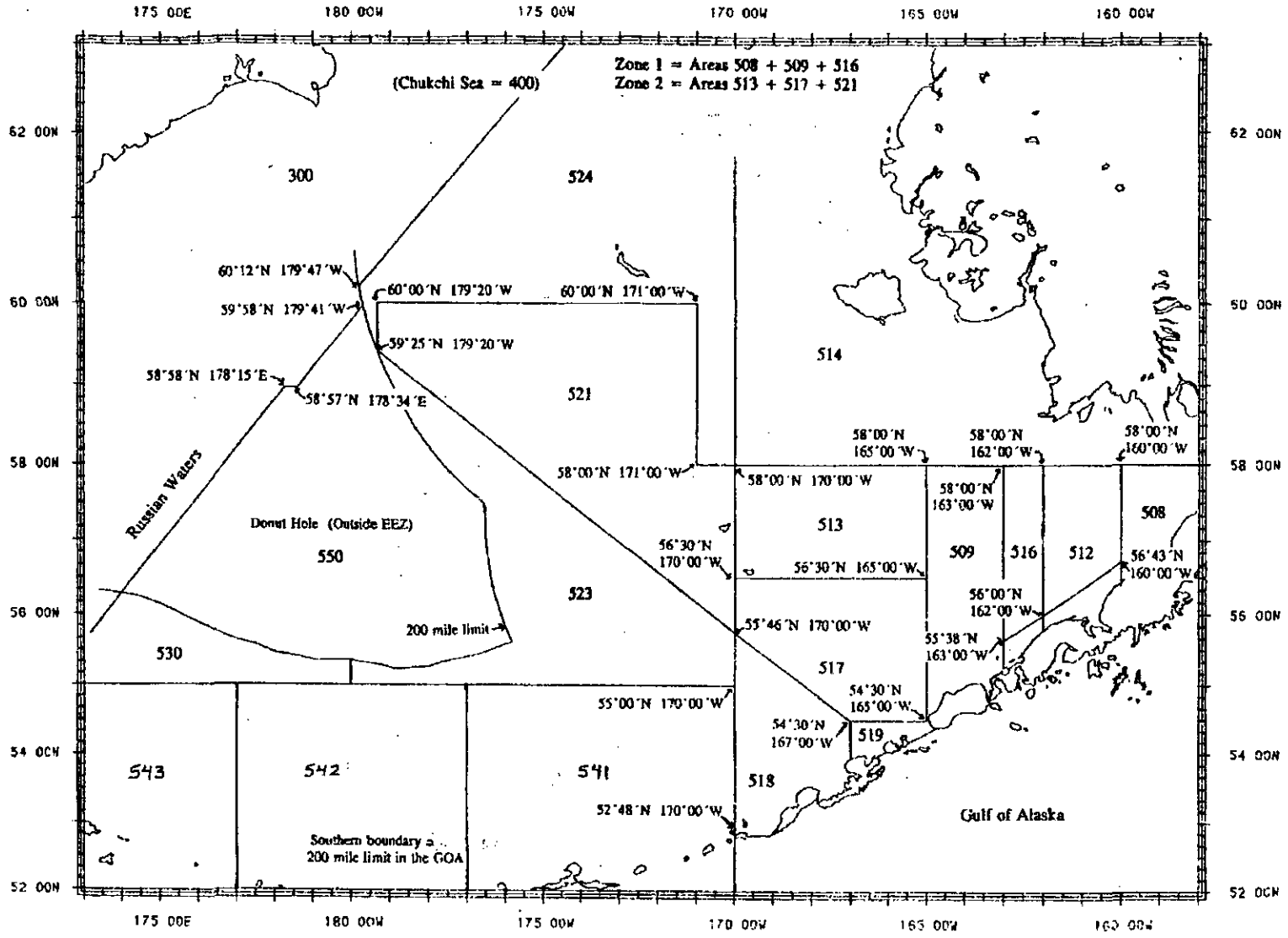



**Fig. 3-9.** Regulatory and Reporting Areas of the Bering Sea

## BERING SEA REPORT GROUPS AND CODES

| Report Group | Species Group | Abbreviation | Code |
|---|---|---|---|
| Squid | Squid | squ | 875 |
| Yellowfin sole | Yellowfin sole | yell | 127 |
| Rock sole | Rock sole | rsole | 123 |
| Flathead sole | Flathead sole | flat | 122 |
| Greenland turbot | Greenland turbot | turb | 134 |
| Arrowtooth flounder | Arrowtooth flounder<br>Kamchatka flounder | arrow | 121 |
| Other flatfish (except halibut) | Other flatfish | oflat | 120 |
| Pollock | Pollock | poll | 270 |
| Pacific cod | Pacific cod | cod | 110 |
| Sablefish | Sablefish | sab | 710 |
| Atka mackerel | Atka mackerel | atka | 193 |
| Pacific ocean perch | POP | pop | 141 |
| Deepwater rockfish | Shortraker rockfish<br>Rougheye rockfish | deep rf | 171 |
| Northern-sharpchin | Northern rockfish<br>Sharpchin rockfish | no chin | 172 |
| Other rockfish | All other rockfish<br>(*Sebastes* and *Sebastolobus* spp.) | orock | 139 |
| Other fish | *Sharks, skates, sculpins, eulachon, smelts, capelin and octopus *only* | oth | 100 |
| Non-allocated * | All remaining fish spp.<br>Invertebrates (except squid and octopus)<br>Miscellaneous items | non | 999 |
| Prohibited species | Prohibited spp. | prohib | 900 |

* The reporting requirement for the ship's and plant's logbooks is different than for the observer's weekly messages. For example, vessels and plants are required to report each of the species groups of "Other fish" (sharks, skates, etc.) separately. Vessels and plants are not required to log any species in the observer's non-allocated category. Refer to the instructions for the vessel logs for their reporting require-

**Fig. 3-10.** Bering Sea Report Groups and Codes

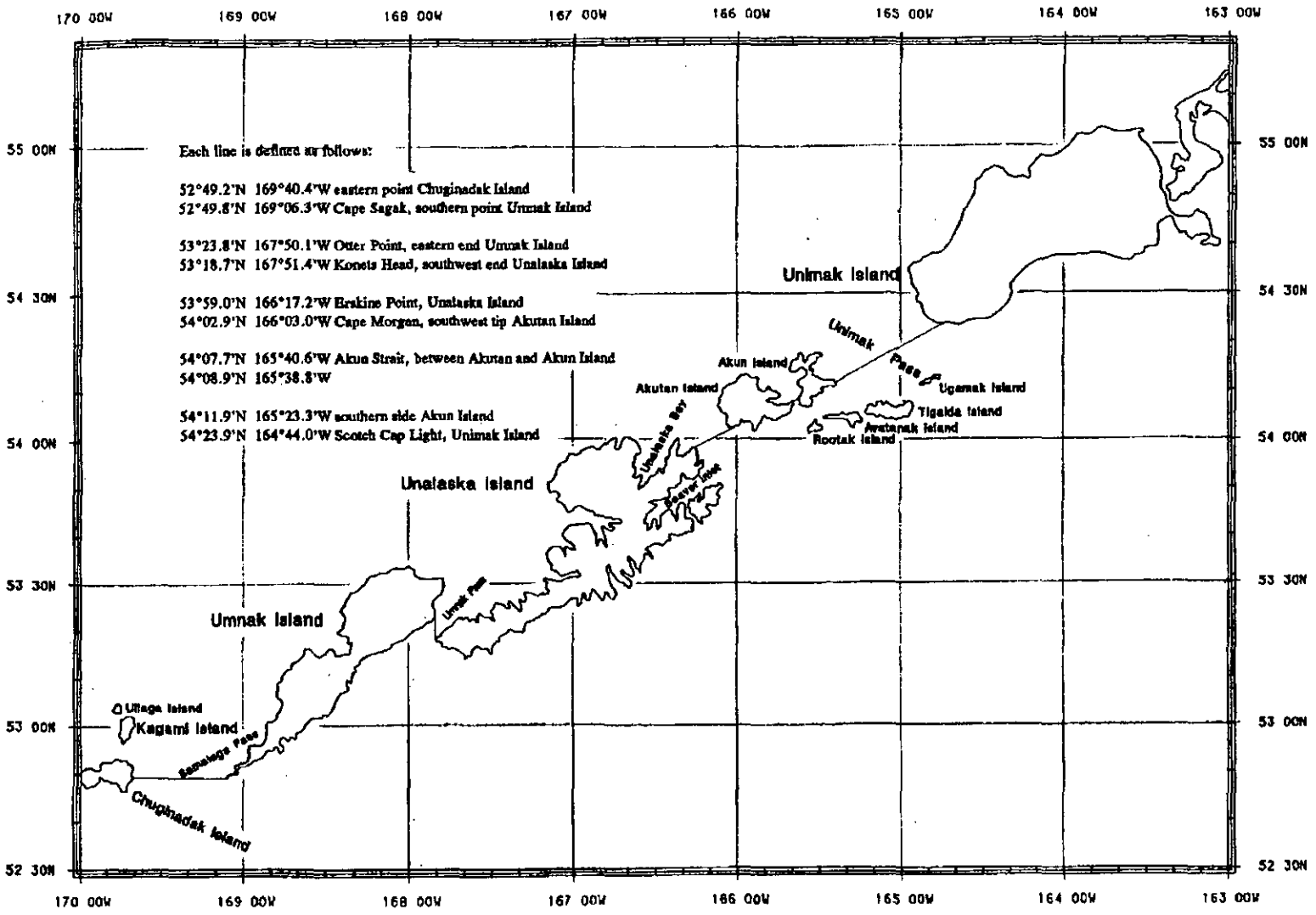



**Fig. 3-11.** Boundary between Bering Sea and Gulf of Alaska.

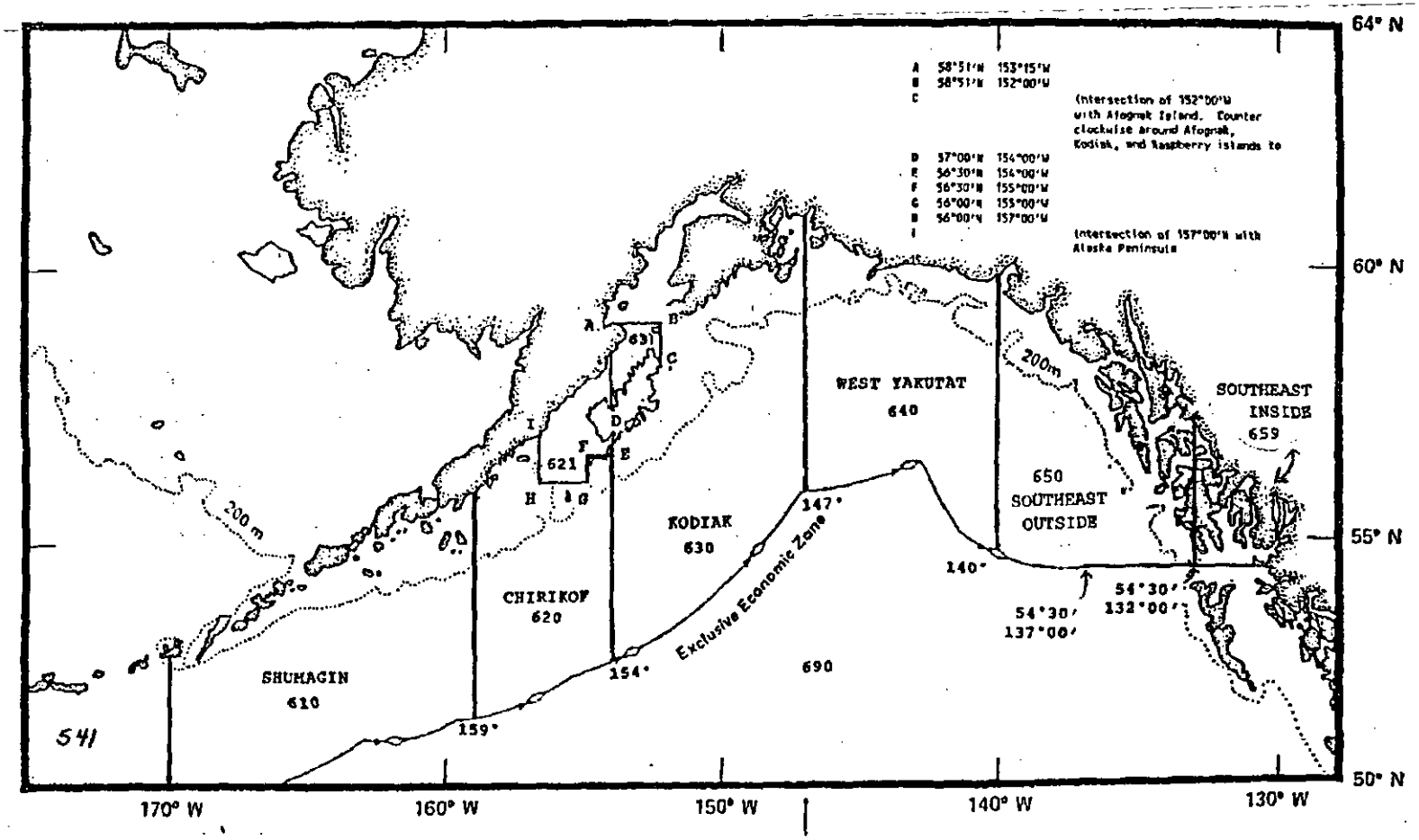



**Fig. 3-12.** Regulatory and Reporting Areas of the Gulf of Alaska

## Gulf of Alaska Report Groups and Codes

| Report Group | Species Group | Abbreviation | Code |
|---|---|---|---|
| Rex sole | Rex sole | rexs | 125 |
| Deep-water flatfish | Dover sole | dflt | 118 |
| | *Greenland Turbot* | | |
| Flathead sole | Flathead sole | flat | 122 |
| *Arrowtooth flounder* | *Arrowtooth flounder* | *arrow* | 121 |
| Shallow-water flatfish | Rock sole | sflt | 119 |
| | *Yellowfin sole* | | |
| | Butter sole | | |
| | Starry flounder | | |
| | All other flatfish (except halibut) | | |
| Pollock | Pollock | poll | 270 |
| Pacific cod | Pacific cod | cod | 110 |
| Sablefish | Sablefish | sab | 710 |
| Atka mackerel | Atka mackerel | atka | 193 |
| POP | Pacific ocean perch (*Sebastes alutus*) | pop | 141 |
| Deep-water rockfish | Rougheye rockfish (*S. aleutianus*) | deep rf | 171 |
| | Shortraker rockfish (*S. borealis*) | | |
| Northern rockfish | Northern rockfish (*S. polyspinus*) | nork | 136 |
| Sharpchin rockfish | Sharpchin rockfish (*S. zacentrus*) | chin | 166 |
| Red banded rockfish | Redbanded rockfish (*S. babcocki*) | rbnd | 153 |
| Thornyhead rockfish | Longspine thornyhead (*Sebastolobus altivelis*) | thrn | 143 |
| | Shortspine thornyhead (*Sebastolobus alascanus*) | | |
| Slope rockfish | Aurora rockfish (*Sebastes aurora*) | slprf | 144 |
| | Blackgill rockfish (*S. melanostomus*) | | |
| | Chilipepper rockfish (*S. goodei*) | | |
| | Darkblotched rockfish (*S. crameri*) | | |
| | Greenstriped rockfish (*S. elongatus*) | | |
| | Harlequin rockfish (*S. variegatus*) | | |
| | Pygmy rockfish (*S. wilsoni*) | | |
| | Bocaccio (*S. paucispinus*) | | |
| | Shortbelly rockfish (*S. jordani*) | | |
| | Splitnose rockfish (*S. diploproa*) | | |
| | Stripetail rockfish (*S. saxicola*) | | |
| | Vermilion rockfish (*S. miniatus*) | | |
| | Yellowmouth rockfish (*S. reedi*) | | |
| | Redstripe rockfish (*S. proriger*) | | |
| | Silvergray rockfish (*S. brevispinus*) | | |

**Fig. 3-13.** Gulf of Alaska Report Groups and Codes

## Gulf of Alaska Report Groups and Codes, continued

| Report Group | Species Group | Abbreviation | Code |
|---|---|---|---|
| Demersal shelf rockfish | Canary rockfish (*S. pinniger*)<br>China rockfish (*S. nebulosus*)<br>Copper rockfish (*S. caurinus*)<br>Quillback rockfish (*S. maliger*)<br>Rosethorn rockfish (*S. helvomaculatus*)<br>Tiger rockfish (*S. nigrochinctus*)<br>Yelloweye rockfish (*S. ruberrimus*) | demrf | 168 |
| Pelagic shelf rockfish | Black rockfish (*Sebastes melanops*)<br>Blue rockfish (*S. mystinus*)<br>Dusky rockfish (*S. ciliatus*)<br>Widow rockfish (*S. entomelas*)<br>Yellowtail rockfish (*S. flavidus*) | pelrf | 169 |
| Other fish | *Sharks, skates, sculpins, eulachon, smelts, capelin, octopus and squid. | oth | 100 |
| Prohibited species * | Prohibited spp. | prohib | 900 |
| Non-allocated * | All remaining fish spp., (except squid and octopus), Miscellaneous items | non | 999 |

* The reporting requirement for the ship's and plant's logbooks is different than for the observer's weekly messages. For example, vessels and plants are required to report each of the species groups of "Other fish" (sharks, skates, etc.) separately. Vessels and plants are not required to log any species in the observer's non-allocated category. Refer to the instructions for the vessel logs for their reporting requirements.

**Fig. 3-13.** Gulf of Alaska Report Groups and Codes continued

Cruise # 4011 Vessel code AIIO Vessel Name Sea Peace CMB - PROHIBITED SPECIES Page 6 of _____ for vessel

Observer Name _____ Page 3 of 4 for transmission (Weekly Message) or Resubmission of Message

| HAUL NUMBER | SAMPLE WEIGHT IN MT | RED KING CRAB NUMBER | RED KING CRAB WEIGHT KG | OTHER KING CRAB NUMBER | OTHER KING CRAB WEIGHT KG | SAMPLE WEIGHT IN MT | HERRING WEIGHT KG | SAMPLE WEIGHT IN MT | BAIRDI TANNER NUMBER | BAIRDI TANNER WEIGHT KG | OTHER TANNER NUMBER | OTHER TANNER WEIGHT KG | SAMPLE WEIGHT IN MT | PACIFIC HALIBUT NUMBER | PACIFIC HALIBUT WEIGHT KG | SAMPLE WEIGHT IN MT | CHINOOK SALMON NUMBER | CHINOOK SALMON WEIGHT KG | OTHER SALMON NUMBER | OTHER SALMON WEIGHT KG | Marine Mammals code | Marine Mammals # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | .331 | 0 | 0 | 0 | 0 | .331 | .3 | .331 | 7 | 2.21 | 0 | 0 | .331 | 0 | 0 | .331 | 0 | 0 | 0 | 0 | NU | |
| 49 | 17.530 | ↓ | ↓ | ↓ | ↓ | 17.530 | 0 | 17.530 | 629 | 100.0 | 28 | 4.24 | 17.530 | 14 | 208.79 | 17.530 | 0 | 0 | 0 | 0 | EJ | 1 |
| 50 | 21.709 | ↓ | ↓ | ↓ | ↓ | 21.709 | .3 | 21.709 | 0 | 0 | 0 | 0 | 21.709 | 0 | 0 | 21.709 | 0 | 0 | 1 | 3.2 | NU | |
| 51 | 54.408 | 0 | 0 | 0 | 0 | 18.923 | 0 | 18.923 | 0 | 0 | 0 | 0 | 54.408 | 0 | 0 | 54.408 | 0 | 0 | 0 | 0 | NU | |

An excerpt from the observer logbook. (Refer to the example 3US data form for haul 49 in manual section 3.):

ADDITIONAL CALCULATIONS

VESSEL/PLANT NAME Sea Peace

Haul 49 Crab Extrapolations:

**Bairdi Wt.:** 5.44 kg males + 8.7 kg females = 14.14 kg bairdi + 0.6 kg opilio = 14.74 kg total subsample wt.
14.14 kg bairdi + 14.74 kg subsample x 89.5 kg unident. = 85.8568 kg bairdi + 14.14 kg subsample = 100.00 kg. est. bairdi in haul

**Bairdi No.:** 32 males + 59 females = 91 Bairdi + 4 Opilio = 95 tanner crab in subsample.
91 bairdi ÷ 95 in subsample x 562 unident. tanners = 538.34 bairdi + 91 bairdi in subsample = 629 est. bairdi in haul

**Other tanner Wt.:** 0.6 kg opilio + 14.74 kg subsample x 89.5 kg unident. = 3.6431 kg opilio + 0.6 kg in subsample = 4.24 kg estimated opilio in haul
**Other tanner No.:** 4 Opilio ÷ 95 in subsample x 562 unident = 23.66 opilio + 4 in subsample = 28 estimated opilio in haul.

**Math Check →** **For Weight:**
*100.00 kg Bairdi + 4.24 kg Others = 104.24 kg tanner in haul.*
**What is the total wt. of tanner crab on Form 3US?**
(0.43 + 0.17 + 5.44 + 8.7 + 89.5 kg = 104.24 kg✓)

**For Number:**
629 Bairdi
+28 Other
657 Tanner in haul

**What is the total number of Tanner crab for haul 49 on 3US?**
(3 + 1 + 32 + 59 + 562 = 657✓)

**Fig. 3-14.** Example of CMB - Prohibited Species form

## CMB Form Instructions

The following instructions pertain only to your sample data for prohibited species (king crab, herring, Tanner crab, halibut, and salmon) from Form 3US (all vessels) and any freshly dead or "lethally removed" marine mammals landed *on trawlers*. Entry of data on Form CMB for Prohibited Species will be made for every haul or set you sample for fish, **even if no prohibited species are found in your samples**.

1. **Heading:** Enter the Cruise number, Vessel code, and the name of your vessel in the appropriate blanks.

2. **"Page ____ of ____ for vessel"** is a consecutive numbering of all Forms CMA and CMB together for that boat, in the same sequence in which the forms were transmitted, all weeks combined. Do not number Form CMAs separately from Form CMBs. The total number of forms for the vessel is the total of all Forms CMA and CMB together.

3. **In "Page ____ of ___ for the Transmission"** continue your entry of the number of pages that you have for that transmission, starting with the haul or set forms. This will allow us to be sure that we have received all the pages you intended to send.

4. **Circle "Weekly Message."** For various reasons, you may be sent a message from the Observer Program office in Seattle asking you to resend catch message forms. If you are re-sending the same message or sending a correction, circle "Resubmission of Message." If you are making a correction, circle the correction on the paper form. If you are transmitting your catch message via the typed message format, COMS or ATLAS, also send a text message identifying what is changed.

5. **Haul or Set number:** Just as on the CMA form, entries are made only for each **sampled** haul or set. For each haul sampled, enter the haul (or set) number in the first column.

7. **Sample weights:** Convert the sample weight for each prohibited species report group on Form 3US from kilograms to metric tons. Record it to three decimal places (i.e., to the nearest .001 mt). Use the following report groups:

| Report Group | Species Included |
|---|---|
| Red King Crab | Red King Crab |
| Other King Crab | Blue, Golden & Couesi King Crab |
| Herring | Pacific Herring |
| Bairdi Tanner | Bairdi Tanner Crab |
| Other Tanner | Opilio, Hybrid, Angulatus, & Tanneri Tanner Crab |

| Report Group | Species Included |
|---|---|
| Pacific Halibut | Pacific Halibut |
| Chinook Salmon | Chinook Salmon |
| Other Salmon | the other species of Pacific salmon including steelhead |

8. **Number and Weight:** For each prohibited species report group, enter the number and weight found in your sample. (For herring, report only their weight.) Do not include any salmon from outside of your sample weight that were reported to you under the Salmon Retention Program.

   **If you subsampled a prohibited species group,** you need to proportion the unidentified salmon or crab based on the relative numbers and weights of species in the subsample. The calculations you should enter in the observer logbook are shown for haul 49 of the Form 3US examples below the CMB form. Notice:

   - There is no column for "unidentified Tanner crab" on CMB. So the question is, what number and weight of the unidentified crabs listed on Form 3US would have been Bairdi and "other" tanner crabs, based on your subsample?
   - The crab *numbers and weight are proportioned separately.* Using this method, less rounding difference is introduced.
   - The "other" Tanner *numbers and weights are not obtained by subtraction.* When the second group is obtained by subtraction, it is not likely you would discover a math mistake in your first calculation.
   - The sum of species numbers and weights on CMB must sum exactly to the total numbers and weights of these species on Form 3US. Remember that your data will be used by NMFS to manage the fishery!

9. **Zero fill:** If no members of a particular prohibited species report group are seen, then enter a zero in each of the number and weight columns. It is permissible to use arrows for continuation of the zero down a column. Enter a zero at the top and a wavy arrow and another zero at the bottom of the arrow, just as is done for other forms.

10. **Marine mammals:** Groundfish trawl vessels have a higher frequency of incidental marine mammal mortalities than other gear types in groundfish fisheries. As a result, the incidental mortality is monitored throughout the fishing season. Observers do not monitor all hauls, so the number of incidental kills has to be extrapolated based on observer's random sampling of the catches.

    Therefore, observers on *trawlers* must report incidental kill of marine mammals in hauls randomly chosen for monitoring. If none were killed, it is important to record that there were none. *Only freshly dead or "lethally removed" mammals that are landed in monitored hauls (hauls randomly chosen) are to be listed.* For these catches of marine mammals, designate the species with the two letter species code given in ~~the instructions for Form 10US on page ?~~*Appendix B. In the last column, report the number of these mammals. (This is for trawl catches only. Observers on longline and pot fishing vessels must leave these columns blank.)

    The following table describes the types of data entry on CMB to be made for all possible combinations of events, with examples of a sea lion (EJ) and a fur seal (CU) being caught. This table coincides with the 2US form example and the CMB form example in this manual.

| As shown with 2US haul no. | Sampled for Groundfish | Monditored for Marine Mammals | Fresh Dead MM in Catch | CMB Entry: Code. No. |
|---|---|---|---|---|
| 48 | yes | yes | no | NU |
| 49 | yes | yes | yes-EJ | EJ 1 |
| not shown | yes | no | no | NU |
| 50 | yes | no | yes-EJ | NU |
| not shown | no | yes | no | no line of entry |
| not shown | no | yes | yes-EJ | EJ 1 (zero fill prohib. line) |
| not shown | no | no | yes-EJ | no line of entry |
| not shown | yes | yes | yes-EJ/CU | EJ 1 and on the next line I ist CU 1 |

Table 3-1. Marine Mammal Reporting on the CMB

## Typed Message Format for Weekly Catch Messages

You would use this method of catch message transmission if you are on a catcher/processor or mothership which does not have fax capability or the COMS or ATLAS software. In this case, use the following format for transmitting the data from Form 1US or 2US, and Forms CMA and CMB. Review these instructions and examples carefully before typing your weekly message.

### Typed Message Format for Form 1US and 2US

*When transmitting your weekly messages in "typed message format", the* order should be Forms 1US or 2US first, then Forms CMA and CMB. For each line of entry on the Form 1US or 2US, type data from all columns of the form - do not leave out any category of information. Column headings are not required. Use back slashes to separate columns as is shown in the following example. Each line of data on the form will probably wrap around (continue) onto a second line on the screen. At the end of a line of data on the form, just enter a "hard return" to start a new line on your screen for the next haul or set. For fields where you have no entry, enter two slashes (//) to indicate the blank field.

On Form 1US, check marks (√) are commonly entered in the first column for "Sets sampled for composition?" Please type a "Y" or "N" for each line of entry for this column. Similarly, for Form 2US, start with a "Y" or "N" for the "Hauls sampled for composition?" column. Other columns should be typed using the same format as when filling out the form, that is, do not use leading zeros except where instructed on the form. Total catch entries must have a decimal and two digits behind the decimal. Any entries for non-fishing or delivery days **must** also be typed on a line with the corresponding dates.

## Typed Message Format for 1US and 2US

**Fig. 3-15.** Form 1US appearance in typed message format:

```
Olivia Observer  F/V Swell  ORC 721
//10/21/0/////N/5530/W/6845/No fishing - rough weather
Y/10/22/7/50/8/1/1/R/5534/W/6842/10/45/325/F/10/300/140/1400/2.80/
2.80/2.00///
/10/22/8/60/8/1/1/R/5542/W/6842/12/10/285/F/10/300/140/1400/1.95/
1.95/1.00///
Y/10/22/9/70/8/1/1/R/5528/W/6821/12/20/165/F/10/300/140/1400/3.64/
3.64/2.00///
Y/10/23/10/0/8/1/1/R/5456/W/6711/11/50/186/F/10/300/140/1400/2.80/
0/2.20/0
Y/10/23/11/80/8/1/1/R/5524/W/6802/13/20/127/F/12/300/140/1680/3.40/
3.40/2.80///
```

**Fig. 3-16.** Form 2US appearance in typed message format:

```
Jane Observer  F/V Sea Peace  ORC 534
//08/31/0/////N/5726/6553/No fishing - rough weather
Y/09/01/48/Y/1/1/1/R/5759/W/6531/2215/0045//50/50/F/3.5/22.34/
22.34/C/.89/20.00////
Y/09/01/49/Y/1/1/1/R/5751/W/6531/0730/0915//52/52/F/3.5/17.53/
17.53/C/.87/15.00////
Y/09/01/50/N/1/1/1/R/5751/W/6554/1000/1218//68/70/F/4.0/43.21/
43.21/C/.98/35.00////
Y/09/01/51/Y/1/1/1/R5746/W/6551/1440/1730//66/70/F/4.0/54.41/54.41/
C/.93/58.00////
N/09/02/52/N/1/9/2/R/5746/W/6550//0730/120/70/75/F/4.5/44.24/44.24/
C/.93/45.00/50570///
```

### Typed Message Format For Forms CMA and CMB

Sequentially number each item in the headings of Forms CMA and CMB when typing them into the computer. Type the numbers in parentheses before each heading item. The first line for Form CMA will begin with (1) cruise number and end with (5) the number you are sending from. The first line for Form CMB starts with (1) cruise number and ends with (4) observer name. Typing in form page numbers is not required.

For the body of the form, type in each line of data separately, with slashes between each column's entries. No slashes are required at the end of a line.

From Form CMA enter report group codes, not abbreviated names, with slashes separating each. The next series of lines have: the haul number, species composition sample weight (with a decimal point and one or two decimal places), and each report group weight. Do not type 'kg' following weight entries. Do not type preceding zeros for species group weights when less than 1 kg. The line of data underneath each line of species weights is the percentage retained for each species report group listed, with slashes between each entry. If you are aboard a trawl vessel, when typing entries from Form CMB, do not forget to enter the marine mammal data at the end of each line.

Cruise # 4011 Vessel code A110 Vessel Name Sea Peace CMA - SPECIES COMPOSITION Page 5 of _____ for vessel

Observer Name June Observer Page 2 of 4 for transmission Fax /Telex # 482-9356 Weekly Message or Resubmission of Message

| GROUP ABBREVIATIONS | | Prohib | Yell | Cod | Flat | Roole | OFlat | Oth | Non | Arrow | Poll | Crock | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES GROUP CODES | | 900 | 127 | 110 | 122 | 123 | 120 | 100 | 999 | 121 | 270 | 139 | | | | |
| HAUL NUMBER | TOTAL SAMPLE WEIGHT IN KG | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE | KG in SAMPLE |
| 48 | 330.63 | 2.51 | 253.4 | 8.6 | 13.36 | 6.1 | 2.4 | 7.1 | 2.41 | 5.8 | 28.95 | 0 | | | | |
| 48 | % of group retained | 0 | 100 | 100 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 49 | 337.2 | 0 | 267.9 | 15.3 | 1.1 | 5.7 | 2.3 | 8.3 | 1.8 | 5.2 | 29.6 | 0 | | | | |
| 49 | % of group retained | 0 | 100 | 100 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 50 | 21709.2 | 3.5 | 0 | 6.2 | 3.0 | 0 | 0 | 0 | 5207.57 | 2.0 | 16476.23 | 10.7 | | | | |
| 50 | % of group retained | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 97 | 57 | | | | |
| 51 | 18922.5 | 0 | 0 | 30.0 | 1.5 | 0 | 0 | 0 | 24.4 | 0 | 18866.6 | 0 | | | | |
| 51 | % of group retained | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | 0 | | | | |

Form CMA appearance in typed message format:

```
(1)4011(2)A110(3)SEA PEACE(4)JANE OBSERVER(5) 482-9356
900/127/110/122/123/120/100/999/121/270/139
48/330.63/2.51/253.4/8.6/13.36/6.1/2.4/7.1/2.41/5.8/28.95/0
48/0/100/100/0/90/0/0/0/0/0/0
49/337.2/0/267.9/15.3/1.1/5.7/2.3/8.3/1.8/5.2/29.6/0
49/0/100/100/0/78/0/0/0/0/0/0
50/21709.2/3.5/0/6.2/3.0/0/0/0/5208.0/2.0/16475.8/10.7
50/0/0/100/0/0/0/0/0/0/97/57/
51/18922.5/0/0/30.0/1.5/0/0/0/24.4/0/18866.6/0
51/0/0/100/0/0/0/0/0/0/99/0
```

**Fig. 3-17.** Example of a Form CMA in typed message format

Cruise # 4011 Vessel code A110 Vessel Name Sea Peace CMB - PROHIBITED SPECIES Page 6 of _____ for vessel

Observer Name _____ Page 3 of 4 for transmission Weekly Message or Resubmission of Message

| HAUL NUMBER | SAMPLE WEIGHT IN MT | RED KING CRAB NUMBER | RED KING CRAB WEIGHT KG | OTHER KING CRAB NUMBER | OTHER KING CRAB WEIGHT KG | SAMPLE WEIGHT IN MT | HERRING WEIGHT KG | SAMPLE WEIGHT IN MT | BAIRDI TANNER NUMBER | BAIRDI TANNER WEIGHT KG | OTHER TANNER NUMBER | OTHER TANNER WEIGHT KG | SAMPLE WEIGHT IN MT | PACIFIC HALIBUT NUMBER | PACIFIC HALIBUT WEIGHT KG | SAMPLE WEIGHT IN MT | CHINOOK SALMON NUMBER | CHINOOK SALMON WEIGHT KG | OTHER SALMON NUMBER | OTHER SALMON WEIGHT KG | Marine Mammals code | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | .331 | 0 | 0 | 0 | 0 | .331 | .3 | .331 | 7 | 2.21 | 0 | 0 | .331 | 0 | 0 | .331 | 0 | 0 | 0 | 0 | NU | |
| 49 | 17.530 | ↓ | ↓ | ↓ | ↓ | 17.530 | 0 | 17.530 | 629 | 100.0 | 28 | 4.24 | 17.530 | 14 | 208.99 | 17.530 | 0 | 0 | 0 | 0 | EJ | 1 |
| 50 | 21.709 | ↓ | ↓ | ↓ | ↓ | 21.709 | .3 | 21.709 | 0 | 0 | 0 | 0 | 21.709 | 0 | 0 | 21.709 | 0 | 0 | 1 | 3.2 | NU | |
| 51 | 54.408 | 0 | 0 | 0 | 0 | 18.923 | 0 | 18.923 | 0 | 0 | 0 | 0 | 54.408 | 0 | 0 | 54.408 | 0 | 0 | 0 | 0 | NU | |

Form CMB appearance in typed message format:

```
(1)4011(2)A110(3)SEA PEACE(4)JANE OBSERVER
48/.331/0/0/0/0/.331/0/.331/7/2.21/0/0/.331/0/0/.331/0/0/0/0/
NU
49/17.530/0/0/0/0/17.530/0/17.530/629/100.0/28/4.24/17.530/14/
208.99/17.530/0/0/0/0/EJ/1
50/21.709/0/0/0/0/21.709/.3/21.709/0/0/0/0/21.709/0/0/21.709/
0/0/1/3.2/NU
51/54.408/0/0/0/0/18.923/0/18.923/0/0/0/0/54.408/0/0/54.408/0/
0/0/0/NU
```

**Fig. 3-18.** Example of a Form CMB in typed message format

# 4 Biological Data Sampling

## Biological Data to Collect from Prohibited Species

### Priority and Description

The priority of collecting biological data from prohibited species follows the collection and transmission of fishing, total catch, and composition data. It is higher in priority than measuring lengths of the target species. The duties for vessel observers, for the most part, are summarized in the following table. If you are observing on board a longline vessel, there are a few differences in how you collect halibut for length and viability sampling (see page ?).

| Prohibited Species Sampling on Vessels | | |
|---|---|---|
| | **Inside Sample** | **Outside Sample** |
| **Salmon** | • Check for tags for fins clips. No adipose? — take snout<br>• I.D., weigh and sex — 3US<br>• Measure — 7US<br>• Take scale samples (until 20/spp. collected — 9US | • Check for tags. If present, take info. for tag form.<br>• Use for special project?<br>No 9US |
| **Halibut** | • I.D., weigh if possible, do not sex — 3US<br>• Measure, check viability at point of discard — 7US<br>• Check for tags — Tagged Fish Form | • Can measure and check viability (random collection, only from hauls sampled for composition) — 7US<br>• Check for tags on any fish |
| **King and Tanner Crab** | • I.D., weigh and sex — 3US<br>• Measure, check females for eggs — 7US<br>• *If vessel is targeting pelagic pollock in BSAI or GOA, measure all spp. of crab in sample — 7US* | • BSAI flatfish target—watch for hauls with > 100 king crab. If so, collect 50 to 100, *measure, sex, look for eggs — 7US* |
| **Herring** | • I.D. and weigh, no sex data — 3US | • No sampling |

**Table 4-1.** Prohibited Species Sampling on Vessels

**From this section, you should learn:**

- which fish and crab to collect biological information from,
- guidelines for subsampling when there are too many,
- what biological information you should collect,
- there are special crab sampling requirements for two trawl fisheries.

### Subsampling

It is usually possible to obtain the data outlined above from all individuals in the sample for prohibited species. However, if there are too many of a given species group in your composition sample to process in a reasonable length of time, a random subsample may be taken. ***If you must subsample, try to collect data from no fewer than 20 halibut, 20 salmon, 20 king crab, and 20 Tanner crab per sample.*** These are guideline numbers for minimum subsamples. Certainly, if you had only 22 Tanner crab, you should collect information from all of them. Alternately, if you are able to take on more work than these minimum guidelines specify, do not collect biological data on more than 100 of any prohibited group. Instead, devote your extra time to larger, or more, species composition samples.

## Salmon and Steelhead

Collect the following information from the salmon and steelhead obtained in the prohibited species samples:

(a) **Identify the species** – the six species (and their other common names) which may be encountered are: chinook (king), chum (dog), sockeye (red), pink (humpback), and coho (silver) salmon, or steelhead.

(b) **Sex** – determine the sex of each salmon; only live salmon that have minimal scale loss should not be sexed. When the sex could not be determined or sexing was not attempted, leave the column for sex blank on Form 3US but this type of entry on Form 7US will have to have a "U."

(c) **Numbers** of salmon/steelhead—determine numbers by species and sex groups.

(d) **Weight** – record the individual weights if scale samples are to be taken; if scale samples are not taken of all fish, obtain the total weight by species and sex group for those fish whose scales were not sampled.

(e) **Length** – the fork length of each salmon found in the sample is recorded to the nearest whole centimeter on Form 7US (Length Frequency of Measured Species). Length measurements are grouped by species and by sex, and are recorded in ascending order.

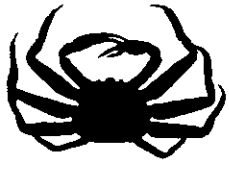
(f) **Scale samples** -- the purpose of taking scale samples is primarily to confirm your identification of the salmon, and secondly, the scales may be read for age and possibly, stream of origin information. Take scale samples of the first 10 salmon of each species found in composition samples during the deployment period (regardless of the number of vessels you are on). Then collect scales from 10 more salmon of each species found in composition samples from throughout the remainder of your contract. Follow the collecting instructions in "Salmon Scale Sampling" on page A.4-22.

*Do collect* a scale sample any time you are not sure of the identification and from all tagged salmon. *Do not collect* scales from salmon that are not part of your prohibited species sample unless they were tagged salmon or you have special instructions.

(g) **Check for tagging** — If the adipose fin is clipped off, a tiny (3 mm) coded wire tag may have been inserted in the snout while the salmon was a smolt. Recovery of coded wire tags is very important and requires specialized equipment. You should cut off and collect the snout as directed in the Tagged Fish section on page A.4-30. You may also see pectoral and/or pelvic fins that are clipped, plastic discs attached through the dorsal ridge, clipped maxilla, or brands. Describe these on the Tagged Fish Information Form, page A.4-33.

You should seldom have to subsample salmon. However, if time does not allow you to gather all of the above information from each salmon in your composition sample, get at least numbers and weights by species (failing this, reduce your sample size!). Then subsample the most numerous species and sex and measure each fish of any other salmon species for sexed lengths (and watch for tags). Take scale samples from each species identified, as needed.

## King and Tanner Crab



Collect the following information from the king crab and Tanner crab obtained in your species composition samples:

(a) **Identify species** -- prohibited crab species off Alaska which could be encountered are red, blue, brown, and *Lithodes couesi* king crab; *Chionoecetes bairdi*, *C. opilio*, *C. hybrid*, *C. angulatus*, and *C. tanneri* Tanner crabs.

(b) **Sex**--determine the sex of each crab. When the sex could not be determined or sexing was not attempted, leave the column for sex

blank on Form 3US but this type of entry on Form 7US will have to have a "U."

(c) **Eggs** — While determining sex, note whether females have eggs under the abdominal flap. When recording female crab measurements on Form 7US, the length data will have to be grouped according to the presence of eggs, Y, N, or U (for Yes, No, or Unknown).

(c) **Numbers** of king/Tanner crab—determine numbers by species and sex groups.

(d) **Weight**--record the total weight by species and sex group.

(e) Check for **Tags**—follow the directions for "Tagged Fish and Crab" on page ?.

(f) **Measure lengths of king crabs and widths of Tanner crab** according to the instructions on page ?. King and Tanner crab are the only species of crab which should be measured unless your vessel is targeting pollock in the Bering Sea or Gulf of Alaska, using a pelagic trawl, see below. Lengths are recorded by sex on Form 7US.

(g) **Measuring Crab On Bering Sea Flatfish Vessels** — If your vessel is in the Bering Sea, targeting on flatfish, make a visual estimate of the number of king crab in *any given haul* (either sampled or unsampled). If the haul appears to *contain more than 100 king crab*, randomly collect 50-100 king crabs, determine sex and measure their lengths. Record these data on Form 7US.

If you are assigned a special project and your vessel is consistently catching large numbers of king crab, follow these steps:

1. Reduce your flatfish target length frequencies to 75 per day.
2. Alternate daily between your special project and taking crab measurements.
3. If you are still unable to keep up with the sampling requirements, notify the Observer Program in Seattle and we will give you further instructions.

***Why are we doing this?*** The Alaska Department of Fish and Game manages the king crab resource. Effective management of this resource depends on area-specific bycatch data. For example, fertilized female red king crab abundance is below the threshold needed to conduct the fishery, so more sample data from incidentally caught king crab are imperative to design time/area closures of Bering Sea trawl fisheries that are effective for protecting females. Thus they have requested an increase in the amount of king crab data collected by observers.

(h) **Measuring Crab On Pelagic Trawl Pollock Vessels** — The pelagic trawl definition includes a performance standard based on the number and size of crab on board at any time. Because the presence of *20 or more of any species* of crab would indicate non-pelagic fishing, the performance standard includes all crab species. Observers must collect size data on all crab in their samples if they are on a pelagic trawl pollock boat.

- Record the width (or length for king crab) of *all species of crab* that occur in your composition sample on Form 7US. For Korean horsehair crab and box crab measure the width at the widest point of the carapace.
- Crab species other than king or Tanner crab do not have to be sexed. Leave sex blank on Form 3US. On Form 7US record "U" for sex and the presence of eggs.

## Trawl Caught Halibut

**Numbers**— On Form 3US record the number of halibut that occurred in your species composition sample. This is not necessarily the same fish or same number of fish as recorded on Form 7US (Length Frequency of *Measured Species).*

**Total Weight**—Obtain the total weight of halibut in your species composition sample; individual weights are not necessary. Halibut too large to be weighed can be just measured; at times, the length must be visually estimated. Look up lengths of measured or estimated fish in the halibut length-weight table (Appendix page ?) to obtain corresponding weights. The total weight of halibut on Form 3US may then include these table weights of measured fish summed with scale weights of the halibut that could be weighed.

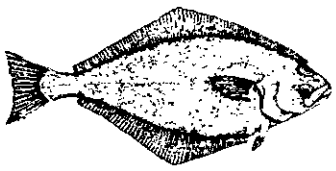
Weighing Preferences:

1st — halibut should be actually weighed,
2nd — actual measurement and weight from the Length/Weight Table
3rd — estimated length and weight from the Length/Weight Table
OR
3rd — sample for average weight and apply to a count of halibut when ones counted are all of a similar size.

**Do not sex halibut**, even dead ones. On Form 3US, leave the column for sex blank. On Form 7US, record the viability condition code in the column for sex.

**Length and Viability (L/V)** — Viability is an assessment of halibut condition just before they drop back into the water under normal handling conditions. Length *and* viability data should be taken from each sampled fish. Length measurements taken without a viability appraisal can be used but not vice versa. Halibut measured and examined for viability must be from a random sample of the catch. However, it may or may not be appropriate to measure and examine the halibut collected in your species

composition sample. Viability and lengths of halibut *may be taken* from randomly selected fish (up to 20) from outside your composition sample as long as they're from a sampled haul or set.



Halibut length and viability sampling can only be done at the point of discard whether the composition sample is taken there or not. A typical example would be if you collect and examine halibut where they are normally sorted out from the catch; where you or the crew put them on a discard belt. Even though it may be less than a minute to the discard chute, if the larger, 70 to 90 cm., halibut are not picked up right away by an incline conveyor belt or are battered by the belt, your viability data is biased. In this example, your appraisal of condition must be done after the incline belt rather than at the point of sorting.

Viability is an appraisal of the condition of halibut - excellent ("E"), poor ("P"), dead ("D"), or unknown ("U"), when condition was not appraised. *Do not guess* the condition of halibut you do not have in hand to examine. Halibut of 50 cm or more are very sturdy fish and one seen swimming vigorously away may still have had a substantial injury and should have been listed as in poor condition.

Measure and record fish lengths to the nearest whole centimeter. Do not lay a measuring tape from the tail up and over the body to the snout. Instead take a straight-line measurement by laying the tape measure on the deck and putting the fish on top of it. Record length frequencies of only actually-measured fish by condition category on Form 7US. Do not include any estimates in length frequency data.

*Catcher-only trawler observers sampling at processing plants* should definitely record condition of halibut sorted out at the plant. *Longline observers* have specific instructions—refer to the longline section of this manual, page 5-22.

**If large halibut are sorted on deck and the rest below, you cannot obtain an unbiased sample. Don't collect length or viability data on that haul.**

*Collect only unbiased data* — Halibut greater than one meter in size are often sorted out on the deck of a trawler because, if dumped below, they're a problem to get out of the tanks. Smaller halibut in the catch are sorted out of the catch later. Unless you can sample the whole haul for halibut, it is not possible to sample from both discharge points in an accurate proportion. If you cannot obtain an unbiased sample, don't collect length or viability data on that haul. On hauls when halibut are only discarded from one location, length and viability sampling should be resumed. In your logbook, record circumstances like this that affect your data.

*"Discard Condition Criteria" tables* — There are 3 tables describing the condition categories for halibut caught by trawl, longline or pot gear. Use the appropriate table for your gear type from Appendix G.

Halibut L/V Sampling Guidelines:

Measure lengths and determine viability only of halibut from hauls sampled for species composition.

Do not guess the condition of halibut you do not have in hand and personally examine.

Assess halibut condition just before they drop back into the water under normal handling conditions.

Halibut measured and examined must be collected from a random sample of the entire catch.

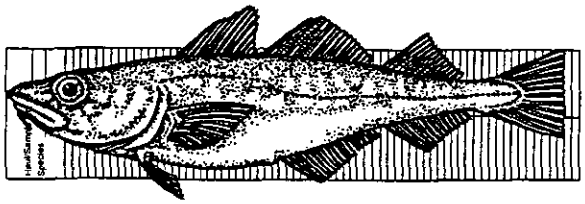
# Length Frequency Sampling

### Uses of the Data

The length and age data from observer samples will be used to determine the relative abundance of each year class of target and selected bycatch species. Length frequency data provide information on the abundance of fish in each size category, while otoliths 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.

**From this section, you should learn:**

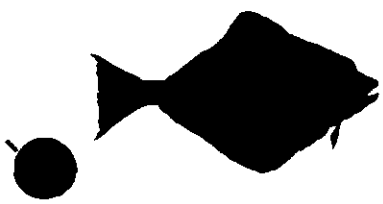
- What species to measure
- Measuring procedures
- Recording length and other data on form 7US



## Length Frequencies of Prohibited Species

All trawler observers should take sexed length frequencies of all salmon, king and Tanner crab and lengths of halibut found in the prohibited species sample if it is possible to do so. Taking length data from prohibited species is a higher priority than length frequency measurements of the target or other sampling species. Fish and crab must be actually measured for length and must be sorted from the whole haul or from a random or systematically random sample. Measuring the ones in your composition sample usually ensures they were collected properly.

**Sub-sampling:** If there are too many salmon, crab or halibut to work on in a reasonable length of time, sub-sample. For sub-sampling, take length and associated data from up to 20 crab, halibut, or salmon per haul. The previous section, "Biological Data Collected from Prohibited Species," includes instructions for sub-sampling and a full listing of the data to gather for each prohibited species group.



**Halibut** sampled for length and viability data must be taken from a haul sampled for composition It may be inappropriate to use halibut in your sample if that means determining their condition at a point sooner than where they normally go over the side. Halibut may be collected from outside of the composition sample to measure and examine as long as they are from a random sample.

Lengths and viability of halibut are normally sampled at the same time. If length measurements were taken but viability was not determined, record the length under condition unknown and explain the circumstances in your logbook. (Also see Item 6 in Form 7US instructions). Viability data without length measurements cannot be used. On Form 7US, record lengths by condition category in ascending order.

Measure halibut by placing them on top of the measuring strip or a measuring tape. For fish larger than 70 cm the measuring strip will need to be offset as described on page ?. Do not attempt to take a straight line measure of halibut by stretching a tape over their body. Even if the tape is held straight over the body, the reading has to be sighted in and would be considered an estimate. Lay the fish on the tape.

### Salmon

Only measure salmon from your prohibited species composition sample unless you have been given a special project with other instructions. Most salmon have a very poor chance of surviving after being caught in a trawl

net, so identify the species, look for tags, obtain the individual lengths, weights, scale samples, and cut them open to determine their sex.

The gonads of salmon are thin, clear filaments which are found along the top of the visceral cavity just below the backbone. Salmon gonads, unlike other fish, will be found near the anterior (head) end of the visceral cavity. Even very young females produce eggs. To sex the fish find the clear tissue of the gonad and look for the presence or absence of the relatively large, round, orange eggs. If eggs are present then the fish is a female. If eggs are absent then the fish is a male.

### Crab

Measure only the king and Tanner crab in the composition sample with two exceptions. 1) Measure *all species* of crab in your sample when in the pelagic pollock fishery. And 2) when targeting flatfish in the Bering Sea watch for hauls with more than 100 king crab. In this case, take a random sample of 50 - 100 king crab. Measure, sex them, and look for presence of eggs. Refer to "Biological Data Collected from Prohibited Species" on page 7.4-3.

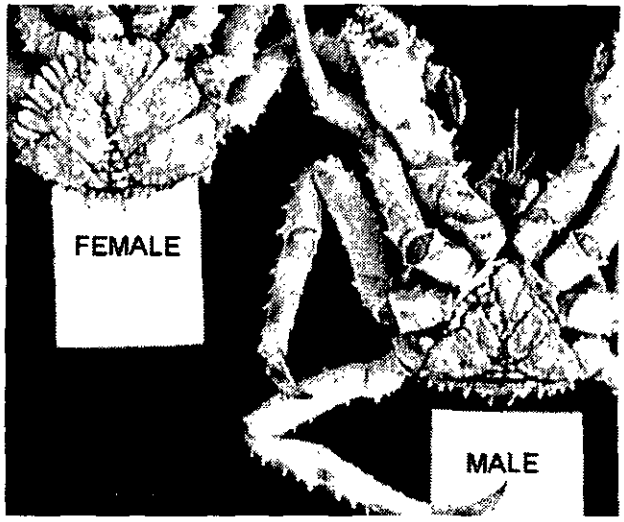
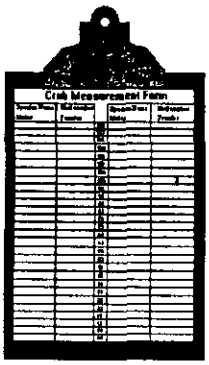



**Fig. 4-1.** King Crab Abdominal. Female upper left, male lower right.

**Fig. 4-2.** Tanner Crab Abdominal. Male top, female bottom.



## Length Measurements for Crab

Use the calipers and plastic crab measuring form provided in your gear. Spread the calipers across the **width** of Tanner crab carapaces at their widest points, excluding spines. Without moving the arms of the instrument, lay one arm of the caliper on the "start line" at the bottom of the plastic form and, when placed perpendicular to the start line, where the tip of the other arm lands, record the measurement with a tally mark on the 5 mm space.

Measurements are grouped in 5 mm increments starting at 3 mm. For example, crabs 41 to 45 mm in size are recorded as 43 mm; crabs 46 to 50 mm are recorded as 48 mm. Thus, check your entries on Form 7US to see that all records of crab measurements end in the digits 3 or 8.

Measure the carapace **length** of king crab from the right eye socket to the midpoint of the posterior margin of the carapace. Be careful not to let the tip of the divider arm slip **into** the eye socket below the carapace surface. Keep the instrument on the **rim** of the carapace socket at it's deepest point. Record the length to the nearest 5 mm size group as explained for Tanner crab above. (Refer to figures below.)

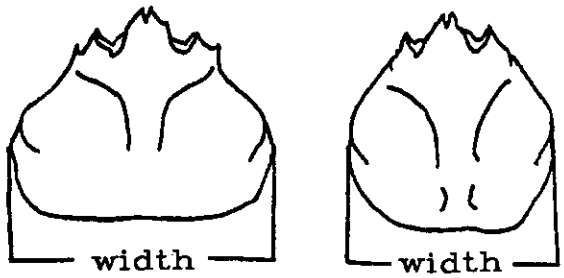



**Fig. 4-3.** Carpace width for Tanner (Snow) Crab. Measure from the widest points of carapace, excluding spines, to the nearest 5th mm.

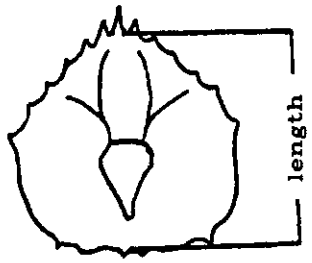



Fig. 4-4. Carapace Length for King Crab. Meaure from the right eye socket to middle of the posterior margin of the carapace, excluding spines.

## Length Frequency Sampling of Target

All observers should measure approximately 150 lengths from one sampling species each day. The species to be sampled is normally the target species of the vessel. There are a couple exceptions. If you are assigned a special project species, you may need to measure lengths from that species instead of the target. If you are on a longline vessel fishing for halibut, in addition to your length and viability work on halibut you need to select some other groundfish species which is being retained as your sample species for length frequencies.

*Select only one species to sample* if there are multiple targets. A large quantity of data from one species is more useful than a few measurements from several species. Try to stay with one sample species for all length data taken on one boat.

### If your vessel switches target species

If a fishery closes and/or your vessel switches to another fishery for the rest of the trip, switch your sample species for length measurements to the new target species.

Preferably, lengths should be taken from **several** hauls or sets per day to ensure that measurements are representative of the total catch for the day and to spread out your work. However, each day's length measurements may all be taken during one sample period. It is preferred but not required that the fish measured are from a catch also sampled for composition. Length data must be identified with a specific haul. Catcher vessel observers must measure fish at sea rather than at the processing plant to collect data by haul.

If your composition sample does not contain enough fish for a good length frequency sample, gather some from outside the composition sample or from another haul or set. You might collect all, or every third, sample species fish passing by you over a period of time. Or use some other method to collect an unbiased sample from a larger portion of the catch.

It may be too difficult to measure 150 fish per day if the fish are large and hard to handle, or if sampling conditions are poor. In this case do as many length measurements as possible. Do not drop this sampling requirement altogether. Inform your debriefing interviewer about situations which affected your ability to sample.

**When given a special project** you may be asked to take lengths from the target *and* an assigned sampling species. If assigned, read the special project instructions carefully. If your assigned project includes length

measuring and you cannot find (or you are asked not to measure) more than 20 fish in a day of the species assigned, it is expected that you can still take approximately 150 lengths of the target species each day.

### Potential Sample Biases

If you wanted to sample approximately 50 fish for length frequencies and the sample you set aside only has 46 fish, don't collect another four fish. Likewise, if the fish you set aside numbered 58, sample them all. It is too easy to bias your sample by "picking" them out of the catch or out of your basket "by hand."

Sex and group the fish into separate baskets (for method, refer to "*Sexing Fish" on page ?*). If you are unable to sex some fish (usually the small ones), separate them into a third group to measure. Their lengths will also need to be recorded and their sex written in as "U" (unidentified). Not measuring the fish you couldn't sex would bias your sample.

If you are asked not to cut fish to sex them, but some are in spawning condition (spilling sperm or eggs) do not record the sex of this non-random subsample.

### Sexed Length Data from Cod and Sablefish

When fishing for Pacific cod or sablefish, the fish are usually bled or headed and gutted by the crew. Under 50 CFR §679.5(f) vessel operators must allow observers "to determine the sex of fish when this procedure will not decrease the value of a significant portion of the catch." If the fish are bled, usually with only a small stabbing cut, sexing the fish will damage the product.

If the skipper does not want you to sex any of the cod then measure them and record the sex as unknown. If the skipper will allow you to sex a small number each day, collect a random subsample for sexed lengths and then measure the rest of the sample without sexing them. Sexed length data are more useful, but if this cannot be done, unsexed lengths are better than no length data.

If the fish are being headed and gutted, try working with the crew, by taking the length measurement first then examining the viscera visible when the fish is gutted by a processor. Another alternative is to ask the crew to show you how to make the pectoral cut. In general, make a diagonal dorsoventral cut from behind the head to behind the pectoral fin, then angle the knife forward to the isthmus. Make the same cut on the other side. Another method is to just make a ventral cut from the pectoral fin anteriorly to the isthmus and back to the other pectoral fin. Then you

can reach in and pull out the gonad or peer into the cavity to see the gonad and determine the sex. Pass the fish on the crew to finish processing. Make sure that your procedure is acceptable to the crew or factory boss. If this method works but is very time consuming, take a subsample for sexed length data and take un-sexed length measurements of the rest.

### Measuring Procedure

The plastic measuring strip is a long, narrow piece of white plastic divided into one centimeter spacings. When setting up a plastic strip on a measuring board, record on it the haul number, date, and species. Keep length data for each haul or set separate by recording data from different hauls on different strips.

The strip can be attached by thumbtacking it to a wood board. When using the aluminum board provided by the program, secure the plastic strip in place by pushing a thumbtack up through the hole drilled in the aluminum and piercing the plastic. Then put a straightened paperclip through the pierced hole and bend it over, top and bottom, to secure the strip. A little fish slime and water will also help "glue" the strip in place.

Measure your measuring strip on both sides to be sure it was trimmed correctly from the printer. Check the position of the strip in relation to the upright end of the measuring board that the snout is pushed up against. For species of fish whose length range is less than 75 cm, the strip must be positioned on the measuring board so that the line for the first space is at 4.5 cm from the upright end. The **center** of the 5 cm **space** should be exactly 5.0 cm from the upright end. Mark each tenth centimeter strip unit to read 10, 20, 30, etc.

**Fig. 4-5.** Example of Placement of Length Frequency Strip. Top strip example for most species: bottom strip for longer species.

For species whose length commonly exceeds 75 cm, the measuring strip may be offset as shown below. To increase the length of a strip by ten centimeters, for instance, offset the strip so that the line for the first space is at 14.5 cm from the end board and the center of the first centimeter space is at 15 cm. Then the tenth centimeter units of the strip should be renumbered accordingly. Check the placement of your measuring strip in relation to the upright end before (and during?) each sampling session.

Note that one side or half of the measuring strip is designated for tallying males, and the other half for females. Make sure you are recording lengths on the appropriate half of the strip.

Position each fish on the measuring strip with jaws closed, snout against the end, dorsal surface away from you, ventral towards you and the **body flat and straight.** Spread the caudal fin with the back of your hand to help see the *tips of the rays in the middle of the caudal fin.* Fork length measurements should always be taken, even if the caudal fin rays are broken and ragged and the exact location of the fork has to be estimated. This is often the case when measuring hake. Measurement of round-tailed species (most flatfish) is also taken from the snout to the midpoint of the caudal fin margin and is still referred to as "fork length." (~~See "Length Measurements for Various Species" in the Appendix.~~)

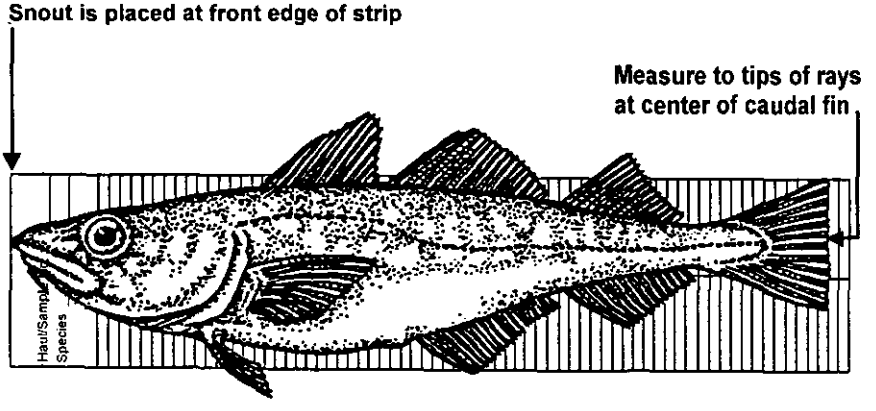



**Fig. 4-6**. Example of Measuring a Roundfish

With a pencil, place a stroke on the appropriate half of the plastic strip in the centimeter *space* where the fork or midpoint of the tail falls. If the fork or midpoint of the tail lies on a line, reposition the fish and check it again. If it's still on the line, record the length in the smaller (shorter), adjacent centimeter length space.

When starting to measure another basket of sexed fish, verify their sex and make sure you are recording their lengths on the appropriate half of the

strip. At the end of sampling, the number of pencil strokes per sex, per centimeter length spacing will give the size group's frequency by sex.

### How to Sex Fish

To determine sex of a species you have not worked with before, it is easiest to start with large, mature fish and work down in size to small, immature specimens. Thoroughly dissect a few fish and identify the various internal structures so that you know what you are looking for.

Cutting open a fish is the only reliable way to sex them. Only two exceptions to cutting them open will be accepted:

- If yellowfin sole are mature enough to clearly see the gonad when they are candled (held over a light source) you can tell the sex. Other species of flatfish must be cut open to sex them.

- If any fish species are in spawning condition such that with light pressure eggs or milt will exude, the sex is apparant. You cannot sex only the ones in spawning condition however, as that would not be a random sample.

  For most of the fish species observers must sex, the following information should help.

**Cod, Pollock and Hake**

**Where to look:** The gonads of all cods and pollock are found directly above the vent near the top of the visceral cavity. Slit the skin of the belly open near the vent, then use your thumb to scoop the viscera out of the visceral cavity. With a little practice, the gonads can be exposed for examination on your thumbnail.

**What to see:** The ovaries are paired bags or sacs which are typically pink or orange in color and slightly translucent. When immature the sacs may be clear but they can be distinguished by shape and position. When the ovaries are mature they tend to be bright orange and will often nearly fill the entire posterior end of the visceral cavity. You should be able to see the eggs inside the ovaries. The ovary sac may or may not have black and white blotches on it. Sometimes the ovary of a fully mature female cod will be entirely black in color.

The testes look very different from the ovaries. They are in the same location as the ovaries but when immature, they will be only a thin filament with a ruffled edge, attached to the vent. Look carefully because in this stage, the testes are very small. As an immature male gadid begins to develop, the lower side of the filament will have very small and fine

convolutions. Gadid testes are always opaque. Immature testes typically will be dark pink turning cream colored tinged with pink as milt develops. The lower edge of the testes then fills with milt as the fish matures and the convolutions finally will be thick, opaque and white; filling the inside of the fish.

**Flatfish** *(refer also to sexing instructions on page ? above.)*

**Where to look:** The gonads of flatfish are found posterior to the visceral cavity and may, particularly in females, extend underneath the flesh of the body. To find the gonads it is usually easiest to cut back the skin from the visceral cavity and then extend the cut ventrally (just above the anal fin) back towards the tail, following the curvature of the body. Testes will be found only in the area directly posterior to the viscera, while the ovaries will extend away from the viscera in an elongated triangular shape.

**What to see:** Females have ovaries that extend into and through the fillet meat in an elongated triangle. This triangle is consistently at least three times as long as it is wide and often much longer. The ovaries when they are immature are typically translucent and pink in color. Mature ovaries are very elongate, pink or orange in color, often with black spotting. Developing ovaries are more granular in texture; eggs can be seen inside them when mature.

Male testes are either found right next to the visceral cavity or, when mature, extending into the flesh as a short wide triangle about as wide as it is long. They are consistently grey/white and opaque. Immature testes are slight crescents that are found along the posterior edge of the visceral cavity, on each side of the fish, parallel to the bone that supports the visceral cavity and becomes the anal spine. The crescent of male gonad tissue can be very small; it may look like fat tissue and can be difficult to differentiate or locate.

**Rockfish**

**Where to look:** Rockfish gonads are found at the top of the visceral cavity directly above the vent. They are anteriorly slanted. When there is fatty tissue around the viscera, extra time and care will be needed to probe through the fat to locate the gonads.

**What to see:** The ovaries are sac shaped and will be filled with eggs and then live young (rockfish bear developed young, not eggs). These bags are soft and flaccid, and generally are clear, but may be pink, orange or yellow color. Small round eggs can be seen often in very immature individuals. Rockfish ovaries are about two or three times as long as they are wide.

Testes are rod-like, they feel firm and are opaque. They are often colored with tan on one side of the testes which fades into a clearer grey on the other side. Some fish may have testes that are tinged with yellow or pink. They are more elongate than ovaries; often about five times as long as they are wide - although this is variable, they will get longer as they approach maturity.

**Atka Mackerel**

**Where to look:** Like rockfish, Atka mackerel gonads are found at the top of the visceral cavity directly above the vent. Atka Mackerel external coloring is sexually dimorphic where often the male's light colored vertical bars are tinged with yellow.

**What to see:** Ovaries are clear bags filled with a mixture of small round eggs that are various shades of olive green, brown, tan, and when hydrated, clear. Atka Mackerel spawn in spurts so eggs in the ovaries will be a mix of different sizes and different stages of development.

Atka mackerel testes are similar to rockfish, described above.

**Sablefish**

**Where to look:** The gonads of sablefish are lateral lobes that run the entire length of the visceral cavity just beneath the backbone.

**What to see:** Usually sablefish gonads appear as fleshy filaments and are tan or cream colored to slightly pink. In immature fish the lobes are more soft and fragile, but when mature the gonad may look like liver tissue. There is no difference in the texture, and no reliable difference in color between the ovaries and the testes of sablefish. However, the testes have four longitudinal lobes and the ovaries have two lobes.

