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NATIONAL MARINE FISHERIES SERVICE

NORTHWEST AND ALASKA FISHERIES CENTER

SEATTLE, WASHINGTON

Manual for Biologists

Aboard Foreign Groundfish Vessels

1988

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PREFACE

This manual has been prepared to assist you in your duties as an observer aboard foreign groundfish vessels operating in the eastern Bering Sea and Northeast Pacific. This manual plus training sessions and your perusal of reports filed by previous observers should adequately prepare you for your observer experience. It must be borne in mind, however, that conditions can and do change and that no set of instructions covering as broad an area as we have attempted to cover here can ever be complete. It is therefore the responsibility of the observer to objectively evaluate each unfamiliar situation on the vessel before deciding on a course of action. Study the manual carefully, refer to it often and consider ways in which it may be improved as a guide for future observers.

THE ROLE OF THE OBSERVER IN THE FOREIGN FISHERIES OBSERVER PROGRAM

THE FOREIGN FISHERIES OBSERVER PROGRAM

In March 1977, the United States entered upon a new era in fisheries management with the implementation of the Magnuson Fisheries Conservation and Management Act of 1976. This Act extends U.S. jurisdiction over fishery resources out to 200 miles and establishes a program for their management. The management policy for the various fisheries permits foreign fishing, if there are resources surplus to the needs of U.S. fisheries, while allowing for the rebuilding of overexploited stocks and prevents overfishing of currently healthy stocks. This management policy protects the fisheries resources and encourages development of new U.S. fisheries. All foreign fishing vessels must obtain a permit from the Secretary of Commerce before engaging in any fishery within the U.S. 200-mile zone, (also known as the EEZ - exclusive economic zone), and each nation will be subject to catch limitations as set by the United States.

In order to monitor the foreign fisheries and joint ventures within the U.S. jurisdictional zone, the Act stipulates that foreign fishing vessels must accept observers. They must also have an observer aboard while conducting any fishing activities unless the requirement is specifically waived by the Secretary of Commerce. These observers are assigned to individual vessels for periods at the discretion of the United States. The primary objectives of the observers are to: obtain daily catch rates; determine species composition; gather data on species, size, and age compositions; determine incidence of Pacific halibut, salmon, king crab and Tanner crab in the landings; and report on possible violations of U.S. fishing regulations. The estimates of catch rates by species obtained by the observers, matched with data on the number of

vessel days on the ground, enables the U.S. to estimate total daily landings of the various fisheries and pace the progress of the foreign and joint venture fisheries towards the quotas.

The United States has placed scientific observers on foreign fishing vessels since 1973. Since 1977 we have placed observers on Japanese, Soviet, Polish, Korean, Taiwanese, West German, Spanish, Bulgarian, Greek, Mexican and Chinese vessels fishing for numerous fish and shellfish species. Because of the need to cover a variety of fisheries spread over broad areas of the ocean and to cover a great number of vessels adequately, observers are generally scheduled to sample for approximately two months per trip.

Because the United States is fully dependent upon the data obtained by observers in order to assess the impact of foreign and joint venture fisheries upon the stocks, the necessity for accuracy in data collections, accurate determinations of species, and complete fulfillment of the sampling plan cannot be overstresed. Data forms must be carefully completed and checked. Sample forms in this manual serve as guidelines. (All observer data and reports are subject to certain restrictions of the Privacy Act and Trade Secrets Act, so any private use of them must be cleared by your contracting agency, who must receive permission from the National Marine Fisheries Service--please refer to "Observer Return and Completion of Duty".)

This manual, along with the training sessions, should adequately prepare you for an observer trip. Because of the variations in fish handling by different ships, observers may be confronted with sampling problems not fully covered in the training sessions. We ask that you adapt to whatever sampling procedure is necessary to insure unbiased samples and

devise sampling methods that insure representative samples of the landings for your ship. If you devise your own sampling procedure, make sure that you are able to collect all of the necessary data we ask you to obtain.

OBSERVER DUTIES AND PRIORITIES

Primarily, the observer's duties and priorities consist of determining haul weight estimates, sampling for species composition and the incidence of king crab, Tanner crab, halibut and salmon in the catch, collecting biological data on various species and monitoring for compliance to fisheries regulations. Priorities may change according to cruise, so observers will be notified of the specific duties and priorities. A list of the observers main duties is given below.

1. Record daily catch rates of the vessel. Special instructions will be issued in regards to obtaining your estimates of catch for comparison with estimates made by the vessel.

2. Determine the species composition of the catch according to specified instructions.

3. Record the numbers, and weights, of certain "prohibited species" in the catch as per instructions. These species include, but may not be limited to: king crab, Tanner crab halibut and salmon.

4. Send a summary of this information (items 1, 2, & 3) by radio message to Seattle weekly.

5. Obtain biological data and samples on target and other species as directed. This may include length frequencies, sexes, otoliths or scales for ageing, stomach content samples, or other information as requested.

6. Observe the compliance or lack of compliance to U.S. fishing regulations and document instances of violations of regulations when observed.

7. Obtain factory production information from the vessel and sample for product recovery rates and average weight of product units.

8. Record species, numbers, and viability of incidentally-caught marine mammals and occurrence of marine mammals in the fishing areas.

SPECIAL CAUTION ON DEPORTMENT

As a guest of the vessel:

1. Fisheries observers have traditionally been treated courteously, and in turn you should show the same respect to the vessel and everyone on board.

2. Observers should make a conscious effort to remain clean and neat, particularly at mealtimes, while aboard vessels. Dirty, unkempt hair appears to be particularly offensive to some.

3. Accommodations and food may be different from what you are used to at home. Adaptable observers with an easygoing attitude in these regards are apt to receive more consideration than those who constantly criticize and make demands.

4. Remember, your hosts consider you a representative of the United States, so your behavior should reflect this.

As a fisheries observer:

1. You must abide by the standards of conduct developed by your hiring contractor.

2. When conflicts or sampling problems occur which affect your attempts to get unbiased samples of the catch (presorting of fish for example), promptly call them to the attention of the captain or fishing master.

3. Do not offer, even if asked, any authoritative advice on what a vessel can and cannot do under terms of the permit under which they are operating. All such questions should be sent via message to the NMFS Regional Director in Juneau for ships in Alaskan waters and the Regional Director in Seattle for vessels fishing off the California, Oregon, and Washington coasts.

4. Maintain a friendly demeanor to vessel personnel, but not to the degree that they might expect you to overlook infractions of the rules. Your behavior should be governed by remembering that you are highly visible and are on the job 24 hours a day. Before acting in any given situation, be mindful of the diplomatic nature and sensitivity of your position. Tactful, mature handling of problems is expected.

5. Consumption of alcoholic beverages should be kept at a very low level. Drinking wine or beer with a meal or having one or two drinks while relaxing during off hours is permissible. However, do not drink to the point where you lose your proper sense of judgement. Your conduct should be above reproach at all times. Anything that damages your character in the eyes of the people you are working with -- now or later -- is detrimental to your effectiveness on the job.

6. Trading of souvenirs is permissible for items of little intrinsic value, such as stamps, candies, coffee, pens, etc. Do not take liquor or pornographic materials to your ship for gifts or exchange with the foreign crew. It is also not advisable to purchase merchandise for foreign crew members if your ship makes a port call. Observers should never accept gifts from the foreign crew, as this may appear to compromise your impartiality.

7. An obvious point (but one of extreme importance) is the prohibition of any sexual activity while at sea. In addition, the use of illegal drugs (such as marijuana) is strictly prohibited.

8. As an American observer you will abide by all rules and regulations relating to the conduct of the host vessel. You shall not utilize, for any purpose other than obtaining required data, any species which the governing permit prohibits the vessel from fishing for or retaining, including especially salmon, halibut, crabs, and marine mammals. (This includes eating them in the ship's mess, if served.) "Prohibited species" is interpreted as including also shrimp, scallops, sponges, corals, and other species which the vessel is not specifically permitted to retain. Do not accept or transport any item violating laws relating to endangered or protected species. (The permit in the appendix does allow you to bring back sea lion or seal canine teeth for age analysis by the National Marine Mammal Laboratory. However, no specimen materials may be taken from walrus.)

9. If your host vessel is boarded by the Coast Guard, do not attempt to interfere with their activities, or those of NMFS enforcement agents, in any way. You can let them know that you are aboard, then stand by. If they wish assistance from you as a guide or interpreter they will ask you.

10. Once you are aboard your sampling ship, avoid making visits to other vessels which are not necessary to the performance of your job. Sometimes other ships or U.S. catcher boats may tie up to your vessel. Consider going aboard in these circumstances only if your transfer there and back can be made under extremely safe conditions and if your work performance is not affected. Do not make social visits to other vessels if they are not tied up to your vessel. Do not stay away from your vessel overnight.

11. If your ship comes into port during mid-cruise to refuel or get supplies, it is your responsibility to clear customs either before or at the moment you come ashore. It is also, obviously, your responsibility to be back aboard when the ship is ready to leave. Departure times are often uncertain, so do not risk being left behind by disembarking for any length of time. Do not stay away from your vessel overnight without prior permission. Any costs you incur while you are off the ship may be at your own expense. Do not accept any gifts of money from officers or crewmen to cover your expenses. It is advised that you do not make purchases for foreign crewmembers without checking with a U.S. customs office or agent.

12. Consider safety first in everything you do.

PREPARATION AND DEPARTURE

COMMUNICATIONS

Observers will not receive mail while on board foreign groundfish vessels. To receive mail while in training or during your cruise, you must make your own arrangements, either through your contractor or the place where you're staying while in Seattle.

On occasion, observers whose host vessel is boarded by the Coast Guard have been able to have the Coast Guard boarding personnel mail letters for them, if the letters were stamped and ready for mailing.

Before the observer departs, he/she will fill out an Emergency Data Form, giving numbers and addresses of whom to contact in emergencies or drastic changes in observer's scheduled return. Any person listed should be notified to contact anyone else who should know of the change in plans or emergency. Do not send or expect to receive any personal messages except in the event of emergencies. If a family emergency should arise at home, relatives should contact your hiring contractor.

The following list of addresses and phone numbers is supplied for your reference:

Contract Agencies:

Oregon State University
Office of International Research and Development
Corvallis, Or. 97331
Virginia Veach (503)-754-2683 message: (503)-754-2228

--For long distance, collect calls use: 1-(503)-754-2683-6860
--For after hours logistics emergencies phone the following people in the order listed:
Virginia Veach: (503)-843-2597
Dr. Howard Horton: (503)-753-6497

Frank Orth and Associates, Inc.
10900 N.E. 4th St.
Suite 930
Bellevue, Wa. 98004
Kathy McKenzie or Claire Armistead (206) 455-9693
--For after hours logistics emergencies phone the following people in the order listed:
Claire Armistead: (206)-324-5922
Kathy McKenzie: (206)-828-6627
Jim Skubic: (206)-789-2125

Observer Program Staff in Seattle:
(These individuals should only be contacted if you are unable to contact your contractor.)

Russ Nelson (supervisor) (206) 526-4194
Janet Wall (supervisory assistant) (206) 526-4195
Karen Teig (training) (206) 526-4191
Bob Maier (training) (206) 526-4191
Mike Brown (debriefing) (206) 526-4192
Gear Office, Debriefing Room (206) 526-4212

THE TRAINING PERIOD

The observer who requires certification training will spend approximately two and one half weeks in Seattle for orientation and training. Transportation from your home to Seattle for training and from Seattle to your home after completion of your duties is at the observers' expense. Similarly, costs of food and lodging while in Seattle are also assumed by the observer.

Training will consist mainly of learning how to identify common species of fish and crabs found in the Bering Sea and Northeast Pacific, explanations of the sampling procedures, and familiarization with groundfish fishing regulations and compliance monitoring duties. The following outline lists some of the activities covered during the training period. The outline is not necessarily complete and the items are not necessarily given in the order that they will be presented.

Day 1
Orientation Day: Administrative information, introductions all around.
Introductory slide show #1 - emphasis on terminology, safety, and visual orientation.
MFCMA and management of the FCZ.
Safety in transfers and aboard the vessel.
Seasickness and medical advice, living accommodations.
Communications, with home, NMFS; clothing and other items to bring with you.
Videos about the observer program and life on a foreign fishing vessel.

Day 2
Guest Lecture: Dr. Aron, Director of Northwest and Alaska Fisheries Center.
Hardships, deportment, and conduct.
U.S. customs.
Introductory slide show #2 - emphasis on life at sea and vessel types.
Objectives and workload; typical sampling procedures.
General instructions on data forms.
GMT, metric system and ratios of proportion.
Videos about MFCMA and joint venture fishing.

Day 3
Species Identification: a general review of identification terminology and slides of various representatives of N.E. Pacific fish families (given by a U. of W. ichthyologist).
Catch information: data forms 2 and 2JV.
Adjusting the ship's estimate of catch size.

Estimation of catch size - by the ship and by the observers.
Discussion of joint venture.
Classroom practice of haul weight estimating using a fish bin model.

Day 4
Species Composition Sampling: Random, representative, unbiased sampling.
Determining a sample weight.
Species composition form 3(2), math extrapolations (forms RM and RM-1) and radio messages (paragraph 1).
Formatting the radio messages, management areas and report groups.
Classroom practice by using fish bin models.

Day 5
Determining the Incidence of Tanner crab, king crab, halibut and salmon in the catch: Sample size, relationship with species composition sampling, sampling methods, considerations, and problems.
Incidence of Prohibited Species form 3(1).
Computations (form RM-3) and formatting the radio message (paragraph 2).

Day 6
Collecting biological data from prohibited species, (form 4).
Tagged fish information collection.
Length frequency sampling, (form 7).
Otolith and scale sampling, (form 9).
Alaska pollock spawning study, (form 6).

Day 7
Species identification of crab: slides and classroom practice.
Harassment of observers and interactions with vessel personnel.
Cross-cultural training.
Problem solving using small group discussions in the classroom.

Day 8
Fish identification laboratory session with a U. of W. ichthyologist.
Fish dissection slides and lab session.
Read previous cruise reports; watch videos made by observers who were on longliners, small trawlers, etc.
Receive special project instruction.

Day 9
Guest Lecture: Scientist from the National Marine Mammal Laboratory showing slides on identification of marine mammals at sea.
Marine mammals: as incidental catch, (form 10); sightings,(form 11a,b).
Net scarred salmon study form.
Final reports 1 and 2, logbook entries.

Day 10
Species Identification - focusing on: rockfish, flatfish, and salmon (with the U. of W. ichthyologist).
Medivacs and radiotelephone procedures.
Safety videos and checkout of survival suits.
Survival suit and life-raft water practice.

Day 11
Guest lecture: NMFS enforcement division agent - monitoring for compliance to fishing regulations.
Product Recovery Sampling, (form 8); comparing observer data with the fishing logs.
Species I.D. Lab final

Day 12
Continued compliance training by NMFS enforcement agent-logging and documentation.
Gear issue: familiarization and care of equipment, checking equipment and calibration of scales.

Day 13
Final Exam.
Guest speaker: Debriefing supervisor.
First day aboard preparation.
Travel rules and parting information.

If a complete grasp of the duties is not demonstrated, the observer may either be given additional training or released. An observer may be dismissed by the contractor if they are deemed not qualified, exhibit poor judgement, or lack the appropriate human relation skills necessary for the job.

Vessel and observer schedule arrangements are a difficult task. Though you may express a preference for a nationality or vessel type, an observer must be willing and able to accept any assignment. The observer-in-training should be prepared for changes in ship assignments and Seattle departure times. Some observers stay in Seattle longer than was originally planned, so be prepared for this eventuality, and be patient. Similarly, dates of return may also be affected by vessel schedules, so notify your contractor, before leaving, if you have any pressing dates soon after your expected return (such as the beginning of a school quarter).

After completing their trip at sea, the observers return to Seattle and are required to work with their contracting agency until their data forms have been properly completed and their cruise reports have been accepted by NMFS. Observers are normally paid for five full working days after their return to Seattle. Refer to the "Observer Return and Completion of Duty" section in the manual for a more complete list of responsibilities.

OBSERVER CLOTHING AND EQUIPMENT

NMFS will provide the scientific observers with adequate rainproof clothing and boots. All equipment necessary for the collection of biological data will be similarly provided. The sampling gear will be brought aboard the vessel by the observer, and at the end of the trip all equipment and supplies will be returned by the observer.

The observer will provide his own personal clothing, warm work clothes for wearing under raingear, toilet articles, and other items of a personal nature.

Unless otherwise informed, the vessel upon which the observer is to be stationed will be expected to provide adequate quarters, bedding, and meals. Reimbursement will not be made on the vessel for food and lodging. Support of the observers is one of the requirements of the fishing permit. In addition, it is expected that the vessel captain will allow the observer an adequate and safe space in which to carry out his duties.

The following pages are lists covering the clothing and equipment necessary to perform 60 days sampling aboard a foreign fishing vessel.

Personal Items Supplied by Observer

The following is a recommended list of personal clothing. The amount and type of heavy clothing is dependent on personal preference, fishing area, and time of year.

Work clothes--minimum number and type

- Shirts, wool - 2 (1 light, 1 heavy)
- Shirts, cotton - 2
- Shirts, cotton sweat - 1
- T-shirts - 3
- Trousers, wool work - 1
- Trousers, cotton - 2
- Wool knit cap
- Slippers or sandals
- Handkerchiefs, large - 3
- Underwear, long-thermal - 2 pairs
- Underwear, shorts - 5 pairs
- Socks, wool work - 2 pairs
- Socks, cotton - 5 pairs
- Jacket, medium wool or synthetic - 1

Other items or articles

- Towel, medium cotton - 2
- Toilet articles
- Suitcase or duffel bag, light, medium size, old or inexpensive - 1
- Traveler's checks purchased with the cash advanced
- Language dictionary and/or phrase book

Optional/Recommended Items

- Felt/wool boot insoles (not liners)
- Needle and thread for repairs
- Extra eyeglasses/contacts
- Sunglasses
- Camera and film
- Watch and travel alarm
- Medication for seasickness and/or ginger root (raw or powdered)
- Vitamins
- Laxative (dried fruits and food high in fibre and/or medication)
- Diarrhea control medicine
- Laundry detergent and toilet paper (a small amount of both)
- Hand cream
- Paperback books
- Prints of family, home town, hobbies
- Small cassette player and tapes
- Water flavoring (i.e. kool-aid, lemon juice, etc.)
- Water bottle (1 qt.) - to keep drinking water in your cabin
- Sprouts (for growing your own edible greens at sea)
- Favorite foods (small quantities)

Sampling Gear Provided by NMFS

To be packed loose in baskets:

- Baskets (2 or 3) with one wooden lid
- Set of castors or wheels for the basket
- Rope (one length, approximately 15 feet)
- Clipboards (2)
- Log book (1)
- Scouring powder (1 can)
- Lubrication oil (16 oz. bottle with applicator cap)
- 50 kg scale (1) - (observer should check accuracy with standard weights on all scales before leaving)
- 5 kg scale (1)
- 2 kg scale (1)
- Tape measure (1 large, reel-type, 15 meter)Sponges (2)
- Scale envelopes (50-200) (coastal hake fishery observers take twice as many)
- Plastic bags for salmon snouts (5) (15 for coastal hake fishery)
- Plastic bags (15)
- Glove liners (3 pair)
- Hardhat and chin-strap (1)
- First aid kit (1) - (check contents for completeness)
- Plastic measuring strips (3)
- Plastic sheets:
  - Basket sample form (2)
  - Prohibited species form (2)
  - Otolith form (2)

To be packed in cardboard box in basket:

- Pencils #2 (6)
- Pencils #3B (2) - (soft lead - for use on plastic forms)
- Pens (4)
- Pencil erasers (2)
- Plastic ruler (1)
- Looseleaf rings for extra forms (3)
- Scotch tape (1 roll)
- Thumbtacks (1 container; about 25 tacks)
- Forceps (2)
- Rubber bands (1 container; about 40 rubber bands)
- Scalpel handles (2)
- Hooked scalpel blades (10)
- Tape measure (1 small, steel, 2 meter)
- Thumb counters (1) - (mothership observers take 2; longline observers take 3)
- Twine (1)
- Knife (1)
- Whet stone (1)
- Flashlight and 2 size "N" batteries

The following items will be checked out either before or during gear issue:

- ✓ Survival suit (with strobe-check expiration date on battery, whistle and wax)
- ✓ Life vest (with whistle)
- ✓ Rain pants (1)
- ✓ Rain jacket (1)
- ✓ Boots (1 pair)
- ✓ Rubber gloves (3 pair)
- ✓ Manila folder containing:
  - ✓ Carbon paper (10 sheets)
  - ✓ Graph paper (5 sheets)
  - ✓ Shipping Label for basket (1)

  Translated packet
- ✓ Binder of data forms (important!-check for completeness!)
- ✓ Dividers (1) - for those who are to measure crab
- ✓ Otolith vials (200-600) - for those who are to collect age structures
- ✓ Vial block (1) (if collecting otoliths or cod scales)
- ✓ Liter bottle of alcohol (1) (if collecting otoliths from roundfish)
- ✓ Liter bottle of glycerol-thymol soln. (1) (if collecting otoliths from flatfish
- ✓ Squirt bottle (1) (if collecting otoliths)
- ✓ Stopwatch (an optional item for motherships and large joint venture processors)
- ✓ Safety goggles (for observers on longliners, optional item for others)
- ✓ Earplugs (2 pair) (optional by request)

The following gear will be handed out during training class:

- ✓ Observer Sampling Manual (1)
- ✓ Enforcement Manual (1)
- ✓ Mechanical Pencil (1) with extra lead
- ✓ Erasure stick (1)
- ✓ Calculator (1)
- ✓ Extra calculator batteries (2)
- ✓ Book - Hart (1)
- ✓ Book - Hitz (1)
- ✓ Book - Eschmeyer (1)
- ✓ Book - Miller and Lea (1) - (Hake ships only)
- ✓ Book - Leatherwood (1) - (marine mammal guide)
- ✓ Laminated photo guide (for new observers only, unless requested)
- ✓ Species identification manual

Number of Data Forms to Take for a Two-month Cruise

	Joint Venture Processors	Independent Stern Trawlers	Independent Longliners	Independent Motherships
Form 1	0	0	0	20
Form 1L	0	0	10	0
Form 2	25	25	0	0
Form 2JV	50	50	0	50
Form 3	140	140	0	140
Form 3L	0	0	140	0
Form 4	30	30	50	50
Form 6	6	6	0	6
Form 7	40	40	60	60
Form 8 Worksheet	8	8	8	8
Form 8	4	4	4	4
Form 9	30	30	50	50
Form 10	10	10	0	5
Form 11A	30-50	30-50	30-50	30-50
Form 11B	5-10	5-10	5-10	5-10
Radio rpt. worksheets RM	15-20	15-20	0	0
Radio rpt. worksheets RM-1	15-20	15-20	15-20	15-20
Radio rpt. worksheets RM-3	15-20	15-20	15-20	15-20
Enforcement report #1	2	2	2	2
Cruise report #2	2	2	2	2
Trawl Web Sample Data Form	10	10	0	10

A packet of forms and letters in English and in the language of the host country will be provided with the gear. In this packet is a letter of introduction, written by the Director of the Northwest and Alaska Fisheries Center, which will introduce the observer to the captain of the fishing vessel and will also explain the duties of the observer. A personal history sheet is provided for the observer to fill out and give to the captain. This should be a brief statement which provides information about you as an individual. Each packet contains two copies of each translated form in case the observer is on more than one ship.

Contents of Translated Packet:

1. English letter of introduction
2. Translated letter of introduction
3. Personal history sheet
4. Notice to vessel captains (Japanese only)
5. Gear, weather and sea codes
6. Meal and bath schedules
7. Form 12 - Vessel Data Form
8. Translated Net or Longline Dimensions Form
9. Language helper and translated phrases

Preparation and Care of Sampling Equipment

The sampling gear provided for you may not be new, but should be in good working order. Most gear is expected to be used for several observer cruises, therefore we depend on you to give proper care and maintenance to 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. There are facilities for cleaning gear at NWAFC if this could not be done while aboard ship. All returned gear must be clean and free of scales. All metal parts must be clean, free of rust, and oiled. Here are a few tips for shipboard maintenance that should make your job easier:

1. Keep all paper products and small, loose equipment (pencils, pens, thumb tacks, scissors, counters, etc.) in plastic bags throughout your trip.

2. Try to keep as dry as possible: calculator, stopwatch, thumb counters, and tape measure.

3. Books should be protected from water and slime at all times.

4. Most important: Every day after use, the 2 kg, 5 kg, and 50 kg scales must be cleaned and oiled. They have steel springs inside which will rust - oil must be squirted up inside the scales.

5. Tape measures, calipers, and thumb counters must also be cleaned (and oiled if necessary) each day when used. (Be careful to keep oil away from plastic forms, since pencil marks tend to wipe off a slick surface). (Do not oil thumb counters.)

6. It is recommended that your knife be kept clean and sharpened.

7. Keep your otolith alcohol in your room. Sometimes crew members consume alcohol which has been left at the work station.

Remember--others must use this gear after you, and proper care of equipment will help make all our work easier.

Please do not give away any gear or books. You will have to replace any government equipment that you give away. Replacement calculators cost about

$30.00 and must be of the type specified. The laminated photo guide cannot be replaced; they originally cost over $50 each in materials alone.

Calibrate your scales during gear check-out. Then prepare a known weight by selecting items which may be easily assembled later. (i.e. a basket, the laminated photo guide, etc.) 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.

Just prior to the start of basket sampling, prepare the weighing scale to read zero when the basket is attached. Do this by adjusting the set screw at the top of the scale. With the scale adjusted, all measurements will then reflect the weight of the basket contents only.

Accurate weights are sometimes hard to obtain when the ship is rolling. When possible, secure the top of the scale directly to a fixed structure, such as a ceiling brace. If the top of the scale has to be attached to the ceiling by a length of rope, use three ropes attached to widely separated points on the ceiling to minimize the swing of the scale. Shortening the length of the ropes to the basket also helps. Scales located close to the center of the ship tend to swing less.

If a flatbed scale belonging to the ship is available for your use, by all means use it, but check it for accuracy first.

All sampling gear and Forms 1-12 will be packed in 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. Pack the life vest so that it will be accessible prior to ship boarding. Remove the casters from the basket to avoid their loss before checking in your baggage at the airport.

TRAVEL TO THE SHIP

Shipment of Gear

The observer carries the sampling baskets with him to the various ports whether traveling via auto, bus, train, or airplane. If traveling by plane, the baskets are normally transported as part of your personal luggage. Excess baggage costs can usually be avoided by careful planning and keeping the number of personal and equipment items at a minimum. Your personal baggage should not weigh more than about seventy pounds. Distribute baggage weight between your pieces of luggage so that no piece exceeds the weight limit of the airline you are flying with. The usual procedure is to pay cash for the amount of excess baggage at the time of check-in, so it is very important to limit the amount of personal items and to allocate enough cash to pay for the excess baggage upon your return. (Excess baggage charges will typically run $200-250 from Dutch Harbor to Seattle.) 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 Dutch Harbor in the event that the airline loses your baggage; manuals are not kept at Dutch Harbor, however, because it is too difficult to keep up with changes.) On the return journey from the ship, carry the completed data forms with you. If these forms are lost, your whole trip is essentially wasted.

Some observers have had their otolith alcohol confiscated by the airlines because we do not have a blanket permit for the transport of alcohol. If the airline personnel do not permit you to take the alcohol, do not argue further--dump the alcohol, rinse the container if necessary, and when you get to your destination, purchase rubbing alcohol to replace the ethyl alcohol that was dumped. Inform the debriefing staff upon your return and note on the top of the Form 9's that rubbing alcohol was used as the preservative.

Customs

Observers should register any foreign-made goods (cameras, watches, etc.) with Customs before they leave the U.S. so duty will not be charged upon re-entry. A foreign ship, even though fishing within the 200-mile limit, is technically considered (for Customs purposes, at least) a bit of "foreign soil," so observers must go through Customs as soon as possible after disembarking. Contacting a customs agent is the first thing you do after stepping onto the dock. Do not go to your hotel before contacting an agent. It is the observer's personal responsibility to contact customs officers at the port of entry, and wait there until they arrive. This may require that airline flights be missed and that an extra night be spent in the port of entry. Failure to comply will result in the observer personally being fined, imprisoned, or both. (Fines have ranged from $300-500 in the past.)

Observers disembarking foreign ships at Dutch Harbor, Kodiak, Seward, or any ports off Washington, Oregon, and California coasts must contact Customs officers in those ports. At some ports (Dutch Harbor and Seward, for example), Customs officers may work on a seasonal or part-time basis. If for

some reason you are unable to contact the Customs personnel in Alaskan ports, report to Customs at the Anchorage airport. The Customs office at the Anchorage airport is located in the international flight building which is about 1/2 mile from the domestic flight terminal. If there is no public or airport transport between terminals and taxis are unwilling to take you such a short distance, you may have to walk. This may cause you to miss connections for your Seattle flight, but you must clear Customs in Anchorage before leaving for Seattle, (if you have not already done so at your port of disembarkation) because Customs in Seattle does not have jurisdiction over the Alaska region. If you are clearing customs after regular working hours, the agent may ask you to pay overtime charges. Your contractor will instruct you as to how to handle the billing of overtime charges.

Observers traveling to their vessels via Japan must go through Customs at the international airports. While aboard the plane enroute to Japan a "Declaration of Unaccompanied Baggage" form should be obtained from the flight attendant, filled and given to the Japanese Customs Officer immediately upon arrival in Japan. This will greatly simplify getting the equipment basket through the freight Customs Office.

Customs Offices:

Eureka, California - (707)-442-4822
Coos Bay, Oregon - (503)-267-6312
Astoria, Oregon - (503)-325-5541
Anchorage, Alaska - (907)-243-4312 or 248-3373
Kodiak, Alaska - (must check in at Anchorage: 271-4043)
Seward, Alaska - (must check in at Anchorage: 271-4043)
Dutch Harbor, Alaska - (907)-581-1270
Seattle, Washington - (206)-442-0554 or 442-0770
Aberdeen/West Port, Washington - (206)-532-2030
San Francisco, California - (415)-556-4340 or 556-4342 or 556-7026

Expenses Incurred While Traveling

The contracting agency should inform the observer before departure, on the procedure for accounting for money spent while traveling from Seattle to the vessel and back again. While in some cases it may not be necessary, it is a good idea to save all receipts for transportation, hotels, meals, and other legitimate expenses. Be cautious in spending your travel advance. Costs are high in Alaska and observers are frequently delayed in both getting on their ships and in getting flights out of the port after their return. Some hotels and restaurants in Dutch Harbor, Ak. do not accept credit cards but you may be able to use them as identification for a personal check. If you have to pay cash for any excess baggage charges on your return flights, don't forget to allow enough money (and get a receipt). Remember, excess baggage charges from Dutch Harbor to Seattle can typically run from $200-250. Retain any unused airline tickets and turn them in to your contract agency upon your return.

Transport to the Ship

There are several methods employed in transporting observers to and from foreign vessels. Joint-venture observers frequently ride out to the fishing grounds on U.S. catcher boats or they take a small chartered boat to a pilot pick-up point where they transfer to a foreign vessel.

Normally, airplane flights are arranged so that an observer arrives at the embarkation port at least one day in advance. This is often necessary since the weather is notoriously bad in certain parts of Alaska, and flights are often postponed. Delays caused by weather may be unavoidable, but it is important that the observer not be the cause of delays by missing the flights, or having his equipment miss the plane. If you miss your flight, notify your contractor immediately, and make new arrangements, on another airline if necessary. Notify Carolyn Griffin (or current contact) in Dutch Harbor if your arrival date is affected. If you are going to miss your pick-up time at port, notify your contracting agency as soon as possible.

Upon arrival at the embarkation port, contact the agency which is to provide transport to the vessel, and let them know of your arrival. Let them know of your whereabouts so that they can contact you if there is a last-minute change of plans.

Since Dutch Harbor is so heavily used by observers, your contractor may have a permanent contact in port to help with logistics.

Embarking/Disembarking Through Dutch Harbor

Observers flying into the airport should call Carolyn Griffin who will take them to the hotel (usually the Unisea Inn or Royal Dutch Inn). Reservations are usually made in advance. Mrs. Griffin will keep you informed of changes in vessel schedules, so make sure that you periodically check the hotel desk for messages and keep her informed of your whereabouts, especially on your day of embarkation.

When returning to Dutch Harbor, contact Mrs. Griffin on the radio if the transfer boat is not at the pick-up point on schedule (see "Radio Telephone Procedure" in the Appendix). Ships approaching Dutch Harbor can no longer go inside to buoy #2 without a harbor pilot, so in rough weather a ship will have to wait at the pilot point for the seas to subside, or pay for a harbor pilot to bring the ship in closer. Be sure to go through Customs before leaving Dutch Harbor if there is a customs agent in town.

Useful Phone Numbers for Dutch Harbor:

Carolyn Griffin
P.O. Box 308
Dutch Harbor, Ak. 99692
(907) 581-1529 (home phone)
(907) 581-1239 (Ken Griffin)

Marianna Langley
P.O. Box 322
Dutch Harbor, Ak. 99692
(907) 581-1453 (home phone)

Unisea Inn: (907) 581-1325
Royal Dutch Inn: (907) 581-1636

TRANSFERS AND DISEMBARKATIONS

Messages sent to the vessel usually contain the phrase "for master and observer" to insure that the observer is notified of dates and times of departure. When the vessel sends messages to NMFS, the Coast Guard relays it to the appropriate NMFS Enforcement Division in Alaska, California, or Seattle and the message is sent, via computer lines, to the observer program headquarters in Seattle. NMFS in Seattle will pass the information to the contracting agency. If the message contains timely information about a transfer or disembarkation, the message is sometimes phoned from the Enforcement Division to the contractor, but keep in mind that messages take time to reach their destination. Expect at least five working days between the time you send a message and the time you receive a reply. Remember that no one will be in the office on Saturdays or Sundays. Make all messages complete, but concise and to the point. No idle comments, offhand remarks, or unauthorized personal business please, as the Coast Guard does not like to pass on information of that nature.

Transfers and disembarkations are normally arranged with the vessels, the fleet commander, or fishing agency. Sometimes, however, fishing schedules are not received in a timely manner. If fishing is good, a vessel may quickly fill its holds and want to leave the grounds before notification of their intent is received through ordinary channels. If you find out that the ship you are on is planning to leave the fishing area before your expected date of departure, send a radio message explaining the matter. Try to make the notification well in advance of any possible change in plans. Having decided to leave the fishing grounds (or for other reasons), a captain may decide to drop off their observer in port or on another vessel. Do not disembark from your vessel for

any reason (except a medical emergency) without seeing a radio message confirming this and specifying as to where and when. A captain may pressure an observer for action or information. This is not an emergency, just poor planning. If there is not enough time for a radio message and reply through regular channels, there is not enough time to make the arrangements anyway. They will have to wait. Don't be pressured into making a direct ship-to-shore radio telephone calls for any matter short of the ship being in danger or you being seriously injured.

On the other hand, a ship schedule planned well in advance may result in the captain knowing of an impending observer transfer before the confirming radio message arrives. The vessel may stop fishing and start moving to meet your transfer vessel. Do not interfere with this type of activity, just do not disembark before seeing the confirming message.

Safety in Transfers

Transfers between a small transport vessel and a large fishing vessel are potentially hazardous, especially in rough weather. At sea, radio messages concerning dates of transfer all assume "weather permitting". The observer must insist upon reasonable safety during transfers. This includes waiting for good weather when necessary, or radioing the Coast Guard to get permission for the two ships to approach within 12 miles of shore so that the transfer can take place in a more sheltered location.

There are no hard and fast rules for allowable safety limits during transfers. Conditions such as vessel size, swells versus waves, impending weather, and mode of transfer affect the decision as to whether or not to transfer. Observers must use their best judgement. Be cautious--not foolhardy. Do not be forced into transferring against your better judgement by an anxious or impatient captain. Whenever possible be preceded or accompanied by a crewman. Always go with an experienced crewman if you are transferring in a small boat or raft. As general guidelines, do not transfer at dusk, in darkness, or in any other low visibility conditions. Transfers involving a small boat or raft should never be carried out at night. Observers on small trawlers or longliners should not transfer when the sea state is two meters or more.

Other points to remember when transferring:

1. Observers will wear life jackets at all times on skiffs or other small-sized vessels and while transferring.
2. Observers will not encumber themselves with baggage when transferring vessels; balance is important. Both hands must be free during transfers.

3. All baggage will 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.
4. Given a choice between using a Jacob's rope ladder or a gangway (accommodation walkway), to board a ship, in most cases use the Jacob's ladder since the use of a rigid ladderway in rough seas can be extremely hazardous to the observer and to the transfer boat.
5. If a cargo net, transfer basket, or cage is used to transfer observer or baggage, make sure that a line is attached to the conveyance from both vessels for greater control and to reduce swaying. The observer should maintain a crouched (knees bent) position as opposed to sitting or standing with straightened legs, to avoid back injury. Be sure to wear your hardhat in addition to your lifevest when using this mode of transfer.
6. Do not spend a lot of time talking to other observers while transferring. It is a potentially dangerous time for those involved in the transfer and the faster it can be accomplished the lower the risk involved for everyone.

ARRIVAL ABOARD THE SHIP

LIVING CONDITIONS ABOARD VESSEL

As a guest of the fishing vessels, the observer will be courteously treated. Living conditions will vary widely depending on the ship type, age of vessel and nationality.

Observers should be provided with accommodations that are equal to those of officers on board that ship. The observer will probably have a private room although possibly he might have to double up with another observer, joint venture representative or foreign officer. Female observers should never be asked to share a room with a male. Quarters are more apt to be cramped on small stern trawlers and longliners. Bedding will be furnished.

Meals on Japanese vessels will generally consist of rice, fish, soybean soup, and pickled vegetables. Semi-western meals will also be served from time to time. Breakfast will usually consist of rice, soybean soup, and pickled vegetables. Raw or boiled eggs are also served occasionally. Lunch may consist of curried rice, pork steak, or a mixed meat and vegetable dish. Supper consists usually of traditional fish cuisine such as broiled and raw fish. Korean meals consist of soups, fish, and rice. Soups are very spicy and hot to the American taste.

On Soviet vessels, meals will usually consist of soups, dark bread, meat, potatoes, cabbage rolls, and sometimes fish. Generally the food is closer to the western style of preparation than observed on Japanese vessels. On Polish vessels the food has been more closely allied to the typical U.S. fare than noted on either Japanese or Soviet vessels. Observers have been served bacon, eggs, and cereal for breakfast, and soup, meat, potatoes, cheese, and lunch meats at lunch and dinner.

Saltwater baths normally will be scheduled daily aboard large Japanese vessels. They may be less frequent on small Japanese vessels and on other vessels of the various nations.

Facilities are usually available for washing clothes. On occasion the vessel's crew arranges to have clothes washed.

On most large joint venture processors, large independent stern trawlers and independent motherships the observers can probably expect an able medic or doctor who is familiar with treating minor illnesses and injuries connected with life at sea. In some cases, however, medical procedures are different from those in the United States, so caution and good judgment should be exercised in deciding whether to accept treatment.

Seasickness sometimes hampers an observer at the beginning of a cruise, but give it time - most seasick victims recover after a few days; in any case, it may take five days or more to arrange for the vessel to drop the observer off at the nearest port, and this is done only for extreme cases.

In the event of a real emergency, such as an injury or illness requiring hospitalization, contact the Coast Guard via voice radio (or if that fails, via radio telegram), and they will attempt a rescue and/or advise you on how to proceed. The Coast Guard will also notify the Observer Program office and keep them advised.

SAFETY ABOARD THE VESSELS

Fishing vessels have many potentially dangerous areas. Extreme care should be taken to avoid injury. In addition to the personal suffering that would result, the observer program could be drastically hampered. The following points must be adhered to while on the vessel:

(1) The first day aboard, note where the lifeboats, life preservers, and other safety devices are kept. Memorize the exit route from your cabin, the factory, the mess hall, and other locations where you spend a fair amount of time. Keep your survival suit where you can get at it in a hurry.

(2) During your first talk with the captain, ask him to explain to you what to do in the event of a major emergency such as a fire aboard the ship, a serious collision with another vessel, or other conditions which might require abandoning the ship. Find out whether there is anyone who would be responsible for your safety in the event of such an emergency.

(3) Observers will wear hard hats at all times when sampling or on deck.

(4) Observers will wear life vests at all times on the trawl deck, whether sampling or observing a trawl being dumped into a bin. (If life vests are worn under your rain jacket, they will stay cleaner.)

(5) The observer should be cautious when wading through the fish catch since fish spines (especially rockfish) can penetrate rubber boots and cause painful wounds to the feet.

(6) Apparel with loose strings or tabs should be avoided, as they might become caught in the equipment or belts.

(7) Observers should not run aboard the vessels. Slipping, tripping, and bumping are all very common accidents which often happen when an observer is in a hurry. Specifically, the observer should watch out for slick spots

where the deck is wet or frozen, the half-foot combing rising from the bottom of metal latch doors and passageways, and the low overheads of vessel ladderways.

(8) The observer should stay clear from under the area where the hatch covering the bin on a stern trawler swings down to open. Furthermore, when the observer is working inside the bin, he/she should be cognizant of the low overhead and especially of the overhanging parts of the hydraulic system of the hatch covers.

(9) The observer should not stay outside on the aft deck during rough seas. An observer has been swept forward over the winches by waves sweeping up the stern ramp. When the observer is outside, he/she should remain in full view of a second party at all times.

(10) Cables that break under strain frequently kill sailors. Whenever a cable is subjected to tension, stand in a place where a backlash will not hit you. If your sampling station is on deck, do not work while a trawl is being set or retrieved--interrupt your work to go to a safe place during the process. When nets are being hoisted off the deck, stand well clear. Heavy nets have fallen near observers when the suspending cables parted.

(11) When working near the exit door in the factory, where incidental prohibited species are sometimes released, the observer should be extremely cautious not to slip and fall overboard through the exit door. Moreover, the observer should be aware of the danger of surging seawater that may pour through the exit doors and portholes during rough seas. Therefore, the sampling site should be situated away from exit doors and portholes during rough seas. The opening and closing of exit doors should be left to factory workers.

(12) Observers are cautioned not to pry loose any fish caught in the chinks of slat or rubber conveyors, since this may result in getting a finger or hand mangled in the machinery.

(13) Electrical lines are everywhere in the processing room. Therefore, when reaching and picking up anything, the observer should look beforehand to see that the area is clear of any suspicious "hot wires".

(14) Observers must avoid close proximity to equipment used in filleting or reducing the fish to surimi or meal.

(15) The observer should notify the U.S. Coast Guard should an injury or illness occur to him which requires immediate hospitalization.

(16) Treat all minor cuts, especially those on hands, with antiseptic to avoid infection from fish slime. Wash hands thoroughly after sampling.

(17) Ask ship personnel which water sources are safe to drink. Some ships have lines containing water for washing and not drinking.

FIRST DAYS ON BOARD

For the first one or two days, the observer should spend his time adapting himself to his new surroundings, meeting people, and making preparations for work. Soon after boarding you should have a meeting with the captain. Cooperation from the captain, officers, and crew is essential in many instances in order to obtain the unbiased samples the observer needs for his work. It is important at this meeting to set the tone for a friendly but business-like working relationship. Give the captain the letter of introduction and your personal history sheet. If the host vessel has not had an observer before, the letter of introduction will be the first step in explaining what your work duties are. If later you find that a crewmember who is assisting you is not familiar with your duties, have them read the letter of introduction also. Perhaps you will want to point out to them a certain item or paragraph for emphasis.

At this time, the observer can explain, using the translated forms, what information will be needed and if communications are fluent, take this opportunity to mention the following points:

1. Tell the captain that you want to routinely see the ship's fishing logs.
2. Arrange a procedure in sending the weekly radio messages with the captain and radio officer.
3. Ask to be informed, in advance, of changes in the fishing schedule so that you may sample the catches from each day of fishing.
4. Ask to be informed if the Coast Guard is about to board the vessel.
5. Ask to be notified if any marine mammals are found in the catches. Unusual sightings of marine mammals would also warrant notifying the observer but communicating what constitutes "unusual" may take some time.
6. Give the captain the other forms that will need to be filled out from your translated packet such as the "Vessel Data Form".
7. You may wish to ask if there are any photography restrictions.

8. Ask for a tour of the ship, or at least the areas you will be frequenting. During your tour note the location of the lifeboats, exit doors, and various safety devices. Also ask the captain about emergency procedures.

Also, during the first few days aboard the vessel you will want to familiarize yourself with the activities of the ship and continue your orientation by noting the following:

1. Watch the fishing, sorting, and processing operations and decide what would be the best location for your sampling station.

2. Note where and how codends are dumped; if crab, halibut, salmon, or other species are presorted on deck; and whether different hauls are mixed in the bins.

3. Notice where the catch is sorted by species and size and generally how the fish are handled, including the system of conveyor belts, tables and chutes being used.

4. Consider the location of your sampling station. Remember, it is determined by sampling requirements, considerations of personal safety, convenience (avoid having to haul baskets of fish long distances and up or down stairs) and minimum interference in fish processing. Check for adequate lighting and accessibility to running water.

5. If fish are available, the observer should familiarize herself 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 in your work.

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

7. Consider the methods for making estimations of catch size and sample size.

OBSERVER OBJECTIVES

The main work objectives of observers are to make independent estimates of catch size, determine the catch composition, figure out the incidence of specified prohibited species in the catch, collect biological data on target and other species and monitor for compliance to fishery regulations. Secondary objectives include gathering factory production information, marine mammal observations, recording gear design and factory layout, etc.

Since ship design and procedures vary from ship to ship, it is the responsibility of the observer to devise sampling techniques which will obtain the needed data. In the following sections, several basic methods of sampling will be outlined. In most cases the observer will be able to use one of those methods or an adaptation of one of them.

When conducting biological sampling, the two most important things to remember are to take representative, unbiased samples, and to do so with a maximum amount of accuracy. We stress the taking of representative samples of all data collections. Accuracy is important in all aspects of the work, including actual sampling, recording the data on plastic sheets, transposing the data on the plastic sheets to the final paper copy, and correctly calculating averages and totals on the final copy. The need for representative, unbiased sampling and accuracy cannot be overstressed.

OBSERVER WORK SCHEDULE AND WORKLOAD

Not only must an observer strive to obtain representative samples of a certain haul or during a given sampling period, but the observer should also select sampling periods so that the catch sampled is representative of the daily catch. Since most of the foreign vessels fish around the clock, the observer should arrange their schedule to allow for sampling at different times of the day. Care should be exercised so that all or most of the observation and sampling is not done during the same time period. The observer's efforts should correlate with the time period that the catch is brought on board. For example, if 20% of the daily catch is brought aboard from 8 a.m. to 12 noon, 20% of the total sampling should be done during this period. Similarly, if only a small tonnage is brought aboard between 1 a.m. and 5 a.m., the observer may decide to sample that time period only once every two to three days.

The bar graph on the following page is offered as a suggested way of keeping track that the tonnage you sample by time period is proportional to the total tonnage that is brought aboard during those time periods. This is a cumulative graph showing tonnage landed on a large vessel over a two week period. The day has been divided into six equal periods of four hours each, and the haul tonnage has been assigned according to the time the haul was retrieved. The shaded bars indicate the tonnage landed during that period and the open bars stand for the tonnage of the sampled hauls. The percentage of the sampled hauls (by weight), for each time period is given in the parentheses at the top of the bars. The graph can be updated periodically by adding to the bars and recalculating the percentages. In this example, the observer needs to adjust the sampling pattern so that more hauls are sampled from periods 5 and 6

Biological Data from crab, halibut, & salmon (Form 4, 7 and 9): Various combinations of species, length, weight, sex, viability and other data are to be collected from the king crab, Tanner crab, halibut, and salmon that occur in your samples for the incidence of prohibited species.

Length frequencies (Form 7): approximately 150 lengths of the sampling species each day.

Age Structures (otoliths/scales) (Form 9): scales are collected from salmon and possibly from other assigned species.

Other Special Projects: as assigned (i.e. stomachs, measuring crab, etc.).

INDEPENDENT LONGLINERS

Estimate set weight (Form 1L): for each set sampled.

Sampling for species composition and the incidence of prohibited species (Form 3L(1) and 3L(2)): sample the catch from at least 20% of the hachi, spread out over three sampling periods. Usually this will require tally sampling three times daily.

Biological Data from crab, halibut, & salmon (Form 4, 7 and 9): Various combinations of species, length, weight, sex, viability and other data are to be collected from the king crab, Tanner crab, halibut, and salmon that occur in your samples for the incidence of prohibited species.

Length frequencies (Form 7): approximately 150 lengths of the sampling species each day.

Age Structures (otoliths/scales) (Form 9): as assigned.

Other Special Projects: as assigned (i.e. stomachs, measuring crab, etc.).

INDEPENDENT MOTHERSHIPS (2 observers)

Estimate codend weight (Form 1): from as many codends as possible, but aim for at least 3 per day--the estimates don't necessarily have to be of the same codends that are sampled.

Sampling for species composition (Form 3(2)): At least 3 times daily; if basket sampling--20 to 30 baskets or more (35 to 45 kg each).

Incidence of prohibited species sampling (Form 3(1)): Each species composition sample should have a corresponding sample for the incidence of prohibited species. If you are using a separate sample weight for prohibited species sampling, then monitor 3 times a day for at least one-half hour periods.

Biological Data from crab, halibut, & salmon (Form 4, 7 and 9): Various combinations of species, length, weight, sex, viability and other data are to be collected from the king crab, Tanner crab, halibut, and salmon that occur in your samples for the incidence of prohibited species.

Length frequencies (Form 7): approximately 150 lengths of the sampling species each day.

Age Structures (otoliths/scales) (Form 9): as assigned.

Other Special Projects: as assigned (i.e. stomachs, measuring crab, etc.).

GENERAL INSTRUCTIONS FOR DATA FORMS

In gathering the necessary data, observers occasionally have to be inventive to overcome sampling problems, but once the data are ready to be transferred from the plastic on-deck sampling forms to the paper keypunch forms, all creativity should cease. Data from well over 500 cruises a year have to be processed, analyzed, and summarized, and there is no way to footnote the data from a particular cruise after they are fed into the computer. Thus, certain data columns always have to be filled in and they have to be filled in a certain way, with leading zeros in some places but not others, zeros filled in behind printed decimal points, and decimal points added by observers in other cases. Refer to the 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.

The forms should 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 can be used to indicate that the numbers in a column are to be repeated. Ditto marks should not be used to repeat a number.

Much of forms 1, 1L, 2, and 2JV should be filled out from the ship's fishing logs. Observers should take care to record the correct information and avoid making copying errors. Avoid the practice of leaving the forms on the bridge - observers have forgotten to pick up these forms when hurriedly packing for a transfer. All sampling data require the position data on these forms, so

if these are missing, other data cannot be used.

Observers should provide the ship captain (especially on Japanese ships) with copies of all completed form 3's (species composition and incidence of prohibited species forms) unless the captain specifically states that he does not want a copy. Copies given to Japanese captains are turned into the Japanese Fishery Agency upon return to Japan. Carbon paper is provided so that the forms can be made out in duplicate. These copies are to be made at the observer's convenience, but before leaving the ship. Vessel captains have no right to demand that any form be completed at a given time. However, if the captain is waiting for your species composition data, so that he can fill in a calculated estimate of the weight of discards or bycatch, then it will behoove you to provide the captain with copies of your form 3's so that you can get a final ship's estimate of catch size and complete your species composition extrapolations. (Note: It is permissible for the captain to use your sampling data to help him fill out the ships' fishing logs.) Likewise, if you are on a joint venture, it is usually best to provide the joint venture representative with copies of your form 3's as soon as possible so that he can relay information concerning the incidence rate of prohibited species to the U.S. catcher boats. ~~(Refer to "Prohibited Species Guidelines" in section II)~~ Many times the joint ventures are operating under strict prohibited species allocation limits and therefore they are very interested in getting information about their catch rate of prohibited species as quickly as possible, so that they can alter fishing strategies if needed.