If the fish is immature it may be very difficult to determine how many lobes are present. Make a clean cross cut through the gonad strand. Use the tip of the scalpel blade to tease the lobes apart at the cut edge. When mature, the ovaries may have a partial fold through each of their two lobes, giving a false four-lobed appearance. Examine the gonads carefully so that you can see if the divisions between the lobes are complete or partial.

| Cruise | Vessel Code | Year | Month | Day |
|---|---|---|---|---|
| 4011 | A110 | 97 | 09 | 01 |

FORM 7US-LENGTH FREQUENCY OF MEASURED SPECIES
(includes halibut, salmon, and crab measurments)

Page 19 of ____

SIZE GROUPS: Fish by 1cm. Crabs by 5mm

M = male
F = female
U = unknown sex

| Species name | Species code | Set/haul no. | Sex | Eggs? | Keypunch check | Size groups | Freq. | Size groups | Freq. | Size groups | Freq. | Size groups | Freq. | Size groups | Freq. | Size groups | Freq. | Size groups | Freq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Halibut | 101 | 48 | P | | 120 | 58 | 1 | 60 | 1 | | | | | | | | | | |
| Halibut | 101 | 48 | D | | 47 | 46 | 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Bairdi Tanner | 4 | 49 | M | | 301 | 48 | 2 | 53 | 1 | 58 | 3 | 63 | 1 | 68 | 4 | | | | |
| ↓ | 4 | ↓ | F | N | 329 | 43 | 1 | 53 | 2 | 63 | 1 | 78 | 3 | 83 | 2 | | | | |
| Bairdi T. | 4 | | F | Y | 237 | 68 | 1 | 73 | 1 | 83 | 1 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Opilio Tanner | 5 | | M | | 247 | 73 | 1 | 83 | 1 | 88 | 1 | | | | | | | | |
| Opilio | 5 | | F | N | 79 | 78 | 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Halibut | 101 | | E | | 471 | 42 | 1 | 50 | 1 | 53 | 1 | 54 | 2 | 57 | 1 | 60 | 1 | 147 | 1 |
| ↓ | 101 | ↓ | P | | 161 | 50 | 2 | 52 | 1 | 55 | 1 | | | | | | | | |
| Halibut | 101 | 49 | D | | 49 | 48 | 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Chum Salmon | 221 | 50 | M | | 50 | 49 | 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Pollock | 201 | 50 | M | | 327 | 41 | 1 | 42 | 1 | 43 | 3 | 44 | 2 | 45 | 2 | 46 | 5 | 47 | 5 |
| ↓ | ↓ | 50 | M | | 270 | 48 | 3 | 49 | 5 | 51 | 3 | 52 | 3 | 54 | 2 | | | | |
| | | 50 | F | | 320 | 32 | 1 | 44 | 1 | 45 | 1 | 46 | 2 | 47 | 2 | 48 | 1 | 49 | 1 |
| | | 50 | F | | 222 | 50 | 1 | 51 | 2 | 52 | 1 | 64 | 1 | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | 51 | M | | 343 | 41 | 2 | 42 | 4 | 44 | 4 | 45 | 2 | 46 | 6 | 47 | 6 | 48 | 6 |
| | | 51 | M | | 415 | 49 | 6 | 50 | 2 | 53 | 6 | 54 | 6 | 57 | 2 | 60 | 4 | 64 | 2 |
| ↓ | ↓ | 51 | F | | 379 | 46 | 8 | 47 | 2 | 48 | 8 | 49 | 2 | 50 | 4 | 51 | 4 | 52 | 8 |
| Pollock | 201 | 51 | F | | 168 | 53 | 2 | 54 | 2 | 55 | 2 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

National Marine Fisheries Service - North Pacific Groundfish Observer Program

Revised 1/1/97

**Fig. 4-7.** Form 7US-Length Frequency of Measured Species

## Form 7US Instructions

Form 7US is used for recording the lengths of prohibited species from your samples and the lengths of your sampling species. **Caution: On this form record only lengths which you actually measured, not estimated lengths.**

1. **Heading—All observers:** Fill in the haul or set date.
   **Plant observers:** write the name of the catcher boat whose fish you are sampling at the top of each form. Plant observers use the date of *delivery*, not necessarily the date the fish was measured.

2. **Species name and code:** record the common name and the related species code from the same code list as used for Form 3US.

3. **Set/Haul:** All data must be grouped by set or haul and the sets or hauls must be listed in sequential order. More than one set/haul can be recorded per page as long as they ended on the date written at the top of the form. Start each day's measurements on a new side of the two sided form. Please use both sides of the form.

4. **Catcher boat observers**: Form 7US is started at sea when lengths of the target species are measured. When prohibited species are going to be sampled at the plant, leave several lines empty for each haul on Form 7US to fill in later with lengths of the prohibited species.

   When assigning prohibited species data taken during delivery to each haul, the individuals listed on Form 3US for a haul have to be the same individuals whose lengths are on Form 7US for that haul.

5. **Sex:** Record lengths of sampling species, salmon, and crab by sex; coded "M" for male or "F" for female. If sex is not determined or the immaturity of fish makes sex identification uncertain, enter "U" for unknown.

6. **For halibut,** record the viability categories "E," "P," or "D" in the column for sex. When condition was not appraised but halibut were measured (not estimated), record these lengths opposite a "U" in the "sex" column.

7. **Eggs?** Check all measured female king, Tanner, and in the whiting fishery, Dungeness, crab for the presence or absence of eggs. Crab eggs are carried by females under the abdominal flap. On lines of

entry for female crab, enter either: "Y" for yes, eggs were present, "N" for no, eggs were not present, or "U" for unknown/unidentified—eggs were not checked for. The column must have an entry if crab measurements are recorded.

8. **For Keypunch check,** simply add all of the numbers in the row (size group and frequencies together) and enter the sum. Be sure to check your work by adding it again to verify your sum. The editing program will also sum the numbers in the line and compare it with your sum. This is our means of checking for correct keypunching of the data.

9. **Size groups** are the length measurements; rounded to the nearest whole centimeter for fish and in 5 millimeter increments for crab (1-5 mm = 3; 6-0 mm = 8). On each line, record size groups in ascending order in the shaded columns. Include a size group only if there is a frequency of one or more.

10. **Frequency** is the number observed in each size group.

11. **Start a new row** each time there is a change in sex or when there are more than seven size groups in a category. Skip a line when there is a change in haul number or species unless it means going to a new page.

12. **Leading zeros** should appear in the month, and day only, as needed. No leading zeros should be written in species code, haul number, size, or frequency columns. To indicate the repetition of a number or letter, such as species code, haul, or sex, draw brackets and arrows as shown in the example form. Do not use ditto marks in key punch columns.

# Salmon Scale Sampling and Form 9US

Salmon scales are read to verfy species identification, determine the age of the fish and even it's stream of origin. Vessel observers take scale samples from salmon in the prohibited species sample up to a maximum of 20 fish per species, per contract, unless given special project instructions otherwise. (Refer also to instructions regarding salmon under Biological Data Collected from Prohibited Species, page ?.) Do not collect scales from salmon that are not part of your samples for prohibited species unless they are tagged salmon. Data from scale sampled salmon is recorded on Form 9US.

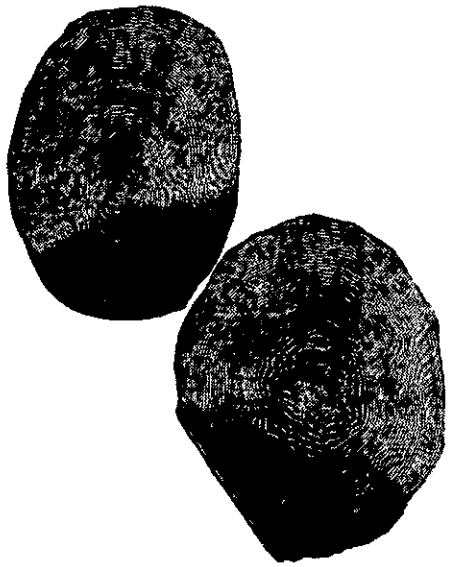


**Fig. 4-8.** King Salmon Scales

## Salmon Scale Sampling Instructions

Collect 15 to 20 good, readable scales from each fish. Salmon often have a lot of regenerated scales. These are replacement scales with material like scar tissue in the center instead of growth rings. This makes them useless for aging or stock analysis. You can see if a scale is regenerated by cleaning it and holding it up to the light. Take scales from both sides of the fish to increase the chance of getting readable scales.

Place the scale sample from each salmon in one of the small paper envelopes provided. Spread-out the scales inside the envelope so that they will not clump together. Then, fill in the requested information in the spaces provided on the outside of the envelope. If you should run out of envelopes, make some with paper and tape. Number the scale samples sequentially, within each species group. Transcribe these data onto Form 9US. For each

SPECIES O. tshawytscha SPECIMEN NO. 4

HAUL/SET 176 DATE 08/16/97

FORK LENGTH 565 ~~(CM)~~ (MM) SEX female

WT. 2.90 (KG) MISSING ADIPOSE? Y or (N)

CRUISE/

SCALE ZONE A VESSEL CODE 1

**Fig. 4-9.** Example of Scale Envelope

species of salmon sampled, start with scale sample number one and keep separate sets of Form 9US by species.

It is recognized that strict adherence to the methods will sometimes be impossible or impractical. Keep a record of the deviations from instructions so that the effect can be evaluated.

**Directions for collecting scales:**

1. Rinse the fish off and/or lightly wipe the area to be sampled with a wet sponge, paper towel, or cloth. This is to minimize contamination of the sample with scales of other fish and to remove slime which can cause scales to rot.

2. Examine the fish and select zone A, B, or other. *Record the zone* on the envelope. Whenever possible, scales should be taken from zone A, zone B is next in preference for age. Refer to the figure below for location. Species identification however, can be determined from scales collected in zones A, B, or C, or from underneath the pectoral fin. Sometimes with trawl caught fish the only body location that has scales is under the pectoral fin. In this circumstance, collect scales that are closer to the posterior tip of the fin if there is a choice. Do not collect lateral line scales as those scales are unreadable.

3. Pluck salmon scales out with forceps so as to minimize the amount of accompanying mucus.

4. Wipe scales off of the forceps, inside the envelope. Collect a minimum of 5 and up to 15 to 20 scales. Ensure that samples are clearly labeled and all pertinent information is recorded on the scale envelope or plastic deck form.

5. Clean excess scales from the forceps before sampling the next fish.

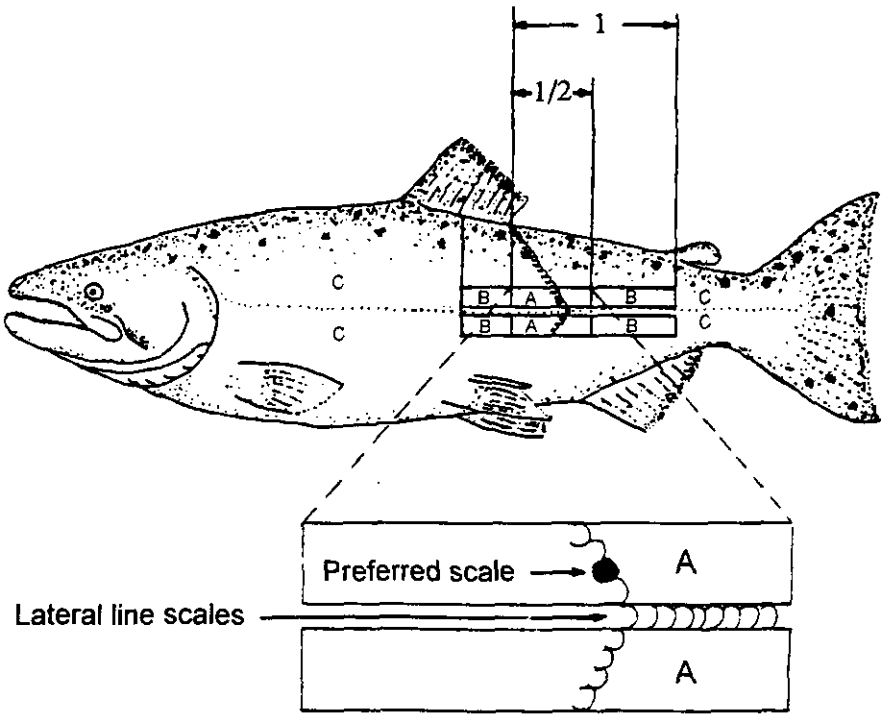



**Fig. 4-10.** Diagram for Collecting Salmon Scales

**Salmon**—Follow the diagonal scale row from the posterior insertion of the dorsal fin to the lateral line of either side. The scale from two scale rows above the lateral line (on the diagonal) is the preferred one.

AREA 521 **FORM 9US - BIOLOGICAL SAMPLING FORM** Page 2

| Cruise no. | Vessel code | Date Year | Date Mo. | Date Day | Species name | Species code | Specimen type | Sampling system |
|---|---|---|---|---|---|---|---|---|
| 1 2 3 4 5 | 6 7 8 9 | 10 11 | 12 13 | 14 15 | | 16-18 | 20-21 | 22-23 |
| | | 94 | 09 | 17 | KING SALMON | 222 | 2 | 2 |

Total no. of specimens _____

Catalogue date _____

| | Set/haul number (25 26 27) | Specimen number (28 29 30) | Sex (31) | Length (cm) (32 33 34) | Weight (kg) (35 36 37 38 39) | Form 7 (41) | Maturity stage (42) | Notes (43 44 45) | Age (47 48 49) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 103 | 4 | M | 56 | 2.00 | Y | | | | |
| 2 | | 5 | M | 58 | 3.10 | | | | | |
| 3 | | 6 | M | 55 | 3.10 | | | | | |
| * 4 | | 7 | M | 67 | 4.40 | | | | | |
| 5 | | 8 | F | 68 | 3.00 | | | | | |
| 6 | | 9 | F | 67 | 3.10 | | | | | |
| 7 | 103 | 10 | F | 67 | 3.20 | Y | | | | |
| 8 | | | | | . | | | | | |
| 9 | | | | | . | | | | | |
| 10 | | | | | . | | | | | |
| 11 | | | | | . | | | | | |
| 12 | | | | | . | | | | | |
| 13 | | | | | . | | | | | |
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| 33 | | | | | . | | | | | |
| 34 | | | | | . | | | | | |
| 35 | | | | | . | | | | | |
| 36 | | | | | . | | | | | |
| 37 | | | | | . | | | | | |

This space reserved for age reader's use only!

*Specimen #7: tissue collected.

**Fig. 4-11.** *Form 9US - Biological Sampling Form*

## Form 9US Instructions

Salmon scale data is recorded on Form 9US but this form is also used for various other studies to record the biological information of individual fish. Observers commonly use Form 9US to record data for fish whose age structures (scales, otoliths, or fin rays) are collected for future age determination. (Refer to special projects text on page ?.) Data for gonad maturity sampling are also recorded on Form 9US.

### Instructions

1. **Form sets and page numbering:** Form 9US data are maintained by cruise number/vessel code and by species. *Keep separate groups of pages for each species.* You cannot record coho salmon on the reverse side of a chinook salmon sheet, for instance. Start with a new page 1 for each species.

   As with other forms, record your name and the ship name at the top of the first page of each set of forms. For Form 9US you should do this at the top of the first sheet for each species.

2. **Area:** At the top, fill in the three-digit NMFS area corresponding to the hauls or sets recorded on the page. To determine the area, plot the latitude and longitude from the Forms 2US or 1US on the maps starting on page ?. Check positions and areas for each haul on Form 9US if your vessel is near a boundary line or moves a lot. If your vessel changes areas between sampled hauls/sets on one day, you will need to use a new page (or side of the page) for each area even though the date and species is the same.

3. **Plant observers:** Please write the name of the catcher boat that delivered the sampled fish on the top of each Form 9US.

4. **Heading:** Fill in the cruise number and vessel code (when known), date, species common name, and the corresponding species code. Start each day's measurements (or subarea if it changes during the day) on a new side. Leading zeros should appear in the month and day only (columns 12 and 14) as needed.

5. **Specimen type:** Record the typ of specimen that is being collected:

   1--otoliths
   2--scales
   3--fin rays
   4--otoliths and scales
   5--otoliths and fin rays
   6--scales and fin rays
   7--otoliths, scales, and fin rays
   8—maturity only
   9—maturity and age structures

6. **Sampling system:** Record the sampling system that was used:

   **1—stratified random:** This is the most common system for the special project assignment of collecting age structures. The fish are obtained from your length frequency samples and a tally sheet is used to ensure that age structures are obtained from no more than 5 fish per cm and sex group.

   **2—random:** In this system, although the fish may be from your length frequency sample, no stratification is made by size and sex. Salmon scale collection is an example of this sampling system because scales are taken from all of the salmon in your composition sample. If a species is too numerous, a subsample is also coded 2, specifying a random sampling system.

   **3—systematic:** Fish are chosen from the length frequency sample in a random fashion (as in 2 above), but the haul/set to be sampled is selected in a "systematic" fashion. For example, the haul closest to the cumulative 200, 400, 600 metric ton catch may be chosen to be sampled.

7. **Total no. of specimens, Catalogue date, and Remarks:** Leave these areas as well as the columns for Notes and Age blank. Entries will be made in these spaces by the age readers processing your collection. If your project specifically directs you to write something, or if you note something extraordinary about an individual fish, put an asterisk beside the line and footnote your remarks below the last line of entry on the page, under the "Remarks" section.

8. **Set/Haul number:** Data from the same species but from several hauls or sets can be recorded per sheet as long as the hauls correspond to the date and NMFS area on the top of the page.

9. **Specimen number** is the identifying number on the otolith vial, scale envelope, or other container with the specimen. There should not be any duplicate specimen numbers within a species. The specimen numbers should be listed in sequence. (We want to avoid having specimen containers filled at random.) Salmon scale samples are numbered sequentially by species and the data are recorded on separate sets of Form 9US by species.

   If you board another ship before completing a collection, you can continue with the same sequence of specimen numbers, but keep separate sets of Form 9US for the two different vessels.

10. **Sex:** It is best if the specimen data are grouped by sex (see example form). Record the sex of the fish using "M", "F", and "U" notation (M = male; F = female; U = unidentified).

11. **Decimal Places:** Record the length of the fish to the nearest whole centimeter. The weight must be filled out to two decimal places. Add trailing zeros where necessary.

12. **Form 7:** If you recorded the length of the fish on the Form 7US (which should almost always be the case unless you picked this particular fish from someplace other than your length frequency sample), record a "Y" for "Yes" in column 41. Otherwise, write "N."

13. **Maturity:** If you are requested to record maturity stage, record this in columns 42-43. An appropriate maturity scale for the species would need to be provided to you.

# Collecting Tagged Fish and Crab Information

***Uses of the Data:***
Tagging studies provide information on fish migration and thus on stock separation. They also are used to estimate survival and fishing mortality. Collecting and returning tags is an important way to help fishery research.

If you should find a tagged fish or crab while you are sampling, or if a crew member brings you a tagged fish or crab, return the tag, along with all pertinent information, to the debriefers at the end of your cruise. If a crew member just gives you a tag, ask them for other information such as, what species was it from and what catch was it found in? It would be very helpful if skippers would make a note of a tag recovery in the NMFS fishing logbook.

**From this section, you should learn:**

- What information is needed when you find or are given a tag.
- What kinds of tags are used and what species are tagged.
- Are there rewards for tag returns?

## Tag Recovery—In General

Species such as yellowfin sole, halibut, cod, pollock, sablefish, salmon and king crab have been tagged. Recently, shortspine thornyhead rockfish and Greenland turbot were tagged in the Bering Sea. For any tag recovery collect the following information:

1. Tag or tag serial number (*must* include prefix letters).
2. Scale and/or otoliths for aging.
3. Fish length (in mm).
4. Fish weight (in grams).
5. Sex and maturity of gonads (immature, mature, spawning).
6. General appearance (poor body condition, good body condition).
7. Condition of tagging wound (healthy healed tissue, open wound, etc.).
8. Time and date of capture.
9. Capture location (latitude and longitude).
10. Capture depth.
11. Name and address of vessel captain or crewmember retrieving the fish.

Tags are usually located on the dorsal surface of the fish, or on the gill cover. Tags can be of the anchor, spaghetti, or modified disk variety. Some fish may be tagged twice. NMFS will pay a $5 reward to the captain of the ship from which a sablefish tag is returned (the observer cannot be paid). To expedite the sending of the reward, include the captain's name and address with the data.

### Halibut

The International Pacific Halibut Commission (IPHC) has tagged halibut with orange, yellow and pink spaghetti tags. These tags are attached to the cheek on the eyed side of the halibut and have a five or six digit number printed on the side. All tags from halibut should be removed from the fish before it is released. Halibut from which tags are returned may be released alive or retained aboard for consumption (anyone) or for "home pack" (by the crew). If the fish is going to be retained, collect the otoliths and return them with the tag. Fish weight is not required. The IPHC rewards fishermen for the return of tags with $5.00 or a baseball cap so include the crewmember's address.

### Salmon

Some agencies tag salmon by inserting a coded wire tag (CWT) into the snout of fingerling salmon. The wire is etched with a binary code and is about three millimeters in length. Wire-tagged salmon are marked by clipping off their adipose fins. If you find a salmon missing an adipose fin

(on the scale envelope, Missing Adipose "Y"), you must collect the snout of the fish because it may contain a coded wire tag. First collect a scale sample, record species, haul or set number, sex, length, weight, and if you have access to a gram scale weigh the gonads. (A gram scale might be available from a factory manager or quality control person.) Also check for other fin clips, tags, or a clipped maxilla. If found, describe these on the tag recovery information slip. Sandwich sized plastic bags with plastic information slips and wire ties in them are in a roll in your issued gear. The plastic slip should be filled out in pencil and the scale sample number written on the top margin.

Remove the upper snout by cutting down ***about one centimeter behind the eye***. The diagram below is on the back of the tag recovery information slip and shows where to cut.

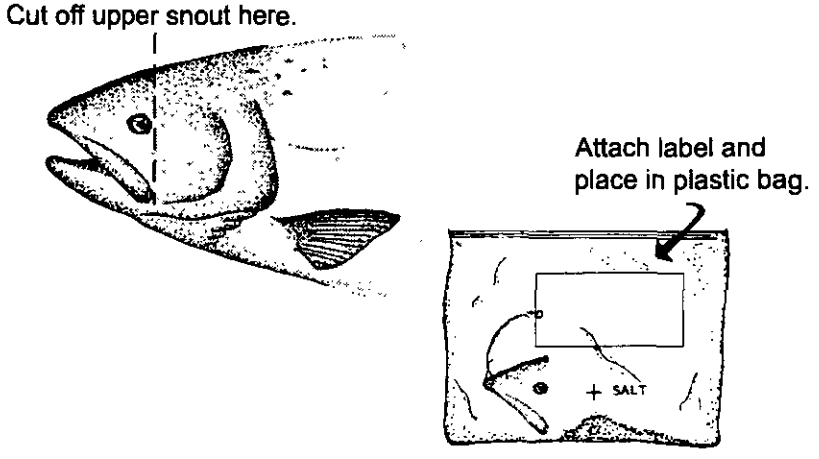



**Fig. 4-12. Removal of Snout from Salmon**

When you get back to your quarters, complete the plastic recovery information slip in pencil with your name, vessel name, date, haul location, and scale number. Attach the completed data tag to the snout, and put it in one of the provided plastic bags. Several handfulls of table or rock salt are needed for preservation. Ask a factory manager or cook for salt and add it to the bag. After a few days, drain off any accumulated liquid and re-salt the snout. Repeat the draining and re-salting as needed. If salt is not available, freeze the snout and ask your debriefer for salt when you come in. Do not dehydrate snouts by drying them in air, this makes it nearly impossible to dissect out the wire tag. ***For adipose clipped salmon found at processing plants, the NMFS area where the catcher boat was fishing will suffice for latitude and longitude.***

## Crab

The Alaska Department of Fish and Game along with other agencies have tagged crab with bright yellow or orange plastic, "spaghetti" tags. If one of these tagged crabs are found, record the needed information and measure the crab to the nearest millimeter. (Refer to ?). Sometimes tagged crabs are alive and in good condition. If this is the case, record the pertinent information along with the tag number and release the crab as quickly as possible.

## Sablefish

The National Marine Fisheries Service, Pacific Biological Station, and the Alaska Department of Fish and Game have tagged sablefish on the dorsal surface posterior to the dorsal fin with pink, red, yellow, and blue spaghetti tags since 1981. Since then, these agencies have compiled considerable information on recruitment, age and growth, distribution, and migration of sablefish in the Bering Sea and Gulf of Alaska. This information is supplemented with an age validation study that requires the extraction of otoliths from tagged sablefish.

Otolith Extraction Procedures: Two procedures are used to extract otoliths from tagged sablefish. The first procedure is for tagged sablefish whose otoliths have been exposed to OTC, a light-sensitive bone-marking chemical. Sablefish treated with OTC have **"GROWTH STUDY - REWARD FOR WHOLE FISH"** written on pink tags or have **BLUE** spaghetti tags. Otoliths from fish with these tags should be extracted and placed in opaque vials that exclude light. If opaque vials are unavailable, the otoliths can be saved in standard translucent otolith vials wrapped completely with black electrical tape or wrapped thoroughly with aluminum foil. Put the tag in the vial along with the otoliths. Another procedure is to remove the head, place it in a plastic bag, and then freeze the head with the tag enclosed in the bag. The cut to remove the head should be between the operculum and the pelvic fin to ensure that the otoliths are not exposed to light.

The second procedure is for tagged sablefish whose otoliths have not been exposed to OTC. These tagged fish do not have special wording on the tag. Otoliths from these fish are extracted in the usual manner and placed in a white or clear translucent vile with the tag enclosed in the vial.

Store **all** otoliths in a solution of 50% ethyl alcohol and 50% water with the tag enclosed in the vial. If vials are unavailable, it is very important to clean the otoliths thoroughly, then dry and place them in paper envelopes with the tag enclosed. Your debriefer will have you fill out a **Tagged Fish Information Form** for each tagged fish.

## TAGGED FISH INFORMATION FORM

Cruise No.: _____ Vessel Code: _____ Observer Name _____

Ship Name: _____

Permit Number: _____

Captain (or reward recipient's) Name: _____

Address: _____

_____

_____

Species: _____

Tag Prefix (often a two letter code) and Serial No.: _____

Tagging Agency (circle one): Seattle Auke Bay Nanaimo Shimizu IPHC Other _____

Time and Date of Capture: _____

Capture Location (lat. & long.): _____

Sex and Maturity of Gonads (immature, mature, spawning): _____

Length (fork length in cm): _____ Affix the tag or vial *here (with tape):*

Weight (total wt. in kg): _____

Capture Depth (fathoms): _____

Vessel/Gear Type: _____

General Appearance (poor body condition, good body condition):

Condition of Tagging Wound (healthy healed tissue, open wound):

Other Comments:

**Fig. 4-13.** Tagged Fish Information Form

# Special Projects

Otolith

Many observers will be assigned a special project. Examples of projects that are assigned are age structure sampling, stomach sampling, maturity coding, tissue collection, or whole fish collection. If you have an interest in working on a particular project, discuss this with your briefing instructor. Only the instructions for age structure collection are presented here. If you are given a different assignment, instructions will be given to you during training or briefing

## Uses of the Data

Special projects are short and long term studies which are not assigned to all observers. These studies are all being done by or are authorized by the NMFS to collect biological information for stock analysis. Two of our long term studies are the collection of age structures and stomach samples.

**Otoliths are collected from most fish; scales are taken from salmon; both scales and otoliths are collected from Pacific cod.**

Scales and otoliths are the most common age structures collected from fish and are read in a similar manner as tree rings to determine age. Knowing the age of harvested fish tells us their age at length, longevity, growth rate, and age of recruitment to the fishery. A graph of the ages and abundance gives a picture of the health of the stock. From stomach samples and scans of stomach content we learn about food habits, the food web, and essential fish habitat.

Other special projects have included tissue samples for stock identification; maturity studies for fecundity and spawning age and behavior. Fish collection directly aids observer training but may also be used for species differentiation. Biological data gives us the basic information needed for stock assessment. You play an important role in helping the NMFS learn more about the status and health of the commercial fisheries resource.

**From this section, you should learn:**

- A description of the age structure sampling system
- Techniques for removing otoliths
- Otolith and scale sampling for Pacific cod
- Types of age structures by species and storage media

## Age Structure Sampling

Objective: To obtain a limited number of age structures from most of the commonly observed length groups in the length frequency collection.

If given this project, the species assigned is usually the target species of the vessel. This will be the same species that you take lengths from. One exception is if your longline or pot vessel is targeting sablefish (black cod). Age structures are not needed from that species. Otoliths, or ear bones are the structures to collect for age determination of *most* commercial species. From salmon though, scales, not otoliths are collected. Scales **and** otoliths are taken from Pacific cod. Consult Table 4 - 1 on page ? for "Age Structure Sample Type and Storage Media" to be sure which age structure to collect.

Choose only one species for your collection. If the vessel is targeting more than one species, choose one which occurs abundantly in the catches. This will make it easier for you to get approximately 150 randomly collected fish for length frequency measurements each day. The fish you take age structures from must be a subset of those in your length frequency sample. The only exception is when taking the otoliths or scales of a tagged fish). On Form 9US, code age structure collection data as "stratified random" (code 1) in the field for "sampling system." This means the collection is stratified by length, from the random length frequency sample of fish.

To select fish for otolith collection, take a few fish (up to a maximum of five) from each sex for each centimeter length group seen in your length frequency sample (up to 5 males and 5 females of each centimeter group). Keep a running tally of the age structure collection on your plastic form 9 to help you keep track of what sizes and sex of fish are still needed (see example). ***It is not necessary to complete the 5/cm/sex categories on the tally sheet or to fill all the vials.*** It is likely that you will have only a scattering of one or two samples from fish whose lengths are at the extremes of the size range you see.

Age structure assignments may be assigned for the "first half" or "second half" of your time at sea. The purpose of this is to spread out the collection effort of all samplers over time. This request should be adjusted as necessary to conform with your period aboard one vessel. A collection (and its cumulative tally) must be discrete by vessel or by plant. If you begin another collection on a new vessel or plant, start a new running tally.

Try not to collect more than 20 age structures per day (10 males and 10 females). We would like the collection to be made over the duration of your sampling time on one boat, not in one or two days. If you are as-

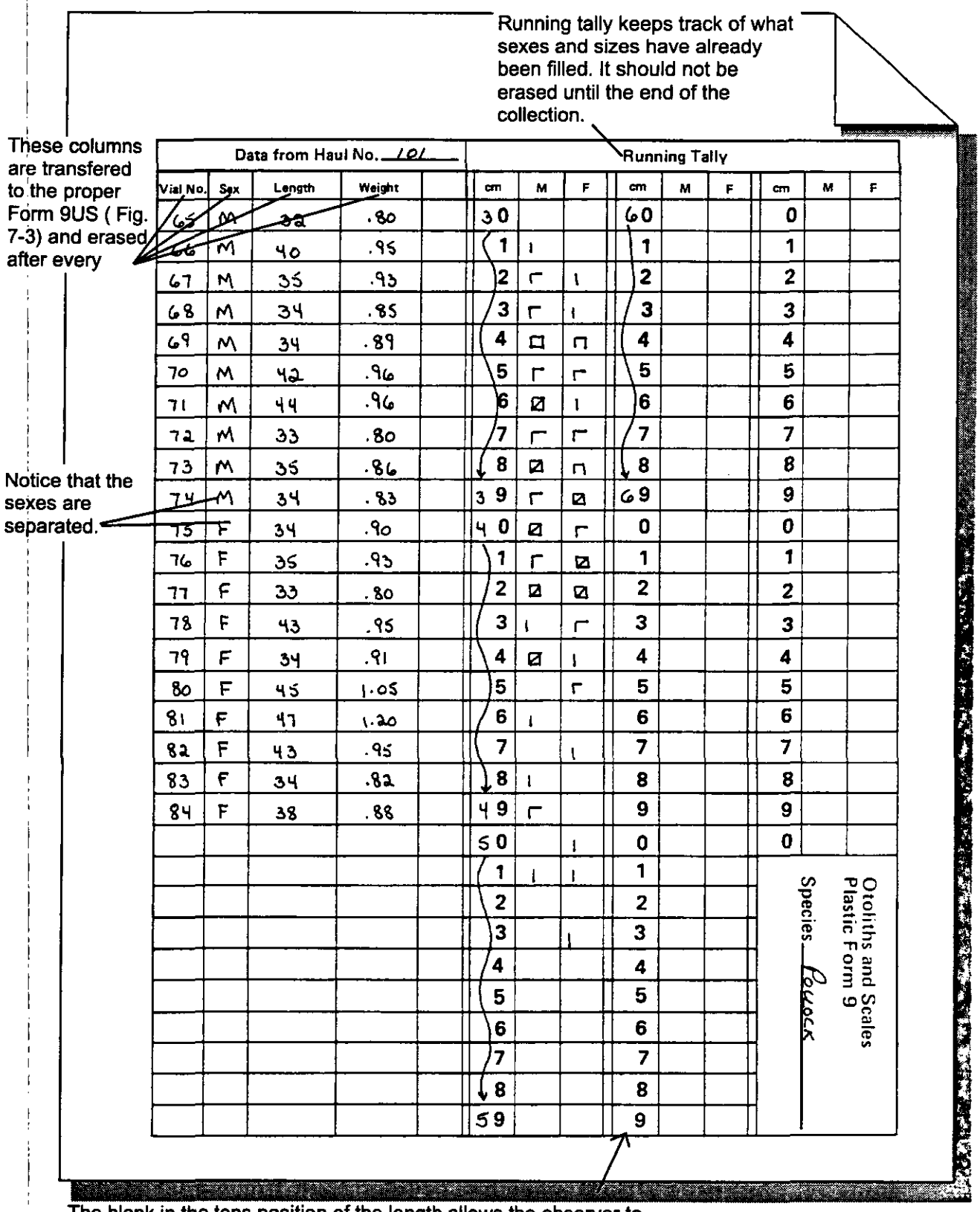



**Fig. 4-14.** Plastic Form 9US

JOE OBSERVER
"SEA GULL"

AREA 521 **FORM 9US · BIOLOGICAL SAMPLING FORM** Page 1 of 12

| Cruise no. | Vessel code | Date Year | Date Mo. | Date Day | Species name | Species code | Specimen type | Sampling system |
|---|---|---|---|---|---|---|---|---|
| 1 2 3 4 5 | 6 7 8 9 | 10 11 | 12 13 | 14 15 | WALLEYE POLLOCK | 16-18 | 20-21 | 22-23 |
| | | 97 | 09 | 17 | | 201 | 1 | 1 |

Total no. of specimens ____

Catalogue date ____

| | Set/haul number (25-27) | Specimen number (28-30) | Sex (31) | Length (cm) (32-34) | Weight (kg) (35-39) | Form 7 (41) | Maturity stage (42) | Notes (43-45) | Age (47-49) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 101 | 65 | M | 32 | .80 | Y | | | | |
| 2 | | 66 | | 40 | .95 | | | | | |
| 3 | | 67 | | 35 | .93 | | | | | |
| 4 | | 68 | | 34 | .85 | | | | | |
| 5 | | 69 | | 34 | .89 | | | | | |
| 6 | | 70 | | 42 | .96 | | | | | |
| 7 | | 71 | | 44 | .96 | | | | | |
| 8 | | 72 | | 33 | .80 | | | | | |
| 9 | | 73 | | 35 | .86 | | | | | |
| 10 | | 74 | M | 34 | .83 | | | | | |
| 11 | | 75 | F | 34 | .90 | | | | | |
| 12 | | 76 | | 35 | .93 | | | | | |
| 13 | | 77 | | 33 | .80 | | | | | |
| 14 | | 78 | | 43 | .95 | | | | | |
| 15 | | 79 | | 34 | .91 | | | | | |
| 16 | | 80 | | 45 | 1.05 | | | | | |
| 17 | | 81 | | 47 | 1.20 | | | | | |
| 18 | | 82 | | 43 | .95 | | | | | |
| 19 | | 83 | | 34 | .82 | | | | | |
| 20 | 101 | 84 | F | 38 | .88 | Y | | | | |
| 21 | | | | | . | | | | | |
| 22 | | | | | . | | | | | |
| 23 | | | | | . | | | | | |
| 24 | | | | | . | | | | | |
| 25 | | | | | . | | | | | |
| 26 | | | | | . | | | | | |
| 27 | | | | | . | | | | | |
| 28 | | | | | . | | | | | |
| 29 | | | | | . | | | | | |
| 30 | | | | | . | | | | | |
| 31 | | | | | . | | | | | |
| 32 | | | | | . | | | | | |
| 33 | | | | | . | | | | | |
| 34 | | | | | . | | | | | |
| 35 | | | | | . | | | | | |
| 36 | | | | | . | | | | | |
| 37 | | | | | . | | | | | |

**Fig. 4-15**. Form 9US Biological Sampling Form

signed to sample a species which is seldom seen in quantity, you may want to take advantage of hauls containing many specimens and collect more otoliths/scales on those days. If there is not enough of an assigned sampling species to collect a good length frequency sample each day, it is expected that you can still take approximately 150 lengths of the target species each day. If that is not possible, just inform your debriefer as to the situation.

After taking the length measurement, if the fish is of a size and sex needed, weigh the fish with the 2.0 kg or 12.0 kg scale. Record weight, sex, and length on the plastic form 9 next to the vial number in which the otoliths (or otoliths and scales) are placed. Fill the otolith vials in numerical order and the sexes should be grouped. It is very important to have a clear understanding of the sampling scheme. A mistake in the numbering sequence or procedure used to relate the otoliths to associated biological data can make a collection useless.

Remove the pair of otoliths from each fish. 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 and place one set of two otoliths in each vial. It is important to get the otoliths clean and dry before storing them to prevent bacterial growth. At the end of the measuring period, the plastic Form 9 should be completed with species name, haul or set number, otolith number, and all corresponding sex, length, and weight data.

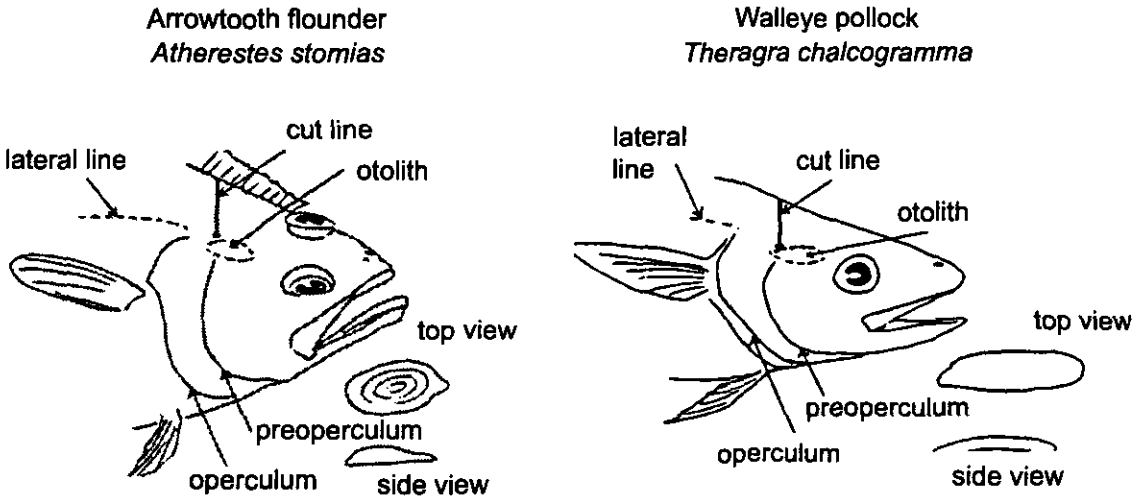



**Fig. 4-16.** Vertical Cut. Approximate location of the otoliths (sagittal) and the cut for the removal of otoliths from flatfish (left) and roundfish (right).

When you are preparing to turn your data and specimens in during debriefing, you must obtain the appropriate storage media, if any, (refer to the table which follows) and add it to each vial. Cover the otoliths and/or scales with the appropriate fluid (if any) and cap it. Most roundfish otoliths are stored in a 50% ethyl alcohol—50% fresh water solution. Flatfish otoliths are stored in the glycerol solution as provided. **Do not use isopropyl (rubbing) alcohol for storage media as it will destroy the otoliths.**

**Age Structure Sample Type and Storage Media**

| Species | Sample Type | Storage Container | Storage Media |
|---|---|---|---|
| Walleye pollock | Otolith | Plastic vial | 50% ethyl alcohol 50% water |
| Yellowfin sole (or other flatfish) | Otolith | Plastic vial | Glycerol/Thymol Solution |
| Atka mackerel | Otolith | Plastic vial | 50% ethyl alcohol 50% water |
| Pacific cod | Otolith & Scale (both in same vial) | | Plastic vial 50% ethyl alcohol 50% water |
| Pacific hake | Otolith | Plastic vial | 50% ethyl alcohol 50% water |
| Jack mackerel | Otolith | Plastic vial | Dry |
| Sablefish (tagged fish only) | Otolith | Plastic vial | 50% ethyl alcohol 50% water |
| Salmon | Scale | Paper envelope | Dry |
| Rockfish | Otolith | Plastic vial | 50% ethyl alcohol 50% water |

**Table 4-2**. Age Structure Sample Type and Storage Media. Note: Ethyl alcohol is the same compound as ethanol but not the same as denatured or rubbing alcohol. Do not use storage media other than that obtained from an NMFS program office.

### Otolith Removal

The otoliths are located ventrally and to either side of the brain tissue, about one eye diameter behind the eye in most fishes (refer to the diagram below). There are three common methods of cutting into a fish's head to remove the pair of otoliths. The easiest method to use 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: On the side of the fish's head, if you were to make a hypothetical extension of the lateral line and of the curve of the preopercular bone, determine the point at which these two lines would meet. Cut down to that point.

Firmly grasp the fish by putting thumb and forefinger into the eye sockets. 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, let up on the knife or you will slice through the otoliths. Put down the knife and break the head open. 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 are then easily picked out with forceps and should be wiped clean before storage.

Care should be taken not to break or crack the otoliths, but if an otolith is broken, **and if** the fish is of an uncommon size, include all pieces in the vial. Otherwise simply discard the otoliths because you will probably see fish of that sex and size again and it is extremely difficult to determine the age of broken otoliths.

On special collection projects use the same otolith number to identify and label the additional structures taken (such as scales, vertebrae, fin rays, etc.). The numbers on those structures will then correspond to the sex, length, and weight information for that fish on Form 9US. There is no need to fill out an additional Form 9US unless instructed to do so.

### Atka Mackerel Otolith Removal

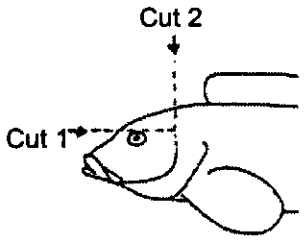
Fish with bony skulls and small otoliths, such as sablefish, Atka mackerel and some rockfish, may pose problems at first. The horizontal cut, in an anterior to posterior direction, cuts off the top of the head to expose the otolith cavity. This cavity can also be reached by going into the back of the mouth with a pair of forceps or scalpel and piercing up through the roof of the mouth.

Take your time practicing with a few fish to make sure you get a good feeling for where the otoliths are. Then the otolith collecting should go much easier. If a lot of blood fills the head cavity (a big problem with Atka mackerel), you probably cut too deep. Flush the cavity out with

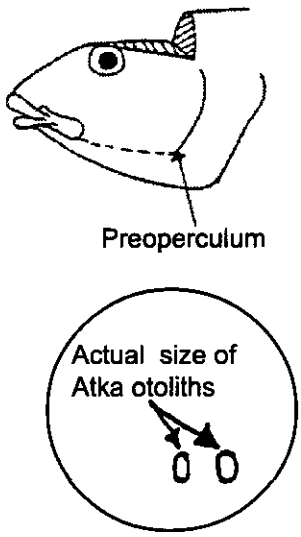
some water. Don't try to get the otoliths by turning the fish upside down and hitting it against a board. The otoliths are too small and it's unlikely you'd find them.

## The Horizontal Cut

**Step 1.** Make a horizontal cut that will pass right above the eye and up to the preoperculum. Then start right above the preoperculum and slice down until you meet with the other cut.




**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.

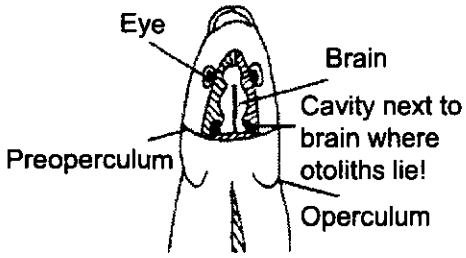



**Fig. 4-17.** Horizontal Cut

### Pacific Cod Age Structure Sampling

From Pacific cod, ***scales as well as otoliths should be taken.*** To collect scales, first rinse the fish off or lightly wipe down the sides with a very wet sponge to remove scales of other fish and slime. There are two preferred body zones from which to take scales, see the figure below. Zone "A" is preferred over zone "B." Use a **clean**, thin-edged instrument (knife, scalpel, forceps) to scrape in an anterior direction (toward the head), within zone A or B if possible. Cod scales are much smaller than salmon scales so a scrape sample is necessary.

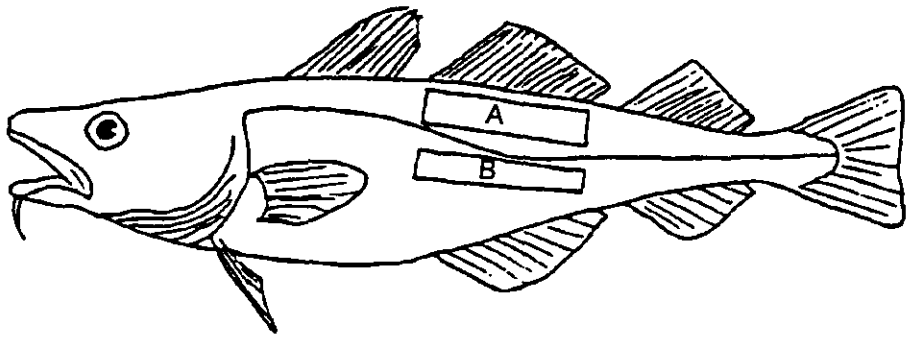



**Fig. 4-18.** Pacific Cod Body Zones A and B

***Cod scales should be put into the vials with the otoliths instead of into scale envelopes.*** Smear the scales off down in the vial as opposed to scraping them off on the vial rim. In debriefing, you will have to open the vials and add alcohol to cover the otoliths and scales. Smearing them insures they are not clumped and stuck together too thickly and if they are down in the vial, they will be immersed when alcohol is added and they will not get lost when the vial is opened and closed. Clean any remaining scales off the instrument before sampling the next fish.

## Fish Collection Instructions

When you collect any organisms at sea, be aware that the specimens belong to NMFS and cannot be kept for any other purpose unless you have obtained written permission first. Collections other than for NMFS could be considered a conflict of interest between observers and vessels. For that reason, label your specimen collection "NMFS Observer Program Specimens" in large letters. The most common problem in fish collections is the vessel discarding it! Labeling it well and getting permission to store the collection should take care of that hazard.

**Collected Specimens Belong to NMFS**

**Tagging and Freezing the Specimens:** After choosing a good specimen, lay the fish flat and straight before freezing it. Glaze the fish with water and freeze quickly after collection. Make an identifying label on thick paper (like the thickness of the dividers in your species I.D. manual), cardboard, plastic sheet or a provided tag (please find a substitution for regular notebook paper; it disintegrates after freezing) and put it with (in) the fish before freezing. The tag should list: 1) your name, 2) vessel name, 3) haul number, and 4) species identification. Fish color and condition keeps best if, after the fish is frozen, you glaze and reglaze it a couple times. If combining different fish species in the same bag, tag each fish inside the bag and put a tag on the outside listing all of the species within. When debarkation is near, pad and package it well to prevent broken tails and fins. While in transit do your best to keep it frozen.

**Types of Collections:** There are various types of fish collection. How you handle getting the collected fish back to NMFS depends on the type of fish collection you are doing. ***Do not collect prohibited species unless you have obtained a special permit from NMFS first!***

**When Turning the Collection over to the NMFS Field Office:** Both the Dutch Harbor and Kodiak offices have freezers. In order to leave fish there, you need to have the individual fish tagged as above and the bag or box holding the entire collection tagged with your name and vessel. If the fish was collected because it is rare or out of range, **make sure you label it as such**. The field offices will not accept untagged fish! Also, please turn in, with your fish collection, a listing of the fish you are leaving with the field office.

All fish in the field offices are eventually shipped to Seattle, but to save money on shipments, the field offices will only ship once they have accumulated at least 100 pounds of fish. That could take quite some time. This is the reason that you **must** yourself bring back any fish to be used for verification of species identification or specimens you need identified for your data. Otherwise the fish will be in Dutch and you will be in Seattle, wanting identification verification!

### Returning to Seattle with Frozen Specimens:

a) If your plane is not leaving immediately, maybe your place of lodging will hold it for you in their freezer. If not, temporarily store it at a NMFS field office. Sometimes a fish processing plant will allow you to keep **well labeled** fish in their freezer. Arrange this through the plant observer.

b) Tell the airlines at check-in that you have a package to keep frozen. If they are wrapped very well, it will help keep them frozen.

c) If you arrive in Seattle on a weekend, phone first and then take the fish to the Seattle Aquarium if you can't keep it at your lodgings. Their weekend, daytime phone number is: 386-5018 or 386-5019 and their 24-hour phone number is: 386-4359. Tell the aquarium staff you are a NMFS observer, get directions and ask them to hold it for you until Monday.

d) If you arrive on a weekday within working hours, just bring the fish into the wetlab freezer. Put incoming fish on one of the shelves just inside the freezer door, on the left. Then be sure and tell your debriefer that you have frozen fish brought back, and the reason you collected them.

## Specimens Needed For Teaching Collection

[Small, 20 - 45 cm specimens are preferred but (*) means collect any size.]

I. Gadidae
Arctic cod
Pacific tomcod
Saffron cod

II. Flatfishes
Rough-scale sole, *Clidoderma asperrimum*
Longhead dab, *Pieuronectes proboscideus*
Curlfin sole, *Pleuronichthys decurrens* *
C-O sole, *Pleuronichthys coenosus*
Greenland turbot, *Reinhardtius hippoglossoides*
Deepsea sole, *Embassichthys bathybius* *
Hybrid sole, *Parophrys vetulus x Platichthys stellatus*
English sole, *Pleuronectes vetulus*
Butter sole, *Pleuronectes isolepis*
Slender sole, *Eopsetta exilis*
Petrale sole, *Eopsetta jordani*
Bering flounder, *Hippoglossoides robustus* *
Arctic flounder, *Pleuronectes gracialis* *

III. Rockfishes
Longspine thornyhead, *Sebastolobus alascanus* *
Darkblotched rockfish, *Sebastes crameri*
Harlequin rockfish, *Sebastes variegatus*
Silvergray rockfish, *Sebastes brevispinis*
Black rockfish, *Sebastes melanops*
Blue rockfish, *Sebastes mystinus*
Any Washington, Oregon or California coastal species

IV. Incidentals - Collect any unusual fish. Look especially for:
Bering Wolffish, *Anarhichas orientalis*
Flathead Pomfret, *Taractes asper*
small Grenadiers, (Macrouridae)
Oxeye Oreo, *Allocyttus folletti*
Capelin, *Mallotus villosus*
Eulachon, *Thaleichthys pacificus*
Manefish, (Caristiidae)
Quillfish, (Ptilichthyidae)
Loosejaws, (Malacosteidae)
Bigscales, (Melamphaidae)
Barracudina, (Paralepididae)
Brotula, (Bythitidae)
immature Ragfish, (Icosteidae)
Ribbonfish, (Trachipteridae)
Anchovies, (Engraulidae)
Lightfish, (Gonostomatidae)
Cusk-eel, (Ophidiidae)

**Fig. 4-19.** Specimens Needed for Teaching Collection

# 5 Observing on Longline and Pot Fishing Vessels

Roughly one third of the total observer days at sea per year are aboard longline and pot fishing vessels. Longline and pot vessels target Pacific cod and are allocated just over half of that species quota. Longline vessels also target sablefish and observers are occasionally aboard when they fish for halibut.

Your duties and priorities are the same as when working aboard a trawler but the methods you will use to obtain OTC and for composition sampling are different. Therefore, your basic instructions on duties are presented in preceding chapters for sampling trawl catches (e.g., how to sex fish). Only the differences for sampling on longline and pot vessels are explained in this chapter.

**From this section,you should learn:**

- about longline and pot gear and its deployment.
- how to calculate your estimates of total catch and the OTC.
- how to record fishing and catch summary information
- how to use the tally method to sample for composition
- how to take a systematic sample to collect halibut length and viability
- data
- about specific regulations for longline vessels and your compliance
- monitoring role.

**Catcher vessel or catcher/processor?** — Longline and pot boats may be the "catcher only" type that ice and deliver their fish to a shoreside plant or to another ship for processing, or they may be catcher/processors. "Heading and gutting, **without freezing or additional preparation,** is not considered to be processing for purposes of reporting to NMFS. If your operation only heads, guts, or ices fish, or cools fish in a recirculation seawater system, NMFS does not consider your operation to be processing." If your vessel is not processing, consider yourself on a catcher boat.

**Longline Gear** — Longliners catch fish using a line with baited hooks attached to it. Hooks are each attached to the longline by a length of line called gangion. NMFS refers to longline gear as "hook & line" and defines it as, "A stationary, buoyed, and anchored line with hooks attached." The longline may be made up of sections of line called skates which, when on board, may be coiled into tubs or onto a skate bottom (a white fabric square with lines on the corners to tie it into a bundle), or the line may be wound onto an empty net reel. On vessels equipped with an auto-baiter system, coils of the line are hung on a rod, suspended by the hooks and gangion, much like coat hangers on a closet dowel. The length of line on one rod may be referred to as a magazine. During retrieval of the line, the end of one skate, magazine, or half magazine and the start of the next may be flagged by a line marker, knot, or a weight attached to the line. The number of hooks per section of line is fairly uniform. Rather than count every hook sampled, you should use these line markers to count the number of sections, and thence, the number of hooks sampled.

A longline is put out to fish or set from the stern of the vessel. Each end of the longline is anchored and marked with buoys. The set is left to soak for a couple hours while the fishermen go to set or retrieve another line. Later the vessel returns and starts retrieval of the line over a roller onto the weather deck or into a cutout in the starboard side of the vessel called the "pit." On a longliner, the fish are removed from the hooks one at a time as line is retrieved and are immediately processed or put into the hold or tanks. Longline fishing is labor-intensive but it produces a high quality product. There are typically three sets made and retrieved each day, and the target groundfish species are Pacific cod or sometimes, Greenland turbot. Halibut and sablefish (also called black cod) are fished with longline gear by those who have Individual Fishing Quota (IFQ) allocation. Longline vessel operators who do not have IFQ will release halibut off the line as a prohibited species. The techniques for releasing halibut off the line are specified by regulation and observers are asked to monitor their compliance with careful release while sampling.

**Longline Halibut/Sablefish IFQs** — This program for halibut and sablefish longline fisheries began in March, 1995. IFQs are a unique way to manage a fishery in that they give individuals a set portion of quota rather than have them compete in an open access fishery. They may have a quota for either one of these species or both, and they can take their quota at any time that fishery is open (generally mid-March to mid-November). Total allowable catch (TAC) is determined annually. Because fishermen are allocated a percentage of the TAC, rather than an absolute amount of fish, the stocks should be protected over time. If stock sizes go up, everyone gets more fish. If the stock sizes go down, everyone gets less.

Observer coverage is not required for halibut IFQ fishing unless the operator targets halibut in two regulatory areas in one fishing trip. However, sometimes a longline skipper will make a few halibut sets before or after groundfish fishing or will retain halibut bycatch. Whether sets are made for halibut or groundfish, an observer onboard is expected to sample according to instructions and the vessel personnel must adhere to all regulatory responsibilities including observer access and assistance. If you have any questions or problems, contact an Observer Program office. (For a summary of halibut IFQ sampling, refer to page ?)

When assigned to a vessel, you will probably not be informed as to whether the vessel has IFQ. The mechanisms for tracking IFQ are independent of observer generated data. If you are on a longline vessel retaining halibut or sablefish you can assume they have quota share for the fish. It is the owner/operator's responsibility to ensure they have quota.

Do not give advice on the IFQ regulations. All questions regarding IFQ should be directed to the Restricted Access Management Division (RAM) at the NMFS Alaska Regional Office in Juneau at 907-586-7202. At this time, the Observer Program is not taking an active role in monitoring for compliance with the IFQ regulations because the catch monitoring system is independent of observer data. However, if you do see obvious problems note them in your log and bring them to the attention of NMFS in debriefing.

**Pot Fishing Gear** — There are various types of pots used by pot fishing vessels. Most vessels use king crab pots which are adapted for targeting on Pacific cod and excluding halibut. The big king crab pots are made up of a rectangular metal frame to which panels of webbing are tied; the frame sizes vary but typically measure about 7 x 7 x 3 feet. Pots weigh about 700 pounds apiece. Funnel-shaped webbing in the side panels guide the fish into the pot through openings fitted with "triggers" which function as valves to let cod in and prevent them from swimming back out. Containers of bait are attached inside each pot to attract fish. Usually a buoy

line and marker float is attached to each pot and the pots are each set out and retrieved individually, that is, they are not strung together by a surface or ground line.

NMFS defines a set as: a string of pots (or hook and line gear) or a group of pots that are deployed in a similar location with a similar soak time. Skippers will interpret this definition in a variety of ways. A set can have one pot in it or a large number of pots. Record set data on your Form 1US as entered on the vessel log and do your best to attribute sampled pots to the correct set number.

Regarding the configuration of the gear, NMFS regulations at 50 § CFR 679.24 state, "Pots 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 no larger than #30. Each pot used to fish for groundfish must 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." If you observe pots in use that do not conform to this regulation, describe them in your logbook and notify the skipper of your observations.

In retrieval, the buoy line is snagged, and the line hauler winch brings the pot to the railing. The pot is swung onto the "launcher", a platform attached to the rail. In heavy weather, a pot may swing wide before it can be set onto the launcher. Pots weigh hundreds of pounds and swinging and shifting pots, colliding with crewmen, have resulted in serious injuries. You must develop an awareness of this potential danger and stay well clear of pots being retrieved. When the pot is landed on the platform, a side panel of the pot is opened and the inboard side of the launching platform is lowered to tip the pot and allow the contents to spill into a waiting tote container. The pot is then re-baited, closed, and then the launching platform is tilted up to slide the heavy pot overboard. As the pot quickly sinks, loops of buoy line whip overboard. Loops of buoy line have lassoed crewmen and dragged them overboard and down before rescuers could grab them. Obviously you should also stand well clear of the pots and buoy line during launching.

### Catch Rate Estimates

Longline and pot catches are logged by set, and all sets are attributed to the date that the retrieval of that set was completed. Just as on the Form 2US for trawlers, the only time a noon position is recorded on the Catch Summary Form 1US is on a non-fishing day. (Refer to the example Form 1US which follows.) The skipper's catch weight estimates are always based on deck tallies (counts) and/or production data. There are no deck

or bin estimates of catch volume or weight. ***The skipper's catch estimates do not usually include bycatch or, if they do, it is a rough estimate.*** On longline vessels, losses of fish which drop off the line are considered part of the total catch but are not usually included in the skipper's catch estimate. Therefore, on longline and pot fishing vessels, you are to use your observer estimates for the "Official" Total Catch.

**For Sampled Sets:** On some boats, you might be able to sample whole sets. In that case, use the sample weight (at the top of the species weight column on Form 3US) as Official Total Catch (OTC). When sampling less than the whole set, the Observer's Total Catch estimate is based on sample weight, extrapolated to the whole set using the following proportion.

$$\frac{\text{Weight sampled}}{\text{Hooks or pots sampled}} = \frac{\text{Estimated total catch weight}}{\text{Total hooks or pots retrieved}}$$

**OTC For Unsampled Sets:** If a set is not sampled, there is no Observer's Estimate entry for Form 1US. For a set not sampled, use an average weight-per-hook value from sampled sets applied to the number of hooks in the unsampled set. Do not use the skipper's (vessel) estimate or an adjusted vessel estimate for OTC. To calculate the OTC of a set not sampled, apply a summed ratio from sampled sets, similar in catch composition, to the number of hooks or pots in each unsampled set. Catch composition, and therefore weight, will vary with depths, times of day and areas fished. Use your judgement to apply ratios from sample data to "like" sets.

$$\frac{\Sigma\text{sample wt. of sample sets}}{\Sigma\text{sampled hooks or pots in sampled sets}} = \frac{\text{Total catch wt. of an unsample set}}{\text{No. of hooks or pots in an unsampled set}}$$

**Verifying Hooks or Pots Per Set:** An important variable in the equations for the official and observer's catch estimates are the number of hooks or pots retrieved per set, so you need to periodically verify their number. This is much easier on pot fishing vessels than for longline observers who must verify total hook count. During a trip, as snarled gear is cut out and sections of line or pots are lost, the number of hooks per skate will change and the number of skates or units of gear may be less. This variation will depend on the availability of new gear aboard and how meticulously the crew repairs the gear. Check the number of hooks or pots per set more often if you note gear lost, skates cut, or the crew not replacing hooks lost. **Do not worry about subtracting hook loss from your estimate of total hooks set unless whole skates or units of gear are lost.** Some methods for longline observers to obtain accurate hook counts follow:

1. If your vessel has automatic baiters there are probably hook counters built into the machines. This may provide an accurate count of the number of hooks set if the counter is working properly. Verify hooks counted by the machine against your own tally of some of the skates when not sampling. If a substantial number of hooks is subsequently lost, the loss estimate should be subtracted from the machine tally.

2. At least once a week, take sample hook counts on five to eight skates or tubs or on one or two magazines. The number of units of gear per set should also be spot checked.

3. If the rate of line retrieval is reasonably constant, track the retrieval time per skate or tub. You might notice which units of line are shorter or longer than average and if you mark those units, later you could count hooks on those units of line and adjust the total hook count.

4. If your vessel makes very long sets of a hundred or more skates, even verifying the total number of *skates* can be difficult. Total number of skates can be checked by: overall timing of the setting of the line with a calculation of the average number of seconds to set one skate or a conversion of miles of gear set to number of skates using the video course plotter and the average length per skate.

    - **An Alternative For Official Total Catch** - The preferred method given above uses the total hook count in the set to extrapolate a total catch weight. *If you do not have a good estimate of the total hooks* retrieved for the set due to an unusual event such as a major snarl, or the line was cut and a lot of a set was lost, you might use the following equation(s). *Use this method **only if:***

        - you are not confident of the hook count in the set,
        - you are able to get an accurate weight for the retained fish in the set and,
        - you are able to determine the retained fish weight in your sample.

Document your reasons and calculations fully in your log.

$$\frac{\text{Total sample weight}}{\text{Weight of retained fish in sample}} = \frac{\text{Total catch weight}}{\text{Weight of retained fish in set}}$$

Retained fish in the sample will be the total sample weight minus the weight of bycatch, dropoffs, and rejected target fish. Check with the

processing crew for target fish that are rejected and thrown back. You need to recognize which ones in your sample won't be retained. Suspect that fish may be thrown out if you see sand fleas present.

*Weight of retained fish in set:* It isn't sufficient to simply adjust the skipper's catch weight estimation without verification. How accurate were the counts of target fish or pans of product? Did you ever verify the count? If the fish count was multiplied by an average weight, what was it and how did it compare with your average weight data from the same time period?

On a freezer boat, were pans of product ever weighed to verify average pan weight? If a product recovery rate was used what was it and where did that figure come from? Did you sample to verify the product recovery rate? (For information, refer to "Product Recovery Rate Sampling" in the appendix.)

For unsampled sets, you could use:

$$\frac{\Sigma \text{ Sample weights of like sets}}{\Sigma \text{ Retained fish wt. in samples}} = \frac{\text{OTC of an unsampled set}}{\text{Round wt. of returned fish in unsampled set}}$$

Notice the use of original sample data in the formula above as opposed to using extrapolated total catch estimates.

FORM 1US - CATCH SUMMARY FOR LONGLINE AND POT VESSELS

Observer Name: Olivia Observer

Vessel Name: F/V Swell

Page 1 of _____ for transmission

Cruise number: 4822 | Vessel code: A413 | Year: 97

| Sets sampled for composition | Date: Month | Day | Set # | Monitored for marine mammals | Gear type | Gear performance | Vessel type | Location code | End position of set: Latitude (N) | N or S | Longitude (100) | E or W | Soak time: hrs | min | Avg. bottom depth | M or F | # of skates or lines or pots in set | Skate length or pot set length | # of hooks or pots per skate | Total hooks in the set | Official Total Catch in metric tons | Observer's Total Catch Estimate in metric tons | Vessel's Total Catch Estimate in metric tons | Processor code | CDQ/IPQ number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 21 | 0 | | | | | N | 5530 | W | 6845 | | No Fishing - rough weather | | | | | | | | . | . | . | | |
| | | | | | | | | | | | | | | | | | | | | | . | . | . | | |
| ✓ | 10 | 22 | 7 | 50 | 8 | 1 | 1 | R | 5534 | W | 6842 | | 10 | 45 | 325 | F | 10 | 300 | 140 | 1400 | 2.80 | 2.80 | 2.00 | | |
| ✓ | 10 | 22 | 8 | 60 | 8 | 1 | 1 | R | 5542 | | 6842 | | 12 | 10 | 285 | | 10 | | | 1400 | 1.95 | 1.85 | 1.00 | | |
| ✓ | 10 | 22 | 9 | 70 | 8 | 1 | 1 | R | 5528 | | 6821 | | 12 | 20 | 165 | | 10 | | | 1400 | 3.64 | 3.64 | 2.00 | | |
| | | | | | | | | | | | | | | | | | | | | | . | . | . | | |
| | 10 | 23 | 10 | 0 | 8 | 1 | 1 | R | 5456 | | 6711 | | 11 | 50 | 186 | | 10 | | | 1400 | 2.80 | . | 2.20 | | |
| ✓ | 10 | 23 | 11 | 80 | 8 | 1 | 1 | R | 5524 | W | 6802 | | 13 | 20 | 127 | F | 12 | 300 | 140 | 1680 | 3.40 | 3.40 | 2.80 | | |
| | | | | | | | | | | | | | | | | | | | | | | . | . | | |
| | | | | | | | | | ↑ LONGLINE VESSEL DATA ↑ | | | | | | | ↓ POT VESSEL DATA ↓ | | | | | | | . | . | | |
| | | | | | | | | | | | | | | | | | | | | | | . | . | | |
| | | | | | | | | | | | | | | | | | | | | | | . | . | | |
| ✓ | 12 | 10 | 57 | 65 | 6 | 1 | 3 | R | 5436 | W | 6710 | | 12 | 40 | 124 | F | 20 | | | | 5.10 | 5.10 | 4.80 | F0040 | |
| ✓ | 12 | 10 | 58 | 60 | 6 | 1 | 3 | R | 5418 | W | 6520 | | 06 | 35 | 130 | F | 20 | | | | 4.80 | 4.80 | 4.10 | F0040 | |
| | | | | | | | | | | | | | | | | | | | | | | . | . | | |
| | 12 | 11 | | | | | | | | | | | Delivery to Akutan Fish Co. | | | | | | | | . | . | . | | |
| | | | | | | | | | | | | | | | | | | | | | | . | . | | |
| ✓ | 12 | 12 | 59 | 75 | 6 | 1 | 3 | R | 5418 | W | 6520 | | 16 | 30 | 126 | F | 20 | | | | 3.62 | 3.62 | 3.20 | F0040 | |
| ✓ | 12 | 12 | 60 | 70 | 6 | 1 | 3 | R | 5417 | W | 6542 | | 17 | 10 | 134 | F | 30 | | | | 4.23 | 4.23 | 3.80 | F0040 | |
| | | | | | | | | | | | | | | | | | | | | | . | . | . | | |

Plant/Processor name: Akutan Fish Co. (for pot boat example) | Location: Akutan Is. | Processor code: F0040

**Fig. 5-1. FORM 1US–Catch Summary for Longline and Pot Vessels**

## Form 1US Catch Summary for Longline and Pot Vessels

Information on fishing effort and catch is obtained from the ship's logs, from vessel personnel, and from direct observation. If you are on a longline or pot vessel, enter this information on Form 1US. Most of the form is filled out for both of these gear types, but there is a part of the form that is specific for each gear type. Points to note :

1. **An entry must be made for every set and every day of your assignment to that vessel**. Start your entries with the day you put your gear aboard and end them on the day you disembark with all your gear. Skip a line between each day's entries. Each delivery or day in port must be noted on a line of Form 1US. Use one line to note the date, and plant name for a delivery even if there are also sets retrieved on that day. Any notes or comments other than for deliveries or non-fishing days should be placed in a part of the form that is not key-punched.

2. **Heading:** Use the cruise number and vessel code given to you in training or briefing. For "Year" enter only the last two digits, such as "98."

3. **ORC:** For each fax transmission of Form 1US data to NMFS, you will need to enter an ORC (Observer Routing Code) number in the box above the date and set number columns. There should be only one ORC number per transmission so the same number should be used on a second page of Form 1US when appropriate. The ORC is a three-digit security code entry which will be explained to you in training.

4. **Sets sampled:** Place a check mark in the far left column to indicate which longline or pot sets you sampled for composition. Enter leading zeros in dates as needed. Skip a line between each day's entries.

5. **Set number:** A given set number should be used only once - no duplicates. The set numbers must be in numerical sequence, ascending order. All sets must be recorded. A set number must be assigned to every set. Use set number "0" for all non-fishing days. Also record the noon position and note the circumstances on the same line.

6. **% Monitored for Marine Mammals:** As the catch of longline and pot vessels is brought aboard over a period of hours, the observer may not be on deck to observe all of the retrieval for catch or deterrence of marine mammals. Observers on longline and pot vessels must roughly estimate the percent of the retrieval monitored, to the nearest whole

percent. (Rounding to the nearest ten percent is most common.) An entry is required for every set. If the set was not monitored, enter "0." If the whole set was monitored, enter "100." **Do not write "%"** as a label for your number in this column.

7. **Gear type** codes:

   6 - pot or trap vessel
   8 - longline vessel
   7 - jig vessel

8. **Gear performance** codes:

   1 - no problem
   5 - problem in retrieving gear - (e.g., gear tangled), requires note in margin
   6 - problem - longline cut, skates or pots lost
   7 - considerable predation of catch by sea lions
   8 - considerable predation of catch by killer whales

9. **Vessel type:**

   1 - Catcher/processor (c/p). This vessel caught and processed its own catch on this set/. Catch is stored in a freezer hold aboard.
   3 - Catcher-only vessel. This vessel caught its own fish and retained it for delivery to a processor (shore-based or "floater"). On board, the catch is kept on ice or in RSW (refrigerated seawater) tanks, not frozen.
   5 - Bait: The catch from this set/tow was sold over-the-side to other fishing vessels who will utilize the fish for bait.

10. **Location code:** Enter "R" if the position in the next column is where the last of the set was retrieved or "N" if it is a noon position on a non-fishing day.

11. **Noon Positions:** Only if no set retrieval is completed on a given day at sea (due to bad weather, transfer of cargo, traveling, etc.), enter the noon position of the vessel and enter 0 in the set number column. To the right of the position column comment on the reason there were no set retrievals. All days at sea must be accounted for with set information or in this manner. Do not enter a noon position when your vessel is in port, just enter the date and note "Delivery."

12. **The location** entered should be the latitude and longitude of the ship at the time the last of the set was retrieved. This position determines the

statistical area of the set. Make sure that all positions are reasonable, i.e. 58°63′ does not exist; double check positions that indicate long distances traveled, if you have not been aware of any. The first digit of longitude (1) is understood, so record only the following digits. Each longline set or set of pots must have a position. On days in which no retrieval of a set is completed, record noon position in these columns.

13. **A set is assigned to a day** according to the time the retrieval of the set is completed, which is not necessarily the same day that the set was begun to be laid or the day that you sample. Sets retrieved before 0000 hours are attributed to the previous day, and sets retrieved on or after 0000 hours are assigned to the next day.

14. **Soak time** of the set is the time interval from the time the first hook or pot enters the water until the last hook or pot is brought in. If bad weather or killer whales prevent the crew from bringing in any of the line for a period of time, subtract the time spent waiting from the total elapsed time. The elapsed time should be entered in hours (on the left) and minutes (on the right). Use leading zeros as necessary. For example, a soak time of 38 hours and 5 minutes would be entered as 38|05.

15. **Depth:** No decimal entries are accepted in this field. The average bottom depth can be recorded in either fathoms (most likely) or meters. Make sure that you indicate the units (fathoms or meters) with an "F" or an "M" in the next column for every depth that you record.

**Longline vessels only:**

16. *On Form 1US the term "skates" can be adapted to whatever units of longline gear your vessel uses.* Other terms for units of gear in use may be: magazines, half magazines, racks, tubs, or coils. Enter numbers for whatever units of gear are used on your vessel.

    **Number of skates** in the set must be filled in and must be a whole number, no decimals. It should represent the number of units of longline gear that are *retrieved* from the set, not necessarily the number that are set. If whole skates are lost, list that set with a gear performance code 6 on the Form 1US, then the number of skates and the total hooks in the set should be adjusted. Note the event in your logbook.

    **Skate length** should represent the length of groundline that the average skate (or other unit of gear) consists of. Record the length in whole fathoms, no decimal entries. Convert the length to the proper

units if necessary (see Table of Equivalents in the Appendix). If the set consists of skates of different lengths, record the mean length (proportional average).

**Number of hooks per skate:** Use whole numbers only in this field. The field may be left blank if the total hook count is more accurate than the calculation of skates times hooks per skate. Sometimes a longline consists of alternating skates with different numbers of hooks. Find out what the pattern is and note this in your logbook.

**Total number of hooks:** This number may be an actual count or it may be the result of multiplying the number of skates by the number of hooks per skate. If Total hooks is an actual count, leave the number of hooks per skate blank to defeat the computer program check on this number.

*Do not subtract (or extrapolate and subtract) individual hook loss. Even the occasional snarl of line does not need to be estimated for loss of fishing effort unless whole skates (or units of gear) are involved. Hooks that are set without bait still catch fish.*

**Pot/trap vessels only:**

17. Record the number of pot/traps *retrieved* per set or string. If pots are lost, then this will not be the same number as was set. If possible, keep track of the number of pots that are lost and include that on Form 1US, in your daily log and final report. Do not include catch estimations of this lost gear in the total catch estimation.

    If pots are attached to a groundline which connects them together in a string, record the total length of the groundline of the set in the column labeled (in part) "pot set length," otherwise leave this column blank Record this length in fathoms — so convert the length to the proper units if necessary (see Table of Equivalents in Appendix).

**All longline and pot vessel observers:**

18. **Official total catch** in metric tons (OTC): This is the best estimate of total catch in your judgement. It should include all landed fish plus, on longliners, fish which are brought up but drop off or are knocked off before being landed. Use the figure in this column in your weekly catch messages. This figure must always be filled in (recorded to two decimal places). Give a complete description in your report of how these figures were obtained.

19. **Observer's estimate:** record your estimate of the sets you sample. This will be an extrapolation of your sample data for the skates/pots that you sampled to the total number of skates/pots in the set. (See the preceding Catch Rate Estimates section for a detailed description of the extrapolation.) Record to two decimal places.

20. **Vessel's total catch estimate:** This is the estimate that is entered for the set in the vessel logbook. There should be a vessel's estimate for every set recorded. Make an effort to ask the skipper for his estimate if you have to leave before it is recorded in the vessel log. Record the weight estimate to two decimal places.

21. **Processor Code** *(and the list of plant/processors at the top of the form) is entered only by observers on catcher vessels* to identify the processor delivered to. Observers on C/P vessels should not make any entries in this column or box. Catcher vessel observers need to look up the name of the processing plant listed alphabetically in the appendix. Write the name of each processor delivered to, its location, and the corresponding code only once in the box. Make this list at the top of only the first page or two of catcher vessel 1US forms. Catcher vessel observers must then record the appropriate processor code for every set entered on Form 1US.

22. **CDQ/IFQ number** (Community Development Quota/ Individual Fishing Quota):

    If your vessel is attributing any part of their catch to an Individual Fishing Quota enter "IFQ" in this column.

    Observers on vessels participating in CDQ must identify which tows are to be attributed to CDQ quota by entering the appropriate CDQ number. Refer to the vessel log. The number they record has the format "CDQ" then the year such as, "97" and then two digits, for example, CDQ9753. On Form 1US, the observer should just enter "C" and the last two digits (example, C53). The list of CDQ partnerships, their numbers and associated vessels are in the CDQ section of this manual.

## Species Composition Sampling on Longliners

**When To Sample** - Most longline sets are 2 to 5 miles in length. Vessels will lay out 2 to 5 sets per day and retrieve 2 to 5 sets per day, alternating between setting and hauling. Some vessels make sets 25 or more miles in length and will only set one line and retrieve one line in a day. On longline (and pot) boats observers do not use the random sample table. Instead, just sample most of the sets. If there are one or two set retrievals, sample at least one or preferably both sets. If there are three sets, sample at least two; three if you can.

**Longline Sample Strategies:** The basic sample method for longliners is tally sampling and it will be described in detail below. Sample size is measured on these vessels by the number of hooks or pots sampled. The overall species composition sample size should be one third to one half or more of the total hooks or pots in the set. Sampling whole sets may be possible, but increasing the frequency of sampling is more important than increasing the sample size. Within a set however, if you only tally sample once during the retrieval, then you need to have a larger sample. Start with the guideline of sampling one third or more of each set sampled.

The best strategy for sampling a set is to tally during several randomly chosen sample periods. This is because for statistical analysis, *all* fish in the catches should have an *equal* opportunity of being sampled. You might assign each unit of the gear a number and randomly select the units to be sampled before retrieval. For example, write the numbers on slips of paper, mix them thoroughly, and draw slips from a can representing specific units of gear which will be sampled. The number of slips to draw is the number of gear units such as skates or half magazines that you can sample. If you have chosen a skate of gear as your sampling unit but a skate is retrieved quickly, starting and stopping your sampling frequently will be a problem. In this case, redefine your sampling unit as four skates of gear or some other unit that will work for you.

Observers frequently notice "patchiness" of catch and composition. Patchiness may occur when a longline is set down or up a slope or when sets are made in rough, rocky areas. Though you may see that your sample is not representative of the composition of the total catch, do not let that dissuade you from random sampling.

On your deck sheet and then in your logbook, make a sample record table of which units of gear (skates, tubs or magazines) were sampled for each set. You might organize this record as shown in table 5-2 or simply list the unit numbers for each set. Start with a definition of your sample units.

| Sampled Set No. | Unit Numbers | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7... |
| 2 | ∩ | ∩ | | ∩ | ∩ | | ∩ |
| 3 | | ∩ | ∩ | | ∩ | ∩ | |
| 5 | ∩ | ∩ | ∩ | | ∩ | ∩ | |
| etc. | | | | | | | |

**Fig. 5-2. Sample Record Table**

It is less desirable but if you have to limit your sampling time or are unable to random sample as described above, you may tally some single portion (1/3 or more) of the set. However, to avoid bias over time, vary the portion sampled for each set sampled this way. For example, you might sample the first third of the skates/pots on the first set, the middle third of the second set, and the last third of the last set. Keep track of the units sampled in your logbook as explained above.

**Recognizing Sample Bias** - You need to be aware of other influences on your data. Large fish are difficult to land (and therefore sample) and some fish do not hook well and will fall off the line. Make notes regarding sample biases like these. If you were able to compensate for sample bias such as including estimates of drop-off numbers and weights, note this in your log. When you return for debriefing you will be completing a vessel report. In this report you will be asked to fully describe any sampling problems you encountered, regardless of whether you found adequate solutions. Remember future observers may benefit from the information you provide.

## Longliner Sampling Duties

1. Composition Sampling
   a. During Tally sampling:
      i. Determine the number of hooks sampled
      ii. Tally all or at least the dominant species
      iii. Collect the infrequent bycatch species
      iv. Record information on drop-offs
      v. Estimate the length of tallied halibut
      vi. Observe method(s) of releasing halibut

   b. Outside of Tally Periods:
      vii. Collect sample of dominant species for average weight
      viii. Sort, count, and weigh non-dominant bycatch collected during tallying

2. Halibut length and viability - only from sets sampled for composition:

   c. Not fishing for halibut IFQ
      ix. Take systematic sample of halibut bycatch.
      x. Assess condition according to criteria for longline vessels.

   d. Targeting halibut for IFQ
      xi. measure halibut lengths if a systematic sample can be taken from all halibut catch, regardless of size. If not, do not measure halibut.
      xii. If halibut are measured, assess viability of discard size, sub-legal halibut

3. Length Frequency Sampling - measure lengths of one target or retained species other than halibut.

4. Marine mammals:

   e. Watch for interaction with, or catch of, marine mammals — Form 10US
      xiii. Watch for predation (or evidence of ) on catch. Outline the incident(s).

   f. Marine mammal sightings — Form 11US
      xiv. Elaborate on your comments regarding predation and any associated sightings
      xv. Take photos of sperm whale flukes and killer whales, if possible, for individual identification.

5. Seabirds Your regular duties regarding birds include identifying and reporting them when they occur in your samples and recording sightings of sensitive species (see page ?). Remember the high priority of reporting any short-tailed albatross caught while you are aboard and salvaging any dead specimens of this species. In addition, note in your logbook the frequency and type of seabird avoidance gear deployed by the vessel (refer to pages ? and ?).

## Composition Sampling

Sampling involves tallying all or at least the dominant fish, estimating halibut lengths, counting and weighing the landed bycatch and obtaining accurate average weights for the tallied species. You do not have the option for multiple sample methods as you do on a trawler. All items caught during a sample period, even if they are seen dropping off during retrieval, are to be included in the sample data, including invertebrates and garbage. Birds are of particular importance and must be included if part of the sample. Therefore, you will have the same number of units sampled and the same sample weight for all species. No matter whether you sample a portion or the entire set, the sample type listed on the Form 3US should be "L" for longline and "T" for pot vessels. There is no separate coding for whole or partial sampling.

**Tally Sampling:** Find a place on the vessel where *you can see* all organisms exiting the water on the line (usually right at the rail). If you can stand at the rail, either behind the rollerman or opposite him on the other side of the line, you will be able to do your tallying and have better supervisory control over the collection of bycatch. In this location you may be working in close quarters with the rollerman and you have to develop a working pattern with the people that work that position. You may get an occasional wave coming over the rail and you have to be mindful of hooks snagging and gaffs in use.

When there is a pit on the vessel where gear is retrieved, observers often make their tallies from the deck immediately above the longline pit. Here you have a good view of the fish coming up on the line, you are out of the way, and it is less dangerous. However, you are more exposed to the wind and you have to rely more on the crew to collect bycatch for you. Also be aware that if there is a back-up gaffer, he works with a long gaff pole and you can be accidentally jabbed in the face with the pole end when he pulls in a fish if you are not careful. Do not observe retrievals from the wheelhouse.

Keep track of how many hooks, skates, magazines, or other units of gear you have sampled. This number is a measure of your sample size and, unless you sampled the whole set, is used to calculate your observer total catch estimate and the OTC. Start and stop all sampling at skate ends if you are going to use hooks/skate x skates sampled = hooks sampled. It should be easy to determine where the skates are tied together. Another method of obtaining the number of hooks sampled is to use one of your thumb counters to tally all of the empty hooks during your sample period. Then, empty hooks + the number of organisms caught = the number of

hooks sampled. Note that all hooks retrieved while tallying, empty or with fish, are counted for the total number of hooks sampled.

Determine which species dominate the catch at a given time. Usually this would be one or two species being retained and one or two common bycatch species that are knocked off the line. These species cannot be held for you during your tally period as they are too numerous. Designate thumb counters for each of the dominant species and tally the rest on a plastic sheet. A sampling board with thumb counters mounted on either side of a clipboard is fairly simple to construct. Before, between, and/or after tally periods, collect a subsample of these to determine their average weight.

Tally all species that come up until you can be certain that the non-dominant bycatch species are all being landed and held for you to identify, count, and weigh. Tell the rollerman what species you don't need while you are tallying (target species and dominant bycatch) and ask him to land all other species for you. While you are tallying, supervise the collection of the non-dominant bycatch species or you may find that the number you saw come up is far less than what was saved for you.

In the retrieval area you need to have a place to put your basket or a confined space for bycatch where the rollerman pulls it off the line. Otherwise the bycatch you need will hit the crucifier and proceed to the holding bin or processing area with the rest of the catch. If the rollerman cannot gaff it off the line and you cannot snag it during tallying, you will have to retrieve it from the holding bin or processing area after tallying. Obviously, this method requires a good deal of cooperation and understanding on the part of the crew. Work with them to achieve the best methods.

**Drop-Off Fish Identification -** On the plastic sheet, record species that drop off the line before the roller and are missed by the gaffer. Write down their identification, number, and if it's not a common species in the catch, estimate their weight. Record in the space for comments on Form 3US which species weights were visually estimated (other than halibut) When estimating the weight of a bird, note this fact in Seabird Daily Notes in your logbook as well. (Otherwise, if a weight is not within normal range, the U.S. Fish and Wildlife Service will assume the bird was misidentified.) Keep a tally of target drop-offs to calculate the percent retained.

Do not collect bycatch from a part of the retrieval which was not tally sampled and use the species composition to identify tallied species. Do not extrapolate percentages of identified species in a *sub-sample of tallied*

*species* to an unidentified group which was only counted. If you know that a drop-off fish was either an arrowtooth or a Kamchatka flounder, a shortraker or a rougheye rockfish, or a shortspine or longspine thornyhead, these *group* codes are available in the species code list specifically for longline observers. Other group codes you may need to use are flatfish unidentified or rockfish unidentified. Do not record taxonomic identifications which are more specific than what you were able to verify.

For catch messages however, you will have to allocate the unidentified drop-off fish to a report group. Since there is no report group for unidentified fish, during sampling determine to which report group the drop-off fish most likely belongs. If you have no clue as to its identity, consult the species weights on your plastic sheet or Form 3US and assume the unidentified fish has the identity of the flatfish or rockfish species with the highest percentage by weight in the sample. On the catch message, list its weight with that species report group.

**Obtaining Weight of Tallied Halibut** - Halibut will usually be released from the line and not landed unless the vessel is retaining halibut under Individual Fishing Quota (IFQ). *When halibut are being landed* for retention during a sample period, the options, in order of preference, are to weigh them, or measure them, estimate their length, or use an average weight. *When halibut are not being retained* during a tally sample, watch the method used to release them (refer to careful release monitoring below) and estimate their length. Later refer to the Length/Weight Table in the appendix to obtain the weight of each halibut. Record the estimated lengths, weights from the table, and the weight sum in your logbook. (When there are lots of halibut, an average weight may be used as explained below.)

One way to improve on estimates of halibut length is to measure and mark the side of the ship near where the halibut will hang briefly before falling back into the sea. Some observers have marked a long gaff pole as a ruler to hold out from the rail. Others have hung a measured line, knotted every 10 centimeters, against the side of the boat. Strive to ensure your length estimates are accurate because fisheries are being closed based on halibut bycatch weight!

Record the length estimates on your plastic sheet during sampling. Record lengths, table weights, and the weight sum in your logbook calculation pages. Double check your work! On Form 3US the weight sum is then recorded on the line for halibut in the sample. Remember that the estimated length data are never recorded on Form 7US.

Sometimes small to medium size halibut are a prevalent bycatch item when targeting Pacific cod. Estimating the length of each halibut would not be practical. Sample 20 or more halibut for length and viability data as described on page ? and weigh them. If the size range of halibut tallied in your composition sample is narrow and consistent with the measured halibut, an average weight can be calculated and applied. If the tallied halibut are almost all the same size with just an occasional large halibut, you might use a combination of making length estimates of large halibut (and get weight from the length/weight table), then count the rest. Sample for average weight as explained then multiply their number by the average weight. *Never* obtain an average weight by averaging individual lengths and looking up that single length on the table—*the length/weight relationship is not linear!*

**To summarize** — When tally sampling, *everything* you can see coming up on the line is accounted for — either tallied on a thumb counter, written down on your deck sheet, and/or collected. Note how many units of gear (skates, magazines or hooks) were retrieved during the sampling period on your plastic deck sheet. At the end of a sampling period, you should have:

- the number of skates or hooks sampled
- a total count of all or at least the dominant species including drop-offs
- drop-offs of retained species, noted on the plastic sheet
- halibut lengths written on the plastic sheet
- bycatch collected in baskets to sort, count, and weigh.

**Careful Release Of Halibut** - Most groundfish fisheries are managed through a quota-based system where catch limits (caps) are set for target and prohibited species. Many fisheries are closed because the prohibited species cap is reached, regardless of whether the target quota for that fishery was fully utilized. The halibut limits set annually by the NPFMC, reflect the weight of halibut *mortality,* not catch, by vessels targeting on groundfish species. Halibut bycatch is managed in terms of mortality because not all halibut caught and released die in the process. Viability estimates taken by observers determine an annual mortality rate which is applied to the total amount of halibut discarded.

Longlining, as a fishing method, facilitates the speedy return of halibut to the water, thus increasing their chances of survival. Research conducted by the International Pacific Halibut Commission determined that halibut mortality rates could be reduced if measures were taken to *carefully release* the halibut during the retrieval process.

Reducing the rate of harvest mortality effectively increases the total tonnage of halibut that can be taken as bycatch. The longline industry, together with the Council, the Halibut Commission, and the NMFS developed a management plan known as the Careful Release Program. This program requires by regulation that halibut bycatch taken by longline vessels be released using one of the three following techniques:

- 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.

Puncturing a halibut with a gaff or other device; or allowing the halibut to contact the vessel or a fixed object in such a way that the hook is ripped from the halibut (known as crucifying) are prohibited actions. These actions are commonly used on other species of bycatch.

Since the Careful Release Program was implemented in 1993, industry and the Observer Program have worked together to develop a successful program. Observer based data has been a critical element in its success. In addition to weight estimates, viability assessments, and length frequencies, we ask that you **record in your logbook and on your final report, information about the techniques used by your vessel to release halibut.** For the Careful Release Program to be accurately assessed, and to aid in the identification of vessels that may not be in compliance with the regulations, please record instances where careful release methods were not used. This information should be recorded in the daily notes section of your logbook. Include details such as: the number of halibut (or estimated number) not carefully released and the total number of halibut for the sample period, the frequency at which it happened, the individual(s) involved, the vessel policy, and whether or not the captain was aware that careful release methods were not being used. Record any circumstances that may aid Observer Program staff in assessing the situation. When you return for debriefing, these compliance concerns should be brought to the attention of your debriefer. As a result of this program and these combined efforts, mortality rates of halibut caught by longline vessels in the groundfish fishery have declined.

**Outside of Tally Sampling Periods:**
**Average Weight Sampling** - For each set, randomly collect 50 of each of the dominant species tallied. Weigh and count them to obtain an average weight per species. (Use the sample for average weight of the target species for length frequency sampling as well.) Multiply the average

weight of the tallied species times the number tallied to obtain the total weight of those fish only counted during your sampling period. Some sets are so short that to sample 1/3 of them would not allow enough time to collect 50 of each dominant species for average weights. If you are pressed for time and you are concerned about your duty priorities, keep in mind that the fishery is managed by weight. It is very important that your average weight of at least the dominant species be as accurate as the tallies you are making on sampled skates. It is preferable to collect less than 50 of the *non-dominant* tallied species per set to allow more time to weigh 50 of the *dominant* species. The result will be a more accurate estimate of total catch. If you cannot obtain 50 fish on a per set basis, collect as many of each dominant species as you can. Combine the numbers and weights for each species collected from several sets of similar depth, location and soak time of day. Note on Form 3US from which sets data were combined.

Average weight sampling in order of preference:

- 50 of each dominant species tallied per set or,
- 50 of each dominant species over more than one set.
- At least 15 of the less numerous bycatch species per set, or collected from more than one set.
- If many sets have been hauled and you haven't collected even 15 fish, use however many you did obtain for the average weight.
- If you cannot collect any fish (as in when an uncommon type drops off and none are landed), use an estimated weight but note on 3US that the weight was estimated.

### Halibut Length and Viability (L/V) Sampling

Ask the crew to land as many as 20 per set, or examine at least 20 per day for the viability study. Halibut length and viability sampling is next in importance after composition sampling. The viability study benefits all longline fishermen, providing accurate data used when setting mortality rates for longline vessels. Observers are the only ones collecting these data on halibut condition so it is important that the crew cooperate in landing the required fish according to your sampling scheme.

There are two options for selecting the fish for these samples. ***If you cannot sample using one of these two methods then do not take viability or length data on halibut.*** Taking one sample for halibut is acceptable but it is preferred that you spread your collection out by sampling halibut in two to four sample periods, just before or just after tally sampling for composition. ***Sample for halibut viability only on sets sampled for composition.*** Either:

- take a sequence of *x* consecutive halibut, where you choose the value of *x* from 5 to 20 fish depending on the number of samples per set, or
- if there are lots of halibut on the line such that the first option would flood you with fish, collect every *n*th fish after completing the last fish.

You choose the value of "*n*," usually two or three. The value of "*n*" is constant for the set. This second option allows you to work on only one fish at a time. Other sampling concerns and solutions will depend on if the vessel is fishing halibut IFQs.

**No Halibut IFQ:** On vessels not retaining halibut, measure collected halibut, examine and determine their condition. Then record halibut lengths (actually measured fish only) under condition codes "E," "P," or "D," on Form 7US. Record length data in order by set, group halibut data by condition, and list size groups in ascending order.

**Halibut IFQ:** If you are sampling on a boat which is currently retaining halibut, sample viability only from halibut that the rollerman would be releasing back to the sea, for obvious reasons. However, *all* halibut caught, regardless of size, are the population you sample from for length measurements. If you cannot take a systematic sample as explained, regardless of size or retention, do not take halibut lengths or viability data when halibut are being retained.

So, this is the halibut IFQ variation on the two sampling options presented above:

1) Have the rollerman land all halibut. Have him call out to you which ones are "discards." Measure each fish and examine only the ones he labeled "discard" for condition. Then you throw the discard-size halibut over as you finish with them. It would be best to do just a few at a time, say 5 to 10 halibut, and sample two or three times. When you have sampled enough halibut in a sample period, tell the rollerman you're stopping and that he can go back to releasing the undersized, "discard" halibut at the rail.

2) When there are lots of halibut coming in, measuring each one isn't feasible. Pick a value of "*n*," where you sample the "*nth*" fish after you finish measuring the last fish. Have the rollerman land all halibut for a time. Have him call out to you which ones are "discards." Examine for viability only the measured fish which are "discard" size. When you're done, tell the rollerman to stop landing discard-sized halibut for you.

**All Longline Observers:** When looking at a fish in hand, all injuries and conditions caused by the act of fishing should be assessed. This includes sand flea predation, hooking injury and hook removal injury. Because these duties will occupy all of your attentions, it is best that you not try to accomplish other sampling duties while sampling for halibut viability. ***Therefore, on longliners, sample for halibut viability and length before or after each tally period, and only on sets sampled for composition.*** This enables data managers to categorize the length and viability data by target fishery and extrapolate it to the estimate of total halibut caught.
Many longliners are very protective of their halibut bycatch because they target on the adults. They may be reluctant to bring halibut aboard for you to sample. Talk to the skipper and rollerman about the importance of the viability study and the necessity of having halibut "in-hand" for you to determine viability and other data. Communicate clearly with the roller man as to which fish need to be landed. Give him enough time to react to your request.

Five issues to be aware of when sampling halibut for viability on longliners:

1. ***Halibut sampled for viability should be released inboard using the same method as is normally employed by the crew when halibut are released outboard of the roller.*** In most cases, the rollerman will be able to use the same release method inboard of the roller to release the fish as is used outboard when you are not sampling. If halibut are released inboard for your sampling in a *different* manner than they are normally released outboard, try to work with the rollerman to overcome the problem. If this is just not possible, then it is permissible to allow one careful release method to take the place of another. (An example is hook straightening; many rollermen find that this cannot be done inboard because they can't find anything to brace the gaff against.) Note the release method inconsistency in your logbook, keeping in mind that it may only be a problem for one particular crewman.

2. ***Attempt to rotate your viability sampling among all crew that are assigned to work the roller.*** Releasing halibut from the hook is largely a matter of skill, so "green" crew may produce different hook removal injuries than experienced crew. Be sure that your sampling does not all take place with one specific crewman, resulting in biased, or unrepresentative, data. Spread your sampling among the crew working at the roller.

3. ***Similarly, be sure to distribute your sampling across the set so that fish from the first end are not the only fish examined.*** Halibut caught

on the first end are subjected to a shorter soak time than those at the far end of the set. Since sand flea predation can be affected by soak time, it is important that sampling be spread out across the set so that halibut with varying soak times comprise the sample.

4. ***All halibut selected for viability sampling must be brought aboard the vessel for inspection, despite awkward size or injury that may occur by being brought aboard.*** You must have the fish in front of you to properly assess hooking and release injuries. You must closely inspect eyes, gills, and vent to look for sand fleas, and examine all parts of the fish for bleeding and other wounds. Under no circumstances should you look at a fish as it is hanging overboard from the hook. Also, data from large fish are just as important as data from small fish, because large fish may suffer different hook injuries due to their larger jaw. **It is crucial that any injury to the halibut while it is being brought aboard at your request (e.g., an errant gaff) is to be ignored in your assessment of viability.**

5. ***Any halibut which you intend to sample that ends up going through a crucifier, intentional or not, must be examined with the crucifier injury taken into account.*** Crucifier injuries are usually fairly severe, and it is impossible to overlook or disregard the damage while at the same time attempting to assess the other injuries. If you see that a large proportion of the halibut are getting crucified, be sure to notify the skipper/deck boss of your observations, as they usually do not want this practice to occur.

**Length Frequencies of Target**

Sampling target length frequencies is a lower priority duty than average weight sampling, or biological sampling of prohibited species (such as length and viability sampling of halibut). The requested workload of taking sexed lengths of approximately 150 of the target species each day may be too difficult on a longline or pot vessel if, 1) the fish are processed immediately upon landing, 2) slitting the belly to sex the fish would ruin the product, and/or 3) the fish are large and therefore more difficult to handle. You may find it necessary to reduce the number of length measurements taken each day and it is permissible to obtain unsexed lengths when necessary. Do not drop this sampling altogether. Just do as many as possible up to 150 per day, and sex as many as you can. If your vessel is targeting halibut, you'll be doing length and viability sampling on halibut anyway so choose another fish species to measure for length frequencies. Of particular importance are the various rockfishes harvested.

Sexed length data are more useful and are preferred but if this is too time consuming or difficult, try to sex some of the measured fish (random

subsample) and take un-sexed length measurements of the rest. If this cannot be done, such as when the fish are being frozen whole, unsexed lengths are better than no length data. *Remember that the sample for length frequency of target does not have to be a sub-set of the composition sample. Also, these fish may be taken from a set not sampled for composition.*

When the fish are being headed and gutted, try working with the crew, taking the length measurement first then examining the viscera visible when the fish is gutted by a processor. Another alternative is to ask the crew to show you how to make the pectoral cut. In general, make a diagonal dorsoventral cut from behind the head to behind the pectoral fin, then angle the knife forward to the isthmus. Make the same cut on the other side. Or, you may be able to just make a ventral cut from the pectoral fin anteriorly to the isthmus and back to the other pectoral fin. Then you can reach in and pull out the gonad or peer into the cavity to see the gonad and determine the sex. Pass the fish to the crew to finish processing. Make sure that your procedure is acceptable to the crew or factory boss.

**Halibut IFQ Fishery Sampling Summary**

When a longline vessel is targeting halibut, continue your sampling. The OTC should be calculated based on your sample data as described previously. Don't forget to record "IFQ" on Form 1US for each set from which any halibut or sablefish are retained.

Tally at or above the rail as you do for other targets. To get the weight of halibut caught on sampled hooks:

- You may estimate the length of each halibut caught during your tally period or,
- just estimate the lengths of the unusually large or small ones and apply an average weight to the rest or,
- simply tally all the halibut in the sample and apply the average weight.

Average weight must be calculated from an unbiased sample of 20 halibut taken in each sampled set. An unbiased sample would be a random or systematic sample from halibut coming up on the line, before they are size sorted as legal or sub-legal. Refer to halibut length and viability sampling on page ?. However, if you are not able to measure halibut for length frequencies you will still need data for average weight. Visual length estimates as the fish hangs briefly at the roller or estimating halibut length by holding a tape measure quickly over a fish may be all that you can do. Actual weights would be preferred, of course, but you may look up the

length measurements or estimates on the halibut length/weight table and average the weights obtained. Record your sampling procedure and data for average weight in your logbook.

You do not need to track the weight percentage of retained halibut for Form 3US. Leave the line for percent retained of halibut blank.

Halibut lengths can only be utilized for length frequency data if:

- you take a systematic sample of all sizes of halibut caught, sub-legal as well as legal, and
- you have measured the halibut correctly, as described on page ?.

If you cannot sample for length frequencies, do not collect viability data. And finally, for sets targeting halibut, substitute a bycatch fish species instead of halibut for the request for sexed length measurements of the target species each day. Length data on a rockfish species would be of particular interest.

**Monitoring for Marine Mammals**

On longline and pot fishing vessels marine mammal catch occasionally occurs, and actions to deter sea lions and killer whales are more likely to be observed than on trawlers. So, when observing on these vessel types, monitor for any marine mammal interactions and record that effort on Form 1US. In one case, an elephant seal was observed entangled in a longline and in other cases harbor seals have been caught in pots. Killer whales in the vicinity of a longline vessel may strip fish from a line being retrieved, particularly in the black cod and turbot longline fisheries. Sperm whales have also been observed to prey on fish caught on longlines. If they come close enough, there may be attempts to deter whales. On Form 10US, record deterrence or catch of marine mammals or instances of mammals feeding on catch.

Interactions with marine mammals are all coded on Form 10AUS but in the case of whales feeding on longline catch, killer whales in particular, please provide additional information on Form 11US for marine mammal sightings. When observing on a longline vessel targeting black cod, turbot, or halibut you are more likely to see killer whales. They may just be touring around the vicinity or actively diving to the line to feed on catch. Try to distinguish feeding behaviors from other activities. Describe what you saw. Watch for fish coming up on the line that have been bitten or scraped by teeth. Only record feeding when you witness the animals in the act. Remember that when there is predation, the gear performance code on Form 1US needs to be changed accordingly.

If feeding (predation) occurs during tally periods, make a record for 11US of how many fish were lost with what evidence of loss. Do not include just empty hooks as loss! When only fish heads (or "lips!") are on the hook due to predation, count the heads as you would whole fish and apply the average weight of whole fish for their weight. If the set is too decimated through predation, you may have to skip sampling that set. Detail the number of predator-damaged fish, and the average and total weight calculation for the prey species on the Form 3US worksheet. Sighting conditions, species identification, individual identification of killer whales, circumstances and behavior take on added importance for assessing predation.

Photographs of individual killer whales, *Orcinus orca*, are requested from observers by the National Marine Mammal Laboratory, in Seattle. There are catalogs of identification photos of over 1,000 killer whales in the Northeast Pacific against which observer's photographs can be compared for identification. Most importantly, the distribution and movement of individuals can be tracked with this type of information. Also, certain family groups, or "pods," have been responsible for the majority of depredation of bottomfish on longline catches in the Bering Sea. The extent to which this is continuing is of interest.

Though guidelines for the professional photographer are given under "Shooting Whales (photographically) From Small Boats" in Appendix ? page ?, any type of film, prints or slides, showing the dorsal fin and light patch behind it is desired. Optimally a picture would be fairly close up, showing the dorsal fin and saddle patch on the *left* side of the whale. Attach any pictures you have to your sighting form 11US, or send them with your name, vessel name, cruise number, vessel code, sighting date, position, and description of event to:

Marilyn Dahlheim
NMFS/NMML, F/AKC3
7600 Sand Point Way
Seattle, WA 98115-0070
(206) 526-4045

## Seabird Avoidance

Recent takes of the endangered shorttailed albatross (*Diomedea albatrus*) in hook-and-line groundfish fisheries in the BSAI and the GOA highlight a seabird bycatch problem. The NMFS has implemented management measures designed to minimize seabird attractions to longline fishing vessels and prevent seabirds from attempting to seize baited hooks. These measures apply to longliners fishing for groundfish in the BSAI and the GOA. Halibut IFQ longliners are presently exempt from this regulation. For the regulation text on these measures, refer to page ?. 10-39.

As an observer, you are asked to note the type of seabird avoidance gear deployed by the vessel. Record this information in the seabird notes section of your logbook. Note whether the measures taken were a standard practice of the vessel or were only observed for specified sets. This request is in addition to the rest of your duties regarding birds described in the section starting on page ?. 7-25

FORM 3US--SPECIES COMPOSITION FOR LONGLINE AND POTS

Page _____ of _____

Worksheet

| | | | | | | |
|---|---|---|---|---|---|---|
| Species: | Sablefish | Grenadier | | | | |
| Wt. of above: | 50 | 60 | | | | |
| No. weighed: | 145.5 | 211.30 | | | | |
| Avg. weight: | 2.910 | 3.5217 | | | | |

Other calc.& comments: Sampled 7 out of 10 skates (980 hooks). Tallied sablefish & grenadier

| Cruise | Vessel Code | Year | Month | Day | Haul |
|---|---|---|---|---|---|
| 4011 | A110 | 97 | 10 | 22 | 9 |

ST = Sampling Type
L = Longline
T = Trap/pot

| Species name | Sex | Species code | ST | Number | Species weight in kg. w/ decimal | No. of hooks or pots sampled | % Retained |
|---|---|---|---|---|---|---|---|
| (keypunch check) | | 999 | | 821 | 2551.40 | | 198 |
| Halibut | | 101 | L | 33 | 99.12 | 980 | |
| Salmon unident. | | 220 | | 0 | 0 | | |
| Brown King crab | M | 8 | | 1 | 1.70 | | |
| Tanner Crab | | 3 | | 0 | 0 | | |
| Herring | | 611 | | 0 | 0 | | |
| Skate | | 90 | | 8 | 20.74 | | 0 |
| Sablefish | | 203 | | 269 | 782.79 | | 98 |
| Grenadier | | 80 | | 426 | 1500.24 | | 0 |
| Shortraker R.F. | | 326 | | 1 | 2.70 | | 0 |
| Arrowtooth fl. | | 141 | | 13 | 28.61 | | 0 |
| Shortspine Thornyhead | | 350 | ↓ | 60 | 79.30 | ↓ | 100 |
| Pollock | | 201 | L | 10 | 36.20 | 980 | 0 |

Revised 1/1/97

**Fig. 5-3. Form 3US–Species Composition for Longline and Pots**

## Form 3US - Instructions For Longline And Pot Vessels

This form is very similar to Form 3US for trawlers - some of the labels for the sampling type and column headings are different. In fact, if you do run out of longline/pot forms, you can substitute the trawler forms (and vice-versa), so long as you realize what ought to be recorded in the columns. Rather than reiterate column by column what should be recorded on this form, only the items that *differ* from the Form 3US for trawlers are presented.

1. Sampling type : the only available options for this field are to use an "L" for longline or a "T" for trap/pot vessel. ***Do not use "W, P, or B."***

2. Number of hooks or pots sampled: Longline and pot observers must have only one sample size (number of hooks or pots sampled) for all species (including target and prohibited species).

3. Indicate the sample size for king crab herring, Tanner crab, halibut, and salmon, even if you do not see individuals of those species in your samples. (Herring bait doesn't count!) If no individuals of these species group were observed, then the observer should enter the group name, the species group general code, sample type, number of hooks or pots monitored for that species group, 0 for the number, and 0 for the weight.

4. **Percent Retained:** Longline observers should count fish that drop off or are intentionally knocked off the line, as part of their normal sampling procedure. On pot vessels, observers need to make note of any sampled cod which were not kept by crew. Count the discards, apply an appropriate average weight, and calculate *by weight* what percentage of each species was retained in your sample. Entries, even of zero, in the percent retained column for prohibited species are not allowed. Leave those lines blank.

   Should drop-offs be so frequent that they cannot be counted separately, a visual approximation, as with trawlers, is acceptable. Take note also of landed fish which are later rejected by the processing crew. If sand fleas are present, it's likely that additional fish will be discarded during processing.

   Even on IFQ vessels during halibut fishing you do not need to report the percentage of halibut retained. Halibut are still classified as a "prohibited species" in our data base though the vessel operators may be legally retaining them. The Observer Program does not collect data on the bycatch rate of sub-legal size halibut.

### Species Composition Sampling on Pot Fishing Vessels

Sampling on pot fishing vessels is very similar to the tally method described for longline vessel sampling. Please review the longline sampling section. When a pot is landed and opened, the contents are spilled onto a table or into a tote, or other container. Crew then remove the desired species, usually Pacfic cod, and throw the bycatch overboard. The observer should count the cod and take the rest of the bycatch aside for counting and weighing. After emptying, the pot has to be re-baited, closed and launched, then the vessel proceeds to the next pot to begin hauling it. Consequently, there should be ample time for the observer to complete the sampling of one pot before the next is emptied. In order to gather 50 cod to determine average weight without seriously delaying the crew, take just a few cod from each pot, weigh them quickly and return to the crew before dealing with the bycatch.

### Catch Message Reporting for Longline and Pot Vessels

Observers on freezer longline and pot fishing vessels transmit their weekly catch messages on Sunday or Monday. Observers on shoreside delivery vessels must wait until their boats come onto port and transmit messages from there. The total sample weight for Form CMA will be the sum of the species weights. The prohibited species group sample weights will be the same on CMB as on CMA, converted to metric tons and carried to three decimal places. The percent retained for the prohibited species report group on Form CMA is always zero even if halibut are being retained. You do not fill in the marine mammal column on the CMB form for pot or longline vessels.

# 6 Plant, Mothership, and CDQ Assignments

## Plant Observer Instructions

When you are assigned as an observer to a shoreside processing plant or to a floating processor your duties and priorities are very different from those of a vessel observer. Like a vessel observer you record information on the fishing effort and groundfish catch delivered to your facility. You are not responsible for conducting your own sampling for catch composition however, only for assisting catcher vessel observers who may be sampling their delivery. You also take length frequency and age structure samples and send a simplified weekly message.

Processing plant observer assignments will vary; some observers may be stationed at only one plant which requires 100% coverage, others may be expected to cover one plant requiring 100% coverage and one or two plants requiring 30% coverage. Some plants may also receive deliveries of crab, halibut or salmon. However, you only need to work on deliveries of groundfish.

**From this section, you should learn:**

- Plant observer duties and priorities
- How to record delivery information
- Your role in assisting vessel observers
- Formatting your weekly report

## Plant Observer Duties and Priorities

### Collecting Delivery Information

The Form A Port Sample Summary Form is comparable to the Haul Form 2US or the Set Form 1US and completing it is the top priority for a plant observer. Information must be recorded for all groundfish deliveries to a plant during an observer assignment. All days must be accounted for on Form A, including days when no deliveries are made. The plant sampler is expected to contact each vessel delivering groundfish to collect data from the observer aboard or from the vessel logs.

### Assisting Catcher Boat Observers With Sampling

Plant observers must plan and schedule their time in order to assist each vessel observer who samples at the plant. Plant observers should coordinate the assistance of the plant personnel and arrange for the set-up of totes, scales, etc. as needed. Plant observers should assist vessel observers in sampling for prohibited species, thus allowing the vessel observer a much needed break.

### Length Frequencies of a Target (Sample) Species

For 100% coverage plants you should measure150-200 lengths per day of the target species; for 30% coverage plants—measure 150-200 lengths/day on the days that you work at the plant (you'll be working at this plant approximately 30% of the time). Preferentially sample the deliveries from vessels without onboard observers and those that did not sort the target species at sea. However, data from observed deliveries and sorted target fish are used so don't let that deter you. Do not take lengths of prohibited species unless you receive special project instructions or they are tagged.

### Age Structures

For 100% coverage plants collect age structures from 100 fish per plant per month; for 30% coverage plants—200/plant/3 mo. period. Remember that the fish you collect age structures from must be a sub-set of the fish sampled for length frequencies. Collect salmon scale samples only from tagged salmon; record these data only on the Tagged Fish Information Form.

### Special Projects

Plant observers are sometimes asked to do special projects such as density sampling, pollock maturity, or stomach samples. If you are assigned a special project, follow the directions that are provided.

# FORM A - Plant Delivery Form

PAGE 1 OF

| Cruise # | Plant code | Year |
|---|---|---|
| 4214 | P050 | 97 |

| Catcherboat Name | ADF&G # | CG # | Permit # |
|---|---|---|---|
| Arcturus | 45978 | | |
| Aurigg | 56153 | | |
| Starlite | 34931 | | |
| Resolute | 17402 | | |
| | | | |
| | | | |

| Delivery sampled ? | Observer onboard ? | Delivery date Month | Delivery date Day | Delivery Number | Gear type | NMFS area number | No. of tows | Average duration (minutes) | Total wt. delivered (round wt.) | LB or MT | ADF&G # of catcherboat | ADF&G fish ticket number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✓ | | 04 | 07 | 1 | 1 | 517 | 5 | 249 | 187297 | LB | 45978 | G97023076 |
| | | 04 | 08 | No | deliveries, | no | processing, | Observer | present | | | |
| | | 04 | 09 | 2 | 1 | 517 | 7 | 253 | 198127 | LB | 45978 | G97023078 |
| ✓ | ✓ | 04 | 10 | 3 | 1 | 517 | 6 | 270 | 215639 | LB | 56153 | G95000341 |
| | ✓ | | 10 | 4 | 1 | 517 | 12 | 258 | 165663 | LB | 34931 | |
| | | | 11 | No | deliveries, | did | process | ground | fish, | Observer | present | |
| ✓ | | | 12 | 5 | 1 | 521 | 9 | 132 | 258165 | LB | 45978 | G95000342 |
| | ✓ | ↓ | 13 | 6 | 1 | 521 | 5 | 143 | 264643 | ↓ | 56153 | G96173611 |
| ✓ | ✓ | 04 | 14 | 7 | 8 | 515 | 12 | 1440 | 8349 | LB | 17402 | G97023079 |
| | | | | EXAMPLE | FROM | PLANT | THAT | WEIGHS | IN | MT | | |
| ✓ | | 07 | 09 | 111 | 2 | 521 | 4 | 252 | 98.7 | MT | 34931 | G96122555 |
| ✓ | ✓ | 07 | 09 | 112 | 1 | 521 | 6 | 290 | 87.3 | MT | 56153 | G96122556 |

National Marine Fisheries Service
North Pacific Groundfish Observer Program

Created 1/1/97

**Fig. 6-1.** Form A–Plant Delivery

# FORM A - Delivery Composition Form

PAGE 1 OF

| Cruise # | Plant code | Year |
|---|---|---|
| 4214 | P050 | 97 |

| Delivery Date | | Delivery number | Species code | Main product code | Possible length/sex bias? | Weight of target species discarded at sea | Round weight of target species delivered | LB or MT |
|---|---|---|---|---|---|---|---|---|
| Month | Day | | | | | | | |
| 04 | 07 | 1 | 202 | 23 | N | | 187234 | lb |
| " | 09 | 2 | 202 | 23 | N | | 198101 | " |
| | 10 | 3 | 201 | 30 | N | | 192045 | |
| | 10 | 3 | 202 | 23 | Y | 250 | 23580 | |
| | 10 | 4 | 201 | 30 | N | | 165324 | |
| | 12 | 5 | 202 | 23 | N | | 258093 | |
| | 13 | 6 | 201 | 30 | Y | 1000 | 260218 | |
| | 13 | 6 | 202 | 23 | N | | 4387 | |
| 04 | 14 | 7 | 202 | 23 | N | | 8349 | lb |

Created 1/1/97

**Fig.6 -2.** Form A–Delivery Composition Form

## Form A Plant Delivery and Delivery Composition Forms

Keep the data for each plant separate. Delivery information should be filled out by the plant observer from the NMFS ship logs or an interview with the catcher boat observer and from observations of scale weights or scale readouts. Maintain separate sets of Form As for each plant. Number the Plant Delivery and the Delivery Composition forms separately. At the top of each set of forms, enter your name and the name of the processing plant. Make an entry on each form for every groundfish delivery made to the plant.

Make at least one line of entry on the Plant Delivery Form for every day. On days where there are no deliveries, note in your log whether or not you were present at the plant and whether or not they were still processing groundfish on that day. These notes will help us to verify observer coverage.

**Plant Delivery Form**

1. **Cruise number, Plant code, Year**: Cruise number and plant code will be given to you during training or briefing, or by your contractor. The plant code is not the same as aprocessor code. The plant codes are not listed in this manual. Use the plant code for the "Vessel Code" entry required on Forms 7US, and 9US. Enter the last two digits of the year.

2. **Catcher boat name**: Enter, only once, the name of each catcher boat which delivers to the plant. When all the lines on the first page are used up, continue the list on page 2, then page 3. You do not need to enter boat names on top of each page where their deliveries are listed. When a new boat delivers, add its name to the next line of the listing, which is not necessarily on the page where its delivery first appears. Keep the catcher boat list together on only the first few pages of the Delivery Form.

   You should be able to easily find ADF&G boat numbers on the side of the boat and on the NMFS vessel and plant logbook pages. The Coast Guard number (CG#) and/or Permit number only need to be recorded in rare circumstances when the vessel does not have an ADF&G boat number.

3. **Place a check mark in the far left column** to indicate which deliveries you sampled for length frequencies or assisted a vessel observer. (Remember, you are entering a line of data for each delivery, not just ones you sample.) Then check mark the "Observer Onboard" column if the vessel delivering catch has an observer assigned to it.

4. **Delivery date**: Enter the date of completion of each delivery to the processing plant that is, if the catch is delivered over a period of two or more days, use the date when the transfer of fish to the plant is completed. Use the delivery date on Forms 7US and 9US. This is not necessarily the same day you sampled for length frequency and age structures. The delivery date should coincide with the date that is used in the NMFS processing plant logs and on the ADF&G fish ticket.

   Plant Sampling If a vessel delivers to more than one plant: If you discover that a vessel is delivering fish caught in one trip to more than one plant, record only the weight delivered to your plant.

5. **Delivery number**: Delivery numbers for each plant should be sequential. Record only one line of data for each delivery on the Plant Delivery Form. Do not split delivery data due to fishing in two areas. Refer to instructions below for the NMFS area number. On Forms 7US and 9US the date and "Set/haul no." must correspond with the date and delivery number on Form A.

**Gear**

6. **Gear type**: Enter the appropriate code. If you are sampling the delivery of a tender that received fish from more than one gear type, leave the gear type column blank.

| | |
|---|---|
| 1 = nonpelagic trawl | 6 = pot or trap gear |
| 2= pelagic trawl | 7 = jigging vessel |
| 3 = unknown or mixed trawl haul | 8= longline gear |
| 4 = pair trawl | 9 = gill net |
| 5 = shrimp trawl | 10 = Scottish seine |

7. **NMFS area code**: This is the 3-digit code for the area in which the vessel fished (refer to the map in the catch message section of this manual). If the vessel fished in two or more areas for the catch delivered, record the area in which most of the fish was caught, but enter an asterisk (*) in the left margin of the form and note on the back of the form the areas fished. Do not divide delivery data by area.

8. **No. of tows**: record the number of tows that were made during the trip. If the vessel is a longliner or a pot vessel, record the number of sets. This information can be obtained from the NMFS ship logs.

9. **Average duration**: record the average duration of the tows in minutes. Get the actual length of each haul from the NMFS logbook, add up the durations and divide by the number of hauls to get the average dura-

tion. You can go up to 9999 minutes for the average length of soak for a longline or pot set.

10. **Total weight delivered (round wt), lb or mt**: Record the total roundweight of the catch delivered to the processing 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. When cut or bled fish are delivered, divide the delivery weight of cut fish by the appropriate product recovery rate to estimate the round weight of the fish before cutting. For instructions, product codes, and recovery rates, refer to the Appendix.

    It is preferred that the observer be on hand to record the scale readouts but if this is not possible, these data can be taken from the ADF&G fish ticket. In most cases, total delivery weight should be the same as the sum of groups reported on the fish ticket, but make sure that the fish ticket sum includes the weight of discards from the plant.

11. **ADF&G Catcher boat No., ADF&G Fish Ticket No.**: Be careful not to confuse these two numbers. Both should be recorded in the NMFS fishing and production logs. Usually though, the plant observer will have access to the fish ticket through the dock foreman or the plant office personnel. Record only the last 6 digits of the fish ticket number.

### Delivery Composition Form

Every delivery must be recoded on the Delivery Composition Form whether or not you sampled it. Notation for days of no deliveries are not needed on this form. The heading, date and delivery number instructions are the same as for the Plant Delivery form. The entries on these two forms will go onto different database tables and so these identifiers must be repeated on each.

12. **A delivery date and number should be repeated** on a second or third line if there are substantial amounts of more than one utilized species in the delivery. Do not split delivery data for any other reason. On Forms 7US and 9US the date and "Set/haul no." must correspond with the date and delivery number on Form As.

13. **Species code**: This is the species composition code number (not the report group code!) for the main target species of the delivery. This is usually the species you measure for length frequencies. Subsequent information on the line refers to this species. If there is more than one fish they were targeting, an additional line of entry is made out. See the example for delivery number 3. Do not record all species listed on

the fish ticket for the delivery. Generally, do not enter a species which makes up less than 25% of the catch delivered. An exception would be when in a multiple target fishery such as the GOA shallow water flatfish. Then enter a line of data for each species making up the top 75% of the catch by weight.

14. **Main product**: Enter the code for the main or primary product that is *made by the plant from the species coded in the previous column.* If the plant is making surimi out of pollock and also taking roe from mature female pollock, list the main product as surimi. (Refer to the "List of Alaska Product Types" in the Appendix of this manual or in the ship's logbooks.)

15. **Possible length or sex bias? (Y, N or blank)**: This question refers to whether or not any individuals of the species indicated were sorted prior to your sampling for sexed length data. If you are not sampling lengths from this species and delivery, or you did not get this information, the column may be left blank.

    Fishermen might discard undersized individuals, or fish of a given sex. Fish may not be sorted out of the catch but just into different holds before delivery. This would also affect your ability to take an unbiased sample and would warrant a "Y" in this column. This question does not refer to any sorting and discarding of other species, such as prohibited species or some other, unwanted species. You can check the NMFS vessel logs for this information but it would be best to ask the vessel's observer if any, or ask one of the crew.

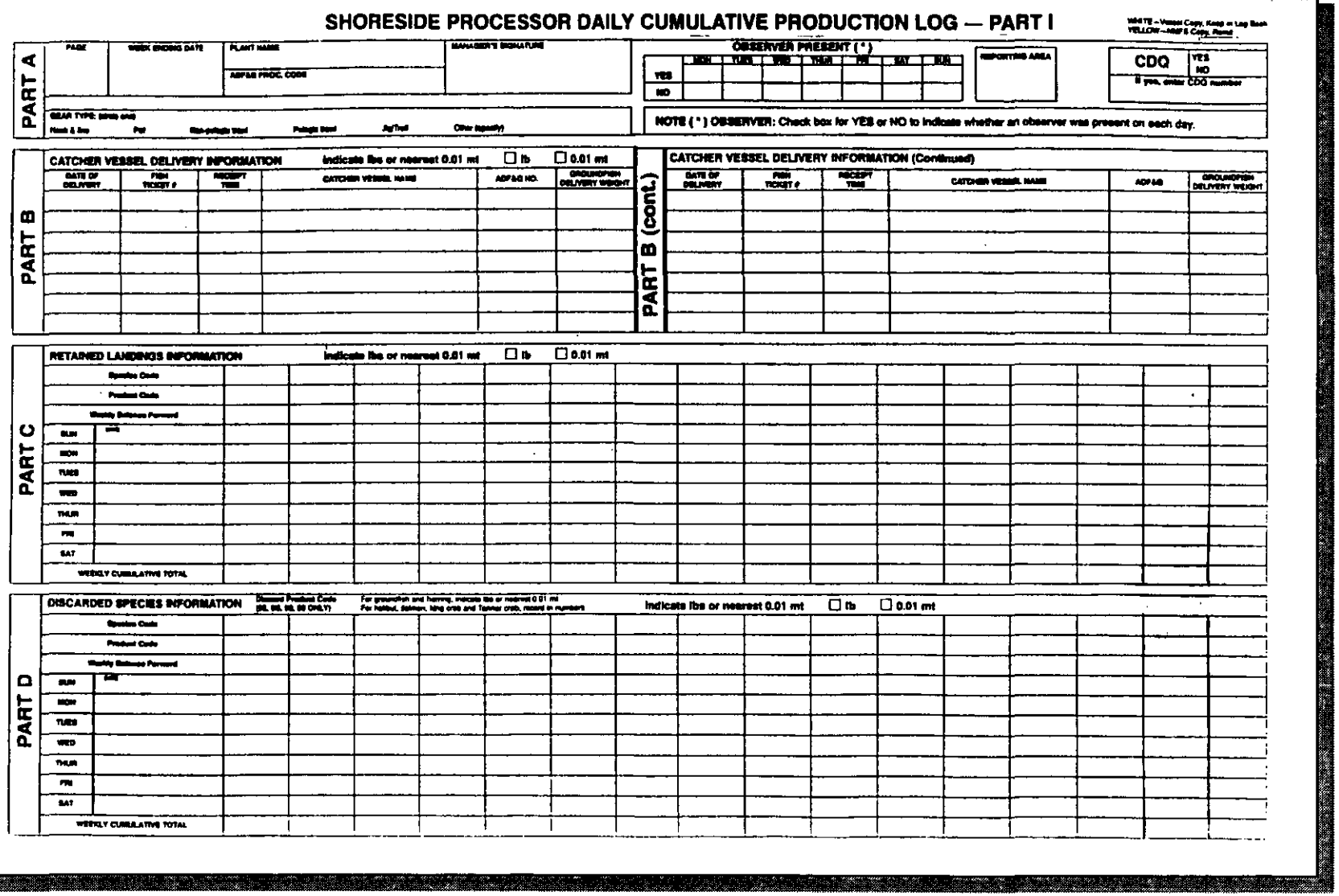
16. **Weight of target species discarded at sea**: If the target species indicated on this line were removed from the catch prior to delivery for any reason, indicate the approximate amount in lb or mt. The units (lb or mt) must be the same as those used for delivery weight. Target discard may be due to sorting, or because the holds were topped off and catch was dumped, or because the plant wouldn't accept a deck load. This information might be in the NMFS logs but is notoriously under reported.

17. **Round weight of target species delivered, lb or mt**: This is the whole weight of the species coded in the fourth column. If cut or bled fish are delivered, calculate an estimate of their round weight with a product recovery rate. Weight of target fish delivered can be obtained from the ADF&G fish tickets. Refer to the cautions about using fish tickets on page ? If you notice a difference between the fish ticket weight and the scale weight totals and the reason given is for water weight adjustment, use the fish ticket weight. As possible, sum the

scale weights yourself, either at the scale or from a paper readout of the tote weights. If there is a digital scale system, yet there are people who add up the tote weights of a delivery, question why.

Halibut Deliveries: When IFQ boats come in with halibut, they are required to keep all the cod and rockfish they catch incidentally. This is why these boats will sometimes carry an observer. We are only interested in the groundfish portion of the delivery. Under Total weight delivered enter only the round weight of catch other than halibut. On the Delivery Composition Form, enter as the species code the species with the most delivery weight after halibut. The information on the rest of that line will refer to that groundfish species, not to halibut. If no groundfish are in the delivery, do not record it. If you are only getting halibut deliveries, take length frequency data on the one or two predominant groundfish species coming in with the halibut.

Tender Deliveries: Tenders are vessels which will take deliveries of fish from catcher vessels on the fishing grounds and deliver the combined catches to shoreside processors. The tender will have multiple fish tickets for the catches they are delivering. From these fish tickets, record in your logbook the fish ticket numbers, catcher boat numbers, weights of delivery to the tender, area fished, and gear type(s). On the Plant Delivery Form you will have just one line of entry for the tender delivery with a delivery number, date, a check mark if you sampled it, gear type and area if they are consistent and the delivery weight. Leave the rest of the columns blank. For the Delivery Composition Form, sample bias and weight discarded at sea will have to be blank but the rest of the information should be filled in.



SHORESIDE PROCESSOR DAILY CUMULATIVE PRODUCTION LOG — PART I

WHITE – Vessel Copy, Keep in Log Book
YELLOW – NMFS Copy, Read

PART A

PAGE | WEEK ENDING DATE | PLANT NAME | ASFSB PROC. CODE | MANAGER'S SIGNATURE

OBSERVER PRESENT ( * )

| | MON | TUES | WED | THUR | FRI | SAT | SUN |
|---|---|---|---|---|---|---|---|
| YES | | | | | | | |
| NO | | | | | | | |

REPORTING AREA

CDQ YES NO
If yes, enter CDQ number

GEAR TYPE: (check one)
Hook & line | Pot | Non-pelagic trawl | Pelagic trawl | Jig/Troll | Other (specify)

NOTE ( * ) OBSERVER: Check box for YES or NO to indicate whether an observer was present on each day.

PART B

CATCHER VESSEL DELIVERY INFORMATION — Indicate lbs or nearest 0.01 mt ☐ lb ☐ 0.01 mt

| DATE OF DELIVERY | FISH TICKET # | RECEIPT TIME | CATCHER VESSEL NAME | ADF&G NO. | GROUNDFISH DELIVERY WEIGHT |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

PART B (cont.)

CATCHER VESSEL DELIVERY INFORMATION (Continued)

| DATE OF DELIVERY | FISH TICKET # | RECEIPT TIME | CATCHER VESSEL NAME | ADF&G | GROUNDFISH DELIVERY WEIGHT |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

PART C

RETAINED LANDINGS INFORMATION — Indicate lbs or nearest 0.01 mt ☐ lb ☐ 0.01 mt

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species Code | | | | | | | | | | | | | | | | | |
| Product Code | | | | | | | | | | | | | | | | | |
| Weekly Balance Forward | | | | | | | | | | | | | | | | | |
| SUN | DATE | | | | | | | | | | | | | | | | |
| MON | | | | | | | | | | | | | | | | | |
| TUES | | | | | | | | | | | | | | | | | |
| WED | | | | | | | | | | | | | | | | | |
| THUR | | | | | | | | | | | | | | | | | |
| FRI | | | | | | | | | | | | | | | | | |
| SAT | | | | | | | | | | | | | | | | | |
| WEEKLY CUMULATIVE TOTAL | | | | | | | | | | | | | | | | | |

PART D

DISCARDED SPECIES INFORMATION — Discard Product Code (60, 66, 68, 69 ONLY) — For groundfish and herring, indicate lbs or nearest 0.01 mt. For halibut, salmon, king crab and Tanner crab, record in numbers — Indicate lbs or nearest 0.01 mt ☐ lb ☐ 0.01 mt

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species Code | | | | | | | | | | | | | | | | | |
| Product Code | | | | | | | | | | | | | | | | | |
| Weekly Balance Forward | | | | | | | | | | | | | | | | | |
| SUN | DATE | | | | | | | | | | | | | | | | |
| MON | | | | | | | | | | | | | | | | | |
| TUES | | | | | | | | | | | | | | | | | |
| WED | | | | | | | | | | | | | | | | | |
| THUR | | | | | | | | | | | | | | | | | |
| FRI | | | | | | | | | | | | | | | | | |
| SAT | | | | | | | | | | | | | | | | | |
| WEEKLY CUMULATIVE TOTAL | | | | | | | | | | | | | | | | | |

**Fig. 6-3.** Shoreside Processor Daily Production Log

## Checking Delivery Information

After having collected Form A delivery information, the NMFS Plant Daily Cumulative Production Log should be checked daily for comparison. This log is used to prepare the plant's Weekly Production Report, which is essential in the inseason management of the catcher boat fleet. It is thus important that all catch and discards are accounted for in the log as best as is practical. Part B of the Production Log should be checked for the date of delivery, catcher vessel name, ADF&G number, and the groundfish delivery weight. Important discrepancies should be questioned and noted in the observer's logbook. (Minor discrepancies such as the start-of-delivery date instead of the completion date should be ignored.) Discarded Species Information (Part D) should be looked at just to verify that the NMFS plant log reflects the species groups which you know to have been caught and discarded by the boats (Code 98) and/or the plant (Code 99).

**Plant Sampling**

Assisting Catcher Vessel Observers With Sampling Assisting the vessel observers is a primary duty, second only to collecting delivery information Provide assistance for any observer whose vessel delivers to your plant regardless of their contractor affiliation. You must meet vessels coming in for delivery to get fishing information for the Plant Delivery Form and to meet with each vessel observer every time they're going to sample at the plant. Even if a vessel observer claims they can handle it, discuss the situation with them. Your assistance should include providing delivery weight information, helping to send their catch messages and helping observers sample for prohibited species.

During pollock deliveries to Dutch Harbor for example, observers will usually sample a whole delivery for prohibited species that may take anywhere from 12 to 20 hours to complete. You should relieve the boat observer for several hours (depending on the length of the delivery) for meals, rest, or to complete catch messages. Do not rely on plant personnel to sort, save and or count fish unless they are working under an observer's immediate supervision.

During pollock fisheries, if you're covering more than one plant, or more than one vessel is delivering at a time, it will be necessary to coordinate your sampling assistance between observers to ensure that observers with long deliveries have help. As you plan your schedule, you may find that it helps to keep the vessel observers informed of it so they know where to find you and are aware of your efforts. Establish a message board or system and inform each catcher vessel observer about it so you can communicate with and leave data for each other. Check it frequently when

vessel observers are in. This is especially helpful for vessel observers who cannot send their own catch messages because of office hours or quick vessel departures.

When you are assisting a vessel observer with sampling, it includes species sorting, counting, weighing, and biological sampling. The vessel observer is ultimately responsible for the sample data and may even have to miss an assigned fishing trip in order to complete their sample collection. However, this should only be necessary when there is no plant observer or you are sick. An important part of your role is to insure that all data collection at the plant is completed and vessel observers are able to meet their assignments. Observers are expected to work cooperatively to accomplish this. When any observer has a question on sampling or data recording, if they cannot find the answer in this manual, they should contact an Observer Program staff member for the answer. Do not attempt to instruct other observers as to their work.

To assist vessel observers and to collect and verify their own information, you must have a detailed knowledge of the fish handling system. Get to know the dock foreman and how to get updates on the progress of off-loading. Does the handling of fish change when they are backed up with deliveries? How are prohibited species returned to sea? You may have to transmit delivery weight data to the vessel observer after the boat has gone back to sea. If fish are sorted before weighing, the weight totals for the bycatch and several grades of the target fish will have to be summed for delivery weight. The most accurate sources for Total weight delivered and Weight of target may be scale readout records in the sorting area. When fish ticket data must be utilized, be very careful to interpret them correctly. Read again the two sections on fish tickets on page ? of this manual.

When a whole delivery is sampled, the vessel observer may not be aware of, or remember to ask for, after- scale information. After scale is bycatch and damaged target species missed during the first sort of the delivery and sorted out by the processors. Check the after-scale fish of sampled deliveries for sampled species. Collect and provide the appropriate data for the vessel observer. Sometimes plant personnel subtract a percentage from the scale weights for water. If you suspect that this is happening, ask plant personnel what their policy is. Check scale readout totals against the fish ticket. Look to see if there is water in with the fish at the weighing point. Document the circumstances and your findings. Report this to your debriefer. If there is a difference between scale readouts and fish ticket weights, use the fish ticket weights for the target species.

Length Frequency Sampling:Collect lengths from the primary commercial species being delivered to the plant. To spread out the collection of length

frequency information, try to sample lengths of target species from boats that don't have observers on board. If all the delivering vessels have observers on board, sample for length frequency anyway. Data from plant observers are usually compiled separately from vessel observer data, so plant observer's length sampling does not substitute for the vessel observer's sampling of the same delivery.

Always ask whether any of the target species were sorted out at sea (see Delivery Composition Form). Sorted deliveries should be avoided for length frequency sampling if possible but if sorted fish are all that is available, take length measurements anyway. The code on Form A will flag the sorted length data. Sometimes the fish are delivered headed and gutted. If only headed and gutted fish are delivered, you cannot take length or otolith samples.

Plant observers should collect 150 - 200 lengths per day, for each day you work at that plant. Length frequency sampling is lower priority work than assisting vessel observers with their sampling. However, length frequency sampling should never be dropped—reduce the number of measurements when you are overloaded. If more than one target species is being delivered to the plant you may take length frequencies from more than one species. Remember though, 150 - 200 length measurements are needed from each species each day. Avoid collecting small amounts of data from many species over time; more data from only one or two species is preferred. Strive for unbiased sampling; by taking several samples spaced throughout the delivery.

On Form 7US, use the delivery completion date even if that is not the date you measured the fish. Under set/haul number, enter the delivery number from Form A. So, length data from two boats that delivered on the same day may be entered by delivery number on one page of Form 7US.

## Age Structures

Age Structure Collection: Observers are asked to collect up to 100 age structures per plant per month, when working at a plant that requires 100% observer coverage. When sampling at plants that require only 30% observer coverage, the observer should collect up to 200 age structures per plant per three month period.

The "roundfish" species of the highest priority for age structure collections are: Pollock, Pacific cod and all rockfish species including Sebastalobus spp.If age structures are collected from Pacific cod, remember to collect both a scale sample and the otoliths, and put them together in the same vial. Do not collect age structures from sablefish. Requested flatfish species are listed below in order of priority:

| Bering Sea | Gulf of Alaska |
|---|---|
| Yellowfin sole | Rock sole |
| Rock sole | Flathead sole |
| Flathead sole | Rex sole |
| Alaska plaice | Dover sole |

Age structure collections should be stratified/random collections (5 per cm. per sex) of a single species per month unless otherwise instructed. If you collected lengths from more than one speciesin a month, do not split your age structure collection between the two species. Collections are of most value if they consist of about 200 age structures for any one species. You may change the length and otolith sample species to another target species when you begin a new month if necessary but if the first sample species continues to be available, stay with it.

If you begin an age structure collection and then find out that the sample species is no longer going to be delivered, keep the collection if it contains more than 50 age structures. Use the remaining empty vials from that collection for another species. Conversely, if the collection contains less than 50 age structures, dump it and use the entire collection of vials for a new species.

As with Form 7US, the delivery number will substitute for haul number on the Form 9US. The date is the delivery completion date which will correlate with the Form A. On Form 9US, the weight of each fish sampled must be the round or whole weight. If the sample fish have been bled, calculate the whole weight by dividing the bled weight by the product recovery ratio. (The table of product recovery rates is in the appendix.)

Example: Bled Pacific cod are being sampled for otoliths and scales. One weighs 1.3 kg bled. The report code for P. cod is 110 and bled fish are product code 3. The product recovery rate is 0.98 (see pages ?).

1.3 kg ÷ 0.98 = 1.3265 kg round weight, weight entry is 1.33 kg on Form 9US

Cruise No. 3926 Observer Name Jamahl Observer

| Plant Name (Once per page list the processor code.) | 100% or 30% Plant? | Week End Date | List Dates of work for the week |
|---|---|---|---|
| All Alaskan F0222 | 100% | 5/8 | 5/5 - 5/8 |
| King Crab F1929 | 30% | 5/8 | 5/4 , 5/6 |
| All Alaskan | 100% | 5/15 | 5/9 - 5/15 |
| King Crab | 30% | 5/15 | 5/11, 5/12, 5/14 |
| | | | |
| | | | |
| | | | |

### Plant Sampling

We want to hear from each observer each week. For your weekly message, please record a new line of entry for each plant you worked at that week. The Week End Date is simply the Saturday date for each Sunday - Saturday reporting period. Send us a message even if you had no deliveries for a report week.