CRUISE NUMBERS AND VESSEL CODES

The cruise number and vessel code help to identify each set of data from a particular sampling period on a particular vessel. The cruise number is assigned according to the day each observer begins sampling. There are four different situations when your cruise number would change:

1.) If you transfer to another ship, on which you sample, you begin a new cruise, and will hence have a different cruise number.

2.) If you change from joint venture fishing to independent fishing or vice versa, you will be given a new cruise number.

3.) If you shift from fishing in Alaskan waters (BSA or GOA) and begin fishing in the coastal waters of Wash., Ore., or Cal., (WOC) or vice versa, then you will have a different cruise number.

4.) If you should happen to be aboard a vessel from December to January of a new year, treat the data beginning on January 1 as a separate cruise, because you will be given a new cruise number even if you did not transfer vessels at that time.

Cruise numbers will be assigned during your trip, and you will find out what they are upon your return. In the meantime, keep separate sets of data for each cruise and mark your name and the ship's name on the first page of each set of forms.

There is a unique vessel code for each ship. The first letter indicates the nationality; the second, the vessel type; and the last two digits designate the particular ship in that category. You will be given the vessel codes of your ships upon your return.

PAGE NUMBERING

On the top of each sheet of each form is a phrase "page ___ of ___." This helps to keep the forms in order and alerts us to a missing sheet. Each set of forms, for each cruise, should have pages numbered separately and consecutively. Enter the first number as you do the daily forms and fill in

the second number after the cruise is complete. For example, if you used 58 Form 3's on a cruise, then the first sheet will be page 1 of 58 and the last sheet will be page 58 of 58. Form 9's 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 and a page 1 of 32 for pollock otoliths.

CALCULATION GUIDELINES: THE ROUNDING RULE

For in-class work only:

The calculated result should be carried out to one more decimal place than your least accurate measurement; and, round as you go.

Example: 380.6 x 1.22 = 464.33 and 464.33 x 0.16 = 74.293

(In the first equation, 380.6 is the least accurate figure. It is recorded to the tenth's or one place to the right of the decimal. Therefore the product or 464.33 is recorded to "one more place than the least accurate measurement", or to the hundredth's--two places to the right of the decimal. In the second step, the answer from the first part of the problem is used in a subsequent equation, and the rounding rule applies again, except in this case both numbers in the equation are recorded to the hundredth's, so the answer is carried out to the thousandth's or three places to the right of the decimal.)

In all your data:

>= 5 is rounded up, < 5 is rounded down.

Example: rounded to two decimal places: .52499 = .52

(When rounding, look only at the first digit to the right of the place you are rounding off at. In the example above, since we are rounding off at the hundredth's, we would only look 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 ".53".)

GREENWICH MEAN TIME

The time and date to be used on all forms (except the first part of the itinerary on the report #2 form) is Greenwich Mean Time (GMT), which is the time and date at that moment in Greenwich, England. All ships keep track of GMT since it is a nautical convention. This eliminates much confusion

concerning time zones as all ships keep the same time regardless of longitude. (If someone wants to know the hours of daylight, this can be easily computed from the position of the ship and the date.)

A GMT day or "data day" is defined as the time period from 0000 to 2359 GMT for a given GMT date. Daylight hours will not correspond to the GMT day; and most ships also keep track of "ship time", in addition to GMT. This may cause a little confusion when you first board your vessel, but you will soon adapt to thinking in two time zones simultaneously. Ship time may be local time, the time in Japan, Korea, Siberia, or some other time frame. Do not use ship time or dates on the data forms. Since most of the clocks on board may be set to ship time, and meal times, bath times, etc. may be given in ship time, it may be useful to learn how to convert ship time to GMT or vice versa. Compare the times shown by the GMT and ship-time clocks, and refer to the table "Relationship of Ship Time to GMT Time" to obtain the relationship for your particular ship. Once this relation has been ascertained, you should easily be able to convert the time systems using the table.

Example: In the summer, ships operating off the California, Oregon coast frequently use a ship time which corresponds to "+7" on the table. One o'clock AM (0100) ship time thus corresponds to 0800 GMT time; noon (1200) ship time is 1900 GMT; and 4 PM (1600) ship time is 2300 GMT. In this example, 5 PM (1700) June 12th ship time is 0000 June 13th GMT, the start of a new day. Ships in Alaska may use a +8 or some other time system.

(Note: The ships' fishing logs and any other logs, should always be kept in GMT. It is a requirement of the fishing regulations.)

Relationship of Ship Time to GMT

SHIP TIME							
+12	+11	+10	+9	+8	+7	GMT	
1200	1300	1400	1500	1600	1700	0000	Beginning of new day
1300	1400	1500	1600	1700	1800	0100	
1400	1500	1600	1700	1800	1900	0200	
1500	1600	1700	1800	1900	2000	0300	
1600	1700	1800	1900	2000	2100	0400	
1700	1800	1900	2000	2100	2200	0500	
1800	1900	2000	2100	2200	2300	0600	
1900	2000	2100	2200	2300	0000	0700	
2000	2100	2200	2300	0000	0100	0800	
2100	2200	2300	0000	0100	0200	0900	
2200	2300	0000	0100	0200	0300	1000	
2300	0000	0100	0200	0300	0400	1100	
0000	0100	0200	0300	0400	0500	1200	
0100	0200	0300	0400	0500	0600	1300	
0200	0300	0400	0500	0600	0700	1400	
0300	0400	0500	0600	0700	0800	1500	
0400	0500	0600	0700	0800	0900	1600	
0500	0600	0700	0800	0900	1000	1700	
0600	0700	0800	0900	1000	1100	1800	
0700	0800	0900	1000	1100	1200	1900	
0800	0900	1000	1100	1200	1300	2000	
0900	1000	1100	1200	1300	1400	2100	
1000	1100	1200	1300	1400	1500	2200	
1100	1200	1300	1400	1500	1600	2300	

During daylight savings time, Seattle is +7; Anchorage, Kodiak, and Dutch Harbor are +8.

During the remainder of the year (standard time), Seattle is +8; Anchorage, Kodiak, and Dutch Harbor are +9.

GENERAL DIRECTIONS FOR OBSERVERS ON JOINT VENTURE PROCESSORS

A joint venture (JV) is a combined fishing and processing effort between a U.S. domestic fishing boat(s) and a foreign processing vessel(s). The U.S. fishing boat is often called a "catcher boat", and the foreign processor is sometimes referred to as a "mothership" or "processor". In a joint venture, the U.S. fishing boat catches the fish and delivers them to the foreign processor by transferring a fishing net codend. The financial and business arrangements between the foreign JV processor and the U.S. catcher boat are usually handled by a third party which is called a "joint venture company." The JV company will usually place a "JV representative" (JV rep.) aboard the foreign processor to assist in communications with the catcher boat and in settling disagreements about codend delivery weights and species composition. The JV rep. will sometimes carry out similar duties as the observer (i.e. catch rate estimates and species composition sampling), but this should not deter observers from doing their assigned work. The JV reps. can sometimes be of help in communicating with foreign ship personnel because of their possible language ability or in communicating with the catcher boats for needed data on the Form 2JV (see following section).

Observers will find it necessary to create a good working relationship between themselves and the JV representative. The JV rep. is important to the smooth operation of the joint venture and can be very influential in the observers dealings with the foreign crew or U.S. fishermen. It is important that observers act in a mature, diplomatic and tactful manner when dealing with the U.S. fishermen, JV rep. or foreign fishermen.

Observers can work with JV reps. to figure out densities and haul weight estimates or maybe product recovery rate determinations. You should not

however, let a JV rep. do your sampling, or conversely, you should not do the JV reps. job for them. This could be considered a possible conflict of interest and under no circumstances should you accept payment from a JV company while you are employed as an observer.

CATCH RATES

FISHING LOGS AND THE SHIP'S ESTIMATE OF CATCH RATES

Each vessel will keep several sets of logs. They will keep a set of logs for their own company's records and when fishing in the U.S. EEZ they will maintain a set of logs as required under the Magnuson Act. Your normal procedure is to obtain daily catch records from these fishing logs for recording on your Haul Form 2JV. Records of all the hauls should be transcribed from the fishing logs whether you sampled them or not.

Even though the information on delivery time, delivery position and weight of total catch, etc. are required as part of the fishing logs, and the water temperature and weather and sea code are normally supplied by vessel personnel, the observer should check all data for accuracy. The date, delivery position, and total catch weight are especially important items--without this information the observer's sampling data cannot be used. The ship's catch weight is the data base to which the observer's species composition and catch of prohibited species sample data are applied. For example, if you sample some fraction of a haul, the sample weight will be a given proportion of the total haul weight estimated by the ship.

A ship's officer will usually make an initial rough deck estimate or "hail weight" of the total catch by direct observation of the volume of fish in the net or in the fish bins. This is usually entered in the fishing logs on

the "Section One - Effort" page under the "Haul Weight Estimate" column. The hail weight may equal the ship's final estimate of catch weight but many times it does not. It is the ship's final estimate of catch weight, not the hail weight, which should be recorded on Form 2JV. The ship's final estimate will be available from the fishing logs on the "Section Two - Catch" page. Please refer to these sections from a fishing log example on the following pages. For a complete description of fishing logs refer to "Section II, 7., b. - Fishing Logs" in the manual entitled, "Observer Guide to Foreign Fishing Regulations".

When estimating catch weight from production information, the ship's officer's first step is to calculate the whole weight (also termed: fresh or round weight) of the fish that went into the production lines. An officer gets a count of the number of units of product produced by the factory for each haul or each day. A unit of product would be a tray of fish packed for freezing or a bag of fish meal. The number of units x the average unit weight = the total weight of product produced. Vessel officers then use a recovery rate to estimate the whole weight of the catch from the tonnage of the products. A recovery rate represents the proportion of the organism that is used in any given product. The use of the recovery rate (or ratio) is shown in the following equation:

Product Weight ÷ Recovery Rate = Whole Weight of fish used to make the product

This procedure is termed: "back-calculation from production figures".

The ship's officer's entries in Section Two of the fishing logs are typically the result of one of four general methods of catch weight estimation:

1. Back-calculation from production figures = total catch. (This assumes no fish were discarded.)

2. Back-calculation from production figures + factory's estimation of discarded species and their weight = total catch.

3. Back-calculation from production figures + observer's data on the species and weight of

discards = total catch.

4. Hail Weight = total catch. Hail weight - back-calculation from production figures = weight of discards.

Find out how the ship's officers determine catch weight. Total catch on the observer's Haul Form 2JV should be the ship's final estimate of catch weight and it should be the weight of everything that is caught--whether it is utilized or not. Once you know their general method, i.e. "from production figures", you will be able to investigate their specific methods. What species are and are not included in the total catch weight? In particular, determine whether discarded fish are included. How do they estimate species composition, do they use the observer's data? How do they estimate the amount of discard? Is the deck estimate used as the final figure or is it perhaps used as a guideline to divide the day's production totals? How do they measure the codend or bin and what density values do they use? (Density figures are discussed on following pages.)

ADJUSTING THE SHIP'S ESTIMATE

In Alaska, not all species that are caught have to be recorded in the fishing logs. These species are referred to as "non-allocated" because there is no allocation or quota on how many may be caught; they are not managed. (Refer to the "Report Groups" in the "Radio Messages" section of the manual.) When non-allocated species are a significant proportion of the catch weight and they are not included in the ship's catch estimate, or when there is a sizable amount of allocated species that are not reported, (such as those that are discarded), the ship's catch estimate should be adjusted for use in observer data. (Don't make or change any entries in the ship's fishing logs.) The catch weight used in observer data must include all species groups present in the catch because observers sample unsorted catch and apply their resultant species composition ratios to the total catch weight. However, do not adjust the catch weight when you believe the ship is deliberately

misrepresenting the counts of product units, or using inaccurate unit weights or product recovery ratios. Do not adjust when the ship's fishing logs show only a portion of a species or species report group recorded, as may be the case when they are discarding undersized target fish. If this is occurring, document this as a possible violation and gather corroborating evidence. (This may become a primary duty depending on the magnitude of the mislogging.)

Remember: Observers should not compare the ship's estimate and the observer's estimate in deciding whether or not to adjust. To decide whether or not to adjust the ship's catch weight, you must first know how their catch estimations are made. For instance, if the deck estimate is the weight used, it includes everything and no adjustment is necessary. Secondly, the amount of non-reported species should be taken into account. If non-allocated or other non-reported species make up more than 10% of the catch weight in any particular tow, (as determined by your species composition sampling), then that haul should be adjusted and its adjustment factor, as defined below, would be 1.10 or more. If the adjustment factor is less than 1.10, you may adjust but it is not necessary to do so. The decision to adjust the ship's estimate can be made on a haul-by-haul and day-by-day basis or all the hauls in an entire cruise may be adjusted.

Calculate the percentage of non-reported species in a haul by looking at the species composition for that haul on Form 3(2) (Refer to "Form 3(2)--Species Composition"). With your species composition data, calculate the following:

$$\frac{\text{observer's total species composition sample weight}}{\text{weight of reported species in species composition sample}} = \text{adjustment factor}$$

If the adjustment factor equals 1.10 or more then:

$$\text{adjustment factor} \times \text{original ship's estimate} = \text{corrected ship's estimate}$$

Correct each haul individually using your sampling data for that haul. To calculate a factor for the hauls that you did not sample, sum the adjusted ship's estimate for the hauls you sampled that day and divide the resulting figure by the sum of the original ship's estimates for those hauls. This will yield an adjustment factor for the day, which is weighted by the size of the sampled hauls. Use this factor to adjust the ship's estimates of the hauls that you did not sample that day. For example, sampled hauls for 9/13/83:

Haul #	original ship's estimate	x	adjustment factor	=	corrected ship's estimate
111	22.0 mt	x	1.65 mt	=	36.30 mt
113	+11.0 mt	x	1.42 mt	=	+15.62 mt
Totals:	33.0 mt				51.92 mt

(51.92 ÷ 33.0 = 1.57, the adjustment factor you should use to correct hauls 110 and 112 on 9/13/83 which you did not sample.)

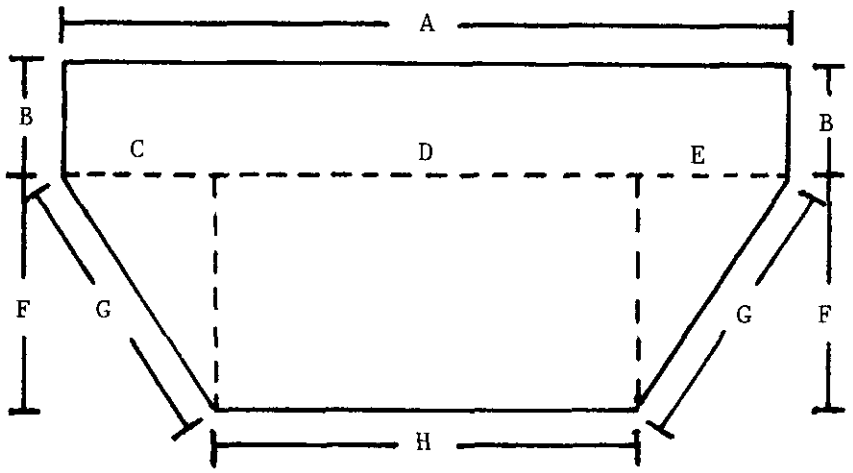
If, in the course of your sampling work, you are counting and weighing **all** of the non-reported species in a haul, as usually happens whenever you whole-haul sample, simply add the total weight of the non-reported species to the ship's estimate to obtain the adjusted haul weight. Similar computations may be necessary to adjust the ship's estimate if you sample part of the haul. Though in addition, the partial haul **sample weight** must be adjusted by taking the appropriate percentage of the ship's reported catch estimate and adding the actual weight of the non-reported species in your sample. (If you change the sample weight, make sure the adjusted sample weight does not exceed the adjusted catch weight recorded on the Haul Form 2JV!) In some unusual instances, your sample weight may exceed the ship's estimate for a haul. This would only happen because you had actually weighed the entire catch. This could occur if the catch was less than one metric ton. If this happens, it would be logical to use your actual weight as the adjusted ship's estimate. If adjustments are made, mark the catch data forms (1, 1L, 2, or 2JV) as instructed so that corrected ship's estimates are legible and clearly defined. After adjusting, you should then use the new adjusted catch weight figure when the total catch is required on any of your data forms.

OBSERVER ESTIMATES OF CATCH RATES

Observer estimation of the total catch is important, so you should do your best to get good data. Observers should make their own estimates, and record them even if they are close to or the same as the ship's estimate. The observer estimate should not be confused with an "adjusted ship's estimate" which is obtained through a different method, using sample data, as was previously described.

On joint venture processors estimate the weight of several hauls per day, and record the date, haul number, delivery time, ship's estimate, and your estimate in your logbook. Observer haul estimates need not be made on the same hauls that are sampled, but this is the usual case. Some techniques for estimating haul weights are as follows:

(1) Bin Volume and Density Method: Measure the fish bin into which the fish will be emptied to obtain the volume in cubic meters. If the fish bin is shaped like a rectangle or square, it would be relatively easy to calculate the volume. Simply multiply the floor area (length x width) by the height of fish. However, many fish bins are irregularly shaped, in which case the floor area of the bin must be broken into sections which can be easily measured. The example below shows how one fish bin was broken into shapes easily calculated or measured to obtain floor area.



Useful Formulas You May Need

Area of a circle = $\pi r2$ Circumference = $2\pi r$ (π = 3.1415)

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)

For bin floors with a conical shaped depression:

Volume of a right angle cone = $1/3\pi r^2 h$

The height of fish in the bin is the third dimension needed to determine volume. If the bin is sided with common width boards of known dimension, use the height of each board to estimate the height of fish in the bin. If the bin is of other composition, ask to mark the sides as to height. To determine an average height of fish, it is best to measure the height of fish at four or more points around the inside of a bin. The area of the fish bin multiplied by the height of fish from that catch equals the volume.

This volume is then multiplied by a "density" figure for that haul. One

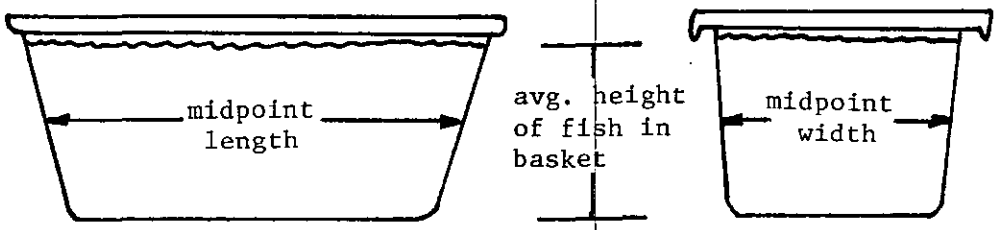
This volume (in cubic meters) is then multiplied by a weight per cubic meter ratio, (termed "density") to obtain a catch weight estimate for that haul. Density is the ratio of mass, or weight, to volume. One cubic meter of fresh water by definition weighs one metric ton. It's **density** then is 1 ÷ 1, or 1.00. The density of seawater is 1.026. The density of fish in a fish bin, (their weight per cubic meter of volume) should be close to 1.00, (they commonly range from .87 - .98). The fish in a codend are often very tightly compacted and thus their density would be greater than the density of fish dumped loosely into a bin or basket. It has been theorized that densities of fish in tightly compacted codends approach 1.00 and may even be greater than 1.00 but no studies have been done to substantiate this. Therefore, we ask that observers sample for density as explained below and do not make unsubstantiated assumptions. [USE BASKET DENSITY]

Density is variable and should be derived from random basket samples for any sampled haul. Average density values for the day or area should be calculated and used for catch weight estimates of unsampled hauls. A minimum of four baskets should be used to calculate density. First obtain the volume of fish in the sampling baskets, (or some other small container which is larger than a basket but not larger than a cubic meter), such that fish weight and volume can be accurately determined. The basket sides are sloped slightly, so use the midpoint width and length measurements. Remember that the midpoint is half the distance from the bottom to the level **of fish** in the basket (or other container) not necessarily to the top of the basket. It is important to fill all the baskets to the same level. It is also important to examine the way that the fish are packed in your basket or small container and make sure that it approximately duplicates the way that the fish are packed in the fish bin or codend. 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 the density of fish

in the bin because there are more spaces or air pockets between the fish in the basket. It may be appropriate to lay or settle the fish into the container but do not compact or smash the fish in an attempt to duplicate the force in the codend. Your resulting density value would be too subjective.

To calculate the volume of the basket, use the following equation:

Midpoint length x height of fish x midpoint width = total volume



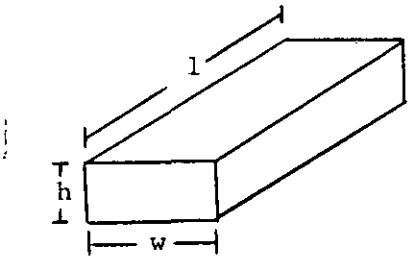
After the volume of an average basket is calculated, you need to obtain the average weight of four or more baskets. Then simply divide the average weight of a basket by the average volume of a basket to calculate the density figure for that haul. Using the volume of the fish in the bin or codend and the density of those fish, you can calculate a total catch weight estimate. Remember:

Volume of fish (m^3) x density (mt/m^3) = weight of fish (mt)

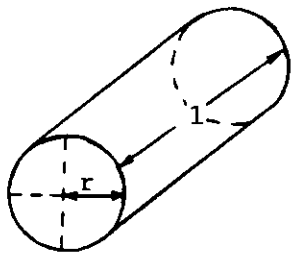
(2) Codend Volume Method: On some ships, it may be necessary to estimate the catch size by the volume of fish in the codend, because the volume of fish in the holding bin cannot be determined. On these ships, the fish bin may be enclosed and thus difficult to measure; the floor of the bin may be moveable; large quantities of water may be used to float the fish in the bin or the bin shape may make volume estimates of the quantity of fish in the bin difficult.

The first step in the estimation of the volume of fish in the codend is to decide which geometric form a particular codend most closely resembles: a rectangular solid, a cylinder, an

ellipsoidal solid, a semi-ellipsoidal solid, or some other form. Determine the needed dimensions for volume calculation of the chosen solid by measuring each codend of fish or by estimating the dimensions using premeasured deck lengths, heights of people, or other standards of reference. Calculate the volume in cubic meters using the appropriate formula, then multiply the volume times the density (weight per cubic meter) calculated as explained above to obtain the metric tonnage of the catches. In some cases, it may be easier or more accurate to estimate the volume of fish in each banded section and add them together instead of treating the whole codend as a single unit.

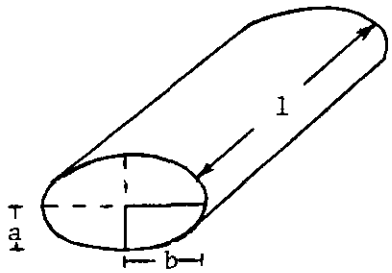


Rectangular solid
Volume = height x width x length
V = hwl

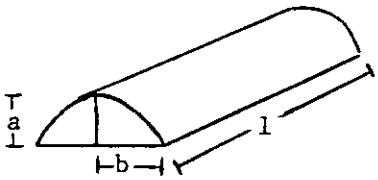


Cylinder
Volume = π x radius^2 x length
V = $\pi r^2 l$

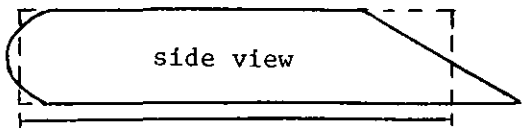
(π = 3.1415)

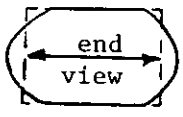


Ellipsoidal solid
Volume = π x short radius x long radius x length
V = π abl



Semi-ellipsoidal solid
Volume = $\frac{1}{2}\pi$ abl
V = $\frac{1}{2}\pi$ abl





(Allowances can be made for irregular shapes or partially filled portions of the net by the way in which the measurements are taken.)

(3) Back-calculation from Factory Production Method: Another approach to estimating the weight of a haul, involves monitoring the factory products and back-calculating to whole catch weight, by product and species, in much the same way that the ship officers normally do. As was explained earlier, the following equation would be used to calculate the whole weight of fish that went into the making of each product:

$$\frac{\text{Product Weight}}{\text{Recovery Rate}} = \text{Whole Weight of fish used to make the product}$$

First of all, each separate product weight would have to be determined. This would be done by counting all of the units (trays or sacks) of each product and then multiplying that number by an average weight per unit to get the total weight of each product. Of course, the average unit weights and total numbers of product units would have to be determined by yourself. (Be careful to weigh the trays of product before they have been frozen or have had any water or glaze added to them. You of course, would also have to subtract the weight of the metal tray itself, in order to get the true unit weight.) Secondly, a recovery rate for each product would have to be determined. The observer would have to run sample tests for recovery rates by using the methods described in the part of this manual entitled, "Obtaining Information on Product Recovery Rates" which can be found in Section II. By independently determining both the product weight and a recovery rate, for each product that was made from a haul, the observer can estimate the whole weights of all the fish that went into the products. Then simply by adding an estimate of the bycatch from that haul, to the back-calculated whole weight from products, the observer can determine their own haul weight estimate. (The estimate of bycatch weight can come from the observers species composition data for that haul.)

Occasionally an observer will be on a ship when a haul comes in containing mud or boulders which makes up a large percentage of the weight/volume of the catch. As the ship's

estimate probably will not include the weight of the mud or rocks, and NMFS is only interested in the catch of all organisms, do not include the weight of the mud in your catch estimation, and avoid including this in your species composition samples.

There is no need to be surreptitious about making your own estimate of the catch size. It is difficult to measure the depth of fish in the bins or estimate a codend without having someone realize what you are doing. In some cases, captains have improved their method of estimating the catch size by watching the observer. (This practice may be encouraged but not demanded.) On the other hand, avoid providing the captain with your estimates--this can lead to argumentation and an attempt to make the two estimates match.

Observer estimates of catch rates are not to be used in place of the ship estimates (with only a few exceptions). The observers' estimates are primarily used as a tool for discovering or detecting an underlogging of catch by the ship.

How to Complete a Form 2JV by using the Ship's Fishing Logs

Some of the entries on Form 2JV can be taken from "Section One - Effort" of the "Daily Joint Venture Log". The "U.S. Vessel Name" in the ship's log is the catcher boat name that goes on Form 2JV (be sure and check for proper abbreviation however). "Receipt No." in the ship's log corresponds to "Haul (Delivery) No." on Form 2JV. Similarly, the term "receipt", in receipt time and receipt position, corresponds to delivery time and delivery position on Form 2JV.

The total catch entry in columns 61-65 of the Form 2JV is obtained by totaling the species groups entries by receipt (codend) in "Section Two-Catch" of the Daily Joint Venture Log. (Refer to the examples below.) If you adjust the ship's total catch weight, refer to item number 11 of the Form 2JV instructions for proper entry.

Be aware that the Fishing Log formats can vary, but they must at least contain the items and information shown in the following example. Weather and sea codes (coded as shown in this manual) and surface and bottom water temperatures, will have to be provided by the ship's officer on watch, in some regular format. The approved Japanese Fishing Logs have columns for this information by haul, but their weather and sea coding systems may be different.

All other effort information, such as fishing times and/or duration, fishing depths, towing speed and fishing locations, will be a result of your efforts to collect it from the U.S. catcher boats (either directly or through the JV rep.) This information is very important, and every effort should be made to gather it.

FORM 2JV - HAUL FORM FOR JOINT VENTURE PROCESSORS

This form has several pieces of information that must be obtained from the catcher boats (i.e. location, fishing time, duration, depth, and speed). Since U.S. fishermen are not required by law to furnish this information, observers have not always been able to obtain it. The U.S. fishermen may have a voluntary "Joint Venture Trawl Log" however, which may have much of the needed information in it. This JV trawl log is provided to the catcher boats by the Pacific Marine Fisheries Commission and is filled out on a voluntary basis only. Many times the U.S. fishermen are concerned that the information that they are giving to you can be retrieved by anyone who may be interested in finding out where a particular boat caught fish. If this is the case, reassure them that the information you are collecting is coded by catcher boat, and cannot be released to non-NMFS users under provisions of the Federal law.

The most important piece of information to try to get from the catcher boats is a measure of fishing effort, either through fishing time or duration. If you are unable to gather any information from a catcher boat, please explain the reason on a non-keypunch part of the form or on the back of the form.

If you have any doubt about the accuracy of information from a catcher boat, do not record it on the form - record it in your logbook and point it out to the debriefers when you return.

Notes on filling out Form 2JV:

1. Collect Form 2JV data for the entire period you are aboard your vessel. Make certain that you have all of the hauls recorded for the days you begin and end sampling.

2. Each codend delivered to the processor must be numbered in sequential order and entered in columns 5-7. (Duplication of haul numbers is not allowed.) The haul number should correspond to the "Receipt No." that is recorded in the "Daily Joint Venture Log".

3. The abbreviated catcher boat name is entered in columns 8-22. (Refer to the alphabetical listing of catcher boat names to find the proper abbreviation.) The abbreviated name must be spelled exactly as it appears in the catcher boat list, because the computer will recognize only one abbreviated name code for each catcher boat. (Do not use periods, and put spaces only where shown.) The full catcher boat name and its abbreviated version should also be printed in the upper right-hand corner of the form in the space provided. This "list of catcher boats" need only be filled in once, and if required, may extend to page 2 or 3.

4. Every haul should have the delivery position entered under "location" (columns 24-32). In addition to this location, the trawl set and retrieval positions should be recorded if this information was obtained from the catcher boat. A "C" meaning "continuation", must be entered under "haul no." every time a trawl set or retrieval position is used. The location identifier (column 23) must be filled in for every location and the noon position of the processor is only used on a non-fishing day. The location identifiers are as follows: D = Delivery position; S = Trawl set position; R = Trawl retrieval position; N = Noon position of processor. Change delivery positions that are right on an area boundary. For example, if the boundary runs along 58-00N lat. and the delivery position is exactly 58-00N lat., then change the delivery position to either, 58-01N lat. or 57-59N lat. depending on where the fish were actually caught. If you hear of any hauls being dumped by the catcher boat before delivery to the processor, please note the occurrence in your logbook and report #2.

5. Information in the remaining columns, (fishing time, duration, delivery time, depths etc.) should be entered on the <u>same line</u> with the delivery position. This should be the <u>first</u> (of three possible) lines entered for any delivery. The second and/or third line would <u>only</u> have the trawl set or retrieval position.

6. Fishing times recorded as either "nets on/off bottom times" or as "duration", are very important. This information is necessary for "catch per unit effort" (CPUE) calculations. If fishing times are received from the catcher boats, they must be recorded in <u>GMT only</u>. If fishing times are recorded, (columns 33-40) then the fishing duration (columns 41-44) should <u>not</u> be recorded. (Frequently catcher boats will record fishing duration without nets on/off bottom times.) Fishing times are preferred because they provide us with more detailed information. Make a real effort to either get fishing time or duration.

7. Delivery times (columns 45-48) will be available from the processor and can be copied from the fishing log. Remember that delivery times are to be recorded in GMT only. (They should be recorded in GMT in the fishing logs.) The delivery time is used to assign a particular haul to a GMT day. If there is more than a four hour difference between the delivery time and the nets off-bottom time, then put a note of explanation on the form.

8. The average fishing depth (columns 49-52) will have to be collected from the catcher boats and can be recorded in either meters (m) or fathoms (f) (column 53) depending on what the catcher boat gives you. The same is true for average bottom depth (columns 54-57). Make sure you indicate the units for every depth you record. (Depths in fathoms need not be converted to meters.)

9. The average speed (columns 59-60) is the speed at which the trawl net was towed. This information will have to be collected from the catcher boats or the JV rep. and recorded in knots.

10. The ships estimate of total catch should represent the weight of all of the fish and invertebrates delivered to the processor. This includes any catch that is discarded after it is delivered to the processing vessel. The ships estimate should represent the final estimate that is recorded in ship's fishing logs. It can be determined by adding together all of the species report group weights that are recorded in the "Section Two - Catch" part of the daily joint venture log and adjusting for any nonallocated species if necessary.

    (Remember that trailing zeros are required in total catch, observers estimate and original ships estimate (columns 61-75).)

11. If you adjusted the ship's estimate (see Adjusting the Ship's Estimate in Section II), enter the adjusted ship's estimate in columns 61-65 and the original ship's estimate in columns 71-75. If you did not adjust the ship's estimate, enter the ship's estimate in columns 61-65 (columns 70-75 will be blank). The observer's estimate goes in columns 66-70.

12. Weather and sea codes (columns 76-77) should be filled in at the delivery time and at GMT noon on a non-fishing day only.

13. On days with no hauls, enter the date, put a zero under haul number, enter the GMT noon position of the processor, enter "N" in column 23, give the reason for no fishing and enter the weather and sea codes for GMT noon.

14. Leading zeros are required in columns 1, 3, 33-40 and 45-48 only. Please do not put them anywhere else.

15. Skip a line after each day.

16. NO DECIMALS FOR AVG. DEPTH

DAILY JOINT VENTURE LOG

SECTION ONE - EFFORT

PAGE NO	DATE Year Month Day	VESSEL NAME	IRCS	U.S. PERMIT NUMBER	NOON POSITION Latitude Longitude	NOON WEATHER	WIND DIRECTION / FORCE	WEATHER	BAROMETER	SEA CONDITION	AIR / WATER TEMPERATURE		MASTER
08	83-09-10	DAIKICHI MARU-2	7KDX	JA-83-0494	58.35N 176-01W		NW 3 m/sec.	CLDY	29.7	MOD	15.1	7.5	Captain Kirk

RECEIPT NO.	U.S. VESSEL NAME	FISHING AREA NO	RECEIPT TIME (GMT)	RECEIPT POSITION	ESTIMATE OF RECEIPT WEIGHT
101	Vanguard	52	0540	58-38 N 176-24 W	15.5
102	Lady of Good Voyage	52	0920	58-37 N 176-30 W	35.0
103	Great Pacific	52	1450	58-37 N 176-27 W	20.5
104	Aleutian Harvester	52	1900	58-38 N 176-31 W	11.5

REMARKS

U.S. INSPECTION

OFFICER DATE

REMARKS

SECTION TWO - CATCH

SPECIES / RECEIPT NO.		SQU 509	POLL 701	COD 702	SAB 703	POP 780	OTH 499
101		0.1	14.4	0	0	0	1.5
102		0.3	34.2	0	0	0	0.5
103		0.4	13.1	3.1	0	0	3.4
104		1.4	10.0	0.4	0.1	0.1	0
DAILY DISPOSITION	C	2.2	71.7	3.5			
	M						1.0
	D				0.1	0.1	4.4
	R						
AREA TOTAL	52	2.2	71.7	3.5	0.1	0.1	5.4
DAILY TOTAL		2.2	71.7	3.5	0.1	0.1	5.4
CUMULATIVE TOTAL		19.8	210.2	20.1	0.1	0.1	7.4

TOTAL CATCH	DAILY TOTAL	CUM. TOTAL
	77.4	250.1
	1.0	1.3
	4.6	6.3
	83.0	257.7
	83.0	
		257.7

PROHIBITED SPECIES				
SAL 210				
1				
1				
1				
2				

MARINE MAMMALS		
SPECIES CODE	NUMBER	STATUS CODE
958	1	4
955	2	4

FORM 2JV
HAUL FORM FOR JOINT VENTURE

	cruise no.				vessel code				year	
	1	3	4	5	6	7	8	9	10	11	12
*										8	3

1. Leading zeros in columns 1, 3, 33–40, 45–48, only.
2. Skip a line after each day.
3. Record a C under haul no. if more than one location is recorded for a haul.
4. On days with no hauls, enter date, haul no. = 0, and note reason.
5. Trailing zeros are required in columns 61–75.

Location identifier (column 23)
D = delivery position
S = trawl set position
R = trawl retrieval position
N = noon position of processor

Depth (columns 53 and 58)
M = meters
F = fathoms

List of catcher boats

full catcher boat name	abbreviated name
Aleutian Harvester	Aleut Harvester
Vanguard	Vanguard
Lady of Good Voyage	Lady Good Voy
Great Pacific	Great Pacific

Date mo. (1–2)	Date day (3–4)	haul (delivery) no. (5–7)	abbreviated catcher boat name (8–22)	location I.D. (23)	location (N) latitude (24–27)	location E/W (28)	location (I) longitude (29–32)	fishing time (GMT) nets on bottom (33–36)	fishing time (GMT) nets off bottom (37–40)	fishing duration (min.) (41–44)	delivery time (GMT) (45–48)	avg. fishing depth (49–52)	M/F (53)	avg. bottom depth (54–57)	M/F (58)	avg. speed (knot) (59–60)	total catch (ships est.) (mt.) (61–65)	observers estimate (mt.) (66–70)	original ships est. (mt.) (71–75)	weather code (76)	sea code (77)
09	09	100	Aleut Harvester	D	5834	W	7600	1545	2235		2245	200	M	210	M	3.8	40.00	.	.	2	4
																.	.	.	.		
09	10	101	Vanguard	D	5838	W	7624	2345	0525		0540	146	M	150	M	3.5	16.00	17.10	.	2	4
↓	↓	C		S	5836	|	7622									.	.	.	.		
		C		R	5837	|	7623									.	.	.	.		
		102	Lady Good Voy	D	5837	|	7630	0500	0900		0920	156	M	160	M	3.6	35.00	.	.	2	4
		103	Great Pacific	D	5837	|	7627			255	1450	80	F	82	F	3.8	20.00	20.50	.	1	3
		104	Aleut Harvester	D	5838	|	7631	1430	1840		1900	147	M	150	F	3.6	12.00	12.90	.	1	3
↓	↓	C		S	5838	↓	7647									.	.	.	.		
09	10	C		R	5838	W	7630									.	.	.	.		
																.	.	.	.		
09	11	0		N	5832	W	7620	NO	FISHING	– ROUGH	SEAS					.	.	.	.	6	8
																.	.	.	.		
09	12	105	Vanguard	D	5836	W	7635	2010	0005		0010	186	M	190	M	3.6	8.00	8.00	.	2	4
↓	↓	C		S	5733		7559									.	.	.	.		
		C		R	5836		7634									.	.	.	.		
		106	Lady Good Voy	D	5834		7625				0745	182	M	185	M	3.5	20.00	20.60	.	2	5
		107	Great Pacific	D	5836		7635			250	1100	85	F	88	F	3.6	7.00	.	.	3	4
		108	Aleut Harvester	D	5836		7646	1000	1300		1315	166	F	170	F	3.5	10.00	.	.	3	4
		C		S	5825		7645									.	.	.	.		
		C		R	5835		7645									.	.	.	.		
		109	Vanguard	D	5840		7645	1800	2205		2350	156	M	160	M	3.8	30.00	32.30	.	2	5
↓	↓	C		S	5901		7720									.	.	.	.		
09	12	C		R	5830		7640									.	.	.	.		
																.	.	.	.		
																.	.	.	.		
																.	.	.	.		
																.	.	.	.		
																.	.	.	.		

Gear Codes

1. Pair Trawl

2. Danish Seiner

3. Otter Trawl (dependent and independent stern trawlers)

Weather Codes

0 Clear (no cloud at any level)
1 Partly cloudy (scattered or broken)
2 Continuous layer(s) of cloud(s)
3 Sandstorm, duststorm, or blowing snow
4 Fog, thick dust or haze
5 Drizzle
6 Rain
7 Snow, or rain and snow mixed
8 Shower(s)
9 Thunderstorm(s)

Sea State Codes

Height of Waves*

Code	Description	Feet	Meters
0	Calm-glassy	0	0
1	Calm-rippled	0-1/3	0-0.1
2	Smooth-wavelet	1/3-1 2/3	0.1-0.5
3	Slight	1 2/3-4	0.5-1.25
4	Moderate	4-8	1.25-2.5
5	Rough	8-13	2.5-4
6	Very Rough	13-20	4-6
7	High	20-30	6-9
8	Very High	30-45	9-14
9	Phenomenal	>45	>14

*The average wave height as obtained from the larger well-formed waves of the wave system being observed. The exact bounding height is to be assigned for the lower code figure, e.g. a height of 4 meters is coded as 5.

652396	Ocean Hope II	Ocean Hope II	89	193	
	Ocean Mariner	Ocean Mariner			
652395	Ocean Hope I	Ocean Hope I	92	195	
517100	Ocean Spray	Ocean Spray	94	134	
615247	~~Ocean Dynasty~~	~~Ocean Dynasty~~	124	168	Sank in November 1988
605206	Ocean Beaut	Ocean Beaut			
602279	Oceanic	Oceanic	122	134	
573157	Oceanida One	Oceanida One	180	238	
590263	Olympic	Olympic			
530292	Orion	Orion	86	149	
612084	Pac Alliance	Pacific Alliance	89	131	
518937	Pac Challenger	Pacific Challenger	86	111	
561934	Pacific Fury	Pacific Fury	110	137	
694522	Pacific	Pacific			
612155	Pacific Future	Pacific Future			
589115	Pacific Ram	Pacific Ram			
555058	Pacific Viking	Pacific Viking	108	138	
548750	Paragon II	Paragon II	110	133	
507438	Pat San Marie	Pat San Marie	101	77	
599040	Patience	Patience	49	34	
621638	Patty A J	Patty A J	65	84	
565120	Pegasus	Pegasus	67	95	
502779	Peggy Jo	Peggy Jo	99	134	
611520	Pelagos	Pelagos	131	126	
536873	Perseverance	Perseverance			
561823	Persistence	Persistence	79		
	Pioneer	Pioneer			
559907	Polar Star	Polar Star	84	107	
565349	Progress	Progress	100	137	
547390	Queen Victoria	Queen Victoria	90	110	
249995	Raven	Raven			
697637	Rebecca Irene	Rebecca Irene	140	191	
555917	Ronnie C	Ronnie C	76	76	
509579	Rosella	Rosella	94	98	
624371	Royal American	Royal American	105	151	
260303	Royal Baron	Royal Baron	97	124	
559271	Royal Atlantic	Royal Atlantic	108	139	
	Sea Wolf	Sea Wolf	123	135	
523458	Sea View	Sea View	108	145	Sank in January 1987
610150	Sea Quest	Sea Quest	80	101	Previous name was: Colentino Rose II
614723	Sea Master	Sea Master			Sank in January 1988
548685	Seadawn	Seadawn	94	133	
	Seeker	Seeker			
	Sharon Lorraine	Sharon Lorraine	110	129	
	Sharon Barbara	Sharon Barbara			
610436	Silver Sea	Silver Sea	102	130	
598904	Silver Chalice	Silver Chalice	83	139	
	Sisu	Sisu			
591482	Sleep Robber	Sleep Robber	78	111	
546375	Sonny Boy	Sonny Boy	79	120	
561651	Starfish	Starfish	108	199	
597065	Starlite	Starlite	122	199	
617807	Starward	Starward	123	199	
579702	State Rebel	State Rebel			New name is: Uyak I
620769	Storm Petrel	Storm Petrel	123	220	
598484	Sunset Bay	Sunset Bay	108	147	
531320	Tam-Ran	Tam-Ran	84	126	New name is: Bon-Su-Mar
632123	Tatiana	Tatiana			
575428	Topaz	Topaz	80	98	
904859	Tracy Anne	Tracy Anne			
	Traveler	Traveler			
529154	Tremont	Tremont	133	311	
	Unknown	Unknown			Catcher boat name was unknown
602309	US Dominator	US Dominator	124	136	
	Uyak II	Uyak II			Sank in November 1987

579702	Uyak I	Uyak I	174	133	Previous name was: State Rebel
611225	Vaerdal	Vaerdal	124	135	
617802	Vanguard	Vanguard	94	144	
553377	Vega Marie	Vega Marie	86	136	
516479	Vega	Vega	90	108	
611642	Vesteraalen	Vesteraalen	125	198	
605228	Viking Explorer	Viking Explorer	123	131	
565017	Viking	Viking	120	138	
616131	Voyager	Voyager	94	151	Sank in Decenber 1988
603897	Wallowa	Wallowa			
	Walter N	Walter N			
524423	Western Dawn	Western Dawn	97	130	
615165	Westward I	Westward I	135	125	

SPECIES COMPOSITION OF THE CATCH

Determination of the species composition of the catch is one of the high priority duties of an observer. The essential features and data that must be obtained for determining species composition are as follows:

(1) Samples of the catch must be representative of a particular haul.

(2) The sample must have a known weight. This is referred to as a "sample weight". (It is sometimes obtained by actual measurement, and sometimes calculated.)

(3) The sample is sorted according to species or species groups, and the total weight of each group is determined. The combined weight of all species groups must equal the sample weight.

(4) The number of individuals in each species group is determined. Thus a weight must be entered for every group making up the sample and the number of individuals making up each weight must also be recorded.

(5) When sampling for species composition, you must also sample for the incidence of halibut, salmon, king crab and Tanner crab. The species composition information will be recorded on the 3(2) side of form 3 and the incidence of king crab, Tanner crab, halibut and salmon will be recorded on the 3(1) side of form 3.

There are a number of different ways the above information can be obtained. The sampling method you choose is dependent on the diversity and size of the catch, the shipboard setup and your time and energy. Basket sampling is the most common means of sampling when the catch is reasonably diverse. When one or two species predominate in the catch and there are very few other species, it may be possible to use a whole haul sampling scheme or a variation of it. In addition, some observers have devised other, but equally

valid means of sampling species composition for use in certain situations. The above mentioned methods will be discussed in detail; it is up to you to decide which method provides the most accurate information in your particular situation, or if none of them are practical, to devise or adapt a sampling scheme which will work.

METHODS OF SPECIES COMPOSITION SAMPLING

Basket Sampling

The sampling aim is to obtain baskets of fish from a particular haul's catch so that the sample will represent the species composition of the whole haul. In the course of your work you will be collecting baskets of fish for various purposes. However, when your method of collecting species composition data is "basket sampling", this means that your sample is limited to only the organisms you gather in baskets from different parts of the haul. Basket sampling yields the smallest sample size, or weight, of any recommended method. Some things to watch for in taking the samples:

(1) The heterogeneity of the catch in the net--i.e., 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. Therefore, samples should be taken from different parts of the trawl.

(2) As the fish are dumped into a bin, or as they pass onto a conveyor belt, the physics of fish flow may cause further sorting to take place--sampling should compensate for this.

(3) Note the points where species sorting or size selection by crew

members or by machines takes place--samples must be taken before such sorting takes place.

Since observers must avoid unconscious selection for certain sizes or certain species when obtaining samples, various methods have been used to obtain random, representative samples. On some ships it may be possible to get samples directly from the cod end by holding a basket into the flow of fish as they fall from the net into a hatch opening on the deck. Another good method is to hold the basket where unsorted fish are falling from the bin to a conveyor belt, or from one conveyor belt to another. 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 blocking the fish flow along the conveyor belt, thereby allowing the catch to spill off the conveyor belt into a basket. Sometimes slats of the bin can be raised, allowing fish to spill into a basket, but be careful, this could be a size selective method. It commonly takes an hour or several hours for all of the fish to be emptied from the bins to the factory and sometimes there aren't many unused 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 allows you to gather your samples effectively from different parts of the catch. The observer may choose to collect all of the fish in a section or several different small sections of the bin (make sure that <u>all</u> fish in the chosen areas are taken and that the fish are representative of the composition of the haul). As a guideline, when basket sampling for species composition, collect a minimum of 8 - 10 baskets of fish or <u>at least</u> 300 kg.

Once the sample has been taken, there are two ways to handle the weigh-

ing of the species groups. The best method is to sort the sample by species, weigh each species group, count the number of individuals making up each group, and total the weights of each group to obtain a "total basket sample weight." The second method may be more practical when one species predominates in the sample. In this method, weigh the basket of unsorted fish, then sort the sample by species. Count the number of the predominant species, and count and weigh the remaining species groups. The weight of the dominant species group can then be obtained by subtracting the total weight of the various species groups from the total basket weight.

Whole-Haul Sampling
(With One Predominant Species in the Catch)

In some cases hauls are composed almost entirely of the target species and basket sampling would not provide a large enough sample size to get an accurate representation of the percentages of the other incidentally-caught species. This happens very frequently on vessels fishing for hake, and often on pollock-fishing ships. Due to the relative purity of hake catches, all hauls should be sampled using whole-haul sampling or a variation of it, such as partial whole-haul sampling which allows for a large sample size. (Refer to "Partial Whole-Haul Sampling" on the following pages.)

If you decide to whole-haul sample, the total sample weight would then be the ship's final catch weight estimate of the entire haul. In whole-haul sampling, a method must be devised to separate out all of the non-target or "bycatch" species from the entire haul. The observer must be present at all times to sort or supervise the sorting of bycatch from the entire catch. Ideally, the catch would pass by the observer at one point and the flow would be slow and shallow to allow for the complete sorting of bycatch by the observer alone, but these circumstances do not always exist. You are expected

to work within the constraints of each sampling situation and produce high quality sampling data. If processing is very slow, the observer may choose to sort during the dumping of a catch on deck or sample less than the whole haul, thus changing to a partial whole-haul sampling method. The bycatch species (which include any prohibited species) that have been sorted out of the entire catch, must then be counted and weighed. The weight of the predominant species can then be obtained by subtracting the total weight of the bycatch from the sample weight, (which in this case would be the ship's estimated haul weight). The observer should then randomly obtain a sufficient number, (about fifty), of the predominant species and count and weigh them to obtain their average weight. Dividing the total weight of the predominant species by the calculated average weight will provide an estimate of the number of predominant species in the haul. This is a very common sampling method, and the recording of the data from this type of sampling is illustrated in the first sample on the "Form 3 example of data from a large stern trawler" on the following pages. Refer to "Recording Whole-Haul Sampling With One Predominant Species" preceding the form example.

Whole-Haul Sampling
(With Two Predominant Species in the Catch)

When two species (for example--pollock and Pacific cod) dominate the catch, it may be possible to use a variation of the whole-haul sampling method and determine the proportionate numbers and weights of the two species in the catch. (The predominant species are not necessarily species the vessel was fishing for or "targeting" on. For example, when fishing for pollock, vessels will occasionally tow through clouds of jellyfish and when fishing on the ocean bottom for turbot, they will sometimes pick up lots of basket

starfish.) Sort out all of the bycatch, (in this example, everything that isn't pollock or Pacific cod) from the whole haul--identify, count, and weigh these. Subtract the weight of the bycatch from the ship's estimate of the haul weight to get the combined weight of the pollock and Pacific cod. Take representative samples of the pollock and Pacific cod in the haul (maybe 4-8 baskets full) and count and weigh the pollock and Pacific cod. Determine the proportionate weights or percentages by weight of the pollock and Pacific cod in this sample. These percentages can then be applied to the combined weight of pollock and Pacific cod in the entire haul. Using the average weights of the pollock and Pacific cod, (which were calculated from your sample) it is now possible to estimate the number of pollock and Pacific cod in the entire haul. Make sure that you note what type of sampling system you used for each haul. (Refer to the second sample on the "Form 3 example of data from a large stern trawler and "Recording Whole-Haul Sampling With Two Predominant Species" preceding the form example.)

Partial Whole-Haul Sampling

When your normal sampling procedure is to whole-haul sample, and you are faced with a haul containing large numbers of non-target species (bycatch), you may be forced to sample only a portion of the haul. The sampling procedure is the same as when whole-haul sampling but the observer must determine what the sample weight is. The sample weight is usually computed as a fraction or percentage of the whole-haul weight. For example, the sample weight may be determined by measuring the difference in the depth of fish in the bin at the beginning and end of the sampling period and dividing that by the measurement of the depth of the total catch in the bins (taken prior to processing). This will enable you to determine the percentage of the whole-haul that was sampled.

The partial whole-haul sample weight would then be that percentage of the ship's final catch weight estimate for that haul. Alternatively, if after sampling a portion of the haul, you cannot be sure what percentage of the haul you have looked at, then you could determine the volume of the fish you have sampled and then multiply that volume by the density, to determine the sample weight.

Other Methods of Obtaining Species Composition

Due to problems in using the previously described methods, some observers have devised other means of obtaining data on species composition:

(Note--In these cases, the sample weight will not be the captain's estimate of the haul size.)