Fig. 6-4. **Example of Weekly Plant Report**

WEEKLY PLANT REPORT

Cruise No._____ Observer Name _____

| Plant Name (Once per page list the processor code.) | 100% or 30% Plant | Week End Date | List Dates of work for the week |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
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**Fig.6-5**. Weekly Plant Report

# Mothership

You must first determine if your vessel is considered a mothership or a floating plant. Your vessel is a mothership if it routinely takes deliveries of unsorted catch via codend transfer. If your vessel occasionally pumps or brails fish from the holds of the catching vessel, it is still considered a mothership. If your vessel routinely accepts catch which could have been sorted, it is a floating processing plant, commonly referred to as a "floater." The Northern Victor, Arctic Enterprise and the Yardarm Knot are floaters. If you are assigned to a floater, you should follow the instructions for plant observers, starting on page ?.

This section serves as a summary of the many notes for mothership observers, already presented in the instructions for Form 2US in section two, and provides some additional guidelines.

**From this section, you should learn:**

- the notes for mothership observers regarding the Haul Summary Form 2US
- what information you need to obtain from catcher vessels
- your respective duties when the catcher boat delivering to your mothership has an observer
- notes for mothership observers on sampling.

## Observering Mothership Operations

For observer program data handling purposes, a vessel is described as a mothership if it receives unsorted catch via codend transfer for at-sea processing. There are basically two kinds of motherships. One type operates solely as a fish processor for smaller catcher-only vessels (as is the case for the Ocean Phoenix, and another type which accepts deliveries in addition to making its own hauls. Deliveries by codend transfer to motherships are recorded on Form 2US and get sampled using the same criteria as any other catcher/processor haul.

In some fisheries, two observers are assigned to a mothership. As this is the usual assignment in a CDQ fishery, follow the instructions for observers in CDQ fisheries on page ?. Two observers are expected to work cooperatively to produce one set of data and to equitably share the work. If you cannot agree on responsibilities or methods, contact Observer Program personnel to mediate.

### Mothership Haul Data

On Form 2US, enter a line of data for all hauls taken or delivered. Any days without haulbacks or deliveries must have an entry for noon position; see Form 2US instructions. If the mothership is also a catcher/processor vessel, fill out only one set of Form 2US with tows and deliveries listed one after another, in the order in which they occur. (See the Form 2US example page ?, bottom half.) To distinguish between hauls towed by your vessel and codends delivered, the vessel type will usually be 1" or 2." In the third column from the right margin, enter the catcher boats ADF&G number for each catch delivered, and leave that column blank for any lines of data on self-made hauls. Also, at the top of the first page or two of the Form 2US, list the vessel names and corresponding ADF&G vessel number for all catcher boats delivering to your ship. One list on the first page or two is all that is needed, not a list for each page.

Enter codend retrieval positions on Form 2US if possible. If retrieval positions are not availablefrom delivering catcher boats, enter "D" in the location code column on Form 2US and list the position of the mothership at the time of delivery. Information on gear type, gear performance, retrieval location, fishing times, fishing and bottom depths, and average towing speed will have to be obtained from the delivering skipper (or an observer aboard, if any), usually by radio. Often, your ship's bridge officers obtain the data from the delivering vessel; sometimes you may have talk to the delivering skipper via radio; sometimes the data are sent over attached to the codend after a few deliveries. You may want to devise a worksheet to give to the delivering skipper or your ship's manager listing the type of data you will be requesting to complete your Form 2US (see

example below). Obtaining the data needed is facilitated if the delivering skipper and your ship managers know what information you need for each delivery. If you cannot get all of the information, try at least to get an estimate of fishing duration.

Format example: Skipper—Observer Worksheet for haul form data

Catcher Boat:_____ Catcher Boat ADF&G Number:_____

Haul # Date Retrieval
Latitude Retrieval
Longitude Nets on
Bottom Nets
off
Bottom Fishing
Depth Bottom
Depth Trawl
Speed

The retrieval time always determines the date of catch but the ordering of the hauls may differ from regular catcher/processors. Deliveries of catch often are not made in the order the nets were retrieved by the various catcher boats. Since the order of delivery of the codends may not be in sequence with the order of the retrievals, you may choose one of two options for recording the sequence of hauls: you may record the catch in order of delivery and have the retrieval times not be in the correct sequence, or you may reorder the deliveries by codend retrieval times before entering the data on Form 2US. Either method is correct as long as each catch is attributed to the correct date (according to retrieval time) and the dates are sequential. The only lines of Form 2US data that may require reordering are those for deliveries around 0000 hours.

In almost all cases, you are the only observer recording data on these delivered hauls. You would treat each delivery as if your own ship fished for it and sample according to regular catcher/processor rules. There are other possibilities in delivery data protocol as well, involving the few times when there will be split codend deliveries or an observer present on the catcher boat. To guide you in determining whose responsibility it is to record data on the deliveries when another observer is present on the catcher boat, use the following scenarios:

1. If there was an observer on a catcher boat delivering unsorted codends to your vessel, you are responsible for recording all the data and sampling the haul.

2. If a catcher vessel delivers catch which has been or could have been sorted, you record the delivery on Form 2US (Vessel Type 4,

mothership receiving sorted catch) and do not sample the catch for species composition. If there was an observer on the catcher boat, he/she also enters the haul data on Form 2US and samples the catch, just the same as if he/she would have delivered to a shoreside plant.

3. If a catch is split between two processors, contact the Observer Program office in Seattle for instructions on how to record the catch information.

### Sampling and Catch Messages On Motherships

Observers on motherships select hauls to be sampled according to the random sampling table or, in the hake fishery, you randomly select the hauls to sample and keep a histogram of sampling effort. Follow the same sampling guidelines and use the same data forms as a regular catcher/processor observer. Though some tows have been delivered by catcher vessels and some may have been caught by your own mothership, if they are all unsorted tows, you may sample them in the regular manner. If a delivery comes to your mothership which has been or could have been sorted, indicate the Vessel Type as 4 on Form 2US and do not sample for catch composition.

Species composition sampling: The are three large motherships, the Ocean Phoenix, Excellence, and Golden Alaska, which do not fish as catcher/processors, instead they stay near the fishing grounds of their catcher boats and take 9 to 14 unsorted codends in a single day. Even when employing a Break Table, it is sometimes impossible to follow a Random Sampling Table in sampling deliveries, and get other duties accomplished as well. You may have to adjust your sampling schedule while keeping in mind duty priorities:

The most important duty of a mothership observer is recording the Form 2US information for each delivery. pollock fisheries, sample whole or partial hauls for prohibited species and drop to basket sampling for other species as needed. Sending catch messages and any requested daily messages is next in importance. Length frequency data and special project collections may have to be cut back, as they are of lesser priority. However, do not drop length frequency sampling altogether.

If you cannot follow the prescribed species composition sampling routine, log which hauls you skipped sampling and record the difficulties you encounter in completing normal duties in the daily notes section.

**Marine mammal monitoring:** If you have watched the entire dumping of the codend on your mothership, you can record the haul as monitored for marine mammal take. If there is a catcher vessel observer, you should contact them to find out if any mammals were deterred or caught during

the net retrieval and sorting (this can be done when you request information on haulback location and times, your split of the duration, etc.). If there is no observer aboard, ask that any marine mammal interactions be reported to you by the vessel, either in your or your ship manager's calls to the ships.

**Catch messages**: Mothership observers must separate the data for delivered unsorted codends versus mothership-caught hauls on the CMA and CMB forms. Enter all hauls where the processor fished for itself on one set of CMAs and CMBs and enter all hauls delivered to the processor on another set of CMAs and CMBs. You do not need to group the deliveries by catcher vessel on CMA and CMB forms. Send all sets to the Observer Program's Seattle office.

# Community Development Quota (CDQ) Program

Observers have been monitoring vessels in the pollock Community Development quota program since its inception. For 1998, amendments to the fishery management plans for North Pacific groundfish fisheries have been approved which will establish multi-species CDQ programs. Modeled on the pollock CDQ program described in this section, the crab CDQ program could be implemented in early 1998 and the groundfish CDQ program by mid-1998 (at the earliest). Should you be assigned to a vessel participating in these new programs, additional instructions may be provided to you in training or briefing.

**From this section, you should learn:**

- about the development of the CDQ program
- how to organize your work with another observer on your boat
- the adjustments to observer -work priorities in this fishery
- about the daily message required from observers at plants receiving CDQ catch

## Western Alaska Community Development Program

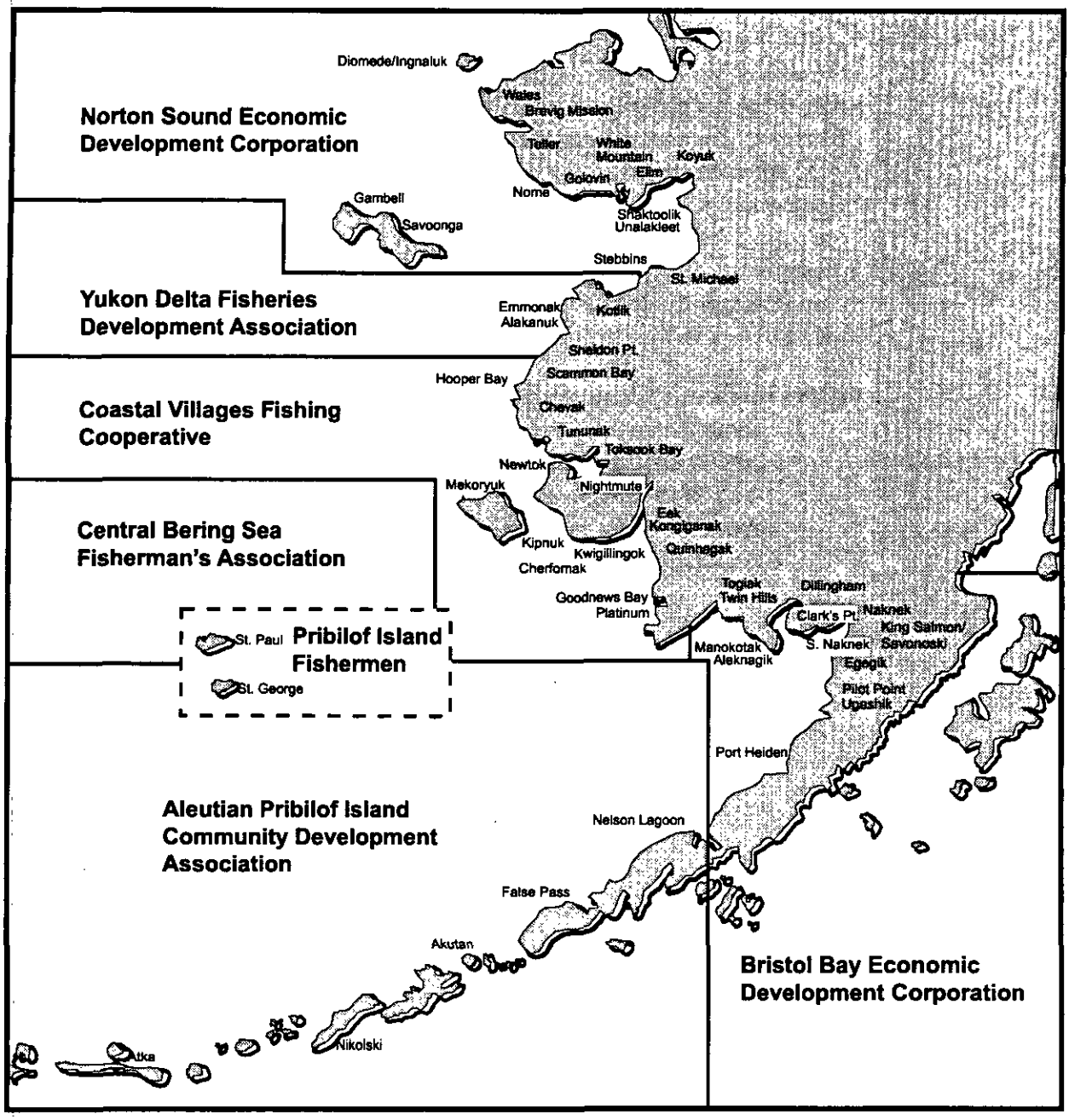



**Fig. 6-6.** Western Alaska Community Development Program

The Western Alaska Community Development Quota (CDQ) program for pollock was established under Amendment 18 to the Bering Sea and Aleutian Islands Fisheries Management Plan, approved by the Secretary of Commerce in 1992. The CDQ program is intended to help develop commercial fisheries in Western Alaska communities. Amendment 18 provided for an annual allocation of 7.5% of the BSAI pollock total allowable catch (TAC) to the "CDQ reserve." In 1997, this amounted to 86,925 mt. When individual fishing quotas for the longline halibut and sablefish fisheries were established, CDQs were allocated in those fisheries as well. Most of the longline vessels participating in the CDQ fishery are under 60 feet and do not require observer coverage.

Pollock CDQs are assigned to organizations representing eligible Western Alaska communities that have submitted a Community Development Plan approved by the Governor of Alaska and the Secretary of Commerce. Each approved CDQ group receives a portion of the overall pollock "CDQ reserve." The harvest and processing of these quota allocations are carried out in partnership with established fishing companies and their harvesting or processing vessels and plants. To date, six CDQ groups have approved plans with each having from one to several processors harvesting their allotted quotas.

In open access fisheries, many individual vessels are attempting to maximize the proportion of the overall quota they harvest before the fishery closes. The individual vessel is not limited by their own harvest in open access fishing, but rather by the closure of the fishery due to the combined action of the fleet. Under this system, there is no direct cost to the individual processor for fish that they have caught. If total catch is over or underestimated for an individual processor, that error is distributed among all of the fishery participants in aggregated data.

In CDQ fisheries, each group has their own quota which they in turn allocate to their contracted or partner processors. The derivation of total catch by an individual processor takes on an immediate economic importance because the processor must compensate the CDQ group for the fish they are reported to have caught. If the processor's harvest is over-estimated, they pay for fish they did not catch. If, on the other hand, the processor's harvest is underestimated, they get fish they don't pay for.

Ultimately, NMFS is responsible for informing each CDQ group's designated representative if or when their quota has been exceeded. Each CDQ managing organization is responsible for managing their contracted or partner processors in a manner that prevents them from exceeding their quota.

# 1997 Pollock CDQ Participants

Aleutian Pribilof Island Community Development Association -CDQ9751

Endurance
Starbound
Trident Seafoods, Akutan

Bristol Bay Economic Development Association - CDQ9752

Arctic Storm
Arctic Fjord

Central Bering Sea Fisherman's Association - CDQ9753

American Dynasty
American Empress
American Triumph
Northern Eagle
Northern Hawk
Northern Jaeger
Ocean Rover
Pacific Explorer
Pacific Navigator
Pacific Scout

Coastal Villages Fishing Cooperative - CDQ9754

Browns Point
Island Enterprise
Seattle Enterprise
Westward Seafoods

Norton Sound Economic Development Corporation -CDQ9755

Northern Glacier
Pacific Glacier

Yukon Delta Fisheries Development Association - CDQ9756

m/s: Golden Alaska
c/v: American Beauty
Ocean Leader
Aleutian Challenger
Amber Dawn
Vanguard

Trident Seafoods - Akutan plant
c/v: Viking Explorer
Dominator
Columbia
Aldebaran
Arcturus
Pacific Viking

**Fig. 6-7**. 1997 Pollock Participants. Note: This 1997 list is provided as a guide. These contractual relationships are subject to change throughout the season. Please consult the logbook and vessel master to determine which CDQ plan your vessel is fishing under.

Both NMFS and the CDQ group representatives track the pollock quota by using the catch summary and species composition data sent daily. The vessels may want to take part in this by tracking their own harvest using your species composition data. If requested, you should provide a copy of your species composition data to vessel personnel (refer to the text on access to your data on page ?). Do not, however, calculate the vessel's pollock catch, as your method of doing so may differ from the method NMFS uses. Please refer these questions on to the NMFS Regional Office in Juneau or to the appropriate CDQ representative.

## Catch Messages Observer Instructions for CDQ Fisheries

**Longline vessels:**
If you are assigned to a longline vessel fishing CDQ, daily faxes are not required, just label your set data on Form 1US according to the instructions.

**Catcher/Processor Trawlers and Motherships:**
Two observers will be assigned to each processor vessel. Your first priority is to obtain independent volumetric estimates on all hauls and report the haul and species composition information on a daily basis. If you are using the ATLAS or the COMS program you must send data daily to Seattle.

The lead observer will usually be the first observer on the vessel if a second observer joins them later for CDQ fishing. If both observers board the vessel at the same time, the observer who will remain aboard the vessel after CDQ fishing should be the lead. If there is any question as to who should be the lead observer on your vessel, contact the Seattle office for a decision. Usually two observers rotate on twelve hour shifts. The two of you should compile a single set of vessel sampling data and catch messages. The lead observer has the responsibility for keeping the entire set of vessel data and bringing it through debriefing. This includes special project data forms and specimens and salmon scales collected on that vessel by either observer. The non-lead observer who goes on to another assignment after the CDQ boat should begin their salmon scale collection over again.

The primary sampling objectives for CDQ fisheries are to make observer estimates of every haul and sample all the hauls selected by the random sample table. Then, with the increased work capacity of two observers, the next priorities are for you to 1) work on improving the accuracy of the volumetric catch weight estimations, 2) consider sampling all the hauls only if this can be done without

compromising sample size, and 3) increase sample sizes.. Fill out only a single set of 2US forms, regardless of starting or ending CDQ fishing or fishing for more than one CDQ group. Each observer may use different composition sampling methods as long as they conform to the program guidelines. If there is a difference of opinion between observers or with vessel personnel on priorities or methodology, be sure to contact one of the Observer Program offices for clarification.

The Official Total Catch weight on CDQ processor vessels (except the Alaska Ocean is a volumetric estimate made by observers from certified and marked bins (the Alaska Ocean has an in-line conveyor weighing system). Refer to the regulations section under Western Alaska Community Development Program, page?- regarding the requirements for certified bins. Utilize the certified bin measurements for your weight estimate and use your estimate also as the OTC. Record your estimatin the OTC and Observer Estimate columns for every haul. While the manual lists several options for estimating OTC, observers on CDQ processor vessels must estimate catch volume using the certified bin documentation. The total catch estimation method must be the same for the two observers on one processor vessel.

While aboard, if there are any problems regarding the volumetric requirements, or if vessel personnel are trying to influence you about some aspect of your work, please contact an Observer Program office. It is expected that cooperation by vessel personnel will be provided to enable accurate total catch estimates. For example, vessel personnel may have to meet the requirement to notify you when hauls are being retrieved. For bin volumes, they may have to hold up processing (particularly if you are whole haul sampling) to allow you the time to record fish height in the tank to determine volume of a haul. If you are not able to make good bin volume estimates due to a lack of cooperation from the vessel personnel, please contact an Observer Program office as soon as possible with details.

Observers should use a density factor of 0.93 if pollock makes up 95% or more of the catch. For each haul that you see or suspect from your samples that the bycatch may make up more than 5% of the total catch, sample for density as per manual instructions. Use a container larger (or better) than your baskets if possible. This calculation should be recorded in the density column of your logbook. Use your sample densities whenever the bycatch rate is greater than 5%.

The Random Sample Table of the lead observer is the table to be used by both observers. All the "on" hauls must be sampled and additional "off" hauls should be sampled as time permits. The break table should not be used. In many cases, all of the hauls can be sampled.

**Observers on Catcher Vessels:**
Catcher vessels will only have one observer. The OTC weight will be obtained by proportioned delivery weight plus the weight of any fish discarded at sea. The delivery weight may be proportioned by either the observer's or the skipper's catch estimates. Daily messages are required from the plant observer regarding the delivery information so do not worry about transmitting catch data from sea. It is necessary for the plant observer to, 1) report the pollock deliveries for Bering Sea areas separately from catches in the Aleutian Islands and 2) to include the weight of any pollock discarded at sea. Be sure to provide the plant observer with this information.

**Shoreside Plant Observers:**
The daily message required from deliveries to shoreside plants is different from the format explained for catcher/processor observers (see below). The managers need the daily total of CDQ pollock weight delivered plus the weight of any pollock discarded at sea, reported separately by Bering Sea versus Aleutian Islands areas, and by vessel (name). Plant observers should ask at the plant office for the appropriate CDQ number to include on their message.

**Shoreside Plant Observer Daily Report:**

Observer Name
Plant name
CDQ number (use the complete number format, such as CDQ9751)
Date

Then for each vessel: Vessel name
Area (Bering Sea or Aleutian Islands)
Total pollock delivered
Total pollock discarded at sea (as reported by the vessel observer)

A caution: Look at the sorting and processing line. If discard pollock are sorted off the line (along with other bycatch species) before the retained pollock are weighed, be sure to get the weight of pollock discarded by the plant and add it to the weight of the pollock that went on to processing. Remember, the weight of pollock caught includes discards at sea and all pollock delivered.

If you have any questions concerning these instructions contact the Seattle or Dutch Harbor office. The Dutch Harbor office can be reached Monday through Friday via SSB between 1000-1100 on frequency 4146 or between 1400-1500 on frequency 6227.

# 7 Marine Mammals and Birds

## Marine Mammals: Interactions and Sightings

**Uses of the data:**
Observers provide reliable estimates of marine mammal mortality and other interactions with the groundfish fishery. Vessel owners and operators are also required to submit reports of marine mammal injury and mortality that occur as a result of their fishing operation. The Observer Program's independent data determines the reliability of these reports. Observer data is also used to identify changes in fishing methods or technology that may increase or decrease incidental serious injury or mortality.

Marine mammal sighting data will provide information on the distribution and behavior of marine mammals. Sighting data from various sources around the world are integrated into the National Marine Mammal Laboratory's Platforms of Opportunity database.

**From this section, you should learn:**

- what species are of special concern.
- what constitutes an interaction and how to record it on Form 10US.
- if a marine mammal is caught, what sampling is required.
- how to describe a sighting on Form 11US
- what to do if you sight a marine mammal and cannot be sure of its identification.
- what to do if you see the same animals repeatedly.

**NMFS has classified Steller sea lions as two distinct populations under the Endangered Species Act. The Steller sea lion population west of 144°W longitude (includes Prince William Sound and all points west) is classified as endangered. The remainder of the U.S. Steller sea lion population continues to be listed as threatened.**

## Marine Mammal Interaction and Specimen Data

Under the MMPA your role is to conduct statistically reliable monitoring and to record information on all marine mammal/fishery interactions. You are also asked to determine sex and measure the length of any species found dead in the catch. If you can, take photos of any mammal in the catch. Good photos can confirm your identification and illustrate an animal's condition. If a Steller sea lion or a northern fur seal is found dead in the catch, you are authorized under a collection permit to collect the upper canine teeth. Collection of other specimen materials are not necessary. Interactions and specimen data are recorded on Form 10US. Record any sightings of marine mammals on Form 11US.

### Which hauls to monitor

To provide statistically reliable information, the hauls or sets you monitor for incidental take of marine mammals have to be randomly selected. Usually, the hauls or sets you sample for species composition can also be monitored for marine mammals. You indicate which hauls or sets you have monitored with your entries on Forms 1US or 2US. You may monitor additional hauls or sets as well.

## Marine Mammal Monitoring

If marine mammals are around your ship, they will often congregate to feed from a discard chute or from the codend or longline being brought in. Watch for any use of deterrence at that time (e.g., using "seal bombs"). Deterrence might be used to keep the mammals from tearing at the net, stealing longline catch, or even getting caught. Monitor retrievals for all types of interactions including deterrence, feeding, or entanglement.

### Feeding on longline catch

The use of deterrence to protect the catch is *most* likely to occur on a longline vessel. Steller sea lions, killer whales, and even sperm whales have been known to feed on longline catches during retrieval. Instances of feeding on catch by killer whales as well as any individual identification notes and photos are of particular interest. For feeding by mammals, enter the appropriate interaction code and outline the event on Form 10AUS, then make a cross reference to Form 11US. On Form 11US (marine mammal sighting form) your observations should be recorded in more detail. Refer to instructions on pages ?.

### Need to be in two places at once?

On some trawlers only a couple of net sections will be dumped at a time on the trawl deck while sorting takes place on the next deck below. On these vessels, to monitor for marine mammal catch and also sample for fish composition might require you to be in two places at once! The only solution is to watch the first part of the net being dumped, ask to be notified of any unusual catch, and insist on no presorting of catch. Then go below to work and, as possible, go topside to spot check the dumping operation. Listen and stay alert for any unusual stoppages in the dumping routine and go check on it if something catches your attention. On longline and pot vessels it is less likely that marine mammals will become entangled or caught in the gear, but it does happen. However, longline and pot observers work in the retrieval area where incidental catch is immediately apparent.

### Catch message reports

If you are on a trawl vessel and a freshly dead marine mammal is landed in a haul which you randomly selected for monitoring, a report of the event must be included with your catch message data for that haul. In 1996, only 2 Steller sea lions and 1 northern fur seal were reported as freshly dead in all trawl hauls randomly selected for monitoring by observers. For reporting instructions, refer to Item 10 on page ? in the catch message instructions.

## Collecting Marine Mammal Specimen Data

All interactions with marine mammals that occur while you are aboard should be recorded (on Form 10US) whether or not they occur in randomly selected, monitored hauls. During your first days on board, tell the captain you want to be called to the deck if any marine mammal is caught, regardless of whether you are sampling fish below deck, sleeping, or whatever. (You may wish to be immediately notified of any sightings too, or at least ask to be notified when you are awake.) Under 50 CFR 229.7(c)(5) "Marine mammals incidentally killed during fishing operations and which are readily accessible to crew members, must be brought onboard the vessel as biological specimens and retained for the purposes of scientific research ***if feasible and requested by*** NMFS personnel, designated contractors, or the aboard observer."

UNITED STATES DEPARTMENT OF CO
National Oceanic and Atmospheric Admin
NATIONAL MARINE FISHERIES SERVICE
1335 East-West Highway
Silver Spring, MD 20910

THE DIRECTOR

**Permit No. 797**

**Scientific Research Permit to Take Marine Mammals**

**The National Marine Mammal Laboratory**, Northwest and Alaska Fisheries Center, National Marine Fisheries Service, 7600 Sand Point Way, N.E. BIN C15700, Seattle, Washington 98115, is hereby authorized to import marine mammal specimens, including material from species listed as threatened or endangered, for scientific research and scientific purposes as cited in the Permit Holder's application and subject to the provisions of the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407), the Regulations Governing the Taking and Importing of Marine Mammals (50 CFR Part 216), the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the regulations governing endangered species permits (50 CFR Parts 217-222), and the Conditions hereinafter set out.

**Abstract:**

The research involves the collection of tissue samples from dead cetaceans, pinnipeds and sea otters to: determine the biology and life history of each species; determine a basis for approval of permits to domestic fishermen; assess and/or conduct appropriate research to lessen the impact of such operations on marine mammal stocks; and assess the rate of incidental takes (mortalities) in gillnet fisheries through observer programs and to use tissue samples from animals collected in this fishery and retrieved opportunistically (i.e., beached stranded) for use in fishery-impact analysis models. Tissues will be analyzed for genotype and pollutant level variations to determine the existence of discrete porpoise stocks.

**Authorization:**

**A. Number and Kind of Marine Mammals:**

An unspecified number of specimen materials may be collected and imported from dead individuals of all cetacean species, all pinniped species, and sea otters which were:

1. directly taken in fisheries for such animals, in countries and situations where such taking is legal, except as provided in B.1.b.;
2. killed incidental to fishing or other operations;
3. found dead at sea or beached; and/or
4. found dead of natural causes.

THE ASSISTANT ADMINISTRATOR
FOR FISHERIES

**Fig. 7-1**. Scientific Research Permit to Take Marine Mammals

**B. Special Conditions:**

1. Research Requirements

   a. The collection and importation of marine mammal specimens shall be conducted worldwide by the means and for the purposes described in the application, as amended, and as limited by the Terms and Conditions of this Permit.

   b. The Holder (or designated agent(s)) shall not import specimens into the United States from:

      (1) marine mammals taken in any high seas driftnet fishery after December 31, 1992; or

      (2) marine mammals taken during operation of any whaling programs not approved by the International Whaling Commission.

   c. No specimens shall be imported into the United States that were taken illegally in the country of origin.

   d. All specimen materials collected under this authority shall be maintained according to accepted curatorial standards and deposited in a museum or other bona fide scientific collection.

   e. The Holder must coordinate activities within the United States with appropriate Federal, state and local resource management agencies.

   f. The authority to collect and import the marine mammal specimens authorized herein, shall extend from the date of issuance through **December 31, 1997.**

   g. The terms and conditions of the Permit shall remain in effect as long as the marine mammal specimens taken and imported hereunder are maintained under the authority and responsibility of the Permit Holder (or designated agent).

2. Reporting Requirements

   a. The Holder shall submit a report by December 31, 1992 (provided specimens have been taken and/or imported), and annually thereafter for the duration of this Permit.

**Fig. 7-1**. Scientific Research Permit to Take Marine Mammals continued

(1) For all cetaceans and pinnipeds (except walrus) the Holder (or designated agent) shall submit an annual report to the National Marine Fisheries Service indicating, if possible, a description of each animal from which a specimen was taken including its species, age, size, sex, reproductive condition; date and location of collection; circumstances causing death; the date and location of each importation; and the name and location of each institution maintaining specimen materials collected under this Permit.

(2) For sea otters and walrus, the Holder (or designated agent) shall submit an annual report to the U.S. Fish and Wildlife Service indicating, if possible, the age, size, sex, reproductive condition; date and location of collection; circumstances causing death, if known; and the date and location of each importation.

c. The Holder shall submit a final report within 90 days of the expiration date of this Permit. The final report shall include a summary of the specimens that were collected and/or imported, their disposition, and the results of research conducted thereon.

d. All reports for cetacean and pinniped (except walrus) collections shall be submitted to: the Permits Division, Office of Protected Resources, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, 1335 East-West Highway, Room 7324, Silver Spring, MD 20910; for sea otter and walrus collections: the U.S. Fish and Wildlife Service, Office of Management Authority, 4401 N. Fairfax Drive, Room 432, Arlington, VA 22203.

3. Notification Requirements

The Holder (or designated agent) shall notify the U.S. Fish and Wildlife Service, Marine Mammals Management Office, 4230 University Drive, Room 310, Anchorage, AK 99508, to coordinate the collection of biological samples from sea otters and/or walrus in Alaska.

**Fig. 7-1**. Scientific Research Permit to Take Marine Mammals continued

C. General Conditions

All applicable General Conditions attached as Section C shall apply and are made a part hereof.

William W. Fox, Jr.

OCT - 1 1992
Date

I. Teiko Saito
Chief, Branch of Permits
Office of Management Authority

OCT - 1 1992
Date

**Fig. 7-1**. Scientific Research Permit to Take Marine Mammals continued

At the end of training or briefing, you will be given a letter which designates you to act as an agent under a marine mammal specimen collection permit given to the National Marine Mammal Laboratory of the Alaska Fisheries Science Center. You are also required to carry a copy of the permit as presented in **Fig. 7-1**.

If a Steller sea lion or Northern fur seal is caught and killed or found dead in the catch (a rare event), you are asked to collect the canine teeth (see **Fig. 7-2**). Do not collect bones or any parts of walrus as specimens. If you are interested and it's feasible to collect other specimens for NMFS, contact the Observer Program as to what is needed and for permission. Length and sex information is requested from any dead marine mammals taken.

## Collection of Sea Lion and Fur Seal Teeth

The procedure for the collection of a tooth from a sea lion or a seal is as follows:

**Protect yourself from contracting "seal finger." Refer to safety cautions on page 8-5.**

1. The end of the upper snout must be cut off without damaging the root of the canine tooth. The canine tooth arches back, so to ensure that the entire canine root is collected, the snout should be cut off between the 2nd and 3rd postcanine teeth (**Fig. 7-2**). It may be helpful to skin the upper snout in order to better see where to make the cut.

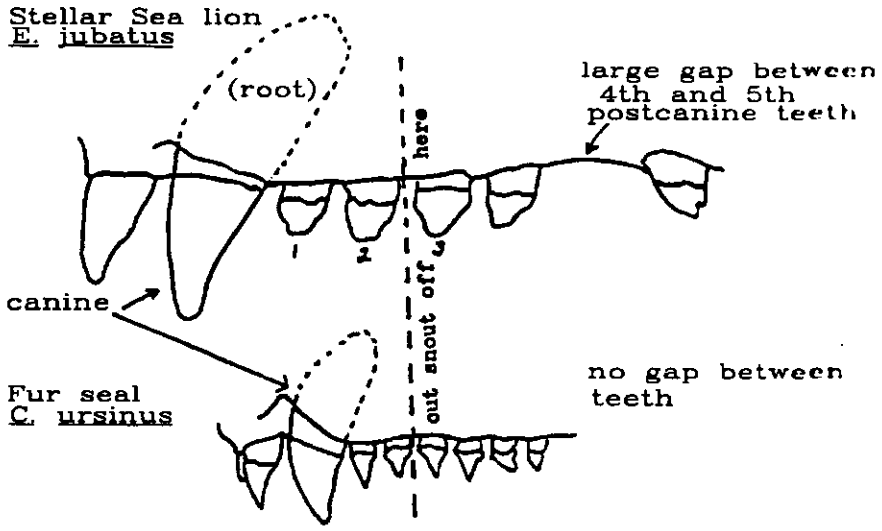



**Fig. 7-2.** Canine Teeth of Sea Lions

2. Methods of preservation:

   a. It is probably easiest to triple-bag the specimen and either freeze or salt the snout to preserve it until you bring it in to debriefing. The AFSC National Marine Mammal Laboratory (NMML) will extract the teeth for study.

   b. Alternatively, you may be able to arrange to boil the snout (suggest: outside, on a hot plate, in a non-food pot) until no more flesh remains on the jaws. The jaws can then be stored dry until you turn them in and the teeth will be safely extracted by NMML for study.

   c. Or, boil the snout until the tooth can be easily pulled and removed. *Do not* forcibly twist the tooth when removing; twisting will break the tooth.

3. *Do not preserve the snout in formaldehyde.*

## Length Measurements of Seals and Sea Lions

*Standard Length* (Measurement No.1) is the straight-line distance from the snout to the tip of the tail flesh on the unskinned body, belly up, ideally with the head and vertebral column on a straight line. If rigor has set in, Measurement No. 2 (below) should be used.

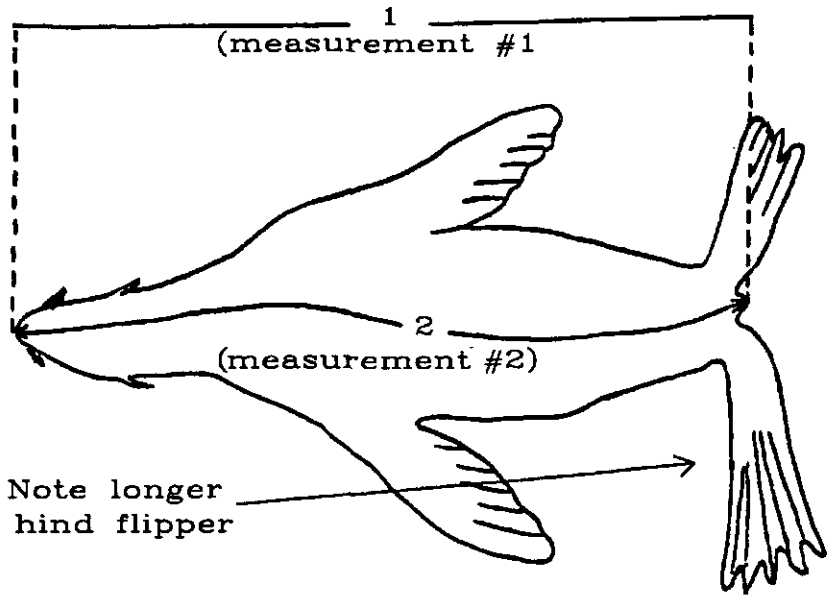
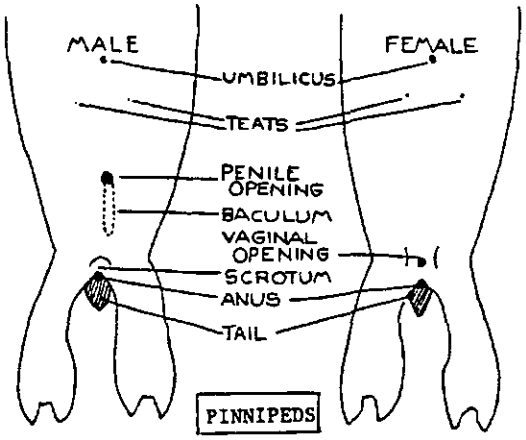


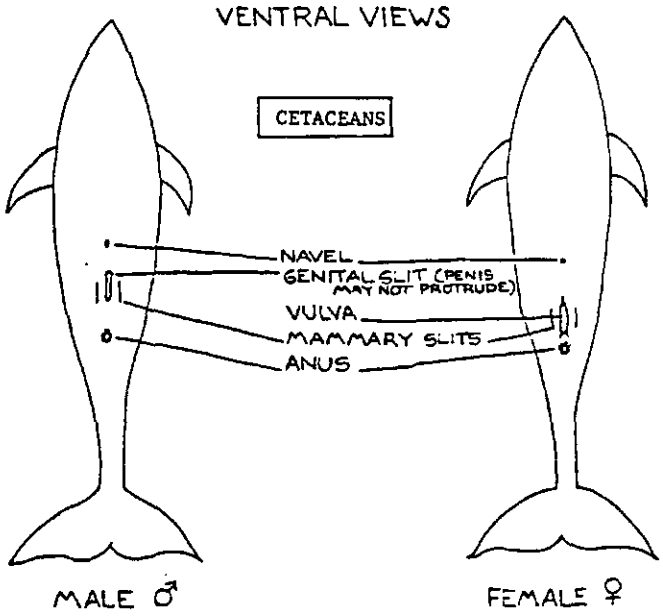

**Fig. 7-3.** Example of Seals and Sea Lion Measurements. Upper half of the diagram is a Steller sea lion, the lower half a northern fur seal.

*Curvilinear Length* (Measurement No. 2) is recorded when the seal cannot be stretched belly up, as when rigor sets in, or is too heavy to be moved. It is the shortest surface distance from the tip of the tail flesh along the back, belly, or side. Record the type of measurement taken. Seals and sea lions are usually measured with a flexible tape.

## Sexing Pinnipeds and Cetaceans

**If possible, take a photograph or make a drawing.** These diagrams illustrate morphological differences between male and female pinnipeds and cetaceans. When recording how you identified the sex, note what body features you saw and their relative position.




In cetaceans, the distance between the anus and the genitals is greater in males.

Otherwise, the sexes appear similar because males have exernal teats, and females have enlarged clitori.

If possible, take a photograph or make a drawing.

**Fig. 7-4**. Diagram of Pinnipeds and Cetaceans Sex Identification

| Cruise # | Vessel code | Year |
|---|---|---|
| 4011 | A110 | 97 |

Form 10AUS - Marine Mammal Interaction Data

Page 1 of

Describe features used in identification; circumstance and effects of deterrents; particulars of entrapment or entanglement; types and extent of injuries; etc.

| Date Month | Date Day | Haul, or set number | Species Name | Species code | Number of individuals | Did you observe mammal? | Condition code | Interaction code |
|---|---|---|---|---|---|---|---|---|
| 09 | 01 | 49 | Steller sea lion | EJ | 1 | Y | 1 | 4 |

Remarks: (see manual for list of required information)

Sea lion was found as haul was dumped. It was not decomposed and only 2 wounds were near mouth. Animal was over 2 meters long, light brown color, large foreflippers, external ears.

| Date Month | Date Day | Haul, or set number | Species Name | Species code | Number of individuals | Did you observe mammal? | Condition code | Interaction code |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

Remarks: (see manual for list of required information)

Note: A single example is shown above, this form cannot be compared with CMB example data.

| Date Month | Date Day | Haul, or set number | Species Name | Species code | Number of individuals | Did you observe mammal? | Condition code | Interaction code |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

Remarks: (see manual for list of required information)

| Date Month | Date Day | Haul, or set number | Species Name | Species code | Number of individuals | Did you observe mammal? | Condition code | Interaction code |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

Remarks: (see manual for list of required information)

Revised on 1/1/97

**Fig. 7-5.** Form 10AUS – Marine Mammal Interaction Data

## Form 10US Instructions

The Form 10US has two parts (A and B sides). The Form10AUS is filled out by vessel observers for any marine mammal interaction or catch (whole or parts of). Form 10BUS is used when specimen data were taken from incidents detailed on Form 10AUS. If no specimen information is taken, Form 10BUS is not used. Conversely, if more than one animal was caught, you may have two or more records on Form 10BUS for one incident on Form 10AUS.

1. Enter Cruise no., vessel code, and last two digits of the year in the heading. Start a new sheet for each vessel you work aboard.

2. Record the date with leading zeros where appropriate. Enter the haul, delivery, or set number for each catch in which there was a marine mammal interaction. (See Interaction Codes below.)

3. **Species Name** - Write the common name of the marine mammal species involved. *If you are not sure of an identification, use a broader classification*, such as unidentified pinniped or unidentified dolphin/porpoise. If more than one species of marine mammal was involved in an interaction, repeat the date and haul number in the next box down the page and enter the second species on its own line.

4. **Species code** - Record the two letter code corresponding to the species name. The mammal code is found in Appendix C.

5. **Number of individuals** - Enter the number of individuals involved in the incident described by the interaction code. If the same mammal was involved in more than one interaction, just enter the mammal once and assign it the interaction code with the most serious consequences for the mammal. If there were several animals of the same species involved in different interactions, record each interaction on a separate line.

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

7. **Condition code** - use one of the codes in **Fig. 7-6** for each line of entry. Code the outcome condition. If a live animal was lethally removed, code it as a carcass, not a live animal.

1 — Carcass
2 — Bones other than the skull
3 — Live animal
4 — Skull
5 — Skull and bones
6 — Tusk/teeth only (no skull)
7 — Baleen only

**Fig. 7-6.** Condition Codes, Form 10AUS

8. **Interaction code** - Choose one of the codes below (**Fig. 7-7.**). An entry is required in this field. A bone for example should have an interaction code of 6. Refer to "Definitions" for these codes and then read what is needed for your "Remarks."

   If a mammal was involved in more than one interaction during one haul or set, just enter it once and assign it the interaction code with the most serious consequences for the mammal. For example, an animal that was deterred and released injured, might hit the propeller and die. The interaction code would be 13 — for the latter event. However,

| | |
|---|---|
| 1 - Deterred, condition unknown | 9 - Deterred and released /escaped uninjured |
| 2 - Released/escaped uninjured | 10 - Deterred and released /escaped injured |
| 3 - Released/escaped injured | 11 - Deterred and lethal removal (not entangled) |
| 4 - Freshly Dead | 12 - Deterred and lethal removal (entangled) |
| 5 - Unknown condition | 13 - Hit propeller and died |
| 6 - Previously dead | 14 - Mammal boarded vessel on own volition and escaped uninjured. |
| 7 - Lethal removal (not entangled) | 15 - Mammal boarded vessel on own volition and escaped injured. |
| 8 - Lethal removal (entangled) | 16 - Feeding (on catch not yet landed) |
| | 17 - Deterred and feeding |

**Fig. 7-7**. Interaction Codes, Form 10AUS

your remarks should clearly reflect the sequence of events.

**Remarks** — This is the most important part of recording the interaction. If you did not observe the animal, briefly explain why not, and where you got your information. If you did see the animal, please use this section to explain the details requested below. If you were on a longline or pot vessel, did this interaction occur while you were monitoring for marine mammals?

**Species identifications**: Record as much detail as you can. What were the shapes and size of dorsal fins, flukes and flippers? What type of coloration pattern was on the fins and body? Did it have external ears or fur? Did it have baleen or tusks? What was the shape and size of the head and snout? List all of the characteristics that you used for species identification.

**Condition of the animal**: *Skull and/or Bones:* Describe the number, size, type, and condition of the bones. What was done with them?

## Definitions

*Deterred:* Animals are subjected to deliberate actions intended to frighten or harm them in order to limit, discourage, or avoid interaction with fishing gear. The animal may be in direct contact with the gear or in very close proximity. Common examples of these *authorized* activities include yelling at the animal, banging pans or other objects, throwing seal bombs, and shooting at or near the animal (unless it's a Steller sea lion, see side bar).

Activities not included in this definition of deterrence are inadvertent propeller strikes, unauthorized harassment, or changes in fishing strategy (e.g., longliners suspending retrieval to avoid depredation by killer whales).

**NOTE: Steller sea lions have additional protection under the Endangered Species Act. Discharging a firearm within 100 yards of a stellar sea lion is a violation of federal law, even if the intent is a warning shot to frighten the sea lion away. Record events like these in your logbook.**

Harassed animals are those that are subjected to deliberate actions intended to frighten or harm them when they are not in direct contact or within the immediate proximity of fishing gear. The same activities that are authorized as deterrence, above, become unauthorized, illegal acts of harassment when they are performed other than for protection of catch or gear. *Instances of harassment should be recorded on Form 11US, documented in your logbook, and reported to your debriefer. Harassment is not coded on Form 10US.*

*Released or Escaped Alive (not injured):* those animals that are entrapped, but are released alive or escaped with no apparent injury (no bleeding, swam or dove strongly within a few seconds) and no fishing gear was attached to the animal.

*Released or Escaped Alive (injured):* Those animals that are entrapped, but are released alive or escape with apparent injury (bleeding, obvious trauma, unusually sluggish movement upon release) and/or with fishing gear attached to the animal.

*Freshly Dead:* Animals killed by entanglement or entrapment during that particular haul or set. The animal was not decomposed and did not show evidence of death by something other than the fishing gear. Examples which do not fit the freshly dead category include animals with obvious gunshot wounds, animals skinned or with snouts removed, etc. Although some marine mammals may smell bad, freshly dead animals should not have a putrid, rotten smell. Freely flowing blood or other body fluids and bright red blood or meat generally indicate a recent kill. 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 the period

of time an animal is in rigor can vary greatly depending on its physical condition and the environmental conditions.

*Unknown Condition:* Includes animals that are entangled or entrapped, but are lost or discarded before the observer is able to judge the animals' condition.

*Previously Dead:* Animals dead before contacting the fishing gear. There may be a putrid, rotten smell, bloating, discoloration of flesh, or loss of skin/fur. A mass of decomposed flesh with bones is also considered Previously Dead. *Animals killed prior to contact with the fishing gear, but not obviously decayed, also are classified as Previously Dead.* Look for a cause of death that indicates that the animal was not killed in the present haul or set (e.g., a decapitated walrus, skinned seal, gunshot wounds). If you think you have seen the animal before, record it again but indicate why you think it is the same animal.

*Lethal Removal (not entangled):* Animals killed to prevent serious damage to or loss of gear, catch, or human life. The death of these animals is not caused by contact with the fishing gear. Examples include shooting or clubbing an animal to prevent it from damaging gear, feeding on the catch, or to remove it from the vessel. An animal killed as a result of deterrence need only be recorded as lethally removed, not also as deterred, but your remarks should clearly reflect the sequence of events.

*Lethal Removal (entangled):* An animal that is killed (e.g. shot or clubbed) to prevent serious damage or loss of gear, catch or human life, and is in direct contact with fishing gear.

*Feeding:* is when a marine mammal is seen pulling fish from a net or off the hook of a longline. On a longliner, you might see sea lions or fur seals taking catch right alongside the rail. If killer whales are feeding though, often they won't come near the boat. Watch killer whale's behavior closely to see if they are actually diving down to the submerged line. Seeing mammals around the ship and having *empty* hooks coming up is not necessarily proof of feeding. Presence of mammals around the ship and having just fish heads or lips left on the line is strong evidence of feeding. Also look for fish that have been bitten or raked by teeth. Note that when mammals feed on discarded bycatch or waste it is not considered feeding *nor is it* intentional feeding by humans.

*Intentional Feeding:* When humans offer or give food or non-food items to marine mammals in the wild, it is a violation. Do not record this on the Form 10US. Instead, document any observations of intentional feeding of marine mammals by humans as a violation in your logbook and mention it to your debriefer.

*Deterrence/Harassment:* Identify the species. What method of deterrence was used? How effective was the deterrence? Was the animal injured as a result of the deterrence? Where was the animal in relation to the vessel and the gear? Who deterred the animal? Why was the animal deterred?

*Released or Escaped Alive (injured and uninjured):* Identify the species. What part of the gear was the animal in? At what point during the fishing was the animal picked up? How was the animal released? What was the animal's condition upon release? Describe all injuries or symptoms of injuries.

*Unknown Condition:* Identify the species. Describe any known details about the animal. What circumstances prevented you from making a good judgement of the animal's condition?

*Freshly Dead:* Identify the species. Could you determine the cause of death? How did you determine the animal was a fresh kill? Where was the animal found? What condition was it in? What type of wounds were present?

*Previously Dead:* Identify the species or species group as best as possible. Describe the state of decomposition, if present. Could you determine a cause of death?

*Lethal Removals:* Identify the species. Fully describe the events surrounding the kill. What methods were used to kill the animal?

*Hit propeller and died:* Identify the species. How was this incident noticed? Describe what was seen. Are you certain the animal was dead or dying?

*Mammal boarded vessel on own volition and escaped injured or uninjured:* Identify the species. How and why did the animal board the vessel? How did the animal exit the vessel? Was any deterrence used to get the animal to leave? Describe its effectiveness. If injured, how did it occur? Describe the injuries.

*Feeding:* Identify the species. If the animals are killer whales, outline the event, refer to Form 11US, and make a more detailed report on that form. Did you actually see the animals eating catch? Describe what you saw. Did you notice a preferred prey? If on a longliner, what percentage of the prey species was taken from the catch? Describe any change in fishing strategy used for avoiding predation and rate its effectiveness.

| Cruise # | Vessel code | Year |
|---|---|---|
| 4011 | A110 | 97 |

Form 10BUS - Marine Mammal Specimen Data

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

| Date Month | Date Day | Haul, or set number | Marine mammal species code | Interaction code | Sex? (M, F, or U) | Specimen number | Standard length in centimeters | Curvilinear length in centimeters | Tooth taken (Y/N)? | Photo taken (Y/N)? |
|---|---|---|---|---|---|---|---|---|---|---|
| 09 | 01 | 49 | EJ | 4 | M | 1 | | 260 | Y | N |

Remarks : (see manual for list of required information)

See remarks on 10A. Sexing was pretty clear using diagram in Spp id Manual. Animal was too large to move for straight line measure. Borrowed a hacksaw and took off the whole end of the snout for the teeth and froze it.

| Date Month | Date Day | Haul, or set number | Marine mammal species code | Interaction code | Sex? (M, F, or U) | Specimen number | Standard length in centimeters | Curvilinear length in centimeters | Tooth taken (Y/N)? | Photo taken (Y/N)? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

| Date Month | Date Day | Haul, or set number | Marine mammal species code | Interaction code | Sex? (M, F, or U) | Specimen number | Standard length in centimeters | Curvilinear length in centimeters | Tooth taken (Y/N)? | Photo taken (Y/N)? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

| Date Month | Date Day | Haul, or set number | Marine mammal species code | Interaction code | Sex? (M, F, or U) | Specimen number | Standard length in centimeters | Curvilinear length in centimeters | Tooth taken (Y/N)? | Photo taken (Y/N)? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

Revised on 1/1/97

**Fig. 7-8.** Form 10BUS – Marine Mammal Specimen Data

## Form 10BUS Marine Mammal Specimen Data

This form is filled out when you collect canine teeth, record sex and/or length data, or take photos of interactions or catch. If you encounter circumstances which you believe warrant collecting other specimens, you must contact the NMFS Observer Program office in Seattle to obtain special permission.

Each entry on Form 10BUS should correspond to an entry on Form 10AUS. Fill out one Form 10B record (there are four records per page) for each animal from which measurements or specimens are taken.

1. Enter cruise no., vessel code, and the last two digits of the year. The date, haul or set number, marine mammal species code, and interaction code should correspond to an entry on Form 10AUS.

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

3. Specimen number should always be 1unless there was an interaction with more than one animal of the same species in a single haul or set.

4. Lengths, curvilinear and/or standard - Record the animal's length (in cm) in the appropriate field. For instructions on measuring, refer to the page following marine mammal species codes, titled "Length Measurements of Seals and Sea Lions."

5. Tooth collected (Y/N)? - Record "Y" if you collected a tooth; otherwise record "N". If you did not take a tooth or the snout of a dead Steller sea lion or northern fur seal, please indicate why in the Remarks section.

6. Photo taken (Y/N)? - Record "Y" if you took photographs; otherwise, record "N."

7. Remarks - Describe how the sex was determined. Document any uncertainties you may have concerning the data. If a tooth or snout was collected, describe it and your method of storage. Any comments not directly related to the specimen data, such as cooperation or hindrance by crew, should be recorded in your logbook.

## Marine Mammal Sightings

Marine mammal sighting data are always valuable. Thus, if a crew member points out a mammal to you, or if you merely glance up from your work and see a mammal, please record the information on Form 11US.

We are interested in every species of marine mammal that you encounter and have provided a guidebook 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 marine mammals tend to lend credence to those records that include identification. Please give us a complete description with comprehensive notes and sketches, to fully describe any species you encounter for the first time each cruise. Records of species which are not fully documented and have not been previously encountered will be difficult to verify.

For the more commonly seen species (e.g., Dall's porpoise), you do not need to give detailed descriptions of subsequent sightings of the same species within one contract. You do need to fill out a sighting form for at least each day of subsequent sightings of the described species. If a sighting involves unusual behaviors, or documents a fishery interaction recorded also on Form 10US, or warrants some extra description (e.g., mating humpback whales), please describe fully. Fill out a separate sighting form for each species you see.

Form 11US

# MARINE MAMMAL SIGHTING

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

Observer(s) Gentle Giant Vessel Big Blue

date 97 05 21

local time (24 hr. clock) 13:00 +/- GMT

latitude 56° 24.3' N/S

general location (optional)

longitude 167° 10.7' E/W

sighting conditions Beaufort 2 +/- water temp. +05.0°C

☐ alert ☒ good ☐ fair ☐ poor

species (common and/or scientific name)

Fin Whale

confidence ☐ sure ☒ likely ☐ unsure

sighting cue

Saw blows about 200m off port

closest approach 100 m

number sighted (best) 8

number (minimum) 5

number (maximum) 10

observer

vessel

platform yrs species code sighting cue

conf. length photos

behaviors

interactions mult

## 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.

Blows were followed by very falcate dorsal fin. Animals got closer to vessel; slender bodies, dark in color, lighter on dorsal part of head. Final id based on jaw color pattern: right side almost white (at least visible part). No flukes seen. Similar to sei whale description but much bigger & sei whales not likely north of Aleutians.

## Body Length Estimate

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

## Behaviors Seen

(circle as appropriate)

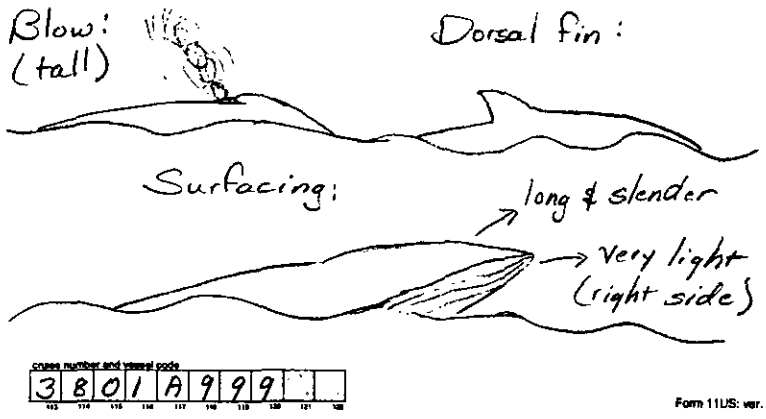
bowriding (small cetaceans)
stern/wake riding
galloping ("porpoising")
jumping
slow rolling
roostertailing
milling

spyhopping (large cetaceans)
blow visible
breaching
pec (flipper) slapping
lobtailing
tail raised on dive
tail throws
lateral lunge feeding
vertical lunging
group lunging
flukes up on dive

rafting (pinnipeds)
resting (jughandle)
running ("porpoising")
inverted slaps
leaving haulout
vocalizing

## Sketches

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




## Fishing Interactions

feeding on discards
feeding from gear
swimming near gear None
contact with vessel
contact with gear
trailing gear

## Photos/Video (optional)

☒ photographs
☐ video

roll/tape #

frame(s) unsure

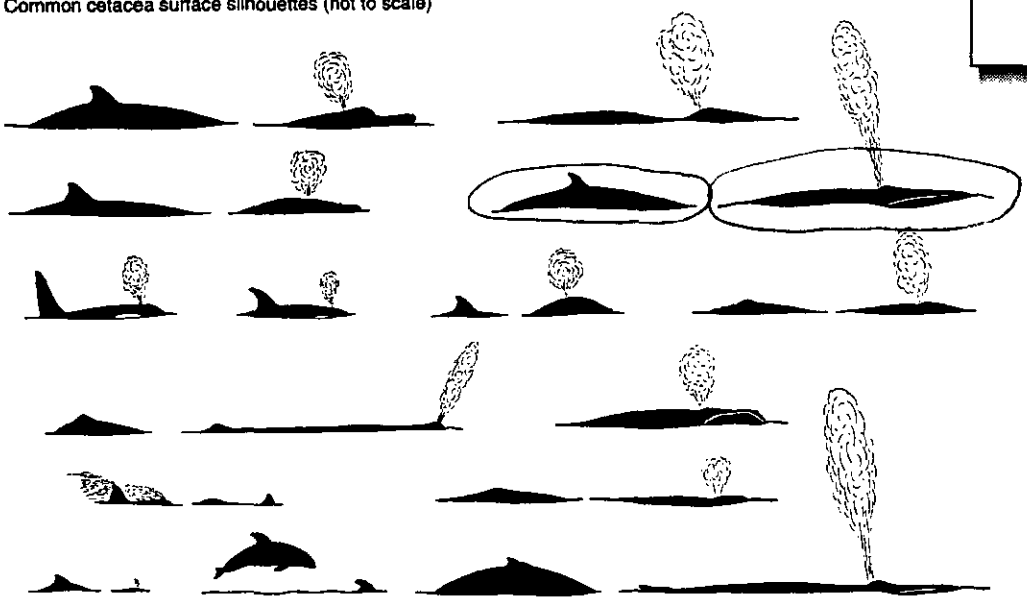
☐ Check here if there was more than one species of marine mammal present at this sighting. Please fill out a form for each species.

cruise number and vessel code 3801A999

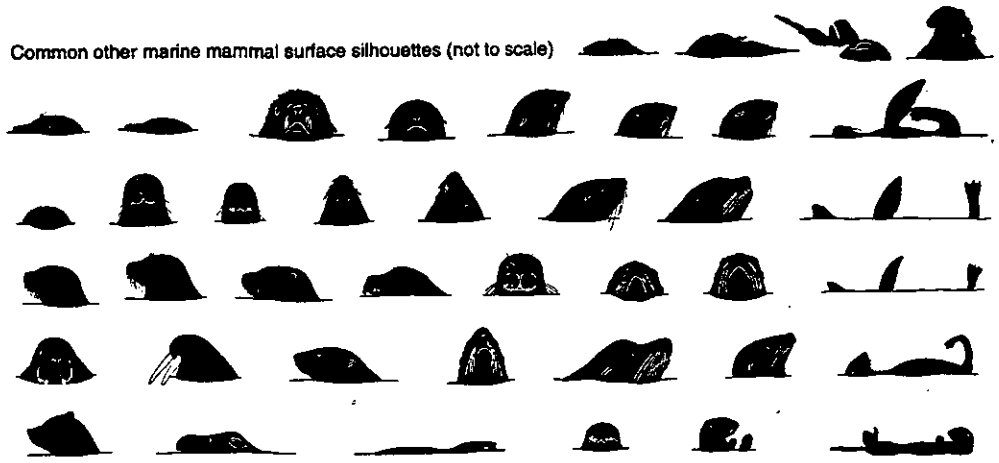
Form 11US: ver. X.96: Balls, Hartness, Hill, Folkens, Mizroch

**Fig. 7-9.** Form 11US – Marine Mammal Sighting

Common cetacea surface silhouettes (not to scale)



Common other marine mammal surface silhouettes (not to scale)



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

| 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) | | | |

**Fig. 7-9.** Form 11US – Marine Mammal Sighting continued

## Form 11US Instructions

*NOTE: DO NOT FILL IN SHADED BOXES.*

1. **Observer, Vessel:** Write your name and your vessel's name in these blanks.

2. **Date:** Enter year (e.g., 98), month and day, in that order.

3. **Time:** Time of sighting is logged when the animal is first seen. Use Alaska local time (ALT). If you know the Universal Time (or Greenwich Mean Time) offset, put it in boxes 11 - 13.

4. **Latitude:** Record the latitude to tenths of minutes, if possible. The name of the general locality is optional.

5. **Longitude:** Record longitude to tenths of minutes, if possible. Place E or W in box 30, depending on which side of the 180th meridian the sighting occurs.

6. **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 or weather. *Fair:* Sighting conditions affected by a combination of problems, e.g., heavy seas or poor weather. *Poor:* Severely limited visibility due to high seas or poor weather.

7. **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. (Note: Although the Beaufort scale actually goes up through 10 - storm, 11 - violent storm, and 12 - hurricane, these codes are not appropriate for sightings.)

8. **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 can be obtained by the ship's engineer from the engine inlet thermometer. The conversion from Fahrenheit to centigrade is: $C^\circ = 5/9(F^\circ - 32)$.

9. **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 in the boxes to the right of the species section. Please give a detailed description of the characteristics you observed. It is very important that you list all of the characteristics that led you to

an identification of the marine mammal. See below for a list of important things to make notes on.

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 a species, enter as "unident. large whale", "unident. porpoise", etc. ***Remember*** *that an erroneous identification* ***is worse*** *than none at all.*

10. **Sighting Cue:** Note what first attracted your attention to the presence of the marine mammal. What was the first thing you saw when you spotted the mammal? Examples are: blows, splashes, the animal's body, roostertail splashes, flukes or fins, or the presence of birds above.

11. **Closest Approach:** Note distance in meters of the closest approach of the marine mammal. If you need a "Table of Equivalents" for converting units, refer to the Appendix.

12. **Number Sighted:** Give a best estimate of number of individual animals here. If unable to count all the animals with certainty, estimate the number seen in terms of a range (e.g., Best estimate: 15, Minimum present: 12, Maximum present: 20). For Dall's porpoise, note if you see more rooster tails than the actual number of animals that come to the boat.

13. **Cruise Number and Vessel Code:** At the bottom of the page, enter the cruise number and vessel code.

### Narrative and Sketches:

These sections are very important parts of your observation. *Remember if you identify the animal, say how you did it.* Everything that you observed about the animal and used to identify it should be entered. Provide sketches—these are always helpful.

Important things to look for and make notes on when attempting to make an identification are:

**Shape and size of dorsal fin and its position on the body**. If possible, also note size and shape of tail and flippers.

**Length**. Size is difficult to estimate at sea, so if it is convenient, compare unfamiliar animals with a species with which you are familiar. For

example--"about size of female Steller sea lion" or "slightly smaller than adult male killer whale." You may also compare an animal to a known length on the ship.

**General shape of body**, slender or robust?

**Shape and size of snout**: Is it long or short? Estimate length in inches. Is there a definite break between snout and forehead? Is the forehead markedly bulbous?

**Color pattern on fins and body?** (stripes, spots, patches, mottling).

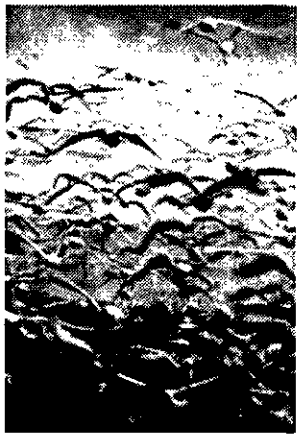
**Shape, location, and direction of blow:** Is it single or double? Where is blowhole located on head? Does it lean forward or go straight up?

**Scars and scratch marks?**

Check off the **Body Length Estimate**, and circle any **Behaviors Seen** or **Fishing Interactions**. Note here if you've taken any **Photos or Video** that may be helpful for species identification or photo-identification for species including killer whales, humpback whales, or blue whales. On the back of the form are profiles of back, blow and heads of many marine mammals. Circle those which most closely resemble what you observed. Be generous with your narrative of animal's behavior. If there are several animals, are they in a tight school, a loose school, or scattered either singly or in small groups? Describe their diving behavior. How many times do they blow when they come to the surface? Do they raise their tail flukes when they dive after their last blow? How long do they stay down between each series of blows? Do they jump (breach) clear of the water? If so, do they jump in a smooth arc or do they sometimes belly-flop, somersault, or spin? Were the marine mammals attracted to the ship by the net retrieval? Were they feeding off discarded fish and fish parts?

Last but not least, this form has been redesigned. Please write in comments and suggestions for ways to improve the form in future revisions.

# Birds



## Introduction

The National Marine Fisheries Service and the U.S. Fish and Wildlife Service (FWS) are cooperating to obtain accurate information on the mortality of birds in groundfish fisheries in the Gulf of Alaska and the Bering Sea. Bird monitoring activities began in 1990 and were expanded during the 1993 season. The major change was to ask observers to identify incidentally caught birds to genus or species. Of special concern are a small number of species whose populations are very small or are declining, referred to here as "sensitive species".

Although bycatch of birds is usually small in comparison with other species groups, it is important to collect accurate and reliable information. In addition to recording incidental take, you will occasionally have the opportunity of recording sightings of endangered species, reporting leg bands found on dead birds, or documenting collisions of birds with the vessel superstructure. All these data are crucial for the management of seabirds by the FWS, which analyzes each year's incidental mortality and its effect on the health of bird populations. The FWS annually receives the data collected by observers as either a data feed from the NORPAC data base and copies of appropriate Observer Logbook pages (Seabird Daily Notes).

## Incidental Take

Approximately 100 million marine birds of over 80 species occur over waters of the EEZ in Alaska. These birds spend most of their lives foraging at sea for small fish, squid, and crustaceans. Birds contact fishing gear because they are feeding near the vessel, either looking for "free" food (bait and offal) or pursuing their normal prey. Birds taken during longline operations are attracted to the baited hooks when the gear is being set; they become hooked at the surface and are then dragged underwater where they drown. More than 90% of seabird bycatch among monitored groundfish fisheries takes place on longline gear. A few birds are caught in trawls and pots. The probability of a bird being caught is a function of many interrelated factors, such as type of gear, length of time the gear "soaks", weather and sea state, size and behavior of the bird species, and physical condition of the individual bird.

Several species are especially vulnerable and comprise the majority of birds caught; however, almost any species is susceptible. The species most likely to be trapped by longline gear in Alaskan waters are northern fulmars, black-footed and Laysan albatrosses, and gulls. Trawl gear tends

to capture shearwaters and alcids (puffins, murres, etc.). Pots are most likely to take murrelets and murres.

### Species Composition Sampling

Most of your work with regard to birds will involve those found in your species composition samples. Birds in your samples are treated similarly to other bycatch; the only difference is that you will use different pages in the Species Identification Manual and the Observer Logbook.

Lay all birds in your sample aside from other specimens. Using the identification manual, divide the birds into major taxonomic groups. Next, identify them to the narrowest taxonomic grouping you can, while still maintaining accuracy. It is important to ensure your identifications are reliable. Do your best to identify as many birds to species or to the narrowest taxonomic group provided, paying special attention to the albatrosses, kittiwakes, and those that occur commonly in your sample. When you have made an identification, be sure to record the diagnostic criteria for each species or group in the Seabird Daily Notes portion of your Observer Logbook; do this every time for sensitive species and the first time you identify other species or groups. These notes increase the value of your identifications greatly.

The remaining processing is similar to that for all other species: find the code for each species or group, weigh it, and record the information on the Species Composition Form (3US). Please refer to the instructions on use of Form 3US. Short-tailed albatross and any leg bands found on birds require special processing, as described further below.

If a bird is observed to drop off from the gear into the sea during the haul, identify it as closely as you can and explain in the Seabird Daily Notes. If you record an estimated weight for a bird drop-off, note clearly in the Seabird Daily Notes that the weight was estimated, not measured.

### Specimen Identification and Code

Identification of marine birds in the Gulf of Alaska and Bering Sea is not easy; some closely-related species are virtually indistinguishable. Most field guides are written to identify live birds, not dead (and bedraggled) ones. When a specimen is wet, many of the plumage characteristics used in field guides are no longer evident. To assess bird mortality associated with commercial fishing, however, specimens need to be categorized at least by genus groups (murre, gull, shearwater, etc.). Observers are asked to identify birds to the narrowest taxonomic level they can (genus, species, other groupings) while still ensuring accuracy. Identification to the species level is the goal, especially for the sensitive species (e.g., short-tailed albatross) and those species that could be confused with a sensitive species

(e.g., black-footed and Laysan albatross). Because we are trying to provide the Fish and Wildlife Service with species identifications of the majority of birds incidentally caught, you should also be familiar with those birds that constitute a great deal of the bycatch. For example, a common species taken in longline fisheries is the northern fulmar. Finally, use an appropriate species group where you do not feel comfortable with your identification or where appropriate; you will not be able to identify immature gulls to species and should instead use the group code "Unidentified gull."

Dead birds do offer a few advantages for identification. The bills of birds have characteristic shapes and sizes and can be measured precisely on birds in the hand. The identification manual has been designed with keys and life-size drawings that allow you to compare bills and other characters of dead birds. Hold the bill up to the page; it should match almost exactly if the identification is correct. Bill size and shape are especially important for differentiating similar species (such as the 3 albatrosses, the 2 kittiwakes, or marbled and Kittlitz's murrelet).

Start at the beginning of the key for each identification (it is easy to be misled if you try to short cut the key). Follow the key to the smallest group listed for your bird. If you believe you have a sensitive species, albatross, or kittiwake, you should also consult the detailed description for each one at the end of the identification manual. Note that all characters of the bird should match the key or description at each step; if some characters do not match, backtrack and try another path.

It is important to note that colors of soft parts (bills, legs, feet) tend to fade if a bird soaks in the water for a long time. Even orange puffin feet become pale yellow! You should also use caution with plumage patterns; wet, messedup black plumage may appear to have white spots showing through.

Codes are listed at the end of this section, in the full code section of this manual, and in the Species Identification Manual. Some codes represent broad taxonomic categories (e.g., "Alcid", "Unidentified waterfowl"); others, such as those relating to sensitive species orcommonly occurring birds, are quite narrow. If you are not certain of an identification, despite your efforts with the Key, **do not guess at an identification**; record the smallest category you are certain of, and explain in the Seabird Daily Notes.

## Sensitive Species and the Endangered Species Act

Four groups of marine birds are of special concern because the populations of some species in the group are very small or are declining. These are the albatrosses, kittiwakes, murrelets, and eiders. Reliable and accurate identification, to the species level where possible, is the goal for these groups. In addition, there are special requirements for one of the albatrosses.

Three species of albatrosses occur commonly in the Alaskan EEZ : Laysan, black-footed, and short-tailed albatross. The short-tailed albatross is an endangered species. Observers are required under the Endangered Species Act to report all short-tailed albatrosses encountered and to salvage all dead individuals of this species. Any short-tailed albatross caught in fishing gear during your cruise must be reported, not only those in the species composition sample. All short-tailed albatrosses should be listed in the seabird portion of your Observer Logbook. In addition, those found in a species composition sample should be reported on Form 3US. Furthermore, all dead short-tailed albatrosses should be saved. The specimens should be labeled (cruise number, vessel code, date, location, haul number, and your name), frozen, and turned over to NMFS in port. Any albatross that you suspect **may be** a short-tail should be saved, in order to confirm the identification. If for some reason it is impossible to salvage the whole carcass (which will be used for research), you should at least save the head and legs/feet to confirm identification. The identification key contains separate sections for dead and live albatrosses. If you have a camera on board, you may want to take photographs of the dorsal and ventral aspects. If you believe you have recovered a short-tailed albatross, inform NMFS immediately.

Many short-tailed albatrosses are banded with metal and/or colored plastic bands. Write colors and numbers of these bands in the seabird portion of your Observer Logbook (and return them with the bird). Include which leg each band was on. Short-tailed albatrosses sighted alive near the vessel should be reported in the Observer Logbook as well. Use the section of the identification manual for live albatrosses when identifying these birds. A standard field guide will also help.

Laysan and black-footed albatrosses are not designated sensitive species, but they should also be identified to species when possible. It is important to know the proportion of all three albatrosses in the bycatch.

Kittiwakes, marbled and Kittlitz's murrelets, and Steller's and spectacled eiders should also be identified to species when possible. The two eider species are threatened (a formal category under the Endangered Species

Act); any incidental take of these birds should be reported immediately, and specimens should be saved. Marbled and Kittlitz's murrelets and the red-legged kittiwake are sensitive species because of declining populations. Black-legged kittiwakes should also be identified to species. All birds should be checked for leg bands, nasal tags, and radio tags, especially sensitive species.

### Other Mortality Factors

Another source of incidental mortality results from birds colliding with vessels. Incidents range from the occasional bird found on deck to massive flocks hitting the ship, often referred to as "bird storms." Birds hit the vessel because they become confused, primarily at night during inclement weather and when bright lights are being used. Data are needed on this source of bird mortality.

All bird strikes should be reported, whether or not you are sampling at the time. Identify groups and species of birds and count them, as you would for bycatch in fishing gear. If birds are alive, release them (many species cannot fly up from a deck and will need to be dropped gently over the rail). Report species, numbers (including whether alive or dead), date, location, and associated information such as vessel type and activity, weather, and lighting conditions in the Seabird Daily Notes portion of your Observer Logbook. Birds may strike the rigging and then fly off; estimate species and numbers, and explain in the Seabird Daily Notes. Note that thoroughly wet birds cannot fly or keep themselves warm. If possible, they should be allowed to dry out in a sheltered spot before being released.

Intentional killing of seabirds sometimes occurs. If you see this, record the event in your Seabird Daily Notes with all information necessary to fully document the circumstances. This includes date, location, species, numbers, vessel name, involved crew members, and other information. Be prepared to fill out an affidavit upon return. You should also let the skipper know that the intentional killing of seabirds is an illegal activity and should be stopped.

**Notify an Observer Program office that you are returning with a bird specimen so we can arrange a permit for you.**

### Banded Birds

The FWS maintains a database on all banded birds, which allows analysis of distribution and movements, population structure and mortality, and other demographic information. Report any banded bird on the Banded Seabird Form, including the complete band number, colors of plastic bands, and which leg each band was on. If the bird is dead, try to salvage the specimen (label and freeze it); if this is not feasible, remove the band and return it to the FWS. If the bird is alive,**do not remove the band**; record band information and the condition of the bird, then release it. The

band is used to determine rates of wear and other information that contributes to data analysis.

### Sightings and Sensitive Species

In the course of fulfilling your duties you will see many birds gathered around the vessel. Birds are attracted to vessels in hopes of feeding on garbage, processing offal, or bait. Most species you will encounter, such as the northern fulmar and many gulls, are abundant in Alaskan waters. In general, bird sighting surveys are not requested of observers. However, the distributions of a few species at sea are poorly known, and records of sightings are valuable. It is very important that you record sightings of the extremely rare short-tailed albatross. Sightings of some other sensitive species are also valuable to marine bird biologists, in particular red-legged kittiwakes, spectacled and Steller's eiders, and marbled and Kittlitz's murrelets. (Note, however, that these two murrelets are very difficult to tell apart at a distance in their brown summer plumage.) Steller's eiders are commonly seen near ports and need not be reported there. Note any recorded sightings to your debriefer when you return.

Report sighting data in your Seabird Daily Notes. Include the cruise number, vessel code, date, location, and your name. Also include identification criteria, numbers of the species, behavior of the birds, weather, and vessel activities.

## Summary of Observer Duties Regarding Birds

1. During species composition sampling:
   A. Identify birds to the narrowest taxonomic grouping you can.
   B. Note your identification criteria, to be recorded in the Seabird Daily Notes.
   C. Count, weigh, determine codes, and enter each group on the 3US.
   D. Be aware of additional requirements noted below.

2. Short-tailed albatrosses:
   A. Record all birds caught, not only in sample, and note in Seabird Daily Notes.
   B. Salvage all dead short-tailed albatrosses (and birds that might be).
   C. Immediately notify the Observer Program office.

3. Birds striking vessel:
   A. For birds on deck, identify, and count (or estimate if necessary).
   B. For birds that flew away, get estimate of species and numbers if possible.
   C. Record in Seabird Daily Notes.

4. Banded or tagged seabirds:
   A. Note all numbers, colors, placement (which leg, etc.).
   B. Record on Banded Seabird Form.
   C. If the bird is dead, salvage the specimen, or at least the band.
   D. If the bird is alive, leave the band and return it to the sea.

5. Sightings of live birds:
   A. Required for short-tailed albatrosses; requested for other sensitive species.
   B. Record in the Seabird Daily Notes.

6. Include on every Observer logbook sheet:
   A. Cruise number, vessel code, and your name
   B. Include in each entry: date, location, haul number, and
   C. Any circumstances that might have affected event (weather, vessel activity, lighting, bird behavior, etc.)

## Species Code List - Birds

(In Taxonomic Order)

| Species Code | Species Group | Scientific Name |
|---|---|---|
| 844 | Loon unidentified | Gaviidae |
| 846 | Grebe unidentified | Podicipedidae |
| 848 | Tubenoses unidentified | Procellariiformes |
| 849 | Albatross unidentified | Diomedeidae |
| 850 | Short-tailed albatross* | Diomedea albatrus |
| 851 | Laysan albatross | Diomedea immutabilis |
| 852 | Black-footed albatross | Diomedea nigripes |
| 853 | Shearwater/petrel unidentified | Procellariidae |
| 854 | Northern Fulmar | Fulmarus glacialis |
| 855 | Dark Shearwater unidentified | Puffinus spp. (sooty and short-tailed) |
| 856 | Sooty Shearwater | Puffinus griseus |
| 857 | Short-tailed Shearwater | Puffinus tenuirostris |
| 858 | Storm-petrel unidentified | Hydrobatidae |
| 861 | Cormorant unidentified | Phalacrocoracidae |
| 862 | Waterfowl unidentified | Anatidae |
| 863 | King Eider | Somateria spectabilis |
| 864 | Spectacled eider** | Somateria fischeri |
| 865 | Steller's eider** | Polysticta stelleri |
| 866 | Common Eider | Somateria mollissima |
| 867 | Shorebird unidentified | Scolopacidae |
| 868 | Phalarope unidentified | Phalaropus spp. |
| 871 | Jaeger/skua unidentified | Stercorarius spp. |
| 874 | Gull unidentified | Larinae |
| 875 | Red-legged kittiwake* | Rissa brevirostris |
| 876 | Black-legged kittiwake* | Rissa tridactyla |
| 877 | Herring Gull | Larus argentatus |
| 878 | Glaucous Gull | Larus hyperboreus |
| 879 | Glaucous-winged Gull | Larus glaucescens |
| 880 | Tern unidentified | Sterninae |
| 883 | Alcid unidentified | Alcidae |
| 884 | Guillemot unidentified | Cepphus spp. |
| 887 | Murre unidentified | Uria spp. |
| 888 | Thick-billed Murre | Uria lomvia |
| 889 | Common Murre | Uria aalge |
| 890 | Puffin unidentified | Fratercula spp. |
| 891 | Horned Puffin | Fratercula corniculata |
| 892 | Tufted Puffin | Fratercula cirrhata |
| 893 | Auklet/murrelet unidentified | Auklet/murrelet spp. |
| 894 | Marbled murrelet | Brachyramphus marmoratus |

* Record also as adult = A, sub-adult = S, immature = I, or unknown = U.

** Record also as male = M, female = F, or unknown = U.

**Fig. 7-10.** Species Code List – Birds

| Species Code | Species Group | Scientific Name |
|---|---|---|
| 895 | Rhinocerous Auklet | Cerorhinca monocerata |
| 896 | Kittlitz's murrelet | Brachyramphus brevirostris |
| 897 | Seabird unidentified | |
| 898 | Land bird unidentified | |

* Record also as adult = A, sub-adult = S, immature = I, or unknown = U.
** Record also as male = M, female = F, or unknown = U.

Note: For a listing of birds species codes in alphabetic order, refer to the listing following the fish codes in the Appendix B.

**Fig. 7-10**. Species Code List – Birds continued

# 8 Safety and Survival

Commercial fishing in Alaska is a dangerous occupation. Slippery decks, heavy gear, and an inhospitable environment are inherent dangers on fishing vessels. 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 sea safety and survival including the North Pacific 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 on many vessels.

You must take responsibility for your own safety and learn as much as you can before an emergency happens that threatens your life. Most fishing vessels are operated by safety-minded skippers who realize the danger of their occupation and consider safety in all that they do. Use the knowledge and experience of the vessel's crew for guidance on safety on your vessel. They are certainly concerned about the safety of an observer, a guest on their vessel, and will make sure that dangers for you are minimized.

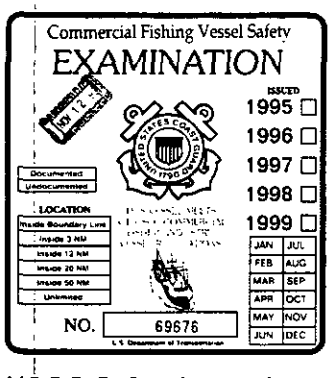
**From this section, you should learn:**

- how to familiarize yourself with the safety equipment and procedures aboard your vessel,
- general safety precautions onboard and while performing your observer duties,
- how to transfer between vessels safely,
- how to respond to an emergency on board, and what procedures to follow in an abandon ship situation.

## First Day on Board

The Commercial Fishing Vessel Safety Act of 1988 mandates certain equipment, instructions, and drills aboard vessels that operate beyond the boundary line (a federally designated line between points of land) or carry more than 16 individuals. Most vessels that need observers fall under these regulation (see **Table 8-1** for a summary).

When you board a vessel, regulations mandate that you receive a safety orientation. This may be as simple as crewmembers 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. As a person aboard the vessel, you will participate in any drills and instruction.




USCG Safety Inspection Decal

Vessels are required to have a safety inspection before taking aboard an observer. This inspection may be made by the United States Coast Guard (USCG), or a Coast Guard approved agent. The Coast Guard issues a decal, good for two years, that is often displayed in the wheelhouse. Other inspections issue a certificate of compliance, or a certificate of inspection that is most likely stored with other official documents of the vessel. You have a right to see these documents or the decal to ensure that an inspection was made.

An inspection is no guarantee that the vessel is still in compliance with the regulations. When you first board a vessel, use the checklist on the following page to examine the safety equipment on board. Check these things before you leave port. You have the right to refuse to board any vessel that is lacking required equipment, has an expired inspection or is carrying improperly installed or maintained equipment. Notify your contractor or NMFS immediately if you are not sure about the safety of a vessel and whether you should board. You can also contact the Coast Guard if you have safety concerns about a vessel.

## Checklist of Vessel Safety Equipment

1. Check for safety inspection documentation. Look for a current decal or ask for documentation.

2. Find the station bill, a posted placard describing the role of all hands on board (including the observer) in an emergency (see Fig. 8-2).

3. Locate life rafts. Are you assigned to a particular one? Is there enough life raft capacity for everyone on board including you? Check the service dates displayed on the canister.

4. Immersion suits/life preservers - where are the survival suits and PFDs located? Are there enough for everyone on board? 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 in a hurry. Your cabin is recommended, but may have limited space.

5. Life rings. Where are they? Are they accessible?

6. Flares–where are the flares located? Check the expiration date. Does this vessel also have approved smoke signals?

7. EPIRBS–Where is the Emergency Position Indicating Radio Beacon (EPIRB)? Is there more than one? Read the instructions.

8. Fire extinguishers–where are they? Are they accessible? Are they up to date, charged, and ready to use?

9. First aid materials–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. Radios–where are the radios? Are emergency call instructions posted nearby? Do you know how to operate the radio for an emergency call?

11. Are there emergency instructions for and did the skipper ensure that you were given a safety orientation explaining the following?
    - survival craft embarkation stations
    - survival craft assignments
    - fire/emergency/abandon ship signals
    - immersion (survival 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. 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 skipper what the general alarm sounds like and if he will test it.

**Fig. 8-1.** Checklist of Vessel Safety Equipment

## EMERGENCY ASSIGNMENTS

| POSITION | ABANDON SHIP<br>GO TO & BRING | FIRE<br>GO TO & BRING | PERSON OVERBOARD<br>GO TO & BRING | FLOODING<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, boundary person, remove hazards, get survival gear | Communicate, assist where needed | Communicate, assist where needed, secure hatches |
| Observer | Debarkation station immersion suit | Wheelhouse | Lookout, assist where needed | Debarkation station immersion suit |

**Fig. 8-2.** Station Bill. Everyone on board, including the observer, has specific instructions in the event of an emergency.

## 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. The hours, the environment, the food, and the work may be quite different than your body is accustomed to. Drinking plenty of water and eating enough food are critically important in maintaining your health in this new environment.

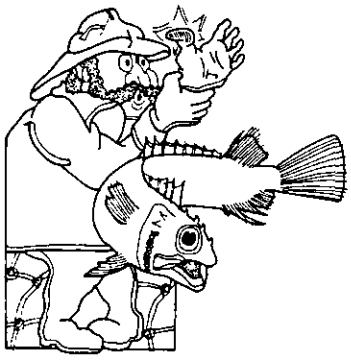
### General Safety Precautions on Board

- 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 in a hurry.
- Apparel with loose strings or tabs and jewelry such as rings should be avoided, as these might become caught in the equipment or moving belts. Long hair should be tied back.
- Don't run aboard ships, particularly up stairwells. Always hold handrails in stairwells and on ladders. Slipping, tripping, and falling are the most common causes of observer injury.

*Lift properly to avoid back injuries.*

- 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 large weights.
- 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 on watch or in control of the gear. Fatigued individuals make mistakes that could affect you. Monotonous work, such as longline tallies, are 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.
- Vegetarians (due to meat-and-potatoes menus) and diabetics (due to odd eating schedules) need to be especially concerned about getting a proper diet. Dietary supplements, vitamins, and extra medications should be considered.
- If you are not feeling well, use extra caution and reduce your time spent working.

## Fish Poisoning



*Look out for fish spines.*

Fish poisoning is the common term for infections that develop in cuts, scrapes or punctures from bacteria found on fish. To prevent fish poisoning, wash your hands thoroughly after sampling in a solution of hot, soapy water and an antiseptic such as betadine. Change your gloves often to keep them dry and discard any torn gloves. Treat all minor cuts, especially those on your hands, with antiseptic to avoid infection from fish slime.

If a wound gets 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, your vessel will probably have some on board. Should an infection be left untreated, the threat to your health can become much more far-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.
- Be cautious whenever wading through fish. Fish spines, especially rockfish, can penetrate rubber boots and cause painful wounds to the feet. Spines carry bacteria and can lead to fish poisoning.

## Working on Decks

- Wear a hard hat, life vest or other flotation and boots when on the weather deck.
- Do not stay outside on the aft 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 out for slick spots where the deck is wet and oily or frozen, step carefully over the half-foot combing rising from the bottom of metal latch doors and passageways, and look out for low overheads in vessel stairwells and watertight doors.
- Trawl cables that break under strain 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, interrupt your work and go to a safe place while a trawl is being set or retrieved.
- Explain to the deck boss that you need to watch the haul-back 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.
- On pot vessels, choose a work area that is somewhat protected from moving pots, if possible, and face the direction of the pot launcher while you work.
- On a longliner, if you are near the moving hooks during retrieval, wear eye protection and use a gaff, not your hands to collect fish.

## In Factories

- Do not pry loose any fish caught in the chinks of slat or rubber conveyors: a finger or hand may get mangled in the machinery.
- Factory processing areas are crowded with machinery, electrical lines, and conveyor belts. It is often difficult to get to the area where you need to sample because of the maze of equipment. Climbing over, under and around machinery on oily and wet floors especially at sea in rough weather is extremely hazardous. Be careful where you step and where you grab for handholds.
- When working near discard chutes and scuppers where bycatch and factory offal wash out, be extremely cautious not to slip and fall into the wash of bilge water.

## Safety While Transferring, Boarding, or Leaving Vessels

Wear a life jacket at all times on skiffs or other small-sized 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 comfortable foot wear such as extra-tuffs or athletic shoes that give sure footing . Time your actions with the movement of the boat; i.e. start your climb up a ladder from the top of the up-and-down cycle to avoid being pinched against the ladder from a moving boat.

All baggage should be secured with lines and transferred via rope lines or cargo nets. Observer baskets have been lost overboard because they were thrown between ships without lines attached.

If a cargo net, transfer basket, or cage is used to transfer you, make sure that a line is attached to the conveyance from both vessels for greater control and to reduce swinging. Maintain a crouched position (knees bent) to avoid back injury. Be sure to wear your hard hat in addition to your life vest when using this mode of transfer. Keep your arms, elbows, and fingers inside the conveyance when transferring.

### At Sea Transfers

You will normally board and disembark vessels at the dock, but a transfer at sea may be necessary in certain circumstances. 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 crewmen died when their small transport skiff overturned in rough water.

Never transfer via a small boat if you cannot see your destination. As a general guideline, 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.

Observers must use their best judgment. Be cautious—not foolhardy. 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.

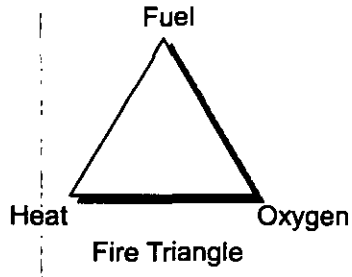
## Emergencies on board

### Man Overboard

Everyone has an active role in a man overboard emergency. As a witness to someone falling over, it is important to both notify the person at the vessel controls and keep the victim in sight. According to the station bill, crewmembers 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, 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, they may be revived by this technique (see CPR Chart, Appendix Q).



Fire Triangle

A fire needs heat, fuel, and oxygen. Remove any one of these components to stop a fire.

### 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—certainly 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 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 Channel 16 on VHF radios and 2182.0 kHz or 4125.0 kHz on single side band radios (SSB). VHF radios are for short range and SSB radios are for long range communications (see Appendix P for more information on radios). Vessels are required to monitor the 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** (said three times)
Vessel name (said three times)
Location
Nature of emergency
How many persons on board
Vessel description
What radio frequency is being used

**ABANDON SHIP**

**SIGNAL:** Seven short blasts followed by one long blast

●●●●●● ——————

1. Preparations should include the following as time and circumstances permit:
   a. **General Alarm & Mayday.**
   b. **All personnel don immersion suits/PFD's**. Warm clothing if time permits.
   c. **Prepare to launch life raft**. Attach sea painter to vessel.
   d. **Assemble signal devices**—EPIRB, flares, smokes, flashlights, handheld radios, etc.
   e. First Aid Kit
   f. Water
   g. Food
2. **Muster at embarkation station.**
3. **When sinking is imminent** or remaining on board is inappropriate:
   a. **Launch & board life raft.**
   b. **Keep sea painter attached to vessel.** Be prepared to cut sea painter immediately if there is risk of damage to life raft or vessel sinks.
   c. **Activate EPIRB & commence 7 Steps to Survival/**

**Fig. 8-3.** Abandon Ship Placard

### Donning the Immersion Suit

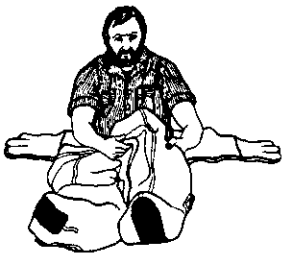
An immersion suit is a shelter that is required by the safety regulations for everyone aboard a vessel that operates in cold water. Your assigned vessel will have enough aboard for the crew, and you will be issued one with your gear. You should know where they are stored and should should try yours on (see **Fig. 8-4**). Be sure that you can put the suit on in less than a minute—even in the dark!

### 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 **Fig. 8-5**).

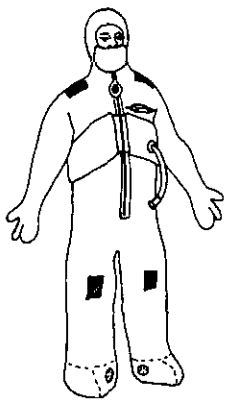
### Survival Kits

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

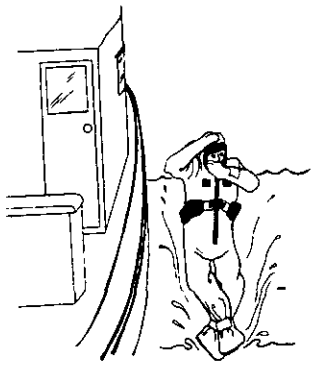


1. Sit on deck and work your legs into the suit. You may have to remove your boots to do so, putting plastic bags over them may help your legs slide in easier.

2. Place your weak arm in first, then pull the hood over your head (or hood first, then weak arm). If you have long hair, make sure that it is safely tucked in the hood.



3. Holding your zipper below the slide with one hand, lean back to straighten the zipper and pull the lanyard with the other hand. Secure the face flap. Do not inflate the air bladder until you are in the water.



4. Jumping in the water is the last resort. Ease yourself into the water if possible. If jumping, protect your head and keep your feet together to protect from floating debris.

**Fig. 8-4.** Donning Immersion Suit

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.

## 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.

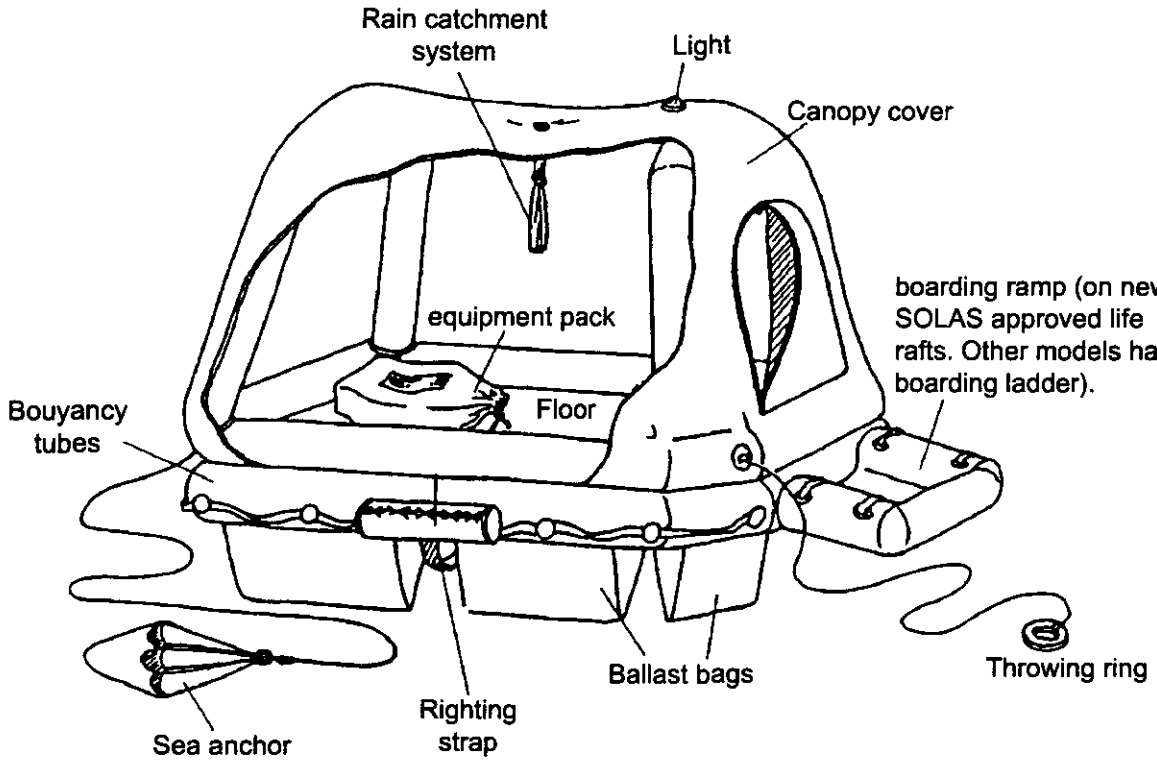



**Fig. 8-5.** Life Raft and Equipment

## 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.

### Recognition

You must 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.

### Inventory

Stop and assess the situation. Decide what you have that will help, and that which will not help you to survive. Inventory equipment, weather, your skills, injuries, and your mental condition. Doing so will help you to make good decisions that will help you survive.

### 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 can take heat away from your body much quicker than air, so shelter also helps you keep 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 to keep your head and neck out of water, therefore conserving heat. In a shore survival situation, the seven steps to survival 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.

### 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. You may have a signal mirror in your personal survival kit. If abandoning ship, anything that can be tossed overboard may help an aircraft spot your position. In a shore survival situation, three of anything (fires, buoys, immersions suits on the beach) is an internationally recognized distress signal.

### 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 a limited rations of water, but it is advised 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.

### Food

A person can go without food much longer than without water. Never eat food without water—your body requires water to digest food. Life rafts are supplied with 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 inter-tidal zone are edible, but avoid mussels or clams—they may cause paralytic shellfish poisoning.

### 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: What You Need to Know About Sea Survival

It is likely that you, if an observer trainee, have never been to sea before. You will learn much about sea safety and survival from the vessel personnel, who probably have many years of sea experience between them. Realize that 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 the 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.

| **Table XX. Federal Requirements for Commercial Fishing Industry Vessels greater than 60 ft.** | |
|---|---|
| | **General Requirements** |
| Documentation & Official Number<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>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>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>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>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>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. |

**Table 8-1.** Federal Requirements for Commercial Fishing Industry Vessels Greater than Sixty Feet

| | |
|---|---|
| Anchor and Radar Reflectors<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>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>46 CFR 28.245,<br>46 CFR 28.375,<br>33 CFR 26.03,<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>• 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>46 CFR 28.105, 46 CFR 28.110,<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. |

**Table 8-1.** Continued

| | |
|---|---|
| Ring Buoy<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>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>46 CFR 28.125 | • Each inflatable liferaft that is required to be equipped with a SOLAS A or B equipment pack 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>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>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>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. |

**Table 8-1.** Continued

| | |
|---|---|
| Visual Distress Signals<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>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>• Must be marked with vessel name and type II retroreflective material ( 46 CFR 28.135). |
| General Alarm<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 may meet 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>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>46 CFR 28.270, 46 CFR 28.275 | • At least once a month the master must ensure that drills are conducted and instructions are given to each person on board.<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. An individual licensed for operation of inspected vessels of 100 gross tons or more needs to comply with the requirements in 46 CFR 28.275.<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>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.<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. |

**Table 8-1.** Continued

| Fire Control Requirements | |
|---|---|
| Fire extinguishers<br>46 CFR 28.155 & 46 CFR 28.160 & 46 CFR 25.30 | • Vessels over 65' are required to have approved 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. |
| Fire Pumps, Fire Mains, Fire Hydrants, and Fire Hoses. 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>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<br>46 CFR 28.215 | • Suitable hand covers, guards ,or railings must be installed in way of 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>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>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 designated person in charge of carrying out the plan. Restrictions on dumping can be found at 33 CFR 151, 33 CFR 155. |

**Table 8-1.** Continued

| | |
|---|---|
| Sexual Abuse Act of 1986<br>46 CFR U.S.C. 10104 | • It is then 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, and sexual contact per 46 CFR U.S.C. 10104. |

**Table 8-1.** Continued

# 9 Debriefing and Decertification

## Debriefing

The success of the Groundfish Observer Program depends on the quality of data collected by observers. Your data will be checked mid-cruise to help you assess your work and correct misunderstandings. Following your cruise, you will "debrief" with an NMFS staff person and prepare a final report. The more complete and conscientious your collection of data at sea, the easier the debriefing and final report will be.

**From this section, you should learn:**

- when and how to schedule a mid-cruise check.
- how to prepare for debriefing while at sea.
- what to bring to your debriefing appointment.
- how to check your data forms for errors.
- how observers are evaluated at the end of debriefing.

## Mid-Cruise Check

**Check-in at the Dutch Harbor or Kodiak field office. If you will only be in port on the weekends, call ahead. From a remote site, call or fax the Seattle office for your mid-cruise check.**

All observers on their first and second contract are **required** to have a mid-cruise check. Observers on their third contract or more will be notified in briefing if a mid-cruise check is required or not. To check-in, observers should report to the Kodiak or Dutch Harbor office sometime within the first month of their cruise with their data, including logbook, catch messages, and species ID forms. For observers on catcher/processors, this may be during the vessel's first off-load. For shoreside delivery vessels, observers should wait until the second or third delivery.

If the field office is temporarily closed (as on weekends) while you are in port, you should call and leave a message. If the vessel only comes into port on weekends, call the field office from sea to arrange a meeting time. If you are assigned to a remote location, or you are on a vessel which doesn't come into Dutch or Kodiak, or you cannot contact the field offices; you are expected to phone or fax the Seattle office for your mid-cruise check. Detailed answers to the following questions and any questions you may have (for each vessel) should be faxed to the office in lieu of your visit.

1. *Please describe how* Official Total Catch was determined. If the observer estimate was used, how did you obtain the OTC when no observer estimate was made? How often are you making observer estimates (i.e., 2 of every 4 hauls or 3 of every 4 sets, 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 bin measurements were used, did you find any difficulties? If no observer estimates were made, explain why.

3. Explain in detail the sampling method(s) you used on this vessel. Describe your sampling area, how you collected the samples, and if there were any difficulties. What methods did you employ to insure the least amount of sample bias and random or systematic sampling?

4. Did you obtain sexed length frequencies? Please describe methods used and any difficulties you encountered in sexing fish. 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.

Since much of the data observers are collecting is used for in-season management, it is important that the data be recorded as accurately as possible **during** a cruise. Mid-cruise check-ins help to identify and solve conceptual problems early on in the contract. They may find some math and paperwork errors, saving you time in making corrections during debriefing. At your mid-cruise check and before the end of your trip, consult the section on "Checking Your Data Form" that follows on page ?. During a mid-cruise check, you will be reminded of any duties you may have overlooked. You will receive help in setting priorities if you are having difficulty completing some duties.

## The Debriefing Process

**Debriefing consists of:**
- **electronic final report**
- **debriefing interview**
- **gear check-in**
- **pre-keypunch check**
- **evaluation**

Debriefing is as important to your job as the work you do at sea. It consists of the following parts: completion of electronic final reports, the debriefing interview, gear check-in, the pre-keypunch check, your correction of all errors found, and the observer check out. Be prepared to stay as long as it takes to get your data finalized. Do not make plane reservations until after the debriefing interview.

At the end of debriefing, you will be evaluated on your performance as an observer. This evaluation is provided to your contractor and kept in your personal file at NMFS. It will include a recommendation for training before your next deployment—four day briefing, or a three week retraining, and a rating score for each vessel assignment. You will find the rating criteria at the end of this section. If probation or decertification is recommended, the reasons for the action will be explained.

### Preparing for Debriefing

Read and use this section while at sea. Review it as you check your data before a debriefing appointment and most time-consuming problems will avoided. During the debriefing process, the most important thing is to maintain a tolerant attitude towards detailed questions and all data corrections. Some of the work requested may seem trivial or redundant but is necessary for quality data processing.

1. While you are at sea, check your work on a regular basis. The more accurate your work is when you return, the faster you will be finished with debriefing. Consult your manual continually while doing paperwork and be sure that you are right. Compare the examples of data forms with your own. The examples in the manual are a complete "set" of data, and show the correct format for each form.

2. Logbook: Filling out a logbook at sea is a requirement. Inside the

front cover (in ink) you need to put your name, cruise number, and contractor. Then list your ship's and/or plant names (for all the ships and/or plants that you worked on), the vessel or plant code for each ship or plant, and the dates you were aboard each ship or sampling at each plant. Do not write on the outside of the logbook. Complete your factory/deck diagrams, and sampling area diagrams with labels and notes. Your notes are essential for completing reports and answering questions that may arise about your work.

**If you have observed a fishing violation, you may asked to write an affidavit.**

Observers who witness fisheries violations may be instructed during debriefing to write an affidavit, a formal legal statements describing what you saw. If you encounter violations they must be well documented in your logbook and supported where possible by your data. (Refer to Observer Logbook Entries, page ? and Steps To Take If You Suspect A Violation, page ?.)

3. Reports: Prior to the debriefing interview, you will be filling out an electronic report for each vessel you are assigned to. In your log is a copy of the vessel report you will be completing before a debriefing interview. It will help you gather the information required to complete the final report.

4. Your last catch message must have been received before an appointment for debriefing can be made at NMFS. The last catch message, if not sent from the ship, should be sent before departing your port if you are returning to Seattle or as soon as possible.

5. You will need these forms and reports completed when you come in for debriefing:

   For most trawler observers:
   - Form 2US, 3US, 7US, CMA, and CMB
   - Species Identification forms
   - Other forms you may have include: Any special project forms, tagged fish forms, 9US, 10US, 11US, Salmon Retention forms.

   ATLAS program observers:
   - Deck forms, Form 1US or 2US
   - Species Identification forms
   - You may have Form 11US and special project forms.

   For longline and pot vessel observers:
   - Form 1US, 3US, 7US, CMA, and CMB
   - Species Identification forms.

Other forms you might have: Any special project forms, tagged fish forms, 9US, 10US and 11US.

For plant observers:

Plant Delivery Form, Delivery Composition Form, 7US, 9US, and the weekly plant report

Other forms you might have: tagged fish forms, Salmon Retention, and plant observer special project forms.

All of these forms should be filled out while you are at sea and must be complete at the time of debriefing. Keeping up with your work at sea becomes especially important if you are deployed on more than one vessel or plant.

When your last catch message has been turned in, and you have all your data and reports completed, your contractor will schedule a computer appointment to complete the final report and another appointment for your debriefing interview. Upon arriving in the city in which you will debrief (Seattle, Kodiak, or Dutch Harbor), the following items must be completed:

**If You Have Questions, Ask a Debriefer!**

1. Sign up in the debriefing office for a gear check-in appointment as soon as possible. Usually you will check in your gear at the place that you checked it out so you may be asked to return your gear at the training center in Anchorage. Your gear must be cleaned before the gear check-in appointment time.

2. Submit any unsent catch messages as soon as possible. Turn them in to debriefing at your first appointment.

3. Bring in any special project collections, materials and forms. Make sure otoliths or other special projects are in order. Otolith vials need to be arranged in groups of ten vials (1-10, 11-20, etc.) and the end of the box needs to be labeled properly. Labeling and preserving instructions can be obtained from the debriefing staff.

4. All tags and completed Tagged Fish forms must be turned in.

5. Any collected fish specimens, salmon snouts, or marine mammal snouts should be brought in. All specimens must be labeled with you name, vessel and cruise number. Put them in the freezer and notify your debriefer.

### Electronic Final Vessel Report

Your computer entry of each vessel/plant report must be completed and printed prior to the interview. Second observers on a vessel also have a vessel report to do, though it's shorter than the one for the primary observer. The report is multiple choice plus comments requested for some answers. Type all comments in detail. Report answers will be read by the next observer on this vessel, your debriefer, and NMFS staff (enforcement, data editing, analysts, etc.). Any comments which are incomplete or difficult to read will get edited and re-entered during the interview. This greatly increases the interview time for each vessel. Answer as if you are describing exactly what you have done to someone about to embark on that vessel.

### The Interview

Interview appointments are also made by your contractor and cannot take place until the electronic vessel reports have been completed. *You must bring all your data forms and logbook to the debriefing appointment!!* During your interview, the debriefer will discuss your data collection methods based on the information you provided in the final vessel report. Changes to the reports may be made at this point. The debriefer will verify your species identification, and review your data forms and logbook for obvious errors.

**Bring all your data forms and logbook to the debriefing appointment!**

The most important aspects of the interview are honesty and a willingness to discuss problems and difficulties. We need to know the feasibility of sampling on various vessels and plants and observers are our only source for this kind of information. If you feel you were not able to sample adequately, tell us so we can help you and the next observer. If errors are detected, they must be corrected before you turn in your data for the pre-keypunch check. Potential fisheries or MARPOL regulation violations will be checked for adequate documentation. You may be asked to write affidavits or photocopy your data as evidence.

### Pre-Keypunch Check

The pre-keypunch check is a final review of your data before it is converted to electronic data (keypunched). All data, biological samples, reports, and logbooks must be submitted for this review. Once you have turned in your data it will be checked on a first come, first served, basis. The staff then thoroughly check all your forms and logbook entries. The forms will be sent to keypunchers whose job it is to enter numbers. Their job is NOT interpreting data. Because almost all data are processed by computer, the forms have a specific format and must be filled in correctly. This is where handwriting and arrows for "repeat fields" become critically important. If you try to be creative with your forms, the data may not be entered properly.

**Keypunchers cannot interpret data; fill out the data forms correctly and clearly.**

As many errors as possible need to be identified before you are finished with debriefing because you may be the only person who can easily correct them. As an example, if there is a mismatch between forms on a date and haul number, only you may know which is correct. A data editor, weeks later, would have to read your logbook, compare all forms and may have to wait months for a vessel logbook to arrive before the correct date for a given haul can be obtained.

After a debriefer has pre-keypunch checked your data, it will be returned to you along with a list of needed corrections. The next step is to make the noted corrections. Be sure to follow through corrections on all affected forms and in your logbook. If you make changes to your 1US, 2US, CMA, or CMB; circle the changes in blue pencil. Entries circled in blue will alert editors to changes made to the data after your weekly message transmission.

### Observer Check-Out

When you have made the noted corrections, submit the list of corrections with the data to a debriefer who will verify that it was completed. At this point, you will be asked to complete an anonymous survey to provide your comments on the observer program. The debriefer will show you your evaluation and send a copy to your contractor. If the debriefer is satisfied with your corrections and you have checked in your gear, you have finished your job.

## Checking Your Data Forms

It is important to check and cross-check your data on a daily basis, and not get behind. All haul/set dates in all forms must match the date recorded on the 2US/1US forms (the day the gear was retrieved). Cross check (on a regular basis) dates, haul/set numbers, weights, fish numbers, etc. in all forms. The following preparation will make processing your data much easier and will get you out more quickly. This is a list of things to do and to look for.

***If you make one correction, be sure to think about what other data might be affected by the change and carry the correction through to all data forms and logbook entries.*** It is helpful to check your forms in a new direction from the way in which you filled them out. In other words, check a set of data forms from back to front and check pages from the bottom to the top, rather than always starting at the beginning and from the top of the page. Looking at numbers in a different pattern will help you find omissions or errors you missed previously.

Get familiar with the following list of the most common mistakes. If you have corrected the most common mistakes, debriefing will proceed more quickly. If you have a question which you feel should be answered in this manual but you couldn't find it, please inform your debriefer. The debriefers are available to answer questions.

Remember, 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 for each vessel/plant and form type -- NOT for your entire trip. In addition, changing over to a new year requires a new cruise number, new page numbering, etc., even if you remain on the same vessel.

### All Forms

- Put your name and ship's name on the first page ***of each type of form*** for each ship or plant.
- Make sure the pages are numbered properly with no skipped numbers and no duplicate numbers. If you have a page with data on one side and blank on the other, the blank page may have a page number or not at your discretion.
- Every page needs to have a cruise number and a vessel code. They will be given to you before your debriefing appointment. Cruise numbers should be adjusted to the right and have no leading zeros.
- Leading zeros should be present only for dates, times, haul weights of zero weight (recorded as 0.00 on 2US). No other numbers or weights should have a leading zero.
- Every time there is a decimal point printed on the page there should be two decimal places written in behind it (the exception to this is the fishing speed on Form 2US). If there is no decimal point printed on the page then you can put one or two decimal places at your discretion. Remember that every weight must have a decimal place and no numbers of fish can have a decimal place.
- All repeat fields (arrows and brackets) should be complete and have the same number at the top and bottom.

**Handwriting must be firm, clear, and legible.**

- Be sure that your handwriting is clear and legible. The data is keypunched by people who do not have any idea how the data is used and what should be on each form. They will punch what they think they see.

Make notes on your forms and in your logbook at sea. Notes should be made any time you have something that is a little bit odd or that might need some explaining. There is space on the top, bottom, and edges of the forms to make notes, so use it. Only write notes in non-keypunched areas. These notes will enable the person checking your data, and data editors, to understand the circumstances without having to talk to you and have you explain it. Notes may include, but are certainly not limited to:

sub-samples, long fishing times, missing data you could not obtain, and reasons for choices made that you weren't certain about.

### Form 1US and 2US

Look these forms over carefully. Question anything that seems incorrect with the ship's personnel while at sea. If you make any changes to your catch messages (1US or 2US, CMA, and CMB) from the original data sent to NMFS, circle the change or use a blue pencil to make the correction. Check Form 1US or 2US for:

- An entry for every day, whether fishing or not. For non-fishing days make a note after the noon position giving the reason why the ship is not fishing.
- On catcher vessels: also record the date and plant name for all deliveries. This is required even if, due to a quick turn around, a

c/v is able to deliver and get back to fishing in one day. These entries are the only cases where you may write notes within a keypunch area of a form.

- No duplicate haul/set numbers.
- Haul/set numbers in consecutive order.
- All non-fishing days have a haul or set number of zero and noon positions.
- A position must be recorded for all hauls/sets. Go back to the fishing log and look up the position, or if it's too late for that, interpolate one from the positions before and after the missing one.
- Positions that are very far from the previous position. If it's not plausible given the times recorded, put a note of explanation on form.
- No missing data in a line, except duration, possibly speed, or observer total catch data.
- No decimals other than those printed on the page.
- No minutes greater than 59.
- Trawlers: no overlapping of on and off bottom times of one haul, or between hauls (except on catcher/processors acting as motherships or on motherships).
- Retrieval times of 0000 are attributed to the next day. Do not use 2400 hr. notation.
- Depths must be rounded to whole numbers. No fishing depths deeper than bottom depths.
- An "F" or "M" for every depth recorded.
- Official total catches recorded for every haul to two decimal places.
- On 1US, number of skates and hook counts must be whole numbers.
- At the top of the page, "Name of catcher boat" and "ADF&G boat #"is only filled in if your vessel was a mothership. The box for plant name

and the column for processor code is only filled in if you worked on a catcher boat.

- Catcher vessels: a processor code must be entered for every haul
- Longliners: if fished IFQ, write "IFQ" in the last column
- CDQ: is "C" and the last two numbers of the CDQ number entered in the last column?

### Form A Plant Delivery and Delivery Composition Forms

- Make sure that you have all mandatory information on the forms. Look at any empty blocks and question them as missing information. If the information *is* missing, explain the circumstance with a note.
- The weight of target species (Delivery Composition Form A) should be less than or equal to the total delivery weight (Plant Delivery Form A).
- Weights of target must be converted to round (whole) fish weights if the fish were cut before weighing.
- If more than one predominant species is listed, the sum of their weights cannot be greater than total delivery weight.
- Be sure to list the ADF&G boat numbers for your catcher boats.
- All dates should be dates of delivery. If delivery dates do not coincide with plant logs and ADF&G fish tickets, make a note of the specifics in your log.
- The column for "Weight of target species discarded at sea" applies only to the sorting at sea of the *targeted* species, not to the discard of unwanted or prohibited species.

### Form 3US - Check

- Haul numbers matching the date as entered on 1US or 2US.
- Species names which match your species codes. Species codes are not the same as catch message report group codes.
- No species codes listed twice for one haul or set unless used in designating female and male prohibited species (salmon, king and Tanner crab only).
- No species codes listed without data accompanying them.
- Sex codes only included for salmon, Tanner and king crab when they are found in the sample. Otherwise, the sex field should always be blank.
- Entries for each of the prohibited species groups, Tanner crab, king crab, Pacific halibut, salmon, and herring, for every sample whether or not they were seen.
- A weight for every number and a number for every weight listed. The only time zeros should be recorded for either is when a prohibited species group was not found in your sampled haul.
- No species recorded that are out of normal range or normal depth. (Bring back a specimen for verification if this is the case.)

**Did you check the distribution and depth for each occasional or unusual catch species in your data?**

- A "1" in the number column for species code 900 (miscellaneous items) and species code 899 (decomposed fish), no matter what the weight.
- Sample types in descending order of sample weight. Please skip a line between sample types.
- Sample weights indicated for each line of entry.
- Whole-haul sample weights that match or round to 2US figure for OTC.
- For weights, at least one decimal place, no more than two places. Are all decimal points distinct?
- All weights in kilograms.
- Accurate sums of numbers and weights on the top line - check your math!
- Percent retained is entered for all non-prohibited species listed.

### Form 7US - Check

- **No estimated lengths recorded!**
- Hauls listed in ascending order.
- Matching species codes to species names.
- Species name, species code, and haul number for every line of data.
- No species listed in a greater number than on the 3US form in whole haul sampled data.
- No decimal places in lengths.
- Lengths recorded in ascending order. No lengths with a frequency of zero.
- No size groups reversed with the frequency.
- Correct keypunch check sum of the numbers on the line. Did you double check your math?
- All crab units of measurement ending in a "3" or an "8."
- Sex codes recorded for every species, every line. Halibut have condition codes of "E", "P", "D", or "U". All other species with a sex code of "F", "M", or "U".
- Hauls matching dates according to 1US or 2US data. Dates match delivery dates for all plant observer data.

### Form 9US

- Separate otolith collections of a single species taken on different boats. (See "General Instructions for Data Forms," in section 1 of this manual.)
- Specimen type, sampling system entries present in the heading line.
- Only one NMFS area per page. NMFS area filled in?
- Each species must be on a separate set of pages with separate page numbering (1 through whatever, for each species).

- No comments or numbers in "total no. of specimens" or "catalogue date" or "remarks" section opposite the data. These are for otolith or scale readers only.
- All specimens have a haul number, a specimen number, a sex, a length, and a weight.
- No duplicate specimen numbers for the same species.
- No otolith or scale number is skipped without a note as to why.
- Lengths must also be recorded on the 7US if you indicated a "Y" in the "Form 7?" column.
- Weights out to two decimal places. Do include trailing zeros!
- Specimen numbers must match the otolith vial numbers.

### Form 10US

- If a marine mammal was preying on catch, being fed, or was caught, killed, harassed, or deterred, there must be an entry on the 10AUS.
- If you are turning in a photo or have specimen data, you have to have an entry on 10BUS.
- In the "Remarks" block include:
  - features used in indentifications
  - details of incident
  - for specimen data, methods of measuring for sexing
  - for an animal or specimen, its condition.

### Form 11US

- Make sure that you have filled in all the non-shaded boxes.
- Did you write a detailed description of the identifying characteristics? This is needed for the first sighting of each species for each observer contract.
- Write details of the animal's activities on all pages. For repeated sightings, you need at least one sighting form per day.

**All changes to the CMA and CMB forms must be circled with a blue pencil.**

### CMA and CMB

Catch messages should be checked on a regular basis while at sea. Failing to do so can cause a lot of problems and delay the debriefing process. Read the instructions carefully and follow them. Check for these potential errors:

- Total pages (in the upper right corner) are consecutive numbers of all the pages of CMA and CMB **together** for that vessel. They are in order by week, with CMA followed by the corresponding CMB for that week. There may be more than one set of forms within a week if the hauls are separated by region or a catcher-processor vessel acting both as a mothership and a trawler.
- All columns of entry are "zero filled" if no species of a report group were seen (weights, numbers and percent retained).

### CMA Form Check

- Species are recorded under the correct report group (BSAI, GOA, WOC).
- All the report groups must be listed in the *same order* across the page on each page (or transmission) of CMA for a week, region and processor. Catcher-only observers with more than one transmission per report week have to especially watch for this.
- Species weights are transcribed exactly (i.e., no rounding) from the 3US and correctly summed for report groups that include more than one species.
- Only one sample weight can be recorded on the CMA (i.e. if there are two different sample weights on the 3US). Prohibited weights that are not part of the sample on CMA should only be recorded on the CMB.
- Percentage retained is entered for every report group found, for each haul.
- Percentage retained for prohibited group is zero.
- The sum of the species group weights adds up to the sample weight (check your math!)
- For all whole and partial haul samples, make sure that the basket sample for the predominant species on Form 3US is extrapolated correctly on the CMA.

### CMB Form Check

- ALL prohibited species groups must have entries of sample weight. If none are found in the sample weight, zero fill only the species weight and number.
- ***Sample weight must be to 0.001 mt.*** Cross check these numbers with Form 3US.
- TRAWLERS ONLY: "MM CODE" column must be filled in. Only "freshly dead" or "lethally removed" mammals should be listed here. Otherwise, enter "NU" for all hauls. Longline and pot observers should leave this column blank.

### Salmon Scale Collection

If you have salmon scales, you will need to match the weight data on the 9US to the weights on the 3US. Numbers of salmon by species and sex on 7US should match the 3US for that haul, or be a subsample of those fish. All of the salmon lengths on form 9US should be present on the 7US.

### Otolith collection

If you collected otoliths, be sure that the haul numbers for the otolith collection correspond to the hauls on your 7US. If you took your otoliths

from outside your length frequency sample you will need to talk to a debriefer about how it should be handled.

### Final Note

Remember that the amount of time spent in debriefing depends largely upon you. Take the time to check your data carefully while at sea. If you take the time to make sure your data is neat, complete, and correct before turning it in, you will save everyone time later on. Debriefing is an essential part of your work and is a critical process to ensure the accuracy and validity of your hard work at sea.

# Rating Criteria

| | UNSUCCESSFUL | MEETS EXPECTATION | EXCEPTIONAL |
|---|---|---|---|
| **GENERAL COMMENTS** | This is a level of performance, while demonstrating some positive contributions, shows notable deficiencies. Problems with quality, quantity, and/or timeliness are too frequent or too serious to ignore. Performance is inconsistent and problems caused by deficiencies may result in unusable data. All data and reports are not ready at the time of the debriefing interview. When requested, the observer refuses to complete additional documentation (questionnaires, affidavits, reports, etc). | This is a level of good, sound performance. The quality of the observer's work is that of a fully competent observer. The performance represents a level of accomplishment expected of the great majority of observers. The data and reports are complete at the time of the debriefing interview. When requested the observer is willing to complete additional documentation (affidavits, reports, etc) that is adequate to initiate a case file. | This is a level of high-quality performance. The quality of the observer's work substantially exceeds expectations.The accuracy and thoroughness of the observer's work are exceptionally reliable. The data and reports are complete at the time of the debriefing interview. When requested the observer is willing to complete additional documentation (affidavits, reports, etc) that is well-written, detailed, and well-organized. |
| **SAMPLING METHODS** | Observer's work demonstrates that they have conceptual mistakes that effects the reliability of their data. | The observer has sampled following the guidelines in the manual. The observer is able to solve most basic problems by referring to the manual, but depends upon NMFS to solve those not specifically addressed in the manual. | The observer has sampled following the guidelines in the manual. If any problems arise, immediate communications with NMFS are made concerning the observer's proposed solution. |
| **DATA RECORDING AND CATCH MESSAGES** | Large numbers of math errors and/ or mismatches between forms. Errors are of a critical nature impacting the management of the fishery. | Moderate number of math errors, but few mismatches between forms. Errors are of a minor nature, not affecting the use of the data. | Few, if any, math errors or mismatches between forms. The observer has obviously double-checked their work. Errors are of a minor nature, not affecting the use of the data. |
| **REPORTS AND DOCUMENTATION** | Brief and general with few specifics or details. Calculations are poorly labeled or not recorded at all. Documentation is insufficient to pursue compliance-related issues. | Concise, but contain all necessary information. Calculations are labeled, easy to follow, legible, and complete. Compliance-related documentation is adequate to initiate a case file. | Calculations, daily notes, and reports are all well-documented. Anything unusual in the catch or sampling methodology is recorded. Compliance-related documentation is well-written, detailed, and well-organized. |

**Table 9-1. Rating Criteria**

| | UNSUCCESSFUL | MEETS EXPECTATION | EXCEPTIONAL |
|---|---|---|---|
| **SPECIES IDENTIFICATION** | Forms and/or verbal descriptions incomplete, incorrect, or missing. | Forms are completed for all major species to the extent that identifications can be verified. | Forms are completed for all major species to the extent that identifications can be verified. |
| **PROBLEM SOLVING** | Observer was unable to effectively solve problems that arose on their vessel and/or they never notified NMFS of the problems affecting their work. Observer fails to recognize compliance issues which affect the reliability of their data. | With assistance from NMFS personnel, the observer was able to solve all problems that arose. The observer recognizes and attempts to address comliance-related issues which effect the reliability of their data. | Working with vessel personnel, the observer was able to solve all problems that arose. Solutions are approved by NMFS before implementing and demonstrates the observer's understanding of sampling theory and the use of the data. The observer recognizes, addresses, and notifies NMFS of compliance-related issues which affect the reliability of their |

Table 9-1. Cont.

# Decertification

Decertification is something most observers need not worry about. It is reserved for extreme cases, and each case is considered individually. Decertification may be based on a single incident or on a combination of many factors. Conduct, attitude, professionalism, and even common sense all come into the picture when decertification is a possibility. If you conduct yourself in a professional manner, make an honest effort, and remember that you are hired to do biological sampling, decertification is not something that should be a concern to you.

This is a summary of the observer decertification procedures as outlined in 50 CFR §679.5(j). ***This summary is not complete,*** nor is it quoted verbatim from federal regulations or law. This summary has been simplified. If you would like a copy of the regulations concerning the Observer Program or have any questions about the procedure, please contact Bob Maier, (206) 526-4197

**§679.2 Definitions.**

- "**Adequate evidence**" means information sufficient to support the reasonable belief that a particular act or omission has occurred.
- "**Civil judgment**" means a judgment or finding of a civil offense by any court of competent jurisdiction.
- "**Conviction**" means a judgment or conviction of a criminal offense by any court of competent jurisdiction, whether entered upon a verdict or a plea, and includes a conviction entered upon a plea of nolo contendere.
- "**Decertification,**" as used in §679.50(j), means action taken by a decertifying official under §679.50(j)(7) to revoke indefinitely certification of observers under this section, an observer whose certification is so revoked is decertified.
- "**Decertifying official**" means a designee authorized by the Regional Director to impose decertification.
- "**Indictment**" means indictment for a criminal offense. An information or other filing by competent authority charging a criminal offense must be given the same effect as an indictment.
- "**Legal proceedings**" means any civil judicial proceeding to which the Government is a party or any criminal proceeding. The term includes appeals from such proceedings.
- "**NMFS investigator**" means a designee authorized by the Regional Director to conduct investigations under this section.

- "**Observer**" means any individual that is awarded NMFS certification to serve as an observer under this part, is employed by an observer contractor for the purpose of providing observer services to vessels and shoreside processors under this part, and is acting within the scope of his/her employment.
- "**Preponderance of the evidence**" means proof by information that, compared with that opposing it, leads to the conclusion that the fact at issue is more probably true than not.
- "**Suspending official**" means a designee authorized by the Regional Director to impose suspension.
- "**Suspension**," as used in §679.50, means action taken by a suspending official under §679.50(j) to suspend certification of observers temporarily until a final decision is made with respect to decertification.

### §679.50(j)(1) Applicability

This paragraph sets forth the procedures for suspension and decertification of observers under this section.

### §679.50(j)(2) Policy

(i) NMFS must certify responsible and qualified observers only. Suspension and decertification are discretionary actions that, taken in accordance with this section, are appropriate means to effectuate this policy.

(ii) The serious nature of suspension and decertification requires that these actions be taken only in the public interest for the promotion of fishery conservation and management and not for purposes of punishment. NMFS may impose suspension or decertification only for the causes and in accordance with the procedures set forth in this section.

(iii) In addition to suspension and decertification, observers who violate provisions of this part may be subject to penalties, fines, and other sanctions as authorized by law.

### §679.50(j)(3) Public availability of suspension or decertification records.

Public availability of suspension or decertification records will depend upon the provisions of the Freedom of Information Act and other applicable law.

**§679.50(j)(4) Effect and timing of suspension or decertification.**

(i) Observers decertified or suspended must not provide services prescribed by this section to vessels and shoreside processors.

(ii) Suspension and decertification actions may be combined and imposed simultaneously.

**§679.50(j)(5) Suspension**

(i) General.

(a) The suspending official may, in the public interest, suspend observers for any of the causes in (j)(5)(ii) of this section, using the procedures in paragraph (j)(5)(iii) of this section.

(b) Suspension may be imposed on the basis of adequate evidence, pending the completion of investigation or legal proceedings, when NMFS determines that immediate action is necessary. In assessing the adequacy of the evidence, the suspending official should consider how much information is available, how credible it is given the circumstances, whether or not important allegations are corroborated, and what inferences can reasonably be drawn as a result.

(ii) Causes for suspension.

(a) The suspending official may suspend observers upon a determination, based upon adequate evidence, that the observers committed any acts or omissions constituting a cause for decertification under paragraph (j)(6)(ii) of this section, or

(b) Upon indictment for any of the causes for decertification in (j)(6)(ii)(a) of this section.

(iii) Procedures.

(a) *Review.* The suspending official must review all available evidence and must promptly determine whether or not to proceed with suspension. The suspending official may refer the matter to the NMFS investigator for further investigation, or to the decertifying officer.

(b) *Notice of suspension.* When observers are suspended, they must be immediately advised personally or by certified mail, return receipt requested, at the last known residence —

(1) That they have been suspended and that the suspension is based on an indictment or other adequate evidence that the observer has committed acts or omissions constituting grounds for suspension under (j)(5)(ii) of this section. Such acts or omissions may be described in terms sufficient to place the observer on notice without disclosing NMFS' evidence.

(2) That the suspension is for a temporary period pending the completion of an investigation and such decertification proceedings as may ensue.

(3) Of the cause(s) relied upon under (j)(5)(ii) of this section for imposing suspension.

(4) Of the effect of the suspension.

(5) That, within 30 days after receipt of the notice, the observer may submit, in writing, documentary evidence and argument in opposition to the suspension, including any additional specific documentary evidence that raises a genuine dispute over the material facts.

(6) That additional proceedings to determine disputed material facts will be conducted unless: (*i*) the action is based on an indictment or (*ii*) a determination is made, on the basis of NOAA General Counsel advice, that the substantial interests of the government in pending or contemplated legal proceedings based on the same facts as the suspension would be prejudiced.

(c) *Dispute.* For suspensions not based on an indictment, if NMFS determines that the observers' submission in opposition raises a genuine dispute over facts material to the suspension and if no determination has been made, on the basis of NOAA General Counsel advice, that substantial interests of the government in pending or contemplated legal proceedings based on the same facts as the suspension would be prejudiced, the suspending official:

(1) Must afford the observer an opportunity to submit additional documentary evidence upon a showing that such documentary evidence was unavailable during the 30-day period following receipt of the notice of suspension.

(2) May, at his or her sole discretion, afford the observer an opportunity to appear in person, present witnesses, and confront any person NMFS presents. The suspending official must make an audio tape of the proceedings and make a copy available at cost to the observer upon request, unless the observer and NMFS, by mutual agreement, waive the requirement for an audio tape.

(d) *Suspending official's decision.*

(1) The suspending official's decision must be based on all the information in the administrative record, including any submission made by observers on action based on an indictment: (*i*) in which the observer submission does not raise a genuine dispute over material facts, or (*ii*) in which additional proceedings to determine disputed material facts have been denied on the basis of NOAA General Counsel advice.

(2) In actions in which additional proceedings are necessary as to disputed material facts, written findings of fact must be prepared. The suspending official must base the decision on the facts as found, together with any information and argument submitted by the observer and any other information in the administrative record.

(3) The suspending official may refer matters involving disputed material facts to another official for findings of fact. The suspending official may reject any such findings, in whole or in part.

(4) The suspending official's decision must be made after the conclusion of the proceedings with respect to disputed facts.

(5) Prompt written notice of the suspending official's decision to affirm, modify or terminate the notice of suspension issued under this paragraph (j)(5) shall be served on the observer, personally or by certified mail, return receipt requested, at the last known residence.

(e) *Period of suspension.*

(1) Suspension is for a temporary period pending the completion of investigation and any ensuing legal proceedings or decertification proceedings, including any administrative review under paragraph (j)(7) of this section, unless sooner terminated by the suspending official or as provided in this paragraph (j). If suspension is in effect, the decertifying official will expedite any related decertification proceedings.

(2) If legal proceedings or decertification proceedings are not initiated within 12 months after the date of the suspension notice, the suspension must be terminated.

**§679.50(j)(6) Decertification**

(i) General. The decertifying official may, in the public interest, decertify an observer for any of the causes in paragraph (j)(6)(ii) in this section using the procedures in paragraph (j)(6)(iii) of this section. The existence of a cause for decertification, does not necessarily require that the observer be decertified; the

seriousness of the acts or omissions and any mitigating factors should be considered in making any decertification decision. The existence or nonexistence of any mitigating factors is not necessarily determinative of an observer's present fitness. Accordingly, if a cause for decertification exists, the observer has the burden of demonstrating, to the satisfaction of the decertifying official, present fitness and that decertification is not necessary.

(ii) Causes for decertification.

(a) *Observers.*

(1) The decertifying official may decertify an observer for a conviction of or civil judgment for the following: (*i*) Commission of fraud or other violation in connection with obtaining or attempting to obtain certification, or in performing the duties of observers as prescribed by NMFS; (*ii*) Commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; or (*iii*) Commission of any other offense indicating a lack of integrity or honesty that seriously and directly affects the present fitness of observers.

(2) The decertifying official may decertify an observer, based upon a preponderance of the evidence, upon a determination that the observer has: (*i*) Failed to satisfactorily perform the duties of observers as prescribed by NMFS; or (*ii*) Failed to abide by the standards of conduct for observers as prescribed under regulation.

(iii) Procedures.

(a) *Investigation and referral.* NMFS personnel shall promptly report to the NMFS investigator matters appropriate for further investigation. The NMFS investigator must investigate matters so referred and submit the investigative material to the decertifying official or, if appropriate, to the suspending official.

(b) *Review.* The decertifying official must review all available evidence and must promptly determine whether or not to proceed with decertification. The decertifying official may refer the matter to the NMFS investigator for further investigation or, if appropriate, to the suspending official.

(c) *Notice of proposed decertification.* If the decertifying official determines to proceed with decertification, he or she must serve a notice of proposed

decertification upon an observer, personally or by certified mail, return receipt requested, at the last known residence, advising:

(1) That decertification is being considered.

(2) Of the reasons for the proposed decertification in terms sufficient to put the observer on notice of the conduct or transaction(s) upon which it is based.

(3) Of the cause(s) relied upon under (j)(6)(ii) of this section for proposing decertification.

(4) That, within 30 days after receipt of the notice, the observer may submit, in writing, documentary evidence and argument in opposition to the proposed decertification, including any additional specific documentary evidence that raises a genuine dispute over the material facts.

(5) Of NMFS' procedures governing decertification decision making.

(6) Of the effect of the issuance of the notice of proposed decertification.

(7) Of the potential effect of an actual decertification.

(d) *Dispute.* In actions not based upon a conviction or civil judgment, if it is found that the observer's submissions raise a genuine dispute over facts material to the proposed decertification, the decertifying official:

(1) Must afford the observer an opportunity to submit additional documentary evidence upon a showing that such documentary evidence was unavailable during the 30-day period following receipt of the notice of proposed decertification.

(2) May, at his or her sole discretion, afford the observer an opportunity to appear in person, present witnesses, and confront any person NMFS presents. The decertifying official must make an audio tape of the proceedings and make a copy available at cost to the observer upon request, unless the observer and NMFS, by mutual agreement, waive the requirement for an audio tape.

(e) *Decertifying official's decision.*

(1) In actions based upon a conviction or judgment, or in which there is no genuine dispute over material facts, the decertifying official must make a decision on the basis of all the information in the administrative record, including any submission made by the observer. The decision must be made after receipt of any timely information and argument submitted by the observer.

(2) In actions in which additional proceedings are necessary as to disputed material facts, written findings of fact must be prepared. The decertifying official must base the decision on the facts as found, together with

any information and argument submitted by the observer and any other information in the administrative record.

(3) The decertifying official may refer matters involving disputed material facts to another official for findings of fact. The decertifying official may reject any such findings, in whole or in part.

(4) The decertifying official's decision must be made after the conclusion of the proceedings with respect to disputed facts.

(5) In any action in which the proposed decertification is not based upon a conviction or civil judgment, the cause for decertification may be established by a preponderance of the evidence.

(f) *Notice of decertifying official's decision.*

(1) If the decertifying official decides to impose decertification, the observer must be given prompt notice personally or by certified mail, return receipt requested, at the last known residence. Such notice must: (*i*) Refer to the notice of proposed decertification. (*ii*) Specify the reasons for decertification. (*iii*) Advise that the decertification is effective immediately, unless the decertifying official determines that there is a compelling reason for maintaining certification for a specified period under conditions and restrictions necessary and appropriate to protect the public interest or promote fishery conservation and management and states the reasons in the notice.

(2) If decertification is not imposed, the decertifying official must promptly notify the observer, by certified mail, return receipt requested, at the last known residence.

(iv) Period of decertification.

(a) Decertification must be in force indefinitely or until rescinded.

(b) The decertifying official may rescind decertification, upon the observer's request, supported by documentation, for reasons such as:

(1) Newly discovered material evidence;

(2) Reversal of the conviction or civil judgment upon which the decertification was based;

(3) Elimination of other causes for which the decertification was imposed; or

(4) Other reasons the decertifying official deems appropriate.

**§679.50(j)(7) Administrative review of suspension or decertification.**

(i) Observers may petition for review of a suspension decision issued under paragraph (j)(5)(iii) of this section or a decertification decision issued under paragraph (j)(6)(iii) of this section within 30 days after the date the decision was served. The petition must be addressed to the appeals officer identified in the notice of suspension or decertification. Any petitioned suspension will remain in effect pending the appeals officer's written decision to affirm, modify or terminate the suspension.

(ii) Administrative review is discretionary. Petitions for discretionary review may be filed only upon one or more of the following grounds:

(a) A finding of material fact is clearly erroneous based upon the administrative record;
(b) A substantial and important question of policy or discretion is involved; or
(c) A prejudicial error has occurred.