1. "Since the conveyor belt moved slowly and erratically, I had to devise a new method for estimation of my sample weight. I found that monitoring the entire haul resulted in confusion and misunderstanding between the factory workers and the manager. For 3 or 4, 15-minute periods per haul I would time each decapitator. From this I could obtain the average hake per minute (h.p.m.). After weighing several baskets of hake, I could obtain the average weight of one hake for that haul. I would remain in the factory anywhere from 1-1/2 hours to 3-1/2 hours to monitor for incidence of prohibited species and obtain species composition. My calculations for a hypothetical sample would be as follows:

   (a) 120 minutes sampling time
   (b) 68 h.p.m.
   (c) .817 kg average weight of 1 hake
   120 minutes x 68 hake/minute x .817 kg = 6666.72 kg = 6.67 mt of hake observed.

   I would then add the weights of the other species to this total to achieve my total sample weight."

"I feel confident in this method since I obtained an average h.p.m. for each haul. The processing time ranged from 58-125 h.p.m. To test this method I monitored two entire hauls of known quantity (hauls 21 & 58). The time it took to observe entire hauls was fairly closely correlated with the time it took to observe partial hauls." (Leslie Watson, Polish Cruise #17, Wlocznik).

2. "The fish bunker opened directly into the processing area so it was necessary for me to take my samples of hake directly from the codend as the fish were dumped into the bunker. I attempted to space my sampling so as to get fish from all parts of the net."

"To estimate frequency of incidentals, I went into the factory and had the factory crew dump all non-hake fishes onto the garbage conveyor belt that led from the cleaning stations to the fish-meal plant. I supervised the factory workers to make sure that they were sorting out all of the bycatch and putting it on the garbage conveyor belt. I monitored this belt for half an hour for each haul that I sampled, removing all incidentals as they passed. In order to estimate sample weight during this period, I simultaneously counted all hake heads that passed me. Multiplying the number of hake heads counted by the average weight of one hake (obtained from the basket sample) gave me the estimated weight of hake observed; which, added to the weight of incidentals, yielded observed sample weight. I feel that this sampling technique is fairly accurate providing the following assumptions are true:"

(a) "The average weight of hake obtained from the basket samples was an accurate reflection of the average weight of all hake in the catch."

(b) "The frequency of incidentals in the portion of the catch samples was representative of the frequency in the entire haul." (Charles West, Soviet Cruise #31, Vulkan)

Species Composition Sampling -- Objectives and Priorities

Species composition samples should be representative and unbiased. The larger the sample weight the better. To accomplish these objectives you can choose from various methods of sampling: whole-haul, partial whole-haul, basket sampling, bin volume, difference in bin volume, timing of constant rate machinery, tally (counting) method, sections of a belt or bin, and others. It is up to you to choose, adapt or devise a sampling method which provides the most accurate information for your particular situation. If you deviate, adapt, or combine methods, document this fully. Remember, you must have good sampling data to back up any assumptions that form a basis for the rest of your data collection. Your choice of a sampling method must fall under the natural

constraints of your available time, energy, and work space as well as consideration of the size of the catch and its diversity. To guide your judgement in choosing a sampling method, please comply with the following additional constraints to ensure proper and accountable data collection:

1) You must be present to sort, or directly supervise the sorting, through the entire collection of **all** of every sample.

2) If you see or suspect that the sorting of your sample is not completely thorough, reduce your sample size and/or change your sampling situation until you can be sure that you are getting all the bycatch--allowing for human error. This usually occurs because (a) the fish that are passing by you are too deep or moving too quickly or (b) you do not have enough supervisory control over the sorters.

3) It is best to count and weigh all of a species sorted from your sample weight, but if you cannot, you must at least count them all and weigh some of them or vice versa. You cannot estimate both the number and the weight of any species with the exception of the calculations for the predominant species as used in whole-haul sampling.

4) You cannot have more than one sample weight on Form 3(2) for species composition data on one haul. This becomes a temptation when you wish to sort one or more species from the whole catch and the remainder of the bycatch from only a portion of the haul. This may be a problem with certain low allocation species like sablefish or Pacific ocean perch (POP). (When **prohibited species** are sorted form the entire catch and other species are sorted from a smaller sample, their data are handled differently. Refer to "The Inclusion of Presorted Prohibited Species in the Species Composition Samples" on following pages for instructions.) The proper solution is

See Pg. 201

to calculate the percentage by weight of the whole-haul sampled species (i.e. sablefish) that would have occurred in your sample weight:

$$\frac{\text{sample weight}}{\text{haul weight}} \times \text{weight of sablefish in haul} = \text{weight of sablefish in sample}$$

Calculate the number of sablefish in your sample based on the average weight of sablefish from that haul and round the number to the nearest whole individual without changing the calculated weight.

5) Allocate your time appropriately. Sampling a catch should usually take two to three hours. If you are spending more than three hours per sample you won't be able to sample three times per day. Sampling twice per day may be all right if there are only three hauls per day, but if your ship is hauling four to six catches per day, you should reduce your sample size and increase the number of samples per day. A deciding factor is whether there is stratification or patchiness in the distribution of species within a haul. As this makes representative sampling more difficult, in these cases it is appropriate to devote more time sampling each haul. On the other hand, when there are obvious differences between tows and uneven species distribution is not a problem then it would be best to reduce the sample size and sample more catches. BETWEEN or WITHIN HAUL STRATIFICATION?

6) Believe in the scientific method of random sampling and in the "long run" accuracy of it. As a result of reducing your sample size, you may find that a species whose occurrence is "patchy" is over-represented in some of your samples and under-represented in others. Over time and many samples, the level of occurrence will closely approximate the true value (assuming random samples). Remember that in many analyses your data will be merged with all other observer's data in that area, year, month and vessel type classification. **In general: It is better to produce accurate data using a small sample size than to have a much larger sample size with dubious data on bycatch species.** (QUALITY over QUANTITY)

Mixing of Hauls

A special sampling problem exists when hauls are being unavoidably mixed and you must sample after mixing occurs. If this happens, there are at least three possible courses of action:

(1) Look at the arrangement and capacities of the fish bins and consider the frequency and tonnage of the fish being delivered. If it is possible to do so, ask the captain or fishing master 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, sample the combined hauls but divide the sample data proportionally by haul weight and enter the data as two separate samples.

(3) If you observe differences in the species composition of the mixed hauls as they are being dumped, use your judgement to attribute bycatch to the appropriate haul. This could only be done if the mixed hauls were very different in composition, such as a pelagic haul of pollock and a bottom haul of turbot.

(4) If you observe layering of fish after the mixing of hauls, you possibly could see the difference in new fish versus old fish in freshness and in state of rigor. Noticing this difference can allow you to sample either or both hauls and obtain discrete data.

FORM 3(2)--SPECIES COMPOSITION

1. Enter the identifying information at the top of the page and the haul number.

2. Remember that the date of the sample should correspond to the information on Form 2. The date should thus be the day the trawl began to be hauled in.

3. Enter the number of baskets collected during the sampling period (if basket sampling).

4. Enter the time you began sampling or the time the net was landed. (This serves as a reference point in case there is some confusion about which haul was sampled.)

5. The total sample weight, is entered on the first line of the species list, opposite the preprinted code number 999.

6. All weights placed in the weight columns (columns 41-49, 56-64, 71-79), should have a well-defined decimal point and trailing zero, since the decimal point itself will be keypunched and must be present even if the weights are not carried to a tenth or a hundredth of a kilogram (see the examples of Form 3). Do <u>not</u> record weights to the thousandths (.001).

7. Below the sample weight row, each species is listed by it's family or specific common name and the corresponding species code found in the list of alphabetically arranged species on the following pages. Look up a species under its family or group name--rockfish, sole, etc. All king crabs and Tanner crabs should be identified to species. All commercially important species of fish should also be identified to species. Try not to use categories such as "flatfish unidentified" and "rockfish unidentified." 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." If you are later able to determine their identity, then substitute the species name and code. On the other hand, for non-commercially important species (sculpins, eelpouts, pricklebacks, rattails, etc.), a designation such as "sculpin, unident." is fine. If you label them "sculpin A" and "sculpin B" and do not get a positive ID on them later, then you must group them all under "sculpin unident". (Refer to "What Fish to Describe" on the following pages.)

8. Items such as seaweed, old boots, pieces of wood, etc., should be combined under "miscellaneous items" code 900, and given a "number" of 1. (We are only interested in the total weight for all miscellaneous items within a haul.)

9. If there is no species code for a given species or family in the sample, enter the accepted common name, leave the species code blank, and put the scientific name and reference source in the "remarks" section. Document the identification procedure thoroughly with a species description, in your

logbook, take a photograph of the fish or bring a specimen back. A new code will be assigned after you return. (Refer to "How to Write a Species Description" in the following pages and "How to Collect Fish" in the Appendix.)

10. The number of individuals and weight of each species group are then placed in the appropriate columns for each sampling period in which they were found. Every number must have a weight (even a few shrimp weigh something) and every weight must have a number.

11. Total the number of specimens from each sampling period and enter the sum in the appropriate columns on line 999 (columns 35-40 for the first sample, 50-55 for the second, and 65-70 for the third).

12. For any given sampling period, the total of the weights of individual species must equal the sample weight. When the weight of the predominant species is obtained by subtraction of the total bycatch weight from the sample weight, mark the weights obtained by subtraction with an asterisk as is shown on the sample forms.

13. The three columns on the far right are used to total the numbers, and weights of the species found in the samples for the day. This information will be of use for checking the observer's math. The "ave. wt. (kg)" column need not be filled in.

14. Doublecheck all calculations. After entering the totals for the day, check the math of the keypunch portion by comparing the sum of the total sample weights (sum of weights in line 999) with the sum of the species weight totals (in "weight" column on right-hand side of form). Also check the sum of the numbers of specimens in a similar fashion. Show all math.

15. There should be no leading zeros in the species codes, haul numbers, or weights. Leading zeros should appear in the cruise number, month, and day numbers only, as needed (columns 1, 2, 10, 12).

16. Do not put commas in large numbers (i.e. 12900 not 12,900).

17. The "remarks" section should include anything unusual about the catch or sampling method. If you had only two sampling periods during that GMT day, or were unable to take the usual number of basket samples, note the reason in this section. This space may also be used to note what type of sampling system you used or for recording density figures.

18. If you have more than 27 species and you need to go to another page, make sure that you enter the entire heading (columns 1-27) on the new page. It is especially important to enter the haul numbers in the same columns as on the first page. The additional species codes, numbers, and weights should then be entered in the proper columns matching the haul numbers. Write "continued from previous page" in the "remarks" section. On the reverse side of the second page (the 3(1) side of the form), enter the page number, but otherwise the page may be left blank. The "totals for the day" should be filled out separately for the

information on each page. In other words, the "totals for the day" will actually be just the totals for the page. The numbers and weight totals for each haul (written on the 999 species code line) should only be recorded on the 1st page of 3(2) and not in the continuation page.

19. If you have more than 3 species composition samples in a given GMT day, you will need to go to another page. Enter only the species that were found in the additional sample(s). The "totals for the day" should be filled out separately for the information on each page as was stated in item #18 above. (However, independent mothership's and longliners will need totals for the day.)

Recording Whole-Haul Sampling With One Predominant Species

(See the first sample on the Form 3 example of data from a large stern trawler.)

Remember--if you get prohibited species in the haul, these should be included as part of the bycatch in whole-haul samples.

1. The weight of the target species is obtained by subtraction of the total weight of the incidentals (bycatch) from the ship's estimate of haul weight (sample weight). Mark this weight with an asterisk.

   16000.0 kg - 142.28 kg = 15857.72 kg
   (sample wt) - (bycatch) = (wt of pollock in sample)

2. The numbers, weight, and calculated average weight of the target species obtained from a subsample must be put on a part of the form that is not keypunched--possibly next to the haul number as in the example.

   129.4 kg (wt. of pollock in subsample) = .76 kg (calculated average
   170 (number of pollock in subsample) weight of pollock)

3. Using the calculated average weight and the total weight of the pollock (obtained by step 1), calculate the total number of pollock that weight represents, and enter in the number column. Calculate daily totals as before.

   15857.72 kg (wt. of pollock) = 20865 (number of pollock)
   .76 kg (ave. wt. of pollock)

Recording Whole-Haul Samples With Two Predominant Species

(See the second sample on the Form 3 example of data from a large stern trawler.

1. Enter the number and weights of the incidental species (bycatch) which were obtained from the whole haul--in this example--sablefish, arrowtooth flounder, rex sole, dogfish shark, and Pacific halibut. Also enter the ship's estimate of haul weight on the 999 line since it is the sample weight.

2. Subtract the total combined weight of the above species groups from the ship's estimate of haul weight (sample weight). The figure you obtain will be the combined weight of the two major species sampled for--in this example--pollock and Pacific cod:

   20000.0 kg - 94.6 kg = 19905.4 kg
   (sample wt) - (bycatch) = (combined wt of pollock and cod in sample)

3. Record the numbers and weights of the subsampled pollock and cod (used for determining avg. wts. and percentages) in a non-key punched portion of the form. Using the proportionate weights of the pollock and cod in the subsamples, divide the combined weight so that you obtain the estimated weight of each species in the whole haul.

the subsample yielded:
151 pollock = 117.2 kg
20 P. cod = 20.4 kg
total subsample weight = 137.6 kg

$$\frac{\text{kg pollock in subsample}}{\text{total subsample wt}} = \frac{117.2 \text{ kg}}{137.6 \text{ kg}} = .85 \text{ (85\% pollock by weight)}$$

$$\frac{\text{kg P. cod in subsample}}{\text{total subsample wt}} = \frac{20.4 \text{ kg}}{137.6 \text{ kg}} = .15 \text{ (15\% P. cod by weight)}$$

Then multiply the combined weight of pollock and Pacific cod in the sample by the percentages of both species that were calculated from the subsample weights.

.85 x 19905.4 = 16919.59 kg = wt. of pollock in whole haul
.15 x 19905.4 = 2985.81 kg = wt. of P. cod in whole haul

Record the above two figures on the data form opposite each species.

4. Using the average weights of these species obtained from the subsample, calculate the number of fish each weight represents.

$$\frac{\text{(wt of pollock in subsample)}}{\text{(number of pollock in subsample)}} = \text{(ave wt of pollock)} \quad \frac{117.2}{151} \text{ kg} = .78 \text{ kg}$$

$$\frac{\text{(wt of P. cod in subsample)}}{\text{(number of P. cod in subsample)}} = \text{(ave wt of P. cod)} \quad \frac{20.4}{20} \text{ kg} = 1.02 \text{ kg}$$

$$\frac{\text{(wt of pollock)}}{\text{(ave wt)}} = \text{(number of pollock)} \quad \frac{16919.59}{.78} = 21692 \text{ pollock}$$

$$\frac{\text{(wt of P. cod)}}{\text{(ave wt)}} = \text{(number of P. cod)} \quad \frac{2985.81}{1.02} = 2927 \text{ P. cod}$$

Enter the above numbers on the data form.

Recording Partial Whole-Haul Samples

Calculate and record in a similar manner as in the whole-haul method of sampling. The only difference is that the sample weight will not be the entire weight of the haul.

FORM 3 (2)

SPECIES COMPOSITION FROM BASKET SAMPLES

Leading zeros in columns 1, 2, 10, 12 only.

* Indicates weight obtained by subtraction from total sample weight.

CRUISE NO.			VESSEL CODE				YEAR		MO.		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13
5	3	0	N	S	7	8	8	3	0	9	1	0

FIRST HAUL OR SAMPLE						SECOND HAUL OR SAMPLE						THIRD HAUL OR SAMPLE					
Haul No.			No. of baskets		Time	Haul No.			No. of baskets		Time	Haul No.			No. of baskets		Time
15	16	17			0600	20	21	22			1505	25	26	27	10		1915
1	0	1	170 POLLOCK = 129.4 Kg avg. = .76 Kg			1	0	3	see left margin			1	0	4	basket sample		

REMARKS: HAUL #101: standard whole haul sample; HAUL #103: whole haul sample with two major species; HAUL #104 haul extremely varied, so used standard basket sample

SPECIES	SPECIES CODE			NUMBER						WEIGHT (in kg with decimal pt.)	NUMBER						WEIGHT (in kg with decimal pt.)	NUMBER						WEIGHT (in kg with decimal pt.)	TOTALS FOR THE DAY		
	32	33	34	35	36	37	38	39	40	41–49	50	51	52	53	54	55	56–64	65	66	67	68	69	70	71–79	No.	Weight	Avg. wt. (kg)
No. of specimens and total basket weight	9	9	9		2	1	1	0	8	16000.0		2	4	6	6	8	20000.0				6	0	4	460.9	46380	36460.9	
POLLOCK	2	0	1		2	0	8	6	5	*15857.72		2	1	6	9	2	*16919.59				4	4	9	350.0	43006	33127.32	
PACIFIC OCEAN PERCH	3	0	1						1	.45												4	0	20.5	41	20.95	
REDBANDED ROCKFISH	3	0	8					1	1	5.0													5	2.5	16	7.5	
DARK BLOTCHED ROCKFISH	3	1	1						2	1.3															2	1.3	
ROUGHEYE ROCKFISH	3	0	7						1	3.2															1	3.2	
SHORTSPINE THORNYHEAD	3	5	0					1	2	4.5															12	4.5	
SABLEFISH	2	0	3					3	1	72.6					3	2	78.5						2	5.2	65	156.3	
Greenland Turbot	1	0	2						2	5.0						3	5.9								5	10.9	
REX SOLE	1	0	5						6	1.45						7	1.4								13	2.85	
ALASKA SKATE		8	8						1	4.1															1	4.1	
DOGFISH SHARK		6	6						4	2.7						6	3.8								10	6.5	
OPILIO TANNER CRAB			5						4	.6													4	.7	8	1.3	
PACIFIC LAMPREY		7	9						2	1.4															2	1.4	
SQUID		5	0						5	3.6												7	2	51.8	77	55.4	
PACIFIC HALIBUT	1	0	1						2	6.2						1	5.0								3	11.2	
KING SALMON	2	2	2						3	5.48													1	.9	4	6.38	
BAIRDI TANNER CRAB			4				1	5	6	24.7													7	4.3	163	29.0	
PACIFIC COD	2	0	2										2	9	2	7	* 2985.81					2	3	23.8	2950	3009.6	
PROWFISH	2	0	5																				1	1.2	1	1.2	

HAUL #103:
151 POLLOCK = 117.2 Kg
avg = .78 Kg
20 COD = 20.4 Kg
avg = 1.02 Kg
TOTAL = 137.6 Kg

Pollock = 117.2 ÷ 137.6 = .85
.85 × 19905.4 = 16919.6

Cod = 20.4 ÷ 137.6 = .15
.15 × 19905.4 = 2985.8

GPO 989-453

SPECIES IDENTIFICATION

All commercially important fish and invertebrates should be identified to species. In the radio message section of this manual, under "Report Groups" for the Bering Sea, 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 also be identified to species. It is more important that observers spend their time working on proper identification of species of commercial interest, such as flatfish and rockfish, than to spend time on fish that no one targets on, such as eelpouts or sculpins.

To verify identifications, we ask each observer to fill out species description forms for the first sighting during a trip of any fish or invertebrate keyed out to species. There are separate forms for rockfish, flatfish and other or miscellaneous species.

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 carefully fill out a species description form in complete detail. 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 ID on them later, then you must group them under "rockfish unidentified", (or "rockfish - unident.") on your forms, and combine their numbers and weights. Remember, a species code may only be listed once on any page (or day) of form 3(2).

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 on the following pages. 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.

ANYTHING TO SPECIES NEEDS THIS

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.)

First, please review the abbreviations at the bottom of the "Field Key to Flatfishes", p.31 in your Species Identification Manual. Often one of these abbreviations is misinterpreted and will create errors in identification. Terms such as ADB, and MAX have often caused confusion. Please also check the illustrations that precede the key to make sure you are taking measurements in the same way that the key asks you to.

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.

Which fish of those listed in the illustrations on p.32-33 of the Species Identification Manual looks most like it?

Please answer the following questions:

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.)**
_____ **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**

KAMCHATKA TO THE WEST/ARROWTOOTH TO THE EAST - SEE UPPER BRANCH GILL RAKE AND EYE

NO PETRALE IN BERING; COLORATION DIFFERENCE BETWEEN FLATHEAD & BERING

In regard to mouth symmetry; the maxillary is:
____ same length on eyed and blind sides
____ slightly asymmetrical
____ dramatically asymmetrical

What is the preoperculum shape?
____ rounded ____ angled

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)

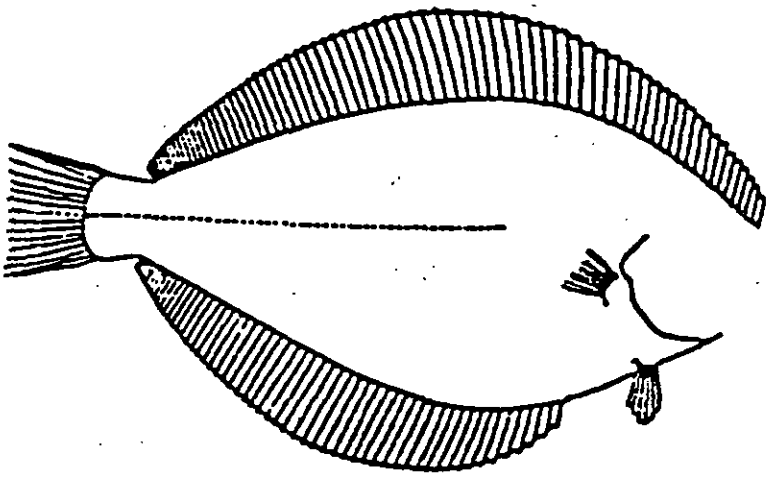
Please make the following counts:

Dorsal fin rays: _____
Anal fin rays: _____
pectoral fin rays: _____
pelvic fin rays: _____

Gill rakers on the 1st arch:
upper arm: _____
lower arm: _____
total: _____
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:

- general head shape
- size and shape of mouth
- placement of eyes
- lateral line (include any arch and ADB)
- shape of preoperculum
- size and shape of pectoral fin
- shape of the end of the tail



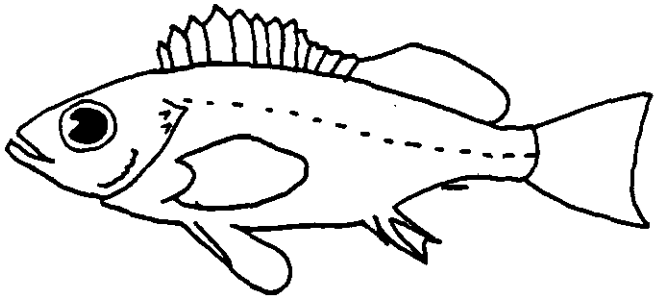
ROCKFISH SPECIES DESCRIPTION FORM

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 extention or a record in size, bring it back for species verification.)

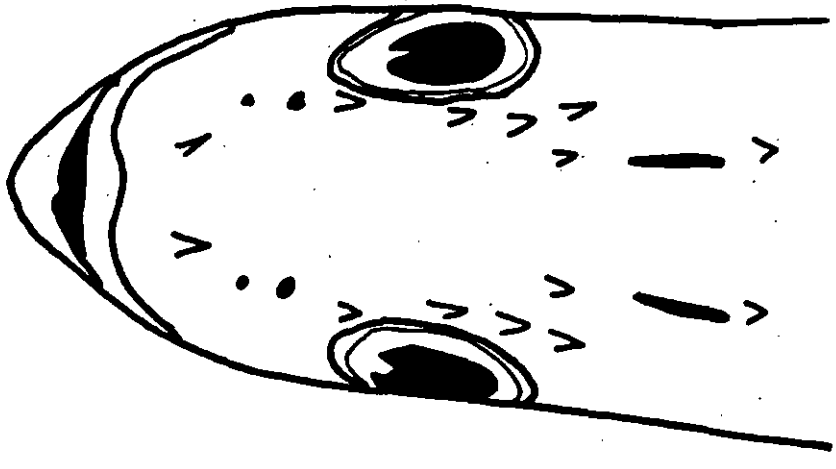
(Remember that Sebastolobus is not in Hitz "Field Identification of the Northeastern Pacific Rockfish (Sebastodes)". Check the rockfish section of the "Species Identification Manual" to make sure it is a Sebastes.)

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 sympheseal knob. Study your specimen closely.



Please indicate which pair 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.



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.)

Dorsal fin spines: _____
Dorsal fin rays: _____
Anal fin rays: _____
Pectoral fin rays: _____
Pelvic fin spines: _____
Pelvic fin rays: _____
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 absolutely sure of your identification, bring a specimen back or at least take a photograph of it.)

Comments and Additional Notes:

_____
_____
_____
_____
_____
_____
_____

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 species of fish (except rockfish and flatfish which have their own description forms) and invertebrates. Animals that are only keyed out to family groups, such as sculpin unidentified, poacher unidentified, or jellyfish unidentified need not be described. 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.

List below, the features that led you to your genus or species conclusion. Be detailed in your description and make a sketch showing the main features.

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	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
998	BIRDS - UNIDENT.	AVES
618	BLACKSMELT - UNIDENT.	BATHYLAGIDAE
260	BLENNY - UNIDENT.	PHOLIDAE, STICHAEIDAE
302	BOCACCIO	SEBASTES PAUCISPINIS
27	BRACHIOPOD	
32	BRYOZOANS	
604	CAPELIN	MALLOTUS VILLOSUS
44	CHITON - UNIDENT.	AMPHINEURA
199	CHUB MACKEREL	SCOMBER JAPONICUS
29	CLAMS MUSSELS OYSTERS SCALLOPS	PELECYPODA
211	COD, ARTIC (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 - UNIDENT.	
6	CRAB, BLUE KING	PARALITHODES PLATYPUS
11	CRAB, BOX	LOPHOLITHODES FORAMINATUS
49	CRAB, CANCER	CANCER OREGONENSIS
16	CRAB, COUESI KING	LITHODES C OUESI
39	CRAB, DECORATOR	OREGONIA GRACILIS
12	CRAB, DUNGENESS	CANCER MAGISTER
8	CRAB, GOLDEN KING	LITHODES AEQUISPINA
15	CRAB, HERMIT - UNIDENT.	PAGURIDAE
7	CRAB, KOREAN HORSEHAIR	ERIMACRUS ISENBECKII
37	CRAB, LYRE -- ROUNDED SPINED	HYAS COARCTATUS ALUTICUS
9	CRAB, LYRE -- SHARP SPINED	HYAS LYRATUS
17	CRAB, PARALOMIS MULTISPINA	PARALOMIS MULTISPINA
38	CRAB, PARALOMIS VERILLI	PARALOMIS VERILLI
74	CRAB, PEA	PINNIXA OCCIDENTALIS
13	CRAB, RED KING	PARALITHODES CAMTSCHATICA
31	CRAB, SCALED	PLACETRON WOSNESSENSKII
19	CRAB, TANNER, ANGULATUS	CHIONOECETES ANGULATUS
4	CRAB, TANNER, BAIRDI	CHIONOECETES BAIRDI
5	CRAB, TANNER, OPILIO	CHIONOECETES OPILIO

47	CRAB, TANNER, BAIRDI/OPILIO HYBRID	CHIONOECETES HYBRID
18	CRAB, TANNER, TANNERI	CHIONOECETES TANNERI
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
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
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 (RED, BLUE, GOLDEN) CRAB	CODE FOR INCIDENCE OF SPECIES ONLY
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
52	*LEECH - UNIDENT.*	*HIRUDINEA*
45	LIMPET - UNIDENT.	
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
776	MEDUSAFISH	ICICHTHYS LOCKINGTONI
289	MELAMPHID - UNIDENT.	MELAMPHAEIDAE
710	MIDSHIPMAN, PLAINFIN	PORICHTHYS NOTATUS
900	MISC. - UNIDENT.	(ROCKS, MUD, BOOTS, BARRELS, ETC)
29	MUSSELS CLAMS OYSTERS SCALLOPS	PELECYPODA
25	NUDIBRANCH	NUDIBRANCHIATA
715	OARFISH	REGALECUS GLESNE
810	OCEAN SUNFISH	MOLA 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 - UNIDENT.	POLYCHAETA
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
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
332	ROCKFISH, BROWN	SEBASTES AURICULATUS
314	ROCKFISH, CANARY	SEBASTES PINNIGER
325	ROCKFISH, CHILIPEPPER	SEBASTES GOODEI
327	ROCKFISH, COPPER	SEBASTES CAURINUS
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
350	ROCKFISH, SHORTSPINE THORNYHEAD	SEBASTOLOBUS ALASCANUS
310	ROCKFISH, SILVERGRAY	SEBASTES BREVISPINIS
315	ROCKFISH, SPLITNOSE	SEBASTES DIPLOPROA
328	ROCKFISH, STRIPETAIL	SEBASTES SAXICOLA
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 TRICHODON
614	SARDINE, PACIFIC	SARDINOPS SAGAX CAERULENS
607	SAURY, PACIFIC	COLOLABIS SAIRA
660	SCABBARDFISH, (CUTLASSFISH) - UNIDENT.	TRICHIURIDAE
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
59	SEA MOUSE	APHRODITE ACULEATA
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	UROCHORDATA
40	SEA URCHINS	ECHINOIDEA
58	SEA WHIP, SEA PEN - UNIDENT.	PENNATULA
54	SEA WORMS - UNIDENT.	POLYCHAETA
550	SEABASS - UNIDENT.	SCIAENIDAE
240	SEARCHER, (RONQUIL) - UNIDENT.	BATHYMASTERIDAE
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
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	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 (BAIRDI, OPILIO) CRAB	CODE FOR INCIDENCE OF SPECIES ONLY
209	TOMCOD, PACIFIC	MICROGADUS PROXIMUS
113	TONGUEFISH, CALIFORNIA	SYMPHURUS ATRICAUDA
227	TROUT, CUTTHROAT (SEA RUN)	SALMO CLARKI CLARKI
807	TUBESHOULDER - UNIDENT.	SEARSIIDAE
43	TUNICATES	UROCHORDATA
143	TURBOT - UNIDENT.	
102	TURBOT, GREENLAND (HALIBUT)	REINHARDTIUS HIPPOGLOSSOIDES
805	VIPERFISH - UNIDENT.	CHAULIODONTIDAE
757	WARBONNET, DECORATED	CHIROLOPHIS DECORATUS
762	WEARYFISH, (PAPERBONES) - UNIDENT.	NOTOSUDIDAE
779	WOLFFISH - UNIDENT.	ANARHICHADIDAE
780	WOLF-EEL	ANARRHICHTHYS OCELLATUS
759	WRYMOUTH - UNIDENT.	CRYPTACANTHODIDAE
999	Z TOTAL BASKET WEIGHT	SPECIES COMPOSITION ONLY

DETERMINING INCIDENCE OF KING CRAB, TANNER CRAB, HALIBUT, AND SALMON

Catch landed other than the target species is called incidental catch or bycatch. Among the species caught incidentally are those that are described as "prohibited species". The prohibited species are listed below by general regional area:

Bering Sea and Aleutians:	Gulf of Alaska:	Wash. Ore. & Cal. Coasts:
Salmon	Salmon	Salmon
Halibut	Halibut	Halibut
King crab	King crab	Dungeness crab
Tanner crab	Tanner crab	
Horsehair crab	Horsehair crab	
Lyre crab	Lyre crab	
Dungeness crab	Dungeness crab	
Scallops	Scallops	
Surf clams	Surf clams & clams	
Snails	Snails	
Shrimp	Shrimp	
Corals	Corals	
Herring *	Herring	

* Herring in the Bering Sea is reported separately from the rest of the prohibited species and nonallocated species--refer to the "Report Groups" part in the "Radio Messages" section.

(A complete discussion of prohibited species and their proper handling under the requirements of the Magnuson Fisheries Conservation and Management Act (MFCMA) is discussed in the Enforcement manual.)

The prohibited species listed above that are of particular importance are Pacific halibut (Hippoglossus stenolepis), salmon (Oncorhynchus spp.), steelhead (Salmo gairdneri), king crab (Paralithodes spp. and Lithodes spp.), and Tanner or snow crab (Chionoecetes spp.). As the United States extensively fishes these species, a great deal of interest has been shown concerning their number per ton of catch on foreign vessels. Determining the incidence of crab, halibut, and salmon is thus a high priority duty for observers. Since these species are normally relatively rare in the catch, a large sample weight must

usually be observed in order to obtain effective data.

The essential features of incidence of prohibited species sampling are as follows:

(1) The observer must be able to identify to species and count and/or weigh all of the individuals of an incidental prohibited species in a given portion (sample) of the catch.

(2) The catch sampled should be representative of the haul.

(3) It must be possible to estimate the weight of the sample observed.

Remember that when you sample a haul, you must sample for <u>both</u> species composition and the incidence of prohibited species. As with sampling for species composition, there are a number of different ways to determine the incidence of a particular species per ton of catch. On hauls in which species composition is obtained by separating out all of the non-target species for the whole haul (whole-haul sampling method), the prohibited species would be part of the bycatch that is sorted out. Therefore, when whole-haul sampling, the sample weight for <u>both</u> species composition and prohibited species sampling would be the ship's estimate of haul weight.

In some situations, because the prohibited species are too abundant, the haul is too large, the sorting too slow, or for some other reason the observer may choose to partial whole-haul sample for prohibited species. The sample weight for partial whole-haul sampling would <u>not</u> be the ship's estimate of haul weight but may be determined as a percentage of the ship's haul weight. The observer can use several other methods to determine the sample weight when partial whole-haul sampling and should refer to "Partial Whole-Haul Sampling" in the "Species Composition" section on the preceding pages.

It is not necessary that the sample weight for species composition and the

incidence of prohibited species be equal. For example, the haul may be very diverse and therefore the method chosen for species composition sampling might be basket sampling. However, even though the catch is very diverse, if the prohibited species are not abundant in the catch, the observer may chose to whole-haul sample for prohibited species and basket sample for species composition. In this case, the sample weight for species composition sampling would be the weight of the basket samples, while the sample weight for prohibited species sampling would be the ship's estimate of haul weight. A slight problem could occur if, for example, the catch is dumped from the codend into the fish bins slowly enough so that the crab, halibut, and salmon can be sorted out on deck as the net is emptied, and the observer chooses to collect his basket samples for species composition from the factory-level fish bins after the presorting of prohibited species has been completed on deck. In this case, the baskets of fish that were collected in the factory for species composition, would not contain any prohibited species. This problem can be compensated for by following the directions explained in the section on the following pages entitled: "The Inclusion of Presorted Prohibited Species in the Species Composition Samples".

Observers have experienced other types of problems in attempting to determine the incidence of prohibited species:

1) Since king crab, Tanner crab, halibut, and salmon are designated as "prohibited species" and fisheries regulations dictate that prohibited species must be thrown overboard as soon as possible, observers sometimes have a difficult time convincing fishing crews to allow them to collect data on these species before throwing them overboard. Hopefully a new clause in the regulations will clear up these misunderstandings, and the observer will be

able to count, weigh, measure, and sex these species without interference.

2) Presorting of the prohibited species by crew members on the trawl deck as the catch is emptied into a below-deck bin, is often the routine procedure. If this is the case on your ship, you may choose to whole-haul sample for prohibited species and take advantage of the crews sorting effort. However, remember to always be present on deck to oversee the sorting operation. If you must gather your species composition sample from the factory level below, you may feel the need to be in two places at once. If the prohibited species sampling on deck can be accomplished quickly you may be able to convince the factory crew to wait for you. To do this you may find it necessary to subsample for the biological information on crab and halibut and bring any salmon you collect to the factory and complete your sampling of them later. If the factory crew can't or won't wait, you may have to reduce your sample size for species composition.

3) Occasionally a haul comes in with a high incidence of a prohibited species group. (i.e. >20 halibut, salmon or king crab and/or >70 Tanner crab.) You must decide whether it is possible to sort all of the prohibited species from the whole haul. If more than one prohibited species group is abundant, you could reduce your sample size to a partial whole-haul sample. If there is a high incidental catch of only one prohibited species group, the observer could choose to partial whole-haul sample (subsample) for only one of the prohibited species groups and whole-haul sample for the others. This alternative is possible because the sample weight for each prohibited species group is recorded separately on the form 3(1). (Refer to the example of "Form 3(1) - Incidence of king crab, Tanner crab, halibut and salmon" and item #7 in the explanation of this form, on the following pages.)

Sometimes it is possible to sort a prohibited species out of a large sample with the help of the crew. However, if after sorting them out, it becomes apparent that the species may be too abundant to count; (i.e. many small crab) or weigh; (i.e. many large halibut), then either count or weigh all of the abundant prohibited species which has been set aside. Take a random subsample of them and count and weigh all of the individuals in the subsample. The subsample is then used to determine an average weight that will be used to estimate the number or weight of the remaining individuals. Remember that you must at least have an actual weight or actual count of all of the prohibited species that occur within your sample weight.

In the unusual situation where you sort out an enormous amount of Tanner crab and cannot separate them all into species groups, you should subsample part of that large amount of unidentified Tanner crab and identify those in the subsample to species and sex groups. After doing this, figure out the percentage of C. bairdi Tanner crab and other Tanner crab in the subsample. This same percentage can then be applied to the remainder of the unidentified Tanner crab to divide them into C. bairdi and other Tanner crab groups for your RM-3 radio message work sheets.

4) Sometimes halibut are too large to weigh. In that case, measure the fish, look up the weight in the length/weight table for halibut and record the sum of the weights as actual weight under the "total weight" column on form 3(1).

5) Sometimes a vessel will accidentally pick up a crab pot that has been snagged by the trawling gear. This incident would fall under the heading of a "gear conflict" and should be handled according to fishing regulations (Refer to your manual entitled "Observer Guide to Foreign Fishing Regulations for the

North Pacific Ocean and Bering Sea"). However, it is important to not count any crab that may be in the pot, as part of your sampling for the incidence of King and Tanner crab.

THE INCLUSION OF PRESORTED PROHIBITED SPECIES IN THE SPECIES COMPOSITION SAMPLES

When presorting of prohibited species occurs before sampling for species composition, then the prohibited species would not be accurately reflected in the species composition sample. Furthermore, if the weight of the prohibited species is included in the ship's haul weight estimate, because of adjusting the ship's estimate by the observer, then the resulting species composition that will be extrapolated for that haul will be inaccurate. This is because of the absence of prohibited species in the species composition sample. If you are whole-haul sampling, this can be avoided by including all the prohibited species as part of the species composition sample. However, when you are partial whole-haul sampling or basket sampling and the prohibited species make up a significant portion of the total haul weight (roughly 10% or more), then an appropriate fraction of the total prohibited species should be added to the species composition sample. As an example, the following is a list of all of the prohibited species that have been presorted out of a haul:

3 chinook salmon ---------- 8.6 kg.
2 red king crab ---------- 3.3 kg.
14 C. opilio Tanner crab ----- 4.7 kg.
84 halibut ---------- 364.8 kg.

The adjusted ship's catch weight, which included the weight of prohibited species, was 3.2 MT or 3200.0 kg. The combined weight of the prohibited species (381.4 kg.) is over 10% of the whole haul weight and therefore an appropriate fraction of weight per species would have to be added to the species composition sample. The proper solution to this would be to calculate the percentage by weight of the presorted species that would have occurred in

your sample weight for species composition. If the species composition sample weight was 385.6 kg, then the following equation should be used for red king crab for instance:

(sample wt) x (wt of red king crab in haul) = (wt of red king crab in sample)
(haul wt) ↑Presorted

385.6 kg x 3.3 kg = .40 kg
3200.0 kg

To calculate the number of red king crab in the sample, first calculate their actual average weight:

3.3 kg ÷ 2 = 1.65 kg (actual average weight of red king crab in the haul)

Then divide the weight of the prohibited species in the sample by their average weight. Round the resultant number to the nearest whole individual. In this example, the calculated weight of red king crab in the sample (.40 kg) is less than the average weight of one crab, (1.65 kg) but a number of one (1) should be written on the form 3(2) because that is the smallest number that can be entered. So, on the form 3(2) for species composition, red king crab would be listed with a weight of .40 kg and a number of one. This procedure would be followed for each of the three remaining prohibited species groups listed in the example above.

If the species composition sample weight was actually weighed by the observer, as it is when basket sampling, the calculated weights of all four prohibited species groups would be added to the total sample weight for species composition. When partial haul sampling, the sample weight is usually derived from volume measurements rather than actually weighed. In order to add "like" quantities, consider the **volume** of the proportionate amount of prohibited species. This is not normally enough to change for instance, the depth measurements of fish in a large bin. So, in these cases, simply add the prohibited species' weights to the rest of the bycatch weight and subtract this subtotal from the sample weight to obtain the weight of the predominant species.

It may be seen then, that the purpose of this procedure is to insure that an appropriate fraction of the sample weight is recorded as prohibited species and not as some other, allocated, species. This concern is only significant when the species composition information is subsequently extrapolated for radio messages and the amount of prohibited species weight is significant, i.e. greater than ten percent. In the eventual computer analysis of observer data, the weights of

prohibited species per metric ton of catch and average weights are **routinely** obtained from form 3(1) and inserted into species composition data but for radio messages, observers must do this at sea.

Remember: follow this procedure only when (1) the sample for species composition has been presorted for prohibited species, (2) the prohibited species weight is included in the total catch weight and (3) the total weight of prohibited species is ten percent or more of the catch weight.

FORM 3(1) - INCIDENCE OF KING CRAB, TANNER CRAB, HALIBUT AND SALMON

1. The species name and general code (total of all species) for king crab, Tanner crab, Pacific halibut, and salmon are already entered. Note the use of the general codes--red, blue, golden, and Lithodes couesi king crab are lumped as species code 2, the Tanner crabs Chionoecetes opilio, C. bairdi, C. angulatus, and C. tanneri are designated code 3, and all species of salmon are given the code 220. These combined codes should be used for form 3(1) data only; on all other forms the codes for the particular species should be used.

2. Steelhead, if seen during the cruise, should be recorded on a lower line with code 226 as the species code. The code and sample weight for steelhead should be recorded for every sample on each page of the form 3(1)'s of the cruise in which steelhead were seen.

3. King crab, Tanner crab, halibut, salmon, and possibly steelhead are the only species that should be recorded on this side of Form 3 unless instructed otherwise.

4. Data for every sample should always be recorded in the same species order since the codes are preprinted on the form.

5. The sample weight must always be entered for all species, even, for example, if no Tanner or king crab are seen in the entire haul.

6. The sample weight may not always be the same for each species in a particular sampling period (see third sample, example Form 3(1)). If a different sample weight is used, or for some reason a species was not monitored, note this on a nonkeypunched part of the form. (See example.)

7. Record under "number observed" all of the incidental prohibited species seen in the sample weight. If there is an entry under the "Number Observed" there must be an entry under the "No. Est. or Weighed" and "Total Weight" columns.

8. If no members of a particular incidental prohibited species group are observed during a given sampling period, leave the "number observed" column blank rather than entering a zero or a dash, but fill in the sample weight.

9. It is preferable to actually weigh halibut. However, if large halibut cannot be weighed, measure them and get their weight from the length-weight table for halibut in the Appendix and include it in the "total weight" column. Since the table is quite accurate for statistical averages, tabulate data obtained in this way as "A" data, as if the halibut had actually been weighed.

10. The average weight for a species group should be calculated from actual and estimated data combined.

11. The "Total Weight" entry **must** correspond with the "No. Est. or Weighed" and may or may not apply to the "Number Observed".

See page 101

12. Recording A and E Data

(a) **You weigh all prohibited species in the sample:** If you actually weigh, (or measure in the case of large halibut) all of the incidental prohibited species that were observed, the number in the "number observed" column will equal the figure in the "number estimated or weighed" column. Repeat this data on the far right side of the form and label this data with an "A" meaning "actual".

(b) **You made estimates on all those you could not actually weigh in your sample:** If an individual is thrown overboard before it can be weighed, make a visual estimate. Enter the number estimated and their estimated weight on the far right side of the form and label this data with an "E" meaning "**estimate by eye**". On the left side, under the keypunched columns, include the number estimated in the "number estimated or weighed" column and the estimated weight in the "total weight" columns, (refer also to item 10., above).

(c) **You have actual weights for some and have no visual weight estimates on others:** If you cannot estimate the weight of a fish or crab that gets by you during sampling but you have some "actual" data for others in that sample, **do not** include the ones you only counted under the "no. est. or weighed" column. Likewise, do not use an average weight to include them under the total weight columns. Therefore, they will only be represented under the "Number Observed" column (refer to item 11., above). In the analysis programs the average weight of the ones that were actually weighed will be applied **by the computer** to the ones you could not weigh.

(d) **You have no actual data or visual estimates of weight but you did count one or more:** If you observed a prohibited species but were unable to weigh or make an estimate of it (i.e. it was the only one in the sample), then the average weight of that species from previous data will have to be used to make an entry under "No. Est. or Weighed" and "Total Weight" so the analysis program will run. This is less than ideal--thus, an observer estimate of an unweighed specimen is much preferred. Do **not** label this data "E" but do explain what figures were used to obtain the average weight.

13. If more than 99 individuals of a species are weighed from a given sampling period, there is a minor difficulty in recording it on the form. On the right-hand side of the form, record the total number and weight of the individuals that were actually weighed, then calculate the average weight and record it to the nearest 0.0001 under the "avg. weight" column. Enter the number "99" in the "no. est. or weighed" column, multiply 99 x the unrounded average weight (full field of the calculator) and enter that weight in the "total weight" column. (Note: this cannot be done on form 3(1)L for longliners.)

14. There should be leading zeros in the cruise number, month, and day only (columns 1, 2, 10, and 12.) Trailing zeros behind the decimal point in sample weight and total weight should be filled in.

15. Check your entries to see that the numbers are written to the right margin of each field of information. The "No. Est. or Weighed" field is a particular problem in this respect.

always Count prohibs if possible

FORM 3 (I) INCIDENCE OF CRAB, HALIBUT AND SALMON

CRUISE NO.			VESSEL CODE				YEAR		MO.		DAY		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	3	0	N	S	7	8	8	3	0	9	1	0	1

#A=ACTUAL DATA OBTAINED BY WEIGHING OR MEASURING E=ESTIMATED WEIGHT

FIRST HAUL OR SAMPLE

SPECIES	SPECIES CODE 17	18	19	HAUL NUMBER 20	21	22	SAMPLE WEIGHT (MT) 23	24	25	26	NUMBER OBSERVED 28	29	30	31	NO. EST. OR WEIGHED 32	33	TOTAL WEIGHT (KG) 35	36	37	38	39	AVG. WEIGHT	A/E*	NO.	TOTAL WEIGHT
KING CRAB			2	1	0	1	1	6	.	0	0														
TANNER CRAB			3				1	6	.	0	0		1	6	0	9	9		1	5	.	6	5	.1581	A	160	25.3
PACIFIC HALIBUT	1	0	1				1	6	.	0	0				2		2			6	.	2	0	3.1000	A	1	4.0
																									E	1	2.2
SALMON	2	2	0				1	6	.	0	0				3		3			5	.	4	8	1.8266	A	3	5.48

SECOND HAUL OR SAMPLE

	40	41	42	43	44	45	46	48	49	50	51	52	53	55	56	57	58	59				
KING CRAB	1	0	3	2	0	.	0	0														
TANNER CRAB				2	0	.	0	0														
PACIFIC HALIBUT				2	0	.	0	0			1		1			5	.	0	0	5.0000	A	1	5.0
SALMON				2	0	.	0	0														

THIRD HAUL OR SAMPLE

	60	61	62	63	64	65	66	68	69	70	71	72	73	75	76	77	78	79				
KING CRAB	1	0	4	1	2	.	0	0														
TANNER CRAB				* 3	0	.	0		1	1	6	9	9		1	7	.	8	2	.1800	A	116	20.88
PACIFIC HALIBUT				1	2	.	0	0			1	1	1		7	1	.	2	0	6.4727	A	9	60.7
																					E	2	10.5
SALMON				1	2	.	0	0			4		3		1	3	.	1	7	4.3900	A	3	13.17

* Subsampled for Tanner crabs

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BIOLOGICAL DATA COLLECTED FROM PROHIBITED SPECIES

In addition to the data required on form 3(1) for the incidence of prohibited species (numbers and weights of halibut, salmon, Tanner crab, and king crab per metric ton of catch), certain data are required on these groups by species, and in most cases, by sex. The additional data collected will consist of:

1) sex - except for halibut
2) detailed species composition - numbers and weights by individual species and sex groups (except halibut)
3) measurements - measure salmon and halibut; crab will be measured only by those assigned to do it
4) viability - for halibut and crab only

In most cases, it will be possible to obtain the data outlined above from all of the individuals observed in the prohibited species sample. However, in other instances when there are too many of a given species group to process in a reasonable length of time, a random representative subsample may be taken. If you must subsample, try to collect data from no fewer than 20 halibut, 20 salmon, 20 king crab, and 70 Tanner crab per sample.

COLLECTING DATA FROM SALMON AND STEELHEAD

The following information should be collected from the salmon and steelhead obtained in the prohibited species incidence samples:

(a) Species identification--note the species identification of all individuals--king, chum, sockeye, pink, coho, or steelhead.

(b) Sex--determine the sex of each salmon; only live salmon that have minimal scale loss should not be sexed, but listed as "unknown" sex. When the observer is not sure of the sex of a salmon or does not have enough time to sex it, the sex should also be listed as "unknown."

(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 individual should be recorded in the same manner as for sampling species, see "Length Frequencies" (Section I). Lengths are recorded to the nearest whole centimeter.

(f) Scale samples--remove scale samples for aging from all salmon, according to the directions in "Scale Samples and Random Stratified Otolith Samples"--Section I.

(g) Check for missing adipose fin--this may indicate that the salmon or steelhead was tagged with a coded wire in the snout. Follow the directions in "Tagged Fish." (Section II).

The observer should seldom have to subsample salmon from the prohibited species incidence sample. If time does not allow the observer to gather all of the above information from each salmon, then take scale samples from a subsample, but make sure that the subsample contains fish from each species of salmon in that sample.

COLLECTING DATA FROM KING AND TANNER CRAB

The following information should be collected from the king crab and Tanner crab obtained in the prohibited species incidence samples:

(a) Species identification--note the species identification of all individuals--red, blue, golden, and Lithodes couesi king crab; Chionoecetes bairdi, C. opilio, C. angulatus, and C. tanneri Tanner crabs.

(b) Sex--determine the sex of each crab. When the observer is not sure of the sex of a crab or does not have enough time to sex it, the sex should also be listed as "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) Viability--an estimate of the survival chance of each crab. This estimate is based upon an appraisal of the condition of the crab upon release to the sea. (Refer to the following pages for a discussion on how to sample for the viability of crab.)

(f Check for tags--follow the directions in "Tagged Fish." (Section II).

(g) Length--Observers who are assigned to measure crab should measure the lengths of king crabs and widths of Tanner crab as described below. (King and Tanner crab are the only species of crab which should be measured.)

The observers who are assigned to measure crab will be provided with calipers or dividers. Measure the width of Tanner crab carapaces at their widest points, excluding spines, recording the measurements to the nearest 5 mm size group (i.e. crabs 41 to 45 mm in size are recorded as 43 mm; crabs 46 to 50 mm are recorded as 48 mm). Observers should measure all of the Tanner crab found in each of the daily prohibited species incidence samples. Normally less than 70 Tanner crab will be found in the sample. If more than 70 are found, and the observer cannot measure all of the crab, then take a representative subsample, selecting every second, third, etc., so that carapace width measurements are made from approximately 70 Tanner crab.

The carapace length of king crab should be measured. Measure from the right eye socket to the midpoint of the posterior margin of the carapace and record the length to the nearest 5 mm size group as with Tanner crab (refer to the illustration of "Length Measurements for Various Species" in the Appendix).

COLLECTING DATA FROM HALIBUT

The following information should be collected from halibut obtained from the prohibited species incidence sample:

(a) Numbers--of halibut.

(b) Weight--individual weights are not necessary, but you should obtain the total weight of the halibut in the incidence sample. Halibut that are too large to be weighed should be measured only, and the lengths can then be looked up in the halibut length-weight table in the Appendix to obtain the corresponding weights. (The total weights of halibut should include these table weights as well as scale weights.) When possible, however, halibut should be weighed instead of using the length-weight table.

(c) Lengths--except in the case where halibut are mistakenly discarded before you have a chance to measure them, you should be able to get lengths of all individuals. Lengths are recorded to the nearest whole centimeter.

(d) Viability--an estimate of the survival chance of halibut upon release to the sea is composed of:

(1) an appraisal of the condition of the halibut

(2) the probability of the halibut being consumed by a sea lion or killer whale upon release. (See below for sampling procedure.)

[Note: Do not sex halibut, not even the dead ones.]

VIABILITY OF HALIBUT, KING CRAB AND TANNER CRAB

The observer's primary duty is to get accurate incidence data, lengths, and total weights, and these tasks may require that the halibut or crab be handled in a manner that would delay their release to the sea. If this is true, try to arrange your sampling scheme so that the data from the prohibited species is collected quickly. This is especially true of halibut and crab. (Most salmon do not have a favorable chance of survival after being caught in a trawl because of major scale loss).

The collection of viability data on halibut and crab can be done quickly and easily and should be carried out at the same time that you are collecting other biological data from these species. If you cannot work with the prohibited species immediately after they are sorted from the catch, then see if you can arrange for a salt water holding tank to put them in temporarily.

If you are unable to get viability information as part of your ordinary sampling procedure, then try to sample specifically for viability of halibut and crab at least twice a week. Viability sampling should not take precedence over sampling for their incidence and obtaining the other biological information needed.

Using the tables on the following pages giving the definitions of "excellent," "poor," and "dead", note the number of halibut and crab in each

category. Do not guess the condition of halibut or crab that you do not personally examine. If the sample of halibut or crab, that is checked for viability, is a subsample of the incidence of prohibited species sample, make certain that the subsample is a representative one.

There is an additional item that comprises the viability information for halibut. That item is a measure of the probability that the halibut will be eaten by a marine mammal at the time that it is released to the sea. This "probability of marine mammal predation" need not be judged for crab, because they are not usually consumed by marine mammals that are swimming around the ship. As it is difficult to make an estimate of the probability of a halibut being consumed by a marine mammal, this estimate is based upon the numbers of sea lions or killer whales present around the ship at the time that most of the halibut in the viability sample are released. If you do not see any sea lions or killer whales around the ship, record "1" as the probability; if you see one to three sea lions, record "2"; and if you see more than three, enter "3." If the halibut in your viability sample are released out an outwash hole in the factory, base your estimate of marine mammal predation on what you feel is a likely estimate.

DEFINITION OF HALIBUT CONDITION

Trawl Catches

(1) Excellent: No sign of stress

(a) Injuries, if any, are minor
(b) Muscle tone or physical activity is strong
(c) Gills are red (not pink) and fish is capable of closing gill cover (operculum) tightly

(2) Poor: Alive but showing signs of stress

(a) Moderate injuries may be present
(b) Muscle tone or physical activity is weak
(c) Gills are red (not pink) and fish is capable of closing gill cover (operculum)

(3) Dead: No sign of life or, if alive, likely to die from severe injuries or suffocation

(a) Vital organs may be damaged
(b) No sign of muscle tone or physical activity
(c) Severe bleeding may occur
(d) Gills may be pink and fish is not able to close gill cover

Longline Catches

(1) Excellent: No sign of stress

(a) Hook injuries are minor and located in the jaw or cheek
(b) No sign of severe bleeding; gills are red (not pink)
(c) No sign of sand fleas

(2) Poor: Alive but showing signs of stress

(a) Hook injuries may be severe, but vital organs are not injured
(b) Moderate bleeding may be observed, but gills are still red (not pink)
(c) No sign of sand fleas

(3) Dead: No sign of life or, if alive, likely to die from severe injuries

(a) Vital organs may be damaged
(b) Sand Fleas may be present (they usually first attack the eyes)
(c) Severe bleeding may occur, gills may be pink
(d) No sign of muscle tone

DEFINITION OF KING CRAB AND TANNER CRAB CONDITION

Trawl and Longline Catches

(1) Excellent: No sign of stress or dismemberment

(2) Poor: Alive but showing signs of stress--a few limbs may be missing; minor mouthpart movement may be the only sign of life

(3) Dead: No sign of life, or if alive, likely to die from major carapace fracture or dismemberments

FORM 4 - SPECIES COMPOSITION OF SALMON, KING CRAB, TANNER CRAB; VIABILITY OF HALIBUT, KING CRAB AND TANNER CRAB

Part of Form 4 is used for recording the number of individuals and weight by species and sex for salmon, steelhead, king crab, and Tanner crab collected from the incidence sample for prohibited species or a random subsample of that sample. (See "Biological Data Collected from Prohibited Species.") Other portions of Form 4 are used in recording the data used in calculating the viability of halibut, king crab and Tanner crab. Species other than salmon, steelhead, king crab, Tanner crab, or halibut should not be entered on Form 4.

1. Fill in the cruise number (when known), vessel code, and date; start each day's data on a new side.

2. On stern trawlers, record the haul number in columns 14-16.

3. Enter the name and the corresponding code (from the species code list) of the particular species. Do not group species on this form.

4. Record all those weighed for each species by sex, code "M" for male and "F" for female. Record a "U" for unknown sex. Include only individuals which you actually weighed-do not include estimated weights. Since halibut are not sexed, do not record a "u" but leave the column blank.

5. With the exception of halibut, (see item 7 below) enter the number of individuals of each sex for each species and the corresponding total weight of those individuals. Important: The total number and weight of king crab, Tanner crab, and salmon for a given haul or sample on Form 4 should never exceed the number observed and the corresponding weight for that species group on Form 3(1). In fact, the numbers and weights should match exactly between form 4 and 3(1) at all times. The only exception would be when the information on form 4 is from a subsample of the prohibited species recorded on form 3(1). (Remember, do not include estimated numbers.)

6. All weights placed in columns 26-34 should have a well-defined decimal point as the decimal point itself will be keypunched and must be present even if the weights are not carried to a tenth or hundredth of a kilogram (see the Form 4 example). Do not carry weights to three decimal places on this form.

7. Halibut numbers and weights do not have to be entered in columns 23-34; since there is only one species, and the sex of the halibut is not determined.

8. When recording halibut viability data, make certain to record the haul number and the species name and code. (As explained in item #5, one should not enter the sex, number of individuals or total weight of halibut.) If there is no viability data for halibut, do not enter any halibut data for that haul. You cannot record viability data for halibut, without "probability of marine mammal predation" data and vice versa.

9. Under the heading "Halibut/Crab Condition," record the number of halibut and crab judged to be in each category. The sum of the numbers recorded in those three categories do not necessarily need to equal the number weighed but frequently do.

10. If you recorded halibut condition, enter the "Probability of Marine Mammal Predation" on the same line. Enter either a 1, 2, or 3 in column 44, depending on whether no predators were observed; one to three predators were present; or four or more predators were swimming around the ship. Do not record "probability of marine mammal predation" for any species other than halibut.

11. Skip a line after recording the data for any one haul.

12. Leading zeros should appear in the cruise number, month, and day only (columns 1, 2, 10, and 12 only, as needed). No leading zeros in haul number, species code, number, weight, or halibut/crab viability data.

Form 4 – SPECIES COMPOSITION OF SALMON, KING CRAB, TANNER CRAB; VIABILITY OF HALIBUT, KING CRAB AND TANNER CRAB

Cruise No.			Vessel code				Date					
							Year		Mo.		Day	
1	2	3	4	5	6	7	8	9	10	11	12	13
5	3	0	N	S	7	8	8	3	0	9	1	0

1. Record individuals from form 3(1) or a random subsample.
2. Leading zeros in columns 1,2,10 and 12 only as needed.
3. Sex: male = M; female = F; unknown = U.
4. Probability of predation; none (0 sea lions) = 1; moderate (1-3) = 2; high (≥4) = 3.
5. Skip a line after each haul/set sample.

Keypunchers: right-adjust all columns.

Set	Haul or sample number		Species Name	Species code	Sex	No. of indiv.	Total weight with decimal point	Halibut and crab condition			Probability of marine mammal predation on halibut
								Number excellent	Number poor	Number dead	
14	15	16		19 20 21	22	23 24 25	26–34	35 36 37	38 39 40	41 42 43	44
1	0	1	Opilio Tanner Crab	5	M	3	.43		1	2	
			" " "	5	F	1	.17		1		
			Bairdi Tanner Crab	4	M	71	12.07	13	22	36	
			" " "	4	F	85	12.63	16	28	41	
			Pacific Halibut	101				2			1
			King Salmon	222	M	1	1.62				
	↓		" "	222	F	1	2.1				
1	0	1	" "	222	U	1	1.76				
1	0	3	Pacific Halibut	101						1	3
1	0	4	Opilio Tanner Crab	5	M	8	1.4	1	5	2	
			" " "	5	F	8	1.65		4	4	
			Bairdi Tanner Crab	4	M	53	7.23	9	13	31	
			" " "	4	F	47	10.6	6	10	31	
	↓		Pacific Halibut	101				4	3	2	2
1	0	4	King Salmon	222	F	3	13.17				

GPO 892-457

LENGTH FREQUENCIES

SELECTION OF SAMPLING SPECIES

The selection of your sampling species depends on several considerations:

1. Your assigned special project.
2. The target species of your vessel.
3. The area you are fishing in.
4. The ships fishing schedule and other considerations.

Your sampling species may change several times throughout your cruise and you will need to make intelligent decisions based on the information provided here and in training.

A KEY FOR SELECTING YOUR SAMPLING SPECIES

A. Are you collecting age structures as your special project?
Yes.....Go to B.
No.....Go to F.

B. Is your age structure collection from the target species?
Yes.....Go to C.
No.....Go to D.

C. Your sampling species will be the target species of the vessel. However, talk to the captain about the fishing schedule so that you can plan to get your collection finished before any possible target species changes.
(Note: Also do "Priority Species" sampling upon occurrence.)

D. Is your age structure collection for a secondary species?
Yes.....Go to E.
No.....Go to G.

E. Look at Table A and choose a secondary species corresponding to the area you are fishing in. Choose the secondary species that occurs most abundantly in the catch. This is your sampling species, unless you have been assigned a specific secondary species.
(Note: Also do "Priority Species" sampling upon occurrence.)

F. If you are not assigned to collect age structures as your special project then your sampling species will be the target species of your ship. (Read "C" above.)
(Note: Also do "Priority Species" sampling upon occurrence.)

G. You have done something wrong, try again. If you are still confused after working through this key a second time, then talk to your instructor.

TABLE A: SECONDARY SPECIES LIST

BERING SEA AND ALEUTIANS

Area 511
- Rock Sole
- Flathead Sole
- Alaska Plaice

Area 513
- Rock Sole
- Alaska Plaice
- Flathead Sole

Area 514
- Rock Sole
- Alaska Plaice
- Flathead Sole

Area 515
- Rock Sole
- Flathead Sole
- Arrowtooth Flounder
- Greenland Turbot

Area 521
- Greenland Turbot
- Arrowtooth Flounder
- Flathead Sole
- Rock Sole

Area 522
- Greenland Turbot
- Arrowtooth Flounder
- Flathead Sole
- Rock Sole

Area 530
- Greenland Turbot

Area 540
- Greenland Turbot
- Arrowtooth Flounder

GULF OF ALASKA

All Areas
- Rock Sole
- Arrowtooth Flounder
- Dover Sole
- Flathead Sole

PRIORITY SPECIES

A priority species is a fish that is of such importance, that when it occurs in significant quantities (at least 0.5 MT or 100 fish) in the catch, we ask all observers to collect length data and age structures. This will undoubtedly be an unusual occurrence, so use this opportunity to collect as many lengths and age structures as you can. You may have to temporarily suspend your other sampling project when this occurs. The age structures should be collected using the regular random stratified method as outlined in

IF YOU FIND PRIORITY SPECIES → TAKE LENGTHS

the manual. Priority fish data is to be collected regardless of your special project assignment, and regardless of whether the fish occurred in a sampled haul. Age structures should be temporarily stored in labeled envelopes until they can be transferred to alcohol-filled vials upon your return to Seattle.

The priority species for the Bering Sea and Aleutians (BSA) areas 511 - 550, are Pacific Ocean Perch and Sablefish. The priority species for the Gulf of Alaska (GOA) areas 610 - 680, are Atka Mackerel and Sablefish.

ADDITIONAL NOTES ON SAMPLING SPECIES AND LENGTH FREQUENCIES

Each observer will be assigned a special project. Some observers will be asked to collect age structures from either the target species or an unspecified secondary species. Others will be assigned to collect age structures from a particular species. While still others may be assigned a special project involving the collection of stomach samples, or the measuring of king and Tanner crab. Regardless of your special project assignment, all observers will be collecting a minimum of 150 lengths from a selected sampling species each day. If your special project assignment involves the collection of age structures from a target or secondary species, then the species that you choose for your collection will be the same species that you collect 150 lengths from daily. If you do not have an age structure collection as your special project, then you would collect 150 lengths on a daily basis, from the target species of your vessel.

If you are assigned to collect age structures from an unspecified secondary species, then choose the secondary species for that area which occurs most abundantly in the catch. This will make it easier for you to get 150 randomly collected lengths each day. Sometimes your chosen sampling species will occur

If a secondary species is not plentiful, there may not be enough in the sample for species composition for a good length frequency sample and you may have to use other methods to get additional fish of that species. In this case, the observer could collect all the individuals of that species from the conveyor belt over a period of time or use some other method to obtain randomly selected fish from a larger sample weight. Be sure to collect the additional fish required in an unbiased manner. If you cannot get 150 fish in a day of the secondary species you chose, take lengths and age structures from those you did collect and, additionally, take approximately 150 lengths of the target species each day. Do not take length frequencies of more than one secondary species during a cruise unless your ship changes target species or other circumstances change as described below.

Try to keep the same sampling species throughout your cruise, regardless of the area you are fishing. If you should change fishing strategies or move to vastly different fishing area or change ships or nationalities, then you may choose a new sampling species. However, if you cannot continue the collection of age structures from a sampling species, don't keep a collection of fewer than 50 age structures. Dump it and start a new one. For instance, suppose that you started your sampling species age structure collection in area 513 when the ship was targeting on pollock. After only a few days, the ship moved to area 511 and began yellowfin sole operations. At this point you should examine your collection. If you have filled fewer than 50 vials with pollock otoliths, then dump the vials and start over with yellowfin sole if you do not anticipate returning to the pollock fishery and pollock are not in the yellowfin sole bycatch. If you have filled more than 50 vials, then keep the collection and start a new collection of yellowfin sole otoliths.

SAMPLING METHOD

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 provides information on abundance of fish of each size category while otoliths are read to determine the corresponding age. The age/length relationship may be quite different for each sex of a species.

Length frequencies should be collected each day from each sampling species selected. The day's length measurements may all be taken during **one** sample period **or** they may be taken from **each** sample period to ensure the measurements are representative when sizes are varying. It is important, however, that any given sample is not selected on the basis of size.

Length frequencies are usually taken from fish that were collected in a random, non-size selective manner during your species composition sampling. Sex all the fish you have set aside for length measurements (refer to "Sexing Fish" in the Appendix). If you wanted to sample 200 fish for length frequencies and your sample set aside only has 192 fish, don't bother collecting another eight fish. It is too easy to bias your sample by "picking" them out in an inappropriate manner. Group the fish into baskets by sex. 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).

Next, set up a plastic strip on a measuring board, recording on it the haul number, date, and species. Observers on processors and trawlers must keep length frequency data for each tow separate. Record data for different hauls on different plastic strips. The plastic measuring strip is a long, narrow piece of white plastic divided into one centimeter spacings. The strip is attached to a 3-sided, wood measuring board (bottom, end, and back boards) by thumbtacks. For species of fish whose length range is less than 75 cm, the strip should be positioned on the measuring board so that the first spacing line is at 4.5 cm from the board across the end and

the **center** of the 5 cm space is at exactly 5.0 cm from the end board. Mark each 10th centimeter strip unit to read 10, 20, 30...etc. For large fish, species whose length range commonly exceeds 75 cm, the measuring strip may be offset as shown in the illustration on the following page. To increase the length of a strip by ten centimeters for instance, offset the strip so that the first spacing line is at 14.5 cm from the end board and the center of the first centimeter space is at 15 cm. The tenth centimeter units of the strip may then need to be renumbered accordingly.

Take one of the baskets of sexed fish. Note that one side or half of the plastic strip is designated for males, and the other half for females. Position each fish on the measuring strip with jaws closed, snout against the end, dorsal surface against the back, and the fish body flat and straight. Spread the caudal fin with your hand to help determine the fork or midpoint of the fin's posterior margin. Fork length measurements should always be taken of fork-tailed sampling species, even if the tails are 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) should be of the total length from the snout to the midpoint of the tail. (See "Length Measurements for various species" in the Appendix.)

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 right 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. After recording a length on the strip, some of these fish may be used or set aside for otolith or scale samples. (Refer to "Scale Samples and Random Stratified Otolith Samples" in the following section.)

When starting to measure another basket of sexed fish, verify their sex and check to be 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 and centimeter length spacing will give the size group's frequency by sex.

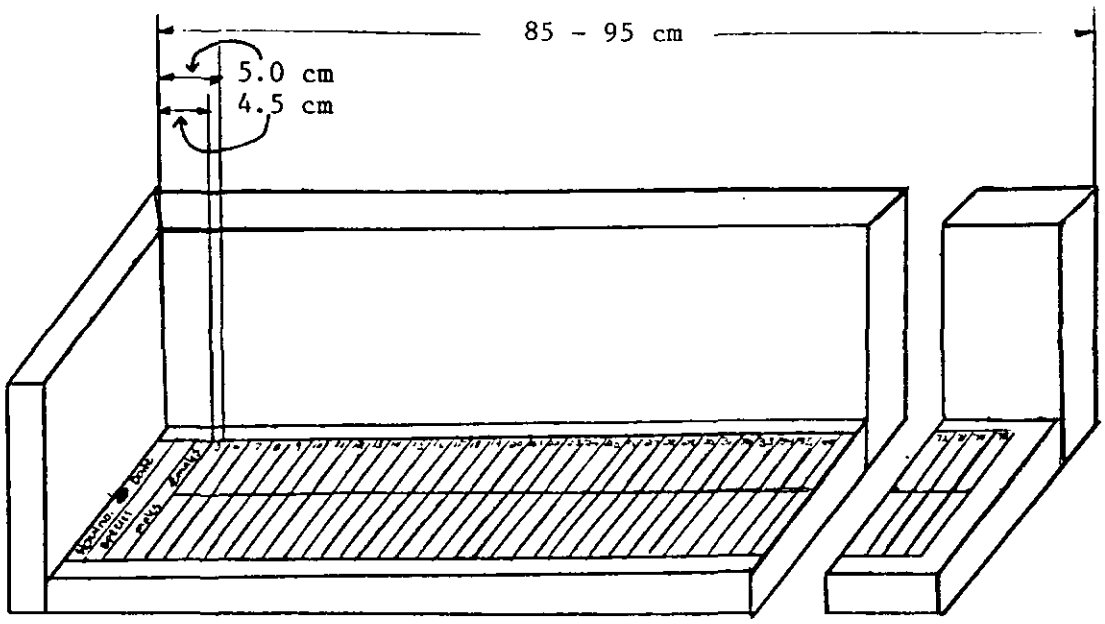
LENGTH FREQUENCIES OF PROHIBITED SPECIES

All observers should take length frequencies of all salmon and halibut found in the prohibited species incidence sample. Remember that when there are too many prohibited species to process in a reasonable length of time, take a random, representative subsample of at least 20 halibut and 20 salmon. If you are measuring crab, a subsample should be of at least 20 king crab and 70 Tanner crab. Only observers who were assigned to measure crab and were provided calipers or dividers should measure king and Tanner crabs. Do not measure crab unless you were given that assignment. The assignment of daily length frequency measurements of a sampling species is a higher priority than an excessive amount of length frequency measurements of prohibited species (unless you are measuring crab).

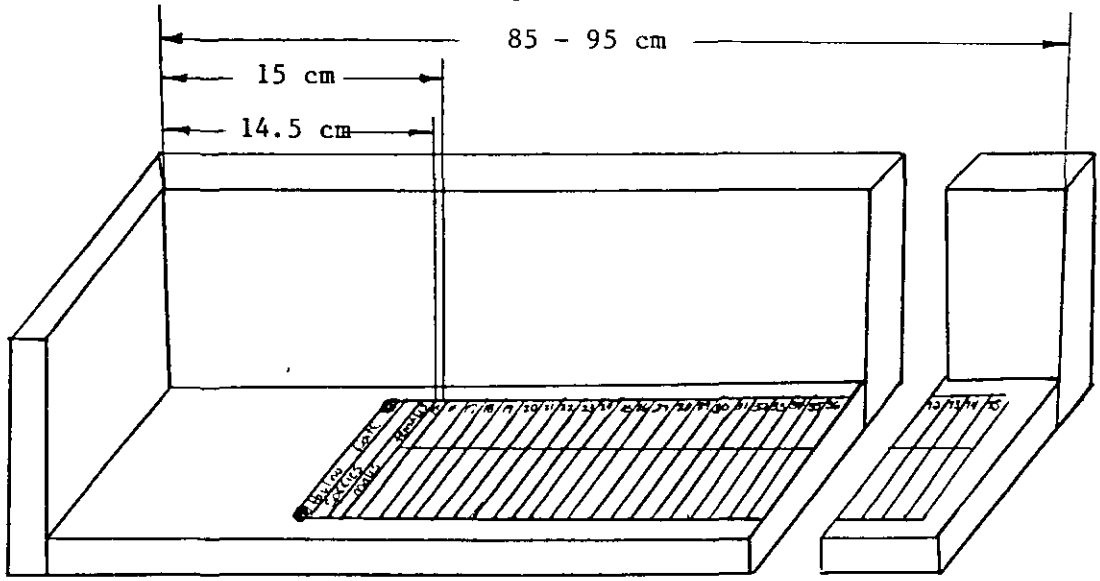
Length frequencies are recorded by species and by sex. Identify salmon to species and do not use the general code 220 for "salmon unidentified". **Do not sex halibut**, but do sex salmon unless they are vigorous and have minimal scale loss (see "Sexing Fish" in the Appendix).

In the previous section, "Biological Data Collected from Prohibited Species" are instructions for subsampling, a full listing of the data to gather for each group, and instructions on measuring king and Tanner crab. Detailed instructions on taking scale samples for salmon follow in the section on scale sampling and Form 9.

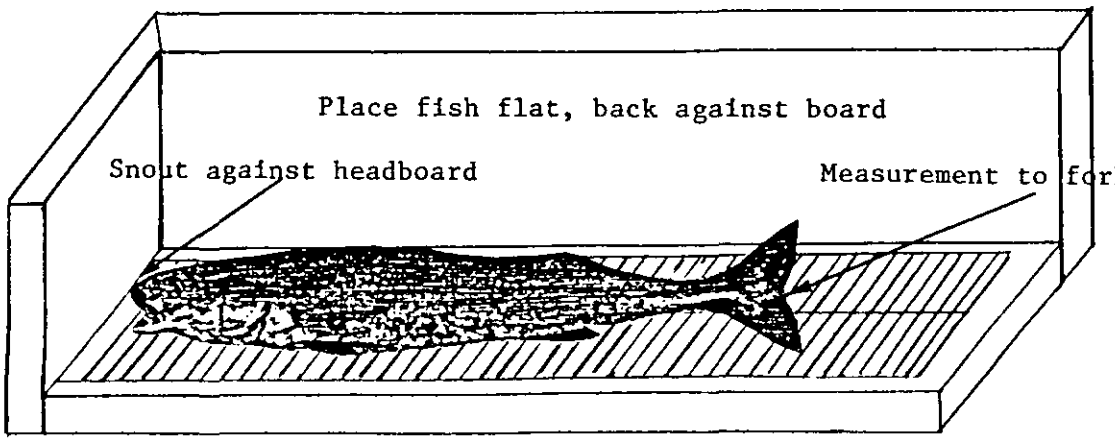
Length Frequency Measuring Board and Measurement



Measuring board with strip set up to measure most fish species.



Measuring board with strip offset in order to measure larger fish.



Measurement of a roundfish on measuring board.

FORM 7--LENGTH FREQUENCY OF MEASURED SPECIES

Form 7 is used for recording the lengths collected on the plastic measuring strips (primary and secondary species) and from other plastic forms (crab, halibut, and salmon caught incidentally).

1. Fill in the cruise number (when known), vessel code, and date; start each day's measurements on a new side.

2. Under species name, record the specific common name and the related species code from the same alphabetical code list as used for Form 3.

3. On stern trawlers, record the haul number in columns 17-19.

4. Record all those observed for each species by sex, coded "M" for male, "F" for female, and, if no sex is determined or the immaturity of the species makes sex identification impossible, code "U" for unknown.

5. The size group is the length measurement to the nearest whole centimeter for fish and to the nearest 5 millimeters for crab (1-5 mm = 3; 6-0 mm = 8). Record the size groupings in the shaded columns.

6. The frequency is the number observed in each size group. Include a size group only if there is a frequency of one or more. Record sequential data horizontally across the form. List lengths from the smallest to the largest within a species/haul/sex designation.

7. Start a new row each time there is a change in sex, haul number, or species, or when there are more than 7 sizes in a group.

8. Sum the frequencies in each row and enter in the column "no. of individuals in row."

9. Calculate the "sum of lengths in row" by multiplying each frequency times the appropriate size group and summing the products.

10. Note that more than one species can be recorded per page as long as each species is identified by name and code. Skip a line between species unless it means going to a new page.

11. Note that more than one haul can be recorded per sheet as long as the hauls all ended on the date written at the top of the page. Start each day's measurements on a new side and use both sides of the form.

12. Leading zeros should appear in the cruise number, month, and day only (columns 1, 2, 10, and 12 only, as needed). No leading zeros in species code, haul number, size, or frequency.

13. To indicate the repetition of a number or letter, such as species code, haul, or sex, draw brackets and arrows as shown in example form. Do not use ditto marks.

14. Caution: Only actually measured lengths, not estimated lengths, should be recorded on this form.

Cruise No.	Vessel Code	Date		
		Year	Mo.	Day
1 2 3	4 5 6 7	8 9	10 11	12 13
530	NS78	83	09	10

FORM 7—LENGTH FREQUENCY OF MEASURED SPECIES

(Includes halibut, salmon, and crab measurements)

NOTE:
1. Leading zeros in columns 1, 2, 10, and 12 only—as needed.
2. For motherships—leave columns 17-19 blank. For longliners—enter set no. in column 17.
3. Start a new row each time when entering data from a different sex, species, or haul.
4. Skip lines between species when space permits.
5. Start each day's measurements on a new side.

M = male
F = female
U = unknown sex
Size groups: Fish by 1 cm.
Crabs by 5 mm
(1–5 = 3; 6–0 = 8)

Species Name	Species Code	Set/haul No.	Sex	No. of individ. in row	Sum of lengths in row	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.
	14-16	17 18 19	20	21-23	24-29	30-32	33-35	36-38	39-41	42-44	45-47	48-50	51-53	54-56	57-59	60-62	63-65	66-68	69-71
POLLOCK	201	101	M	15	523	32	1	33	2	34	5	35	2	36	2	37	2	39	1
			M	3	126	40	1	42	1	44	1								
			F	35	1265	33	4	34	9	35	12	37	4	38	1	43	2	45	3
POLLOCK	201		F	1	47	47	1												
C. opilio	5		M	3	244	73	1	83	1	88	1								
C. opilio	5		F	1	78	78	1												
C. bairdi	4		M	35	2415	48	1	53	1	58	3	63	4	68	10	73	8	78	8
			M	16	1448	83	6	88	3	93	4	98	1	103	1	113	1		
			F	40	2765	43	1	48	2	58	1	63	6	68	9	73	12	78	9
C. bairdi	4		F	23	2079	83	8	88	4	93	7	98	1	103	2	108	1		
HALIBUT	101		U	1	54	54	1												
KING SALMON	222		M	1	38	38	1												
	222		F	1	43	43	1												
KING SALMON	222	101	U	1	40	40	1												
POLLOCK	201	103	M	19	699	30	1	33	2	35	3	36	7	39	2	41	3	45	1
POLLOCK	201	103	F	14	487	32	5	33	2	36	3	37	1	38	2	40	1		
HALIBUT	101	103	U	1	76	76	1												
POLLOCK	201	104	M	43	1778	38	1	39	1	40	12	41	11	42	8	43	6	44	4
			M	3	135	45	3												
			F	27	1159	37	1	40	2	41	7	42	4	44	4	45	7	48	2
POLLOCK	201	104	F	2	104	50	1	54	1										

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Cruise No.	Vessel Code	Date		
		Year	Mo.	Day
1 2 3	4 5 6 7	8 9	10 11	12 13
530	NS78	83	09	10

FORM 7—LENGTH FREQUENCY OF MEASURED SPECIES
(Includes halibut, salmon, and crab measurements)

NOTE:
1. Leading zeros in columns 1, 2, 10, and 12 only—as needed.
2. For motherships—leave columns 17-19 blank. For longliners—enter set no. in column 17.
3. Start a new row each time when entering data from a different sex, species, or haul.
4. Skip lines between species when space permits.
5. Start each day's measurements on a new side.

M = male
F = female
U = unknown sex
Size groups: Fish by 1 cm.
Crabs by 5 mm
(1–5 = 3, 6–0 = 8)

Species Name	Species Code	Set/haul No.	Sex	No. of individ. in row	Sum of lengths in row	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.	Size Groups	Freq.
	14-16	17 18 19	20	21-23	24-29	30-32	33-35	36-38	39-41	42-44	45-47	48-50	51-53	54-56	57-59	60-62	63-65	66-68	69-71
KING SALMON	222	104	F	3	145	47	1	49	2										
HALIBUT	101		U	9	698	47	1	51	1	68	2	83	1	91	2	92	1	107	1
C. opilio	5		M	8	314	23	1	33	2	38	2	48	2	53	1				
C. opilio	5		F	8	324	33	2	38	3	43	1	48	1	53	1				
C. bairdi	4		M	18	1059	38	1	43	1	48	1	53	2	58	5	63	2	68	6
			M	28	2454	73	4	78	3	83	4	88	6	93	4	98	5	103	2
			M	5	575	108	1	113	1	118	3								
			F	39	2722	43	4	53	8	68	4	73	7	78	4	83	5	88	7
C. bairdi	4	104	F	5	490	93	2	98	1	103	2								

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RANDOM STRATIFIED OTOLITH SAMPLES

Otoliths, or fish ear bones, are collected from a stratified sample of the catch for age determination later. These are read in a similar manner as tree rings to determine age. The fish you take age structures from are your biological sampling species and are a subsample of those in your length frequency sample, thus, the use of the name "random stratified" which is a subsample, stratified by length, from the random length frequency sample of fish.

A maximum of five pairs of otoliths per sex for each centimeter length group are to be taken for this type of collection (5 males and 5 females of each centimeter group). Do not be concerned if after filling your vials you do not have a complete set of five pairs of otoliths per sex for each centimeter length group that you observed. It is expected 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. The object of this collection is <u>not</u> to complete the 5/cm/sex categories on the tally sheet or to fill all the vials. The object is to obtain age structures from most of the commonly observed length groups in the length frequency collection so that age and length information can be used to evaluate the status of the fish populations.

Otoliths are always collected while taking length-frequency measurements by sex from the sampling species. A running tally of your otolith collection on your plastic form 9 helps you keep track of what sizes and sex of fish are needed for your collection. After taking the length measurement, if the fish is of a size and sex needed, weigh the fish with the 2.0 kg or 5.0 kg scale. Record weight, sex, and length on the plastic otolith sheet after the vial

number in which the otoliths will be placed. The otolith vials are to be filled in numerical order and the sexes should be grouped. 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 and place them in the vial. There is one set of two otoliths per vial. Add the appropriate fluid if any, fill the vial half full, 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 and jack mackerel otoliths are stored dry. Check the instructions for your sampling species in the table "Otolith and Scale Collection for Select Species" in the Appendix. 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. Try not to collect more than 20 age structures per day (10 males and 10 females).

It is very important to have a clear understanding of the scheme used to identify the otoliths being collected. A mistake in the numbering sequence or procedure used to relate the otoliths to associated biological data can make a collection useless. If it is necessary to take more otoliths of the same species on a second ship, continue with the same numbering sequence but start the second collection over with a new otolith tally sheet because it will essentially be a new collection. If you have collected less than 50 age structures from a primary species and then transfer to a second vessel, you should dump the age structures that have already been collected and start over on the new ship. (Note: You may be instructed to take two separate sets of otoliths--simply start your tally sheet over the second month.)

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 in the Appendix). There are three common methods of cutting into a fish's head to remove this pair of otoliths. On a roundfish, a horizontal cut, in an anterior to posterior direction which cuts off the top of the head can be done 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. When beginning though, the easiest method to use in locating and removing otoliths is to make a vertical cut down through the top of the head to the location of the otolith packet. This point is located by this simple rule of thumb: On the side of the fish's head, if you were to make an extension (hypothetically) 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. Though it may not be pleasant, 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.

Some fish with bony skulls and small otoliths such as jack mackerel, sablefish, and some rockfish may pose problems at first. You may want to use a small hacksaw instead of a knife. Refer also to the diagram in the Appendix

"How to Determine Sex and Remove Otoliths from Jack Mackerel." Care should be taken not to break or crack the otoliths, but if an otolith is broken, and the fish is of an uncommon size, include all pieces in the vial. Otherwise simply discard the otoliths because you will probably see that size of fish again.

Start with vial number one when filling your otolith vials and fill consecutively numbered vials. Attempt to take some otoliths each sampling day if the species seems readily available. If possible, you should not collect more than 20 otoliths per day (10 males and 10 females). When a sample species is seldom seen in quantity, however, you may want to take advantage of hauls containing many specimens and collect more otoliths/scales on those days.

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 9. There is no need to fill out an additional Form 9 unless instructed to do so.

SCALE SAMPLES

For certain species of fish, the scale is the preferred structure for determining age; on some species, otoliths are used. Scale samples should be taken from all salmon or steelhead in the incidence of prohibited species samples, or from as many as possible (to subsample, see instructions under Biological Data Collected from Prohibited Species, and its salmon data section). As there is a high chance of obtaining regenerated scales from salmon, try to pluck samples from both sides of the fish to increase the chance of getting readable scales. A minimum of five, good, readable scales from each fish must be collected.

Place the salmon scale samples dry, in small paper envelopes. Try to smear or spread-out the scales inside the envelope so that they will not stick together in one large clump. On each pre-printed envelope, fill in the requested information. If you should run out of envelopes, the ship may have some you can use or you should make some. Number the salmon scale samples sequentially, within each species group. Record their data on Form 9 on separate groups of pages by species. Each cruise should start with salmon scale number one for each species of salmon.

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. "A" is the preferred zone, "B" is next in preference. Refer to the figures in the Appendix (Location of Preferred Scale Sampling Zones"). When there are no scales available in either zones A or B (on either side of the fish) then another area may be used.

3. Using any clean, thin-edged instrument (knife, scalpel, forceps), scrape within the zone in an anterior direction (toward the head). For salmon, try to pluck scales out with forceps so as to minimize the amount of accompanying mucus.

4. Wipe off, inside the envelope or vial, 15 to 20 scales that adhere to the instrument. Be certain the envelope is properly labeled or the vial is marked and all pertinent information is recorded on the plastic sheets.

5. Remove excess scales from instrument before sampling the next fish.

Scale samples, as well as otoliths, from Pacific cod and sablefish should be taken from a stratified centimeter/sex group as explained in "Scale Samples and Random Stratified Otolith Samples." Unlike most age-structure samples, Pacific cod and sablefish scales and otoliths should be put into vials of alcohol instead of into scale envelopes. The primary reason for this is to prevent the scales from sticking together so badly that they are damaged by pulling them apart. Thus it is important to insert the scales into the alcohol solution in the vials rather than to add the alcohol to the scale samples at a later time.

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.

FORM 9 - LIST OF OTOLITHS OR SCALES

Form 9 is used for recording the data on the stratified otolith or scale collections of the primary and secondary species you were instructed to take, plus data on scales of salmon caught incidentally.

1. Keep separate groups of pages for each species. Start with page 1 for each new species. (Otolith and scale collections are filed separately by cruise and by species because readers specialize in aging certain species.)

2. At the top of the form, write the number of the management area corresponding to the catches on the sheet. (Refer to the map in the radio message section.)

3. Circle "otoliths" or "scales" in the title of the form to indicate which structures were taken.

4. Fill out the vessel name, observer name, and species common name on each sheet. (The different users cannot always be provided with current cruise, vessel and species code lists.)

5. Fill in the cruise number and vessel code (when known), species code, and date; start each day's measurements on a new side.

6. Leading zeros should appear in the cruise number, month, and day only (columns 1, 2, 13, and 15 only, as needed).

7. On stern trawlers record the haul number in columns 26-28. Skip a line between hauls.

8. Note that several hauls can be recorded per sheet as long as the hauls were begun to be retrieved on the date written on the top of the page and they were all taken from hauls in the same area. Go to a new side only when all 37 lines are filled, when you are starting a new day, or a haul is in a different management area.

9. The otolith or scale number is the identifying number on the vial or scale envelope. There should not be any duplicate otolith or scale numbers within a species. The otolith/scale numbers should also be listed in sequential order, which should be the case if the sampling directions were followed. (We want to avoid having vials filled at random.)

10. Salmon scale samples are numbered sequentially by species and are recorded on separate groups of pages.

11. If you transfer to another ship, or change fishing operations to or from joint venture, you can continue with the same sequence of otolith numbers, but keep the Form 9's and the otoliths separate for different cruises.

12. It is best if the otoliths are removed by sex group, then they will be recorded separately by sex on the form. Record the sex of the fish using "M," "F," and "U" notation. (M = male; F = female; U = unidentified)

13. Record the length of the fish to the nearest cm--no decimal places.

14. The weight is to be filled out to two decimal places.

15. If for some reason, an alcohol other than ethyl alcohol was used (such as rubbing alcohol), note the type of alcohol at the top of the first page of each set of Form 9's.

16. Note the type of sample at the top of the form if it is something other than salmon scales or a typical random stratified collection.

17. Skip a line between hauls

AREA 54

FORM 9 LIST OF (OTOLITHS) OR SCALES
(CIRCLE ONE)

PAGE 2 OF 28

CRUISE NO.	VESSEL CODE	SPECIES CODE	DATE YEAR	DATE MO	DATE DAY
1 2 3	4 5 6 7	8 9 10	11 12	13 14	15 16
083	0521	201	83	05	15

VESSEL Uzbekistan

OBSERVER John Brown

SPECIES Pollock

	SET NUMBER 26 27 28	HAUL NUMBER	(OTOLITH) OR SCALE NUMBER 34 35 36	SEX 37	LENGTH (cm) 38 39 40	AGE 41 42	WEIGHT (kg) 43 44 45 46 47	special handling 59 60	total age 61	herring 65	AGE REMARKS
1	154		26	M	32		.80				
2	⌣		27	|	40		.95				
3			28	|	35		.93				
4			29	|	34		.85				
5			30	|	34		.89				
6			31	|	42		.96				
7			32	|	44		.96				
8			33	|	33		.80				
9			34	↓	35		.86				
10			35	M	34		.83				
11			36	F	34		.90				
12			37	|	35		.93				
13			38	|	33		.80				
14			39	|	43		.95				
15			40	|	34		.91				
16			41	|	42		.96				
17			42	|	47		1.20				
18			43	|	43		.95				
19	↓		44	↓	32		.80				
20	154		45	F	40		.93				
21							.				
22							.				
23							.				
24							.				
25							.				
26							.				
27							.				
28							.				
29							.				
30							.				
31							.				
32							.				
33							.				
34							.				
35							.				
36							.				
37							.				

INTERACTION WITH VESSEL PERSONNEL CONCERNING SAMPLING

In most cases, observers are treated very well by both officers and crew, and are provided work space, a sampling table, and assistance when needed. (See "Treatment of Observers" in the Compliance Manual) At times, however, observers are faced with situations in which their sampling data could be biased (either unintentionally or on purpose) due to requests from ship officers or assistance from helpers. Common sense, good judgement, and diplomacy are needed when dealing with such situations, but the observer should be insistent in efforts to avoid data bias. The following are some situations which have occurred in the past and suggested ways of dealing with them:

1. Officers or crew may request that you not sample at a particular time--in this case, evaluate the request by finding out the reason they do not want you to sample, and if your data might be biased if you complied with their request. Some possible reasons:
   a) Helpers not available--observers should be able to figure out ways to do all of their sampling duties by themselves, without any assistance or supervision, so this is not a valid reason for not sampling.
   b) Concern for observer safety--During rough weather the officers may not want observers to watch the dumping of codends on deck. Evaluate the safety hazard (some officers give this excuse during a flat calm), and see if you can satisfy the concern for your safety without affecting the validity of your data. You must be able to at least observe the taking of your basket samples to insure that they constitute random representative

samples and insure that the sorting of prohibited species for instance, is done correctly. If you decide that it is too dangerous to be on deck, you may have to have the crew eliminate all on-deck sorting.

c) High incidence of crab, halibut, rockfish, or other species-- This is not a valid reason for not sampling; you should decide whether or not to sample a particular catch before it comes on board. Do not allow yourself to be swayed by the desires of officers.

d) Officers may want your completed data by a certain time, so they may urge you not to sample at night. The observer should not let the provision of data to vessel personnel interfere with obtaining representative samples throughout the day.

2. Observers may have sampling problems due to actions of crew members. Crew members often provide invaluable assistance in sorting out prohibited species and carrying basket samples, but the observer should always oversee their actions. Watch the catch being brought aboard to be certain that presorting does not occur which would bias the sampling data. If they are assisting you in sorting of fish to species, check that their species identification is correct. If there is a problem caused by vessel personnel and you are unable to deal with it directly, speak to the captain or factory manager. If this problem continues, inform the captain of the problem in writing and document the situation in your logbook. Do what you can to circumvent the problem and get good sampling data.

3. Observers are asked to provide vessel personnel with copies of completed data Forms 3 or 3L. The provision of these data should be made at the convenience of the observer, and should not interfere with the daily sampling routine. The observer is under no obligation to explain to officers any discrepancies between observer sampling data and vessel catch figures. Note in your logbook, and later in your report:

   a) any refusal to send observer radio messages as originally written;

   b) attempts to make observer data and vessel data agree by forcing you to change your data. Do not sign any statement which you do not know to be true or of which you have inadequate knowledge of all of the circumstances involved.

In some instances, such as commonly occurs on joint ventures, the observer should be aware that it may be important to give prohibited species sampling data to the joint venture representative as soon as possible, so that the JV rep. can relay the information to the U.S. catcher boats. This would be particularly important when the incidence rate for prohibited species is high.

6. The first digit of longitude (1) is understood, so record only the following digits.

7. A given haul number should be used only once - no duplicates. The haul numbers must be in numerical sequence. Make sure that the haul numbers do not exceed 3 digits. (If the haul number recorded in the fishing log is 1657 for instance, then drop the thousandths position and call the haul 657. This will enable you to more easily compare your data with the ships.) All hauls must be recorded unless there was a gear malfunction resulting in a zero catch.

8. The trawl position is the location of the ship when a particular haul is begun to be retrieved, i.e. when the winches begin bringing in the cable. When net retrieval is begun, the time is recorded under "nets off bottom". ("Bottom" may refer to the fishing level rather than the actual ocean floor.) Under "nets on bottom" is recorded the time that the net first reaches the fishing level, where the winches stop paying out cable.

9. The time system used (on this and all other forms) should be GMT time and dates. Time recorded should be in the 24-hour system.

10. All 2400-hour notations should be changed to 0000 hours. If this occurs in the "nets off bottom" time, the date should be changed accordingly.

11. Doublecheck haul times to see if they are reasonable times for your ship. Also, an overlap in haul times for two hauls is an obvious error.

12. Enter the average depth of the haul in columns 44-46. Make certain that the information you receive is the trawling depth, not the bottom depth. If the trawl depth exceeds 1,000 meters, enter 999 on Form 2 and the actual depth of each haul on the back or the margin of the form.

13. The total catch should represent the weight of all of the fish and invertebrates caught in that particular haul, whether or not they were landed or utilized. The only time the weight of something in the haul should be excluded is when there is a large amount of mud or rocks (or possibly even marine mammals). Avoid including this in your species composition samples. The total weight for each day's fishing is very important. Without this figure, a day's sampling is worthless.

14. Zero hauls should be recorded as 0.0; other hauls less than 1 mt should be recorded without the leading zero (i.e., 0.5 = .5 mt). Note - if there is a gear malfunction - ripped net, trawl doors hung up on net, etc., resulting in a zero haul, the captain probably won't record it - that is the only valid reason for not recording a haul.

15. Decimal points within the 49-54 block, 64-69 block, and 70-75 block will also be keypunched, so they should be made larger than usual.

16. If there were no hauls on a given day (due to bad weather, transfer of cargo, traveling etc.) enter the noon position in both the noon position and the haul position columns, and enter 0 in the haul number column. Also, fill in the weather and sea codes corresponding to noon. You can comment on the reason there was no fishing in columns 36-54. All days at sea must be accounted for in this manner.

17. The codes for weather and sea conditions are given on the ~~following~~ page. following the ZTV form example

18. If water temperature data are available, enter it in columns 57-62. Water temperature should not ever go below -1.8'C. (If water temperatures are not available, note the reason why, either on the back or margins of the form.

19. Leading zeros should be in columns 1, 2, 11, 13, 36-43 only.

20. Skip a line after each GMT day.

21. Columns 64-69 are for observer's estimate of catch.

22. If you adjusted the ship's estimate (see Adjusting the Ship's Estimate in Section II), enter the adjusted ship's estimate in columns 49-54 and the original ship's estimate in columns 70-75. If you did not adjust the ship's estimate, enter the ship's estimate in columns 49-54 (columns 70-75 will be blank).

DAILY FISHING LOG

SECTION ONE - EFFORT

PAGE NO	DATE Year Month Day	VESSEL NAME	IRCS	US PERMIT NUMBER	NOON POSITION Latitude Longitude	NOON WEATHER	WIND DIRECTION FORCE	WEATHER	BARO METER	SEA CONDITION	AIR TEMPERATURE	WATER	MASTER OR OPERATOR
152	83-09-14	NAUTILUS	ICEB	UK-B6-0001	57-21N 169-17W		NW 3 m/sec	CLDY	29.7	MOD	15.1	11.5	Captain Nemo

TRAWL OR SET NO	FISHING AREA NO	GEAR TYPE	SET TIME (GMT)	SET POSITION	COURSE OF SET	SEA DEPTH (METERS)	DEPTH OF SET (METERS)	DURATION OF SET (MINUTES)	HAULING TIME (GMT)	HAULING POSITION	NO OF POTS OR LONGLINE UNITS	NO OF HOOKS PER LONGLINE UNIT	TRAWL SPEED	TRAWL MESH SIZE COD END	HAUL/SET WEIGHT ESTIMATE
114	51	OTB-2	0055	56-05N 168-58W	315.2°	88	88	480	0855	56-55N 169-22W			3.7	110	61.3
115	51	OTB-2	0935	56-10N 169-12W	314.8°	77	77	307	1442	56-56N 169-29W			4.0	110	26.7
116	51	OTB-2	1735	56-52N 169-27W	314.9°	79	79	115	1930	56-53N 169-28W			3.4	110	59.6
117	51	OTB-2	2105	56-53N 169-48W	315.1°	74	74	170	2355	56-54N 169-52W			3.3	110	75.8

SECTION TWO - CATCH

SPECIES / HAUL NO.		SQU 509	YELL 720	TURB 118	ARROW 721	OFLAT 129	POLL 701	COD 702	SAB 703	ATKA 207	POP 780	OROCK 849	OTH 499	TOTAL CATCH DAILY TOTAL	TOTAL CATCH CUM. TOTAL	PROHIBITED SPECIES SAL 210	PROHIBITED SPECIES HAL 722	MARINE MAMMALS SPECIES CODE	MARINE MAMMALS NUMBER	MARINE MAMMALS STATUS CODE
114		0	0.3	0.7	0	0.8	58.8	0.1	0	0	0	0	0.3				10			
115		0	0.1	0.3	0	0.4	26.1	0.1	0	0	0	0	0.1			2	3			
116		0	0	0.6	0	0.8	57.8	0.2	0	0	0	0	0.1				12	955	1	4
117		0	0.1	0.6	0	0.9	74.1	0.4	0	0	0	0	0.2			1	16			
DAILY DISPOSITION	C		0.5	2.2		2.4	216.8	0.8						222.7	9716.3					
	M					0.5							0.5	1.0	186.5					
	D												0.2	0.2	102.1					
AREA TOTAL	51		0.5	2.2		2.9	216.8	0.8					0.7	223.9	1829.5	3	41			
DAILY TOTAL			0.5	2.2		2.9	216.8	0.8					0.7	223.9		3	41			
CUMULATIVE TOTAL		56.6	25.7	54.9	33.1	83.7	9543.1	12.7	5.7	0	3.1	12.9	173.4		100049	109	583			

FORM 2 HAUL FORM FOR INDEPENDENT STERN TRAWLER EXAMPLE FORM

CRUISE NO.			VESSEL CODE				GEAR	YEAR	
1	2	3	4	5	6	7	8	9	10
5	3	0	N	S	7	8	3	8	3

1. LEADING ZEROS IN COLUMNS 1,2,11,13, 36-43 ONLY.
2. SKIP LINE AFTER EACH DAY.
3. ON DAYS WITH NO HAULS, ENTER DATE, NOON POSITION IN BOTH 15-23 AND 27-35, HAUL NO. = 0. NOTE REASON.

* Adjusted ship's estimate on 9/13 because nonallocated species > 10%

DATE		NOON POSITION			TRAWL POSITION			FISHING TIME		AVERAGE HAUL DEPTH (M)	AVG. SPEED (KNOT)	TOTAL CATCH (MT WITH DECIMAL PT.)	WEATHER CODE	SEA CODE	WATER TEMP. °C		Observer estimate with Dec. Pt.	Original ship est. with Dec. Pt. *
MO.	DAY	(N) LATITUDE	E/W	(I) LONGITUDE	HAUL NO.	(N) LATITUDE	E/W	(I) LONGITUDE	NETS ON BOTTOM	NETS OFF BOTTOM					SURFACE	BOTTOM		
11 12	13 14	15 16 17 18	19	20 21 22 23	24 25 26	27 28 29 30	31	32 33 34 35	36 37 38 39	40 41 42 43	44 45 46	47 48	49-54	55	56	57 58 59	60 61 62	64-69	70-75
09	09	5824	W	7614	100	5834	W	7600	1545	2235	200	3.8	40.0	2	4	10.8	1.0		
	10	5837		7619	101	5838		7624	2345	0525	146	3.5	16.0	2	4	10.0	1.0	17.1	
					102	5837		7630	0610	0920	156	3.6	35.0	2	4	10.2	1.0		
					103	5837		7607	1015	1435	150	3.8	20.0	1	3	10.2	1.0	20.5	
	10	5837		7619	104	5838		7647	1530	1850	147	3.6	12.0	1	3	10.5	1.0	12.9	
	11	5832		7620	0	5832		7620	NO FISHING - ROUGH SEAS					6	8	10.2			
	12	5836		7647	105	5836		7653	2000	0000	186	3.6	8.0	2	4	10.0	1.5	8.0	
					106	5834		7625	0145	0745	182	3.5	20.0	2	5	10.5	1.5	20.6	
					107	5836		7711	0830	1100	276	3.6	7.0	3	4	10.6	1.3		
					108	5836		7646	1200	1300	166	3.5	10.0	3	4	10.4	1.2		
09	12	5836	W	7647	109	5914	W	7810	1800	2350	156	3.8	30.0	2	5	10.4	1.0	32.3	
09	13	6121	W	7903	110	6003	W	7836	0133	0510	201	3.5	28.26	3	4	10.3	1.1		18.0
					111	6042		7858	0724	0803	236	3.5	36.3	3	3	10.1	1.0	35.4	22.0
					112	6111		7900	1000	1045	287	3.7	18.84	4	3	9.9	.9		12.0
09	13	6121	W	7903	113	6120	W	7901	1136	1349	293	3.6	15.62	3	3	10.0	.9	15.7	11.0
09	14	5721	W	6917	114	5655	W	6922	0055	0855	88	3.7	61.0	2	2	11.4	1.9		
09	14	5721	W	6917	115	5656	W	6929	0935	1442	77	4.0	27.1	2	2	11.5	1.9	27.2	
09	14	5721	W	6917	116	5653	W	6928	1735	1930	79	3.4	59.5	2	3	11.3	1.6		
09	14	5721	W	6917	117	5654	W	6952	2105	2355	74	3.3	76.3	2	3	11.3	1.7	78.1	

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SPECIES COMPOSITION AND INCIDENCE OF PROHIBITED SPECIES SAMPLING

Sampling for species composition and the incidence of prohibited species in the catches from an independent stern trawler will be accomplished in the same manner as for a joint venture processor. Therefore, please refer to the appropriate sections to review those sampling methods if needed. In most cases, observers on joint ventures have been able to sample individual hauls and record the species composition (Form 3(2)) and incidence of prohibited species data (Form 3(1)) in the same manner as for a joint venture processor. If the catches are relatively pure (consisting mainly of one or two species), you may be able to use the whole-haul method of sampling or one of its variations. If the catches of two hauls are mixed in the bins, handle the situation as you would on a joint venture--sample the combined catches but divide the sampling data proportionally by haul size and enter the data as two separate samples (note this on the form).