(iii) If the appeals officer declines review based on the written petition, the observer must be immediately advised of the decision to decline review personally or by certified mail, return receipt requested, at the last known residence.

(iv) If the appeals officer grants review based on the written petition, he or she may request further written explanation from the observer, or the decertifying officer or suspending officer. The appeals officer will then render a written decision to affirm, modify or terminate the suspension or decertification or return the matter to the suspending or decertifying official for further findings. The appeals officer must base the decision on the administrative records compiled under paragraphs (j)(5) or (j)(6) of this section, as appropriate. The appeals officer will serve the decision on the observer personally or by certified mail, return receipt requested, at the last known residence.

(v) An appeals officer's decision imposing suspension or decertification or an unpetitioned suspending or decertifying official's decision is the final administrative decision of the U.S. Department of Commerce.

# 10 Regulations

## Regulatory Compliance and the Observer

### Uses of the data

The Observer Program's role in gathering fisheries harvest data, assessing marine mammal interactions and monitoring regulatory compliance is critical to the sound management of the resource. As competition in the fishery intensifies, proper resource management becomes crucial. An important component of effective management is the ability to monitor for regulatory compliance.

**From this section, you should learn:**

- what to do if you suspect a violation, documentation instructions,
- your role if the Coast Guard boards your vessel, and
- an informational summary of regulations relevant to your work.

## Regulatory Compliance Monitoring — The Role of the Observer

Fishery management has two goals: (1) understanding the fisheries stocks, and (2) controlling the impact of fishing on those stocks. As an observer your primary duties are the collection of harvest data used in stock assessments. However, you also have a role in monitoring compliance with fishing regulations. This role ranges from identifiying vessel-specific problems to collecting data used to understand fleet wide behavior and the effectiveness of management programs.

As an observer, you have no enforcement authority. It is not your job to advise the crew of regulations, interpret regulations or assure that the crew complies with regulations. Your role is to observe vessel adherence to and document potential violations of specific regulations. This role should not be taken lightly, nor should you act impulsively and without regard to the impact on your ability to collect management data.

The regulation summary at the end of this section, combined with your training should give you enough information to identify potential violations, address problem situations if they arise, and adequately document events. The following regulations are relevant to your work as an observer:

Commercial groundfish regulations established by the North Pacific Fisheries Management Council and used to implement the Fisheries Management Plans in the Bering Sea/Aleutian Islands area or the Gulf of Alaska;

- Regulations concerning interactions between marine mammals and the groundfish fleet;
- Regulations pertaining to safety standards for vessels carrying observers;
- Marine pollution regulations; and
- Regulations that are directly related to protected and endangered species that interact with groundfish fisheries.

Several regulations specifically prohibit actions that interfere with your personal safety and your right to conduct your required work. You need to be capable of recognizing situations and behavior that directly affects your work and your safety. In addition you must have a clear understanding of how to resolve and report such incidences.

## Overview of Groundfish Fishing Regulations

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) gives the Department of Commerce the authority to regulate fisheries resources that are found in the Exclusive Economic Zone (EEZ). These resources were to be managed at a regional level by the National Marine Fisheries Service and Fisheries Management Councils. The Fisheries Management Councils include representatives of state and federal fisheries agencies, industry, and academia.

The North Pacific Fishery Management Council (Council) consists of representatives from the states of Alaska, Washington, and Oregon and has jurisdiction over the fisheries within the 900,000 square mile EEZ off Alaska. The Council is primarily responsible for maintaining the Bering Sea/Aleutian Islands, and the Gulf of Alaska Fisheries Management Plans (FMP's). Annual responsibilities of the Council include, determining annual Optimum Yield (OY) and Total Allowable Catch (TAC) for each management area, and allocating the available harvest to each user group. FMP's contain a great deal of information on the biological status of the commercially important stocks, and the condition of the fishery (landings, gear, fishing grounds, processing, markets, etc.). The FMP's identify problems in a fishery and propose management measures in the form of fishing regulations that will correct the problems. Once the FMP is in place, NMFS and the council are required to monitor the fisheries resources to determine if the goals of the plan are being met and to make changes as necessary.

The FMP for the Bering Sea/Aleutian Islands, and the Gulf of Alaska contain many fishery regulations designed to conserve groundfish stocks and protect established halibut, herring, crab, and salmon fisheries. When an FMP, amendment, regulatory action or emergency action has gone through the regulatory process and is published in the *Federal Register*, the management measures become federal regulation. These regulations and other related laws are primarily enforced by the NMFS Office of Enforcement. The Office of Enforcement is assisted in this task by the U.S. Coast Guard, cooperating state troopers, and other federal agents.

The Alaska Regional office of NMFS, located in Juneau has primary responsibility for policy development and in-season harvest management. Policy development includes working with the Council to amend the FMP's, and with various divisions of the agency to develop implementation policy and management regulations. During FMP amendment the regional office staff generates required Environmental Assessments and Regulatory Impact Reviews. These reviews examine the problem, alternative plans of action, and their impact to industry, the public, the resource,

and the government agency. Public news releases regarding openings, closures, and regulatory changes are also the responsibility of the Alaska Regional office.

In addition to policy development, the regional office is responsible for within-season monitoring of harvest statistics to determine how much of the allocation of each species has been taken, and when each fishery should close. Harvest data includes estimations of catch volume, species composition, age and size distributions of catch, volume and species of discards, fishing effort, etc. Three primary methods are used by the Alaska Regional Office to obtain necessary harvest data for groundfish fisheries: (1) fish receipts filled out at the dock or processing plant, (2) logbooks and production reports completed by captains at sea, and (3) biological sampling and observations of fishing operations by observers.

NMFS is required by the Magnuson-Stevens Act to carry out a comprehensive program of fishery research to obtain information. Research programs are designed to gather knowledge and statistical information on fishery conservation and management, on economics of the fisheries, and on biological interdependence of fisheries or stocks. Other matters bearing on the abundance and availability of fish are also studied such as the impact of pollution on fish and the impact of wetland and estuarine degradation. The Alaska Fisheries Science Center is the research branch of NMFS responsible for conducting fisheries research in the federal waters off Alaska.

The Observer Program's role in gathering fisheries harvest data, assessing marine mammal interactions and monitoring regulatory compliance is critical to the sound management of the resource. As competition in the fishery intensifies, proper resource management becomes crucial. An important component of effective management is the ability to monitor for regulatory compliance.

## Steps to Take If You Suspect a Violation

Common sense and good judgement should prevail when you suspect that a violation has occurred on your vessel or at your plant. The actions you decide to take depend upon the type of suspected violation, the circumstances under which it occurred, and the actions and attitudes of vessel or plant personnel. In any case there are certain steps you should take: investigate, advise and document. Document the situation from the time you first suspect the violation. Include any subsequent actions taken by you and/or vessel/plant personnel. Do not jeopardize your position on the vessel or at the plant by resorting to "cloak and dagger" techniques to

obtain evidence. Investigation and documentation of a suspected violation should be done openly as part of your routine duties.

**Investigate**

Investigation may be necessary to find out if a violation has actually occurred. There are obvious cases in which investigation is not needed, such as witnessing a crew member throwing plastic bags overboard, but other suspected violations may not be so obvious. Depending on the type of suspected violation, you may need to double check your measurements, calculations, and methods, check scale calibrations, logbook entries and production figures—***be thorough***. You should ask the captain, plant manager, or other vessel/plant personnel to clarify any questions you may have. By asking questions you may be able to determine that no violation has occurred. You should consider contacting Observer Program staff or NMFS Enforcement personnel to see if a particular action would be considered a violation.

**Advise**

Once you feel that a violation has taken place, it is usually best to talk to the captain or plant manager. Determine whether or not they were aware of the problem. By bringing a suspected violation to their attention, you may be able to ensure that it does not happen again. Direct the skipper or plant manager to NMFS enforcement if there are questions about the regulations—do not give authoritative answers on your own. Suspected violations may be the result of misinterpretation of regulations, misunderstanding of observer work objectives, carelessness in record keeping, etc. For example, you might have witnessed crew members collecting prohibited species in a basket in order to discard them, not to take them to the cook. Document each instance in which you advise personnel of suspected violations..

**Document**

Suspected violations should be documented in your logbook under the Daily Notes section. Remember that your logbook may be used as evidence many months or even years after an event and your memory will fade with time. Your documentation should be thorough and unemotional. All written comments should be in ink and events should be recorded in chronological order. Record observations as soon as possible after the event. If an event seems significant only in hindsight, record it when you remember it. Always include dates and times, especially if you are recording something long after it happened. Good documentation contributes to your credibility as a witness.

All logbook entries of suspected violations should contain the following basic elements:

**When:** Identify the exact or approximate time of the suspected violation.

- hour, day, month, year
- haul/set/delivery number where appropriate

**Where:**

- Identify the ship's latitude and longitude at the time of the suspected violation. If a vessel's exact position is not known, use the closest approximation from the last haul, noon position, or compass direction and distance to nearest point of land.
- Clearly identify where on the ship or at the plant the suspected violation occurred. Draw and label a diagram of the specific area (trawl deck, observer room, sorting conveyor, etc.) If the suspected violation was noticed in the vessel or plant logbook, indicate where the logbook is kept.

**Who:**

- Identify the vessel or plant by name, permit number and vessel type.
- Identify the individuals involved by name, position (captain, engineer, deckhand, etc.), and function or duties—especially if related to suspected violation.
- Identify the individuals who are in the primary positions of authority, if not already named.
- Include any information e.g., language difficulties, which may have had an effect on your ability to communicate.

**What:** Describe the events and circumstances in narrative form. Include:

- what made you suspicious,
- what you discovered in the investigative stage,
- what you advised any personnel and their reactions to your advice or inquiry, and
- what happened (or didn't happen) as a result of your talk.
- Use direct quotes whenever possible.
- Record each instance of a suspected violation.

Make certain you have gathered all the evidence that you feasibly can to convince an outside person that a violation actually occurred. Use copies of the logbooks, photographs where appropriate, and any other documents written by you and/or vessel or plant personnel. Make sure all evidence is dated.

**Why:** Try to determine why the suspected violation occurred. If you use your own conclusions or opinions, identify them as such. Try to be as objective as possible.

Was the suspected violation committed intentionally or unintentionally? Violations are not always intentional, but whether they are or aren't may affect the severity of the punishment. Consider the following questions:

- Could it have been a careless mistake, such as a mathematical or transcription error in the logbook?
- Were there unusual circumstances beyond the control of vessel or plant personnel which may have played a factor? This might include severe weather conditions, mechanical breakdowns, or injuries.
- If you feel the suspected violation was intentional, on whose orders or with whose knowledge do you feel it was done, and why? State why you feel it was intentional, especially in cases of interference with observers. Sometimes casual comments by crew members can give insight into the motive behind the commission of a suspected violation.

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 unfounded personal opinions. Do not use your logbook to "blow off steam". Statements such as "the captain acts and dresses like a slob" are irrelevant as to whether a fisheries violation has been committed. If you are requested to write an affidavit your job will be much easier if you have taken the time to document as outlined above. If you have good documentation of a violation the case is more apt 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.

## Observer Procedures During a Coast Guard Boarding

The Coast Guard makes periodic boardings of fishing vessels to inspect them for fisheries and safety violations. A NMFS Enforcement agent may also be present. Should a boarding occur during your assignment, your role is as follows:

Remain objective throughout the process and do not involve yourself beyond your capacity as an observer. 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 not needed, keep out of their way.

When the Coast Guard boards your vessel, introduce yourself as soon as is practical. After that, let the boarding party know where you can be found if they wish to speak to you. If they do have questions or request 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. Avoid giving anyone your original forms or your logbook to keep if possible. 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, at least make handwritten copies.

If you have any information for the boarding officer or NMFS agent on suspected or actual violations, or other problems, arrange to speak with him or her in private. As much as possible, avoid speaking with boarding party members in front of the crew. If you are unable to hold a private conversation, write down any information you have and hand it to the boarding officer or NMFS agent. It is important that the boarding party knows about any violations you may have observed.

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. The Observer Program staff does try to instruct the Coast Guard to avoid putting observers on the spot. If you are questioned in private, answer all questions completely and honestly. Your testimony is only one part of the whole investigation.

***Do Not Interfere With Boarding Party Decisions.*** If you have strong objections to decisions made by the NMFS agent or the boarding officer, discuss your objections in private with the appropriate person or with the Observer Program staff in Dutch Harbor, Kodiak or Seattle. Do not write your objections to a Coast Guard decision in your logbook.

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.

# Observer Program's Partial Summary of Federal Groundfish Fishing Regulations for the U.S. EEZ Off Alaska

Prepared November 1996 and updated August 1997 by: Observer Program Staff

## Introduction

This summary of regulations is intended to provide observers with a working knowledge of regulations as they apply to groundfish observer duties. Regulations presented in the *Code of Federal Regulations* (50 CFR 600 and 679) which implement the Fisheries Management Plans for the Gulf of Alaska, and the Bering Sea and Aleutian Islands areas 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 following National Marine Fisheries Service (NMFS) offices.

NMFS, Alaska Regional Office
P.O. Box 21668
Juneau, AK 99802-1668
Tel: 907-586-7228
Fax: 907-586-7131

NMFS, Office of Enforcement, Alaska Region
P.O. Box 21767
Juneau, AK 99802-1668
Tel: 907-586-7225
Fax: 907-586-7200 (general information)
Fax: 907-586-7313 (IFQ)

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 Office. To aid the public in accessing this information, the Alaska Regional Office provides public access at the following INTERNET address, **http://www.fakr.noaa.gov** To further assist fishermen, the National Marine Fisheries Service prints reference manuals on Recordkeeping and Reporting Requirements for Groundfish fisheries in Alaska.

***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 and Bering Sea and Aleutian Islands 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 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. Regulations governing such fisheries can be obtained from the Alaska Department of Fish and Game.

# DEFINITIONS §679.2

## 1. GEOGRAPHIC DEFINITIONS

ALEUTIAN ISLANDS SUBAREA The portion of the Bering Sea/Aleutian Island management area south of 55° N. latitude and west of 170° W. longitude.

The Eastern Aleutian District (statistical area 541)
The Central Aleutian District (statistical area 542)
The Western Aleutian District (statistical area 543)

BERING SEA AND ALEUTIAN ISLAND MANAGEMENT AREA (BSAI) is the portion of the EEZ in the Bering Sea north of the Aleutian Island chain, and that portion of the EEZ in the North Pacific Ocean that is adjacent to the Aleutian Islands and west of 170°00' W. longitude.

Bering Sea Subarea (statistical areas 508, 509, 512, 513, 514, 516, 517, 518, 519, 521, 523, 524, 530)
Bogoslof district (statistical area 518)

BERING SEA SUBAREA is that portion of the BSAI exclusive of the Aleutian Islands subarea.

BYCATCH LIMITATION ZONES

Bycatch limitation zone 1 means BSAI statistical areas 508, 509, 512, and 516.
Bycatch limitation zone 2 means BSAI statistical areas 513, 517, and 521.

CONVENTION WATERS means all waters off Alaska in halibut regulatory areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E.

DONUT HOLE The waters of the Central Bering Sea seaward of the outer boundary of the U.S. EEZ and seaward of the outer boundary of the Russian Federation. This area can be found in the Catch Message section of this manual (statistical area 550).

EXCLUSIVE ECONOMIC ZONE (EEZ) is the area adjacent to the United States which encompasses all waters from the seaward boundary of each of the coastal states to a line on which each point is 200 nautical miles. Federally managed waters are found between 3 - 200 nautical miles offshore.

GULF OF ALASKA (GOA) is that portion of the EEZ of the North Pacific Ocean exclusive of the Bering Sea, between 132 °40' W. longitude and 170°00' W. longitude seaward of the State of Alaska.

REPORTING AREA means the relevant Bering Sea/Aleutian Islands, and Gulf of Alaska statistical areas and all state waters between the shore and any inshore boundary of that statistical area.

REGULATORY AREA refers to three areas of the EEZ in the Gulf of Alaska. These areas are the Eastern, Central, and Western and can be found in the Catch Message section of this manual.

REGULATORY DISTRICT refers to two districts of the Eastern Regulatory area of the Gulf of Alaska. These areas are 1) Southeast Outside district (statistical area 650), and 2) West Yakutat district (statistical area 640). A map containing these areas can be found in the Catch Message section of this manual.

STATISTICAL AREAS Any one of the following 14 geographical units in the Bering Sea/Aleutian Island management area: 508, 509, 512, 513, 514, 516, 517, 518, 519, 521, 523, 524, 530, 541, 542, and 543. Or, any one of the following five geographical units in the Gulf of Alaska management area: 610, 620, 621, 631, 630, 640, and 650. (Refer to the maps in manual section 6.)

**2. GENERAL DEFINITIONS**

ADF&G means the State of Alaska Department of Fish and Game.

ALASKA LOCAL TIME (A.l.t.) means the current Alaska time, either daylight savings time or standard time.

AUTHORIZED OFFICER

a) Any commissioned, warrant, or petty officer of the U.S. Coast Guard;

b) Any special agent or fisheries enforcement officer of NMFS;

c) Any officer designated by the head of any Federal or State agency which has entered into an agreement with the secretary and Commandant of the U.S. Coast Guard to enforce the provisions of the Magnuson-Stevens Act, i.e.: Alaska State Troopers from the ADF&G Office of Protection;

d) Any U.S. Coast Guard personnel accompanying and acting under the direction of any commissioned, warrant, or petty officer of the U.S. Coast Guard.

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 (see figure 2, following).

CATCH or TAKE includes, but is not limited to, any activity which results in killing any fish or bringing any live fish on board.

COMMUNITY DEVELOPMENT PLAN (CDP) (applicable through Dec. 31, 1998) means a business plan for the development of a specific Western Alaska community or group of communities under the CDQ Program..

COMMUNITY DEVELOPMENT QUOTA (CDQ) (applicable through Dec. 31, 1998) means a percentage of the CDQ reserve for a particular fish species that is allocated to a CDP.

COMMUNITY DEVELOPMENT QUOTA RESERVE (CDQ Reserve) (applicable through Dec. 31, 1998) means a percentage of the TAC for a particular management area for pollock, halibut, or hook-and-line sablefish that has been set aside for purposes of the CDQ program.

DAILY REPORTING PERIOD OR DAY is the period from midnight (0001 hours) until the following midnight (2400 hours) using Alaska local time (A.l.t.).

FISH PRODUCT WEIGHT means the weight of the fish product in pounds or to at least the nearest thousandth of a metric ton (0.001 mt). Fish product weight is based upon the number of production units and the weight of those units. Production units include pans, cartons, blocks, trays, cans, bags, and individual fresh or frozen fish. The weight of a production unit is the average weight of representative samples of the product, and, for fish other than fresh fish, may include additives or water but not packaging. Any allowance for water added cannot exceed 5 percent of the gross product weight (fish, additives, and water).

FISHING, OR TO FISH means any activity, other than scientific research conducted by a scientific research vessel, which involves:

(1) The catching, taking or harvesting of fish.
(2) The attempted catching, taking or harvesting of fish;
(3) Any other activity which can reasonably be expected to result in the catching, taking or harvesting of fish; or
(4) Any operations at sea in support of, or in preparation for, any activity described in subparagraphs (1), (2), or (3) above.

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 DAY means a 24-hour period, from 0001 hours, Alaska local time (A.l.t.), through 2400 hours, ALT, in which fishing gear is retrieved and groundfish are retained. Days during which a vessel only delivers unsorted codends to a processor are not fishing days.

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 (see figure 2).

FISHING TRIP means:

(1) With respect to monitoring compliance with groundfish directed fishing closures, an operator of a vessel is engaged in a fishing trip from the time the harvesting, receiving, or processing of groundfish is begun or resumed in an area after the effective date of a notification prohibiting directed fishing in the same area under 679.20 or 679.21 until:
   (i) The offload or transfer of all fish or fish product from that vessel;
   (ii) The vessel enters or leaves an area where a different directed fishing prohibition applies; or
   (iii) The end of a weekly reporting period, whichever comes first.

(2) With respect to the IFQ program, the period beginning when a vessel operator commences harvesting IFQ species and ending when the vessel operator lands any species.

(3) With respect to subpart E of Part 679 (Groundfish Observer Program) one of the following time periods:
   (i) For a vessel used to process groundfish or a catcher vessel used to deliver groundfish to a mothership,—a weekly reporting period, during which one or more fishing days occur.
   (ii) For a catcher vessel used to deliver groundfish to other than a mothership,—the time period during which one or more fishing days occur, that starts on the day when fishing gear is first deployed and ends the day the vessel offloads groundfish, returns to an Alaskan port, or leaves the EEZ off Alaska and adjacent waters of the State of Alaska.

FISHING VESSEL means any vessel, boat, or other craft which is used for, equipped to be used for, or of a type that is normally used for:

(1) Fishing; or

(2) Aiding or assisting one or more vessels at sea in the performance of any activity relating to fishing, including, but not limited to, preparation, supply, storage, refrigeration, transportation, or processing.

FISHING YEAR the period of time beginning at 0001 hours, Alaska local time, (A.l.t.), on January 1, and ending at 2400 hours, A.l.t., on December 31.

FOOT ROPE means a chain or wire rope attached to the bottom front end of a trawl and attached to the fishing line (see figure 2).

GROUNDFISH means pollock, Pacific cod, any species of flatfish, any species of flounder and sole, Pacific Ocean Perch, thornyhead rockfish, other rockfish, sablefish, Atka mackerel, squid, and octopus. It includes all other marine invertebrates except shrimp, scallops, snails, king crab, Tanner crab, Dungeness crab, horsehair crab, lyre crab, coral, and clams. Also included are all other finfish except salmonids, steelhead trout, Pacific herring, and Pacific halibut.

HARVESTING or TO HARVEST means the catching and retaining of any fish.

HOOK & LINE means a stationary, buoyed, and anchored line with hooks attached, or the taking of fish by means of such a device.

INSHORE COMPONENT (applicable through December 31, 1998) means the following three

categories of the U.S. groundfish fishery that process pollock harvested in a directed fishery for pollock in the GOA or BSAI, or Pacific cod harvested in a directed fishery for Pacific cod in the GOA, or both:

(1) Shoreside processing operations.

(2) Vessels less than 125 ft (38.1 m) in length overall (LOA), that process no more than 126 mt per week in round-weight equivalents of an aggregate amount of those fish.

(3) Vessels that process those fish at a single geographic location in Alaska State waters during a fishing year. For purposes of this definition, NMFS will determine the single geographic location in a fishing year for an individual processor from the geographic coordinates the vessel operator reports on the check-in report (679.5(h)) when that vessel first engages in processing those fish.

JIG means a single, non-buoyed, non-anchored line with hooks attached, or the taking of fish by means of such a device.

LANDING means offloading fish.

LENGTH OVERALL (LOA) of a vessel means the horizontal distance, rounded to the nearest foot, between the foremost part of the stem and the aftermost part of the stern, excluding bowsprits, rudders, outboard motor brackets, and similar fittings or attachments.

LONGLINE means a stationary, buoyed, and anchored line with hooks or two or more groundfish pots attached, or the taking of fish by means of such device.

LONGLINE POT means a stationary, buoyed, and anchored line with two or more pots attached, or the taking of fish by means of such a device.

MOTHERSHIP (with respect to subpart E of Part 679) means a processor vessel that receives and processes groundfish from other vessels and is not used for, or equipped to be used for, catching groundfish.

NET-SOUNDER DEVICE means a sensor used to determine the depth from the water surface at which a fishing net is operating.

NONPELAGIC TRAWL means a trawl other than a pelagic trawl.

OFFSHORE COMPONENT (applicable through December 31, 1998) means all vessels not included in the definition of "inshore component" that process pollock caught in directed fisheries for pollock in the GOA or BSAI, or Pacific cod caught in directed fisheries for Pacific cod in the GOA, or both.

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) Except for small mesh allowed under the following paragraphs of this definition;

(i) Has no mesh tied to the fishing line, headrope, and breast lines with less than 20 inches (50.8 cm) between knots, and has no stretched mesh size of less than 60 inches (152.4 cm) aft from all points on the fishing line, head rope, and breast lines and extending past the fishing circle for a distance equal to or greater than one-half the vessel's length overall (LOA); or

(ii) Has no parallel lines spaced closer than 64 inches (162.6 cm), from all points on the fishing line, headrope, and breast lines and extending aft to a section of mesh, with no stretched mesh size of less than 60 inches (152.4 cm), extending aft for a distance equal to or greater than one-half the vessel's LOA;

(4) Has no stretched mesh size less than 15 inches (38.1 cm) aft of the mesh described above for a distance equal to or greater than one-half the vessel's LOA;

(5) Contains no configuration intended to reduce the stretched mesh sizes described in paragraphs

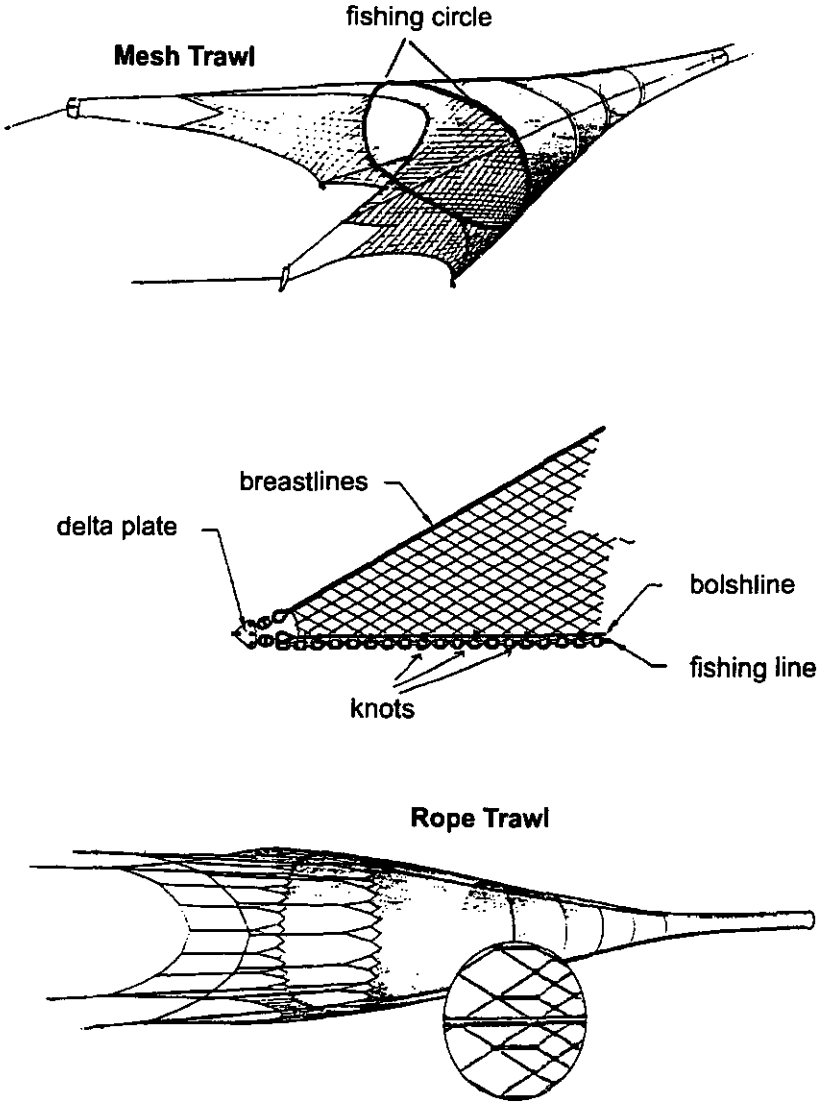



Fig.10-1. Examples of Mesh and Rope Trawls

(3) and (4) of this definition;

(6) 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.)

(7) 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;

(8) Has no metallic component except for connectors (e.g., hammerlocks or swivels) or a net-sounder device aft of the fishing circle and forward of any mesh greater than 5.5 inches (14.0 cm) stretched measure;

(9) May have small mesh within 32 feet (9.8 m) of the center of the headrope as needed for attaching instrumentation (e.g., net-sounder device); and

(10) May have weights on the wing tips.

POT-AND-LINE means a stationary, buoyed line with a single pot attached, or the taking of fish by means of such a device.

PROCESSING or TO PROCESS means the preparation of fish to render it suitable for human consumption, industrial uses, or long-term storage, including but not limited to cooking, canning, smoking, salting, drying, freezing, and rendering into meal or oil, but does not mean icing or bleeding. Heading and gutting without additional preparation , such as freezing, is not processing under this definition.

PROCESSOR VESSEL means, unless otherwise restricted, any vessel that has been issued a Federal groundfish vessel permit and that can be used for processing groundfish.

QUARTER OR QUARTERLY REPORTING PERIOD means one of four successive 3-month periods, which begin at 0001 hours, Alaska local time (A.l.t.), on the first day of each quarter, and end at 2400 hours, A.l.t. on the last day of each quarter, as follows:

(1) 1st quarter: January 1 through March 31.
(2) 2nd quarter: April 1 through June 30.
(3) 3rd quarter: July 1 through September 30.
(4) 4th quarter: October 1 through December 31.

ROUND WEIGHT OR ROUND-WEIGHT EQUIVALENT is the weight of groundfish calculated by dividing the weight of the primary product made from that groundfish by the standard product recovery rate for that primary product as listed in regulation, or if not listed, the weight of groundfish calculated by dividing the weight of a primary product by the standard product recovery rate as determined using the best available evidence on a case by case basis.

STRETCHED MESH SIZE means the distance between opposite knots of a four-sided mesh when opposite knots are pulled tautly to remove slack.

TRAWL means a conical-shaped net that is towed through the water for catching fish or other organisms. The net accumulates its catch in the closed, small end (usually called the cod end). The definition includes, but is not limited to, Danish and Scottish seines and otter trawls.

VESSEL unless otherwise restricted, includes catcher vessels and processor vessels.

WEEKLY REPORTING PERIOD means a time period that begins at 0001 hours, Alaska local time (A.l.t), Sunday morning (except during the first week of each year, when it starts on January 1) and ends at 2400 hours, A.l.t., the following Saturday night (except during the last week of each year, when it ends on December 31).

WING TIP means the point where adjacent breast lines intersect or where a breast line intersects with the fishing line (see fig. -1).

# PERMITS - §679.4

No vessel may harvest or process groundfish in the BSAI or GOA management areas without first obtaining a federal fisheries permit. Each vessel must carry the permit on board and must present it for inspection upon the request of an authorized officer. Groundfish permits are not transferable, nor should they intentionally be altered or mutilated. They are obtained free of charge from the NMFS Office of Enforcement in Juneau, Alaska and are issued on a 3-year cycle. The permit is in effect from the date of issuance through the end of the current NMFS 3-year cycle, unless it is revoked, suspended, or modified.

When a vessel owner submits an application for a permit the following information is to be provided:

- Owner's name, address, and telephone number.
- ADF&G vessel number.
- U.S. Coast Guard documentation, or Alaska registration number.
- Name and Home Port of vessel.
- Type of gear used.
- Length and net tonnage of the vessel.
- Telephone, fax and COMSAT (satellite communication) number used on board.
- Names of operators and/or managers of the vessel.
- Vessel operations category (catcher vessel, catcher/processor, mothership, tender vessel, or support vessel.)

If information required during the permit application process changes, written notification must be provided to the Regional Administrator within 30 days, with one exception. Changes in mode of

operation such as harvesting or support operations must be notified to the Director prior to engaging in a new operation.

Under the conditions of the groundfish permits, no person may use a vessel for which a BSAI or GOA groundfish permit was issued to catch or possess fish that were caught in the Donut Hole during the fishing year for which the permit was issued. If a permit is surrendered in accordance with the guidelines provided by the Alaska Regional Administrator a vessel may be used to catch or possess fish caught from the Donut Hole.

# RECORDKEEPING REQUIREMENTS FOR ALL VESSELS AND SHORESIDE PROCESSORS - §679.5

GENERAL INFORMATION

The operator of any catcher vessel, (catcher vessels less than 60ft in length are exempt) mothership, catcher/processor, or tender vessel, that is five net tons or larger, and is required to have a Federal fisheries permit, and the manager of any shoreside processor, mothership, or buying station that receives groundfish from vessels required to have a Federal fisheries permit, are each responsible for compliance with the applicable recordkeeping, reporting, logbook and notice requirements summarized in this section. This includes the maintenance of timely and accurate records, reports, and logbooks. Such information is to be maintained in a legible manner, and in English. All reporting requirements are based on Alaska local time (A.l.t.). In addition, the owners of the vessel or shoreside processing facility must ensure that the operator or manager complies with these requirements, and is jointly responsible for compliance with these regulations. Except where otherwise stated, this section applies to all vessels required to have a Federal groundfish fishing permit, and to all processor vessels and shoreside processing facilities that receive groundfish.

AVAILABILITY FOR INSPECTION

The operator of a vessel and the manager of a shoreside processing facility must make the original copy of any record, report or logbook required under this section immediately available upon the request of an authorized officer or observer any time during which the record, report, or logbook is required to be maintained.

SUBMISSION OF RECORDS AND REPORTS TO NMFS ALASKA ENFORCEMENT.

Records and reports which are required to be submitted to the NMFS Alaska Enforcement Division should be sent to the following address:

National Marine Fisheries Service
Alaska Enforcement
P.O. Box 21767
Juneau, AK 99802-1767
Attn: Log Book Coordinator

SUBMISSION OF RECORDS AND REPORTS TO THE REGIONAL ADMINISTRATOR.
Records and reports which are required to be submitted to the Regional Administrator should be sent to the following address:

NMFS, Alaska Regional Office
P.O. Box 21668
Juneau, AK 99802-1668
Tel: 907-586-7228

## LOGBOOKS

GENERAL
If any catcher vessel, (catcher vessels less than 60 ft in length are exempt) catcher processor, or mothership, five net tons or larger, and any shoreside processing facility, floating processor, or buying station that is required to have a Federal groundfish permit, processes groundfish from any reporting area in the Gulf of Alaska or the Bering Sea/Aleutian Islands during the fishing year, they are required to maintain all prescribed groundfish logbooks. These logbooks are prescribed by the Regional Administrator and are provided to the operator of a vessel and the manager of a shoreside processing facility. The following groundfish logbooks are currently in use:

1) Daily Fishing Logbooks (DFL)
2) Daily Cumulative Production Logbooks (DCPL)
3) Product Transfer Logbooks.

Maintenance of the prescribed groundfish logbooks and compliance with the recordkeeping and reporting requirements is the responsibility of the vessel operator or the manager of the shoreside processing facility. Such information is to be maintained in a legible, timely, and accurate manner; in English; if handwritten, in indelible ink; if computer-generated, a printed, paper copy; and based on Alaska local time (A.l.t.). No person, other than an authorized officer may remove any original page of any logbook. In addition, no person may alter or change any entry or record in a logbook except that an inaccurate or incorrect entry or record may be corrected by lining out the original and inserting the correction, provided that the original entry or record remains legible. The owners of the vessel or shoreside processing facility must ensure that the operator or manager complies with these requirements, and is jointly responsible for compliance with these regulations.

RETENTION OF LOGBOOKS

- Original copies of all required logbooks must be retained on board the vessel or within the processing facility until the end of the fishing year and for as long after the end of the fishing year as fish or fish products recorded in the logbook are retained on board the vessel, or at the processing facility.
- The original (white) copy of all logbooks and a paper copy of all required reports and forms must be retained for three years after the end of the fishing year during which the records were made.
- The operator or manager of a buying station must retain the pink copy of all DCLs for three years after the end of the fishing year during which the records were made.

# DAILY FISHING LOGBOOK (DFL)

The operator of each catcher/processor and catcher vessel harvesting groundfish from any reporting area in the GOA or the BSAI must maintain on board a daily fishing log of the effort and catch information of the vessel. Daily effort entries are required for each day of a fishing trip, from the day a vessel leaves an Alaskan port or enters the EEZ off Alaska until a vessel returns to port or leaves the EEZ off Alaska. Daily entries are not required for those days when the fishing vessel stays in port. Catcher vessels will receive a logbook that identifies only effort and catch information. However, catcher/processor vessels will be provided with a Daily Fishing Logbook that also functions as a Daily Cumulative Production Logbook.

CONTENTS OF DAILY FISHING LOGBOOKS

The daily fishing log must record the following effort information on a daily basis:
(Note: This may not be a complete list)

- The date.
- The vessel's name and ADF&G number.
- Reporting area where activity was conducted.
- The gear type used.
- The operator's signature.
- Whether an observer was on board the vessel.
- The number of individuals in the crew.
- Daily discard amounts by groundfish species or species group. These weights are to be recorded to the nearest thousandth of a metric ton (0.001 mt).
- Daily discard amounts of prohibited species.

DISCARD INFORMATION

- For each fishing trip, discard information must include the following:
- (Note: This may not be a complete list)
- A species code for each discarded species.
- *Total amount of discards during a fishing trip, by species code, from the previous day. This is a* cumulative number, obtained by carrying the discards from the previous day forward. The total discard number returns to zero at the beginning of each trip.
- Total discarded amount from the current harvesting day.
- Updated cumulative discarded amount for the fishing trip.

EFFORT AND CATCH DATA

The following information must be recorded for each haul or set:
(Note: This may not be a complete list)

- Haul or set number—must be a consecutive number starting from one. Consecutive numbering can be on a daily, trip, or yearly basis.
- *Beginning time and position.*
  - ◊ Trawlers - when gear reaches fishing level.
  - ◊ Other gear types - when first pot, jig, or hooks enter the water.
- The average sea depth - to the nearest fathom or meter.

- Average gear depth - to the nearest fathom or meter.
- End time (date if different from beginning date) and position.
  - ◊ Trawlers - when retrieval of trawl cables begins.
  - ◊ Other gear types - when last pot, jig, or hooks leave the water.

Duration of set or trawl.

- For longline or single pot gear - the number of skates or pots per set, and the average number of hooks or pots.
- Round weight of Groundfish caught (whether retained or not).
- Intended target species.

OFFLOADS

On days that catcher vessels offload groundfish to a processor, the processors name, the ADF&G processor code, and the ADF&G fish ticket number must be recorded.

MAINTENANCE OF THE DAILY FISHING LOG

Within two hours after the haul is retrieved, the set or haul number, time, position and estimated groundfish catch weight must be recorded in the prescribed logbook. The remaining information described under the Effort and Catch data section, must be recorded by noon of the following day.

Discard information must be recorded in the Daily Fishing Logbook before the vessel's catch is off-loaded. Daily discard information for each day since the previous off-load must be provided to the processor receiving the catch. The processor must record this discard information in the Daily Cumulative Production Logbook and in the weekly production report.

SUBMISSION OF THE DAILY FISHING LOG

Quarterly submission. The operator of a catcher or catcher/processor vessel must submit a copy of the Daily Fishing Logbook on a quarterly basis to the NMFS Alaska Enforcement Division. The copy of the Daily Fishing Logbook for fishing activities conducted during the first quarter must be submitted by May 1 of that year; for the second quarter, by August 1 of that year; for the third quarter, by November 1 of that year; and for the fourth quarter, by February 1 of the following year.

## DAILY CUMULATIVE PRODUCTION LOGBOOK (DCPL)

The operator of a processor vessel and the manager of a shoreside processing facility that receives or processes groundfish from any reporting area in the GOA or the BSAI must maintain on the processor vessel, or within the processing facility, a Daily Cumulative Production Logbook (DCPL) of estimated catch receipt (if applicable), species discard amounts, and retained groundfish product information as described in the following section. Daily entries are required for each day a processor vessel or facility receives or processes groundfish.

CONTENTS OF THE DAILY CUMULATIVE PRODUCTION LOGBOOK

(Note: This may not be a complete list)

- Page number - Consecutively numbered beginning with one on the first day the processor vessel or processing facility conducted any fishing or processing activity. A separate page must be used for each day's entries. Separate pages should be completed for each gear type and each area.

- The date.
- The name of the processing vessel or facility.
- The ADF&G vessel number or the ADF&G processor code.
- Reporting area.
- Gear type: pelagic, non-pelagic, trawl, hook and line, jig/troll, or pot.
- Whether an observer was on board the processing vessel or at the shoreside processing facility.
- Operator's signature.
- Number of crew.
- Round weight of each groundfish species discarded to the nearest 0.001 mt. Prohibited species should be recorded by number except herring which should be recorded to the nearest 0.001 mt. The information should include the amounts of discard reported to the processor by the catcher vessel.
- The total cumulative discards for the week.
- Daily product amounts by species or species group and product type.
- The total cumulative product amounts for the week.

MOTHERSHIPS

The following information must be recorded for each groundfish set or haul received by a mothership: (Note: This may not be a complete list)

- ADF&G fish ticket number.
- Time that transfer of set or codend is completed.
- Position of mothership when set or codend were received.
- Name and ADF&G number of catcher vessel.
- Estimated total weight of catch or codend.

SHORESIDE PROCESSORS (Note: This may not be a complete list)

- The ADF&G fish ticket number.
- Time that offloading was completed.
- The name and ADF&G number of the delivery vessel.
- The estimated total round weight of groundfish in catch.

MAINTENANCE OF DAILY CUMULATIVE PRODUCTION LOGBOOKS

Information concerning the catch receipt number or State of Alaska fish ticket number, time of receipt, the name of the delivering vessel and, for a mothership processor vessel, the position of that vessel and the estimated catch receipt weight, must be recorded in the Daily Cumulative Production Logbook within two hours after the set, codend or catch is received. All other information required in the Daily Cumulative Production Logbook as described in this section must be recorded by noon of the day following the day the catch receipt or production occurred. Information concerning product amounts must be recorded in the Daily Cumulative Production Logbook by noon of the day following the processing of the product regardless of when the set, codend or catch is received.

SUBMISSION OF THE DAILY CUMULATIVE PRODUCTION LOGBOOK

The operator of a processor vessel or manager of a shoreside processing facility must submit a copy of the daily cumulative production logbook on a quarterly basis to the NMFS Alaska Enforcement Division. The copy of the Daily Cumulative Production Logbook for activities conducted during the

first quarter must be submitted by May 1 of that year; for the second quarter, by August 1 of that year; for the third quarter, by November 1 of that year; and for the fourth quarter, by February 1 of the following year.

## PRODUCT TRANSFER LOGBOOKS

The operator of each processor vessel and the manager of each shoreside processing facility must record, in a separate transfer log, each loading, offloading, shipment, or receipt of any processed groundfish product, including quantities transferred or off loaded outside the EEZ, within any state's territorial waters, or within the internal waters of any state or at any shoreside facility. Product transfer information must be recorded in the product transfer log within twelve hours of the completion of the transfer.

The transfer logbook must have a record of the following information:
(Note: This may not be a complete list)

- The page number: This number must be consecutive beginning with page one for the first transfer occurring after the start of the fishing year and continuing throughout the logbook for the remainder of the fishing year.

- The time, date and location: This information must include the time and date when the transfer began and the time and date when it is completed. If the product transfer logbook is maintained for a processor vessel, this information must include the location of the transfer. If the processor vessel is at sea, the location of the transfer must be specified in geographic coordinates. If the processor vessel is in port, the location of the transfer must be specified by identifying that port.

- Identification information: When product transfer logbook is maintained for a processor vessel, the identification information must include the vessel's name, the Federal permit number, the ADF&G vessel number and radio call sign. When the product transfer logbook is maintained for a shoreside processing facility, the identification information must include the name of the facility, the location of the facility, and the ADF&G Processor Code number.

- Company representative information: Company representative information must include the name of a person representing the processor vessel or facility, the telephone number for that person, and either a telex or facsimile number for that person.

- Transfer information: The transfer information must include the type of transfer involved and must specify whether the transfer is a shipment or offloading or whether it is a receipt or loading

- Second party information: Second party information must include information concerning the other parties involved in the transfer including: the name, Federal permit number, radio call sign of any vessel involved, the name of any shipping agent involved, and the name and location of any processing facility involved. If the transfer involves a shipment, the second party information must include the destination of the carrier or vessel receiving the fish product.

- The fish product weight of each product transferred, including species and product-type codes, total number of production units transferred, and the estimated weight of each production unit type.

SUBMISSION OF PRODUCTION

An operator of a processor vessel and a manager of a shoreside processing facility must submit a copy of the product transfer logbook to the Regional Administrator for each week when any product transfer activity occurred. Copies of the product transfer logbooks must be received by the Regional Administrator within one week after the week the transfer occurred.

# REPORTING REQUIREMENTS FOR PROCESSING VESSELS AND PLANTS - §679.5

The operator or manger of any processing vessel or shoreside processor of the United States that harvests or processes groundfish caught from any reporting area in the GOA or the BSAI must, in addition to the other requirements of this section, comply with the following requirements:

## ALASKA GROUNDFISH CHECK-IN/CHECK-OUT NOTICES

- Requirements. Before a processing vessel begins any fishing activity or receives any groundfish in the GOA or the BSAI reporting areas, the operator of the processing vessel must provide a check-in notice to the Regional Administrator. When any processing vessel completes any fishing activity or receipt of groundfish in any GOA and BSAI reporting area, the operator of the processing vessel must provide a check-out notice to the Regional Administrator. When any shoreside processing facility completes receipt of groundfish from any GOA or BSAI reporting area, the manager of the processing facility must provide a check-out notice to the Regional Administrator. The check-in/check- out notices must be provided by means and in the manner prescribed by Regional Administrator.

The notice of check-in or check-out must include the following information:
(Note: This may not be a complete list)

- The processor vessel's name
- Radio call sign and,
- if applicable, Federal groundfish permit number; or the shoreside processor's name and ADF&G processor code number.
- Time and date information.
  - ◊ If the notice concerns the commencement of fishing activity or the receipt of groundfish by a processor vessel, this information must include the time (to the nearest hour, ALT) and date of when these activities will begin.
  - ◊ If the notice concerns the completion of fishing activities or the receipt of groundfish by a processor, this information must include the time (to the nearest hour, ALT) and date when these activities ceased.

- ◊ If the notice concerns the completion of groundfish receipts by a shoreside processing facility, this information must include the date when this activity ceased.
- Processor Vessel Location. The reporting area and the position in geographic coordinates where the fishing activity or receipt of groundfish is expected to occur or has occurred.

## WEEKLY PRODUCTION REPORTS

PROCESSOR VESSELS

The operator of a processor vessel which conducts fishing activity in, or receives groundfish from, any GOA or BSAI reporting area must submit weekly production reports. Weekly production reports are required from a processor vessel beginning from the start date specified in the check-in notice and ending after all groundfish and fish products prepared with any groundfish harvested from any GOA or BSAI reporting area are off loaded. Weekly production reports are required during this period even if no groundfish are harvested, received, or processed during a particular week. Weekly production reports for such weeks should specify zero amounts harvested, received, or produced.

SHORESIDE PROCESSORS

The manager of a shoreside processing facility that receives groundfish from any GOA or BSAI reporting area must submit weekly production reports beginning with the first week of a fishing year that groundfish is received by the facility and continuing until the end of the year or until the date specified in a check-out notice. Weekly production reports are required during this period even if no groundfish are harvested, received, or processed during a particular week. Weekly production reports for such weeks should specify zero amounts received or produced.

Weekly production reports must have a separate page for each gear type used and each page must include the following information: (Note: This may not be a complete list)

- The name of the person submitting the report
- A telephone number, and either a facsimile or telex number for that person.
- Identification information:
  - ◊ The name and radio call sign for a processor vessel.
  - ◊ The plant name for a shoreside processing facility.
- Federal permit number or ADF&G processor code, whichever is applicable.
- The end date of the weekly reporting period.
- The gear type used to harvest the groundfish catch or catch receipt (pelagic trawl, non-pelagic trawl, hook and line, jig/troll, or pot gear).
- The reporting area or areas from which groundfish was harvested and retained during the weekly reporting period, with the reporting area(s) specified for each groundfish species or species group.
- The number of days when fishing activities were conducted and when fish were received.
- The total estimated catch weight or catch receipt for each reporting area to the nearest metric ton (mt).
- The fish product weight of each product produced during the weekly reporting period, including species and product-type codes, for each groundfish species or species group for which a total allowable catch (TAC) is specified. The one exception is within the category "other species."

This group must be reported by the species or species group. All weights in the Weekly Production Report must be reported to at least the nearest 0.1 mt.

- The amount of each groundfish species, species group, or prohibited species listed, which is discarded in related fishing operations during the weekly reporting period.

SUBMISSION OF WEEKLY PRODUCTION REPORTS

The weekly production reports must be submitted to the Regional Administrator. Weekly production reports must be received by the Regional Administrator within 48 hours after the end of the applicable weekly reporting period.

## DAILY PRODUCTION REPORT

When requested to do so by the Regional Administrator, processor vessels and shoreside processing facilities that conduct fishing activity in or receive groundfish from any GOA or BSAI reporting area must submit Daily Production Reports.

The Daily Production Reports must include the following information:
(Note: This may not be a complete list)

- The name of the representative submitting the report,
- The telephone number of the submitter, and either a facsimile or telex number for that person.
- Identification information.
  Processor vessels must include:
  - ◊ The name,
  - ◊ radio call sign, and
  - ◊ Federal permit number of that vessel.

  Shoreside processing facility must include:
  - ◊ The name, and
  - ◊ The ADF&G processor code number of the plant.
- The gear type used to harvest the groundfish catch or catch receipt
  - ◊ Pelagic trawl,
  - ◊ Non-pelagic trawl,
  - ◊ Hook-and-line,
  - ◊ Pot,
  - ◊ Jig/troll
  - ◊ Other.
- The date(s) of groundfish harvest or receipt.
- For each day, the report must include groundfish catch for each species or species group listed by area(s).
- The fish product weight of each product produced during a day, including species and product-type codes. Each groundfish species or species group, except the "other species" category must be reported by TAC species or species group.
- The amount of each groundfish species or species group that is discarded in related fishing operations during a day.

SUBMISSION OF DAILY PRODUCTION REPORTS

Daily Production Reports must be submitted to the Regional Administrator through the means and in the manner prescribed by the Regional Administrator.

# GENERAL PROHIBITIONS - §600.725, §679.7

IT IS UNLAWFUL FOR ANY PERSON TO :

- Fish for groundfish in the BSAI or GOA without a valid permit.
- Forcibly assault, resist, impede, intimidate, or interfere with an observer.
- Interfere with or bias the sampling procedure employed by an observer, including physical, mechanical, or other sorting or discarding of catch before sampling.
- 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.
- 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.
- 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.
- 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.
- Conduct any fishing contrary to a notice of inseason adjustment. These include:
  - ◊ Closure, extension, or opening of a fishery
  - ◊ Closures of statistical areas or portions of statistical areas
  - ◊ Modification of allowable gear
  - ◊ Adjustment of Total Allowable Catch and Prohibited Species Limits (caps)

- Retain quantities of pollock roe that are greater than that which is defined in the general limitation section titled "Summary of the Roe Stripping Regulation."
- 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 more than one "inshore component" category. These categories include:
  - ◊ All shoreside processor operations
  - ◊ All processing vessels that average less than 18mt per week of processed GOA cod and pollock, and are less than 125 feet.
  - ◊ All processor vessels that process at a single geographic location during a year.

- Operate a vessel in both the "inshore " and "offshore component" of a BSAI or GOA directed pollock fishery during the same fishing year.

- Operate a vessel in both he "inshore " and "offshore component" of a GOA directed Pacific cod fishery during the same fishing year.
- Use a vessel for which a BSAI or GOA groundfish permit was issued to catch, process, or possess fish that were caught in the Donut Hole during the fishing year for which the permit was issued.
- Use a vessel to fish with trawl gear in areas of BSAI Zone 1 that are closed to trawl gear unless NMFS authorizes this after consultation with the Council.
- Use a vessel to fish with trawl gear in areas of BSAI Zone 1 that are closed to trawl gear without fully complying with a scientific data collection and monitoring program.
- With respect to halibut caught while using hook-and-line gear to fish for groundfish, the following actions are prohibited:
  - ◊ Fail to release the halibut outboard a vessel's rails;
  - ◊ Release the **halibut** by any means other than one of the following **careful release** methods:
    - ♦ 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; or
  - ◊ Allow the halibut to contact the vessel, if such contact causes, or is capable of causing, the *halibut to be stripped from the hook.*
- Have on board, at any particular time, 20 or more crab of any species which have a width of more than 1.5 inches (38 millimeters) at the widest dimension, caught with trawl gear during the following situations:
  - ◊ BSAI - When directed fishing for pollock with nonpelagic trawl gear is prohibited.
  - ◊ GOA - When directed fishing for groundfish, except by vessels using **pelagic trawl** gear for pollock, is prohibited.
- Discard any salmon taken incidental 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. *This regulation is known as* ***Salmon Retention.***

# ENFORCEMENT - §600.7 § 600.8

Groundfish regulations may be enforced by authorized officers of the United States Coast Guard, Special Agents of the National Marine Fisheries Service, deputized officers of the Alaska Department of Public Safety, Fish & Wildlife Protection Division, or the Alaska Department of Fish & Game. The operator of, or any other person aboard a fishing vessel must comply with instructions and signals issued by an authorized officer to stop the vessel and to facilitate safe boarding and inspection of the vessel, its gear, equipment, fishing records, and catch. Please note that groundfish observers are not authorized enforcement officers.

IT IS UNLAWFUL FOR ANY PERSON TO :

- Fail to comply immediately with enforcement and boarding procedures.
- Refuse to permit an authorized enforcement official to board a fishing vessel for the purpose of conducting any search or inspection in connection with the enforcement of groundfish regulations.
- Dispose of fish or parts thereof or other matter in any manner, after any communication or signal from an authorized officer, or after the approach by an authorized officer or an enforcement vessel.
- Forcibly, assault, resist, oppose, impede, intimidate, or interfere with any authorized enforcement officer in the conduct of any search or inspection of a vessel.
- Interfere with, delay, or prevent by any means, the apprehension of another person, knowing that such person has committed any act prohibited by the Magnuson-Stevens Act.
- Resist a lawful arrest.

# NOTICES OF CLOSURE

Notices of closures are issued by NMFS when it is determined that the total allowable catch for any species category in any regulatory area or district has been or will be reached. The notice will prohibit directed fishing for that species or declare such species prohibited in all or part of the area or district. During the time that such notice is in effect, the operator of every vessel must minimize the catch of that species in the area or district affected.

Inseason adjustments are issued by NMFS when it is determined that it is necessary to prevent overfishing or to rectify incorrectly specified harvest limits. An inseason adjustment may close or extend a season in all or part of an area or district, modify the allowable gear to be used in all or part of a area or district, and/or adjust the total allowable catch limit.

Notices of closures and inseason adjustment will, in addition to being published in the Federal Register, normally be released to the public news media and are posted on the NMFS computer bulletin board. [http://161.55.184.53/akr-home.htm]

# 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.

Prohibited species include:

- Pacific salmon (All species.)
- steelhead trout
- 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 part 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.

## SALMON RETENTION REGULATIONS - §679.21(c)

The operator of a vessel and the manager of a shoreside processing operation in a directed BSAI groundfish fishery by vessels using trawl gear must not discard any incidentally taken salmon until the salmon has been enumerated by a NMFS-certified observer, and the collection of any scientific data or biological samples from the salmon has been completed. Exceptions to this regulation include mothership processing vessels and shoreside processing plants that are exempt from obtaining observer coverage.

- 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.
- 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 .
- 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 consistent with this paragraph. 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.

# ROE STRIPPING REGULATIONS - §679.20(g)

Pollock roe retained onboard a vessel at any time during a fishing trip must not exceed seven percent of the total round-weight equivalent of pollock, as calculated from the primary pollock product onboard the vessel during the same fishing trip as defined below. Determinations of allowable retention of pollock roe will be based on the amounts of pollock harvested, received, or processed during a single fishing trip. Pollock or pollock products from previous fishing trips may not be used to determine the allowable retention of pollock roe for that vessel.

1. For purposes of this regulation, only one primary product per fish, other than roe, may be used to calculate the round-weight equivalent. The primary product must be distinguished from ancillary products in the daily cumulative production logbook. Ancillary products are those such as meal, heads, internal organs, pectoral girdles, or any other products which may be made from the same fish as the primary product.

2. Only the following product types and standard product recovery rates may be used to calculate round-weight equivalents for pollock for purposes of this subparagraph (see **Fig. 10-2.**)

| Product Code | Product Description | Standard Product Recovery Rate |
|---|---|---|
| 07 | Headed and gutted, western cut | .65 |
| 08 | Headed and gutted, eastern cut | .56 |
| 10 | Headed and gutted, without tail | .50 |
| 20 | Fillets with skin and ribs | .35 |
| 21 | Fillets with skin on , no ribs | .30 |
| 22 | Fillets with ribs, no skin | .30 |
| 23 | Fillets, skinless, boneless | .21 |
| 24 | Deep skin fillets | .13 |
| 30 | Surimi | .16 |
| 31 | Mince | .22 |
| 32 | Meal | .17 |

**Fig.10-2.** Product Types and Standard Product Recovery Rates

3. A vessel is engaged in a fishing trip when commencing or resuming the harvesting, receiving, or processing of pollock until: the transfer or offloading of any pollock or pollock product, the vessel leaves the subarea or district where the fishing activity commenced, or the end of a weekly reporting period, whichever comes first.

4. To calculate the amount of pollock roe that can be retained onboard during a fishing trip, first calculate the round-weight equivalent by dividing the total amount of primary product onboard by the appropriate product-recovery rate. To determine the amount of pollock roe that can be retained during the same fishing trip, multiply the round-weight equivalent by 0.07. The result is the maximum amount of pollock roe that can be onboard during that trip. Pollock roe retained onboard from previous fishing trips cannot be counted.

If two or more products, other than roe, are made from different fish, then round-weight equivalents are calculated separately for each product. Round-weight equivalents are then added together, and the sum multiplied by 0.07 to determine the maximum amount of pollock roe that can be retained onboard a vessel during a fishing trip. However, if two or more products, other than roe, are made from the same fish, then the maximum amount of pollock roe that can be retained during a fishing trip is determined from the primary product.

# GROUNDFISH OBSERVER PROGRAM - §679.50

**(Applicable through December 31, 1998)**

GENERAL

Operators of vessels possessing a Federal fisheries permit under § 679.4(b)(1) and processors that possess a Federal processor permit under § 679.4(f)(1), must comply with this section. The owner of a fishing vessel subject to this part or a processor subject to this part must ensure that the operator or manager complies with this section and is jointly and severally liable for such compliance. Observer coverage requirements specified under this section are in addition to observer coverage requirements specified at § 679.32(c) for vessel operators and processors participating in CDQ fisheries.

OBSERVER REQUIREMENTS FOR VESSELS

Motherships: A mothership of any length that processes, 1,000 mt or more in round weight or round-weight equivalent of groundfish during a calendar month is required to have an observer aboard the vessel each day it receives or processes groundfish during that month. A mothership of any length that processes from 500 mt to 1,000 mt in round weight or round-weight equivalent of groundfish during a calendar month is required to have an observer aboard the vessel at least 30 percent of the days it receives or processes groundfish during that month. Each mothership that receives pollock harvested by catcher vessels in the catcher vessel operational area during the second pollock season that starts on September 1, is required to have a second observer aboard, for each day of the second pollock season until the chum salmon savings area is closed, or until October 15, whichever occurs first.

Catcher/processors or catcher vessels: All vessels of 125 feet length overall (LOA) or longer are required to carry an observer at all times when participating in the groundfish fishery, except for a vessel fishing with pot gear for groundfish. Vessels from 60 to 124 feet LOA and vessels fishing for groundfish with pot gear will be required to carry certified observers during 30 percent of its fishing days in each calendar quarter of the year in which they fish more than 3 days. Vessels under 60 feet LOA must carry an observer if required by the Regional Administrator. Each 30% coverage vessel (vessels from 60 to 124 feet LOA and each vessel fishing for groundfish with pot gear) that participates for more than 3 days in a calendar quarter in a directed groundfish fishery must carry an observer during at least one entire fishing trip in that calendar quarter for each groundfish fishery category. Vessels fishing with hook-and-line gear must carry an observer during one entire fishing trip in the Eastern Regulatory Area of the Gulf of Alaska during each calendar quarter the vessel participates in a directed groundfish fishery in the Eastern Regulatory Area.

OBSERVER REQUIREMENTS FOR SHORESIDE PROCESSING PLANTS

Shoreside processing facilities that process 1,000 mt or more, in round weight or round weight equivalents, of groundfish during a calendar month are required to have a NMFS certified observer present at the facility each day it receives or processes groundfish during that month. A shoreside processing facility that processes 500 mt to 1,000 mt, in round weight or round weight equivalents, of groundfish during a calendar month is required to have an NMFS certified observer present at the facility at least 30 percent of the days it receives or processes groundfish during that month. Facilities which receive less than 500 mt during a calendar month are not required to have an observer. A shoreside processing facility that offloads pollock at more than one location on the same dock and has distinct and separate equipment at each location to process those pollock and that receives pollock harvested by catcher vessels in the catcher vessel operational area during the second pollock season that starts on September 1, is required to have an observer, in addition to the observer required above, at each location where pollock is offloaded, for each day of the second pollock season until the chum salmon savings area is closed or October 15, whichever occurs first.

VESSEL RESPONSIBILITIES

**An operator of a vessel required to carry one or more observers must:**

*(i) 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.

*(ii) 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;
  (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.

*(iii) Transmission of data.*

Facilitate transmission of observer data by:

- Allowing observers to use the vessel's communication equipment and personnel, on request for entry, transmission, and receipt of work-related messages, at no cost to the observers or the United States.

- Ensuring that each mothership that is required to have a second observer aboard, is equipped with INMARSAT Standard A satellite communication capabilities and cc:Mail remote. The operator of each mothership shall also make available for the observer's use the following equipment compatible therewith and having the ability to operate the NMFS-supplied data entry software program: A personal computer with 486 or greater capacity processing chip, a DOS 3.0, or a successor version of DOS with 10 megabytes free hard disk storage, and 8 megabytes RAM. The operator of the mothership is responsible for obtaining the NMFS-supplied data entry software and for ensuring that all software and hardware required for observers to enter and transmit data is fully functional and operational.

*(iv) 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.

*(v) 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.

*(vi) 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.

*(vii) 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.

*(viii) 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.

*(ix) 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:**

*(i) 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.

*(ii) Operations information.*

- Notify the observers, as requested, of the planned facility operations and expected receipt of groundfish prior to the receipt of those fish.

*(iii) Transmission of data.*

- Allow observers to use the shoreside processor's communication equipment and personnel, on request, for the entry, transmission, and receipt of work-related messages, at no cost to the observers or the United States.

- Ensure that each shoreside processor that is required to have an additional observer, makes available to the observer the following equipment or equipment compatible therewith: A personal computer with a 486 or greater capacity processing chip with at least a 9600-baud modem and a telephone line. The personal computer must be equipped with a mouse, Windows version 3.1, or a program having the ability to operate the NMFS-supplied data entry software program, 10 megabytes free hard disk storage, and 8 megabytes RAM. The manager of the shoreside processor is responsible for obtaining the NMFS-supplied data entry software and for ensuring that all software and hardware required for observers to enter and transmit data is fully functional and operational.

*(iv) 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.

*(v) 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.

*(vi) 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.

CONTRACTOR RESPONSIBILITIES

**Responsibilities and duties of observer contractors include but are not limited to the following:**

(iv) Providing observer's salary, benefits and personnel services in a timely manner.

(v) 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.

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.

(vii) Maintaining communications with observers at sea and shoreside facilities. Each observer contractor 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.

(ix) Ensuring that observers complete mid-deployment data reviews when required.

(x) Ensuring that observers complete debriefing as soon as possible after the completion of their deployment and at locations specified by the Regional Director.

(xi) Ensuring all data, reports, and biological samples from observer deployments are complete and submitted to NMFS at the time of the debriefing interview.

(xii) 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.

(xiv) Providing the following to the Observer Program Office by electronic transmission (e-mail) or by fax.

- Copies of "certificates of insurance" that name the NMFS Observer Program Task 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 Worker's Compensation Act ($1 million minimum).
- States Workers' Compensation as required.
- Commercial General Liability with contractual endorsements optional.
- Reports of observer harassment, concerns about vessel or processor safety, or observer performance problems must be submitted within 24 hours after the observer contractor becomes aware of the problem.

**Conflict of interest:**

(ii) Observer contractors 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.

## GENERAL PROHIBITIONS §679.7(g)

**It is unlawful for any person to do any of the following:**

- Forcibly assault, resist, oppose, impede, intimidate, sexually harass, bribe, or interfere with an observer.
- Interfere with or bias the sampling procedure employed by an observer, including physical, mechanical, or other sorting or discarding any catch before sampling.
- amper with, destroy, or discard an observer's collected samples, equipment, records, photographic film, papers, or personal effects without the express consent of the observer.
- Prohibit or bar by command, impediment, threat, coercion, or refusal of reasonable assistance, an observer collecting samples, conducting product recovery rate determinations, making observa-

tions, or otherwise performing the observer's duties. 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.

- 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 storage of the finished product.
- Fish for or process fish without observer coverage required under §679 Subpart E.

## SEASONS - §679.23

1. Fishing for groundfish in the Gulf of Alaska, Bering Sea, and Aleutian Islands is authorized from 0001 hours Alaska local time (A.l.t.), January 1, through 2400 hours, A.l.t., December 31, subject to other provisions of this part, except as provided in paragraphs (3) through (6) of this section.

2. The time of all openings and closures of fishing seasons, other than the beginning and end of the calendar fishing year, is 1200 hours, A.l.t.

3. Notwithstanding other provisions of this part, fishing for groundfish with trawl gear in the BSAI and GOA is prohibited from 0001 hours, A.l.t., January 1, through 1200 hours, A.l.t., January 20.

4. GOA Pollock: Subject to other provisions of this part, directed fishing for pollock in the Western and Central Gulf Regulatory Areas is authorized from January 1 to April 1, June 1 to July 1, and September. 1 to December 31.

5. Directed fishing for arrowtooth flounder and Greenland turbot in the BSAI is authorized from 1200 hours, A.l.t., May 1, through 2400 hours, A.l.t., December 31, subject to other provisions of this part.

## GEAR LIMITATIONS - §679.24

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 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 Bering Sea and Aleutian Islands management area (BSAI) and the Gulf of Alaska (GOA), and operators of hook-and-line vessels that are required to obtain a Federal permit and are fishing for groundfish in Alaskan waters adjacent to the BSAI and to the GOA, must comply with the following seabird avoidance measures. The operator of a vessel is not required to comply with the seabird avoidance measures whenever the round-weight equivalent of halibut retained on board exceeds the round-weight equivalent of groundfish retained on board.

Seabird Avoidance Measures:

(1) The operator of a vessel described above must conduct fishing operations in the following manner:
   (i) Use hooks that when baited, sink as soon as they are put in the water.
   (ii) Any discharge of offal from a vessel must occur in a manner that distracts seabirds, to the extent practicable, from baited hooks while gear is being set or hauled. The discharge site on board a vessel must either be aft of the hauling station or on the opposite side of the vessel from the hauling station.
   (iii) Make every reasonable effort to ensure that birds brought on board alive are released alive and that wherever possible, hooks are removed without jeopardizing the life of the birds.
   (iv) Employ one or more of the following seabird avoidance measures:
      (A) Tow a streamer line or lines during deployment of gear to prevent birds from taking hooks;
      (B) Tow a buoy, board, stick or other device during deployment of gear, at a distance appropriate to prevent birds from taking hooks. Multiple devices may be employed;
      (C) Deploy hooks underwater through a lining tube at a depth sufficient to prevent birds from settling on hooks during deployment of gear; or
      (D) Deploy gear only during the hours specified below, using only the minimum vessel's lights necessary for safety.

HOURS THAT HOOK-AND-LINE GEAR CAN BE DEPLOYED FOR SPECIFIED LONGTITUDES [Hours are Alaska local time.] (See **Table 10-1**.)

| Calendar Month | Longtitude | | |
|---|---|---|---|
| | Shoreward to 150° W | 151 to 165° W | 166 to 180° W |
| January | 1800–0700 | 1900–0800 | 2000–0900 |
| February | 1900–0600 | 2000–0700 | 2100–0800 |
| March | 2000–0500 | 2100–0600 | 2200–0700 |
| April | 2100–0400 | 2200–0500 | 2300–0600 |
| May | 2200–0300 | 2300–0400 | 2400–0500 |
| June | (\1\) | (\1\) | (\1\) |
| July | (\2\) | (\2\) | (\2\) |
| August | 2200–0400 | 2300–0500 | 2400–0600 |
| September | 2000–0500 | 2100–0600 | 2200–0700 |
| October | 1900–0600 | 2000–0700 | 2100–0800 |
| November | 1800–0700 | 1900–0800 | 2000–0900 |
| December | 1700–0700 | 1800–0800 | 1900–0900 |

**Table 10-1**. Hours for Hook-And-Line Gear in Specified Longtitudes
Notes: (\1\) This measure cannot be exercised during June.
(\2\) This measure cannot be exercised during July.

## 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.

# GEAR AND AREA RESTRICTIONS FOR THE GULF OF ALASKA - §679.22(b)

PELAGIC TRAWL RESTRICTION

No person may trawl in waters of the EEZ within the following areas in the vicinity of Kodiak Island from a vessel having any trawl other than a pelagic trawl, either attached or on board.