OTHER DATA FORMS FOR INDEPENDENT STERN TRAWLERS

Forms 4, 6, 7, 8, 9, 10, and 11 are to be filled out in the same manner as for a joint venture processor and there is no paragraph 3 in the radio message for an independent stern trawler. (Refer to the "Radio Messages" section.)

GENERAL DIRECTIONS FOR OBSERVERS ON LONGLINERS

Longliners are small independent fishing vessels of about 50 meters in length and 350-500 gross tons with a total crew complement of between 25-35 men. Longliners catch fish using a line with baited hooks attached to it (refer to the diagram in "Final Report No.2 of section II). The longline is divided into sections called "hatchi" (there are usually about 400 hatchi per longline), which are separated by weights. Each hatchi usually has 35-50 hooks which are separately attached to the longline by lengths of line called "gangen." There is typically only one longline "set" that is put out and retrieved per day, and the target species is Pacific cod, or Greenland turbot. On a longliner, the fish are removed from the hooks one at a time and immediately processed. This effort is usually labor-intensive, but it also produces a very high quality product.

SHIP ESTIMATES OF CATCH RATES

The information stated in the catch rate section for independent stern trawlers will also apply to ship estimates of catch rates on longliners (except for the bin and codend volume methods). However, longliner catches are recorded by set, and all sets are attributed to the day that the retrieval of that set was completed. Just like for joint venture ships, the only time a noon position is recorded is on a non-fishing day. (Refer to Form 1L in the following pages.)

OBSERVER ESTIMATES OF CATCH RATES

Observers on longliners should be able to estimate the total catch of each sampled longline set using the following proportion:

$$\text{Estimated catch weight} = \text{weight sampled (for that set)} \times \frac{\text{Hachi retrieved}}{\text{Hachi sampled (during all sampling periods)}}$$

Since part of the observer's catch estimate is dependent upon the number of hatchi as reported in Section I of the fishing logs, observers should try to periodically verify the number of hatchi that are being set. Some methods for determining this are as follows:

1) Actual count of hachi during the setting process.
2) Actual count of hachi between buoy sections during retrieval.
3) Overall timing of the setting of hachi with a calculation of the average number of seconds to set one hachi.
4) A conversion of miles of gear set to hachi using the video course plotter.

If some hachi are set but not retrieved due to bad weather or gear conflicts, note this in your logbook and final report. Do not include catch estimations of these lost hachi in the total catch estimation.

How to Complete a Form 1L by using the Ship's Fishing Logs

Most of the entries on Form 1L can be taken from "Section One - Effort" of the ship's "Daily Fishing Log". Copying the date and noon position onto your Form 1L from the Section One of the Fishing Log is straight forward. (Refer to the example of a Fishing Log and Form 1L that follows.) The set number will either be a "1" or "2" depending on whether the ship finished retrieving one or two sets that day. The table shown below, should assist you in transferring other Fishing Log entries onto Form 1L. Be aware that the Fishing Log formats can vary, but they must at least contain the items and information shown in the following example.

Fishing Log Entry:	(is equivalent to)	Form 1L Entry:
Depth of Set (meters)	.....	Average Depth (m)
Duration of Set (minutes)	.....	Fishing Time (hours)
Hauling Position	.....	End Position of Set
No. of Pots or Longline Units	.....	No. of Hatchi
No. of Hooks per Longline Unit	.....	Average No. Hooks/Hatchi

Weather and sea codes (coded as shown in this manual) and surface and

watch, in some regular format. The approved Japanese Fishing Logs have columns for this information by set, but their weather and sea coding systems may be different.

The "Total Set Catch (mt)" entry in columns 39-41 of the Form 1L is obtained by totaling the species groups entries by set in "Section Two-Catch" of the Daily Fishing Log. (Refer to the examples below.) If you adjust the ship's total catch weight, refer to item number 17 of the Form 2 instructions for proper entry.

FORM 1L - DAILY CATCH SUMMARY FOR LONGLINERS

This form summarizes longliner fishing effort by each line retrieved. The data for this form should be obtainable from the ships "Daily Fishing Log". While you copy information from the fishing logs onto the form 1L, make sure that the information is recorded properly and that no errors have been made in transposition. Points to note:

1. The set number in column 8 will usually be 1, since normally only one set is retrieved per day. Occasionally a longliner may complete retrieval of two different sets on a day; if so, they should be labeled 1 and 2.

2. The date of the set should be the date (GMT) that the retrieval of that set was completed.

3. The time system used (on this and all other forms) should be GMT. According to the fishery management regulations, the fishing logs will also be kept in GMT.

4. Check the latitude and longitude for the position of the ship at the time retrieval was completed. Make sure it is reasonable - i.e., 58 degrees 63 min. does not exist; doublecheck positions that indicate large movements if you have not been aware of any.

5. The first digit of longitude (1) is understood, so record only the following digits.

6. Average depth - we are aware that since lines are long, there may be quite a range of depths which are averaged.

7. The approximate fishing time (recorded in tenths of an hour) should represent the time interval from the time the first part of the line was laid until the time the last of the set 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.

8. The number of hachi (columns 34-36) should represent the number of line units that are retrieved, not necessarily the number that are set. If possible, however, keep track of the number of hachi that are lost and include that in your daily log and final report.

9. The total set catch should represent the weight of all of the fish and invertebrates caught on that particular line that ended retrieval that day, whether or not it was landed. This should not include losses due to sea lion or killer whale predation, however, since that would be difficult to determine. Heavy predation should be noted in

your logbook, final report and on form 3L(2).

10. If no set retrieval is completed on a given day (due to bad weather, transfer of cargo, traveling, etc.), enter the noon position of the longliner in columns 18-26, leave average fishing depth and fishing time blank, and enter 1 in the set no. (column 8). You can comment on the reason there was no fishing in columns 39-47.

11. The average number of hooks per hachi should be recorded in columns 42-47. This number usually remains constant throughout the cruise. Sometimes a line consists of alternating hachi with different numbers of hooks--find out what the pattern is and note this in your final report.

12. The codes for weather and sea condition are given in the "Catch Rates" section for Independent Stern Trawlers.

13. If water temperature information is available, enter it in columns 57-62. Water temperature should never go below -1.8 degrees C.

14. Leading zeros should be in columns 1, 2, 14, and 16 only.

15. Skip a line after each day.

16. Columns 67-69 are for observer's estimate of catch size.

17. If you adjusted the ship's estimate, enter the corrected ship's estimate in columns 39-41 and the original ship's estimate in columns 73-75. If you did not adjust the ship's estimate, enter the ship's estimate in columns 39-41 (columns 73-75 will be blank). If you are filling out an old Form 1L, which is missing the columns 73-75, the observer's estimate goes in unmarked columns 67-69, and the original ship's estimate should be written in the margin next to column 69.

DAILY FISHING LOG

SECTION ONE - EFFORT

PAGE NO	DATE Year Month Day	VESSEL NAME	IRCS	U.S. PERMIT NUMBER	NOON POSITION Latitude	Longitude	NOON WEATHER	WIND DIRECTION	FORCE	WEATHER	BAROMETER	SEA CONDITION	AIR TEMPERATURE		MASTER OR OPERATOR
135	83-10-25	Zekubu Maru	JALL	JA-83-9991	58-47	178-00		NW	3m/sec	CLDY	29.7	MOD	12.1	8.0	Captain Song

TRAWL OR SET NO	FISHING AREA NO	GEAR TYPE	SET TIME (GMT)	SET POSITION	COURSE OF SET	SEA DEPTH (METERS)	DEPTH OF SET (METERS)	DURATION OF SET (MINUTES)	HAULING TIME (GMT)	HAULING POSITION	NO OF POTS OR LONGLINE UNITS	NO OF HOOKS PER LONGLINE UNIT	TRAWL SPEED	TRAWL MESH SIZE COD END	HAUL/SET WEIGHT ESTIMATE
351	54	LLS	0100	58-38N 178-01W	315.1°	775	775	1050	1830	58-50N 178-01W	420	45			14.0

SECTION TWO - CATCH

SPECIES / HAUL SET NO.	TURB 118	ARROW 721	OFLAT 129	POLL 701	COD 702	SAB 703	ORDCK 849	OTH 499							PROHIBITED SPECIES HAL 722				MARINE MAMMALS SPECIES CODE	NUMBER	STATUS CODE
351	0.7	0.2	0.5	1.3	1.7	7.2	0.1	2.3							39						
DAILY DISPOSITION C	0.7			1.3	1.7	7.2	0.1	0.1													
DAILY DISPOSITION M																					
DAILY DISPOSITION D		0.2	0.5					2.2													
AREA TOTAL 51	0.7	0.2	0.5	1.3	1.7	7.2	0.1	2.3													
DAILY TOTAL	0.7	0.2	0.5	1.3	1.7	7.2	0.1	2.3													
CUMULATIVE TOTAL	56.1	32.2	30.3	22.7	230.8	321.9	41.7	156.7													

TOTAL CATCH DAILY TOTAL	TOTAL CATCH CUM. TOTAL
11.1	598.1
2.9	294.3
14.0	371.4
14.0	
	892.4

FORM 1L DAILY CATCH SUMMARY FOR LONGLINERS

CRUISE NO.	1	2	3	VESSEL CODE	4	5	6	7	GEAR CODE	11	YEAR	12	13
	1	3	1		N	L	0	6		8		8	3

NOTE - 1. IF REMARKS ARE NECESSARY, RECORD ON SEPARATE PAGE; USE VESSEL NAME AND DATE AS REFERENCE.
2. LEADING ZEROS IN COLUMNS 1, 2, 14, AND 16 ONLY.
3. COLUMNS 9-10, 37-38, 63-66 (NOT SHOWN) ARE BLANK.
4. SKIP LINE AFTER EACH DAY.

* Adjusted Orig. Ship's Est. to include Non-allocated

SET NO.	DATE MO.	DATE DAY	END POSITION OF SET (N) LATITUDE	E W	(I) LONGITUDE	SET DATA AVERAGE DEPTH (M)	SET DATA FISHING TIME (HOURS)	NO. OF HACHI	TOTAL SET CATCH (MT) *	AVERAGE NO. HOOKS/HACHI (RIGHT ADJUST)	WEATHER CODE	SEA CODE	WATER TEMP.°C SURFACE	WATER TEMP.°C BOTTOM	OBSERVER ESTIMATE (MT)	ORIGINAL SHIP ESTIMATE (MT) *
8	14 15	16 17	18 19 20 21	22	23 24 25 26	27 28 29 30	31 32 33	34 35 36	39 40 41	42-47	55	56	57 58 59	60 61 62	67 68 69	73 74 75
1	10	19	5850	W	7801	775	17.5	420	11.4	45	1	4	8.0	.	8.2	8.5
1	10	20	5815	W	7828	785	12.8	420	16.5	45	1	4	8.0	.	16.2	12.1
1	10	21	5810	W	7839	815	12.0	420	8.6	45	2	4	8.0	.	8.7	7.4
2	10	21	5800	W	7850	725	14.3	320	10.1	45	8	5	7.0	.	9.8	5.3
1	10	22	5800	W	7850			NO	FISHING	—	8	7	TOO ROUGH			
1	10	23	5755	W	7901	765	11.5	420	9.5	45	8	5	7.0	.	9.8	6.4
1	10	24	5813		7832	790	13.3	350	8.3	45	8	3	8.0	.	8.3	6.7

OBTAINING SPECIES COMPOSITION ON LONGLINERS

Unlike the situation on an independent mothership or stern trawler, all of the fish from a longline set are not dumped at once into a bin. On longliners, the catch comes up one fish at a time and the fish are usually processed as they come aboard. Many observers have noted "patchiness" of fish on a longline set. The change in species composition in different portions of the set makes it difficult to get samples that are representative of the entire set. The only solution to this problem is to try to get as large a sample size as possible; sample large portions of the longline set.

The large size of both sablefish and Pacific cod makes sampling a large portion of the set difficult, since the sample baskets fill up quickly but contain few fish. A sampling system has been devised to try to reconcile some of these problems. Determine which species dominates the catch at a given time--it may be sablefish, Pacific cod, or rattails. As this chosen species is brought aboard during your sampling period, tally the number of these fish using a thumb counter or a stroke-tally on a plastic sheet. (As you gain in proficiency, it may be possible to tally up to three species at once, such as sablefish and rattails.) Include in your count, fish that drop off the hooks and are missed by the gaffer. Place in your sample baskets everything else that comes up on the line--including those organisms that are normally not wanted and are usually knocked off the hooks so that they are not brought aboard (such as crabs, halibut, sea anemones, sea cucumbers, etc.). Do not bother to include rocks, old fishing gear, etc.--only organisms. Note also how many hatchi were retrieved during the sampling period using a thumb counter or a stroke--tally on a plastic sheet. Sort the samples by species, weigh each species group, and count the

FORM 1L DAILY CATCH SUMMARY FOR LONGLINERS

CRUISE NO.	1	2	3	VESSEL CODE	4	5	6	7	GEAR CODE	11	YEAR	12	13
	1	3	1		N	L	0	6		8		8	3

NOTE - 1. IF REMARKS ARE NECESSARY, RECORD ON SEPARATE PAGE; USE VESSEL NAME AND DATE AS REFERENCE.
2. LEADING ZEROS IN COLUMNS 1, 2, 14, AND 16 ONLY.
3. COLUMNS 9-10, 37-38, 63-66 (NOT SHOWN) ARE BLANK.
4. SKIP LINE AFTER EACH DAY.

* Adjusted Orig. Ship's Est. to include Non-allocated

SET NO.	DATE MO.	DATE DAY	END POSITION OF SET (N) LATITUDE	E W	(I) LONGITUDE	SET DATA AVERAGE DEPTH (M)	SET DATA FISHING TIME (HOURS)	NO. OF HACHI	TOTAL SET CATCH (MT) *	AVERAGE NO. HOOKS/HACHI (RIGHT ADJUST)	WEATHER CODE	SEA CODE	WATER TEMP.°C SURFACE	WATER TEMP.°C BOTTOM	OBSERVER ESTIMATE (MT)	ORIGINAL SHIP ESTIMATE (MT) *
8	14 15	16 17	18 19 20 21	22	23 24 25 26	27 28 29 30	31 32 33	34 35 36	39 40 41	42-47	55	56	57 58 59	60 61 62	67 68 69	73 74 75
1	10	19	5850	W	7801	775	17.5	420	11.4	45	1	4	8.0	.	8.2	8.5
1	10	20	5815	W	7828	785	12.8	420	16.5	45	1	4	8.0	.	16.2	12.1
1	10	21	5810	W	7839	815	12.0	420	8.6	45	2	4	8.0	.	8.7	7.4
2	10	21	5800	W	7850	725	14.3	320	10.1	45	8	5	7.0	.	9.8	5.3
1	10	22	5800	W	7850		.	NO	FISHING	—	8	7	TOO ROUGH		.	.
1	10	23	5755	W	7901	765	11.5	420	9.5	45	8	5	7.0	.	9.8	6.4
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individual organisms in each group as you would in any other form of basket sampling. As close as possible to your sampling period, gather several baskets of the species that you tallied, making sure that you get every fish in your representative sample. Weigh the baskets and count the fish to obtain an average weight of the tallied species. (You will also be able to use these fish for your length frequency sample, if desired.) Multiply the average weight of the tallied species times the number tallied to obtain the total weight of those fish brought aboard during your sampling period.

Some observers have found it convenient to make their tallies from the deck immediately above the longline pit, since it is less dangerous during rough weather and they were able to obtain a good view of the fish coming up on the line without getting in the way. If this alternative is chosen, make sure that from your vantage point (whether above the pit or on the fishing deck) you can watch the crew place all of the non-tallied species in your baskets. Obviously, this method requires a good deal of cooperation and understanding on the part of the crew, so it may not be possible to use this sampling method on board your vessel.

If you are unable to use the above sampling method, or for the first few days until you become familiar with the fish and fishing operation, you may wish to resort to the following easier sampling method. Simply place all of the catch in your sample baskets until they are filled. Note how many hatchi (hooks) it takes to fill the baskets. Take as many basket samples as possible to increase the sample weight. Weigh and count the species groups as you would on an independent stern trawler.

FORM 3L(2) - RECORDING SPECIES COMPOSITION ON LONGLINERS

This form is filled out much like a Form 3(2) for stern trawlers except for the following differences:

1. Remember that the date of the sample should correspond to the information on Form 1L. The date should thus be the day the retrieval of the longline set was completed.

2. Set numbers should be recorded in columns 15, 20, and 25 and sample numbers should be recorded in columns 17, 22, and 27. The first sample of each set should be numbered 1; the second - 2; the third - 3; and so on. The next set, start over again with sample number 1. Therefore, if you want to refer to a given sample in your report, you must give both the date and the set-sample number.

3. Note the number of hachi that were sampled for species composition during each sampling period, and place in columns 18-19, 23-24, and 28-29.

4. Note in "Remarks" heavy predation on the set catch by sea lions or killer whales.

5. If the tally system was used to count the dominant species in the catch, record the number of fish tallied in columns 35-40. In a non-keypunched portion of the form (see example form), record the data on the baskets of dominant species that were collected at about the same time as each sampling period--note the sample number, the number of fish in the baskets, the weight of those fish, and the calculated average weight. Multiply that average weight times the number of that species tallied during that sampling period and record the weight in columns 41-49, opposite the tallied number. Enter the species names, species codes, numbers and weights of the bycatch taken during the sampling period. Total the weights of all the species to get the estimated weight of all the organisms that came up on the line during the sampling period and enter this figure in columns 41-49, opposite the species code 999 (see example form). Total the numbers of specimens in each sample at the top of the column, in line 999. If all species were placed in the baskets during the sample period, record the actual counts and weights in columns 35-40 and 41-49, as you would for basket sampling on a stern trawler.

FORM 3L (2)

SPECIES COMPOSITION FROM BASKET SAMPLES ON LONGLINERS

Leading zeros in columns 1, 2, 10, 12 only.

* Indicates weight obtained by subtraction from total sample weight.

EXAMPLE OF DATA FROM A LONGLINE VESSEL

CRUISE NO.			VESSEL CODE				YEAR		MO.		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13
4	7	5	N	L	0	6	8	3	1	0	2	0

REMARKS: SEALI[illegible] WERE PRESELECTING SABLEFISH IN FIRST SAMPLE. BREAKS OCCURED DURING THE 2ND & 3RD SAMPLES

FIRST SAMPLE						SECOND SAMPLE						THIRD SAMPLE					
Set No.	Sample No.		No. of hachi		Time 0845	Set No.	Sample No.		No. of hachi		Time 1430	Set No.	Sample No.		No. of hachi		Time 1820
15	16	17	18	19		20	21	22	23	24		25	26	27	28	29	
1		1	4	0	No. of baskets = 5	1		2	3	5	No. of baskets = 8	1		3	5	0	No. of baskets = 4

SPECIES	SPECIES CODE			NUMBER						WEIGHT (in kg with decimal pt.)	NUMBER						WEIGHT (in kg with decimal pt.)	NUMBER						WEIGHT (in kg with decimal pt.)	TOTALS FOR THE DAY		
	32	33	34	35	36	37	38	39	40	41–49	50	51	52	53	54	55	56–64	65	66	67	68	69	70	71–79	No.	Weight	Avg. wt. (kg)
No. of specimens and total basket weight	9	9	9				4	4	3	1431.09				4	8	8	1303.33				8	0	8	2097.45	1739	4831.87	
SABLEFISH	2	0	3				2	1	4	778.96				2	2	1	640.9								435	1419.86	
SHORTSPINE THORNYHD	3	5	0					3	6	40.6					1	0	6.3					5	6	52.5	102	99.4	
PECTORAL RATTAIL		8	2				1	8	1	579.2				2	2	7	590.2								408	1169.4	
UNIDENT. SKATE		9	0						6	14.8															6	14.8	
PACIFIC HALIBUT	1	0	1						6	17.53					1	7	48.03					1	2	33.55	35	99.11	
RED KING CRAB		1	3													1	1.2						2	6.48	3	7.68	
ROUGHSCALE RATTAIL		8	1													5	5.0								5	5.0	
SHORTRAKER ROCKFISH	3	2	6													7	11.7								7	11.7	
PACIFIC COD	2	0	2																		6	7	5	1858.4	675	1822.5	
WALLEYE POLLOCK	2	0	1																			3	5	108.5	35	108.5	
GOLDEN KING CRAB			8																				1	1.02	1	1.02	
Greenland Turbot	1	0	2																			2	7	37.0	27	37.0	

#1 47 SABLEFISH = 150.4 Kg
avg = 3.64 Kg
#1 38 P. RATTAILS = 138.3 Kg
avg = 3.20 Kg

#2 51 SABLEFISH = 147.9 Kg
AVG = 2.90
#2 33 P. RATTAILS = 85.8
avg = 2.60 Kg

#3 62 COD = 167.4 Kg
avg = 2.70 Kg

GPO 989-454

DETERMINING INCIDENCE OF CRAB, HALIBUT, AND SALMON

On longliners, the incidence data is taken from the same sample as the species composition. Both species composition and prohibited species sampling can be accomplished at the same time and will have the same sample weight. Refer to the appropriate section for stern trawlers for a complete discussion of prohibited species sampling.

OTHER NOTES FOR LONGLINERS

Remember that often on a longline vessel you cannot immediately work with the prohibited species that are being saved for you because you are too busy tallying species as the line comes on board. If the halibut and crab are kept for you for some time out of water, the condition of the halibut and crab will be affected by your sampling procedure. You may be able to have a salt water tank constructed to hold the halibut and crab, until you are able to work with them. If you are unable to get viability information as part of your ordinary sampling procedure, then try to sample specifically for viability of halibut and crab at least twice a week. Using the table in the independent stern trawler section giving the definitions of "excellent," "poor," and "dead" condition for longliners, note the number of halibut and crab in each category. The viability estimate should be the estimate of the halibut and crab condition upon release to the sea. Do not guess the condition of animals that you do not personally examine. If the sample of halibut checked for viability is a subsample of the incidence of prohibited species sample, make certain that the subsample is a representative one.

FORM 3L(1) - INCIDENCE OF CRAB, HALIBUT, AND SALMON ON LONGLINERS

Incidence data on longliners should be reported in much the same way as on stern trawlers except for the following differences:

1. Record the set number in columns 20, 40, and 60 and sample number in columns 22, 42, and 62.

2. Record the number of hachi sampled for each sampling period in the appropriate column.

3. If more than 99 individuals of a species are observed from a given sampling period, there is a minor difficulty in recording it on the form. Simply divide the sample wt., no. of hatchi, no. observed, no est. or weighed, and total wt. entries by halves or thirds (to the nearest whole number of fish) as is necessary and enter the data in the next one or two fields on the data form. Flag this data with the notation, "split data", on the right side of the form. Repeat the same sample no. in each divided field. Number your pages straight through as usual. This will alleviate the problem of not being able to record more than 99 individuals in one field. (Note: a field is the no. of keypunch columns on a data form that are assigned to one sample. For example, columns 20-39, 40-59 and 60-79 are the three fields of Form 3L(1).)

FORM 3L (1) INCIDENCE OF CRAB, HALIBUT, AND SALMON ON LONGLINERS

Cruise No.	1	2	3	Vessel Code	4	5	6	7	Date	YEAR 8	9	MO. 10	11	DAY 12	13	14
	4	7	5		N	L	0	6		8	3	1	0	2	0	1

*A = Actual data obtained by weighing or measuring
E = Estimated weight

LONGLINER EXAMPLE

FIRST SAMPLE

SPECIES	SPECIES CODE 17	18	19	Set No. 20	Sample Number 21	22	SAMPLE WEIGHT (MT) 23	24	25	26	No. Hachi 27	28	29	No. Observ 30	31	No. Est or Weigh 32	33	TOTAL WEIGHT (KG) 35	36	37	38	39	AVG. WEIGHT	A/E*	NO.	TOTAL WEIGHT
KING CRAB			2	1		1		1	4	3		4	0													
TANNER CRAB			3					1	4	3		4	0													
PACIFIC HALIBUT	1	0	1					1	4	3		4	0		6		6		1	7	5	3	2.92	A	6	17.53
SALMON	2	2	0					1	4	3		4	0													

SECOND SAMPLE

SPECIES	40	41	42	43	44	45	46	47	48	49	50	51	52	53	55	56	57	58	59	AVG. WEIGHT	A/E*	NO.	TOTAL WEIGHT
KING CRAB	1		2		1	3	0		3	5		1		1			1	2	0	1.20	A	1	1.20
TANNER CRAB					1	3	0		3	5													
PACIFIC HALIBUT					1	3	0		3	5	1	7	1	6			4	5	2	0	2.83	A	14	39.2
																						E	2	6.0
SALMON					1	3	0		3	5													

THIRD SAMPLE

SPECIES	60	61	62	63	64	65	66	67	68	69	70	71	72	73	75	76	77	78	79	AVG. WEIGHT	A/E*	NO.	TOTAL WEIGHT
KING CRAB	1		3		2	1	0		5	0		3		3			7	5	0	2.50	A	3	7.50
TANNER CRAB					2	1	0		5	0													
PACIFIC HALIBUT					2	1	0		5	0	1	2	1	2			3	3	5	5	2.80	A	12	33.55
SALMON					2	1	0		5	0													

FORM 4 - SPECIES COMPOSITION OF SALMON, KING CRAB, TANNER CRAB; VIABILITY OF HALIBUT, KING CRAB AND TANNER CRAB

Form 4 is filled out in the same manner as for a stern trawler except that the set number is recorded in column 14 and the sample number in column 16. Sample numbers should correspond to the incidence sample from which the prohibited species were collected.

FORM 7 - LENGTH FREQUENCY OF MEASURED SPECIES

This form is completed in the same manner as for a stern trawler except that the set number is recorded in column 17 and the sample number is not needed. Therefore, since this form does not require data by sampling period, the data for different sampling periods within a set should be combined. The easiest way to do this is to use one measuring strip for the whole set and record it all at once at the end of the day. Care must be taken to insure that the data are not scrubbed off the plastic forms between samples.

FORM 9 - LIST OF OTOLITHS AND SCALES

This form is filled out using the same procedures as for a stern trawler except that the set number is recorded in column 26.

OTHER FORMS

Form 8 is filled out in the same way as for a stern trawler. Form 10 is not filled out for a longliner, and Forms 11A and B are filled out as described in "Observations of Marine Mammals" in Section II of the manual.

GENERAL DIRECTIONS FOR OBSERVERS ON INDEPENDENT MOTHERSHIPS

"Motherships" are very large Japanese processing vessels which are 150-200 meters in length, 10,000-25,000 gross registered tons and have a total crew compliment of between 300-500 men. A mothership does not fish for itself but has smaller vessels fishing for it and delivering their catches to her by transferring the codends. This is a similar arrangement to a joint venture and in fact, in a joint venture, the processor is often referred to as a "mothership". However, in this case the mothership operation does not involve U.S. catcher boats and is an independent fishing operation and not a joint venture. The smaller fishing vessels usually consist of pair trawlers, Danish seiners, or dependent stern trawlers. Motherships usually target on pollock or yellowfin sole and fish in the Bering Sea from May-November. There are usually two observers placed aboard each mothership.

SHIP ESTIMATES OF CATCH RATES

The information and methods described in the catch rate section for independent stern trawlers will also apply to ship estimates of catch rates on motherships. However, on most motherships, the codends are actually weighed as they are lifted on board the mothership from the side of the vessel, rather than being pulled up a trawl ramp. Another difference is in recording the catch rate estimates on motherships. The Daily Catch Summary (Form 1) record will be in total tonnage by vessel type (pair trawlers, Danish seiners, and dependent stern trawlers) for the day. Form 1 replaces Form 2 which is used for independent stern trawlers.

OBSERVER ESTIMATES OF CATCH RATES

On motherships, catch estimates by bin volume or codend measuring techniques are impractical to obtain. As part of your sample routine or to watch codend deliveries, you probably will be frequenting the "scale room" where codends are individually weighed as they are hoisted aboard the mothership. If possible, verify catch estimates by monitoring all of the deliveries of a particular catcher boat type in a day. Be careful to account for the tare weight which is the weight of a wet, empty codend. This tare weight may be adjusted for on the scale and periodically checked with an empty net, or the tare weight may be routinely subtracted from the readout figure. Record the procedure and the tare weight in your logbook. Another method to verify an individual codend weight would be to have that codend dumped into a premeasured empty deck bin in which you could determine the volume and then apply a calculated density to estimate the weight. Next, compare your estimated weight figures to the tonnage figures the ship's officers are recording in the fishing logs. If there are significant discrepancies, you should begin the process of discovering why. This project should be started early in your cruise as it gives you a good perspective on the operation of the particular mothership.

How to Complete a Form 1 by using the Ship's Fishing Logs

Some of the entries on Form 1 can be taken from "Section One - Effort" of the ship's "Daily Consolidated Log". Copying the date and noon position onto your Form 1 from the Section One of the Fishing Log is straight forward. (Refer to the example of a Fishing Log and Form 1 that follows.) Be aware that the Fishing Log formats can vary, but they must at least contain the items and

information shown in the following example.

Weather and sea codes, (coded as shown in this manual) surface and bottom water temperatures, ave. depth and duration, and no. of tows, will have to be provided by the ship's officer on watch, in some regular format. The approved Japanese Fishing Logs have columns for this information, but their weather and sea coding systems may be different so be careful.

The "Total Daily Catch (mt)" entry in columns 37-41 of the Form 1 is obtained by totaling the species groups entries by vessel in "Section Two-Catch" of the Daily Consolidated Log. (Refer to the examples below.) They will have to be grouped according to vessel type (i.e. pair trawler, danish seiner, or stern trawler). You may have to ask the vessels officers to identify the vessel types, since the fishing logs will only list information by vessel name and not type.

FORM 1 - DAILY CATCH SUMMARY FOR INDEPENDENT MOTHERSHIPS

This form summarizes all fishing effort of the various catcher boats in the mothership fleet by day and gear type. If the mothership has eight pair trawlers, the combined data for all eight on a particular day is what is entered on the "pair trawler" line. The data for this form should be obtainable from the fishing logs. After you have filled out the form 1 information, check to see that it is recorded properly and that no errors have been made in transposition. Points to note:

1. A number corresponding to catcher boat type should be entered in column 11 to indicate trawl gear (see gear code under "Catch Rates" in the Independent Stern Trawlers Section).

2. For hauls spanning midnight GMT time, the date of the haul, columns 12-17, is the date it was landed on the mothership.

3. The noon position, columns 18-26, should be the position of the mothership at noon GMT time, not the position of the catcher boats - thus there should be only one noon position per day. Use brackets and arrows to indicate the application of that one noon position to all vessel types for the day.

4. Check the latitude and longitude to make sure it is reasonable - i.e., 58 degrees 68 mins. does not exist; doublecheck positions that indicate large movements if you haven't been aware of any.

5. The first digit of the longitude (1) is understood, so record only the following digits.

6. The times and dates for noon or midnight (and all other times logged on the forms) should be GMT time. According to the fishery management regulations, the fishing logs should be kept in GMT time.

7. The total daily catch should represent the weight of all of the fish and invertebrates landed on the mothership, plus any catches that were made and dumped that day instead of being delivered for processing (sometimes done by scout vessels).

8. If one vessel type did not fish on a given day, or if none of the catcher boats fished on that day, enter the noon position of the mothership as usual, leave the average depth blank, put a "1" in ave. duration, and enter 0 in no. of tows. You can comment on the reason there was no fishing in columns 27-34 only.

9. Average depth and duration should not have a decimal point.

10. The codes for weather and sea conditions are to be found under "Catch Rates" in the Independent Stern Trawler Section.

11. If water temperature information is available, enter it in columns 57-62. Water temperature should never go below -1.8 degrees C.

12. Leading zeros should be in columns 1, 2, 14, and 16 only.

13. Skip a line after each day.

DAILY CONSOLIDATED LOG

SECTION ONE - EFFORT

PAGE NO.	DATE Year/Month/Day	VESSEL NAME	IRCS	U.S. PERMIT NUMBER	NOON POSITION Latitude	Longitude	NOON WEATHER	WIND DIRECTION/FORCE	WEATHER	BARO-METER	SEA CONDITION	AIR/WATER TEMPERATURE		MASTER
42	83-08-31	Mothership Maru	XA35	VK-86-0024	58-16N	173-41W		NW 12m/sec	CLDY	29.7	ROUGH	15.1	7.5	Captain Sano

SECTION TWO - CATCH

VESSEL / IRCS	SPECIES / AREA	SQU 509	YELL 720	TURB 118	ARROW 721	OFLAT 129	POLL 701	COD 702	SAB 703	ATKA 207	HER 209	OTH 499	PROHIBITED SPECIES SAL 210	PROHIBITED SPECIES HAL 722	MARINE MAMMALS SPECIES CODE	MARINE MAMMALS NUMBER	MARINE MAMMALS STATUS CODE
KAIKO-8 JAXO	52	0	0	0.17	0.09	0.12	101.5	1.33	0	0.06	0	0.05					
EBISU-21 K3PD	52	0	0	0.09	0.06	0.11	99.8	1.54	0	0	0.05	0.10					
SHUYO CTIY	52	0	0	0.07	0.04	0.15	132.6	1.35	0	0.09	0.08	0.13	1				
MITSU-44 JPPA	52	0	0	0.18	0.11	0.09	89.7	1.18	0	0.11	0.06	0.08					
KAIUN-2 KORI	52	0	0	0.17	0.10	0.08	95.9	1.09	0	0	0	0.09					
OTOHIME 7J5T	52	0	0	0.20	0.08	0.10	112.1	1.76	0	0.08	0.07	0.06			998	1	3
HOKKO-7 F361	52	0	0	0.16	0.07	0.12	106.4	1.82	0	0	0.09	0.12	2				
HOKKO-16 JA45	52	0	0	0.10	0.09	0.10	115.4	1.37	0	0.07	0	0.09					
WAKABA 8STB	52	0	0	0.13	0.08	0.14	103.7	1.44	0	0	0	0.06					
DAILY DISPOSITION C				1.27	0.72	1.01	957.1	12.88		0.41			TOTAL CATCH DAILY TOTAL: 973.39	CUM. TOTAL: 25201.7			
DAILY DISPOSITION M												0.78	0.78	36.4			
DAILY DISPOSITION D											0.35		0.35	10.8			
AREA TOTAL	52			1.27	0.72	1.01	957.1	12.88		0.41	0.35	0.78	974.52	25248.9	3		
DAILY TOTAL				1.27	0.72	1.01	957.1	12.88		0.41	0.35	0.78	974.52	X	3		
CUMULATIVE TOTAL				43.5	31.6	62.4	24969.5	35.9		25.5	15.8	64.7	X	25248.9	77		

Form 1 **Daily Catch Summary for Motherships**

EXAMPLE OF MOTHERSHIP DAILY CATCH

Cruise No.	1	2	3	Vessel Code	4	5	6	7	Year	12	13
	4	5	9		N	M	O	5		8	3

NOTE:
1. If remarks are necessary, record on separate page; Use vessel name and date as reference.
2. Leading zeros in columns 1, 2, 14 and 16 ONLY.
3. Columns 8-10, 42-46, 49-54 (not shown) are blank.
4. Skip line after each day.

Vessel Type	GEAR	DATE Mo.	DATE Day	Noon Position (N) Latitude	E W	Noon Position (1) Longitude	Tow Data Average Depth (M)	Tow Data Average Duration (Mins.)	No. of Tows	Total Daily Catch (MT)	Av. Sp. Knts.	Weather Code	Sea Code	Water Temperature °C Surface	Water Temperature °C Bottom
	11	14 15	16 17	18 19 20 21	22	23 24 25 26	27 28 29 30	31 32 33 34	35 36	37 38 39 40 41	47 48	55	56	57 58 59	60 61 62
Pair	1	08	31	5816	W	7341	116	239	18	316.1	1.8	2	5	11.3	1.0
Danish	2	↓	↓	↓	↓	↓	116	60	41	541.2	3.8	↓	↓	11.3	1.0
Stern Trawler	3	08	31	5816	↓	7341	142	230	4	117.2	3.0	2	5	11.3	-1.0
Pair	1	09	01	5833	↓	7347	127	242	18	12.0	1.8	2	6	11.0	-1.3
Danish	2	↓	↓	↓	↓	↓	120	95	13	56.0	3.5	↓	↓	↓	-1.3
Stern Trawler	3	↓	01	5833	↓	7347		1	0	.	.	2	6	11.0	.
Pair	1	↓	02	5856	↓	7357	(No Fishing -	Too Rough) 1	0	.	.	6	7	10.8	.
Danish	2	↓	↓	↓	↓	↓	"	" 1	0	.	.	↓	↓	↓	.
Stern Trawler	3	09	02	5856	W	7357	"	" 1	0	.	.	6	7	10.8	.

OBTAINING SPECIES COMPOSITION ON INDEPENDENT MOTHERSHIPS

At any one time the unloading bin of the mothership contains a mixture of several hauls, and upwards to 200-400 metric tons. Due to the mixing of landed hauls, possibly from several types of catcher boats, the observer usually selects "sampling periods" rather than any one individual haul to conduct sampling. Data should be attributed to these sampling periods even when individual codends are sampled. The sampling periods, as mentioned before, should be selected from different times of the day to effectively represent all the net-landing periods. Most of the sampling cautions for observers on independent stern trawlers apply equally to observers on motherships. Sampling conditions on motherships warrant a few additional considerations, however. Crews aboard some catcher boats (usually Danish seiners and dependent stern trawlers) have been known to do some sorting of the catch before delivering it to the mothership. If you know that to be true, attempt to avoid the presorted catches.

Basket sampling has long been the traditional method of obtaining species composition data on motherships. This is the recommended method to use when you are just starting your cruise and are unfamiliar with your situation, when the catch is diverse in composition, or when other sampling methods cannot be employed. Other methods which yield larger sample weights should be used whenever possible. Some of the sampling schemes successfully used have been:

1) Bin volume - Though most mothership bins are much too large to permit accurate measurements of volume, smaller temporary holding bins may be in use which could be utilized if the catch transferred to them is still unsorted.

2) Codend sampling - If a net of fish being landed can be dumped in a

separate bin or area of a bin, the sample weight would be the delivered weight as determined from the scale reading. One of the observers should be in the scale room to direct the landing of codends to be sampled to a separate area and to read and verify their scale weight.

3) Conveyor belt monitoring - In this process, you measure the volume of fish passing a given point on the conveyor belt during a specified length of time and convert the volume to weight. Ideally, the belt should run at a constant speed, and the fill and depth of fish on the belt should be constant. Then:

Depth of fish (m)	x	Width of belt (m)	x	belt speed (m/minute)	x	minutes sampled	=	volume of fish in sample (m3)

Volume (m3)	x	weight per volume (kg/m3)	=	sample weight (kg)

The weight per volume of fish (density) can be determined from basket samples, as explained under "Observer estimates of catch rates" in the stern trawler section, or by weighing all of the fish from a marked section of the conveyor belt (obtained when the belt is stopped). The marked section is measured (length x width x depth) for volume. An example of calculating the tonnage of fish and crabs passing the observer is as follows: 0.058 m (depth of fish on belt) x 0.4 m (width of belt) x 26.3 m/min. (belt speed) x 30 min. (period of observation) = 18.3048 m3 (volume of fish observed) x 940 kg/m3 (density of fish and crabs determined from basket samples) = 17206.512 kg (sample weight).

To keep the belt uniformly filled at a constant depth, the cooperation of the crewmen shoving fish onto the belt is needed and the use of a skimmer board helps. The crewmen working in the bins should be watched to ensure no presorting is taking place.

A variation to the typical belt monitoring situation was discovered on one mothership where a belt with vertical partitions in it scoops up fish. With this kind of a belt, the sample weight is calculated by:

average speed (scoops/minute)	x	minutes sampled	x	average weight of fish per scoop (kg/scoop)	=	sample weight (kg)

The samples taken by the methods described in 1-3 above are all processed in a similar manner. All bycatch is sorted out, identified to species, counted and weighed. Baskets (four or more) of target species are collected, counted, and weighed to determine average weight of the target species. Then:

$$\left(\text{total sample weight} - \frac{\text{bycatch weight}}{\text{total weight of target species}}\right) \;\&\; \frac{\text{total wt. of target}}{\text{avg. wt. of target}} = \text{number of target species}$$

As explained in the stern trawler section, this partial whole-haul method can be adapted for use when two species are prevalent in the catch. The catch has to be fairly pure to permit the sorting and removal of all bycatch. High rates of bycatch can make the sorting and removal work overwhelming. On motherships, however, extra assistants can usually be called in to assist in sorting bycatch when needed. The observer must decide when to call for extra assistance versus reducing the sample size when the rate of bycatch increases.

For radio messages, mothership observers sum their sample weights (and weights by species groups) for the day and extrapolate the data from the day's total of sample weights up to the day's total catch (a one-step RM-1 extrapolation). If sample weights within a day vary widely, the smaller samples will be underrepresented in the results of the extrapolation. Therefore, try not to change your sample method within a day so that the sample sizes are approximately equal. Changes in sample size from one day to the next

do not constitute a problem.

If the catch diversity increases and as a result you must decrease your sample size within a day, you should extrapolate your smaller sample data up to the average weight of that day's larger samples on Form 3 (for species composition and/or incidence of prohibited species data) before summing the samples for the radio message extrapolation. If you are subsampling an individual codend, however, instead of sampling mixed catches, then you would extrapolate your smaller sample data up to the weight of the codend. On Form 3, enter the extrapolated sample data under sample 1, 2, 3 to be keypunched, but also enter the raw data for that smaller sample on a part of the form which you section off and label "Do Not Keypunch." Label your work carefully and put in a note of explanation in the remarks.

DETERMINING INCIDENCE OF CRAB, HALIBUT, AND SALMON

On motherships, incidence of crab, halibut and salmon data has usually been obtained by conveyor belt monitoring. As stated for stern trawlers, these species are normally relatively rare in the catch, and a large sample weight must be observed to obtain effective data. Also, sorting through a larger amount of fish is easier when just these four species groups are being monitored.

Sometimes on motherships, a problem arises when Tanner crab is too abundant to count. Usually the only solution to this problem is to reduce the sample size for Tanner crab by monitoring a smaller portion of the conveyor belt, or sampling for a shorter time period. If the depth of the fish on the belt is so high that small crab are apt to be missed, then their incidence may best be obtained by taking about 10 additional basket samples per sampling

period, weighing the baskets to obtain the sample weight, and separating just the Tanner crab from them.

When using some form of whole-haul sampling for species composition described in the previous section, species composition and incidence of prohibited species sampling are done simultaneously and the sample weight is the same for each.

IF YOU ARE ASSIGNED TO MEASURE CRAB:

Observers given the assignment to measure crab should collect and measure three additional baskets of Tanner crab twice a month, if there are enough Tanner crab to make this feasible. If the incidence of Tanner crab is very low, gathering three baskets would be too difficult. If their incidence is very high, enough Tanner crabs can be measured from the daily incidence samples so that extra effort in collection is not needed. To ensure an unbiased sample, all of the crabs must be removed from a chosen volume of the catch. To do this, either collect every crab from a corner of the bin so none are missed, or collect crab from the conveyor belt only when it is less than one-fourth full; otherwise, the small ones will remain hidden. Enter this additional crab measurement data on Form 7 only, unless you were able to determine the weight of catch from which the extra Tanner crab were gathered. If you know the sample weight, then these data may be entered on Forms 3(1) and 4 also.

FORM 3 - FOR INDEPENDENT MOTHERSHIPS

Form 3(2) is filled out in much the same way as for a stern trawler except for the following differences:

1. Remember that the date of the sample should correspond to the information on Form 1. The date of a haul is the date it was landed on the mothership.

2. Instead of haul number, the sample number should be entered in columns 17, 22, and 27. The first sample for each GMT day should be numbered 1; the second - 2; the third - 3; and so on. The next day start over again with sample number 1. Therefore, if you want to refer to a particular sample in your report, you must give both the date and sample number.

Form 3(1) is filled out in an identical manner to a stern trawler except that a sample number is used instead of a haul number in columns 22, 42, and 62. The sample numbers begin again with "1" on each day, just like on Form 3(2).

FORM 3 (2)

SPECIES COMPOSITION FROM BASKET SAMPLES

Leading zeros in columns 1, 2, 10, 12 only.

* Indicates weight obtained by subtraction from total sample weight.

EXAMPLE OF DATA FROM A MOTHERSHIP

CRUISE NO.			VESSEL CODE				YEAR		MO.		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13
4	5	9	N	M	0	5	8	3	0	8	3	1

REMARKS: Landing of fish did not start until 1200 hours, because of rough sea in morning.

FIRST HAUL OR SAMPLE						SECOND HAUL OR SAMPLE						THIRD HAUL OR SAMPLE					
Haul No.			No. of baskets		Time	Haul No.			No. of baskets		Time	Haul No.			No. of baskets		Time
15	16	17	10		1250	20	21	22	10		1500	25	26	27	10		1900
		1						2						3			

SPECIES	SPECIES CODE			NUMBER						WEIGHT (in kg with decimal pt.)	NUMBER						WEIGHT (in kg with decimal pt.)	NUMBER						WEIGHT (in kg with decimal pt.)	TOTALS FOR THE DAY		
	32	33	34	35	36	37	38	39	40	41–49	50	51	52	53	54	55	56–64	65	66	67	68	69	70	71–79	No.	Weight	Avg. wt. (kg)
No. of specimens and total basket weight	9	9	9			1	6	9	7	278.8			1	6	5	9	272.3			1	6	8	5	280.17	5041	831.27	
Yellowfin sole	1	4	0			1	6	1	4	* 253.1			1	5	9	4	*254.39			1	6	2	7	*269.4	4835	776.89	
Alaska plaice	1	0	6					2	1	16.8					1	9	7.1					2	0	6.7	60	30.6	
Rock sole	1	0	4													1	.2						2	.5	3	.7	
Greenland halibut	1	0	2																				1	.3	1	.3	
Great sculpin	4	0	5					1	3	5.0					1	6	6.7						4	1.6	33	13.3	
Warty sculpin	4	0	6						1	.5															1	.5	
Sturgeon poacher	4	5	2					1	1	.7						9	.55						8	.55	28	1.8	
Rainbow smelt	6	0	5																				1	.03	1	.03	
Pollock	2	0	1						7	.2						2	.05								9	.25	
Pacific cod	2	0	2						3	.4						1	.10						1	.08	5	.58	
Starfish		2	0					2	4	1.4					1	5	2.4					1	8	.5	57	4.3	
Hya's crab			9						1	.1															1	.1	
Korean horsehair crab			7						1	.15															1	.15	
Misc (seaweed, wood)	9	0	0						1	.45						1	.80						1	.16	3	1.41	
Longhead dab	1	4	4																				2	.35	2	.35	
Shrimp		7	0													1	.01								1	.01	

FORM 3 (I) INCIDENCE OF CRAB, HALIBUT AND SALMON

CRUISE NO.			VESSEL CODE				YEAR		MO.		DAY		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	5	9	N	M	0	5	8	3	0	8	3	1	1

FIRST HAUL OR SAMPLE *Mothership Example*

*A= ACTUAL DATA OBTAINED BY WEIGHING OR MEASURING E=ESTIMATED WEIGHT

SPECIES	SPECIES CODE 17 18 19	HAUL NUMBER 20 21 22	SAMPLE WEIGHT (MT) 23 24 25 26	NUMBER OBSERVED 28 29 30 31	NO. EST. OR WEIGHED 32 33	TOTAL WEIGHT (KG) 35 36 37 38 39	AVG. WEIGHT	A/E*	NO.	TOTAL WEIGHT	VIABILITY NO. OBSERVED	VIABILITY NO. ALIVE
KING CRAB	2	1	2.8									
TANNER CRAB	3		2.8									
PACIFIC HALIBUT	1 0 1		2.8									
SALMON	2 2 0		2.8									

SECOND HAUL OR SAMPLE

	40 41 42	43 44 45 46	48 49 50 51	52 53	55 56 57 58 59						
KING CRAB	2	1 5.3 8	4	4	3.4 0	.85	A	4	3.40		
TANNER CRAB		1 5.3 8	4 0	3 8	6.1 0	.16	A	38	6.10		
PACIFIC HALIBUT		1 5.3 8	1 0	1 0	2 0.3 0	2.03	A	9	18.3		
							E	1	2.0		
SALMON		1 5.3 8									

THIRD HAUL OR SAMPLE

	60 61 62	63 64 65 66	68 69 70 71	72 73	75 76 77 78 79						
KING CRAB	3	2 0.0 0	1	1	.8 0	.80	A	1	.80		
TANNER CRAB		1 0.0 0	2 3 7	9 9	1 7.8 4	.18 *	A	237	42.71		
PACIFIC HALIBUT		2 0.0 0	1	1	8.1 3	8.13	A	1	8.13		
SALMON		2 0.0 0									

* SUBSAMPLED FOR TANNER CRABS

FORM 4 - SPECIES COMPOSITION OF SALMON, KING CRAB, TANNER CRAB, VIABILITY OF HALIBUT, KING CRAB AND TANNER CRAB

Form 4 is filled out in the same manner as for a stern trawler, except that a sample number replaces the haul number and is recorded in column 16. Sample numbers should correspond to the incidence sample from which the prohibited species were collected.

FORM 7 - LENGTH FREQUENCY OF MEASURED SPECIES

This form is completed in the same way as for a stern trawler except that a sample number is not needed; therefore, columns 17-19 are left blank. Since this form does not require data by sampling period, the data for an entire day should be combined. The easiest way to do this is to use one set of measuring strips for the whole day, tabulating the data only at the end of the day. Care must be taken to insure that the data are not scrubbed off the plastic forms between samples.

FORM 9 - LIST OF OTOLITHS AND SCALES

This form is filled out using the same procedures as for a stern trawler except that there is no haul or sample number recorded, so columns 26-28 are left blank.

OTHER FORMS

Form 8 is filled out in the same way as for a stern trawler. Form 10 is filled out differently than a stern trawler, and Forms 11A and B are filled out as described in their section. Refer to section II of the manual for complete instructions on how to fill out these marine mammal forms.

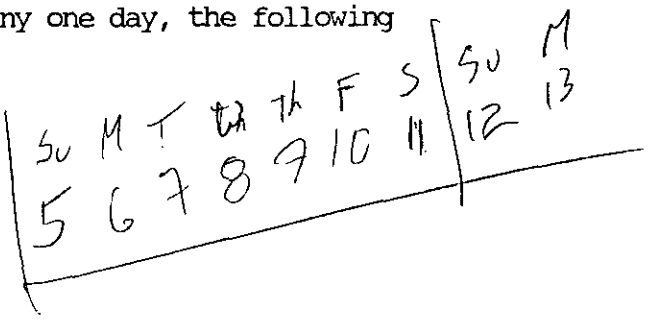
INSTRUCTIONS FOR WEEKLY RADIO MESSAGES

One of the primary tasks of the Observer Program is the estimation of the foreign catch of groundfish and prohibited species throughout the year to insure that these catches remain within the quotas established by the United States. In order that the observers' data may be utilized before returning from sea, a radio message is sent each week to the Northwest and Alaska Fisheries Center summarizing the weeks' fishing activity. The first paragraph of the message will give the estimated catch by species group (species composition data) for each area and the second paragraph will provide data on the prohibited species. A third paragraph is to be included in the radio message only if the vessel is operating in a joint venture. It will list the number of codends delivered, and will include a marine mammal catch disposition report.