Alitak Flats, Towers, Marmot Flats Areas For general location see the map below. For the exact coordinates please see the Commercial Fishing Regulations for U.S. Fishermen Fishing for Groundfish in the EEZ in the Gulf of Alaska.

10-3
***Figure 0** View of restricted areas in the vicinity of Kodiak Island.*

From February 15 to June 15, no person may trawl in any of the following areas in the vicinity of Kodiak Island from a vessel having any trawl other than a pelagic trawl either attached or on board:

Chirikof Island and Barnabas Areas: For general location see map above. For the exact coordinates please see the Commercial Fishing Regulations for U.S. Fishermen Fishing for Groundfish in the EEZ in the Gulf of Alaska.

Each person trawling in any area limited to pelagic trawling under of this section must maintain in working order on that trawl, a properly functioning, recording net-sounder device and must retain all net-sounder recordings aboard the fishing vessel during the fishing year. No person trawling in any area limited to pelagic trawling under this section will allow the footrope of that trawl to be in contract with the seabed for more than ten percent of the period of any tow, as indicated by the net-sounder device.

# GEAR AND AREA RESTRICTIONS FOR THE BERING SEA AND ALEUTIAN ISLANDS - §679.22(a)

No fishing with trawl gear is allowed at any time in statistical area 512 except as described in the following paragraph.

Fishing for Pacific cod with trawl gear may be allowed in that portion of area 512 that lies south of a straight line connecting the coordinates 56°43' N latitude, 160°00' W longitude and 56°00' N latitude, 162°00' W longitude, provided that such fishing is in compliance with a scientific data collection and monitoring program, established by the Regional Administrator.

No fishing with trawl gear is allowed at any time in that part of area 516 during the period March 15 through June 15 except as described in the following paragraph.

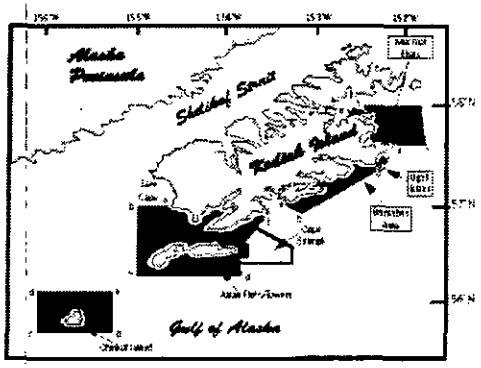



**Fig. 10-3.** Kodiak Island

During the period March 15 through June 15, fishing for Pacific cod with trawl gear may be allowed in that portion of area 516 that lies south of a straight line connecting the coordinates 55°38' N latitude, 163°00' W longitude, and 56°00' N latitude, 162°00' W longitude provided that such fishing is conducted in full compliance with a scientific data collection and monitoring programs established by the Regional Administrator.

ROUND ISLAND AND THE TWINS

From April 1 through September 30 of any fishing year, vessels are prohibited from fishing between 3 and 12 miles seaward of the baseline used to measure the territorial sea around islands named Round Island and Twins as shown on National Ocean Survey Chart 16315, and around Cape Pierce (58°33' N latitude, 161°43' W longitude).

CATCHER VESSEL OPERATIONAL AREA

Processor vessels in the "offshore component" of the groundfish fishery may not catch pollock in excess of the directed fishing standard for pollock during the second seasonal allowance of pollock in the Bering Sea subarea south of 56°00' N and between 163°00' and 168°00' W longitude. ~~(See diagram below.)~~

Processor vessels in the "offshore component" that do not catch groundfish but process pollock that is caught in a directed fishery for pollock by catcher vessels, may operate within this area to process the second seasonal allowance of pollock.

Offshore processor vessels that catch or process groundfish in directed fisheries for species other than pollock may operate within this area.

Offshore processor vessels are prohibited from conducting directed fishing for pollock in the CVOA unless they are operating under a Community Development Program approved by NMFS.

CHUM SALMON SAVINGS AREA

Trawling is prohibited from August 1 through August 31 in the area defined by straight lines connecting the following coordinates in the order listed:

56°00' N 167°00' W
56°00' N 165°00' W
55°30' N 165°00' W
55°30' N 164°00' W
55°00' N 164°00' W
55°00' N 167°00' W
56°00' N 167°00' W

When the Regional Administrator determines that 42,000 non-chinook salmon have been caught by vessels using trawl gear during the time period of August 15 through October 14 in the CVOA, NMFS will prohibit fishing with trawl gear for the period of September 1 through October 14 in the Chum Savings Area.

# 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 which is also known as the Vessel Incentive Program is based on observed data. For the purposes of this program, observed data refers to data collected by observers who are certified under the NMFS Observer Program.

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.

FISHING MONTH

- Fishing month refers to a time period based on weekly reporting periods and is as follows: Each fishing month begins on the first day of the first weekly reporting period that has at least 4 days in the associated calendar month. Fishing month ends on the last day of the last weekly reporting period that has at least 4 days in that same calendar month. Dates of each fishing month are announced in the Federal Register.

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

Establishment of 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. 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.

Bycatch rate standards or adjustments to such standards specified under this section will not take effect until the Secretary has published the proposed bycatch rate standards or adjustments to such standards in the Federal Register for public comment for a period of 30 days unless the Secretary finds for good cause that such notice and public comment are impracticable, unnecessary, or contrary to the public interest.

VESSEL BYCATCH RATES

For the purposes of this program observed data collected for each haul sampled during a day will include the date, position (Federal reporting area) 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. Observed data was defined earlier for this section and is the CMA, CMB, 2US, and 3US data.

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.

COMPLIANCE WITH BYCATCH RATE STANDARDS

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.

# WESTERN ALASKA COMMUNITY DEVELOPMENT PROGRAM - CDQ § 679 Subpart C

CDQ RECORDKEEPING

In addition to all other recordkeeping and reporting requirements, operators of all vessels fishing CDQ's must record all CDQ catch, including all groundfish species and prohibited species caught, taken or harvested in the tow or set. Such data is to be recorded in the Daily Fishing Logbook, and the Daily Cumulative Production Logbook for processor vessels. A separate page must be used for CDQ catch, and the CDQ identification number must be clearly written on the sheet. The manager of a shoreside processing facility and the operator of a processor vessel must record all CDQ receipts, including receipts of all groundfish species and prohibited species caught, taken or harvested in the tow or set, on a Weekly Production Report sheet. A separate page must be used for CDQ catch, and the CDQ identification number must be clearly written on the sheet.

## OBSERVER COVERAGE REQUIREMENTS

Vessel operators and processors participating in CDQ fisheries must comply with the following requirements for observer coverage:

- Each shoreside processing operation must have one NMFS certified observer present at all times while receiving and processing groundfish harvested under a CDQ.
- More than one observer can be required by the Regional Administrator if:
- The CDQ delivery schedule requires an observer to be on duty more than 12 hours in a 24 hour period.
- Simultaneous deliveries by more than one vessel cannot be monitored by one observer.
- One observer is not capable of adequately monitoring CDQ deliveries.
- Each Processor vessel must have two NMFS certified observers at all times while groundfish harvested under a CDQ is harvested, processed, or received from another vessel.
- Each catcher vessel delivering sorted groundfish harvested under a CDQ must have a NMFS certified observer onboard at all times while the vessel is participating in a CDQ fishery, regardless of vessel length.

## EQUIPMENT AND OPERATIONAL REQUIREMENTS

**Shoreside Processing Facilities:**

- Groundfish harvested in the CDQ fisheries must be recorded and weighed on a scale certified by the State of Alaska. Such a scale must measure catch weights at all times to at least 95% accuracy, as determined by a NMFS certified observer or authorized officer. The scale and scale display must be simultaneously visible by the observer.
- Observers must be provided access to the scale used to weigh groundfish landings.
- Printouts of scale measurements of each delivery must be made available to observers and be maintained in the shoreside processing operation office for as long after the fishing year as product from fish harvested during that year are retained in the shoreside processing operation.
- The manager of each shoreside processing facility must notify the observer(s) of the offloa schedule of each CDQ groundfish delivery at least 1 hour prior to offloading. This is necessary to provide the observer an opportunity to monitor the weighing of the entire delivery.

**Vessel Requirements:**

- Each processor vessel participating in the CDQ fishery must estimate the total weight of groundfish catch by the specified volumetric procedures, or must weight the catch prior to sorting.

## VOLUMETRIC ESTIMATES

- Bins for volumetric estimates must:
  - ◊ be accurately measured and permanently marked in 10 cm intervals on all sides of the bins.
  - ◊ must have markings that are visible and readable from outside the bin.
  - ◊ have adequate lighting to allow markings to be read from outside the bin.
- Prior to harvesting or receiving CDQ groundfish a certified table must be submitted to the Observer Program that indicates the volume of each bin in cubic meters for each 10cm increment. All bin certification documentation must be dated and signed by the certifier.

- Vessel operators must notify observers prior to any removal or addition of fish from each bin used for volumetric measurements of catch. Such notice is to be made in such a manner that allows an observer to take bin volume measurements prior to fish being removed from or added to a bin.
- Once a volumetric measurement has been taken additional fish may not be added to the bin until at least half the original volume has been removed. Fish may not be removed from or added to a bin used for volumetric measurements of catch until an observer indicates that bin volume measurements have been completed and any samples of catch required by the observer have been taken.
- Fish from separate hauls or deliveries from separate harvesting vessels may not be mixed in any bin used for volumetric measurements.

SCALE ESTIMATES

- Any scale used on a processor vessel to weigh groundfish harvested in the CDQ fisheries must measure catch weights to at least 95% accuracy at all times as determined by a NMFS certified observer or authorized officer. The scale must be equipped with a motion compensation device to account for vessel acceleration, roll, pitch, and vibration movement. The scale and scale display must be visible by the observer simultaneously.
- Printouts of scale measurements of each weight must be made available to the observer and be maintained on board the vessel for the duration of the fishing year or for as long after a fishing year as products from fish harvested during that year are retained aboard the vessel.

# CONTACT POINTS

**NMFS Regional Administrator**
P.O. Box 21668
Federal Building, Room 450
Juneau, Alaska 99802
(907) 586-7221

**NMFS Fisheries Management Division**
P.O. Box 21668
Federal Building, Room 450
Juneau, Alaska 99802
(907) 586-7228,FAX: (907) 586-7131
TELEX: 62296000 (reply NMFS AKR JNU)

**NMFS Office of Enforcement**

Juneau
P.O. Box 21668
Federal Building, Room 413
Juneau, Alaska 99802
(907) 586-7225, FAX:General (907)586-7200, IFQ (907) 586-7313

Kodiak
1211 Gibson Cove Road
Kodiak, Alaska 99615
(907) 486-3298, FAX: (907)486-6868

Dutch Harbor
P.O. Box 368
Dutch Harbor, AK 99692
(907) 581-2061, FAX:(907) 581-2066

| | |
|---|---|
| Sitka | P.O. Box 2340<br>Post Office Building<br>Sitka, Alaska 99835<br>(907) 747-6940, FAX:(907) 747-6541 |
| Anchorage | Fed. Bldg. & U.S. Court House<br>222 West 7th Avenue<br>Anchorage, Alaska 99513<br>(907) 271-5006, FAX (907) 271-4915 |
| Homer | P.O. Box 360<br>Homer, AK. 99603<br>(907)235-2337, FAX: (907)235-2209 |
| Yakutat | P.O. Box<br>Yakutat, AK<br>(907) 784-3613, FAX: 907-784-3615 |
| Seward | PHONE: (907)224-5348, FAX: (907)224-5349 |
| Cordova | PHONE: (907)424-3578, FAX: (907)424-3579 |
| Petersburg | PHONE: (907)772-2285, FAX: (907)772-2287 |
| Ketchikan | PHONE: (907)247-5804, FAX: (907)247-5810 |

North Pacific Fishery Management Council, Anchorage (907) 271-2809

NMFS Bulletin Board (907) 586-7259; Bulletin Board assistance (907) 586-7229

NMFS Office of Enforcement HOTLINE NUMBER: 1-800-853-1964

# MARINE MAMMAL REGULATIONS

Prepared by Observer Program Staff, 1995

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 non-food 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 byproducts 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:
(1) Any person, vessel, or conveyance subject to the jurisdiction of United States to take any marine mammal on the high seas, and
(2) 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:

(1) 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 a prohibited taking or unlawful importation of any marine mammal or marine mammal product; or

(2) Any person subject to the jurisdiction of the United States to possess any marine mammal taken in violation of the Marine Mammal Act or these regulations, or to transport, sell, or offer for sale any such marine mammal or any marine mammal product made from any such mammal.

(3) Any person subject to the jurisdiction of the United States to use in a commercial fishery, any means or method of fishing in contravention of regulations and limitations issued by the Secretary of Commerce for that fishery to achieve the purposes of this Act.

**Collection of certain marine mammal parts (§216.26)**

(1) Any bones, teeth or ivory of any dead marine mammal may be collected from a beach or from land within _ 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 should not keep tusks or any other part of a walrus that are retrieved in commercial fishing gear.**

(2) 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 (§229.4)**

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 sealion, 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 -This new regime replaces the Interim Exemption for Commercial Fisheries and is effective as of January 1, 1996. The following information is based on the proposed rule)

(1) 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.

(2) 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.

- New Authorization Process:
  Fishers participating in Category I fisheries would be required to register with NMFS and display a current decal. Annual registration fees may be charged for authorization issuance.

- New Fishery Classification Criteria and Proposed List of Fisheries:
  Commercial 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 proposed list of fisheries has been developed, classifying fisheries according to the following criteria.

Category I A commercial fishery that is, by itself, responsible for the annual removal of 50% or more of any stock's **PBR (Potential Biological Removal)**.

Category II A commercial fishery that is, collectively with other fisheries, responsible for the annual removal of more than 10% of any marine mammal stock's PBR level and is by itself responsible for the annual removal of between 1% and 50% exclusively, of the PBR level for any stock.

Category III A fishery that, collectively with other fisheries, is responsible for less than or equal to 10 percent of any marine mammal stock's PBR; **or** a fishery that, by itself, is responsible for less than or equal to 1 percent of that stock's PBR.

(Category II to Category III include Bering Sea and Aleutian Island groundfish trawl fisheries, )

- New Fishing Reporting Requirements:
  All fishers, regardless of category, would be required to submit a report to NMFS within 48 hours after the end of the fishing trip if they have incidentally injured or killed a marine mammal in the course of commercial fishing operations. Intentional lethal taking of marine mammals is prohibited, except if imminently necessary in self defense or to save the life of another person in immediate danger. NMFS is developing easy-to-use computer scanning reports for use in reporting injuries and mortalities.

REGULATIONS CONCERNING STELLER SEA LIONS
(excerpts from §672.24 and §675.24)

New regulations now apply to all human activities, including commercial fishing, near Steller (northern) sea lions at-sea and near some of the islands where they breed.

1. Shooting at or near any Steller sea lion for any reason is now prohibited in U.S. waters. Fishermen may still use other means which do not result in injury or death to the animal to deter sea lions from interfering with their gear.

2. ***Fishing vessels are not permitted to enter within 3 nautical miles of Steller sealion rookery sites (locations where pups are born) west of 150° W longitude. Trawling cannot be conducted within 10 nautical miles of Steller sealion 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 the following straits, narrows, or passageways, if the vessel proceeds in a continuous transit and maintains a minimum of 1 nautical mile from the rookery site.*** The listing of a strait, narrows or passageway does not indicate that the area is safe for navigation. The areas are as follows:
   See Figure 10-4
   ***Longline and pot vessels may fish within the 10 and 20 mile boundaries, but may not enter inside of three nautical miles.*** A table describing these rookeries is ~~included on the next two~~ table 10-2.

~~pages~~. More detailed maps or additional clarification are available from the National Marine Fisheries Service in Juneau.

3. The Secretary of Commerce is now 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.

4. 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 changes are due to the designation of the Steller sea lion as threatened throughout its range under the Endangered Species Act on April 5, 1990. This designation is 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 base 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, nearshore zones proximal to rookeries are likely to be important feeding areas throughout the year.

# MARINE POLLUTION (MARPOL) REGULATIONS

Prepared by Observer Program Staff 1995

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. Even though MARPOL has been in place since 1988 some individual vessel operators and crew have chosen to ignore MARPOL restrictions.

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 sealions have been shown to

| Rookery | Straits, Narrows, Or Pass |
|---|---|
| Akutan Island | Akutan Pass between Cape Morgan and Unalga Island |
| Clubbing Rocks | Between Clubbing Rocks and Cherni Island |
| Outer Island | Wildcat Pass between Rabbit and Ragged Islands |

**Fig. 10-4. Listing of Straits, Narrows, and Points**

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 undigestible plastics.

## VESSEL OPERATOR OBLIGATIONS PLACARDS

(1) The regulations require U.S. recreational and other U.S. 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, as outlined later. The placard must also note that State and local regulations may further restrict the disposal of garbage.

(2) 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. These locations might include embarkations points, food service areas, galleys, garbage handling spaces, and common deck spaces frequented by passengers and crew.

(3) 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

(1) 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.

(2) 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 the requirements shown on the following table. It must also designate the person who is in charge of carrying out the plan.

| ISLAND NAME | FROM | TO | NOAA CHART | NOTES |
|---|---|---|---|---|
| Sea Lion Rocks | 55°28.0N 163°12.0W | | 16520 | whole island |
| Bogoslof I. | 53°56.0N 168°02.0W | | 16500 | whole island |
| Yunaska I. | 52°41.0N 168°02.0W | 52°42.0N 170°38.5W | 16500 | NE end |
| Seguam I. | 52°21.0N 172°33.0W | 52°21.0N 172°35.0W | 16480 | N coast, Saddleridge Pt. |
| Agligadak I. | 52°05.5N 172°54.0W | | 16480 | whole island |
| Kasatochi I. | 52°10.5N 175°29.0W | 52°10.0N 175°31.5W | 16480 | N half of island |
| Adak I. | 51°36.5N 176°59.0W | 51°38.0N 176°59.5W | 16460 | SW point, Cape Yakak |
| Gramp Rock | 51°29.0N 178°20.5W | | 16460 | whole island |
| Tag I. | 51°33.5N 178°34.5W | | 16460 | whole island |
| Ulak I. | 51°20.0N 178°57.0W | 51°18.5N 178°59.5W | 16460 | SE corner, Hasgox Pt. |
| Semisopochnoi | 51°58.5N 179°45.5E | 51°57.0N 179°46.0E | 16440 | E quadrant, Pochnoi Pt. |
| Semisopochnoi | 52°01.5N 179°39.0E | 52°01.5N 179°37.5E | 16440 | N quadrant, Petrel Pt. |
| Amchitka I. | 51°21.5N 179°25.0E | 51°22.5N 179°28.0E | 16440 | East Cape |
| Amchitka I. | 51°32.5N 178°49.5E | | 16440 | Column Rocks |
| Ayugadak Pt. | 51°45.5N 178°24.5E | | 16440 | SE coast of Rat I. |
| Kiska I. | 51°52.5N 177°13.0E | 51°53.0N 177°12.0E | 16440 | Cape At. Stephen |
| Kiska I. | 51°57.5N 177°21.0E | 51°56.5N 177°20.0E | 16440 | W central, Lief Cove |
| Outer I. | 59°20.5N 150°23.0W | 59°21.0N 150°24.5W | 16013 | S quadrant |
| Sugarloaf I. | 58°53.0N 152°02.0W | | 16013 | whole island |
| Marmot I. | 58°14.5N 151°47.5W | 58°10.0N 151°51.0W | 16013 | SE quadrant |
| Chirikof I. | 55°45.5N 155°39.5W | 55°45.5N 155°43.0W | 16013 | S quadrant |

**Table 10–2**. Rookeries

| | | | | |
|---|---|---|---|---|
| Chowiet I. | 56°00.5N 156°41.5W | 56°00.5N 156°42.0W | 16013 | S quadrant |
| Atkins I. | 55°03.5N 159°18.5W | | 16540 | whole island |
| Chernabura I. | 54°47.5N 159°31.0W | 54°45.5N 159°33.5W | 16540 | SE corner |
| Pinnacle Rocks | 54°46.0N 161°46.0W | | 16540 | whole island |
| Clubbing Rocks - South | 54°42.0N 162°26.5W | | | |
| Clubbing Rocks - North | 54°43.0N 162°26.5W | | 16540 | whole island |
| Ugamak I. | 54°14.0N 164°48.0W | 54°13.0N 164°48.0W | 16520 | E end of island |
| Akun I. | 54°18.0N 165°32.5W | 54°18.0N 165°31.5W | 16520 | Billings Head Bight |
| Akutan I. | 54°03.5N 166°00.0W | 54°05.5N 166°05.0W | 16520 | SW corner, Cape Morgan |
| Ogchul I. | 53°00.0N 168°24.0W | | 16500 | whole island |
| Walrus I. | 57°11.0N 169°56.0W | | 16380 | |
| Buldir I. | 52°20.5N 175°57.0E | 52°23.5N 175°51.0E | 16420 | |
| Agattu I. | 52°24.0N 173°21.5E | | 16420 | |
| Agattu I. | 52°23.5N 173°43.5E | 52°22.0N 173°41.0E | 16420 | |
| Attu I. | 52°57.5N 172°31.5E | 52°54.5N 172°28.5E | 16420 | |
| Adugak I. | 52°55.0N 169°10.5W | | 16500 | whole island |

**Table 10–2**. Rookeries Continued.

## 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.

## ENFORCEMENT

The U.S. Coast Guard is responsible for enforcement of Annex V.

## 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 (see list below). Any US citizen may report observations of dumping in violation of Annex V at these same offices. **NOTE: Observers wishing to report a potential MARPOL V violation can complete a questionnaire during the debriefing process.**

Commanding Officer
U.S. Coast Guard
Marine Safety Office
Federal Building &
U.S. Courthouse Bldg.
222 W 7th MC #17
Anchorage, AK 99513
(907) 271-5137

Commanding Officer
U.S. Coast Guard
Marine Safety Office
P.O. Box 486
Valdez, AK 99686

Commanding Officer
U.S. Coast Guard
Marine Safety Office
2760 Sherwood Lane,
Suite 2A
Juneau, AK 99801
(907) 586-7344

Commanding Officer
U.S. Coast Guard
Marine Safety Office
1519 Alaska Way S
Seattle, WA 98134
(206) 286-5550

# MATERIALS THAT CAN NOT BE DISCARDED

PLASTIC includes but is not limited to: plastic bags, Styrofoam cups and lids, six pack holders, stirrers, straws, milk jugs, egg cartons, synthetic fishing lines, ropes, line, and bio or photo-degradable plastics

GARBAGE means paper, rags, glass, metal, crockery (generated in living spaces aboard the vessel–what we normally call trash), and all kinds of food, maintenance and cargo-associated waste. "Garbage" does not include fresh fish or fish parts, dishwater, and gray water.

DUNNAGE is material used to block and brace cargo, and is considered a cargo-associated waste.

**INSIDE 3 MILE**

PLASTICS
DUNNAGE, LINING AND PACKING MATERIALS THAT FLOAT
ANY GARBAGE EXCEPT DISHWATER/GRAYWATER/FRESH FISH PARTS

**3 TO 12 MILES**

PLASTICS
DUNNAGE, LINING AND PACKING MATERIALS THAT FLOAT
ANY GARBAGE LARGER THAN ONE SQUARE INCH

**12 TO 25 MILES**

PLASTIC
DUNNAGE, LINING AND PACKING MATERIALS THAT FLOAT

**OUTSIDE 25 MILES**

PLASTIC

DISHWATER means the liquid residue from the manual or automatic washing of dishes and cooking utensils which have been pre-cleaned to the extent that any food particles adhering to them would not normally interfere with the operation of automatic dishwashers.

GRAYWATER means drainage from a dishwasher, shower, laundry bath, and washbasin, and does not include drainage from toilets, urinals, hospitals, and cargo spaces.

**Fig. 10--4.** Non-discardable Materials

# Appendixes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# Appendix A–Contact Addresses and Numbers

## North Pacific Groundfish Observer Program

**Address**

NMFS Observer Program, F/AKC2
Alaska Fisheries Science Center
7600 Sand Point Way NE
BIN C15700, Bldg. 4
Seattle, WA 98115-0070

**Contact People:**

Glenn A. Campbell, *communications questions* ..... (206) 526-4240
Dr. Bill Karp, Observer Program Task Leader ..... (206) 526-4194
Martin Loefflad, Supervisory Assistant ..... (206) 526-4195
Heather Weikart, *contact for questions at sea* ..... (206) 526-4195

Offices:

Gear Office ..... (206) 526-6827
Training and Debriefing ..... (206) 526-4192

Other Numbers:

E-mail for Satelite Standard C: ATLAS.mail@NOAA.gov
Satelite Standard C: country code 582, mobile no. 430349910
Satelite Standard A for COMS: (206) 526 - 6301
Satelite Standard A for ATLAS: (206) 526 - 4203
Fax: (206) 526-4066 or 526-4207, backup: 526-6723 and 526-4004

During working hours, program staff members will accept collect calls. After-hours, voice mail is available on (206) 526-4205. Leave a message even if only to tell us you are trying to reach us. The voice mail message tells the operator that you can leave collect calls.

## Alaska Regional Office

*(This office will accept collect calls from observers on matters directly related to observer work, i.e. CDQ daily reports, not "quota remaining" or "fishery closure" questions.)*

**Address:**

National Marine Fisheries Service, F/AKR
PO Box 21668
Juneau, AK 99802-1668

**Numbers:**

Phone: ..... (907) 586-7229
FAX: ..... (907) 586-7131
Telex: 6229600 callback = NMFS AKR JNU

## *Appendix A–Contact Addresses and Numbers*

### Observer Program Field Offices:

**Kodiak**

Address:

1211 Gibson Cove Road
Kodiak, AK 99615

Contact Person: Allison Barnes ..... (907) 486-6920

Other Numbers:

907-486-6028 SSB Call Sign: WYH (Whiskey, Yankee, Hotel)
4125.0 KHz: M - F, 0800 - 1630

NOTE: If you need to contact Kodiak or Dutch Harbor office staff at other than the hours listed, leave a message on the phone recorder.

**Dutch Harbor**

Address:

FTS Office Complex, Suite 104
Dutch Harbor, AK 99692

Numbers:

Phone ..... 907-581-2060, or -2063
Fax: ..... 907-581-2066
VHF Channel 9, M - F, 0830 - 1600
SSB Call Sign: WYI (Whiskey, Yankee, India)
4146.0 KHz from 10-11 AM, M - F
6227.0 KHz from 2-3 PM, M - F

Other Offices:

NMFS Enforcement ..... (907) 581-2061
**NMFS Fisheries Management** ..... (907) 581-2062

### North Pacific Fisheries Observer Training Center (OTC)

Address:

OTC
707 A Street, Suite 207
Anchorage, Alaska 99517

Contacts:

Paula Cullenberg, Director ..... (907) 257-2771
Luke Jadamec, Instructor ..... (907) 257-2772
Greg Morgan, Instructor ..... (907) 257-2773

Other Numbers:

Main Phone: ..... (907) 257-2770
FAX: ..... (907) 257-2774

# Appendix B–Species Code List

| Code | Common Name | Scientific Name |
|---|---|---|
| 106 | Alaska plaice | *Pleuronectes quadrituberculatus* |
| 450 | Alligatorfish, (Poacher) - unident. | *Agonidae* |
| 610 | Anchovy, Northern | *Engraulis mordax* |
| 55 | Anemone, Sea - unident. | *Actiniaria* |
| 620 | Argentine - unident. | *Argentinidae* |
| 43 | Ascidians, Sea Squirt, Tunicate | *Urochordata* |
| 204 | Atka Mackerel | *Pleurogrammus monopterygius* |
| 48 | Barnacles | *Cirripedia* |
| 795 | Barracuda, Pacific (California) | *Sphyraena argentea* |
| 770 | Barracudina - unident. | *Paralepididae* |
| 622 | Barreleye or Spookfish - unident. | *Opisthoproctidae* |
| 289 | Bigscale, (Melamphid) - unident. | *Melamphaeidae* |
| | Birds - Refer to listing for this group following the fish codes | |
| 618 | Blacksmelt - unident. | *Bathylagidae* |
| 260 | Blenny - unident. | *Pholidae, Stichaeidae* |
| 302 | Bocaccio | *Sebastes paucispinis* |
| 27 | Brachiopod, Lampshell | *Brachyopoda* |
| 54 | Bristleworm, Leech, Polychaetes | *Annelida* |
| 32 | Bryozoans | |
| 604 | Capelin | *Mallotus villosus* |
| 44 | Chiton - unident. | *Amphineura* |
| 199 | Chub Mackerel | *Scomber japonicus* |
| 29 | Clams Mussels Oysters Scallops | *Pelecypoda* |
| 211 | Cod, Arctic (Race) | *Boreogadus saida* |
| 203 | Cod, Black (Sablefish) | *Anoplopoma fimbria* |
| 202 | Cod, Pacific | *Gadus macrocephalus* |
| 208 | Cod, Saffron | *Eleginus gracilis* |
| 214 | Codling - unident. | *Moridae* |
| 32 | Corals | |
| 1 | Crab - Family, Genus Unknown | |
| 6 | Crab, Blue King | *Paralithodes platypus* |
| 11 | Crab, Box | *Lopholithodes foraminatus* |
| 8 | Crab, Brown King | *Lithodes aequispina* |
| 49 | Crab, Cancer | *Cancer pregonensis* |
| 16 | Crab, Couesi King | *Lithodes couesi* |
| 39 | Crab, Decorator | *Oregonia gracilis* |
| 12 | Crab, Dungeness | *Cancer magister* |
| 15 | Crab, Hermit - unident. | *Paguridae* |
| 2 | Crab, King Crab - unident. | *Lithodes & Paralithodes* |
| 7 | Crab, Korean Horsehair | *Erimacrus isenbeckii* |
| 37 | Crab, Lyre – Rounded Spined | *Hyas coarctatus* |
| 9 | Crab, Lyre – Sharp Spined | *Hyas lyratus* |
| 840 | Crab, Lyre - unident. | *Hyas* |
| 17 | Crab, Paralomis Multispina | *Paralomis multispina* |
| 38 | Crab, Paralomis Verilli | *Paralomis verilli* |
| 74 | Crab, Pea | *Pinnixa occidentalis* |
| 13 | Crab, Red King | *Paralithodes camtschaticus* |
| 31 | Crab, Scaled | *Placetron wosnessenskii* |
| 19 | Crab, Tanner, Angulatus | *Chionoecetes angulatus* |
| 4 | Crab, Tanner, Bairdi | *Chionoecetes bairdi* |

## *Appendix B—Species Code List*

| Code | Common Name | Scientific Name |
|---|---|---|
| 5 | Crab, Tanner, Opilio | *Chionoecetes opilio* |
| 47 | Crab, Tanner, Bairdi/opilio Hybrid | *Chionoecetes hybrid* |
| 18 | Crab, Tanner, Tanneri | *Chionoecetes tanneri* |
| 3 | Crab, Tanner - unident. | *Chionoecetes sp.* |
| 23 | Crab, Telmessus | *Telmessus cheirgonus* |
| 53 | Crinoids - unident. | *Crinoidea* |
| 248 | Cusk-eel - unident. | *Ophidiidae* |
| 660 | Cutlassfish - unident. | *Trichiuridae* |
| 144 | Dab, Longhead (Sanddab) | *Limanda proboscidea* |
| 679 | Daggertooth | *Anotopterus pharao* |
| 899 | Decomposed Fish | |
| 799 | Dragonfish - unident. | *Melanostomiidae* |
| 690 | Dreamer - unident. | *Oneirodidae* |
| 250 | Eelpout - unident. | *Zoarcidae* |
| 91 | Egg Case, Skate - unident. | |
| 34 | Eggs, Snail | *Gastropoda* |
| 601 | Eulachon, (Candlefish) | *Thaleichthys pacificus* |
| 901 | Fish - unident. | *Osteichthyes* |
| 100 | Flatfish - unident. | |
| 210 | Flatnose, Pacific (Codling) | *Antimora microlepis* |
| 146 | Flounder, Arctic | *Liopsetta glacialis* |
| 141 | Flounder, Arrowtooth | *Atheresthes stomias* |
| 145 | Flounder, Bering | *Hippoglossoides robustus* |
| 149 | Flounder, Kam/ Arrow - unident. | |
| 147 | Flounder, Kamchatka | *Atheresthes evermanni* |
| 142 | Flounder, Starry | *Platichthys stellatus* |
| 660 | Frostfish, (Cutlassfish)-unident. | *Trichiuridae* |
| 390 | Greenling - unident. | *Hexagrammidae* |
| 80 | Grenadier, (Rattail) - unident. | *Macrouridae* |
| 430 | Gunnel - unident. | *Pholidae* |
| 77 | Hagfish - unident. | *Myxinidae* |
| 660 | Hairtails, (Cutlassfish)-unident. | *Trichiuridae* |
| 206 | Hake, Pacific | *Merluccius productus* |
| 102 | Halibut, Greenland (Turbot) | *Reinhardtius hippoglossoides* |
| 101 | Halibut, Pacific | *Hippoglossus stenolepis* |
| 767 | Hatchetfish - unident. | *Sternoptychidae* |
| 611 | Herring, Pacific | *Clupea harengus pallasi* |
| 902 | Invertebrate - unident. | |
| 418 | Irish Lord - unident. | *Hemilepidotus, sp.* |
| 33 | Isopod | *Isopoda* |
| 207 | Jack Mackerel | *Trachurus symmetricus* |
| 35 | Jellyfish - unident. | *Scyphozoa* |
| 2 | King Crab - unident. | *Lithodes and Paralithodes sp.* |
| 608 | King-of-the-salmon, (Ribbonfish) | *Trachipterus altivelis* |
| 700 | Lampfish - unident. | *Myctophidae* |
| 75 | Lamprey - unident. | *Petromyzontidae* |
| 785 | Lancetfish, Longnose | *Alepisaurus ferox* |
| 700 | Lanternfish - unident. | *Myctophidae* |
| 54 | Leech, Bristleworm, Polychaetes | *Annelida* |
| 45 | Limpet - unident. | |

## *Appendix B—Species Code List*

| Code | Common Name | Scientific Name |
|---|---|---|
| 603 | Lingcod | *Ophiodon elongatus* |
| 14 | Lithodid - unident. (Race) | *Lithodid crab unident.* |
| 809 | Loosejaw, Shining | *Aristostomias scintillans* |
| 525 | Lumpsucker - unident. | *Cyclopteridae* |
| 204 | Mackerel, Atka | *Pleurogrammus monopterygius* |
| 199 | Mackerel, Chub (Pacific) | *Scomber japonicus* |
| 207 | Mackerel, Jack | *Trachurus symmetricus* |
| 774 | Manefish | *Caristius macropus* |
| 903 | Marine Mammal (Or Parts Of) unident. | |
| 776 | Medusafish | *Icichthys lockingtoni* |
| 289 | Melamphid - unident. | *Melamphaeidae* |
| 710 | Midshipman, Plainfin | *Porichthys notatus* |
| 900 | Misc. - unident. (Rocks, Mud, Garbage, Etc) | |
| 29 | Mussels, Clams, Oysters, Scallops | *Pelecypoda* |
| 25 | Nudibranch | *Nudibranchiata* |
| 715 | Oarfish | *Regalecus glesne* |
| 810 | Ocean Sunfish | *Mola* |
| 60 | Octopus - unident. | *Octopoda* |
| 61 | Octopus, Pelagic | *Vampyromorpha* |
| 297 | Opah | *Lampris guttatus (L. Regious)* |
| 295 | Oreo, Oxeye | *Allocyttus folletti* |
| 29 | Oysters, Clams, Mussels, Scallops | *Pelecypoda* |
| 301 | Pacific Ocean Perch | *Sebastes alutus* |
| 762 | Paperbones, Scaley (Wearyfish) - unident. | *Notosudidae* |
| 681 | Pearleyes - unident. | *Scopelarchidae* |
| 450 | Poacher - unident. | *Agonidae* |
| 201 | Pollock, Walleye | *Theragra chalcogramma* |
| 54 | Polychaete, Bristleworm, Leech | *Annelida* |
| 765 | Pomfret - unident. | *Bramidae* |
| 790 | Pompano, Pacific | *Peprilus simillimus* |
| 750 | Prickleback - unident. | *Stichaeidae* |
| 205 | Prowfish | *Zaprora silenus* |
| 280 | Ragfish | *Icosteus aenigmaticus* |
| 99 | Ratfish, Spotted | *Hydrolagus colliei* |
| 80 | Rattail, (Grenadier) - unident. | *Macrouridae* |
| 90 | Ray, (Skate) - unident. | *Rajiformes* |
| 563 | Ribbonfish - unident. | *Trachipteridae* |
| 300 | Rockfish - unident. | *Scorpaenidae* |
| 353 | Aleutian Scorpionfish | *Adelosebastes latens* |
| 334 | Rockfish, Aurora | *Sebastes aurora* |
| 337 | Rockfish, Bank | *Sebastes rufus* |
| 306 | Rockfish, Black | *Sebastes melanops* |
| 319 | Rockfish, Blackgill | *Sebastes melanostomus* |
| 316 | Rockfish, Blue | *Sebastes mystinus* |
| 302 | Rockfish, Bocaccio | *Sebastes paucispinis* |
| 351 | Rockfish, Broad Banded Thornyhead | *Sebastes macrochir* |
| 332 | Rockfish, Brown | *Sebastes auriculatus* |
| 314 | Rockfish, Canary | *Sebastes pinniger* |
| 325 | Rockfish, Chilipepper | *Sebastes goodei* |
| 327 | Rockfish, Copper | *Sebastes caurinus* |

## *Appendix B—Species Code List*

| Code | Common Name | Scientific Name |
|---|---|---|
| 311 | Rockfish, Dark Blotched | *Sebastes crameri* |
| 330 | Rockfish, Dusky | *Sebastes ciliatus* |
| 339 | Rockfish, Greenspotted | *Sebastes chlorostictus* |
| 313 | Rockfish, Greenstriped | *Sebastes elongatus* |
| 323 | Rockfish, Harlequin | *Sebastes variegatus* |
| 350 | Rockfish, Idiot Fish | *Sebastolobus alascanus* |
| 352 | Rockfish, Longspine Thornyhead | *Sebastolobus altivelis* |
| 303 | Rockfish, Northern | *Sebastes polyspinis* |
| 301 | Rockfish, Pacific Ocean Perch | *Sebastes alutus* |
| 335 | Rockfish, Pygmy | *Sebastes wilsoni* |
| 343 | Rockfish, Quillback | *Sebastes maliger* |
| 322 | Rockfish, Rasphead | *Sebastes ruberrimus* |
| 308 | Rockfish, Red Banded | *Sebastes babcocki* |
| 324 | Rockfish, Redstripe | *Sebastes proriger* |
| 309 | Rockfish, Rosethorn | *Sebastes helvomaculatus* |
| 312 | Rockfish, Rosy | *Sebastes rosaceus* |
| 307 | Rockfish, Rougheye | *Sebastes aleutianus* |
| 304 | Rockfish, Sharpchin | *Sebastes zacentrus* |
| 318 | Rockfish, Shortbelly | *Sebastes jordani* |
| 326 | Rockfish, Shortraker | *Sebastes borealis* |
| 354 | Rockfish, Shortraker/rougheye | *S. borealis & 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 unident. | *S. alascanus & altivelis* |
| 329 | Rockfish, Tiger | *Sebastes nigrocinctus* |
| 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 - unident. | *Bathymasteridae* |
| 200 | Roundfish - unident. | |
| 203 | Sablefish, (Black Cod) | *Anoplopoma fimbria* |
| 220 | Salmon - unident. | *Oncorhynchus, sp.* |
| 221 | Salmon, Chum (Dog) | *Oncorhynchus keta* |
| 222 | Salmon, King (Chinook) | *Oncorhynchus tshawytscha* |
| 225 | Salmon, Pink (Humpback) | *Oncorhynchus gorbuscha* |
| 224 | Salmon, Red (Sockeye) | *Oncorhynchus nerka* |
| 223 | Salmon, Silver (Coho) | *Oncorhynchus kisutch* |
| 40 | Sand Dollars | *Echinoidea* |
| 670 | Sand Lance, Pacific | *Ammodytes hexapterus* |
| 136 | Sanddab - unident. | *Bothidae* |
| 144 | Sanddab, Longhead | *Limanda proboscidea* |
| 137 | Sanddab, Pacific | *Citharichthys sordidus* |
| 239 | Sandfish | *Trichodon* |
| 614 | Sardine, Pacific | *Sardinops sagax caerulens* |
| 607 | Saury, Pacific | *Cololabis saira* |
| 660 | Scabbardfish,(Cutlassfish)-unident. | *Trichiuridae* |

## *Appendix B—Species Code List*

| Code | Common Name | Scientific Name |
|---|---|---|
| 29 | Scallops, Clams, Mussels, Oysters | *Pelecypoda* |
| 400 | Sculpin - unident. | *Cottidae* |
| 431 | Sculpin, Gymnocanthus - unident. | *Gymnocanthus, sp.* |
| 418 | Sculpin, Irish Lord - unident. | *Hemilepidotus, sp.* |
| 440 | Sculpin, Myoxocephalus Sp. | *Myoxocephalus sp.* |
| 433 | Sculpin, Triglops - unident. | *Triglops sp.* |
| | Note: Many other genera and species of sculpins are present. Group these others under sculpin unidentified. | |
| 55 | Sea Anemone - unident. | *Actiniaria* |
| 41 | Sea Cucumber - unident. | *Holothurioidea* |
| 689 | Sea Devil - unident. | *Ceratiidae* |
| 54 | Sea Mouse, Bristleworm, Leech | *Annelida* |
| 43 | Sea Onions - unident. | *Urochordata* |
| 58 | Sea Pen, Sea Whip - unident. | *Pennatula* |
| 43 | Sea Potato - unident. | *Urochordata* |
| 25 | Sea Slug, - unident. | *Nudibranchiata* |
| 56 | Sea Spider - unident. | *Pycnoganida* |
| 43 | Sea Squirts, Onions, Potatoes, Tunicates | *Urochordata* |
| 40 | Sea Urchins | *Echinoidea* |
| 58 | Sea Whip, Sea Pen - unident. | *Pennatula* |
| 54 | Sea Worms (Polychaetes) | *Annelida* |
| 550 | Seabass - unident. | *Sciaenidae* |
| | Seabirds - Refer to listing for this group following the fish codes | |
| 242 | Searcher | *Bathymaster signatus* |
| 900 | Seaweed Misc. items | |
| 606 | Shad, American | *Alosa sapidissima* |
| 750 | Shanny, (Prickleback) - unident. | *Stichaeidae* |
| 65 | Shark - unident. | *Squaliformes* |
| 69 | Shark, Blue | *Prionace glauca* |
| 68 | Shark, Brown Cat | *Apristurus brunneus* |
| 62 | Shark, Pacific Sleeper | *Somniosus pacificus* |
| 67 | Shark, Salmon | *Lamna ditropis* |
| 78 | Shark, Sixgill | *Hexanchus griseus* |
| 64 | Shark, Soupfin | *Galeorhinus zyopterus* |
| 66 | Shark, Spiny Dogfish | *Squalus acanthias* |
| 63 | Shark, Thresher | *Alopias vulpinus* |
| 70 | Shrimp - unident. | |
| 90 | Skate - unident. | *Rajiformes* |
| 212 | Skilfish | *Erilepis zonifer* |
| 625 | Slickhead, Threadfin | *Talismania bifurcata* |
| 602 | Smelt - unident. | *Osmeridae* |
| 604 | Smelt, Capelin | *Mallotus villosus* |
| 601 | Smelt, Eulachon (Candlefish) | *Thaleichthys pacificus* |
| 619 | Smoothtongue, Northern | *Leuroglossus stilbius schmidti* |
| 30 | Snail - unident. | *Gastropoda* |
| 34 | Snail, Eggs | *Gastropoda* |
| 36 | Snail, Shell, Empty | |
| 500 | Snailfish - unident. | *Liparididae* |
| 559 | Snipe Eel - unident. | *Nemichthyidae* |
| 109 | Sole, Butter | *Isopsetta isolepis* |

## *Appendix B—Species Code List*

| 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 unident. | |
| 120 | Sole, Northern Rock Sole | |
| 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 - unident. | *Porifera* |
| 622 | Spookfish - unident. | *Opisthoproctidae* |
| 270 | Squaretail, Smalleye | *Tetragonurus cuvieri* |
| 50 | Squid - unident. | *Decapoda* |
| 51 | Squid, Giant | *Moroteuthis robusta* |
| 20 | Starfish - unident. | *Asteroidea* |
| 21 | Starfish, Basket | *Gorgonocephalus* |
| 22 | Starfish, Brittle | *Ophiuroidea* |
| 24 | Starfish, Sunstar | *Solaster sp.* |
| 226 | Steelhead | *Salmo gairdneri* |
| 230 | Sturgeon - unident. | *Acipenseridae* |
| 3 | Tanner Crab - unident. | *Chionoecetes sp.* |
| 209 | Tomcod, Pacific | *Microgadus proximus* |
| 113 | Tonguefish, California | *Symphurus atricauda* |
| 227 | Trout, Cutthroat (Sea Run) | *Salmo clarki* |
| 807 | Tubeshoulder - unident. | *Searsiidae* |
| 43 | Tunicates, Ascidians, Sea Squirts | *Urochordata* |
| 102 | Turbot, Greenland (Halibut) | *Reinhardtius hippoglossoides* |
| 143 | Turbot/ Kam/ Arrow - unident. | |
| 805 | Viperfish - unident. | *Chauliodontidae* |
| 757 | Warbonnet, Decorated | *Chirolophis decoratus* |
| 899 | Waste Fish | |
| 762 | Wearyfish, (Paperbones) - unident. | *Notosudidae* |
| 779 | Wolffish, Wolf-eel - unident. | *Anarhichadidae* |
| 780 | Wolf-eel | *Anarrhichthys ocellatus* |
| 781 | Wolffish, Bering | *Anarhichas orientalis* |
| 760 | Wrymouth, Giant | *Delolepis gigantea* |
| 783 | Wrymouth, Dwarf | *Lyconectes aleutensis* |
| 999 | Z Summation Line | Code for Form 3us only |

## *Appendix B—Species Code List*

| Code | Common Name | Scientific Name |
|---|---|---|
| | **Seabirds - Code List** | |
| 852 | Albatross, Black-footed | *Diomedea nigripes* |
| 851 | Albatross, Laysan | *Diomedea immutabilis* |
| 850 | Albatross, Short-tailed * | *Diomedea albatrus* |
| 849 | Albatross - Unident | *Diomedeidae spp.* |
| 883 | Alcid - unident. | *Alcidae spp.* |
| 893 | Auklet/murrelet - Unident | *Auklet/murrelet spp.* |
| 895 | Auklet, Rhinocerous | *Cerorhinca moncerata* |
| 998 | Bird - unident. | *Aves* |
| 861 | Cormorant - unident. | *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 - unident. | *Podicipedidae* |
| 884 | Guillemot - unident. | *Cepphus spp.* |
| 878 | Gull, Glaucus | *Larus hyuperboreus* |
| 879 | Gull, Glaucus-winged | *Larus glaucescens* |
| 877 | Gull, Herring | *Larus argentatus* |
| 874 | Gull - unident. | *Larinae spp.* |
| 871 | Jaeger/skua - unident. | *Stercorariidae spp.* |
| 876 | Kittiwake, Black-legged * | *Rissa tridactyla* |
| 875 | Kittiwake, Red-legged * | *Rissa brevirostris* |
| 898 | Land Bird - unident. | |
| 844 | Loon - unident. | *Gaviidae* |
| 889 | Murre, Common | *Uria aalge* |
| 888 | Murre, Thick-billed | *Uria lomvia* |
| 887 | Murre - unident. | *Uria spp.* |
| 893 | Murrelet/auklet - unident. | *Murrelet/auklet spp.* |
| 896 | Murrelet, Kittlitz's | *Brachyramphus brevirostris* |
| 894 | Murrelet, Marbled | *Brachyramphus marmoratus* |
| 854 | Northern Fulmar | *Fulmarus glacialis* |
| 853 | Petrel/shearwater - unident. | *Procellariidae* |
| 858 | Petrel, Storm - unident. | *Hydrobatidae* |
| 868 | Phalarope - unident. | *Phalaropodidae spp.* |
| 891 | Puffin, Horned | *Fratercula corniculata* |
| 892 | Puffin, Tufted | *Fratercula cirrhata* |
| 890 | Puffin - unident. | *Fratercula spp.* |
| 897 | Seabird - unident. | |
| 855 | Shearwater, Dark unident. | *Puffinus spp.* |
| 853 | Shearwater/petrel - unident. | *Procellariidae spp.* |
| 857 | Shearwater, Short-tailed | *Puffinus tenuirostris* |
| 856 | Shearwater, Sooty | *Puffinus griseus* |
| 867 | Shorebird - unident. | *Charadriiformes spp.* |
| 871 | Skua/jaeger - unident. | *Stercorariidae* |
| 858 | Storm-petrel - unident. | *Hydrobatidae* |

## *Appendix B—Species Code List*

| Code | Common Name | Scientific Name |
|---|---|---|
| 880 | Tern - unident. | *Sterninae spp.* |
| 848 | Tubenoses - unident. | *Procellariiformes* |
| 862 | Waterfowl - unident. | *Anseriformes* |

Seabirds - Please also note occurances in Observer Logbook, Seabird Sightings section.. * Note in log whether: adult (A), sub-adult (S), immature (I), or unknown (U). ** Note in log whether: male (M), female (F), or unknown (U). For information on this, see bird key in Species I.D. Manual.

# Appendix C–Common and Scientific Names and Species Codes for Marine Mammals

| Code | Common Name | Scientific Name (NE indicates no equivalent) |
|---|---|---|
| NU | None | |
| CU | Northern fur seal | *Callorhinus ursinus* |
| EJ | Northern (Steller) sea lion | *Eumetopias jubatus* |
| ZC | California sea lion | *Zalophus californianus* |
| UO | Unidentified otariid (fur seals and sea lions with visible ears) | |
| 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 (hair or true seals without visible, external ears) | |
| UP | Unidentified pinniped (the order which includes both otariids and phocids) | |
| EL | Sea otter | *Enhydra lutris* |
| PD | Dall's porpoise | *Phocoenoides dalli*: *dalli* type |
| PT | Dall's porpoise | *Phocoenoides dalli*: *truei* type |
| PB | Dall's porpoise | *Phocoenoides dalli*: *black* type |
| PX | Dall's porpoise | *Phocoenoides dalli*: type unknown |
| PP | Harbor porpoise | *Phocoena phocoena* |
| DD | Common dolphin | *Delphinus delphis* |
| LO | Pacific whiteside 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 | NE |
| GM | Shortfin pilot whale | *Globicelphala macrorhynchus* |
| FA | Pygmy killer whale | *Feresa attenuata* |
| PC | False killer whale | *Pseudorca crassidens* |
| OO | Killer whale | *Orcinus orca* |
| DL | Belukha; beluga | *Delphinapterus leucas* |
| PM | Sperm whale | *Physeter macrocephalus* |
| 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* |

## *Appendix C–Common and Scientific Names and Species Codes for Marine Mammals*

| Code | Common Name | Scientific Name (NE indicates no equivalent) |
|---|---|---|
| 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 | NE |
| UZ | Unidentified large whale | NE |
| UW | Unidentified whale | NE |
| UC | Unidentified cetacean: whale or porpoise or dolphin, definitely not a pinniped (Form 10AUS only) | NE |
| ZZ | Unidentified marine mammal | NE |
| UM | Polar bear | *Ursus maritimus* |

# Appendix D–Weights and Measures

1 inch = 2.540 centimeters (cm)
1 foot (ft) = .3048 meters = .1667 fathoms
1 fathom (f) = 6 feet = 1.829 meters

1 centimeter = 10 millimeters = .3937 inches
1 meter (m) = 100 cm = 3.2808 ft. = 0.5468 f
1000 m = 1 kilometer (km) = .6214 s. mile

1 liter = 1.0567 U.S. quarts

F° = (1.8 x C°) + 32

C° = 5/9(F° - 32)

1 statute mile = 5280 feet = 1.609 kilometers = 0.86899 nautical miles = 880 fathoms
1 nautical mile = 1.15078 statute miles = 1 minute of latitude
= 1.852 kilometers = 1012.6859 fathoms = 1852 meters
1 fathom = 0.0009875 nautical miles = 0.0011364 statute miles

1 pound = 0.4536 kg

1 kg = 1000 grams = 2.2046 lb.

total catch wt. in lbs ÷ 2.2046 = total catch wt. in kilograms

1 metric ton = 1000 kg = 2204.6 lbs = 0.9842 long tons = 1.1023 short tons
1 short ton = 907.1847 kg = 2000 lbs = 0.8929 long tons = 0.9072 metric tons
1 long ton (British) = 1016.0469 kg = 2240 lbs = 1.1060 metric tons
= 1.12 short tons

**Conversion Table–Pounds to Metric Tons**

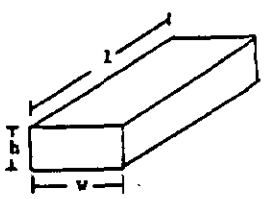
| LBS | MT | LBS | MT |
|---|---|---|---|
| 1000 | 0.4536 | 14000 | 6.3504 |
| 2000 | 0.9072 | 15000 | 6.8040 |
| 3000 | 1.3608 | 16000 | 7.2576 |
| 4000 | 1.8144 | 17000 | 7.7111 |
| 5000 | 2.2680 | 18000 | 8.1647 |
| 6000 | 2.7216 | 19000 | 8.6183 |
| 7000 | 3.1752 | 20000 | 9.0719 |
| 8000 | 3.6288 | 21000 | 9.5255 |
| 9000 | 4.0824 | 22000 | 9.9791 |
| 10000 | 4.5360 | 23000 | 10.4327 |
| 11000 | 4.9896 | 24000 | 10.8863 |
| 12000 | 5.4432 | 25000 | 11.3399 |
| 13000 | 5.8968 | 26000 | 11.7935 |

## *Appendix D–Weights and Measures*

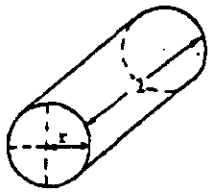
VOLUME AND PRODUCT FORMULAS

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

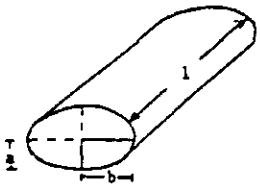
Area of a circle = $\pi r$  Circumference = $2\pi r$  ($\pi = 3.1416$)
Area of a square or rectangle = length x width
Area of a triangle = base x height
Volume of a right angle cone = $1/3\pi r h$
Volume of a sphere = $4\pi r \div 3$
Length of the triangle hypotenuse "c" where a and b equal the length of the opposite two sides.



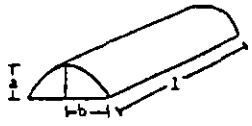

Rectangular solid
Volume = height x width x length
V = hwl




Cylinder
Volume = π x radius² x length
V = π r²l




Ellipsoidal solid
Volume = π x short radius x long radious x length
V = πabl




Semi-ellipsoidal solid
Volume = $^1/_2$ πabl
V = $^1/_2$ πabl

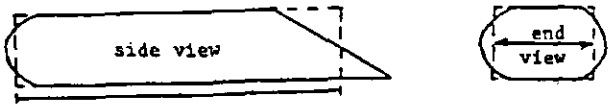



**Fig. 2-1.** Volume Calculations. Allowances can be made for irregular shapes or partially filled portions of the net by the way in which the measurements are taken.

# Appendix E–Processor Code List

| | | |
|---|---|---|
| F0528 | 10th & M Seafoods | Anchorage |
| F1968 | Alaska Custom Seafoods Inc | Homer |
| F0321 | Alaska Fresh Seafoods, Inc. | Kodiak |
| F1814 | Alaska General Processors | Ketchikan |
| F2232 | Alaska Glacier Seafood Co. | Juneau |
| F0210 | Alaska Pacific Seafood | Kodiak |
| P3230 | Alaska Packer | Vessel |
| P3308 | Alaska Pioneer | Vessel |
| F0937 | Alaska Seafood Co., Inc. | Juneau |
| P3423 | Alaska Warrior | Vessel |
| F1870 | Alaskan Leader Fisheries | Kodiak |
| F1595 | Alaskan Premier Seafoods | Anchorage |
| F1662 | Aleutian Dragon Fisheries | Chignik |
| F0753 | Alyeska Seafoods, Inc. | Unalaska |
| M3681 | American Dynasty | Vessel |
| M3408 | American Empress | Vessel |
| M4055 | American Triumph | Vessel |
| F9517 | Annette Island Packing Co. Cold Storage | Metlakatla |
| F1795 | Aquatech | Anchorage |
| P5314 | Arctic Enterprise | Vessel |
| M3396 | Arctic Fjord | Vessel |
| P3978 | Arctic Star | Vessel |
| M2943 | Arctic Storm | Vessel |
| F1861 | Arrowac Fisheries, Inc | Bellingham |
| F1973 | Atka Pride Seafoods, Inc | Juneau |
| F0188 | Barge Unisea | St. Paul Island |
| F1947 | Bell's Seafood | Haines |
| P3531 | Bering Star | Vessel |
| F1848 | Big Dipper Seafoods, Inc. | Valdez |
| F9999 | Bornstein Seafoods, Inc. | Bellingham |

## *Appendix E–Processor Code List*

| | | |
|---|---|---|
| M2726 | Browns Point | Vessel |
| F1917 | Buy N Pack Seafoods | Hoonah |
| F1673 | Cannery Row, Inc | Cordova |
| F1232 | Carlson Seafoods | Anchorage |
| F0365 | Chignik Pride Fisheries | Chignik |
| M3362 | Claymore Sea | Vessel |
| F1757 | Coal Point Trading, Co | Homer |
| F1065 | Coastal Cold Storage | Petersburg |
| P5293 | Coastal Star | Vessel |
| F0186 | Cook Inlet Processing, Seward Plant | Seward |
| F1155 | Cook Inlet Processing | Kodiak |
| F9999 | Cook Inlet Processing | Nikiski |
| F0186 | Cook Inlet Processing | Nikiski |
| F1051 | Deep Creek Custom Packing, Inc. | Ninilchik |
| F0088 | Dejon Delights | Haines |
| P3877 | Discovery Star | Vessel |
| F0030 | Dragnet Fisheries Co., Inc. - Kenai Plant | Kenai |
| P5453 | Elna Lorraine | Vessel |
| M3360 | Endurance | Vessel |
| M4111 | Excellence | Vessel |
| F0398 | Favco, Inc. | Anchorage |
| F1540 | Fishhawk Fisheries, Inc. | Astoria |
| F2575 | Flopping Fresh | Homer |
| F2882 | Fresh and Frozen Seafoods | Ketchikan |
| F0314 | Glacier Village Supermarket, Inc. - Super Bear | Juneau |
| F1253 | Glacier Village Supermarket, Inc. - Jerry's Meats | Juneau |
| M1607 | Golden Alaska | Vessel |
| F1678 | Great Pacific Seafoods, Inc. - Anchorage | Anchorage |
| M3664 | Heather Sea | Vessel |
| M3348 | Highland Light | Vessel |
| F9999 | His Catch Value Added Seafood | Homer |

## *Appendix E–Processor Code List*

| | | |
|---|---|---|
| F0777 | Hoonah Cold Storage | Hoonah |
| F2223 | Horst Seafood Inc. | Juneau |
| F1020 | Howsers Supermarket Ltd | Haines |
| F9999 | Icicle Seafoods, Inc. - Roeder Ave | Bellingham |
| F0133 | Icicle Seafoods, Inc | Homer |
| F1894 | Icy Straits Seafoods, Inc | Juneau |
| F1231 | Inlet Fish Producers, Inc. | Kenai |
| F1039 | Inlet Salmon | Kenai |
| F9999 | Int'l Seafoods of Alaska, Inc. | Kodiak |
| F0021 | International Seafoods of Alaska, Inc. | Kodiak |
| M3870 | Island Enterprise | Vessel |
| F2052 | Island Seafoods | Kodiak |
| F1963 | J.r. Fish Co Inc | Wrangell |
| F1342 | J&r Fisheries | Seward |
| F1705 | Jon-k Seafoods, Inc. | Juneau |
| F1330 | Kachemak Bay Seafood | Homer |
| F1737 | Kachemak Fish Packers | Homer |
| F1663 | Kake Fisheries, Inc | Kake |
| F1689 | Katch Seafoods, Inc. | Homer |
| F9999 | Kell-nor Fisheries | Everett |
| F9999 | Kelliher Fish Company | Edmonds |
| F1182 | Kenai Custom Seafoods | Kenai |
| F1839 | Kingfisher Seafoods Co | Unalaska |
| M3671 | Kodiak Enterprise | Vessel |
| F1983 | Kodiak Smoking & Processing | Kodiak |
| M3367 | Legacy | Vessel |
| F2003 | Nautilus Foods | Valdez |
| F0602 | New West Fisheries, Inc. | Bellingham |
| F9999 | Nor-freeze Inc. | Seattle |
| F1460 | Norquest Seafoods, Inc | Craig |
| F1486 | Norquest Seafoods Inc | Cordova |

## *Appendix E–Processor Code List*

| | | |
|---|---|---|
| F1459 | Norquest Seafoods Inc | Petersburg |
| F1461 | Norquest Seafoods Inc | Ketchikan |
| F9999 | North Alaska Fisheries Inc. | Anchorage |
| F0232 | North Pacific Processors | Cordova |
| F9999 | Northport Fisheries, Inc. | Everett |
| F9999 | Ocean Beauty Seafoods, Inc - Seattle Div | Seattle |
| F1930 | Ocean Beauty Seafoods, Inc. - Cordova Facility | Cordova |
| F1929 | Ocean Beauty Seafoods, Inc. - Kodiak Facility | Kodiak |
| F1941 | Ocean Beauty Seafoods, Inc. - Naknek Facility | Naknek |
| F1940 | Ocean Beauty Seafoods, Inc. - Petersburg Facility | Petersburg |
| M3703 | Ocean Phoenix | Vessel |
| M3442 | Ocean Rover | Vessel |
| F1764 | Osterman Fish | Dutch Harbor |
| F9999 | Pacific Choice Seafoods, Co | Charleston |
| M3416 | Pacific Explorer | Vessel |
| M2799 | Pacific Navigator | Vessel |
| M4194 | Pacific Prince | Vessel |
| F9999 | Pacific Salmon Company Inc. | Seattle |
| M3383 | Pacific Scout | Vessel |
| F1834 | Pacific Star Seafoods, Inc. | Kenai |
| F9999 | Pelican Seafoods | Pelican |
| F0142 | Peter Pan Seafoods, Inc. - King Cove | King Cove |
| F1041 | Peter Pan Seafoods, Inc - Valdez | Valdez |
| F0134 | Petersburg Fisheries | Petersburg |
| F2150 | Pioneer Food Corp. | Unalaska |
| F0306 | Point Adolphus Seafoods | Gustavus |
| F2309 | Port Graham Seafoods, Inc. | Port Graham |
| F9999 | Prime Alaska Seafoods, Inc. | Unalaska |
| F1816 | Prime Select Seafood, Inc. | Cordova |
| F2213 | Pristine Seafood Company | Sitka |

## *Appendix E–Processor Code List*

| | | |
|---|---|---|
| P5876 | Proud Mary | Vessel |
| F0838 | R & J Seafoods | Kasilof |
| M2838 | Rebecca Ann | Vessel |
| F1379 | Resurrection Bay Seafoods L.l.c. | Seward |
| F1093 | Royal Aleutian Seafoods, Inc. | Seattle |
| F0115 | S.e. Ak. Smoked Salmon Co., Inc. - Taku Fisheries | Juneau |
| M4056 | Saga Sea | Vessel |
| F1485 | Sahalee of Alaska, Inc | Anchorage |
| F0037 | Salamatof Seafoods, Inc | Kenai |
| F2164 | Samer-i Seafoods | Anchor Point |
| F0223 | Sea Hawk Seafoods, Inc | Valdez |
| F0709 | Sea Level Seafoods, Inc | Wrangell |
| F1962 | *Sea World Fisheries, Ltd.* | *Ketchikan* |
| F1206 | Seafood Producer Cold Storage Inc | Sitka |
| F0172 | Seafood Producers Cooperative | Sitka |
| M3245 | Seattle Enterprise | Vessel |
| F0135 | Seward Fisheries | Anchorage |
| F0210 | Sitka Sound Seafoods | Yakutat |
| F0210 | Sitka Sound Seafoods | Sitka |
| P3592 | Snopac | Vessel |
| F9999 | Sound Seafood | Girdwood |
| F0983 | Specialty Fish Products | Anchorage |
| F1936 | Star of Kodiak | Kodiak |
| M3414 | Starbound | Vessel |
| F9999 | T & L Specialty Meats and Seafood, Inc. | Sitka |
| F9999 | *The Auction Block* | *Homer* |
| F0828 | The Salmon River Smokehouse | Gustavus |
| F1700 | Toksook Bay Fishermen's Bldg | Toksook Bay |
| F1193 | Trans-aqua International Inc. | Kasilof |
| F0939 | Trident Seafoods Corp. - Akutan Plant | Akutan |
| F0940 | Trident Seafoods Corp. - Sand Point | Sand Point |

## *Appendix E–Processor Code List*

| | | |
|---|---|---|
| F1927 | Trident Seafoods Corp. - St. Paul Plant | St. Paul Island |
| F1605 | Unalaska Seafood Co. | Unalaska |
| F1180 | Unisea, Inc - Dutch Harbor Facility | Dutch Harbor |
| M2839 | Victoria Ann | Vessel |
| F0270 | Wards Cove Packing Company - Kenai Operation | Kenai |
| F0274 | Wards Cove Packing Company - Excursion Inlet | Excursion Inlet |
| F1170 | Wards Cove Packing Company - Elfin Cove | Elfin Cove |
| F2185 | Wards Cove Packing Co., Dba E.c. Phillips & Son | Ketchikan |
| F0268 | Wards Cove Packing Company - Port Bailey | Kodiak Island |
| F0266 | Wards Cove Packing Company - Alitak Plant | Kodiak |
| F9999 | Washington Crab Producers Inc. | Westport |
| F0320 | Western Alaska Fisheries Inc. | Kodiak |
| F1366 | Westward Seafoods, Inc. | Dutch Harbor |
| F2266 | Wild Fish | Juneau |
| F0319 | Wrangell Fisheries, Inc. | Wrangell |
| F1249 | Yamaya Seafoods | Anchorage |
| P3116 | Yardarm Knot | Vessel |
| F9999 | Yki Fisheries, Inc. | Yakutat |

# Appendix F–Halibut Length to Weight Table

| Length (cm) | Kilograms | Length (cm) | Kilograms | Length (cm) | Kilograms |
|---|---|---|---|---|---|
| 10 | .01 | 55 | 1.82 | 100 | 12.64 |
| 11 | .01 | 56 | 1.93 | 101 | 13.05 |
| 12 | .01 | 57 | 2.05 | 102 | 13.47 |
| 13 | .02 | 58 | 2.16 | 103 | 13.91 |
| 14 | .02 | 59 | 2.29 | 104 | 14.35 |
| 15 | .03 | 60 | 2.41 | 105 | 14.80 |
| 16 | .03 | 61 | 2.55 | 106 | 15.26 |
| 17 | .04 | 62 | 2.69 | 107 | 15.73 |
| 18 | .05 | 63 | 2.83 | 108 | 16.21 |
| 19 | .06 | 64 | 2.98 | 109 | 16.71 |
| 20 | .07 | 65 | 3.13 | 110 | 17.21 |
| 21 | .08 | 66 | 3.29 | 111 | 17.72 |
| 22 | .09 | 67 | 3.45 | 112 | 18.24 |
| 23 | .11 | 68 | 3.62 | 113 | 18.77 |
| 24 | .12 | 69 | 3.80 | 114 | 19.32 |
| 25 | .14 | 70 | 3.98 | 115 | 19.87 |
| 26 | .16 | 71 | 4.17 | 116 | 20.44 |
| 27 | .18 | 72 | 4.36 | 117 | 21.01 |
| 28 | .21 | 73 | 4.56 | 118 | 21.60 |
| 29 | .23 | 74 | 4.76 | 119 | 22.20 |
| 30 | .26 | 75 | 4.98 | 120 | 22.81 |
| 31 | .28 | 76 | 5.19 | 121 | 23.43 |
| 32 | .32 | 77 | 5.42 | 122 | 24.07 |
| 33 | .35 | 78 | 5.65 | 123 | 24.71 |
| 34 | .38 | 79 | 5.89 | 124 | 25.37 |
| 35 | .42 | 80 | 6.13 | 125 | 26.04 |
| 36 | .46 | 81 | 6.38 | 126 | 26.72 |
| 37 | .50 | 82 | 6.64 | 127 | 27.41 |
| 38 | .55 | 83 | 6.91 | 128 | 28.12 |
| 39 | .60 | 84 | 7.18 | 129 | 28.83 |
| 40 | .65 | 85 | 7.46 | 130 | 29.56 |
| 41 | .72 | 86 | 7.75 | 131 | 30.31 |
| 42 | .76 | 87 | 8.05 | 132 | 31.06 |
| 43 | .82 | 88 | 8.35 | 133 | 31.83 |
| 44 | .88 | 89 | 8.66 | 134 | 32.61 |
| 45 | .95 | 90 | 8.98 | 135 | 33.41 |
| 46 | 1.02 | 91 | 9.31 | 136 | 34.22 |
| 47 | 1.10 | 92 | 9.64 | 137 | 35.04 |
| 48 | 1.17 | 93 | 9.99 | 138 | 35.87 |
| 49 | 1.25 | 94 | 10.34 | 139 | 36.72 |
| 50 | 1.34 | 95 | 10.70 | 140 | 37.59 |
| 51 | 1.43 | 96 | 11.07 | 141 | 38.46 |
| 52 | 1.52 | 97 | 11.45 | 142 | 39.35 |
| 53 | 1.62 | 98 | 11.83 | 143 | 40.26 |
| 54 | 1.72 | 99 | 12.23 | 144 | 41.18 |
| | | | | 145 | 42.11 |
| 146 | 43.06 | 188 | 97.39 | 230 | 187.75 |
| 147 | 44.02 | 189 | 99.11 | 231 | 190.40 |