The report week for each message will always run from SUNDAY through SATURDAY, Greenwich Mean Time and date regardless of the date the message is actually sent. The reporting areas to be used for radio messages are shown in the maps on the following pages.

Catch report radio messages should not be sent during four one-hour periods of each day. These periods are 2330-0030 GMT, 0530-0630 GMT, 1130-1230 GMT, and 1730-1830 GMT. Catch messages coming into the Coast Guard communications center during these certain times of the day severely hamper their ability to handle time-critical weather messages.

In order to alleviate the problem of too many catch reports being sent to the Coast Guard communications center on any one day, the following



schedule has been set up. The catch report radio messages should be sent on the GMT day shown below:

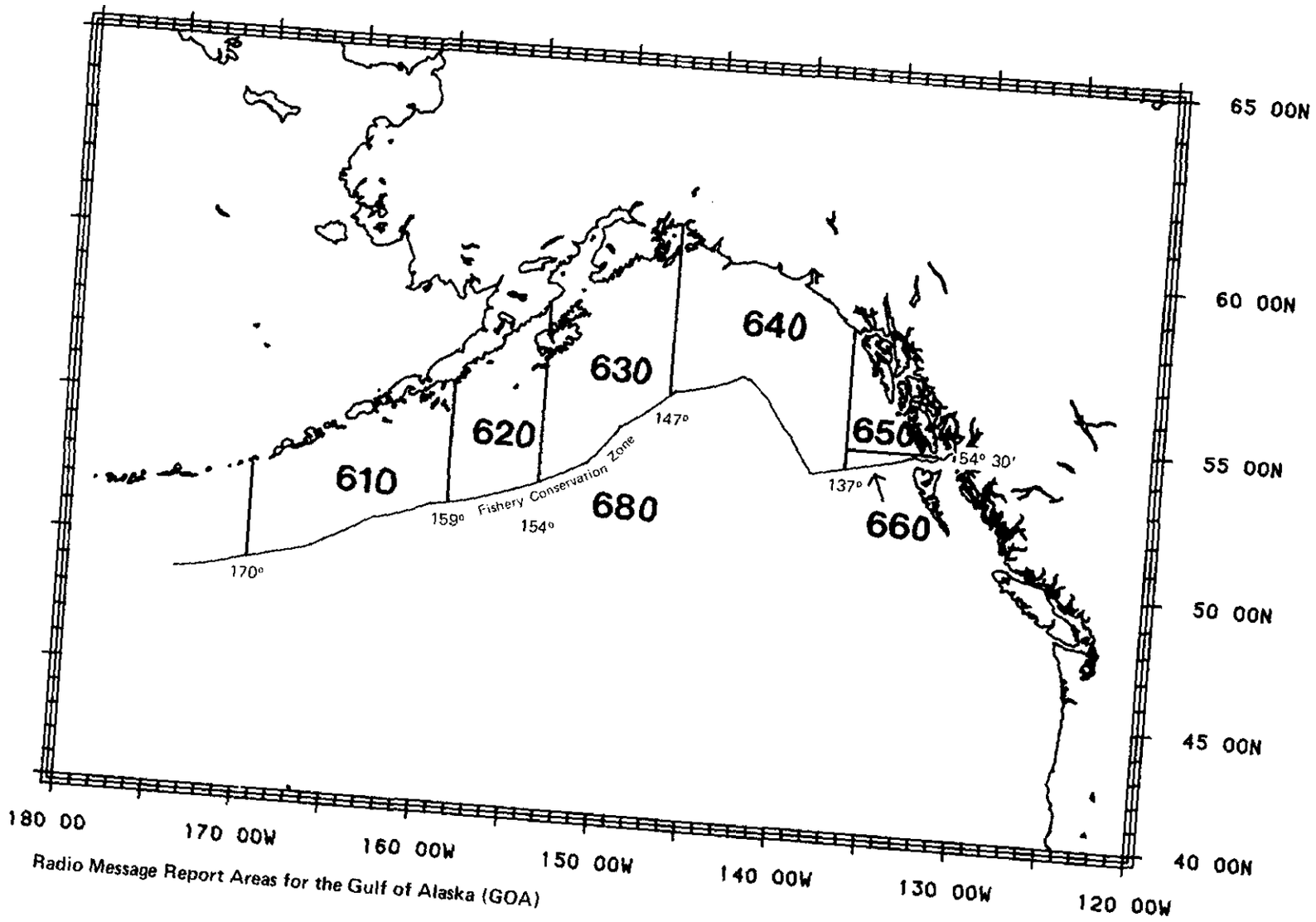
Sunday--All joint venture vessels and all WOC coast vessels
Monday--All other vessels (non-J.V. in Alaskan waters)

Radio messages should be sent on time. When you are asked to repeat a message, you should do so immediately and not wait until the end of the week.

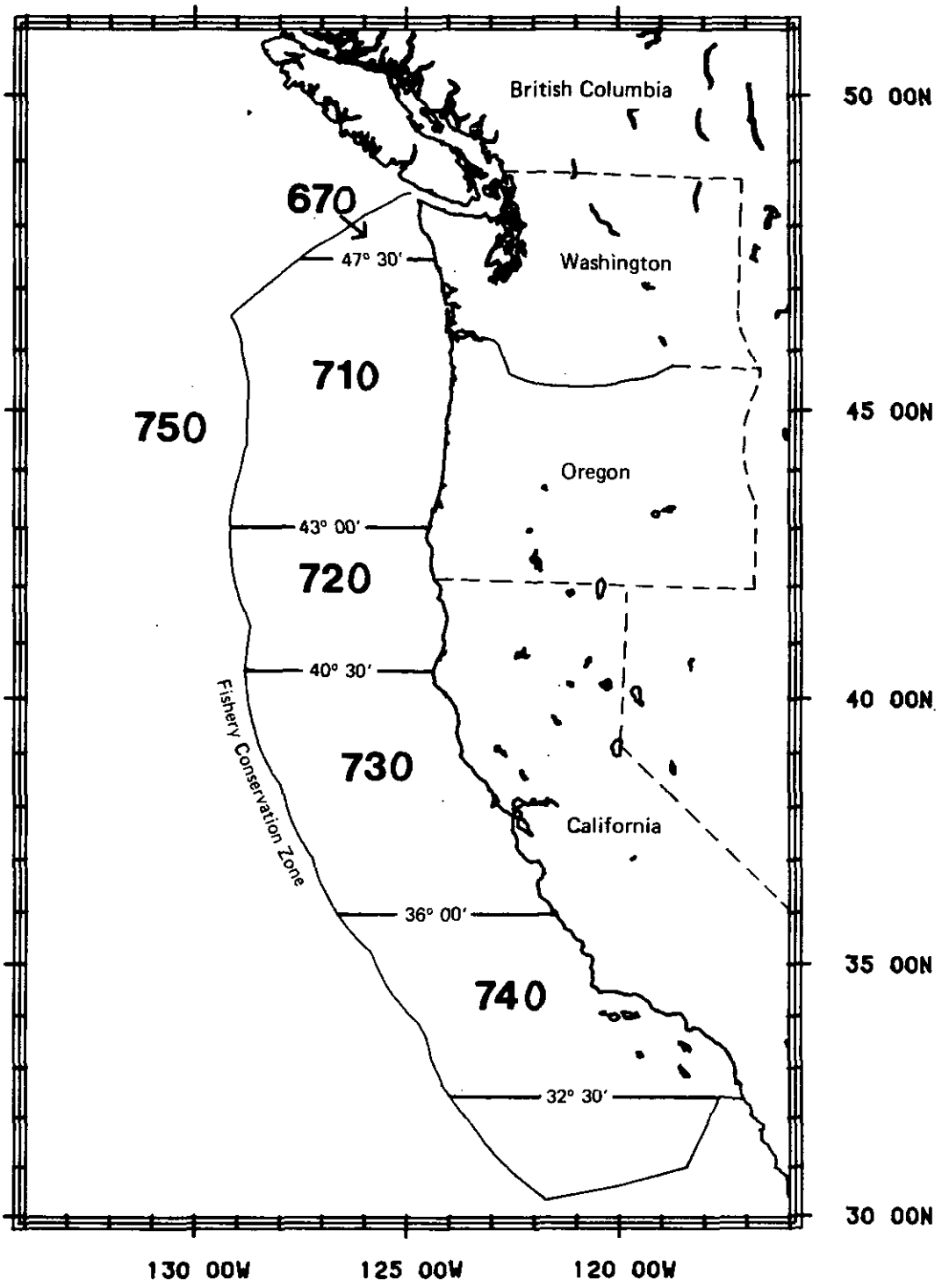
Keep a copy of all weekly messages sent. You will be asked to transfer this information to keypunch forms for verification purposes upon your return to Seattle. Send your last radio message from your ship before you leave to come back to Seattle. (This radio message will normally only contain a partial weeks sampling information because observers don't always stop sampling on Sunday.)

INSTRUCTIONS FOR MAKING WEEKLY SPECIES COMPOSITION CATCH REPORTS - PARAGRAPH 1

Paragraph 1 of the message will give, by reporting area, the vessel days on the grounds and the estimated catch by your vessel of each of the species groups managed in the major fishing regions (i.e., Bering Sea/Aleutians; Gulf of Alaska; or Washington-Oregon-California). The table "Reporting Groups for Species Composition Radio Messages" is correspondingly divided into the three regions. Each section indicates the report groups and abbreviations under which all species in the observer's species composition samples should be reported.



Radio Message Report Areas for the Gulf of Alaska (GOA)



Radio Message Report Areas for the
Washington, Oregon, and California Coast (WOC)

USING THE SUBAREA TABLES FOR THE BERING SEA AND ALEUTIANS

When you are given a position that is close to the diagonal boundary lines that separate areas 513 and 515 or areas 521 and 522, it may be difficult to determine exactly which subarea the deliver should be attributed to. These tables will aid you in that determination.

The 1st table: Table 1, is a plot of the line intersecting areas 513 and 515. The line gives the corresponding latitude position for each minute of longitude.

The 2nd table: Table 2, is a plot of the line intersecting areas 521 and 522.

HOW TO USE THE TABLES

First find the longitude of your delivery position in Column B of the table. The corresponding latitude in Column A marks the point on the line which intersects the two subareas. If the latitude of your delivery position is greater than the table latitude, your position falls in the subarea to the north of the line. If the latitude of your delivery position is less than the table latitude then your position falls in the subarea to the south of the line.

SPECIAL CASES

For delivery positions that fall exactly on the line, or if the delivery position falls on "Four Corners", the intersecting point of 55-46 N 170-00 W, use the trawl data you have for the delivery to decide which subarea the fish were caught in and assign the delivery to that subarea.

EXAMPLE OF USE

To demonstrate the use of the tables: suppose your ship had received a codend and records the delivery position as 54-39 N 68-07 W. Determine what subarea this delivery position falls in.

1) First, find longitude 168-07 W in Column B of the tables:

longitude 168-07 is found in Table 1:

Col. A	Col. B	
5457. 72	16805. 00	
5458. 15	16806. 00	
5458. 57	16807. 00	<----- delivery longitude
5458. 99	16808. 00	
5459. 42	16809. 00	

2) Read the corresponding latitude from Column A:

Col. A	Col. B	
5457. 72	16805. 00	
5458. 15	16806. 00	
-----> 5458. 57	16807. 00	
5458. 99	16808. 00	
5459. 42	16809. 00	

3) Determine whether your delivery latitude is greater than or less than the latitude in Column A:

delivery latitude 54-39 (5439.00) is lower than Intersecting latitude 5458 .57

4) Determine the subarea:

Remember that Table 1 ,where the delivery longitude was found, represents points on the line between subareas 513 and 515. Table B represents points on the line between subareas 521 and 522.

Since the delivery latitude was lower than the line latitude, the delivery position falls into subarea 515, the subarea south of the line.

SUMMARY TABLE

	Table 1	Table 2
Delivery latitude less than line latitude	SUBAREA 515	SUBAREA 522
Delivery latitude greater than line latitude	SUBAREA 513	SUBAREA 521

LAT COL. A	LONG COL. B
5430.00	16700.00
5430.43	16701.00
5430.86	16702.00
5431.29	16703.00
5431.72	16704.00
5432.14	16705.00
5432.57	16706.00
5433.00	16707.00
5433.43	16708.00
5433.86	16709.00
5434.29	16710.00
5434.71	16711.00
5435.14	16712.00
5435.57	16713.00
5436.00	16714.00
5436.43	16715.00
5436.85	16716.00
5437.28	16717.00
5437.71	16718.00
5438.14	16719.00
5438.56	16720.00
5438.99	16721.00
5439.42	16722.00
5439.85	16723.00
5440.27	16724.00
5440.70	16725.00
5441.13	16726.00
5441.55	16727.00
5441.98	16728.00
5442.41	16729.00
5442.83	16730.00
5443.26	16731.00
5443.69	16732.00
5444.11	16733.00
5444.54	16734.00
5444.97	16735.00
5445.39	16736.00
5445.82	16737.00
5446.25	16738.00
5446.67	16739.00
5447.10	16740.00
5447.52	16741.00
5447.95	16742.00
5448.38	16743.00
5448.80	16744.00
5449.23	16745.00
5449.65	16746.00
5450.08	16747.00
5450.50	16748.00
5450.93	16749.00
5451.35	16750.00
5451.78	16751.00
5452.20	16752.00
5452.63	16753.00
5453.05	16754.00
5453.48	16755.00
5453.90	16756.00
5454.33	16757.00

LAT COL. A	LONG COL. B
5454.75	16758.00
5455.18	16759.00
5455.60	16800.00
5456.03	16801.00
5456.45	16802.00
5456.87	16803.00
5457.30	16804.00
5457.72	16805.00
5458.15	16806.00
5458.57	16807.00
5458.99	16808.00
5459.42	16809.00
5459.84	16810.00
5500.27	16811.00
5500.69	16812.00
5501.11	16813.00
5501.54	16814.00
5501.96	16815.00
5502.38	16816.00
5502.81	16817.00
5503.23	16818.00
5503.65	16819.00
5504.08	16820.00
5504.50	16821.00
5504.92	16822.00
5505.34	16823.00
5505.77	16824.00
5506.19	16825.00
5506.61	16826.00
5507.03	16827.00
5507.46	16828.00
5507.88	16829.00
5508.30	16830.00
5508.72	16831.00
5509.15	16832.00
5509.57	16833.00
5509.99	16834.00
5510.41	16835.00
5510.83	16836.00
5511.26	16837.00
5511.68	16838.00
5512.10	16839.00
5512.52	16840.00
5512.94	16841.00
5513.36	16842.00
5513.78	16843.00
5514.21	16844.00
5514.63	16845.00
5515.05	16846.00
5515.47	16847.00
5515.89	16848.00
5516.31	16849.00
5516.73	16850.00
5517.15	16851.00
5517.57	16852.00
5517.99	16853.00
5518.41	16854.00
5518.83	16855.00
5519.25	16856.00
5519.67	16857.00

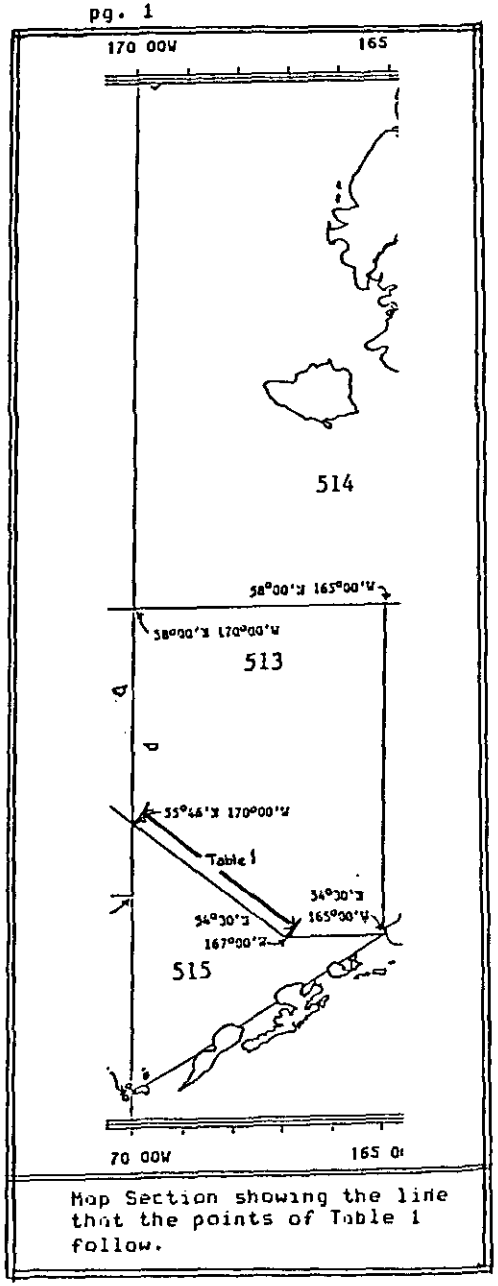
LAT COL. A	LONG COL. B
5520.09	16858.00
5520.51	16859.00
5520.93	16900.00
5521.35	16901.00
5521.77	16902.00
5522.19	16903.00
5522.61	16904.00
5523.03	16905.00
5523.45	16906.00
5523.87	16907.00
5524.29	16908.00
5524.71	16909.00
5525.13	16910.00
5525.55	16911.00
5525.97	16912.00
5526.39	16913.00
5526.81	16914.00
5527.23	16915.00
5527.64	16916.00
5528.06	16917.00
5528.48	16918.00
5528.90	16919.00
5529.32	16920.00
5529.74	16921.00
5530.16	16922.00
5530.57	16923.00
5530.99	16924.00
5531.41	16925.00
5531.83	16926.00
5532.25	16927.00
5532.66	16928.00
5533.08	16929.00
5533.50	16930.00
5533.92	16931.00
5534.34	16932.00
5534.75	16933.00
5535.17	16934.00
5535.59	16935.00
5536.01	16936.00
5536.42	16937.00
5536.84	16938.00
5537.26	16939.00
5537.67	16940.00
5538.09	16941.00
5538.51	16942.00
5538.93	16943.00
5539.34	16944.00
5539.76	16945.00
5540.18	16946.00
5540.59	16947.00
5541.01	16948.00
5541.42	16949.00
5541.84	16950.00
5542.26	16951.00
5542.67	16952.00
5543.09	16953.00
5543.51	16954.00
5543.92	16955.00
5544.34	16956.00
5544.75	16957.00

LAT COL. A	LONG COL. B
5545.17	16958.00
5545.58	16959.00
5546.00	17000.00

TABLE 1

plot of the points on the line intersecting between subareas 513 and 515.

pg. 1



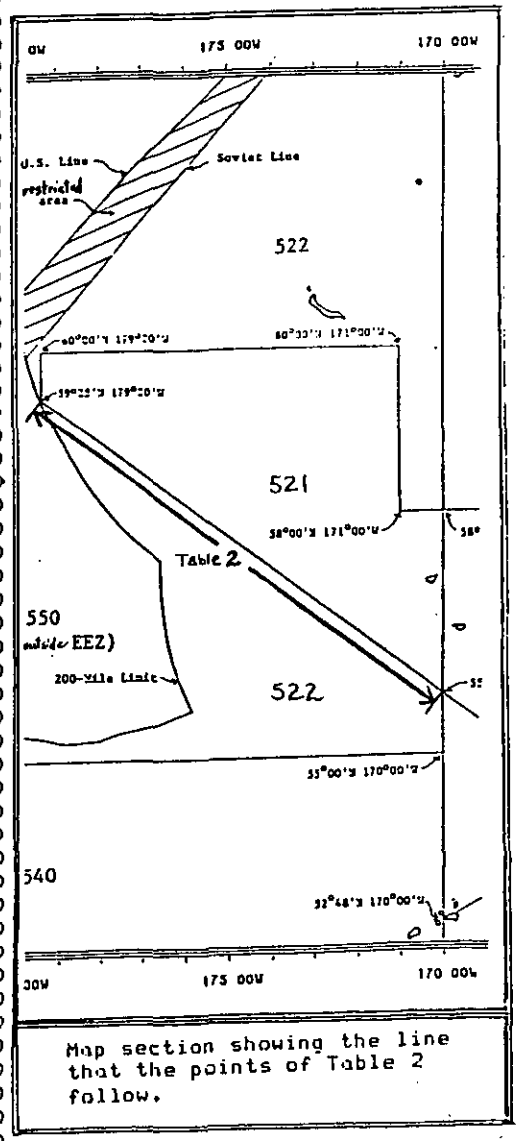
Map Section showing the line that the points of Table 1 follow.

LAT COL. A	LONG COL. B
5546.41	17001.00
5546.82	17002.00
5547.23	17003.00
5547.64	17004.00
5548.05	17005.00
5548.46	17006.00
5548.87	17007.00
5549.28	17008.00
5549.70	17009.00
5550.11	17010.00
5550.52	17011.00
5550.93	17012.00
5551.34	17013.00
5551.75	17014.00
5552.16	17015.00
5552.57	17016.00
5552.97	17017.00
5553.38	17018.00
5553.79	17019.00
5554.20	17020.00
5554.61	17021.00
5555.02	17022.00
5555.43	17023.00
5555.84	17024.00
5556.25	17025.00
5556.66	17026.00
5557.07	17027.00
5557.48	17028.00
5557.89	17029.00
5558.29	17030.00
5558.70	17031.00
5559.11	17032.00
5559.52	17033.00
5559.93	17034.00
5600.34	17035.00
5600.75	17036.00
5601.15	17037.00
5601.56	17038.00
5601.97	17039.00
5602.38	17040.00
5602.79	17041.00
5603.19	17042.00
5603.60	17043.00
5604.01	17044.00
5604.42	17045.00
5604.83	17046.00
5605.23	17047.00
5605.64	17048.00
5606.05	17049.00
5606.46	17050.00
5606.86	17051.00
5607.27	17052.00
5607.68	17053.00
5608.08	17054.00
5608.49	17055.00
5608.90	17056.00
5609.30	17057.00
5609.71	17058.00
5610.12	17059.00
5610.52	17100.00
5610.93	17101.00
5611.34	17102.00
5611.74	17103.00
5612.15	17104.00
5612.56	17105.00
5612.96	17106.00
5613.37	17107.00
5613.78	17108.00
5614.18	17109.00
5614.59	17110.00
5614.99	17111.00
5615.40	17112.00
5615.80	17113.00
5616.21	17114.00
5616.62	17115.00
5617.02	17116.00
5617.43	17117.00
5617.83	17118.00
5618.24	17119.00
5618.64	17120.00
5619.05	17121.00
5619.45	17122.00
5619.86	17123.00
5620.26	17124.00
5620.67	17125.00
5621.07	17126.00
5621.48	17127.00
5621.88	17128.00
5622.29	17129.00
5622.69	17130.00
5623.09	17131.00
5623.50	17132.00
5623.90	17133.00
5624.31	17134.00
5624.71	17135.00
5625.12	17136.00
5625.52	17137.00
5625.92	17138.00
5626.33	17139.00
5626.73	17140.00
5627.13	17141.00
5627.54	17142.00
5627.94	17143.00
5628.35	17144.00
5628.75	17145.00
5629.15	17146.00
5629.56	17147.00
5629.96	17148.00
5630.36	17149.00
5630.76	17150.00
5631.17	17151.00
5631.57	17152.00
5631.97	17153.00
5632.38	17154.00
5632.78	17155.00
5633.18	17156.00
5633.58	17157.00
5633.99	17158.00
5634.39	17159.00
5634.79	17200.00
5635.19	17201.00
5635.60	17202.00
5636.00	17203.00
5636.40	17204.00
5636.80	17205.00
5637.20	17206.00
5637.61	17207.00
5638.01	17208.00
5638.41	17209.00
5638.81	17210.00
5639.21	17211.00
5639.61	17212.00
5640.01	17213.00
5640.42	17214.00
5640.82	17215.00
5641.22	17216.00
5641.62	17217.00
5642.02	17218.00
5642.42	17219.00
5642.82	17220.00
5643.22	17221.00
5643.62	17222.00
5644.02	17223.00
5644.43	17224.00
5644.83	17225.00
5645.23	17226.00
5645.63	17227.00
5646.03	17228.00
5646.43	17229.00
5646.83	17230.00
5647.23	17231.00
5647.63	17232.00
5648.03	17233.00
5648.43	17234.00
5648.83	17235.00
5649.23	17236.00
5649.63	17237.00
5650.03	17238.00
5650.43	17239.00
5650.83	17240.00
5651.23	17241.00
5651.62	17242.00
5652.02	17243.00
5652.42	17244.00
5652.82	17245.00
5653.22	17246.00
5653.62	17247.00
5654.02	17248.00
5654.42	17249.00
5654.82	17250.00
5655.22	17251.00
5655.61	17252.00
5656.01	17253.00
5656.41	17254.00
5656.81	17255.00
5657.21	17256.00
5657.61	17257.00
5658.00	17258.00
5658.40	17259.00
5658.80	17300.00
5659.20	17301.00
5659.60	17302.00
5659.99	17303.00
5700.39	17304.00
5700.79	17305.00
5701.19	17306.00
5701.59	17307.00
5701.98	17308.00
5702.38	17309.00
5702.78	17310.00
5703.17	17311.00
5703.57	17312.00
5703.97	17313.00
5704.37	17314.00
5704.76	17315.00
5705.16	17316.00
5705.56	17317.00
5705.95	17318.00
5706.35	17319.00
5706.75	17320.00
5707.14	17321.00
5707.54	17322.00
5707.94	17323.00
5708.33	17324.00
5708.73	17325.00
5709.13	17326.00
5709.52	17327.00
5709.92	17328.00
5710.31	17329.00
5710.71	17330.00
5711.11	17331.00
5711.50	17332.00
5711.90	17333.00
5712.29	17334.00
5712.69	17335.00
5713.08	17336.00
5713.48	17337.00
5713.87	17338.00
5714.27	17339.00
5714.67	17340.00
5715.06	17341.00
5715.46	17342.00
5715.85	17343.00
5716.25	17344.00
5716.64	17345.00
5717.03	17346.00
5717.43	17347.00
5717.82	17348.00
5718.22	17349.00
5718.61	17350.00
5719.01	17351.00
5719.40	17352.00
5719.80	17353.00
5720.19	17354.00
5720.59	17355.00
5720.98	17356.00
5721.37	17357.00
5721.77	17358.00
5722.16	17359.00
5722.55	17400.00
5722.95	17401.00
5723.34	17402.00
5723.74	17403.00
5724.13	17404.00
5724.52	17405.00
5724.92	17406.00
5725.31	17407.00
5725.70	17408.00
5726.10	17409.00
5726.49	17410.00
5726.88	17411.00
5727.28	17412.00
5727.67	17413.00
5728.06	17414.00
5728.45	17415.00
5728.85	17416.00
5729.24	17417.00
5729.63	17418.00
5730.02	17419.00
5730.42	17420.00
5730.81	17421.00
5731.20	17422.00
5731.59	17423.00
5731.99	17424.00
5732.38	17425.00
5732.77	17426.00
5733.16	17427.00
5733.55	17428.00
5733.95	17429.00
5734.34	17430.00
5734.73	17431.00
5735.12	17432.00
5735.51	17433.00
5735.90	17434.00
5736.29	17435.00
5736.69	17436.00
5737.08	17437.00
5737.47	17438.00
5737.86	17439.00
5738.25	17440.00
5738.64	17441.00
5739.03	17442.00
5739.42	17443.00
5739.81	17444.00
5740.20	17445.00
5740.59	17446.00
5740.99	17447.00
5741.38	17448.00
5741.77	17449.00
5742.16	17450.00
5742.55	17451.00
5742.94	17452.00
5743.33	17453.00
5743.72	17454.00
5744.11	17455.00
5744.50	17456.00
5744.89	17457.00

TABLE 2

Plot of the points on the line intersecting between subareas 521 and 522.

pgs. 2-3



Map section showing the line that the points of Table 2 follow.

LAT COL. A	LONG COL. B
5745.28	17458.00
5745.67	17459.00
5746.06	17500.00
5746.44	17501.00
5746.83	17502.00
5747.22	17503.00
5747.61	17504.00
5748.00	17505.00
5748.39	17506.00
5748.78	17507.00
5749.17	17508.00
5749.56	17509.00
5749.95	17510.00
5750.34	17511.00
5750.73	17512.00
5751.11	17513.00
5751.50	17514.00
5751.89	17515.00
5752.28	17516.00
5752.67	17517.00
5753.06	17518.00
5753.44	17519.00
5753.83	17520.00
5754.22	17521.00
5754.61	17522.00
5755.00	17523.00
5755.38	17524.00
5755.77	17525.00
5756.16	17526.00
5756.55	17527.00
5756.94	17528.00
5757.32	17529.00
5757.71	17530.00
5758.10	17531.00
5758.49	17532.00
5758.87	17533.00
5759.26	17534.00
5759.65	17535.00
5800.03	17536.00
5800.42	17537.00
5800.81	17538.00
5801.20	17539.00
5801.58	17540.00
5801.97	17541.00
5802.36	17542.00
5802.74	17543.00
5803.13	17544.00
5803.52	17545.00
5803.90	17546.00
5804.29	17547.00
5804.67	17548.00
5805.06	17549.00
5805.45	17550.00
5805.83	17551.00
5806.22	17552.00
5806.60	17553.00
5806.99	17554.00
5807.38	17555.00
5807.76	17556.00

LAT COL. A	LONG COL. B
5808.53	17558.00
5808.92	17559.00
5809.30	17600.00
5809.69	17601.00
5810.07	17602.00
5810.46	17603.00
5810.84	17604.00
5811.23	17605.00
5811.61	17606.00
5812.00	17607.00
5812.38	17608.00
5812.77	17609.00
5813.15	17610.00
5813.54	17611.00
5813.92	17612.00
5814.31	17613.00
5814.69	17614.00
5815.08	17615.00
5815.46	17616.00
5815.85	17617.00
5816.23	17618.00
5816.61	17619.00
5817.00	17620.00
5817.38	17621.00
5817.77	17622.00
5818.15	17623.00
5818.53	17624.00
5818.92	17625.00
5819.30	17626.00
5819.68	17627.00
5820.07	17628.00
5820.45	17629.00
5820.83	17630.00
5821.22	17631.00
5821.60	17632.00
5821.98	17633.00
5822.37	17634.00
5822.75	17635.00
5823.13	17636.00
5823.52	17637.00
5823.90	17638.00
5824.28	17639.00
5824.66	17640.00
5825.05	17641.00
5825.43	17642.00
5825.81	17643.00
5826.19	17644.00
5826.58	17645.00
5826.96	17646.00
5827.34	17647.00
5827.72	17648.00
5828.10	17649.00
5828.49	17650.00
5828.87	17651.00
5829.25	17652.00
5829.63	17653.00
5830.01	17654.00
5830.40	17655.00
5830.78	17656.00
5831.16	17657.00

LAT COL. A	LONG COL. B
5831.54	17658.00
5831.92	17659.00
5832.30	17700.00
5832.68	17701.00
5833.06	17702.00
5833.45	17703.00
5833.83	17704.00
5834.21	17705.00
5834.59	17706.00
5834.97	17707.00
5835.35	17708.00
5835.73	17709.00
5836.11	17710.00
5836.49	17711.00
5836.87	17712.00
5837.25	17713.00
5837.63	17714.00
5838.01	17715.00
5838.39	17716.00
5838.77	17717.00
5839.15	17718.00
5839.53	17719.00
5839.91	17720.00
5840.29	17721.00
5840.67	17722.00
5841.05	17723.00
5841.43	17724.00
5841.81	17725.00
5842.19	17726.00
5842.57	17727.00
5842.95	17728.00
5843.33	17729.00
5843.71	17730.00
5844.09	17731.00
5844.47	17732.00
5844.84	17733.00
5845.22	17734.00
5845.60	17735.00
5845.98	17736.00
5846.36	17737.00
5846.74	17738.00
5847.12	17739.00
5847.50	17740.00
5847.87	17741.00
5848.25	17742.00
5848.63	17743.00
5849.01	17744.00
5849.39	17745.00
5849.77	17746.00
5850.14	17747.00
5850.52	17748.00
5850.90	17749.00
5851.28	17750.00
5851.65	17751.00
5852.03	17752.00
5852.41	17753.00
5852.79	17754.00
5853.17	17755.00
5853.54	17756.00
5853.92	17757.00

LAT COL. A	LONG COL. B
5854.30	17758.00
5854.67	17759.00
5855.05	17800.00
5855.43	17801.00
5855.81	17802.00
5856.18	17803.00
5856.56	17804.00
5856.94	17805.00
5857.31	17806.00
5857.69	17807.00
5858.07	17808.00
5858.44	17809.00
5858.82	17810.00
5859.20	17811.00
5859.57	17812.00
5859.95	17813.00
5900.32	17814.00
5900.70	17815.00
5901.08	17816.00
5901.45	17817.00
5901.83	17818.00
5902.20	17819.00
5902.58	17820.00
5902.96	17821.00
5903.33	17822.00
5903.71	17823.00
5904.08	17824.00
5904.46	17825.00
5904.83	17826.00
5905.21	17827.00
5905.58	17828.00
5905.96	17829.00
5906.33	17830.00
5906.71	17831.00
5907.08	17832.00
5907.46	17833.00
5907.83	17834.00
5908.21	17835.00
5908.58	17836.00
5908.96	17837.00
5909.33	17838.00
5909.71	17839.00
5910.08	17840.00
5910.45	17841.00
5910.83	17842.00
5911.20	17843.00
5911.58	17844.00
5911.95	17845.00
5912.33	17846.00
5912.70	17847.00
5913.07	17848.00
5913.45	17849.00
5913.82	17850.00
5914.19	17851.00
5914.57	17852.00
5914.94	17853.00
5915.31	17854.00
5915.69	17855.00
5916.06	17856.00
5916.43	17857.00

LAT COL. A	LONG COL. B
5916.81	17858.00
5917.18	17859.00
5917.55	17900.00
5917.93	17901.00
5918.30	17902.00
5918.67	17903.00
5919.05	17904.00
5919.42	17905.00
5919.79	17906.00
5920.16	17907.00
5920.54	17908.00
5920.91	17909.00
5921.28	17910.00
5921.65	17911.00
5922.02	17912.00
5922.40	17913.00
5922.77	17914.00
5923.14	17915.00
5923.51	17916.00
5923.88	17917.00
5924.26	17918.00
5924.63	17919.00
5925.00	17920.00

REPORTING GROUPS FOR SPECIES COMPOSITION RADIO MESSAGES

Bering Sea/Aleutians (Areas 51 - 55)

Species Group	Report Group	Abbreviation
Squid	Squid	SQU
Yellowfin sole	Yellowfin sole	YELL
Greenland turbot	Greenland turbot	TURB
Arrowtooth flounder	Arrowtooth Flounder	ARROW
Kamchatka flounder		
Other flatfish (except halibut)	Other flatfish	OFLAT
Pollock	Pollock	POLL
Pacific cod	Pacific cod	COD
Sablefish	Sablefish	SAB
Atka mackerel	Atka mackerel	ATKA
Pacific ocean perch *	POP Complex	POP
Rougheye rockfish		
Northern rockfish		
Sharpchin rockfish		
Shortraker rockfish		
All other rockfish (Sebastes and Sebastolobus spp.)	Other rockfish	OROCK
Herring	Herring	HER
Sharks, skates, sculpins, eulachon, smelts, capelin and octopus only	Other fish	OTH
All remaining fish spp.	Non-allocated	NON
Prohibited spp. (except herring)		
Invertebrates (except squid and octopus)		
Miscellaneous items		

* The POP report group has recently changed to a group containing the following five rockfish species: Pacific ocean perch, Rougheye rockfish, Northern rockfish, Sharpchin rockfish and Shortraker rockfish.

Gulf of Alaska (Areas 61 - 66, and 68)

Species Group	Report Group	Abbreviation
Squid	Squid	SQU
All flatfish (except halibut)	Flatfish	FLAT
Pollock	Pollock	POLL
Pacific cod	Pacific cod	COD
Sablefish	Sablefish	SAB
Atka mackerel	Atka mackerel	ATKA
Aurora rockfish (Sebastes aurora)	Slope Rockfish	SLPRF
Blackgill rockfish (S. melanostomus)		
Chilipepper rockfish (S. goodei)		
Darkblotch rockfish (S. crameri)		
Greenstriped rockfish (S. elongatus)		
Harlequin rockfish (S. variegatus)		
Northern rockfish (S. polyspinus)		
Pacific ocean perch (S. alutus)		
Pygmy rockfish (S. wilsoni)		
Red-banded rockfish (S. babcocki)		
Rougheye rockfish (S. aleutianus)		
Sharpchin rockfish (S. zacentrus)		
Shortbelly rockfish (S. jordani)		
Shortraker rockfish (S. borealis)		
Splitnose rockfish (S. diploproa)		
Stripetail rockfish (S. saxicola)		
Vermilion rockfish (S. miniatus)		
Yellowmouth rockfish (S. reedi)		
Boccacio (Sebastes paucispinus)	Demersal Shelf Rockfish	DEMRF
Canary rockfish (S. pinniger)		
China rockfish (S. nebulosus)		
Copper rockfish (S. caurinus)		
Quillback rockfish (S. maliger)		
Redstripe rockfish (S. proriger)		
Rosethorn rockfish (S. helvomaculatus)		
Silvergray rockfish (S. brevispinus)		
Tiger rockfish (S. nigrochinctus)		
Yelloweye rockfish (S. ruberrimus)		
Black rockfish (Sebastes melanops)	Pelagic Shelf Rockfish	PELRF
Blue rockfish (S. mystinus)		
Dusky rockfish (S. ciliatus)		
Widow rockfish (S. entomelas)		
Yellowtail rockfish (S. flavidus)		
Longspine thornyhead (Sebastolobus altivelis)	Thornyhead Rockfish	THRN
Shortspine thornyhead (Sebastolobus alascanus)		
Sharks, skates, sculpins, eulachon, smelts, capelin octopus, only	Other fish	OTH
All remaining fish spp.	Non-allocated	NON
Prohibited spp. (includes herring)		
Invertebrates (except squid and octopus)		
Miscellaneous items		

POP

POP COMPLEX

after ATKA on list

Washington-Oregon-California Hake Fishery (Areas 67, 71 and 75)

Species Group	Report Group	Abbreviation
Pacific hake	Pacific hake	HAKE
Jack mackerel	Jack mackerel	JACK
Pacific ocean perch	Pacific ocean perch	POP
Widow rockfish *	Widow rockfish	WIDOW
Yellowtail rockfish *	Yellowtail rockfish	YTAIL
Other rockfish	Other rockfish	RF
All flatfish (except halibut)	All flatfish	FLAT
Sablefish	Sablefish	SAB
All remaining fish spp. (except halibut and salmon)	Other fish	OTH
Invertebrates (other than prohibited species invertebrates)	Other fish	OTH
Prohibited spp.	Non-allocated	NON
Miscellaneous items	Non-allocated	NON

* These two report groups (WIDOW and YTAIL) are not required by the fisheries regulations. Therefore be aware that your species composition data for rockfish will differ from that of the ships when examining their fishing logs.

FORM RM - FOR INDEPENDENT STERN TRAWLERS AND JOINT VENTURE VESSELS

On stern trawlers and joint venture ships, the relative importance of each haul you sample for species composition is dependent upon the size of the haul in relation to the size of other hauls that were sampled. In order to reflect the relative importance of each haul that is sampled in your daily calculation of catch, you must first determine the estimated weight for each species or species group from each haul sampled for your data in the following way:

1. Determine the statistical area of each haul sampled. Data for each area should be recorded on separate sheets of Form RM.

2. According to the list by region, (BSA, GOA, or WOC), write the species report group abbreviations, in order, across the tops of the columns on Form RM. (Note: There are not enough columns on the form to enable you to enter all of the report groups for the BSA. You will have to omit one report group that you don't expect to see that week.)

For each sampled haul:

3. Enter the date and haul number in the first column.

4. Column A. Enter the haul weight, in metric tons, from the "Total Catch" columns on Form 2 or Form 2JV.

5. Column B. Enter the total sample weight, in kilograms, from Form 3(2).

6. Column C. (For each species group) - Enter the weight for the species or species group, in kilograms, from the sample data on Form 3(2). To make certain all weights were transcribed and that they are correct, add the kg sampled for each species group. This should equal the sample weight for each haul (column B) exactly.

7. Column D. (For each species group) - Calculate the total catch of each species or species group as shown below. Record the result to the nearest .001 mt. Tonnages of .00049 or less may be recorded to the nearest .0001 and carried through the calculations to the summary for the week.

$$\frac{\text{mt of sp. in haul}}{\text{mt total haul wt.}} = \frac{\text{kg of sp. in sample}}{\text{kg total sample wt.}}, \quad \text{or} \quad \frac{\text{Col D}}{\text{Col A}} = \frac{\text{Col C}}{\text{Col B}}, \text{therefore:}$$

$$\text{Col D} = \frac{(\text{Col A}) \times (\text{Col C})}{(\text{Col B})}, \text{ which is the same as: } \text{Col D} = \frac{(\text{Col A})}{(\text{Col B})} \times (\text{Col C})$$

Note: If you whole haul sampled for species composition, the entry in column D is simply a conversion of kilograms in column C to metric tons in column D, rounded to three decimal places. After computing column D for each species group, check your math by adding each column D entry for a line and comparing the summation to the column A entry for that same line. A variance of more than + or - .003 MT indicates the strong probability of a calculation error.

8. For the day's totals of sampled hauls by area, sum column A and each column D. Add the column D summations across and compare this to the sum of column A. A variance of more than + or - .005 mt indicates the strong probability of calculation error.

9. Skip a line between days.

10. Number pages consecutively regardless of area designation.

The afore-mentioned procedure was an extrapolation of the species composition data from the weight by species in the sample to the weight by species for the entire sampled haul. Observers on independent stern trawlers and joint venture vessels now need to extrapolate the weight by species from sampled hauls to the weight by species for the total catch of the day, and sum these data for the week.

FORM RM WEEKLY RADIO REPORT WORK SHEET AREA 52

CRUISE NO. 530 VESSEL CODE NS78

Extrapolation of sample wt. up to total wt. of hauls sampled

PAGE 1 OF _____

ARROW* JOINT VENTURE EXAMPLE

DATE & HAUL No.	A HAUL WT MT	B TOTAL SAMPLE WT KG	C SQU KG SMPL	C SQU MT HAUL	D YELL KG SMPL	D YELL MT HAUL	TURB KG SMPL	TURB MT HAUL	OFLAT KG SMPL	OFLAT MT HAUL	POLL KG SMPL	POLL MT HAUL	COD KG SMPL	COD MT HAUL	SAB KG SMPL	SAB MT HAUL	ATKA KG SMPL	ATKA MT HAUL	POP KG SMPL	POP MT HAUL	OROCK KG SMPL	OROCK MT HAUL	HER KG SMPL	HER MT HAUL	OTH KG SMPL	OTH MT HAUL	NON KG SMPL	NON MT HAUL
9/9 #100	40.0	524.7	120.2	9.163							365.8	27.986	10.2	.778	8.4	.640			11.3	.861	3.7	.282					5.1	.389
9/10 #101	16.0	16000.0	3.6	.004			5.0	.005	1.45	.001	15857 .72	15.858			72.6	.073			.45	.0005	14.0	.014			6.8	.007	38.38	.038
#103	20.0	20000.0					5.9	.006	1.4	.001	16919.59	16.920	2985.81	2.986	78.5	.079									3.8	.004	5.0	.005
#104	12.0	460.9	51.8	1.349							350.0	9.113	23.8	.620	5.2	.135			20.5	.534	2.5	.065					7.1	.185
DAY'S TOTALS	48.0			1.353				.011		.002		41.891		3.606		.287				.535		.079				.011		.228
9/11	~ NO FISHING ~																											
9/12 #105 (POLLOCK)	8.0	8000.0	20.1	.020			8.7	.009	4.1	.004	7059.0	7.059	645.8	.646	120.6	.121			40.3	.040	6.6	.007	17.8	.018	41.3	.041	35.7	.036
9/12 #106 (POLLOCK)	20.0	3279					.55	.034	6.7	.409	291.3	17.768	13.2	.805	15.6	.952									.3	.018	.25	.015
DAY'S TOTAL POLLOCK HAULS	28.0			.020				.043		.413		24.827		1.451		1.073				.040		.007		.018		.059		.051
9/12 #109 (PACIFIC COD)	30.0	356.0									40.1	3.379	302.1	25.458	3.3	.278			7.6	.640	2.1	.177					.8	.067
DAY'S TOTAL (COD HAULS)	30.0											3.379		25.458		.278				.640		.177						.067

* The "ARROW" category was left out because the observer did not expect to see any flatfish from that category during the week.

GPO 989-767

FORM RM-1 - FOR ALL VESSEL CLASSES

The instructions for calculating the week's catch data on Form RM-1 are similar for all vessel classes. The difference lies in which Form the required information comes from. Guidelines for each vessel type are included with instructions below.

1. At the end of each day, determine the correct statistical area of each catch. The position which determines the statistical area is:

   Joint Venture Processors - the delivery position
   Independent Stern Trawlers - the haul position
   Independent Longliners - the set retrieval position
   Independent Motherships - the noon position
   For all vessels - the noon position on non-fishing days.

   Data for each area should be recorded on separate sheets of Form RM-1. (Longline observers must not only calculate their radio information separately by area, but also by shallow or deep water catch. -- See the following section: "Additional Instruction by Vessel Type".)

2. According to the list by region (BSA, GOA, or WOC), write the species report group abbreviations, in order, across the tops of the columns. (If all of the species report groups will not fit on the form, then leave out one or two report groups that you do not expect to see in that weeks' catch.)

3. Enter the GMT date.

4. Column A. Record the total weight of catch landed by the vessel in the area that day.

   By vessel class this is:

   Independent Stern Trawlers and Joint Venture Processors - the sum of all individual haul weights from within the area for the day (both sampled and not-sampled hauls), from Form 2 or Form 2JV.
   Independent Longliners - the catch weight of each set from Form 1L. Calculate each set separately.
   Independent Motherships - the day's catch from Form 1.

   The ship's final estimate of landed catch (or adjusted estimate) should be used as the official daily total. Check these data against the ship's log on a following day. Be aware that if the Captain later adjusts his first estimate of a catch, you must adjust your catch weights on your forms and recalculate the associated data.

5. Column B. The entry according to vessel class is:
Independent Stern Trawlers and Joint Venture Processors - the sum of the haul weights of the sampled hauls. This is the sum of column A for the day on Form RM and is in metric tons, not kilograms.
Independent Longliners and Motherships - the total weight of all species composition samples taken for that set or day from Form 3(2) under "Totals for the Day", in kilograms.

6. Column C. (For each species group) - Record the total weight of each species report group from the day's species composition sample.
Independent Stern Trawlers and Joint Venture Processors - This is the sum of Column D for the day from Form RM and is recorded in metric tons to the nearest .001 mt.
Independent Longliners and Motherships - record the summed weight of that species report group from the species composition samples of that set or day, from Form 3(2), in kilograms.
Check your transcribing and summaries by adding the Column C's across and comparing with Column B for an exact match.

7. Column D. (For each species group) - To calculate the total daily catch of each species report group, divide the total landed catch for the area (Column A) by the total sampled weight (Column B). Store this constant ratio in the calculator memory and multiply it by each species sample weight (Column C). Record the results to the nearest .001 mt. Tonnages of .00049 or less should be recorded to the nearest .0001 and carried through the calculations to the summary for the week.

8. Check your calculations by adding the Column D's across for each day or set and comparing with Column A. A tolerance of + or - .005 mt is acceptable for independent longliners or motherships, or + or - .01 mt for independent stern trawlers and joint venture processors.

9. For the week: Sum Column A. Sum Column D's for each species report group. All summations should be rounded and recorded to either two or three decimal places consistently. Add the Column D's across. The total of the Column D's should be within + or - .02 mt of the sum of Column A for the week.

10. If the difference between the sum of Column D's and Column A is within the tolerance specified, it is probably due to rounding. In paragraph 1 of your radio message however, species weights must equal the total weight exactly. Differences due to rounding must be eliminated by adjusting a predominant species weight sum (Column D). The correct figure should be circled and the adjusted figure written below it (see the Independent Mothership Form RM-1 example).

FORM RM-1 WEEKLY RADIO REPORT WORK SHEET AREA 52

CRUISE NO. _____ VESSEL CODE _____

Extrapolation of Total wt. of hauls sampled up to total wt. of all hauls for the day.

JOINT VENTURE EXAMPLE

* For motherships and longliners, column B should equal the day's total sample wt. in kg. and the column C's should equal the total wt. of each group (in kg.) from the day's samples.

	A	B*	C*	D	SQU		YELL		TURB		OFLAT		POLL		COD		SAB		ATKA		POP		DROCK		HER		OTH		NON	
DATE	DAY WT IN MT	TOTAL WT OF SMPLD HAULS IN MT	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY	MT IN SMPLD HAULS	MT DAY
9/9/83	40.0	40.0	9.163	9.163									27.886	27.886	.778	.778	.640	.640			.861	.861	.282	.282					.389	.389
9/10	83.0	48.0	1.353	2.340					.011	.019	.002	.003	41.891	72.437	3.606	6.235	.287	.496			.535	.925	.079	.137			.011	.019	.2281	.394
9/11 No Fishing																														
9/12 (Pollock)	35.0	28.0	.020	.025					.043	.054	.413	.516	24.827	31.034	1.451	1.814	1.073	1.341			.040	.050	.007	.009	.018	.023	.059	.074	.051	.064
9/12 (Cod)	40.0	30.0											3.379	4.505	25.158	33.944	.278	.371			.640	.853	.177	.236					.067	.089
Totals For the Week	198.0			11.528						.073		.519		135.862		42.771		2.848				2.689		.664		.023		.093		.936
	198.0			11.53						.07		.52		135.86		42.77		2.85				2.69		.66		.02		.09		.94
MOTHERSHIP EXAMPLE																														
8/31/83	718.0	831.27			776.89	671.030			.3	.259	31.65	27.337	.25	.216	.58	.501											13.83	11.946	7.77	6.711
9/1	668.0	990.75			920.8	620.837			23.7	15.979	27.2	18.339	1.25	.843	.8	.539											16.5	11.125	.5	.337
9/2	— No Fishing —																													
Totals For the Week	1386.0					1291.867				16.239		45.676		1.059		1.040												23.071		7.048
	1386.0					(1291.86)				16.24		45.68		1.06		1.04												23.07		7.05
DEEP DEPTHS LONGLINER EXAMPLE																														
10/19 #1	11.4	3723.7											11.7	.036	492.1	1.507	2913.1	8.918			27.4	.084	152.7	.467			94.6	.290	32.1	.098
10/20 #1	16.5	4831.87							37.0	.126			108.5	.371	1858.4	6.346	1419.84	4.849			11.7	.040	99.4	.339			14.8	.051	1282.21	4.379
10/21 #1	8.6	2472.2											25.5	.089	600.3	2.088	1166.09	4.056			9.1	.032	11.7	.041			87.11	.303	572.4	1.991
10/21 #2	10.1	3264.6							1278.3	3.955	126.5	.391	7.3	.023	10.8	.033	702.71	2.174			1.7	.005	28.6	.088			167.2	.517	941.5	2.913
10/22 #1	— No Fishing —																													
Totals For the Week	46.6									10.427		.391		.519		3.628		19.997				.161		.935				1.161		19.381
	46.6									(10.42)		.39		.52		3.63		20.00				.16		.94				1.16		9.38

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ADDITIONAL INSTRUCTION BY VESSEL TYPE

Longliners

Longliner observers should calculate and report the catch data for the radio messages separately according to the target species of the fishery. The species composition of the catch has been found to vary largely due to the depth fished. When a set is retrieved from shallow water (water less than 500 meters), the catch is largely Pacific cod, and when the set is made in deep water, sablefish, rattails, or flatfish usually predominate. As in item 1 of the last section, determine the statistical area of each set from the "set retrieval position" listed on Form 1L. Then decide whether the majority of the catch for a given day is typical of shallow water or deep water fishing. When deciding whether or not a catch should be called "shallow" or "deep", pay more attention to the catch composition rather than the depth. In other words, if the depth is 525 meters, yet the catch is mostly cod, call it a shallow set.