## *Appendix F–Halibut Length to Weight Table*

| Length (cm) | Kilograms | Length (cm) | Kilograms | Length (cm) | Kilograms |
|---|---|---|---|---|---|
| 148 | 45.00 | 190 | 101.10 | 232 | 193.09 |
| 149 | 45.99 | 191 | 102.83 | 233 | 195.80 |
| 150 | 47.00 | 192 | 104.58 | 234 | 198.53 |
| 151 | 48.02 | 193 | 106.36 | 235 | 201.29 |
| 152 | 49.06 | 194 | 108.16 | 236 | 204.08 |
| 153 | 50.12 | 195 | 109.97 | 237 | 206.90 |
| 154 | 51.18 | 196 | 111.81 | 238 | 209.74 |
| 155 | 52.27 | 197 | 113.67 | 239 | 212.61 |
| 156 | 53.37 | 198 | 116.00 | 240 | 215.50 |
| 157 | 54.49 | 199 | 117.45 | 241 | 218.43 |
| 158 | 55.62 | 200 | 119.37 | 242 | 221.38 |
| 159 | 56.77 | 201 | 121.32 | 243 | 224.35 |
| 160 | 57.93 | 202 | 123.28 | 244 | 227.36 |
| 161 | 59.11 | 203 | 125.27 | 245 | 230.39 |
| 162 | 60.31 | 204 | 127.28 | 246 | 233.45 |
| 163 | 61.53 | 205 | 129.32 | 247 | 236.54 |
| 164 | 62.76 | 206 | 131.37 | 248 | 239.66 |
| 165 | 64.01 | 207 | 133.45 | 249 | 242.80 |
| 166 | 65.27 | 208 | 135.55 | 250 | 245.98 |
| 167 | 66.55 | 209 | 137.67 | | |
| 168 | 67.83 | 210 | 139.82 | | |
| 169 | 69.17 | 211 | 141.99 | | |
| 170 | 70.51 | 212 | 144.18 | | |
| 171 | 71.86 | 213 | 146.39 | | |
| 172 | 73.23 | 214 | 148.63 | | |
| 173 | 74.62 | 215 | 150.89 | | |
| 174 | 76.02 | 216 | 153.18 | | |
| 175 | 77.45 | 217 | 155.49 | | |
| 176 | 78.89 | 218 | 157.82 | | |
| 177 | 80.35 | 219 | 160.18 | | |
| 178 | 81.83 | 220 | 162.56 | | |
| 179 | 83.33 | 221 | 164.97 | | |
| 180 | 84.85 | 222 | 167.40 | | |
| 181 | 86.39 | 223 | 169.85 | | |
| 182 | 87.94 | 224 | 172.33 | | |
| 183 | 89.52 | 225 | 174.84 | | |
| 184 | 91.11 | 226 | 177.37 | | |
| 185 | 92.73 | 227 | 179.93 | | |
| 186 | 94.36 | 228 | 182.51 | | |
| 187 | 96.01 | 229 | 185.11 | | |

Halibut Discard Condition Criteria - Hook and Line Gear *(MSWord files sent separately)*

Halibut Discard Condition Criteria - Pot Gear *(MSWord files sent separately)*

Halibut Discard Condition Criteria - Trawl Gear *(MSWord files sent separately)*

## PACIFIC HALIBUT DISCARD CONDITION CRITERIA - TRAWL GEAR

*NOTE: Fish are initially assumed to be in EXCELLENT condition. If any criteria is true for a lesser condition, fish is then considered to be no better than that lesser condition.*

| CRITERIA CATEGORY | | EXCELLENT<br>*NO SIGN OF STRESS* | POOR<br>*ALIVE, BUT SHOWING SIGNS OF STRESS* | DEAD<br>*NO SIGN OF LIFE OR, IF ALIVE, LIKELY TO DIE FROM SEVERE INJURIES OR SUFFOCATION* |
|---|---|---|---|---|
| Capture injuries | General | Injuries, if any, are minor. | Moderate injuries. | Major injuries. |
| | Fin fraying | Minor. | Severe. | Severe. |
| | White Side Hemorrhaging | Limited to 10% or less of surface area on white side of fish. | From 10 to 25% of surface area on white side shows hemorrhaging. | More than 25% of surface area on white side of fish shows hemorrhaging. |
| | Body Damage | Limited to superficial nicks or cuts on body. | Moderate severity of any abrasions or cuts that may be present. | Vital internal organs may be damaged. Body or body cavity may be ripped open. Severe skin lacerations. |
| Jaw and mouth | | Jaw is tightly clenched. | Jaw is weakly clenched. | Jaw may hang open. Sediment in mouth. |
| Operculum pressure | | Fish closes operculum tightly for at least 5-10 seconds. Very difficult to force open. | Fish closes operculum weakly and not sustained. | Fish does not close operculum. |
| Bleeding | | No bleeding observed. | Bleeding from gill area may occur, but not profusely. Slight bleeding from fin edges. | Severe bleeding may be occurring from gill area. |
| Muscle tone and physical activity | | Muscle tone or physical activity is strong. | Muscle tone or physical activity is weak. Intermittent movement. May respond if stimulated. Body appears limp. | No sign of muscle tone. Physical activity absent or limited to fin ripples or twitches. Little, if any, response to stimuli. |
| Gill color | | Gills are deep red in color, indicating no loss of blood. | Gills are deep to bright red, indicating some loss of blood. | Gills appear washed out, e.g., dull red, pink, or white in color, indicating a substantial loss of blood. |

## Appendix G–Discard Condition Criteria

## PACIFIC HALIBUT DISCARD CONDITION CRITERIA - HOOK AND LINE GEAR

*NOTE: Fish are initially assumed to be in EXCELLENT condition. If any criteria is true for a lesser condition, fish is then considered to be no better than that lesser condition.*

| CRITERIA CATEGORY | | EXCELLENT<br>*NO SIGN OF STRESS* | POOR<br>*ALIVE, BUT SHOWING SIGNS OF STRESS* | DEAD<br>*NO SIGN OF LIFE OR, IF ALIVE, LIKELY TO DIE FROM SEVERE INJURIES OR SUFFOCATION* |
|---|---|---|---|---|
| Hooking & hook removal injuries | General | Hook injuries are minor, limited to hook entrance/exit hole, torn lip. | Hook injuries are moderate. | Hook injuries are severe. |
| | Jaw | Jaw in one piece, not split or separated from head. | Upper or lower jaw bone may be torn through, hanging from fish, or torn away on either side of the head. Tear may or may not include tearing through the cheek area. Lower or upper jaw may be split laterally, tearing through either snout or lower mouth. | Removal of hook has torn large flap from side of head. Tear usually originating in cheek area. Flap, usually including part of jaw, is either hanging loosely or missing. |
| | Eyeball/ Eye socket | Eye socket may be torn, but eyeball is undamaged. | Eyeball punctured. | Eyeball punctured. |
| Internal organs | | Internal organs undamaged. | Internal organs undamaged. | Internal organs are damaged. |
| Bleeding | | Minor and limited to jaw area. | Light to moderate, but not from gills. | Fish is bleeding severely, especially from gills. |
| Muscle tone | | Muscle tone or physical activity is strong. | Weak or intermittent; little or any response to stimuli. | No sign of muscle tone. Physical activity absent or limited to fin ripples or twitches. |
| Gill color | | Deep red, indicating no loss of blood. | Deep to bright red, indicating some loss of blood. | Gills appear washed out, e.g., dull red, pink, or white in color, indicating a substantial loss of blood. |
| Jig-hook wounds | | Limited to minor scratches on, or shallow punctures of, head or body. | Limited to minor scratches on, or shallow punctures of, head or body. | Jig-hook injury has penetrated viscera. |
| Gaff hook wounds | | Limited to minor scratches on, or shallow punctures of, head or body. | Limited to minor scratches on, or shallow punctures of, head or body. | Gaff wound penetrates viscera or cranial area. |
| Sand fleas | | Sand fleas may be present on the body, but no penetration of the eyes, fins, anus is noticed. Any damage is limited to small marks on skin or near fins. | Sand fleas may be present on the body, but no penetration of the eyes, fins, anus is noticed. Any damage is limited to small marks on skin or near fins. | Sand fleas have penetrated body. This may be very noticeable, but closely examine the fish. Initial penetration is usually through membrane around eye, near anus, or at base of fins. |
| Other predators | | None. | None. | Sea lions or orca whales may have taken obvious bite out of fish. Sea lamprey may have left hole into viscera or body. |

## Appendix G–Discard Condition Criteria

## PACIFIC HALIBUT DISCARD CONDITION CRITERIA - GROUNDFISH POT GEAR

*NOTE: Fish are initially assumed to be in EXCELLENT condition. If any criteria is true for a lesser condition, fish is then considered to be no better than that lesser condition.*

| CRITERIA CATEGORY | | EXCELLENT<br>*NO SIGN OF STRESS* | POOR<br>*ALIVE, BUT SHOWING SIGNS OF STRESS* | DEAD<br>*NO SIGN OF LIFE OR, IF ALIVE, LIKELY TO DIE FROM SEVERE INJURIES OR SUFFOCATION* |
|---|---|---|---|---|
| Capture injuries | General | Injuries, if any, are minor. | Moderate injuries or damage to fish. | Severe injuries or damage to fish. |
| | Fin fraying | Minor. | Moderate. | Severe. |
| | White Side Hemorrhaging | Limited to 10 % or less of surface area on white side of fish. | From 10 to 25 % of surface area on white side shows hemorrhaging. | More than 25% of surface area on white side of fish shows hemorrhaging. |
| | Body Damage | Limited to superficial nicks or cuts on body. | Moderate severity of any abrasions or cuts that may be present. | Vital internal organs may be damaged. Body or body cavity may be ripped open. Severe skin lacerations or cuts. |
| Jaw and mouth | | Jaw is tightly clenched. | Jaw is weakly clenched. | Jaw may hang open. Sediment in mouth. |
| Operculum pressure | | Fish closes operculum tightly for at least 5-10 seconds. Very difficult to force open. | Fish closes operculum weakly and not sustained. | Fish cannot close operculum, especially when disturbed. |
| Internal organs | | Internal organs undamaged. | Internal organs undamaged. | Internal organs are damaged. |
| Bleeding | | None from fins or gills. | Bleeding only slightly from fin edges or body. | Severe bleeding from fin edges, body, or snout. |
| Muscle tone | | Muscle tone or physical activity is strong. | Muscle tone or physical activity is weak. Intermittent movement. May respond if stimulated. Body appears limp. | No sign of muscle tone. Physical activity absent or limited to fin ripples or twitches. Little, if any, response to stimuli. |
| Gill color | | Gills are deep red in color, indicating no loss of blood. | Gills are deep to bright red, indicating some loss of blood. | Gills appear washed out, e.g., dull red, pink, or white in color, indicating a substantial loss of blood. |
| Sand fleas | | Sand fleas may be present on the body, but no penetration of the eyes, fins, anus is noticed. Any damage is limited to small marks on skin or near fins. | Sand fleas may be present on the body, but no penetration of the eyes, fins, anus is noticed. Any damage is limited to small marks on skin or near fins. | Sand fleas have penetrated body. This may be very noticeable, but closely examine the fish. Initial penetration is usually through membrane around eye, near anus, or at base of fins |
| Other predators | | No damage from crabs. | No damage from crabs. | Crabs in the pot may have attacked and/or eaten the "dead" fish |

## Appendix G–Discard Condition Criteria

# Appendix H–Product Recovery Rate Sampling

A recovery rate represents the proportion of the organism that is used in the product. The recovery rate is also referred to as the product recovery rate (PRR) or the recovery ratio. Recovery rates can be used in estimating the fresh weight of a catch from the tonnage of products produced from that catch by using the following equation and then adding discard weight, if any.

$$\text{Recovery Rate} = \frac{\text{Product Weight}}{\text{Round Weight (before processing)}}$$

Recovery rates are commonly expressed as a percent or as a ratio. Headed and gutted cod may have a recovery ratio of .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.

$$\text{Round Weight} = \frac{\text{Product Weight}}{\text{Product Recovery Rate}}$$

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 1 by the conversion factor.

If you were to check the accuracy of the product weight entries in processor logs, counts of product and average unit weight should also be checked. Unit weights tests, if done, should consist of weighing at least 10 units. The headings below should be used for sampling and documentation.

| Unit Type | No.of Units Sampled | Total Wt. - Container Wt. | = Unit Wt. |
|---|---|---|---|

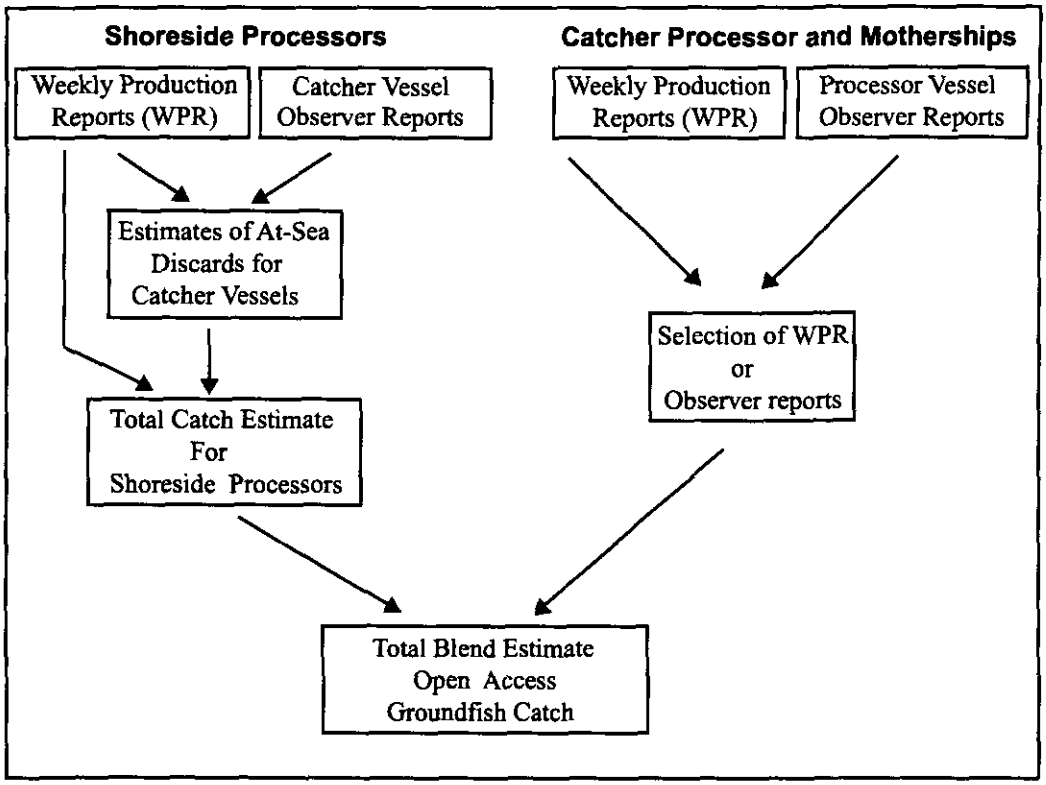
# Appendix I–Product Types and Codes

**Product Type Codes and Description**

| | |
|---|---|
| 1 | Whole fish/food fish (PRR = 1.00) |
| 2 | Whole bait fish (PRR = 1.00) |
| 3 | Bled only (throat, or isthmus, slit to allow blood to drain) |
| 4 | Gutted only |
| 6 | H & G, with roe |
| 7 | H & G, Western cut (head removed in front of pectoral girdle) |
| 8 | H & G, Eastern cut (head removed behind pectoral girdle) |
| 10 | H & G, tail removed |
| 11 | Kirimi (head, gut and tail removed by cuts perpendicular to spine) |
| 12 | Salted and split |
| 13 | "Wings" (On skates, side fins are cut off next to body) |
| 14 | Roe only (eggs, either loose or in sacs, or skeins) |
| 15 | Pectoral girdle only |
| 16 | Heads |
| 17 | Cheeks (opercular bone and muscles) or chins (lower jaw, muscles, flesh) |
| 18 | Chins (lower jaw, muscles and flesh) |
| 19 | Belly flaps (flesh in region of pelvic and pectoral fins) |
| 20 | Fillets with skin and ribs |
| 21 | Fillets with skin, no ribs |
| 22 | Fillets, with ribs, no skin |
| 23 | Fillets, skinless/boneless |
| 24 | *Deep skin fillets* |
| 30 | Surimi (paste from any of the fish flesh and additives) |
| 31 | Minced fish |
| 32 | Fish meal |
| 33 | Fish oil |
| 34 | Milt (in sacs, or testes) |
| 35 | Stomachs (includes all internal organs) |
| 36 | Octopus/squid mantles (flesh after removal of viscera and legs) |
| 37 | Butterfly (split, no backbone, head removed, fillets still attached) |
| 95 | Discards at plant. Floaters/shoreside in plant discard of whole groundfish and prohib.'s |
| 96 | Decomposed fish, previously caught fish which is caught again and discarded. (PRR 0.0) |
| 98 | Discards, at sea. Groundfish and prohibited sp. discarded by catcher vessels, c/p, and ms. |
| 99 | Dockside discard; discard after delivery and before processing. |

# Appendix J–The NMFS 'Blend' System

The 'Blend' system combines data from industry and observer reports to estimate groundfish harvest in North Pacific groundfish fisheries. Groundfish harvest is estimated weekly for each processor. Why use both industry and observer data?




## Shoreside Processors

### Weekly Production Reports for Shoreside Processors

Weekly Production Reports (WPR) for Shoreside Processors report landed weight of catch, which is used to account for the retained portion of the groundfish catch. Landings on a WPR are reported separately for each week, reporting area, gear type, and State/Federal waters designation. Catch under a Community Development Program or Research Fishery is reported separately.

The total retained groundfish for each processor is also used, in conjunction with observed discard rates, to estimate at-sea discards of groundfish.

### Catcher Vessel Observer Reports

Observers on catcher vessels report groundfish species composition, total catch, and estimates of retention and discard on a weekly basis. The information on groundfish discards is used in conjunction with total retained groundfish catch from shoreside weekly production reports to estimate total at-sea discards from all catcher vessels, including observed and unobserved vessels.

**Estimates of At-sea Discards for Catcher Vessels delivering to shoreside processors**
Observers on shore-delivering catcher vessels collect data on at-sea discards of groundfish. All observer data for a month, gear, and target fishery are combined to compute discard rates for each groundfish species observed to be discarded.

The discard rates are expressed as a ratio of the weight of the discarded species to the total retained groundfish weight.

The discard rates are multiplied by the retained landings for each shoreside processor to estimate total at-sea discards of groundfish associated with the groundfish landed to the processor.

**Total Catch Estimate for Shoreside Processors**
Total catch for shoreside processors is obtained by adding the landed catch weights reported on shoreside processor weekly production reports to the estimates of at-sea discards.

## Catcher/Processors and Motherships

**Weekly Production Reports for catcher processors and motherships**
Weekly Production Reports for Catcher Processors and Motherships report weights of processed products and round weights of discards. Product weights are converted to equivalent round weights using Product Recovery Rates (PRR).

**Processor Vessel Observer Reports**
Observers on processor vessels report groundfish species composition, total catch, and estimates of retention and discards on a weekly basis for each separate reporting area and gear type. Total catch may be estimated using cod-end or bin volumetrics, scales, or conversion from production data. Species composition of the catch is obtained by sampling the catch, and the total catch is apportioned by species based on that sampling.

**Selection of WPR or Observer Reports**
Total groundfish catch for all species combined is computed each week for each processor vessel from the weekly production report and from the observer report.

- If either report is missing, the report present is selected. If both reports are present, the blend compares the two numbers:
- If the WPR and observer total catch numbers are within 5 percent, the WPR is selected as the source.
- If the WPR is more than 30 percent higher than the observer total catch (for pollock target fisheries)** or more than 20 percent higher (all other targets), the WPR is selected as the source.
- In all other cases, the observer report is selected as the source.

The blend program then returns to the source data (WPR or observer) and copies the detailed records, showing gear type, area and species, to the blend. Records from WPR are identified in the blend by a Source field value of 'W', observer records are identified by a Source field value of 'O.'

** Pollock is processed into several products with highly variable recovery rates, including surimi and deep-skin fillets. The wider selection range is needed to ensure that WPR records are not inappropriately selected in cases where a processor achieves high recovery rates.

**Total Blend Estimate of Groundfish Catch**

Summary: The blend process combines data from industry production reports and observer reports to make the best, comprehensive accounting of groundfish catch. These data are used to manage quotas for groundfish in the Gulf of Alaska , Bering Sea, and Aleutian Islands . The blend data are also used as the basis for computing estimates of prohibited species bycatch. Prohibited species include Pacific halibut, salmon, herring, and crabs. Blend data are used for numerous regional and national reports, fishery stock assessments, and analysis of fishery management plans.

**Why use both industry and observer data to estimate total groundfish catch?**

For shoreside processors, Weekly Production Reports (WPR) submitted by industry are the best source of data for retained groundfish landings. All fish delivered to shoreside processors are weighed on scales, and these weights are used to account for retained catch.

Observer data from catcher vessels provide the best data on at-sea discards of groundfish by vessels delivering to shoreside processors. Discard rates from these observer data are applied to the shoreside groundfish landings to estimate total at-sea discards from both observed and unobserved catcher vessels.

For observed catcher/processors and motherships, the WPR and the Observer Reports record estimates of total catch (retained catch plus discards). If both reports are available, the blend selects one of them for incorporation into the catch database. If the vessel is unobserved, only the WPR is available.

# Appendix K–Sampling on Jig Vessels

The use of jig gear in the North Pacific groundfish fisheries has been expanding in recent years, particularly on smaller vessels targeting Pacific cod in the Bering Sea/Aleutian Islands area, and black rockfish in the Gulf of Alaska. Most vessels using jig gear are smaller than 60 feet and are currently exempt from observer coverage. However, some larger vessels participate in these fisheries and take observer coverage. *Should you find yourself on a vessel using jig gear, please follow these instructions for sampling* and recording your data. Our experience on this gear type is limited so your observations and final reports are especially important. In particular, please advise us if your experiences differ from what this handout indicates.

## The Gear Type and Fishing Strategy

Typically, a vessel using jig gear has several automatic jigging machines attached at points along the rail. Each machine has a single monofilament line weighted at the end with several hooks above the weight. The hooks have lures attached and usually are not baited. The automated machines deploy the gear to whatever fishing depth is programmed, or bottom depth. Upon reaching depth, they jig automatically. The more expensive machines can be programmed to sense a set resistance, such as 20 kilograms of fish, and automatically retrieve the gear, or retrieval can be done at the discretion of a crewman.

The strategy employed by jig vessels is similar to sport bottom fishing. The vessel either locates fish, or goes to a probable location, where the crew deploys the gear at a drift. If fish are present, and are amenable to taking the jigs, the catch should commence immediately. Vessels will stay on a site until the fishing activity drops off, and then move to a more productive location. While at any particular site they may move about to some degree in order to drift over a certain spot, rock, ledge or whatever. For our purposes, *this represents the same fishing site and the same fishing set.*

## Form Instructions

**Form 1US** - On a jig vessel please use Form 1US and follow the instructions for longline and pot vessels with the following exceptions:

1. The gear type for jigs is "7."

2. Soak time is defined as the total time from when gear is first deployed in a set until the last jigs are retrieved. Do not get concerned if any given machine breaks down or if the vessel stops fishing momentarily at the same site—all the time on a site is counted as total time no matter how many jigs are deployed, or if there are short stops in fishing.

3. In place of the total number of skates, enter the total number of separate jigging machines that were used in a set.

4. In place of the skate length or pot set length, enter the fishing depth as measured at the bottom of the weight. Do not subtract a fathom or two to account for where the hooks are at on the line. In many cases, fishing depth will equal the bottom depth, but not always such as when jigging for squid or pelagic rockfish.

5. In place of the number of hooks or pots per skate, enter the average number of hooks per jigging machine used on a set.

6. Leave the total hooks in the set blank. Because jig gear is generally set and retrieved many times in any given set, this column is not relevant. The total hooks figure on jig vessels cannot be used as on a longliner in extrapolating from hooks observed to total hooks set.

7. The OTC column on jig vessels should be the observer's estimate based on actual weights, or the observer's tally of fish with average weights applied. The catch rates are not comparable to trawl gear and it is often possible to weigh the entire catch. Because trips are short and catch rates relatively low, this method is possible. If the catch rates are high and you are unable to observe all fish from all machines, it is possible to tally only some of the jig machines, and then extrapolate that tally to the total number of machines used in the set for an OTC figure. Should you miss a set for whatever reason, use the vessel estimate of catch for OTC. However, the few observers who have worked on jig vessels have been able to independently estimate all sets.

**Form 3US** - On a jig vessel, please use the Form 3US designed for Trawl Vessels. The instructions for sampling are the same as on trawl vessels with the following clarifications which are specific to jig gear.

1. It is usually feasible to whole haul sample a jig set. The sets are not of a long duration, the catch size is small, and the diversity is not too great. If you whole haul sample and actually weigh each fish, enter a "B" in the sample type column. If you whole haul sample but tally and apply an average weight to fish in your sample, enter a "W" in the sample type column.

2. If for some reason you are unable to sample the entire set, you can partial haul or basket sample by observing the fish from only some of the jig machines. If you tally fish and apply an average weight to them, enter a "P" in the sample type. If you weigh all the catch from your sub-sample, enter a "B" in the sample type.

## Appendix L– Crisis Resource Centers

Kodiak Women's Resource and Crisis Center
The center provides resources and crisis services to the community, as well as shelter for women and their children who are victims of domestic violence and sexual assault.
P.O. Box 2122
Kodiak, AK 99615
Business Phone: (907) 486 - 6171
**Crisis Line Phone: 486 - 3625**

South Peninsula Women's Services Inc.
P.O. Box 2328
Homer, AK 99613
Business Phone: (907) 235 - 7712
**Hot Line: 235 - 8101**

Women's Resource and Crisis Center
325 S. Spruce
Kenai, AK 99611
Business Phone: (907) 283 - 9479
**Crisis Phone: 283 - 7257**

Sitkans Against Family Violence
P.O. Box 6136
Sitka, AK 99835
Business Phone: (907) 747 - 6511
**Crisis Phone: 747 - 3370**

Women in Safe Homes
P.O. Box 6552
Ketchikan, AK 99901
24 hour phone (Business and **Crisis**) (907) 225 - 9474

Aiding Women in Abuse and Rape Emergencies (AWARE)
P.O. Box 020809
Juneau, AK 99802
Business Phone: (907) 586 - 1090
**Crisis Phone: 586 - 6623**

Dutch Harbor: Unalaskan's Against Sexual Assault and Family Violence
P.O. Box 36, Unalaska, AK 99685
**24-Hour Crisis Line: 711**
Office: (907) 581 - 1500
AK Toll Free: 1-800-478-7238

# Appendix M – Radio Communications

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.

The use of radio communication equipment requires a licensed operator. If your vessel has given you permission to use the radio, you **must** follow the FCC rules for calling and speaking on the type of radio (VHF or SSB) you use. Ask first how to operate the radio and use these pages as a guide for calling. Be aware that obstructing others' transmissions with your call (by conversing for too long), using profanities or making false distress calls can cost the permit holder and/or you a heavy fine and/or prison sentence.

## VHF-FM 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. It 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.

Channel 22A (157.100 MHz) is the U.S. Coast Guard Liaison Channel. This channel is used for communications with U.S. 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.

Channels 24, 25, 26, 27 and 28 (also 84, 85, 86 and 87) are the Public Correspondence channels (ship-to-coast). These are available to all vessels to communicate with Public Coastal stations (Marine Operator). Channels 26 and 28 are the primary public correspondence channels.

Channels 1, 3, 5, 12, 13, 14, 15, 17, 65, 66, 73, 74, 77, 81, 82 and 83 are channels with special designations (port traffic communications, U.S. government communications, locks and bridges, environmental, etc.), and their use close to shore or to ports should be minimized.

Channels 7, 8, 9, 10, 11, 18, 19, 67, 68, 69, 70, 71, 72, 78, 79, 80 and 88 are commercial and non-commercial working channels that are available for conducting business. The abbreviated format (no call signs) is acceptable on these frequencies. It should be noted that some of these channels may be locally restricted (off the Washington Coast, for example, channel 11 is Tofino Coast Guard Traffic Control for the entry into Juan deFuca Strait, used for reporting ship locations), in which case their use for business should be avoided.

## HF-SSB Radios

To communicate over distances of beyond twenty miles, you will need to use satellite communication or a medium to high frequency radiotelephone referred to as Single Side Band (SSB) radio. The signal is poorer in quality than VHF and susceptible to slight atmospheric shifts. Lower frequencies are used for medium distances and higher frequencies for greater distances. The general rule for single sideband frequency selection is: multiply the frequency in MHz by 100 to obtain the approximate coverage distance in miles. At night however, the ranges of SSB radiowave travel are from 2-3 times greater. Therefore, use a lower frequency at night to cover the same distance.

All ship SSB radiotelephones must be capable of operating on 2182 kHz, the international distress and calling frequency, and at least 2 other frequencies. Numerous channels are available for your use; which ones are available varies from place to place. However, channel 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 on channel 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: channel 16.

## Radio Procedure

Inasmuch as the airwaves are in the public domain, it is the responsibility of the radio station operator to conduct business according to established guidelines and procedures. While on the air, the operator should follow the following format outline:

1. Listen before beginning transmission in order to ensure that you are not interfering with other stations or with emergency radio traffic.

2. Identify your station when calling. On the SSB, a calling station must limit the duration of the hail to not more than 30 seconds. If there is no reply, the hail may be repeated at 2 minute intervals up to a maximum of three times, at which time the calling station must sign off and wait a minimum of 15 minutes before making another attempt. This requirement does not apply in emergency situations.

3. Keep transmissions short and concise, giving the other station a chance to respond, ask questions, or reconfirm an unclear message. A long, complicated message can best be effected in short segments,

with breaks in between to ensure that the receiving station has copied each portion of the message correctly.

4. Follow correct radio procedure while on the air. The phonetic alphabet should be learned and used — spelling unclear words with an extemporaneous phonetic alphabet can lead to misunderstood messages. You should also know and use the radio "punctuation" words ("over", "clear", "out", "roger", "words twice", "say again", "standing by", and "break"). Since most radio communication is only one way at a time, these words can be invaluable for signaling your intentions to the receiving station. Make sure to speak directly into the microphone; speaking loudly, slowly, and distinctly — but not shouting — can significantly improve the legibility of radio broadcasts. The use of profanity on the public airwaves is strictly forbidden.

5. Upon completing a transmission, you must sign off by identifying your station and using the words "clear" or "out" (or, if you expect to soon resume contact with the same station, by using the phrase "standing by").

Radio Telephone Procedure - Continued

1. Radios are different from telephones in that they cannot transmit and receive simultaneously. Therefore when you have temporarily finished talking and are ready to listen, say "over," and release the button on your microphone. When the other party is ready to listen they will say "over." At the end of your entire message, say "out" rather than "over." Keep in mind that people on other ships can overhear your conversation, so watch what you say.

2. Sounds are easily garbled on marine radios so the phonetic alphabet is used when sailors want to spell something. Here are the words that the Coast Guard will recognize as letters:

| | |
|---|---|
| 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 (keeloes) | X - x-ray |
| L - Lima (Leema) | Y - Yankee |
| M - mike | Z - Zulu |

3. Every ship and all Coast Guard stations continually listen to the emergency frequencies. Therefore when you want to talk to someone, call on an emergency frequency. As soon as you contact them, arrange to switch to another channel. It is illegal, impolite, unfair, and dangerous to talk on emer-

gency channels. Sometimes atmospheric conditions are such that the emergency frequencies are the only ones that work. At those times you simply cannot communicate via radio except to report emergencies.

Emergency frequencies are:

FM Channel 16, international distress
FM Channel 13, for ships to use to avoid collisions. You can contact other ships on 13, but not Coast Guard shore stations.
AM 2182, international distress

(Almost certainly as an observer you will only be using FM frequencies.)

4. When you initially contact another station make sure you state what channel you are broadcasting on, since all ships and stations constantly listen to several.

5. Speak in normal tones, using normal conversational pauses and emphasis.

6. Ensure that your messages are brief and businesslike. No chatter.

7. When trying to establish communications repeat the other station's name, and your name, at least twice. A typical message may be as follows:

You: *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: *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 an observer talking for the captain. A crewman has a badly crushed arm and needs hospitalization. Can you evacuate the crewman? Over."*

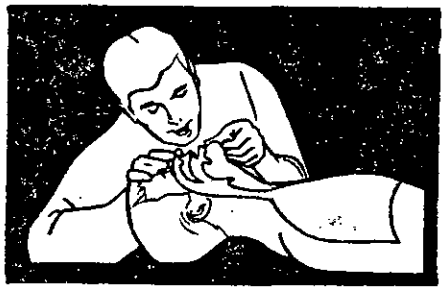
C.G.: *Vessel Starry Flounder, this is Kodiak. Affirmative. What is your current position? Over."*

You: *Kodiak this is the Starry Flounder. Position fifty-five degrees fifty minutes north, 157 degrees, twenty-four minutes west, over.*

# Cardiopulmonary Resuscitation (CPR)

**SHAKE OR SHOUT TO DETERMINE UNCONSCIOUSNESS**

## Airway



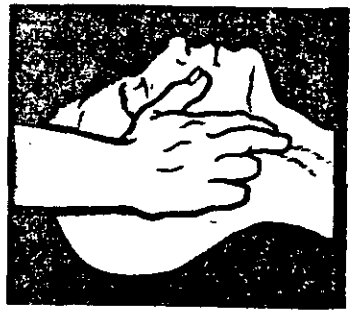
**If no response:**

**TILT** head and **LIFT** chin to clear airway of tongue.
**LOOK, LISTEN,** and **FEEL.**
Look to see if chest is rising and falling.
Listen and Feel at mouth with your ear to determine breathing.

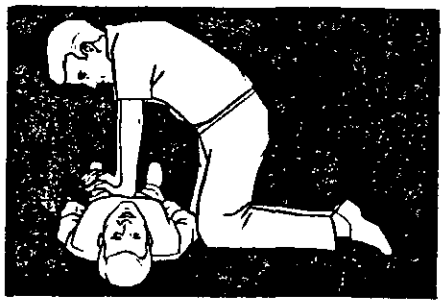
## Breathing

**If no breathing:**

**PINCH** nostrils.
**OPEN** your mouth.
**TAKE** a deep breath.
**SEAL** patient's mouth with yours.
**BLOW** four quick, full breaths.
**CHECK** neck pulse on the side nearest you.
If pulse is present, continue breathing 12 times per minute (1 each 5 seconds).
*Child/Infant rate - 20 times per minute (1 each 3 seconds)*

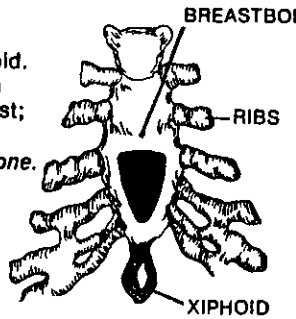


## Circulation



**If no pulse:**

**REMOVE** obstructive clothing from chest.
**FEEL** for lower end of breastbone with 2 or 3 fingers on xiphoid.
**PLACE** heel of one hand just above fingers so that you are on lower one-half of breastbone, **PLACE** other hand on top of first; **KEEP** arms straight.
*Small child — use heel of one hand at midpoint of breastbone.*
*Infant — use 2 fingers at midpoint of breast bone.*
**COMPRESS** breastbone straight down 1½ to 2 inches . . .
*Child — ¾ to 1½ inches*
*Infant — ½ to ¾ inch*
. . . at a **RATE** of 60-80 times per minute.
*Child/Infant 80-100 times per minute.*

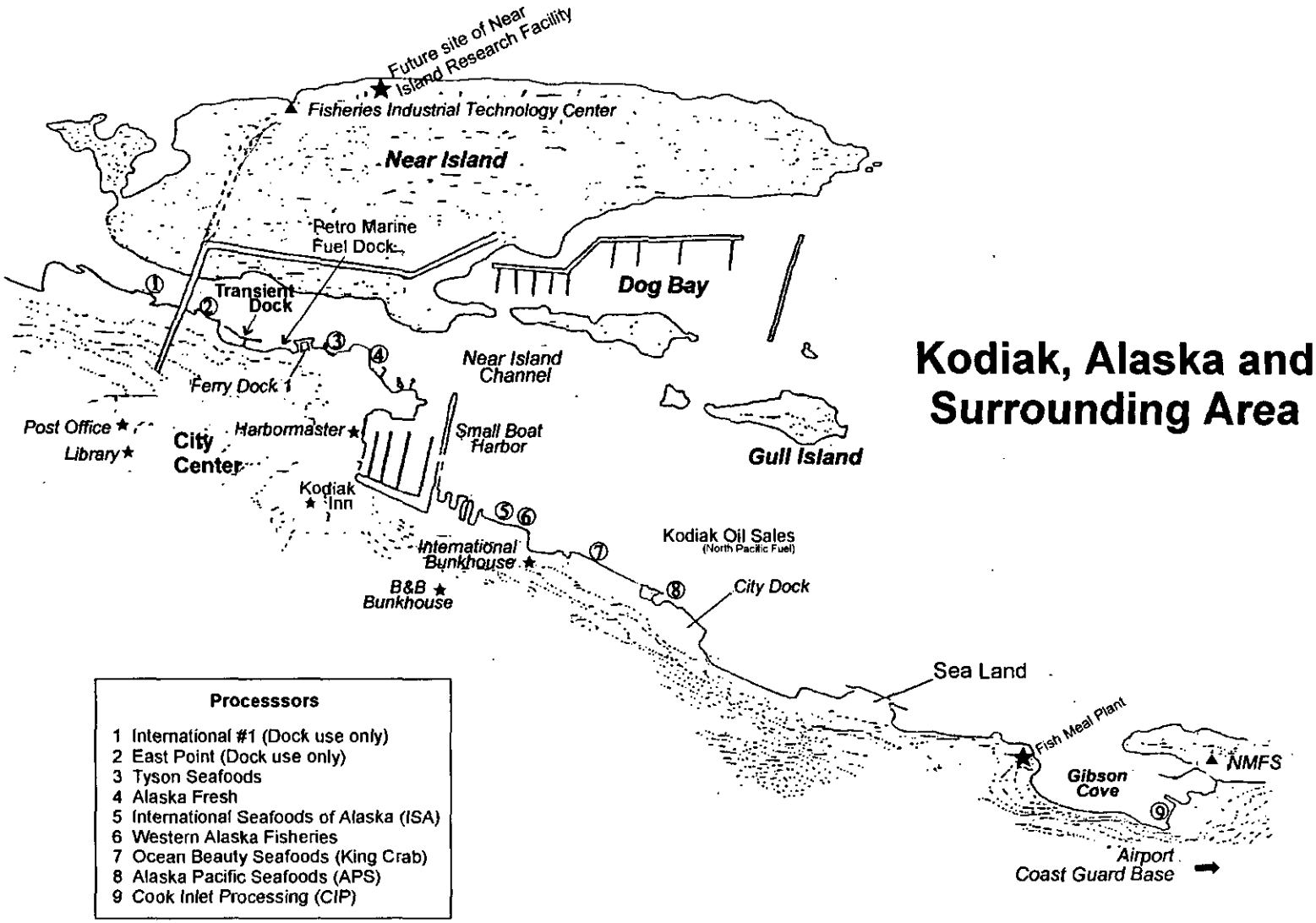



**ONE PERSON** — give **2 BREATHS** after **15 CHEST COMPRESSIONS.** Chest compressions are done at a rate of 80 times per minute.

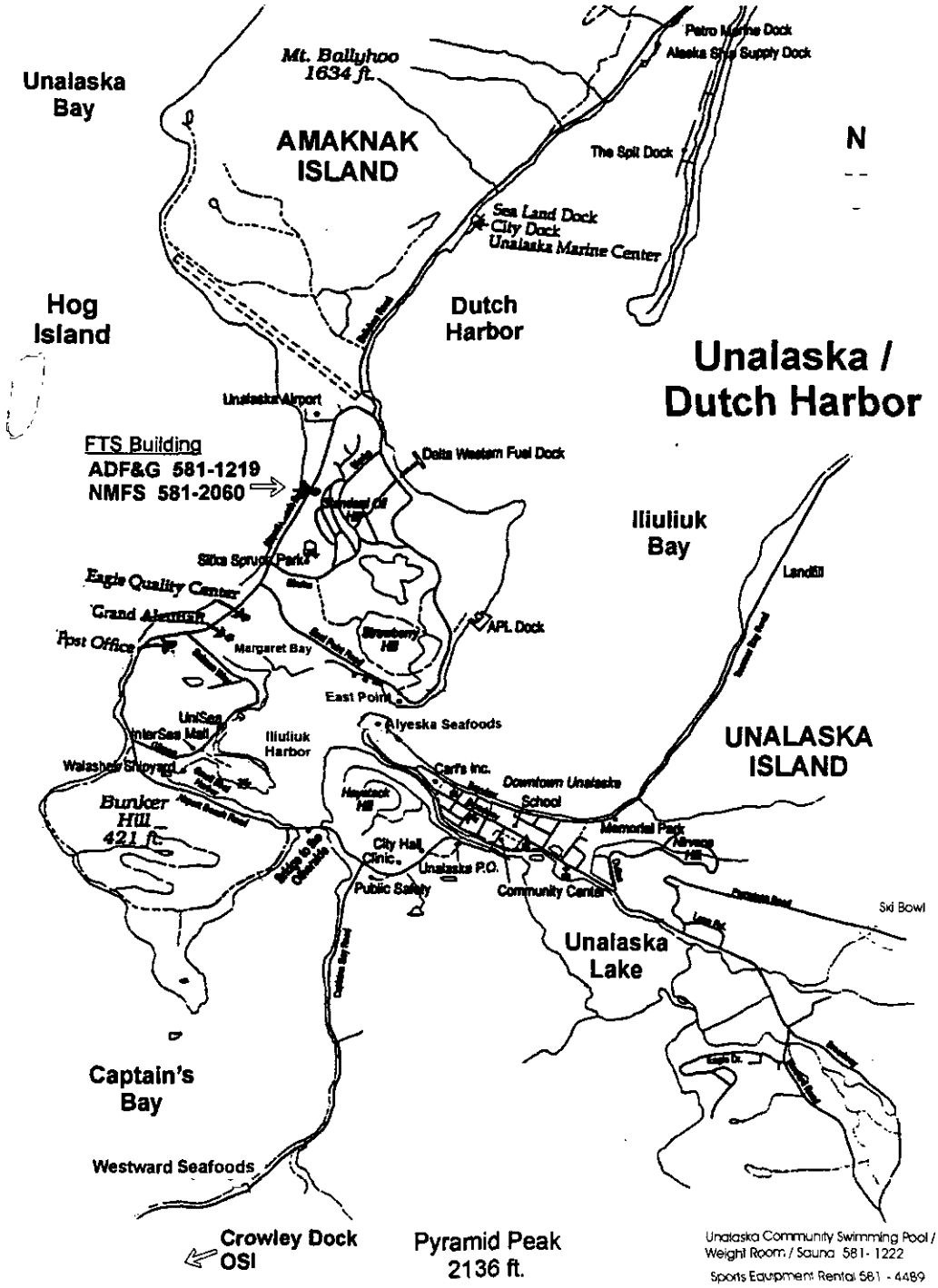
**TWO PERSONS** — Give **1 BREATH** during the upstroke of each **5th CHEST COMPRESSION.** Chest compressions are done at a rate of 60 times per minute.

## Call for Help.

# Kodiak, Alaska and Surrounding Area



# Appendix O– Charts of Alaskan Ports



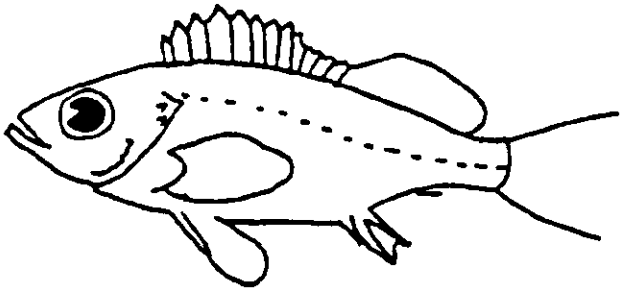
## **Appendix P**–ROCKFISH SPECIES DESCRIPTION FORM

Species Name:
Date of Capture:
Haul or Delivery Number:
Position of Capture (Lat. & Long.):
Depth of Capture:
Length:
Weight:
Was an example of this species brought back? Yes No
**(Note: If this fish represents a range or depth extension or a record in size, bring it back for species verification.)**

Remember to start by checking the rockfish section of the "Species Identification Manual" to determine whether it is of the genus Sebastes, Sebastolobus, or Adelosebastes.

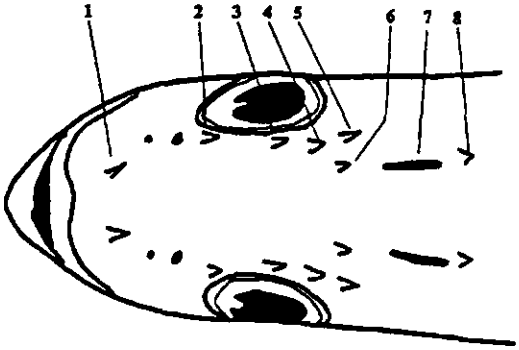
What *color category of Hitz's would you place it in?*

Please sketch any pattern, stripes, freckles, bars, light or dark areas etc. Draw the shape of the anal fin and include any symphyseal knob. Study your specimen closely.



Circle the pairs of head spines your specimen has on the diagram below. Remember that all members of a species do not have exactly the same spine distribution that is depicted in Hitz. Also, remember that some spines are very difficult to find.

**Strength of Head Spines - Circle: WEAK or STRONG**



## *Appendix P–Rockfish Species Description Form*

Which fish in Eschmeyer looks the most like your fish?

Plate number: ____ Common name:

Scientific name:

Examine the fish and record the following meristic characters: (Note: There is often a fair amount of variability in a fish, even between counts on different sides of the same fish. Therefore, counts on both sides might help.)

Gill rakers—total:
Gill rakers--upper arm:
Gill rakers—lower arm:

Peritoneum Color:

Are the second anal fin spine and third anal fin spine equal in length? Yes No

If not, which is larger? Second spine Third spine

**(Note: If you are not <u>absolutely</u> sure of your identification, bring a specimen back or at least take a photograph of it.)**

Comments and Additional Notes:

## **Appendix Q**–FLATFISH SPECIES DESCRIPTION FORM

Species Name:
Date of Capture:
Haul or Delivery Number:
Position of Capture (Lat. & Long.):
Depth of Capture:
Length:
Weight:

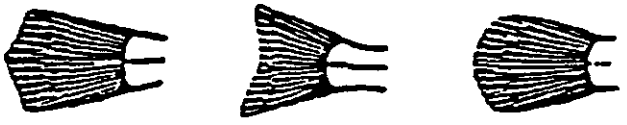
Was an example of this species brought back? Yes No
**(Note: If this fish represents a range or depth extension, or a record in size, bring it back for species verification.)**

Is the flatfish right eyed or left eyed?

Note: Right-eyed fish belong to the family Pleuronectidae and left-eyed fish belong the family Bothidae. However, remember that not all Pleuronectidae have their eyes on the right side, unusual individuals may have their eyes on the left.

Please answer the following questions: (Hint - check the illustrations on the first page of the key to make sure you are taking measurements in the same way that the key asks you to.)

What is the general tail shape?



Does the fish have an accessory dorsal branch (ADB) of the lateral line?
__ Yes (If so, remember to sketch it in on the illustration on the back.)
__ No

Does the eye protrude over the profile of the head such that its edge can be seen from the blind side?
__ Yes __ No

Relative to the lower eye, the maxillary ends:
__ forward of orbit
__ below anterior part of orbit
__ below pupil of eye
__ below posterior part of orbit
__ below posterior margin of orbit or beyond

What is the preoperculum shape?
__ rounded __ angled

Anal spine present?
____Yes No____

## *Appendix Q–FlatfishSpecies Description Form*

What is the shape of the lateral line over the pectoral fin?
__ flat __ arched
__ curved __ highly arched

What is the shape of the posterior margin of the pectoral fin (on the eyed side)?
__ rounded
__ angular
__ pointed or extended (i.e. upper rays longer than lower rays)

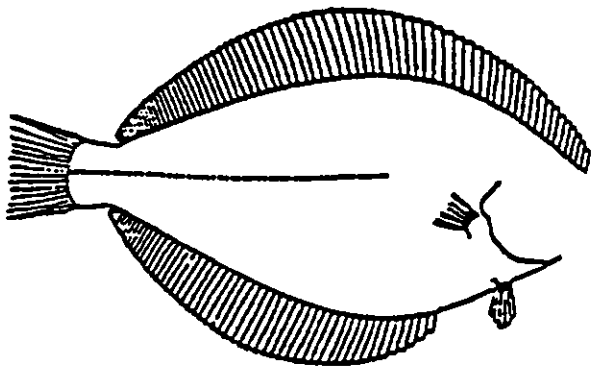
Please make the following counts:

Gill rakers on the 1st arch:
total: ___
upper arm: ___
lower arm: ___

Gill rakers on the 2nd arch:
upper arm: ___

Finish the sketch below as best you can. Make sure to draw in the important features of the flatfish. Include the following in your drawing and/or comments:

- general head shape
- size, shape, and symmetry of mouth
- shape of the end of the tail
- lateral line (include any arch and ADB)
- shape of preoperculum
- size and shape of pectoral fin
- placement of eyes
- coloration (eyed and blind side)
- coloration patterns



Comments: _____

_____

_____

_____

## **Appendix R**—MISC. SPECIES DESCRIPTION FORM

Species Name:
Date of Capture:
Haul or Delivery Number:
Position of Capture (Lat. & Long.):
Depth of Capture:
Length:
Weight:

Was an example of this species brought back? Yes No
**(Note: If this animal represents a range or depth extension or a record in size, bring it back for species verification.)**

This form is to be filled out for the first sighting of all fish (except rockfish and flatfish which have their own description forms) and invertebrates keyed out to family or to species. For fish, include counts of all fin rays, standard body measurements, (fork length, head length, snout length, and caudal peduncle length) and any other pertinent measurements.

Examine the fish and record the following meristic characters: (Note: There is variability in fish of the same species, and even between counts on different sides of the same fish. Therefore, counts on both sides might help.)

Dorsal fin spines:_____ _____ _____
Dorsal fin rays:_____ _____ _____
Anal fin rays:_____ _____
Anal fin spines_____ _____
Pectoral fin rays:_____
Pelvic fin spines:_____
Pelvic fin rays:_____

Gill rakers--upper arm:_____
Gill rakers—lower arm:_____
Gill rakers total:_____

List below, the features that led you to your family, genus or species conclusion. Be detailed in your description and on the back of this form, make a sketch showing the main features.
**If you are not absolutely sure of your identification, bring a specimen back or at least take a photograph of it.**

Comments:

**Draw Specimen on Reverse Side**

# Appendix S—Sampling Theory and Random Number Table

We take samples from a population because we do not have the time or the resources to count or measure every member of a population, but we still wish to draw conclusions about the population. If every member of the population is equally likely to occur in our sample, then when we repeat the sampling method over time, our repeated samples are representative of the population. If our samples are representative of the population, then we can draw conclusions based on our samples and apply them to the population. By choosing a random selection method to draw our sample from the population, we ensure that every member of the population has an equal probability of occurring in our sample.

Advantages of random sampling
The use of a random method of sample selection eliminates any subjectivity on the part of the scientist. 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 if you have used a random method to collect your species composition samples.

When random sampling methods are used to collect data, we are justified in using statistical methods for estimating population parameters based upon that data. We can also calculate the precision of estimates, and determine whether estimates are significantly different from one another.

**How to take a random sample**

- First, 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, our population is the entire group of animals of all species caught in a given haul.

- Second, define a sampling frame. The sampling frame is a conceptual framework which divides the population into independent, countable sampling units (defined below). In practice, you have two general categories of sampling frames on a trawler vessel: spatial and temporal. Use a spatial framework (such as measured portions of a deck or bin) when all of the catch is in one place while you are sampling. Use units of time (five minute increments, for example) when all of the catch is not available in one space, but 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).

- Third, 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 parts of the sampling frame; so if your sampling frame breaks the catch on deck into measured areas, then a single measured area is the sampling unit. Likewise, a single five minute increment of run time is the sampling unit for a temporal sampling frame defined for a factory conveyor. 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 5 pots, or a group of any number of pots as long as the number for the unit is consistent throughout the sampling frame.

• Fourth, 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 (although you will have to keep track of how many go by in the entire set.)

• Fifth, generate random numbers between 1 and your maximum sample unit number (inclusive) to determine which sampling unit(s) to select for your sample. You may use a computer to generate random numbers, if you have one available. Since many of you will not have access to a computer, you can use the random number table on the next page.

• To use the random number table, you must 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. Then you determine how many digits in the row you are using: if you need numbers between 1 and 250, use three digits in the row. If you need numbers between 1 and 25, use two digits in the row, and so on. Then proceed in one direction along the column, recording appropriate numbers and skipping numbers too high or repeated, until you have enough random numbers. For example, to choose 3 numbers between 1 and 25, you enter the table by placing your finger on a given column and row. You previously decided you would work up the column from your starting point. (The following example digits do not correspond to the random number table you have been given!) The pair of digits you enter on is 67, so you skip it because it is greater than 25. The next pair of digits up is 09, so you write down nine. The next pair up is 35, so you skip it, and so on until you have 3 unique numbers between 1 and 25 (inclusive). You can go in any direction in the table, even diagonally, as long as you decide the direction before you enter the table. If you get to the end of one column or row, continue in the opposite direction in the next column or row. Unlike the Random Sample Table (RST) that we have designed to select hauls to be sampled, 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.

• Finally, 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 you units are time increments, collect all of the fish from the time increment. If you units

| | 00-04 | 05-09 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 22808 | 04391 | 45529 | 53968 | 57136 | 98228 | 85485 | 13801 | 68194 | 56382 |
| 01 | 49305 | 36965 | 44849 | 64987 | 59501 | 35141 | 50159 | 57369 | 76913 | 75739 |
| 02 | 81934 | 19920 | 73316 | 69243 | 69605 | 17022 | 53264 | 83417 | 55193 | 92929 |
| 03 | 10840 | 13508 | 48120 | 22467 | 54505 | 70536 | 91206 | 81038 | 22418 | 34800 |
| 04 | 99555 | 73289 | 59605 | 37105 | 24621 | 44100 | 72832 | 12268 | 97089 | 68112 |
| 05 | 32677 | 45709 | 62337 | 35132 | 45128 | 96761 | 08745 | 53388 | 98353 | 46724 |
| 06 | 09401 | 75407 | 27704 | 11569 | 52842 | 83543 | 44750 | 03177 | 50511 | 15301 |
| 07 | 73424 | 31711 | 65519 | 74869 | 56744 | 40864 | 75315 | 89866 | 96563 | 75142 |
| 08 | 37075 | 81378 | 59472 | 71858 | 86903 | 66860 | 03757 | 32723 | 54273 | 45477 |
| 09 | 02060 | 37158 | 55244 | 44812 | 45369 | 78939 | 08048 | 28036 | 40946 | 03898 |
| 10 | 94719 | 43565 | 40028 | 79866 | 43137 | 28063 | 52513 | 66405 | 71511 | 66135 |
| 11 | 70234 | 48272 | 59621 | 88778 | 16536 | 36505 | 41724 | 24776 | 63971 | 01685 |
| 12 | 07972 | 71752 | 92745 | 86465 | 01845 | 27416 | 50519 | 48458 | 68460 | 63113 |
| 13 | 58521 | 64882 | 26993 | 48104 | 61307 | 73933 | 17214 | 44827 | 88306 | 78177 |
| 14 | 32580 | 45202 | 21148 | 09684 | 39411 | 04892 | 02055 | 75276 | 51831 | 85686 |
| 15 | 88796 | 30829 | 35009 | 22695 | 23694 | 11220 | 71006 | 26720 | 39476 | 60538 |
| 16 | 31525 | 82746 | 78935 | 82980 | 61236 | 28940 | 96341 | 13790 | 66247 | 33839 |
| 17 | 02747 | 35989 | 70387 | 89571 | 34570 | 17002 | 79223 | 96817 | 31681 | 15207 |
| 18 | 46651 | 28987 | 20625 | 61347 | 63981 | 41085 | 67412 | 29053 | 00724 | 14841 |
| 19 | 43598 | 14436 | 33521 | 55637 | 39789 | 26560 | 66404 | 71802 | 18763 | 80560 |
| 20 | 30596 | 92319 | 11474 | 64546 | 60030 | 73795 | 60809 | 24016 | 29166 | 36059 |
| 21 | 56198 | 64370 | 85771 | 62633 | 78240 | 05766 | 32419 | 35769 | 14057 | 80674 |
| 22 | 68266 | 67544 | 06464 | 84956 | 18431 | 04015 | 89049 | 15098 | 12018 | 89338 |
| 23 | 31107 | 28597 | 65102 | 75599 | 17496 | 87590 | 68848 | 33021 | 69855 | 54015 |
| 24 | 37555 | 05069 | 38680 | 87274 | 55152 | 21792 | 77219 | 48732 | 03377 | 01160 |
| 25 | 90463 | 27249 | 43845 | 94391 | 12145 | 36882 | 48906 | 52336 | 00780 | 74407 |
| 26 | 99189 | 88731 | 93531 | 52638 | 54989 | 04237 | 32978 | 59902 | 05463 | 09245 |
| 27 | 37631 | 74016 | 89072 | 59598 | 55356 | 27346 | 80856 | 80875 | 52850 | 36548 |
| 28 | 73829 | 21651 | 50141 | 76142 | 72303 | 06694 | 61697 | 76662 | 23745 | 96282 |
| 29 | 15634 | 89428 | 47090 | 12094 | 42134 | 62381 | 87236 | 90118 | 53463 | 46969 |
| 30 | 00571 | 45172 | 78532 | 63863 | 98597 | 15742 | 41967 | 11821 | 91389 | 07476 |
| 31 | 83374 | 10184 | 56384 | 27050 | 77700 | 13875 | 96607 | 76479 | 80535 | 17454 |
| 32 | 78666 | 85645 | 13181 | 08700 | 08289 | 62956 | 64439 | 39150 | 95690 | 18555 |
| 33 | 47890 | 88197 | 21368 | 65254 | 35917 | 54035 | 83028 | 84636 | 38186 | 50581 |
| 34 | 56238 | 13559 | 79344 | 83198 | 94642 | 35165 | 40188 | 21456 | 67024 | 62771 |
| 35 | 36369 | 32234 | 38129 | 59963 | 99237 | 72648 | 66504 | 99065 | 61161 | 16186 |
| 36 | 42934 | 34578 | 28968 | 74028 | 42164 | 56647 | 76806 | 61023 | 33099 | 48293 |
| 37 | 09010 | 15226 | 43474 | 30174 | 26727 | 39317 | 48508 | 55438 | 85336 | 40762 |
| 38 | 83897 | 90073 | 72941 | 85613 | 85569 | 24183 | 08247 | 15946 | 02957 | 68504 |
| 39 | 82206 | 01230 | 93252 | 89045 | 25141 | 91943 | 75531 | 87420 | 99012 | 80751 |
| 40 | 14175 | 32992 | 49046 | 41272 | 94040 | 44929 | 98531 | 27712 | 05106 | 35242 |
| 41 | 58968 | 88367 | 70927 | 74765 | 18635 | 85122 | 27722 | 95388 | 61523 | 91745 |
| 42 | 62601 | 04595 | 76926 | 11007 | 67631 | 64641 | 07994 | 04639 | 39314 | 83126 |
| 43 | 97030 | 71165 | 47032 | 85021 | 65554 | 66774 | 21560 | 04121 | 57297 | 85415 |
| 44 | 89074 | 31587 | 21360 | 41673 | 71192 | 85795 | 82757 | 52928 | 62586 | 02179 |
| 45 | 07806 | 81312 | 81215 | 99858 | 26762 | 28993 | 74951 | 64680 | 50934 | 32011 |
| 46 | 91540 | 86466 | 13229 | 76624 | 44092 | 96604 | 08590 | 89705 | 03424 | 48033 |
| 47 | 99279 | 27334 | 33804 | 77988 | 93592 | 90708 | 56780 | 70097 | 39907 | 51006 |
| 48 | 63224 | 05074 | 83941 | 25034 | 43516 | 22840 | 35230 | 66048 | 80754 | 46302 |
| 49 | 98361 | 97513 | 27529 | 66419 | 35328 | 19738 | 82366 | 38573 | 50967 | 72754 |

Random Number Table

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# Glossary

## A – B

**ABC**. For acceptable biological catch. An annual harvest level for each species based only on biological considerations.

**aft**. Towards the stern of a vessel

**amidships**. Midway between the bow and stern of a ship, or on the centerline.

**athwart ships**. Side-to-side across a ship, perpendicular to the centerline.

**bag** . The codend.

**basket sample**. 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.

**bight**. The 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.

**block**. A pulley or system of pulleys in a frame, with a hook.

**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 trawl to protect the net from damage.

**bosun**. The chief of the deck crew.

**bottom**. 1) Ocean floor, or 2) fishing depth, or 3) a ship hull.

**bow**. The forward end of a ship.

**bow line**. A mooring line attached to the bow of a ship.

**bowline**. A type of knot used to form an eye in the end of a rope.

**breach**. 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, 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**. Any species in the catch other than the target species.

## C

**capstan** (gypsy). An upright, spool-shaped, power rotational cylinder around which cables or hawsers are wound for hoisting anchors, or other weights.

**chaffing gear**. The protective carpeting (or strands of nylon forming a carpet pile) on the outer, underside of a bottom 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.

**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.

**codend**. The end "bag" of a trawl net where the majority of the fish are collected and held.

**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**. In accordance with the fishing regulations.

**cookie** (disc). A flat, round piece of rubber with a hole in the center strung on a wire rope or chain to protect the trawl net from abrasion and to stir up a mud cloud on the bottom.

## D – E

**demersal**. Being or living near the seabed.

**directed fishing**. Targeting or fishing for a species quota.

**disembark**. To get off a vessel.

**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**. The vertical distance from keel to waterline of a ship.

**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**. For Exclusive Economic Zone. This is the term for the 200 mile jurisdiction zone around the U.S. coastline.

**embarkation**. To board a vessel.

**EPIRB**. For Emergency Position Indicating 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.

**expenses**. All costs of making the trip: fuel, groceries, ice, bait, lost gear. Some expenses may be gross-stock expenses, that is, costs levied against the gross stock before any shares are deducted. Crew expenses are those trip costs levied against the crew's share, which is the amount left after deduction of boat share and gross-stock expense.

## F

**fathom**. A measure of length or depth equal to six feet.

**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.

**flatfish**. Fish which are laterally compressed and who 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**. A series of bobbins, tires or discs strung on chain or wire rope attached to the bottom front of a bottom trawl to protect the net from damage. On a midwater trawl, the rope or wire running

along the front and bottom edge of the net.

**forward**. Towards the bow of a vessel.

**freezer trawler**. A large, catcher/processor vessel whose products are whole fish or parts of fish frozen into blocks.

**fresh weight**. The weight of the whole fish (or animal) as it was when alive. Also called round weight, whole weight.

**FUS**. For Fully Utilized Species. A designation given to bycatch species whose quota has been taken, but may be taken incidentally in another target fishery. Fully Utilized Species must be discarded from the catch like prohibited species.

## G

**galley**. The ship's kitchen and/or mess hall.

**gallows**. Structure from which trawl blocks are hung; separate units port and starboard.

**gangion**. The leader line, about a meter in length, tied into a longline with a hook tied to its free end.

**gantry**. A continuous structure athwart ship used for towing and gear handling.

**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.

**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

**hatch**. An opening in a deck or bulkhead of a ship.

**haul**. A catch of fish from one tow of a net.

**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.

**I-beam**. A steel beam shaped like an "I" in cross section.

**incidental catch or species**. A 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 divided by distance, equaling speed. One knot equals one nautical mile (6080

feet) in one hour.

## L – O

**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

**lobby**. Another name for a fish bin on a catcher/processor.

**master**. Fishing master and/or captain.

**mothership**. A processing vessel at-sea (under way) whose fish come from catcher boat's deliveries.

**MSY**. For maximum sustainable yield. An estimate of the largest average annual sustainable 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.

**net reel**. A hydraulic drum on the deck on which the net and most of the rigging are wound.

**otterboard**. Another name for a trawl door; refer to net diagram.

**otter trawl**. The type of net gear used on stern trawlers; Refer to net diagram.

**OY**. For optimum yield. A harvest level for a species that achieves the greatest overall benefit, including economic, social, and biological consideration.

## P

**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, pewing**. A sharp-ended pole which is used to skewer fish and toss them to another location.

**pod**. A group of marine mammals traveling in association.

**port**. The left side of a ship (when looking forward).

**porthole**. A window in the hull or the outside bulkhead of a ship.

**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 you are collecting your sample.

**prohibited species**. For groundfish fishing vessels, species whose allowable catch and retention is zero. For observer sampling, the prohibited species include salmon, herring, halibut, king crab and tanner crab. For vessel operators, the prohibited species include the above as well as any other species declared prohibited by a notice of closure.

**prohibited species sampling**. Groundfish catch sorted by the observer to determine only the numbers and weights of salmon, herring, halibut, king crab, and tanner crab present.

**PSC**. For prohibited species catch. A harvest limit usually placed on halibut, salmon and crabs or

other species which must be discarded in the groundfish fisheries.

## R

**radio call sign**. The 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.

**R.D.F.** For radio direction finder.

**regenerated scale**. A fish scale which has grown in to replace one that was lost. Regenerated scales are useless for aging the fish.

**reserve**. A portion of quota set aside at the beginning of the fishing year to allow for uncertainties in preseason estimates of ABC.

**riblines**. Heavy lines or chains that run down the length of the trawl net to strengthen it.

**rostrum**. A pointed, calcareous, median extension on the anterior end of crab carapaces.

**roundfish**. Fish that orient themselves in the water with the dorsal side towards the surface and ventral side towards the bottom.

**round weight**. The weight of the whole fish (or animal) as it was when alive, synonymous with fresh weight.

**RSW** - For refrigerated sea water. Usually referring to a tank for holding fish.

## S

**sample weight**. The weight of catch which was sorted and sampled by the observer.

**scupper**. A hole in the bulwarks which allows water to drain from the deck.

**sheave**. A wheel with a grooved rim, such as is mounted in a pulley block to guide the rope or cable.

**shortwiring**. To haul in the main wire to bring the net up out of the fishing level but not out of the water. The trawl doors may or may not be brought up to the stern. The vessel continues to tow to keep the fish corralled in the net until haulback. The towing speed may be reduced. Shortwiring (1) may be done by a catcher boat for a mothership to hold the fish in good condition until delivery, (2) may be done to keep the warp cables from tangling when turning the ship around, or (3) may be done to raise the net to see the amount of catch.

**skate**. A length of longline gear, usually 100 fathoms or 600 feet long.

**skate bottom**. A white fabric square with lines on the corners to tie it into a bundle once a longline "skate" has been coiled onto it.

**species composition sample**. To sort a defined weight of catch such that each organism 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**. For single side band radio. Used for long distance contact.

**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 tow a conical shaped mesh trawl through the water, and haul it up a ramp in the stern of the ship.

**sub-sample**. A sub-set of the sample, disignated by the observer for a supplimental task such as sampling for average weight.

**surimi**. Minced fish meat paste usually produced from pollock.

## T– Z

**TAC**. For total allowable catch. Annual harvest levels based on biological, economic and social factors

**target species**. The species the vessel is fishing for.

**taper**. To cut webbing according to a given formula for fitting into a trawl.

**tare**. Deduction from gross weight to obtain net weight. Usually made to allow for the weight of a container.

**trawl**. A cone shaped net, towed through the water to catch fish.

**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.

**wing**. The sides of 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 to keep sleeves dry and clean.

**zipper**. An area of the codend which may be opened to remove fish, a seam connecting two parts of the net which may be opened by pulling on the zipper line.

**zulu**. Another name for Greenwich Mean Time.

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