If you have a shallow set and a deep set on the same day, extrapolate the catch separately, but attribute the day on the ground to the depth at which most of the fishing was done. Keep separate RM-1 forms for each area and fishing strategy, labeling the top of the RM-1 for "Shallow" or "Deep". Refer to the "Radio Message Examples" section for an example of a radio message from a longliner.

Joint Venture Vessels in the Hake Fishery Only

In joint venture operations in the hake fishery, it is important to determine the amount of bycatch species (species other than hake) that are discarded and not utilized. In this fishery only, discards of these species are not counted toward the quota. The ships' fishing logs will indicate

whether the bycatch species were kept or discarded. (It can be found under "Daily Disposition" in Section Two - Catch of the Joint Venture Log.) Your radio message should contain the estimated quantity of hake caught, the quantities of bycatch species retained, and the amount of bycatch species discarded. The total for each area should be the total caught (amount retained + amount discarded). All hake caught must be applied to the quota whether discarded or not. The "Joint-venture in the WOC Coast Hake Fishery" radio message illustrates how to report bycatch discards.

Joint Venture Vessels Which Also Fish On Their Own

If two different types of catches are being landed aboard the processing vessel - codends from catcher boats fishing from the U.S. quota, and hauls made by the processing vessel itself from a foreign allocation - the data from these two types of hauls must be kept separate. The two sets of data should be like two separate cruises. Each day's activities should be accounted for on both sets of forms (Form 2 and Form 2JV). For example, if the processing vessel did not fish for itself on a given day because it was receiving fish from the joint venture, enter this reason in columns 36-54 of Form 2 (for stern trawlers) to distinguish that situation from a non-fishing day due to bad weather or cargo transfer.

If the processing vessel made any catches on its own during the week, it is important to sample at least some hauls from each day of independent fishing so that you will have species composition data to use for the extrapolations (for radio messages on forms RM and RM-1).

If the ship received codends in a joint venture and fished on its own as an independent vessel, in the same day, but you were unable to sample the catch

from both operations, an extrapolation may be possible. Apply the sampling data (percent composition by weight) from flanking days (previous or following) of the same type of fishing (J.V. or indep.) from the same area. Then divide the day on grounds based on either the fishing time spent in each operation or on the number of tows of each type of fishing that were landed on your vessel that day. However, if there were no flanking days data from the same type of operation and area, then do not extrapolate and do not include the weight of those hauls or their corresponding fractional day on ground in your weekly radio report. For example, in your radio message, you would include a line like the following: "Did not sample independent catch of 20D5P9 MT on May 14 DG 0D25P7".

SPECIAL PROBLEMS

If Your Ship Fishes Outside of the FCZ

Continue to sample and send radio reports for any catches taken outside the FCZ. In the Bering Sea report the catch as coming from Area 55. Outside the FCZ in the Gulf of Alaska is Area 68, and outside the FCZ off the Washington Oregon-California coast is Area 75. (Refer to the charts on previous pages.)

Lack of Species Composition Data from an Area for a Day Fished

If, during the middle of a cruise you did not sample at all for a given fishing day due to illness, severe weather problems, or other reasons, do not extrapolate catch data for that period. In your weekly radio message, include only the catch data for the days you did sample, indicate the reason for not sampling, and report the dates and total catch tonnage of the non-sampled days in a separate sentence. (See the example of a message sent from a "vessel

fishing independently in the WOC Hake Fishery.)

If, however, the ship fished in two or more areas in a day that you sampled but you were unable to sample the catch for all of the areas in which the vessel fished that day, an extrapolation may be possible. Apply the sampling data (percent composition by weight) of the hauls from the previous or following day from that same area to the catch from that area for the day.

Two Distinct Types of Fishing Strategy within a Day

In those cases where the vessel uses two distinct fishing strategies during the day to target on two different types of fish (i.e. flatfish during the day and rockfish at night), the observer should use the following method to calculate the daily catch for the weekly catch message. Both types of hauls must be sampled each day and you must be able to designate each haul as one of the two types.

Within each area fished during the day, treat the two types of hauls separately on Form RM and Form RM-1 so that you estimate the catch of each species group separately for each type of haul. Within each area you will have two separate daily estimates of catch by species on Form RM-1. At the week's end, sum all estimates from both types of hauls for each species (Column D). There is no need to separate the week's totals into two types of hauls. (Refer to the date 9/12 on the RM and RM-1 examples.)

INSTRUCTIONS FOR MAKING WEEKLY PROHIBITED SPECIES CATCH REPORTS - PARAGRAPH 2

The following set of instructions pertains to the data you have collected on the incidental catch of prohibited species (king crab, Tanner crab, halibut, and salmon) and their inclusion in Paragraph 2 of the weekly radio message. The information to be included in the message should be recorded on Form RM-3 "Weekly Radio Report Worksheet for Prohibited Species". The data required to complete this form are recorded on Forms 1, 3(1) and 4 for independent motherships, Forms 2, 3(1) and 4 for independent stern trawlers, Forms 2JV, 3(1) and 4 for joint-venture processors, and Forms 1L, 3L(1) and 4 for independent longliners.

Abbreviations to Be Used in RM-3 and the Radio Messages:

REDKNG	Red King Crab
BLUKNG	Blue King Crab
OTHKNG	Golden & Couesi King Crab
BTAN	Bairdi Tanner Crab
OTHTAN	Opilio, Angulatus, Tanneri Tanner Crab
HBT	Pacific Halibut
CHIN	Chinook Salmon
OTHSAL	The other four species of salmon

(As there are so many prohibited species report groups, report a prohibited species group only if you observed some. If there were no prohibited species in your samples for an entire week, then you must report the total weight of the hauls sampled and at least one prohibited species report group with "0" in the message so that the computer program will except the message.)

FORM RM-3 - FOR ALL VESSEL CLASSES

1. Entry of data on Form RM-3 will be made for every haul on independent stern trawlers and joint-venture processors, day on independent motherships, or set on independent longliners which you sample for the incidence of prohibited species (even if none are found in your samples).

2. All data should be separated by area (i.e. 51, 52, 53, etc., see charts on previous pages) and each area recorded on separate sheets of Form RM-3. Longline observers should also report their data by depth (shallow--less than 500 m; deep--greater than 500 m).

3. Enter GMT date and the haul number for independent stern trawlers and joint venture processors or set number on independent longliners. (Only the date is needed for independent motherships.) Remember the week runs from Sunday through Saturday GMT.

4. Column A: Enter the haul weight for independent stern trawlers and joint venture processors, day's total catch for independent motherships, or the set catch for independent longliners. Enter the weight in metric tons (mt), not kilograms.

5. Column B: Enter the weight of groundfish catch sampled for each of the prohibited species to the nearest 0.01 mt. The data will be recorded by haul on independent stern trawlers and joint venture processors. A total sample weight for the day (motherships) or set (longliners) will have to be computed by summing the sample weight over all sampling periods. (This is obtained from your 3(1) forms.)

6. Column C: Using your Form 4 data for the same haul, determine the species composition of the prohibited species that you recorded in the "number observed" columns of Form 3(1). If your Form 4 data are a subsample of your 3(1) number observed, you need to extrapolate the Form 4 data to the 3(1) number observed before entering the results on the worksheet. For example: you entered 1000 Tanner crab on 3(1) but you subsampled 100 for the Form 4 data, obtaining 25 Bairdi, 50 opilio, and 25 angulatus. On the RM-3 worksheet you would enter 250 Bairdi and 750 other Tanner crab.

7. Column D: Compute the estimated number of individuals caught of each species and record the result to the nearest 0.1.

$$\text{Column D} = \frac{\text{Column A} \times \text{Column C}}{\text{Column B}}$$

8. Column X: Enter the average weight to the nearest 0.0001 kg for the halibut you observed on Form 3(1). For independent motherships, a daily average will have to be computed and a set average for independent longliners. To compute the daily or set average, divide the sum of the weights of those individuals estimated or weighed during all sampling periods by the sum of the number of individuals estimated or weighed during all sampling periods. (Please note that halibut is the only prohibited species that requires an average weight on RM-3.)

9. Column Y: Compute the estimated weight of the halibut and record the result to the nearest 0.01 kg. (Please note that halibut is the only prohibited species that requires an estimated weight.)

   Column Y = Column D x Column X

   (Note: If you whole haul sample and weighed or measured all of the halibut, simply enter the total number of halibut in column D and their total weight in column Y. Don't introduce rounding error by going through needless calculations.)

10. At the end of each week, sum columns A, D, and Y by area for each species.

11. Skip a line between weeks.

FORM RM-3 WEEKLY RADIO REPORT WORK SHEET FOR *PROHIBITED SPECIES*

CRUISE NO. 530 VESSEL CODE NS78 AREA 52 JOINT VENTURE EXAMPLE PAGE 1 OF _____

	A	B	C	D	C	D	C	D	B	C	D	C	D	C	D	B	C	X	D	Y	B	C	D	C	D	C	D
		KING CRAB							TANNER CRAB							PACIFIC HALIBUT					SALMON						
DATE AND HAUL NO.	HAUL OR DAY WT (mt)	3(i) Sample wt	REDKNG No. Observ.	REDKNG Est. No.	BLUKNG No. Observ.	BLUKNG Est. No.	OTHKNG No. Observ.	OTHKNG Est. No.	3(i) Sample wt	BTAN No. Observ.	BTAN Est. No.	OTHTAN No. Observ.	OTHTAN Est. No.	No. Observ.	Est. No.	3(i) Sample wt	HBT No. observ.	HBT Avg. wt (kg)	HBT Est. No.	HBT Est. wt (kg)	3(i) Sample wt	CHIN No. Observ.	CHIN Est. No.	OTHSAL No. Observ.	OTHSAL Est. No.	No. Observ.	Est. No.
9-9 #100	40.0	20.0	0		0		0		20.0	1	2.0	0				20.0	1	1.20000	2.0	2.40	20.0	0		0			
9-10 #101	16.0	16.00	0		0		0		16.00	156	156.0	4	4.0			16.00	2	3.10000	2.0	6.20	16.00	3	3.0	0			
#103	20.0	20.00	0		0		0		20.00	0		0				20.00	1	5.00000	1.0	5.00	20.00	0		0			
#104	12.0	12.00	0		0		0		3.00	100	400.0	16	64.0			12.00	11	6.4727	11.0	71.20	12.00	4	4.0	0			
9-11 NO FISHING																											
9-12 #105	8.0	8.00	0		0		0		8.00	123	123.0	0				8.00	4	1.90000	4.0	7.60	8.00	0		0			
#106	20.0	20.00	0		0		0		20.00	15	15.0	0				20.00	0				20.00	0		0			
#109	30.0	30.00	0		0		0		15.00	0		0				15.00	0				15.00	1	2.0	0			
WEEKS TOTAL	146.0			0		0		0			696.0		68.0						20.0	92.40			9.0		0		

FORM RM-3 WEEKLY RADIO REPORT WORK SHEET FOR

CRUISE NO. _____ VESSEL CODE _____ AREA 52

PAGE 1 OF _____

A	B	C	D	C	D	C	D	B	C	D	C	D	C	D	B	C	K	D	Y	B	C	D	C	D	C	D
	KING CRAB							TANNER CRAB							PACIFIC HALIBUT					SALMON						
		REDKNG		BLUKNG		OTHKNG			BTAN		OTHTAN					HBT					CHIN		OTHSAL			
DATE AND HAUL NO.	HAUL OR DAY WT (mt)	3(i) Sample wt	No. Observ.	Est. No.	No. Observ.	Est. No.	No. Observ.	Est. No.	3(i) Sample wt	No. Observ.	Est. No.	No. Observ.	Est. No.	No. Observ.	Est. No.	3(i) Sample wt	No. observ.	Avg. wt (kg)	Est. No.	Est. wt. (kg)	3(i) Sample wt	No. Observ.	Est. No.	No. Observ.	Est. No.	No. Observ.	Est. No.
							Longliner Example																			
DEEP DEPTHS																										
10-19 #1	11.4	3.72	0		1	3.1	0		3.72	12.0	36.8	0				3.72	7	1.72	21.5	36.98	3.72	0		0			
10-20 #1	16.5	4.83	3	10.2	0		1	3.4	4.83	0		0				4.83	35	2.83	119.6	338.47	4.83	0		0			
10-21 #1	8.6	2.47	0		0		0		2.47	0		3	10.4			2.47	3	2.94	10.4	30.58	2.47	0		0			
#2	10.1	3.26	3	9.3	0		0		3.26	0		0				3.26	12	2.21	37.2	82.21	3.26	0		0			
10-22 #1	—	No	Fishing																							
WEEKS TOTAL	46.6			19.5		3.1		3.4			36.8		10.4						188.7	488.24			0		0	
							Mothership Example																			
8-31	718.0	35.66	0		0		5	100.7	25.66	0		277	7750.8			35.66	11	2.58	221.5	571.47	35.66	0		0			
9-1	668.0	87.78	0		0		2	15.2	87.78	0		81	616.4			87.78	3	3.77	22.8	85.96	87.78	0		0			
9-2		—	No	Fishing																						
WEEKS TOTAL	1386.0			0		0		115.9			0		8367.2						244.3	657.43			0		0	

GENERAL DIRECTIONS FOR WRITING RADIO MESSAGES

The following abbreviations are to be used in formatting your radio messages:

A represents area

DG represents days on grounds

D represents a decimal point (put in each catch figure, even if tonnage is a whole number; i.e. 125 mt should be sent as 125D0P8).

P represents the numerical check which is the sum of the actual value of the digits in the weight shown for the species.

/ represents the equivalent of a comma in a sentence.

/// represents the equivalent of a period in a sentence.

STOP means "end of message".

The following line of information should be written as the first entry of any radio message from a ship in the Bering Sea or Gulf of Alaska:

NOJ DE vessel call sign MSG CATCHREP K

If you are sending a message from a ship off the coasts of Washington, Oregon or California, then you should use the following first entry line:

NMC DE vessel call sign MSG CATCHREP K

This line identifies the message to the receiving Coast Guard station as a catch report from a foreign vessel. The next four lines identify the receivers (TO: ____, ATTN: ____, INFO: ____) and the sender (FROM: ____) of the message, in that order. The "TO:" line should always read: "RUSS NELSON/ NWAFC/ SEATTLE WA". The "ATTN:" line is addressed to your contracting agency. Use the following abbreviations for contractors:

Oregon State University: OSU
University of Washington: UW
Frank Orth and Associates: ORTH

The "INFO:" line should read: "NMFS/ AK REGION/ JUNEAU AK" for those fishing in Alaskan waters (BSA and GOA); and "NMFS, NW REGION, SEATTLE WA" for those

fishing off the Wash. Ore. or Calif. coasts (WOC).

The most recent GMT noon position and the date (month, day) of that position should be a routine part of the "FROM: ____" entry of every radio message so that the vessel's location can be monitored. Thus, it should be sent with the routine species composition and prohibited species messages, as well as any radio message sent at other times--i.e. to ask a question about sampling or inform us that the ship will be leaving soon.

Example:

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: Your contractor (i.e. OSU, ORTH, UW, etc.)
INFO: NMFS/ AK REGION/ JUNEAU AK (for BSA and GOA)
NMFS/ NW REGION/ SEATTLE WA (for WOC)
FROM: Your name/ vessel name/ vessel permit number/ 59-40N 177-59W SEP 14
(Most recent GMT noon position and date)

If you are transferred to a new ship during the week, you must report the catch and effort data for the period spent on each ship separately. Your weekly message will include two reports, one for each ship, for that week. The GMT date and time of transfer from one ship to another should be included in the first catch message on the ship that you transfer to. The time is not a critical item, but if there is a considerable delay between disembarkation of the first vessel and the embarkation of the second vessel, give the time and date of the arrival on the new vessel.

Your last radio message should be sent before leaving for Seattle. In most cases, this will be only a partial weeks data, however NWAFC will receive the information quicker if it is sent via a radio message rather than provided during your debriefing period in Seattle.

After the heading of the radio message, comes the body of the message. The first paragraph of the message will contain the species composition information. Label this as "PARA 1" for paragraph 1. After "PARA 1", the

1989 Joint Venture Permits

27-Jan-89

U.S. Partner	Foreign Company	Code	Vessel Name	Vessel Pe
Profish International	Dalmor	PL15	Admiral Arciszewski	
Alaska Pacific International	Dalmor	PL16	Admiral Arciszewski	
Alaska Joint Venture Seafoods	Dalmor	PL23	Admiral Arciszewski	
Westward Trawlers	Taiyo Fishery	JA25	Akashi Maru No. 11	
Westward Trawlers	Taiyo Fishery	JA25	Akashi Maru No. 12	
Westward Trawlers	Taiyo Fishery	JA25	Akashi Maru No. 66	
Westward Trawlers	Taiyo Fishery	JA25	Akashi Maru No. 67	
United Pacific Fisheries	Nichiro Gyogyo	JA81	Akebono Maru No. 18	
United Pacific Fisheries	Nichiro Gyogyo	JA81	Akebono Maru No. 22	
United Pacific Fisheries	Nichiro Gyogyo	JA81	Akebono Maru No. 3	
United Pacific Fisheries	Nichiro Gyogyo	JA81	Akebono Maru No. 31	
United Pacific Fisheries	Nichiro Gyogyo	JA81	Akebono Maru No. 72	
United Pacific Fisheries	Nichiro Gyogyo	JA81	Akebono Maru No. 77	
Profish International	Dalmor	PL15	Altair	
Alaska Pacific International	Dalmor	PL16	Altair	
Alaska Joint Venture Seafoods	Dalmor	PL23	Altair	
Profish International	Dalmor	PL15	Amarel	
Alaska Pacific International	Dalmor	PL16	Amarel	
Alaska Joint Venture Seafoods	Dalmor	PL23	Amarel	
Profish International	Dalmor	PL15	Antares	
Alaska Pacific International	Dalmor	PL16	Antares	
Alaska Joint Venture Seafoods	Dalmor	PL23	Antares	
Profish International	Anyo Suisan K.K.	JA20	Anyo Maru No. 1	
Profish International	Anyo Suisan K.K.	JA20	Anyo Maru No. 11	
Profish International	Anyo Suisan K.K.	JA20	Anyo Maru No. 15	
Profish International	Anyo Suisan K.K.	JA20	Anyo Maru No. 18	
Profish International	Anyo Suisan	JA20	Anyo Maru No. 21	
Profish International	Anyo Suisan	JA20	Anyo Maru No. 22	
Profish International	Dalmor	PL15	Aquarius	
Alaska Pacific International	Dalmor	PL16	Aquarius	
Alaska Joint Venture Seafoods	Dalmor	PL23	Aquarius	
Profish International	Dalmor	PL15	Aquila	
Alaska Pacific International	Dalmor	PL16	Aquila	
Alaska Joint Venture Seafoods	Dalmor	PL23	Aquila	
Profish International	Dalmor	PL15	Arcturus	
Alaska Pacific International	Dalmor	PL16	Arcturus	
Alaska Joint Venture Seafoods	Dalmor	PL23	Arcturus	
Profish International	Dalmor	PL15	Awior	
Alaska Pacific International	Dalmor	PL16	Awior	
Alaska Joint Venture Seafoods	Dalmor	PL23	Awior	
Profish International	Dalmor	PL15	Bogar	
Alaska Pacific International	Dalmor	PL16	Bogar	
Alaska Joint Venture Seafoods	Dalmor	PL23	Bogar	
Profish International	Dalmor	PL15	Cassiopeia	
Alaska Pacific International	Dalmor	PL16	Cassiopeia	
Alaska Joint Venture Seafoods	Dalmor	PL23	Cassiopeia	

Alaska Surimi Products	Korea Wonyang Fisheries	KS30	Cheog Yang Ho
Dona Joint Venture Fisheries	Korea Wonyang Fisheries	KS52	Cheog Yang Ho
Alyeska Ocean	Hoko Fishing	JA26	Chikubu Maru
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Chikuzen Maru
Westward Trawlers	Taiyo Fishery	JA25	Chiyo Maru
Profish International	Dohoku Suisan	JA76	Choyo Maru No. 81
Profish International	Namyangsa	KS34	Crystal Dahlia
Alaska Trawl Fisheries	Dae Rim Fishery	KS50	Dae Jin No. 21
Alaska Trawl Fisheries	Dae Rim Fishery	KS50	Dae Jin No. 52
Dona Joint Venture Fisheries	Hansung Enterprise	KS45	Dae Sung Ho
United Pacific Fisheries	Ohura Gyogyo	JA69	Daian Maru No. 188
Alaska Pacific International	Maruyo Zousen Tekko	JA59	Daikichi Maru No. 2
Alaska Pacific International	Maruyo Zousen Tekko	JA59	Daikichi Maru No. 5
Alaska Pacific International	Maruyo Zousen Tekko	JA59	Daikichi Maru No. 51
Profish International	Dalmor	PL15	Dalmor 2
Alaska Pacific International	Dalmor	PL16	Dalmor 2
Alaska Joint Venture Seafoods	Dalmor	PL23	Dalmor 2
Profish International	Dalmor	PL15	Delfin
Alaska Pacific International	Dalmor	PL16	Delfin
Alaska Joint Venture Seafoods	Dalmor	PL23	Delfin
Profish International	Dalmor	PL15	Denebola
Alaska Pacific International	Dalmor	PL16	Denebola
Alaska Joint Venture Seafoods	Dalmor	PL23	Denebola
Profish International	Dong Bang Ocean Fisheries	KS33	Dong Bang Ho

Profish International	Dongwon Industries	KS32	Dongsan Ho
Profish International	Maruhon Suisan	JA75	Ebisu Maru No. 88
Profish International	Marue Suisan	JA83	Fukuho Maru No. 78
Profish International	Fukushin Suisan	JA21	Fukushin Maru No. 8
Alaska Pacific International	Kato Gyogyo K.K.	JA70	Fukuyoshi Maru No. 38
Alaska Pacific International	Kato Gyogyo	JA70	Fukuyoshi Maru No. 58
Alaska Surimi Products	Korea Wonyang Fisheries	KS30	Gae Cheog Ho
Dona Joint Venture Fisheries	Korea Wonyang Fisheries	KS52	Gae Cheog Ho
Arctic Ventures	Gae Yang Heungsan	KS46	Gae Yang Ho
Profish International	Dalmor	PL15	Garnela
Alaska Pacific International	Dalmor	PL16	Garnela
Alaska Joint Venture Seafoods	Dalmor	PL23	Garnela
Profish International	Dalmor	PL15	Gemini
Alaska Pacific International	Dalmor	PL16	Gemini
Alaska Joint Venture Seafoods	Dalmor	PL23	Gemini
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Geng Hai
Profish International	Dalmor	PL15	Grinwal
Alaska Pacific International	Dalmor	PL16	Grinwal
Alaska Joint Venture Seafoods	Dalmor	PL23	Grinwal
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Hai Fa
Profish International	Dalmor	PL15	Hajduk
Alaska Pacific International	Dalmor	PL16	Hajduk
Alaska Joint Venture Seafoods	Dalmor	PL23	Hajduk
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Hakurei Maru
Profish International	Silla Trading	KS37	Han Jin Ho
Profish International	Silla Trading	KS37	Han Kil Ho

Profish International	Silla Trading	KS37	Hanil Ho
Profish International	Taiheiyo Suisan	JA72	Natsue Maru No. 68
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Hokkai Maru
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Hokuto Maru
Northern Deep Sea Fisheries	Hohsui	JA43	Koyo Maru
Profish International	Dalmor	PL15	Humbak
Alaska Pacific International	Dalmor	PL16	Humbak
Alaska Joint Venture Seafoods	Dalmor	PL23	Humbak
Profish International	Dalmor	PL15	Indus
Alaska Pacific International	Dalmor	PL16	Indus
Alaska Joint Venture Seafoods	Dalmor	PL23	Indus
Dong Joint Venture Fisheries	Hansung Enterprise	KS45	Joon Sung Ho
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Kai Chuang
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Kai Tuo Hai Feng 301
Northern Deep Sea Fisheries	Kaiun Suisan	JA74	Kaiun Maru No. 65
United Pacific Fisheries	Kaiyo Gyogyo	JA68	Kaiyo Maru No. 115
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 1
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 11
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 12
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 17
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 18
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 2
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 7
Northern Deep Sea Fisheries	Hohsui	JA43	Kakuyo Maru No. 8
Profish International	Dalmor	PL15	Kalmar
Alaska Pacific International	Dalmor	PL16	Kalmar
Alaska Joint Venture Seafoods	Dalmor	PL23	Kalmar
Profish International	Dalmor	PL15	Kantar
Alaska Pacific International	Dalmor	PL16	Kantar
Alaska Joint Venture Seafoods	Dalmor	PL23	Kantar
Profish International	Marukei	JA60	Koei Maru No. 51
Profish International	Marukei	JA60	Koei Maru No. 56
Trawl Resources	Hokkaido Fishery	JA42	Kohoku Maru No. 7
Profish International	Dalmor	PL15	Kolias
Alaska Pacific International	Dalmor	PL16	Kolias
Alaska Joint Venture Seafoods	Dalmor	PL23	Kolias
Alaska Pacific International	Watarai Shoten	JA61	Koshin Maru No. 1
Northern Deep Sea Fisheries	Hohsui	JA43	Koyo Maru No. 2
Northern Deep Sea Fisheries	Hohsui	JA43	Koyo Maru No. 3
Northern Deep Sea Fisheries	Hohsui	JA43	Koyo Maru No. 8
Profish International	Korea Wonyang Fisheries	KS31	Kung Yang Ho
Profish International	Dalmor	PL15	Manta
Alaska Pacific International	Dalmor	PL16	Manta
Alaska Joint Venture Seafoods	Dalmor	PL23	Manta
Profish International	Dalmor	PL15	Marlin
Alaska Pacific International	Dalmor	PL16	Marlin
Alaska Joint Venture Seafoods	Dalmor	PL23	Marlin
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Minishima Maru
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Miyajima Maru
Profish International	Dalmor	PL15	Mors
Alaska Pacific International	Dalmor	PL16	Mors
Alaska Joint Venture Seafoods	Dalmor	PL23	Mors

Profish International	Dalmor	PL15	Mustel
Alaska Pacific International	Dalmor	PL16	Mustel
Alaska Joint Venture Seafoods	Dalmor	PL23	Mustel
Alaska Joint Venture Seafoods	Nambug Fisheries	KS39	Nambug Ho
Dona Joint Venture Fisheries	Hansung Enterprise	KS45	No. 1 Han Sung
American Offshore Ventures	Sam Ho Moolson	KS40	No. 29 Tae Baek
Alaska Pacific Fisheries	Taewoong Deep Sea Fisheries	KS49	No. 602 Tae Woong
C.K.K. Uyck Fisheries	Marine Enterprise	KS52	No. 7 Sang Won
Profish International	Oyang Fisheries	KS44	No. 70 Oyang Ho
Profish International	Dong Bang Ocean Fisheries	KS33	No. 71 Dong Bang
United Pacific Fisheries	Ohtori Suisan	JA78	Ohtori Maru
Profish International	Dalmor	PL15	Orcyn
Alaska Pacific International	Dalmor	PL16	Orcyn
Alaska Joint Venture Seafoods	Dalmor	PL23	Orcyn
Profish International	Dalmor	PL15	Orlen
Alaska Pacific International	Dalmor	PL16	Orlen
Alaska Joint Venture Seafoods	Dalmor	PL23	Orlen
Profish International	Sajo Industrial	KS36	Oryang No. 501
Profish International	Sajo Industrial	KS36	Oryang No. 503
Profish International	Dalmor	PL15	Otol
Alaska Pacific International	Dalmor	PL16	Otol
Alaska Joint Venture Seafoods	Dalmor	PL23	Otol
Profish International	Oyang Fisheries	KS44	Oyang Ho
Profish International	Dalmor	PL15	Parma
Alaska Pacific International	Dalmor	PL16	Parma
Alaska Joint Venture Seafoods	Dalmor	PL23	Parma
Profish International	Dalmor	PL15	Perses
Alaska Pacific International	Dalmor	PL16	Perses
Alaska Joint Venture Seafoods	Dalmor	PL23	Perseus
Profish International	Dalmor	PL15	Pollux
Alaska Pacific International	Dalmor	PL16	Pollux
Alaska Joint Venture Seafoods	Dalmor	PL23	Pollux
Profish International	Dalmor	PL15	Prof. Bogucki
Alaska Pacific International	Dalmor	PL16	Prof. Bogucki
Alaska Joint Venture Seafoods	Dalmor	PL23	Prof. Bogucki
Profish International	Korea Wonyang Fisheries	KS31	Pung Yang Ho
Profish International	Dalmor	PL15	Regulus
Alaska Pacific International	Dalmor	PL16	Regulus
Alaska Joint Venture Seafoods	Dalmor	PL23	Regulus
Profish International	Dalmor	PL15	Rekin
Alaska Pacific International	Dalmor	PL16	Rekin
Alaska Joint Venture Seafoods	Dalmor	PL23	Rekin
Northern Deep Sea Fisheries	Hokusui	JA43	Rikuzen Maru
Trawl Resources	Hokkaido Fisheries	JA42	Ryoyo Maru
Westward Trawlers	Hokkaido Fisheries	JA82	Ryoyo Maru
Profish International	Matsubun Gyogyo	JA22	Ryuho Maru No. 38
Profish International	Matsubun Gyogyo	JA22	Ryuho Maru No. 51
Profish International	Dalmor	PL15	Sagitta
Alaska Pacific International	Dalmor	PL16	Sagitta
Alaska Joint Venture Seafoods	Dalmor	PL23	Sagitta
Profish International	Namyang Frozen Foods	KS35	Salvia
Kodiak and Western Trawler Group	Honma Gyogyo	JA75	Seitoku Maru No. 107
Profish International	Dalmor	PL15	Serius
Alaska Pacific International	Dalmor	PL16	Serius
Alaska Joint Venture Seafoods	Dalmor	PL23	Serius
Profish International	Fukushin Suisan	JA21	Shinei Maru No. 63
Profish International	Shintaro Yoshida	JA65	Shinei Maru No. 63
United Pacific Fisheries	Shinnichi Gyogyo	JA79	Shinnichi Maru No. 38

United Pacific Fisheries	Shinnichi Gyogyo	JA79	Shinnichi Maru No. 68
Profish International	Dongwon Industries	KS32	Shinyang Ho
United Pacific Fisheries	Kanafuji Gyogyo	JA67	Shunyoo Maru No. 118
Westward Trawlers	Taiyo Fishery	JA25	Soyo Maru
Profish International	Nemyangsa	KS34	Sunflower No. 7
American Offshore Ventures	Sam Ho Moolsan	KS40	Tae Baek Ho
Alaska Pacific Fisheries	Taewoong Deep Sea Fisheries	KS49	Tae Woong Ho
Northern Deep Sea Fisheries	Nohsul	JA43	Takachiho Maru
Profish International	Dalmor	PL15	Tazar
Alaska Pacific International	Dalmor	PL16	Tazar
Alaska Joint Venture Seafoods	Dalmor	PL23	Tazar
Profish International	Shinichiro Karari	JA66	Teisho Maru No. 68
Westward Trawlers	Taiyo Fishery	JA25	Tenyo Maru
Westward Trawlers	Taiyo Fishery	JA25	Tenyo Maru No. 2
Westward Trawlers	Taiyo Fishery	JA25	Tenyo Maru No. 3
Westward Trawlers	Taiyo Fishery	JA25	Tenyo Maru No. 5
Kodiak and Western Trawler Group	Kanai Gyogyo	JA31	Tomi Maru No. 51
Kodiak and Western Trawlers Group	Shunnichi Kanai	JA62	Tomi Maru No. 55
Kodiak and Western Trawler Group	Company unknown	JA77	Tomi Maru No. 58
Kodiak and Western Trawlers Group	Shunnichi Kanai	JA62	Tomi Maru No. 81

Kodiak and Western Trawler Group	Kanai Gyogyo	JA31	Tomi Maru No. 82
Kodiak and Western Trawler Group	Company unknown	JA77	Tomi Maru No. 83
Kodiak and Western Trawler Group	Kanai Gyogyo	JA31	Tomi Maru No. 86
Kodiak and Western Trawler Group	Kanai Gyogyo	JA31	Tomi Maru No. 87
Kodiak and Western Trawlers Group	Asahi Gyogyo	JA63	Tomi Maru No. 88
Alyeska Ocean	Hoko Fishing	JA26	Touda Maru
Profish International	Dalmor	PL15	Tunek
Alaska Pacific International	Dalmor	PL16	Tunek
Alaska Joint Venture Seafoods	Dalmor	PL23	Tunek
Profish International	Dalmor	PL15	Vega
Alaska Pacific International	Dalmor	PL16	Vega
Alaska Joint Venture Seafoods	Dalmor	PL23	Vega
Profish International	Dalmor	PL15	Walen
Alaska Pacific International	Dalmor	PL16	Walen
Alaska Joint Venture Seafoods	Dalmor	PL23	Walen
Profish International	Dalmor	PL15	Wlocznik
Alaska Pacific International	Dalmor	PL16	Wlocznik
Alaska Joint Venture Seafoods	Dalmor	PL23	Wlocznik
Northern Deep Sea Fisheries	Nippon Suisan Kaisha	JA34	Yamato Maru
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Yan Yuan No. 1
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Yan Yuan No. 2
China Pacific Ventures	Dalian Marine Fishery Corp,	PC14	Yun Hai
Profish International	Dongwon Industries	KS32	Yuyang Ho
United Pacific Fisheries	Esahi Gyogyo	JA80	Zuihoo Maru No. 28
Trawl Resources	Hokkaido Fisheries	JA42	Zuiyo Maru
Westward Trawlers	Hokkaido Fisheries	JA82	Zuiyo Maru
Westward Trawlers	Hakodate Kokai Fishery	JA38	Zuiyo Maru No. 3

vessel's permit number and the Saturday date of the report week should be entered. Use the following three letter abbreviations for the month: JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC. Then, give the nation whose quota the catch will be applied against for a message from a vessel that has been fishing independently, for example, a message from an independent Japanese trawler would read: "ALL JAPAN CATCH". If the message is written for a joint venture operation, then the phrase should read: " ALL US CATCH".

In a joint venture, following the phrase, "ALL US CATCH", you must list that vessels "joint venture company code" for the week. Joint venture company codes are a two letter - two number code that is indicative of a specific foreign fishing company and U.S. JV company match. These codes will be given to you in class in the form of a handout that should be added to your training manual.

The next items that are written in a standard weekly catch report message are a list of the inclusive dates of the days on grounds in the area, the statistical area, and the number of observer days on grounds. Determine the number of observer days on the grounds (DG) by statistical area for the week. This is simply the number of calendar days during the seven-day period (Sun-Sat) spent in each area. Both fishing and non-fishing days are counted. Days spent in transit, transferring cargo, or sitting out rough weather are considered normal days on the grounds. Do not include phrases informing us of these normal activities. <u>The only time a day is not a day on grounds is when the ship is fishing and you don't sample, or when the foreign ship is in port.</u>

If the ship traverses an area in which it does not fish, then add to your radio message the date, area, days on grounds, and reason. (Example: Aug 18/ A62/ DG 1D0P1/ traversing/). If the vessel fishes in two areas in

one day, divide the day proportionally to the actual time spent in each area. For example, if on your vessel, 40% of the day occurred in Area 521 and 60% in Area 522, then 0.4 of the day is attributed to Area 521, and 0.6 of the day to Area 522. Likewise, if the vessel fishes directed (independent; from its foreign allocation) and operates in a joint venture (from the U.S. allocation) on the same day, divide the day proportionately by time.

During your first week on board each vessel, you will only include the number of days beginning with your first day of sampling. The week that you get off a ship, days on grounds should end with your last sampling day. Days on grounds for all other weeks will add up to 7 or should be accounted for in the message. The ship's captain is required to accurately report changes in fishing area and should therefore be able to provide you with the GMT time of the area change. In a proper radio message, all seven days will be accounted for and each area entered will only be listed once (exception: longliners give shallow and deep information for each area. Note for longline observers: If you have a shallow set and a deep set on the same day, extrapolate the catch data separately, but attribute the day on the grounds to the depth at which most of the fishing was done. (See the longliner message example which follows). If your vessel does not fish during a week, send a message informing us of that. If this occurs after you have begun sampling, send a message with the heading and Para 1 through DG as normal. Then include a phrase such as "no fishing/STOP". If a period of no fishing occurs in the week(s) before you've started sampling or after you have completed sampling and wrapped up your gear, send a message with the heading and a phrase such as: NO FISHING FOR THE WEEK OF JUN 2-8/ STOP

This is an example of a radio message showing everything you have learned up to this point:

NOJ DE vessel call sign MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: OSU (if you were contracted by Oregon State Univ.)
INFO: NMFS/ AK REGION/ JUNEAU AK (for BSA and GOA)
NMFS/ NW REGION/ SEATTLE WA (for WOC)
FROM: Your name/ vessel name/ vessel permit number/ 59-40N 177-59W SEP 14

TRANSFERRED TO TORA MARU 0200 SEP 8/ PARA 1/ JA-85-0383/ SEP 12/ ALL US

CATCH/ JA20/ SEP 9-12/ A522/ DG 4D0P4/

After this information, the message should list the names and weights of each species report group (by area) in the same order as is given in the list of report group abbreviations for that region. Species with zero catch do not need to be reported. Lastly, give a total tonnage by area. This completes the species composition portion of the radio message for all vessel types with the exception of longliners (see the "Additional Instructions by Vessel Type" section and the longliner radio message example).

The following is an example of the heading and first paragraph of the sample radio message we have been progressively writing:

This message was sent from Jane Observer on the Tora Maru which has been fishing joint venture (call sign: 7DDT; permit number: JA-85-0383; joint venture company code: JA20): (Please Note: ~~This message corresponds to the RM-1~~ THE PARA 1 information corresponds to the RM-1 example for the same dates on the preceding pages.)

NOJ DE 7DDT MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: OSU
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: JANE OBSERVER/ TORA MARU/ JA-85-0383/ 59-40N 177-59W SEP 14

TRANSFERRED TO TORA MARU 0200 SEP 8/ PARA 1/ JA-85-0383/ SEP 12/ ALL US

CATCH/ JA20/ SEP 9-12/ A522/ DG 4D0P4/ SQU 11D53P10/ TURB 0D07P7/ OFLAT 0D52P7/

POLL 135D86P23/ COD 42D77P20/ SAB 2D85P15/ POP 2D69P17/ OROCK 0D66P12/

HER 0D02P2/ OTH 0D09P9/ NON 0D94P13/ TOTAL 198D0P18///

Paragraph 2 which follows is a summary of the incidence of prohibited species information for the week. Begin paragraph 2 with "PARA 2", then give the nation to whom the catch quota will be attributed to or the phrase, "ALL US CATCH" if it is a joint venture, followed by the joint venture company code and then the inclusive dates of the days on grounds in that area, the statistical area, and the sum of Column A from Form RM-3. Lastly, list the species report groups--both numbers and weights. Use the following abbreviations.

an HW followed by the sum of column A from Form RM-3, LASTLY list the species report

Abbreviations	Meaning
HW	sum of Column A, from Form RM-3
REDKNG	Red King Crab
BLUKNG	Blue King Crab
OTHKNG	Golden & Couesi King Crab
BTAN	Bairdi Tanner Crab
OTHTAN	Opilio, Angulatus, & Tanneri Tanner Crab
HBT	Pacific Halibut
CHIN	Chinook Salmon
OTHSAL	The other four species of salmon
NOS	sum of Column D
WT	sum of Column Y

Now let's add the second paragraph to the radio message example:
(Note: If this had not been a joint venture radio message, the message would end at this point with an IDS date and a "stop". These two items will be explained on the following pages.) Also, note that the PARA 2 information corresponds to the RM-3 example for the same dates on the preceding pages

NOJ DE 7DDT MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: OSU
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: JANE OBSERVER/ TORA MARU/ JA-85-0383/ 59-40N 177-59W SEP 14

TRANSFERRED TO TORA MARU 0200 SEP 8/ PARA 1/ JA-85-0383/ SEP 12/ ALL US

CATCH/ JA20/ SEP 9-12/ A522/ DG 4D0P4/ SQU 11D53P10/ TURB 0D07P7/ OFLAT 0D52P7/

POLL 135D86P23/ COD 42D77P20/ SAB 2D85P15/ POP 2D69P17/ OROCK 0D66P12/

HER 0D02P2/ OTH 0D09P9/ NON 0D94P13/ TOTAL 198D0P18///

PARA 2/ ALL US CATCH/ JA20/ SEP 9-12/ A522/ HW 146D0P11/ BTAN 696D0P21/

OTHTAN 68D0P14/ HBT NOS 20D0P2 WT 92D40P15/ CHIN 9D0P9///

This completes the radio message instruction for all observers except those in a joint venture operation. Joint venture observers are required to send a third paragraph. The first part of "PARA 3" is a listing of the total number of codends delivered to the processor that week. The second part of "PARA 3" is the marine mammal report.

Observers on joint venture ships should always submit a marine mammal report if there is U.S. catch. Only freshly killed or fatally injured mammals that are delivered to the foreign processor are to be reported. If no marine mammals are killed or injured, report "MAMM 0". Sea lions caught in Alaska will be Northern sea lions. It is sometimes difficult to distinguish between Northern sea lions and Northern fur seals. Refer to the descriptions of each under "Observations of Marine Mammals" in Section II to help in their identification. Observers in Pacific Coast fisheries (Washington-Oregon-California) should check the "Species Identification Manual" to distinguish between Northern sea lions and California sea lions, as both may be found in that region. Be careful to identify marine mammals correctly, since allocations for each species differ greatly.

Unlike species composition and prohibited species catch reports, marine mammal reports are reported by region (BSA, GOA, WOC), not individual statistical reporting areas (51, 52, 54, etc.). If a ship fishes in areas 51 and 52 during the week, for example, send a single marine mammal report for the week for the Bering Sea (BSA).

Abbreviations:

BSA	Bering Sea
GOA	Gulf of Alaska
WOC	Wash-Oreg-Calif coast
MAMM*	Marine mammal
NLION	Northern sea lion (Eumetopias jubatus)
CLION	California sea lion (Zalophus californianus)
FURS	Northern fur seal (Callorhinus ursinus)
HARB	Harbor seal (Phoca vitulina)
WHALE	Whales, porpoises, dolphins (all cetaceans)
ELEPH	Northern elephant seal (Mirounga anjustirostris)
WALRS	Walrus (Odobenus rosmarus)

* This should be recorded whether or not any are delivered to the processor.

If there were no marine mammals for a week then the MAMM number would be zero.

The last thing that needs to be added to your radio message is an "Initial Date of Sampling" (IDS). You must identify your first day of sampling in the radio message: 1) on each new vessel, or 2) when the vessel you're on changes fishing operations from joint venture to directed and vice versa, or 3) when the vessel moves from Alaskan waters to waters off the coasts of Washington, Oregon and California and vice versa. Use the following code at the end of your first two catch messages, "IDS mo. day". The IDS date is important to the observer program's data organization and, therefore, repeat the IDS date in your second species composition radio message to insure that it is received correctly. (Note that the "days on grounds" for the first week begins with this day. Example: if you start sampling on a GMT Thursday, days on grounds will total 3 days for that week.)

The following is an example of the completed radio message which now includes a third paragraph for joint venture, and an IDS date and a "STOP" to indicate the end of the message:

NOJ DE 7DDT MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: OSU
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: JANE OBSERVER/ TORA MARU/ JA-85-0383/ 59-40N 177-59W SEP 14

TRANSFERRED TO TORA MARU 0200 SEP 8/ PARA 1/ JA-85-0383/ SEP 12/ ALL US

CATCH/ JA20/ SEP 9-12/ A522/ DG 4D0P4/ SQU 11D53P10/ TURB 0D07P7/ OFLAT 0D52P7/

POLL 135D86P23/ COD 42D77P20/ SAB 2D85P15/ POP 2D69P17/ OROCK 0D66P12/

HER 0D02P2/ OTH 0D09P9/ NON 0D94P13/ TOTAL 198D0P18///

PARA 2/ ALL US CATCH/ JA20/ SEP 9-12/ A522/ HW 146D0P11/ BTAN 696D0P21/

OTHTAN 68D0P14/ HBT NOS 20D0P2 WT 92D40P15/ CHIN 9D0P9///

PARA 3/ TOTAL CODENDS DELIVERED 10P1/ BSA MAMM 3P3/ NLION 2P2/ FURS 1P1/

IDS SEP 9/ STOP

The next few pages contain an easy to follow outline of the proper formatting for all weekly catch report messages. The previous verbal description of how to write a radio message along with this outline, should enable any observer to write a mistake-free radio message.

SEND LAST MSG FROM SHIP

WEEKLY RADIO MESSAGE FORMAT OUTLINE

****

(1) DE (2) MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: (3)
INFO: NMFS/ (4)/ (5)
FROM: (6)/ (7)/ (8)/ (9)/ ORC___P__

(10)/ PARA 1/ (11)/ (12)/ ALL (13) CATCH/ (14)/ (15)/ A(16)/
DG (17)/ (18)/ TOTAL (19)/// *

PARA 2/ ALL (13) CATCH/ (14)/ (15)/ A(16)/ HW (20)/
(21)/ HBT NOS (22) WT (23)/ (24)/// **

PARA 3/ TOTAL CODENDS DELIVERED (25)/ (26) MAMM (27)/(28)///

IDS (29)/ (30)/ STOP

****

(1) - Fill in NOJ for Alaskan waters, it's the call sign for the Kodiak Coast Guard station. Fill in NMC for Washington, Oregon and California waters, it's the call sign for the San Francisco Coast Guard station.

(2) - Fill in the call sign of the vessel which is sending the message.

(3) - Fill in the correct abbreviation for your contractor. Either OSU for Oregon State University or ORTH for Frank Orth and Associates.

(4) - Fill in AK REGION if the message is coming from a vessel in Alaskan waters. Fill in NW REGION if the message is from a vessel in Washington, Oregon or California waters.

(5) - Fill in JUNEAU AK if the message is coming from a vessel in Alaskan waters. Fill in SEATTLE WA if the message is from a vessel in Washington, Oregon or California waters.

(6) - Fill in your name.

(7) - Fill in the name of the vessel which is sending the radio message.

(8) - Fill in the vessel's permit number, using the format: NN-YY-####
NN = 2-letter abbreviation for nation:
JA = Japan KS = Korea UR = USSR PL = Poland PC = China
YY = 2-number abbreviation for year (i.e. 88 for 1988)
= 4-number sequence of permit number (different for each vessel)
example: JA-88-0001

(9) - Fill in the vessel's last available GMT noon position and date.
example: 61-31N 179-13W SEP 14

(10) - (Optional-use when needed) Fill in any transfer information. You should let us know when you arrived aboard any new sampling vessel.
example: TRANSFERRED TO DAIKICHI MARU 0200 SEP 8

(11) - Fill in the vessel's permit number as was explained in number 8 above.

(12) - Fill in the GMT, Saturday, week ending date, using the format: MMM DD
MMM = 3-letter abbreviation for the month:

JAN = January	FEB = February	MAR = March
APR = April	MAY = May	JUN = June
JUL = July	AUG = August	SEP = September
OCT = October	NOV = November	DEC = December

DD = the numerical day of the month.
example: SEP 3 (Note: Required space between month and day and no leading zeros in day.)

(13) - Fill in the name of the foreign nation if the message is for independent fishing from that nations foreign quota (TALFF).
For example: ALL JAPAN CATCH
Fill in US if the message is for joint venture fishing from the U.S. JV quota (JVP).
For example: ALL US CATCH (Note: Don't use periods after the U and S)

(14) - (Optional-use only for JV messages) Fill in the joint venture company code, using the format: NN##
NN = 2-letter abbreviation for nation (as listed in item 8 above).
= 2-number joint venture code
example: JA25 is the JV company code for the Westward Trawlers/Taiyo joint venture.
(Note: The joint venture company codes are only found in the handout that was provided to you in class.)

(15) - Fill in the inclusive dates corresponding to the area listed in item (16), using the format: MMM DD-DD
MMM = 3-letter abbreviation for month (as listed in item 12 above).
DD-DD = the numerical dates of the month.
example: AUG 7-13 (Note: Required space between month and day and no leading zeros in day.)

(16) - Fill in the radio message report area. There should be no space between "A" and the area number.
example: A522 or A710
(Note: Remember to use the new 3 digit area codes.)

(17) - Fill in the days on grounds "DG" corresponding to the dates and area preceding it (items 15 and 16). Refer to the observer manual for directions on how to calculate days on grounds for the week. Use the following format: #D#P##
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: 3.5 days on grounds would be written: 3D5P8
7 days on grounds would be written: 7D0P7
(Note: Days on grounds need to add up to 7 for the week, except for the first and last sampling weeks aboard any vessel.)

(18) - Fill in the radio message report group names and weights as they are listed on the "Total for the Week" line of the RM-1 for that area (see item 16). They should be listed in the same order as shown in the list of report group abbreviations for that region in your manual. Report groups with zero catch need not be listed. Use the following format: GGGG###D###P##
GGGG = the correct abbreviation for the report group.
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: ATKA 0D025P7 or OTH 10D5P6

(19) - Fill in the total catch for the week for that area (it is listed as the sum of column A on the RM-1 form).
Use the format: ###D###P##
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: 153D45P18

* - At this point in the message if you had fished in more than one area that week, you would repeat items 15-19. If you had fished both joint venture and independent that week, you would repeat items 13-19.

(20) - Fill in the sum of column A (Week's Total) from form RM-3, for that area, using the format: ###D#P##
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: 123D0P6

(21) - Fill in the sum of column D (Week's Total) from form RM-3, for the king crab and Tanner crab, for that area. Report groups with zero catch need not be listed. Use the following format: GGGGGG###D#P##
GGGGGG = the correct abbreviation for the crab report group
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: REDKNG 66D60P18

Note: Items 22 and 23 need not be filled out if there were no halibut.

(22) - Fill in the sum of column D (Week's Total) from form RM-3, for halibut, for that area, using the format: ###D#P##
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: 8D0P8

(23) - Fill in the sum of column Y (Week's Total) from form RM-3, for halibut, for that area, using the format: ###D##P##
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: 777D77P35

(24) - Fill in the sum of column D (Week's Total) from form RM-3, for salmon, for that area. Report groups with zero catch need not be listed. Use the following format: GGGGGG###D#P##
GGGGGG = the correct abbreviation for the salmon report group.
# = a number (0 - 9).
D = the abbreviation for decimal point.
P = a numerical check (the summation of each digit in the number preceding it).
example: CHIN 11D1P3

Note: If no prohibited species were found in your samples that week, include only one report group, with a zero catch, in place of items 21-24. For example: OTHSAL 0D0P0

** - At this point in the message if you had fished in more than one area that week, you would repeat items 15-16 & 20-24. If you had fished both joint venture and independent that week, you would repeat items 13-16 & 20-24.

Note: PARA 3 is only used in joint venture radio messages.

(25) - Fill in the total number of codends delivered to the foreign processing vessel that week, using the format: ###P##
# = a number (0 -9).
P = a numerical check (the summation of each digit in the number preceding it).
example: 44P8

(26) - Fill in the region that the vessel was fishing in that week, using the format: RRR
RRR = BSA (Bering Sea and Aleutians).
GOA (Gulf of Alaska).
WOC (Washington, Oregon, & California).

(27) - Fill in the total number of marine mammals that were delivered to the foreign processor that week in either a fatally injured or freshly killed condition. Use the following format: ##P##
# = a number (0 -9).
P = a numerical check (the summation of each digit in the number preceding it).
example: 2P2
(Note: If there were no marine mammals, the number would be 0P0)

(28) - Fill in the marine mammal species group name and number of animals. Make sure that the abbreviations are correct and that the following format is used: GGGGG ##P##
GGGGG = the abbreviation for the marine mammal report group.
# = a number (0 - 9).
P = a numerical check (the summation of each digit in the number preceding it).
example: NLION 1P1

(29) - (Optional-use when needed) Fill in the IDS (Initial Day of Sampling) date, using the format: MMM DD
MMM = 3-letter abbreviation for month (as listed in item 12 above).
DD-DD = the numerical dates of the month.
example: JAN 24
(Note: Include the IDS date in the first two radio messages from any new cruise.)

(30) - Fill in any other information that you wish to include in the message. For example, this would include accounting for days that were not spent on the grounds. This may be written as follows:
"SICK MAY 14-DID NOT SAMPLE DAYS CATCH OF 23 MT" or
"MAY 16/ A720/ DG1P1/ TRAVERSING"

Note: If you are on a longliner, you will need to report "deep" and "shallow" sets. Also, if you are on a joint venture vessel in the WOC region (Washington, Oregon, & California), you will need to report discards of all species except hake. Refer to your observer manual for a complete discussion of these items.

RADIO MESSAGE EXAMPLES

Example of a Message From a Joint Venture in Alaska

(Note: This message is the outcome of the information that has been supplied in the example forms throughout the manual.)

Shows: First radio message sent from a second Japanese vessel fishing in joint venture; using the heading containing the noon position 61-31N 179-13W for September 13; joint venture company code of JA30; message sent Sunday.

NOJ DE 7KDX MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: ORTH
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: JOE OBSERVER/ DAIKICHI MARU/ JA-85-0494/ 61-31N 179-13W SEP 13/ ORC___P__

TRANSFERRED TO DAIKICHI MARU 0200 SEP 8/ PARA 1/ JA-85-0494/ SEP 12/ ALL US

CATCH/ JA30/ SEP 9-12/ A522/ DG 4D0P4/ SQU 11D53P10/ TURB 0D07P7/ OFLAT 0D52P7/

POLL 135D86P23/ COD 42D77P20/ SAB 2D85P15/ POP 2D69P17/ OROCK 0D66P12/

HER 0D02P2/ OTH 0D09P9/ NON 0D94P13/ TOTAL 198D00P18///

PARA 2/ ALL US CATCH/ JA30/ SEP 9-12/ A522/ HW 146D0P11/ REDKNG 30D0P3/

OTHTAN 823D9P22/ HBT NOS 94D9P22 WT 182D28P21/ CHIN 9D0P9/ OTHSAL 1D0P1///

PARA 3/ TOTAL CODENDS DELIVERED 10P1/ BSA MAMM 3P3/ NLION 2P2/ FURS 1P1/

IDS SEP 9/ STOP

Example Message From a Vessel Fishing Directed and in Joint Venture in the GOA

Shows: Two types of operations, JV and independent in one day; using JV company code of KS31; Para 3; message sent Sunday.

NOJ DE HMMI MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: ORTH
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: JANE OBSERVER/ HEUNG YANG HO/ KS-85-0005/ 56-38N 155-40W MAR 11/
ORC___P__

PARA 1/ KS-85-0005/ MAR 10/ ALL US CATCH/ KS31/ MAR 4-10/ A620/ DG 6D4P10/

SQU 0D371P11/ FLAT 1D584P18/ POLL 319D252P22/ COD 2D433P12/ SAB 0D141P6/

ATKA 0D025P7/ POP 0D023P5/ OROCK 0D095P14/ OTH 2D102P5/ NON 0D211P4/

TOTAL 326D237P23///

ALL KOREAN CATCH/ MAR 8/ A620/ DG 0D6P6/ SQU 0D053P8/ FLAT 0D061P7/

POLL 47D517P24/ COD 0D022P4/ OROCK 0D010P1/ OTH 0D126P9/ NON 0D415P10/

TOTAL 48D204P18///

PARA 2/ ALL US CATCH/ KS31/ MAR 4-10/ A620/ HW 79D65P27/ OTHKNG 3D0P3/

BTAN 123D0P6/ HBT NOS 27D0P9 WT 124D30P10/ CHIN 2D0P2/ OTHSAL 3D0P3 ///

ALL KOREAN CATCH/ MAR 8/ A620/ HW 23D55P15/ BTAN 19D0P10 /

HBT NOS 2D0P2 WT 7D45P16///

PARA 3/ TOTAL CODENDS DELIVERED 39P12/ GOA MAMM 4P4/ NLION 3P3/ FURS 1P1/ STOP

COMPUTER WILL CALCULATE TARGET FOR YOU ON WEEKLY

DIRECTIONS FOR WRITING DAILY PROHIBITED SPECIES MESSAGES

Observers may be asked to send in daily prohibited species messages in the unlikely event that one of the prohibited species caps is being reached. Follow the procedure outlined below <u>if and only if</u> you receive a message requesting daily prohibited species messages:

The appropriate target category must be determined first:

IN ORDER OF PREF-ERENCE

If the daily catch is greater than or equal to 95% pollock then the target is MIDWATER POLLOCK (TGT POLL). If not then

Is the daily catch is greater than or equal to 50% pollock and cod combined and cod is greater than or equal to 5%? If so, then the target is OTHER BOTTOM TRAWL (TGT BOT). If not then-

Is the daily catch is greater than or equal to 50% pollock and cod combined and cod is less than 5%? If so, then the target is POLLOCK BOTTOM (TGT POLLBOT). If not then-

Is the daily catch greater than or equal to 35% RSOLE ? If so, then the target is RSOLE BOTTOM (TGT RSOLE). If not then-

Is the daily catch greater than or equal to 20% YELL, OFLAT and RSOLE combined? If so, then the target is YFS/OFLAT (TGT YELL). If not then-

Is the daily catch greater than or equal to 20% Atka mackerel ? If so, then the target is ATKA (TGT ATKA). If not then-

All other fisheries that have failed to meet <u>any</u> of the above conditions are classified as OTHER BOTTOM TRAWL (TGT BOT).

In writing your daily radio message make sure you include the following along with the appropriate heading:

1) the date of the data and the phrase- DAILY PROHIBITED SPECIES
2) phrase- ALL US CATCH (indicating joint venture catch)
3) the JV company code
4) the target for the day (TGT)
5) total catch for the day (GFISH)
6) Sum of the haul weights <u>sampled</u> that day (HW as in normal weekly messages)
7) Numbers of crab and the numbers and weights of halibut (The extrapolated figures taken from Form RM-3. Use the standard abbreviations)

NOJ DE (vessel radio call sign) MSG CATCHREP K

TO; RUSS NELSON/NWAFC/SEATTLE WA
ATTN: OSU
INFO:NMFS/AK REGION/JUNEAU AK
FROM: JANE OBSERVER/HOTDOG HO/ WW-89-1234/ 55-11N 128-33W/ JUN 10/ ORC___P_

PARA 2/WW-89-1234/ JUN 10 DAILY PROHIBITED SPECIES / ALL US CATCH / WW11 (JV company code)/ A513 / TGT YELL / GFISH 250D00P7 / HW 100D00P1 / BTAN 134D0P8 / HBT NOS 30D1P4 WT120D2P5/ STOP

Example of a Radio Message sent from a vessel fishing Joint-Venture in the WOC Coast Hake Fishery

Shows: JV operation; using JV company code of PL11; reporting discards; Para 3; message sent Sunday.

NMC DE RYCE MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE, WA
ATTN: OSU
INFO: NMFS/ NW REGION/ SEATTLE WA
FROM: JOE OBSERVER/ RATMANOVA/ UR-85-0078/ 43-27N 129-52W JUN 10/ ORC___P__

PARA 1/ UR-85-0078/ JUN 9/ ALL US CATCH/ PL11/ JUN 3-9/ A710/ DG 7D0P7/

HAKE 86D93P26/ JACK 13D01P5/ JACK DIS 1D02P3/ POP 1D87P16/ POP DIS 0D27P9/

RF 4D86P18/ RF DIS 0D54P9/ FIAT DIS 1D43P8/ SAB 4D76P17/ OTH DIS 0D42P6/

NON DIS 0D24P6/ TOTAL 115D35P15///

PARA 2/ ALL US CATCH/ PL11/ JUN 3-9/ A710/ HW 63D44P17/ HBT NOS 5D0P5

WT 5D47P16/ CHIN 22D3P7 ///

PARA 3/ TOTAL CODENDS DELIVERED 37P10/ WOC MAMM 0P0/ STOP

Example of a Radio Message sent from a vessel fishing independently in the WOC Hake Fishery

Shows: Independent operation; fishing in two areas; traversing an area; non-sampled day; message sent Sunday.

NMC DE SQDN MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: OSU
INFO: NMFS/ NW REGION/ SEATTLE WA
FROM: JANE OBSERVER/ TUCANA/ PL-85-0003/ 41-36N 123-57W MAY 19/ ORC___P__

PARA 1/ PL-85-0003/ MAY 18/ ALL POLISH CATCH/ MAY 12-15/ A710/ DG 3D0P3/

HAKE 96D73P25/ JACK 15D21P9/ POP 0D01P1/ RF 0D97P16/ FLAT 0D25P7/ SAB 0D12P3/

OTH 3D20P5/ NON 1D42P7/ TOTAL 117D91P19///

MAY 17-18/ A730/ DG 2D0P2/ HAKE 42D71P14/ JACK 5D22P9/ SAB 0D44P8/ OTH 1D27P10/

NON 0D98P17/ TOTAL 50D62P13///

PARA 2/ ALL POLISH CATCH/ MAY 12-15/ A710/ HW 33D28P16/ HBT NOS 14D0P5

WT 51D80P14/ CHIN 7D0P7/ OTHSAL 3D0P3///

MAY 17-18/ A730/ HW 21D49P16/ HBT NOS 3D0P3 WT 11D75P14/ CHIN 4D0P4/

OTHSAL 1D0P1/

SICK MAY 14-DID NOT SAMPLE DAYS CATCH OF 23 MT///

MAY 16/ A720/ DG1P1/ TRAVERSING/// STOP

Example Message from a Japanese Longliner

Shows: Catch reported by target species-shallow and deep sets; message sent Monday.

NOJ DE JPZQ MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: UW
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: JOE OBSERVER/ EBISU MARU 88/ JA-85-0610/ 56-45N 173-25W DEC 17/ ORC___P__

PARA 1/ JA-85-0610/ DEC 15/ ALL JAPAN CATCH/ DEC 9-12/ A540/ SHALLOW/ DG4D0P4/

TURB 0D13P4/ POLL 3D41P8/ COD 91D9P19/ OTH 3D5P8/ NON 0D36P9/

TOTAL 99D3P21///

DEC 13-15/ A540/ DEEP/ DG3D0P3/ TURB 5D62P13/ OFLAT 0D02P2/ SAB 14D44P13/

POP 0D03P3/ OROCK 0D29P11/ OTH 0D21P3/ NON 3D37P13/ TOTAL 23D97P21///

PARA 2/ ALL JAPAN CATCH/ DEC 9-12/ A540/ SHALLOW/ HW 99D3P21/

BLUKNG 7D4P11/ BTAN 177D1P16/ HBT NOS 58D1P14 WT 242D0P8///

DEC 13-15/ A540/ DEEP/ HW 23D98P22/ BLUKNG 12D3P6/ BTAN 175D8P21/

HBT NOS 3D9P12 WT 77D80P22/ STOP

OK to use the hail weight for expediency purposes

SPECIAL DAILY RADIO MESSAGE

While you are out at sea, you may receive a message that asks you to begin sending daily radio messages. This is most apt to occur when a report group species is approaching its quota limit. These messages are to be sent in addition to your normal weekly radio message, and are to be sent on a daily basis. This daily message is similar to PARA 1 of the weekly catch report, except instead of giving the week-ending-date, give the day's date that the catch is for and label the date as such and instead of listing each report group in the days catch, include only the report group asked for and the total catch for that day. Each day's catch is for a GMT day.

"DAILY CATCH"

Example of a Daily Radio Message

This is an example of a daily radio message sent from a vessel using the heading containing the noon position 55-11N 148-33W. The message is sent June 11, and the catch is from GMT day June 10. The daily message was requested for pollock.

NOJ DE vessel call sign MSG CATCHREP K

TO: RUSS NELSON/ NWAFC/ SEATTLE WA
ATTN: ORTH
INFO: NMFS/ AK REGION/ JUNEAU AK
FROM: OSCAR MEYER/ HOTDOG HO / WW-88-1234 / 55-11N 148-33W
DATE SENT → JUN 11/ ORC___P__

PARA 1/ WW-88-1234/ JUN 10 DAILY CATCH/ ALL US CATCH/ A63/ DG1D0P1/ POLL 22D43P11/ TOTAL 30D79P19/ STOP

SECTION II: ADDITIONAL DUTIES AND INFORMATION

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OBTAINING INFORMATION ON PRODUCT RECOVERY RATES

A recovery rate represents the proportion of the organism that is used in the factory products. The recovery rate is also referred to as the "product recovery rate (PRR)" or the "recovery ratio". Vessel officers usually make use of recovery rates to estimate the weight of a catch from the tonnage ofh products produced from that catch by using the following equation:

$$\text{Product Weight} = \frac{\text{Whole Weight (before processing)}}{\text{Recovery Rate}}$$

Coast Guard boarding officers also utilize recovery rates to check whether the fishing logs accurately represent the weight of the fish used to make the products in the holds.

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, and the vessel type may all have a bearing on the recovery rate of a particular species.

Since there is a need to find out what recovery rates are being used, observers are being asked to record the rates used on their vessels, and to run tests to determine recovery rates on their own. To determine your own recovery rates for particular products, you must observe the following procedures: First of all, you would obtain a representative sample of the fish that are waiting to be processed. They should be sorted to species and be of the size and condition of those that are normally processed in one particular way. (For example, in order to obtain the recovery rate for roe from pollock, select a basket of roe-bearing, female pollock of the sizes normally used.) Weigh the sample of whole fish before processing, this would be called the "whole

weight", "fresh weight" or "round weight". Have these fish processed by the factory crew as usual, then weigh the resulting product (the roe). The weight of the product divided by the weight of the fish before processing is the recovery ratio.

$$\frac{\text{Product Weight}}{\text{Fresh Weight}} = \text{Product Recovery Rate}$$

It would be very difficult for an observer to determine the PRR of such products as surimi and fish meal, so it is not expected. However, if the observer were able to run a test on the recovery rate of surimi, it would be very important to fully document the procedure in the logbook.

Each observer will be running weekly tests for product recovery rates and also conducting tests for determining unit weights. The testing guidelines are outlined below on the "Form 8 Worksheet". Record only the "lowest" ~~average~~ PRR test value and the "highest" ~~average~~ PRR test value and the lowest and highest unit weight test values on the Form 8 itself. This will provide a range of PRR and unit weight values for each product by area/month/vessel-type designation. (For more complete information, refer to the Form 8 instructions that follow.)

Only highest and lowest PRR, not average is to be reported at the end

Form 8 Worksheet
(Product Recovery Rate and Unit Weight Tests)

PRODUCT RECOVERY RATE TESTS:

1) Run PRR tests on primary products once per week minimum.
2) Run PRR tests on secondary products when they occur.
3) Each PRR test will consist of at least 60 normal size fish, (25 - 50 cm) or 30 big fish, (>50 cm) per test.

Species: _____ Product: _____

Sorting Criteria: _____

Date: ___/___/___/ Haul No.: _____
Mo. Day Yr.

Test #	No. of fish	Product wt.	(divided by)	Whole wt.	=	PRR

Date: ___/___/___/ Haul No.: _____
Mo. Day Yr.

Test #	No. of fish	Product wt.	(divided by)	Whole wt.	=	PRR

Date: ___/___/___/ Haul No.: _____
Mo. Day Yr.

Test #	No. of fish	Product wt.	(divided by)	Whole wt.	=	PRR

UNIT WEIGHT TESTS:

1) Run unit weight tests at least twice per cruise for the major products and once per cruise for minor products.
2) Each test should consist of weighing at least 10 units.

Unit Type	No. of Units Sampled	Total Wt.	- Container Wt.	= Unit Wt.
			Average =	

FORM 8 - PRODUCT RECOVERY RATES

This form is to be filled out with the product recovery rates that the ship personnel are using, and the recovery rates that the observer has obtained through their own tests. The ship's recovery rates can be obtained from the "Section Three - Production" of the ship's fishing logs on a daily basis. Record the highest and lowest PRR values for each product. This will provide a range of PRR values for each product by area/month/vessel-type designation.

A product recovery rate represents the proportion of the organism that is used in the factory products. 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.

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 4.5). To convert a conversion factor to a recovery rate, divide the number 1 by the conversion factor.

Additional points to note:

1. Enter the year and month (columns 8-11) in which the information was obtained and for which the data applied.

2. Likewise, enter the code for the area in which you collected your own recovery data and the area for which the vessel data applies. Use the old two digit code for the area designation, instead of the new 3 digit codes (i.e. Area 522 would be recorded as area 52 on form 8). In other words, use the first two digits of the new area code.
(see the maps in the "Instructions for Weekly Radio Message").

3. Use a separate sheet for each area, month, or vessel reported.

4. Write the name of the species or species group which is processed and its appropriate code (columns 14-16) from the species code list. Observer-determined recovery data should be listed by each particular species, but figures supplied by vessel personnel are often applied to a group of species. "Unidentified fish" (code 901) may be used for the categories of fish and fish waste turned into fish meal and fish oil. Other possibly useful codes are flatfish unidentified (code 100), turbot unidentified (143), and rockfish unidentified (300).

5. Describe the product and enter the matching product code in columns 17-18 (see "Codes used for Product Recovery Form 8" on the following pages.) If in doubt of the appropriate code, draw a picture and take detailed notes describing the product. Discuss the unidentified product with the debriefer upon your return. Record only those products which were actually produced while you were aboard.

6. Indicate in column 19 whether the product was primarily prepared by machine (M) (includes rotary saw) or through cutting by hand (H).

7. Enter, to 2 decimal places, the recovery ratio that was used by the vessel (columns 20-22). If you discover a range of recovery figures for that product, in that area, during a particular month, enter the data twice, once for the lowest figure and once for the highest figure. Use "Example Form 8" on the next page, as a guide. Likewise, the observers' recovery rate figures should be entered in columns 28-30. If there is a range of values, then record the lowest and highest values only.

8. The unit weight asked for in columns 24-27 and 32-35 is the weight of processed fish (before freezing or addition of water) in a block of frozen fish, a bag of surimi, or a sack of fish meal. The unit weight is not the weight of a box containing 2 or more blocks of fish, but the weight of the fish making up one of those blocks.

9. Columns 20-27 ask for data obtained from ship personnel and columns 28-35 are for data determined by the observer. The unit weight obtained by the observer should be the average of weighing no less than 10 random samples of each particular unit type. If you discover a range of unit weights for that product, in that area, during a particular month, enter the data twice, once for the lowest figure and once for the highest figure. The ship's unit weights will have to be collected directly from the ship's officers, since they are not required in the fishing logs.

10. At the bottom of the form there is room for comments.

FORM 8 PRODUCT RECOVERY RATES

Page 1 of 1

Cruise Number	Vessel Code	Year	Month	Area
532	NS54	84	07	52

Species Name	Species Code			Description of Product	Product Code	H/M	Vessel Data: Percent Recovery	Vessel Data: Unit wt. to .1 kg	Observer Data: Percent Recovery	Observer Data: Unit wt. to .1 kg
	14	15	16		17 18	19	20 21 22	24 – 27	28 29 30	32 – 35
Pollock	2	0	1	Surimi	36	M	.25	10.0	.	.
↓				"	36	M	.34	10.0	.	.
↓ (large fish)		↓		dorsal fillets	30	H	.65	15.0	.	.
Pollock (large fish	2	0	1	skinless fillets	32	H	.40	.	.	.
Pacific Cod	2	0	2	headed & gutted	13	M	.50	.	.54	15.4
↓		↓		" "	13	M	.60	.	.60	.
Pacific Cod	2	0	2	fillet-skin on one side	31	H	.43	.	.	.
Pacific Ocean Perch	3	0	1	headed & gutted	13	↓	.60	.	.	.
Harlequin Rockfish	3	2	3	" "	↓	↓	.62	.	.65	.
Sharpchin Rockfish	3	0	4	" "	↓	↓	.62	.	.	.
Other Rockfish	3	0	0	" "	13	↓	.60	.	.	.
Sablefish	2	0	3	headed & gutted with pect. girdle	15	H	.70	.	.70	14.8
Atka Mackerel	2	0	4	frozen whole	10	H	1.00	.	.	.
Greenland Turbot	1	0	2	headed & gutted	13	H	.55	.	.59	15.1
Flathead Sole	1	0	3	frozen whole	10	H	1.00	.	.	.
Other flatfish	1	0	0	headed & gutted	13	H	.70	.	.	.
Octopus		6	0	gutted	51	↓	.80	↓	.	.
Squid		5	0	mantles	52	↓	.50	↓	.	.
"		5	0	tentacles	53	↓	.30	↓	.	.
All skates		9	0	skate wings	26	H	.30	15.0	.42	.
All other fish & waste	9	0	1	fish meal	40	M	.20	20.0	.	.
All other fish & waste	9	0	1	fish oil	41	M	.05	.	.	.
							.	.	.	.
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							.	.	.	.

Comments: The ship provided a range of figures for surimi and headed, gutted Pacific Cod, so only the high and low values are entered here. A rotary saw was sometimes used for heading the turbot as well as the cod, but cutting by hand was more common.

Codes Used for Product Recovery Form 8

Product Codes (column 17-18)

10 Whole fish (the recovery rate would be 100%)
5 Fish with roe removed only
11 Gutted only
19 Headed (but not gutted)
12 Headed and tail removed
7 Pre-dressed - gutted, only part of head removed by diagonal cut (P. Cod specialty product. This product applies only to cod. If you have this product for another species, talk to the debriefer upon your return.
13 Headed and gutted
17 Headed and gutted, stomachs included
18 Headed and gutted, roe included
15 Headed and gutted, pectoral girdle included
16 Headed and gutted, pectoral girdle and roe included
14 Headed and gutted, tail removed
9 Headed and gutted, tail removed, roe included
4 Headed and gutted, tail and skin removed
28 Headed and gutted, skinned; tail and fins removed
8 Headed and gutted, fins clipped by scissors (tail on)
6 Tooshka - headed, gutted, fins clipped, tail removed (a Soviet product)
30 Dorsal fillet - The head and guts have been removed by a long diagonal cut, leaving the upper portion of the body, most of the backbone, and the posterior ventral portions (see sketch-these are made only from roundfish, not flatfish).
35 Otoshimi - type of minced fish flesh used for breaded fish sticks; also a component of surimi before washing and dehydration.
36 Surimi - a product made from minced fish flesh mixed with sugar, polyphosphate, and other ingredients. Let the debriefer know if you did your own product recovery determination. Write a description of your work in report two. If the ship occasionally adds a few cod to the pollock when making surimi, record it only as pollock. (Record cod or Atka mackerel surimi if they are using these species exclusively to make surimi.)
37 Kirimi - (steaks) vertical slices made from headed and gutted fish (usually for yellowfin sole); (see sketch)
38 Caudal peduncle - caudal fin removed (usually for yellowfin sole on the Japanese mothership, Kashima); (see sketch)
34 Punched section - body section stamped out by means of a punching machine (usually for yellowfin sole on the Japanese mothership, Kashima)
60 Gills and stomach lining (Korean product usually made from Pacific cod)
20 Heads
3 Cheeks - (usually of turbots)
21 Pectoral girdle - a section of the throat and pectoral girdle
22 Livers
66 Canned Livers (Soviet product)
23 Stomachs

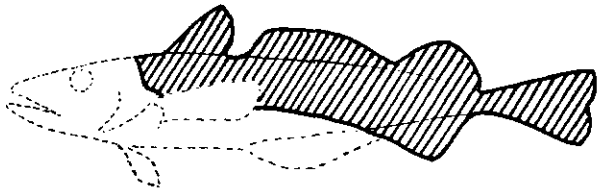
24 Ovaries - roe
25 Testes - milt
40 Fish meal (use species code 901--misc. fish)
41 Fish oil (use species code 901--misc. fish)
42 Bone meal
32 Skinless fillets
29 Skinless fillets, ribbed section removed (see sketch)
33 Deribbed skinless fillets - (ribs lifted out - flesh not removed)
31 Fillets with skin on one side
39 Deribbed fillet with skin on one side
43 Butterfly fillet - dorsal fillet with backbone and tail removed (see sketch)
44 Tailless and finless dorsal fillet (used on dogfish shark)
45 Salted dorsal fillet, backbone partially removed, tail present *(Spanish P. cod product)
46 Salted dorsal fillet, backbone partially removed, tail removed *(Portuguese P. Cod and pollock product)
26 Skate wings (There are no skate fillets.)
27 Skate - tips of wings, nose and tail removed
50 Whole squid or octopus
51 Gutted squid or octopus, beak removed
52 Head or mantle of octopus or squid
53 Arms or tentacles of octopus or squid
54 Skinned squid or octopus
65 Canned fish
61 Fish skin
80 Snail meats (for snailpot vessels only)

Processing Codes (H/M) - (Column 19)

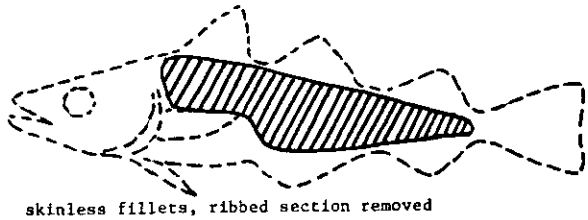
H = Product was primarily processed using hand labor (cutting or filleting by hand).
M = Product was primarily processed by machinery (includes cutting with a rotary saw).

* Salt cod and pollock	Codes before Salting	Codes after Salting
Portuguese (dorsal fillet, no tail)	44	46
Spanish (dorsal fillet, with tail)	30	45

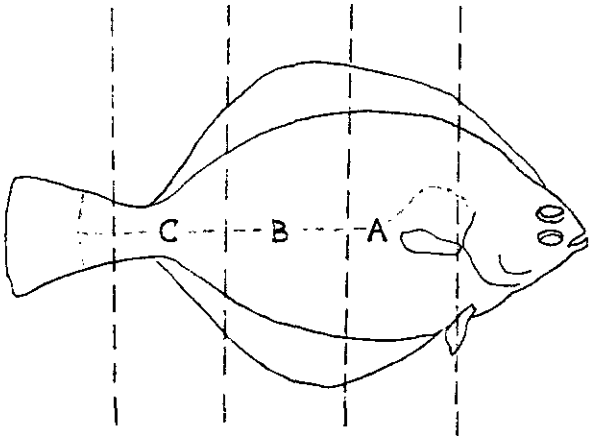
Sketches of Various Product Types Listed on Previous Pages:



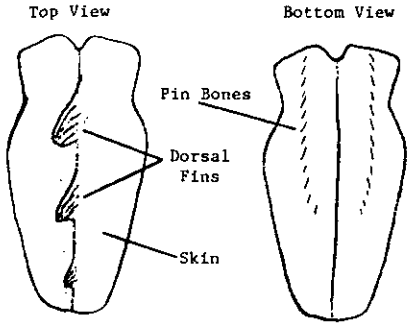
dorsal fillet from Pacific hake



skinless fillets, ribbed section removed



Kirimi steaks (A & B) and caudal peduncle (C)
cut from yellowfin sole.



Butterfly fillet from pollock
(backbone, tail and pectoral girdle removed)

ADJUSTING THE SHIP'S CATCH ESTIMATE

A common problem arises from the fact that foreign vessels are not required to report the catch of species in the "nonallocated" group in section two of the ship's fishing logs. (For a definition of this group for the particular area you are fishing in, see the list given in "Reporting Groups for Species Composition Radio Messages" in the RADIO MESSAGES section.) Therefore it may be necessary for the observer to adjust the ship's estimate because the nonallocated species are not included in the ship's catch weight estimate. If an adjustment is made, mark the catch data forms (1, 1L, 2, or 2JV) as instructed so that corrected ship's estimates, original ship's estimates, and observer estimates are legible and clearly defined. After adjusting, you should then use the new adjusted catch weight figure in all of your subsequent data forms (i.e. forms 3(2) and 3(1) if you have whole-haul sampled and forms RM, RM-1 and RM-3).

In deciding whether or not to adjust the ship's estimate, the magnitude of the underestimation should be taken into account. If the species in the nonallocated group make up more than 10% of the catch in any particular haul, then that haul should be adjusted and its adjustment factor, as defined below, would be 1.1 or more. You can judge whether the nonallocated species makes up more than 10% of the catch of a haul by examining the RM form (Refer to "Form RM - For Independent Stern Trawlers and Joint Venture Vessels" in the Radio Message section). Observers should not compare the ships estimate and the observers estimate in deciding whether or not to adjust. The decision to adjust the ship's estimate can be made on a haul-by-haul and day-by-day basis or all the hauls in an entire cruise may be adjusted.

In some unusual instances, your sample weight may exceed the ship's

estimate for that haul. This would only happen because you had actually weighed the entire catch. This sometimes occurs on small trawlers when the catch is less than one metric ton. If this happens, it would be logical to use your actual weight as the adjusted ships' estimate.

The following information will explain how to adjust the ship's estimate:

Independent Longline Vessels

This is the most common vessel type to require an adjustment of the ship's estimate. A high percentage of the catch in a set is often made up of nonallocated species such as rattails and halibut. You must look at your species composition data for that set and determine whether the nonallocated species make up 10% or more of the catch. If they do, then you would adjust the ship's estimate for a given set, by using the following formulas:

$$\text{adjustment factor} = \frac{\text{observer's total species composition sample weight}}{\text{weight of (reported species}^{1}\text{) in species composition sample}}$$

$$\text{corrected ship's estimate} = \text{original ship's estimate} \times \text{adjustment factor}$$

Record each adjustment factor in your logbook. On form 1L, (Refer to the "Longliners" section) enter the corrected ship's estimate in the columns for total catch (col. 39-41), and the original ship's estimate in columns 73-75. The corrected ship's estimate is the figure that you should also use on all of your other forms requiring the ship's estimate (i.e., whole haul sample weights on Form 3, haul weights and total daily catch on radio message forms). If you are filling out an old form 1L, which is missing columns 73-75, the observer's

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[1] "Reported species" are any species other than nonallocated species.

estimate goes in the unmarked columns 67-69, and the original ship's estimate should be written in the margin next to column 69.

Joint Venture Processors and Independent Stern Trawlers

As for longline vessels, the first step is to look at your species composition data for each sampled haul and determine whether the nonallocated species make up 10% or more of the catch. If they do, then you would adjust the ship's estimate for that haul by using the same formulas given in the previous longline vessel section.

Correct each haul individually using your sampling data for each haul, and write the adjustment factors in your logbook. To calculate a factor for the hauls that you did not sample, sum the adjusted ship's estimate for the hauls you sampled that day and divide the resulting figure by the sum of the original ship's estimates for those hauls. This will yield an adjustment factor for the day which is weighted by the size of the sampled hauls. Use this factor for the day to adjust the ship's estimates of the hauls that you did not sample that day.

From the Form 2 example in the manual:

Sampled hauls for 9/13/83

Haul #	ship's estimate		adjustment factor	adjusted ship's estimate
111	22.0 MT	x	1.65 MT	36.30 MT
113	+11.0 MT	x	1.42 MT	+15.62 MT
Totals	33.0 MT			51.92 MT

(51.92 divided by 33.0 = 1.57, the adjustment factor you should use to correct hauls 110 and 112 on 9/13/83 which you did not sample)

If you whole-haul sample for species composition, the sample weight is dependent on the ship's estimation of the catch. Since you are counting and

weighing all of the nonallocated species for the haul, add the total weight of the nonallocated species to the ship's estimate to obtain the adjusted haul weight. This may then be used as the sample weight for both species composition and incidence of prohibited species as well as the corrected ship's estimate on Form 2 or 2JV. Divide the corrected ship's estimate by the original ship's estimate to get the adjustment figure, which is used in calculating the figure by which non-sampled hauls can be adjusted.

Similar computations may be necessary to adjust the ship's estimate if you partial whole-haul sample. In addition, sample size must be adjusted by taking the appropriate percentage of the ship's reported catch estimate and adding the actual weight of the nonallocated species in your sample. Remember, do not bother to adjust sample weights or ship's estimates unless the nonallocated species make up 10% or more of the catch. If you change the sample weight, make sure that the adjusted sample weight does not exceed the adjusted ship's estimate on Form 2 or 2JV.

On Form 2JV, enter the adjusted ship's estimate in the columns for total catch (Col. 61-65)On Form 2, enter the adjusted ship's estimate in the columns for total catch (Col. 49-54).

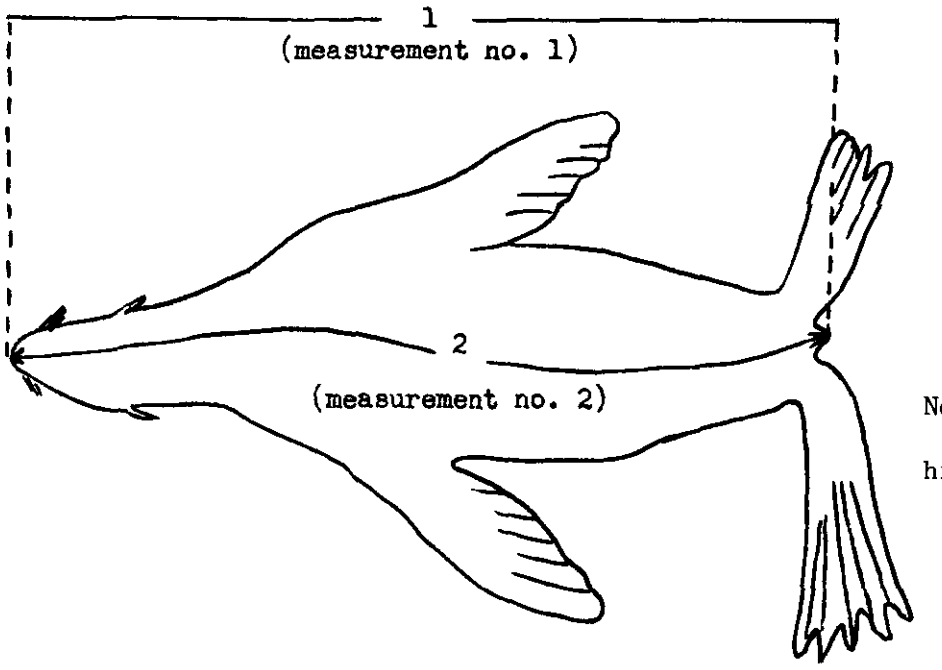
OBSERVATION OF MARINE MAMMALS

Observations for marine mammals are one of the secondary duties of a foreign fisheries observer. Observers should be aware of any mammals caught in the hauls that are sampled, and should try to have crew members inform them if sea lions or other marine mammals are captured during non-sampling periods.

If a dead seal or sea lion appears in the catch, measure either the standard length or curvilinear length of the body using a measuring tape. (Refer to the diagram on the next page.)

A voluntary effort which will yield valuable data is the collection of the upper canine teeth from dead seals or sea lions for age and sex determinations. The method of extraction is explained in the following pages. Since age is determined from counting the growth ridges on the root of each tooth, care should be taken not to break or cut off the root of the tooth. The part of the jaw containing the tooth may be brought back, as long as all of the flesh is removed. A label with the date, haul number, location, body length of mammal, ship name, type of ship, cruise number, and observer name should accompany the tooth. Teeth or jaws are the only part of seals or sea lions that are allowed to be brought into the United States by observers. A marine mammal collection permit is in the Appendix. Walrus tusks cannot be used for ageing and should be left with the body. Gloves should be worn when extracting canine teeth because of the risk of infection and disease transmission through contact with marine mammal saliva. Be especially careful to protect and cleanse any open cuts or abrasions on your hands.

LENGTH MEASUREMENTS OF SEALS AND SEA LIONS

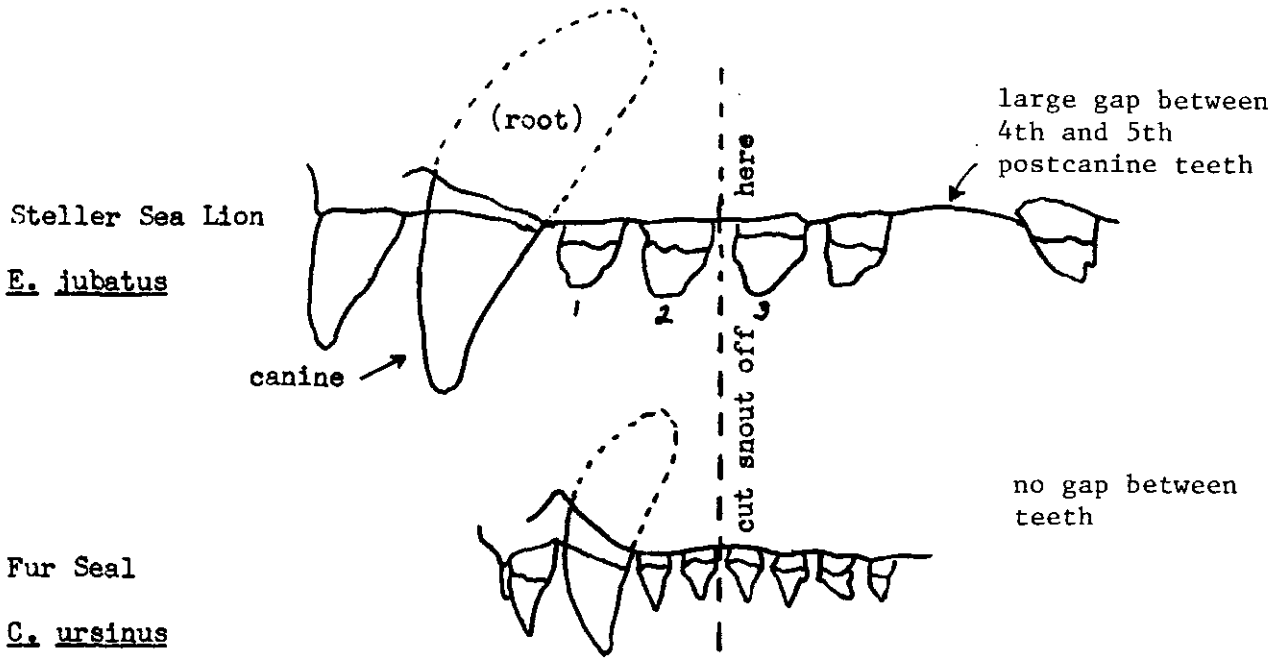


Upper half of diagram is of Steller Sea Lion, lower half is Northern Fur Seal.

Standard Length (measurement no. 1) is the straight-line distance from snout to tip of tail flesh on the unskinned body, belly up, ideally with the head and vertebral column on a straight line. If rigor has set in, then this measurement probably cannot be taken and measurement no. 2 should be taken.

Curvilinear Length (measurement no. 2) is taken 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 snout to tip of tail flesh along back, belly, or side. Record the type of measurement taken. Seals are usually measured with a flexible tape.

COLLECTION OF SEA LION AND FUR SEAL TEETH



Outline of sea lion and fur seal teeth

The procedure in collecting a tooth from a seal or a sea lion is as follows:

1. Skin and cut off snout, taking care not to damage the root of the canine tooth.

2. To insure that the entire canine root is collected, the snout should be cut off between the 2nd and 3rd post canine teeth (see figure).

3. Method of preservation: (use a. or b.)
   a. Boil snout until tooth can be easily pulled and removed. Do not forcibly twist the tooth when removing - twisting will break the tooth.
   b. Boil snout until no more flesh remains on jaws - jaws can then be stored dry.

4. Do not preserve snout in formaldehyde.

FORM 10 - MARINE MAMMAL INCIDENTAL CATCH DATA

Each day, entries should be made on Form 10 concerning the occurrence of marine mammals caught incidentally, whether or not any were actually caught. As in the incidence of other prohibited species, population managers need to be able to calculate the number caught per metric ton of groundfish observed. The front side of Form 10 is used for recording the marine mammals in a random sampling of the catch.

On stern trawlers, an entry should be made for every haul the observer samples for species composition and incidence of prohibited species. Therefore, the number of entries would be the number of hauls sampled. Record also the date, the haul number, the species caught (if any), the number observed, and their condition (column numbers 8-23, 25-27, 46-55, and species name). In the upper right-hand corner, record the total number of hauls made during the cruise (unobserved + observed).

On independent motherships an entry should be made each fishing day. The observer should enter the estimated tonnage in which it is known whether or not there were any mammals, the date, the species caught (if any), the number observed, and their condition (column numbers 8-10, 28-36, 46-55, and species name).

The back of Form 10 has space for remarks about entries on the front. In addition, ask the captain to have reported to you all mammals in catches which you did not intend to sample. As you did not plan to sample these hauls, do not enter these data on the front side of Form 10; log these mammals on the back of Form 10, giving the haul number, position, and time of day. (Note: You will not have an entry number for this sighting because it wasn't from a sampled haul.) If you can get access to any dead marine mammals in the catch, measure them according to the instructions on the preceding pages and log the data on the back of Form 10. Note whether canine teeth or jaws were taken.

EXAMPLE FORM

PAGE 1 OF 3

FORM 10 MARINE MAMMAL INCIDENTAL CATCH DATA

USE FORM 10-a, "REMARKS ON MARINE MAMMALS" ON THE REVERSE SIDE OF THIS FORM FOR ADDITIONAL COMMENTS REGARDING THE INCIDENTAL TAKE OF MARINE MAMMALS.

NUMBER (11–13)	CODE (14–17)	YEAR (18–19)
113	NS33	83
115	NM06	

Total no. hauls made while observer aboard 124

ENTRY NUMBER (8–10)	DATE (MO/DAY) (20–23)	GEAR (24)	STERN TRAWLER HAUL NUMBER (25–27)	MOTHERSHIP TONNAGE OBSERVED (TO NEAREST METRIC TON) (28–32)	MOTHERSHIP DATE MONTH (33–34)	MOTHERSHIP DATE DAY (35–36)	STERN TRAWLER TOTAL HAUL WEIGHT (37–40)	MARINE MAMMAL SPECIES (IF NONE OBSERVED, WRITE IN NONE)	SPECIES CODE (41–45)	NUMBER ANIMALS IN CATCH: TOTAL CAUGHT SEEN BY OBS. (46–47)	NUMBER ALIVE AND RELEASED (48–49)	NUMBER KILLED BY CREW (50–51)	NUMBER DEAD IN CATCH (52–53)	NUMBER DECOMPOSED (54–55)	(N) LATITUDE (56–59)	N/S (60)	(1) LONGITUDE (61–64)
J.V. example																	
1	1009		4					None									
2	09		6					Steller sea lion		1		1					
3	09		8					None									
4	09		9					Steller sea lion		2	1		1				
5	10		12					None									
6	10		13					None									
7	10		15					Decomposed body of small whale – Unident.		1			1	1			
8	1011		18					Dall porpoise		1			1				
243																	
independent mothership example																	
1				90	06	14		None									
2				85		15											
3				120		16											
4				115		17											
5				80		18		None									
6				105	06	19		Steller sea lion		1			1				

8 9 10 | 20 21 22 23 | 24 | 25 26 27 | 28 29 30 31 32 | 33 34 | 35 36 | 37 38 39 40 | 41 42 43 44 45 | 46 47 | 48 49 | 50 51 | 52 53 | 54 55 | 56 57 58 59 | 60 | 61 62 63 64

GPO 955-743

FORM 10-a REMARKS ON MARINE MAMMALS IN CATCH

Instructions: Describe problems encountered in observations, identification, specimens collected, percentage of haul observed, discrepancies in reports, etc. Be complete in describing observations of dead or living animals.

ENTRY NO.	DATE	HAUL NO.	REMARKS
			EXAMPLE - JOINT VENTURE
2	10/9	6	The haul was dumped into the fish bin before it was realized that there was a sea lion in it. The sea lion was a large aggressive male which had to be shot since there was no safe way to remove it alive. It was 200 cm. standard length. I was unable to remove the canines because the captain was anxious to get it overboard.
4	10/9	9	The live sea lion was very weak, but after a few minutes it appeared to recover and was persuaded to leave. The crew threw the dead sea lion overboard before I had a chance to measure it.
7	10/10	15	The whale was 4 meters long and was in an advanced state of decomposition. It was a toothed whale but I was unable to note any other important features.
			EXAMPLE - MOTHERSHIP
	6/14		The fishing manager said that he would call me whenever a mammal is found in the bins so that I can at least note it on this side of Form 10 when I am not sampling, and I can obtain length measurements and teeth if it is dead.
1	6/14		During the course of the day I am quite sure that I would have been aware of any mammals in at least 1/4 of the catch, so I entered 90 tons as the tonnage observed. (All later tonnages were estimated similarly.)
6	6/19		The dead sea lion was a male; its standard length was 195 cm. Both canine teeth were removed intact by boiling the snout.

FORMS 11(A) and 11(B) - MARINE MAMMAL SIGHTING AND EFFORT FORMS

These forms are designed to gain information about marine mammals sighted other than those brought up in the fishing gear. Most marine mammal sighting data are valuable, whether or not you were deliberately looking for mammals. Thus, if a crew member points out a mammal to you, or if you merely glance up from your work and see a mammal, write it down, and record the information on the form.

We are interested in all species of marine mammals that you might encounter and will provide an identification guide 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 make a complete description with copious notes and illustrations as necessary, to fully describe any new species of marine mammal sighted. Records of species which are not fully documented and have not been previously encountered, will probably not be verifiable at a later date.

Instructions for filling out Marine Mammal Sighting Form 11(A)

(* = Do not fill in boxes preceded by an asterisk except as noted.)

1. NAME - In the upper left hand corner of the form, write the observer's and vessel's names.

2. DATE (7-12) - Note proper sequence (yr./mo./day)
   TIME (13-16) - Time of sighting is logged when the animal is first seen. All times are logged in GMT.

3. LATITUDE (18-23) - To tenths of minutes, if possible.

4. LONGITUDE (24-30) - To tenths of minutes, if possible. Place E or W in box 30, depending on which side of the 180th meridian the sighting occurs.

5. SPECIES - Write in both the common and scientific name of the animals. If more than one species are sighted at the same time, note the association (if any) in the comments section and fill out a separate sighting form for each species. Do not enter a species name unless you are absolutely positive. If you are the least bit unsure of the animal's identity, enter as "unident. large whale", "unident. porpoise", etc. Remember that an erroneous identification is worse than none at all.

Important things to look for when attempting to make an identification are:
(Note and circle characteristics on back of Sighting Form)

1. Shape and size of dorsal fin and its position on the body. If possible, also note size and shape of tail and flippers.

2. 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 Stellar sea lion" or "slightly smaller than adult male killer whale."

3. General shape of body (slender or robust).

4. Shape and size of snout. Is it long or short (estimated length in inches)? Is there a definite break between snout and forehead? Is the forehead markedly bulbous?

5. Color pattern on fins and body (stripes, spots, patches, mottling).

6. Shape, location, and direction of spout. Is it single or double? Where is spout located on head? Does it lean forward or go straight up?

7. Scars and scratch marks.

6. NUMBER SIGHTED (37-40) - If unable to count the animals, estimate the number seen in terms of a range (e.g., 250 + or - 50). For Dall's porpoise, note if you see more roostertails than the actual number of animals that come to the boat. (There is evidence that schools may split up.)

7. BEHAVIOR - Record primary behavior observed. For example, the most frequently observed behaviors are as follows:
   - No specific behavior other than in the water
   - Following vessel
   - Bow riding
   - Porpoising
   - Attracted by fish nets
   - Feeding
   - Avoidance
   - Nonspecific contact/play
   - Roostertailing
   - Slow-rolling
   - Riding stern wake
   - Milling
   - Approach vessel-veer away
   - Slow roll-roostertail-slow roll

Additional notes on behavior can be made in the comments field.

8. ANGLE FROM BOW (47-48) - Consider the ship a 360 degree circle when recording sighting angle; dead ahead being 000 degrees and dead astern being 180 degrees.

9. INITIAL SIGHTING DISTANCE - Note it in nautical miles, yards, or meters, whichever you are most comfortable with. Convert to 10's of meters and place in boxes 50-52. Remember that boxes 47-52 are right justified (e.g., 100 meters = 10 in boxes 51-52).

10. VISIBILITY - Note in miles, if good weather, or in meters, if poor (e.g., fog).

11. WAVE HEIGHT - Record wave height in meters.

12. VIS CODE - Do not fill in (note asterisk).

13. WEATHER - Rain, fog, blue skies, overcast, etc. Also note wind strength.

14. SURFACE WATER TEMPERATURE (54-56) - In degrees Centigrade. If below freezing, place a "-" in box 54. Temperature is placed in boxes 55-56.

15. PLATFORM CODE - Do not fill in (note asterisk).

16. TIME ZONE - Do not bother to fill this in (note asterisk).

17. IDENTIFICATION- This section is one of the most important parts of the observation.

BEHAVIOR COMMENTS - Everything that you observed about the animal and used to identify it should be entered. Be liberal with sketches! Use as much room as you need to get everything down (the back of the sheet, if necessary). In addition to details of the animal's appearance, note:

1. Kinds and numbers of other associated animals (fish, birds, squid, mammals, etc.) and their behavior.

2. Anything else you think might be of interest.

Remember, if you identify the animal, say how you did it. (e.g., Sperm whale - 35 ft., large square head, no snout, spout at end of head and leaning forward).

Be generous with narrative of animal behavior. If there are several animals, are they in a tight school, a loose school, or scattered either singly or in small groups? Do the animals approach the vessel and ride the bow wave? Note 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 leave "tracks" or swirls on the surface when they are submerged? 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?

Note how close the animal approached the vessel. Were the marine mammals attracted to the ship by the net retrieval? Were they feeding off discarded fish and fish parts? Are these mammals possibly the same ones that you have previously reported seeing?

FORM 11(A)

FOREIGN FISHING OBSERVER
MARINE MAMMAL SIGHTING FORM
* DO NOT FILL IN BOXES PRECEDED BY AN ASTERISK

CRUISE NO. 442
VESSEL CODE K504

1. OBSERVER NAME Charlie Tuna
   VESSEL NAME Cheong Yang Ho

RECORD ID * (1 2 3 4 5 6)

2. DATE (Yr./Mo./Day) & TIME (GMT) OF SIGHTING — YR 83 (7 8) / MO 10 (9 10) / DAY 11 (11 12) — TIME (GMT) 0300 (13 14 15 16)

3. LATITUDE (degrees/minutes/10ths)—N/S — DEGREES 54 / MIN. 59.4 (10ths) (18 19 20 21 22) * N (23)

4. LONGITUDE (degrees/minutes/10ths)—E/W — DEGREES 157 / MIN. 36.8 (10ths) (24 25 26 27 28 29) E/W W (30)

5. SPECIES Unidentified Balenoptera (Common name) Balenoides sp. (Scientific name) * (33 34) TENTATIVE * (35)

6. NUMBER SIGHTED 7 ± 2 — C.I. * (36) 7 (37 38 39 40)

7. BEHAVIOR Appeared to be feeding; short shallow dives in a concentrated area * (45 46)

8. ANGLE FROM BOW 90 (47 48 49)

9. INITIAL SIGHTING DISTANCE 2 statute miles

10's of meters 322 (50 51 52)

10. VISIBILITY 5 statute miles — 11. WAVE HEIGHT (meters) 1.5m — 12. VIS CODE * (53)

13. WEATHER (& WIND SPEED) Lt. Rain/Fog; Wind 10k @ 200° — 14. SURFACE WATER TEMP. (° C) ± + (54) 09 (55 56)

15. PLATFORM CODE * 1994 (57 58 59 60) — 16. TIME ZONE * (61) * 0 (62 63)

17. How did you identify animal(s)? Sketch and describe animal; associated organisms; behavior (include closest approach); comments.

Straight tall blows, very falcate dorsal fin. 7 ± 2 animals about 2 miles off starboard beam heading slowly away from ship. Observed blows followed by dorsal fin after blow disappeared. Chief Officer pointed out on fish finder, a large concentration of plankton in the area.

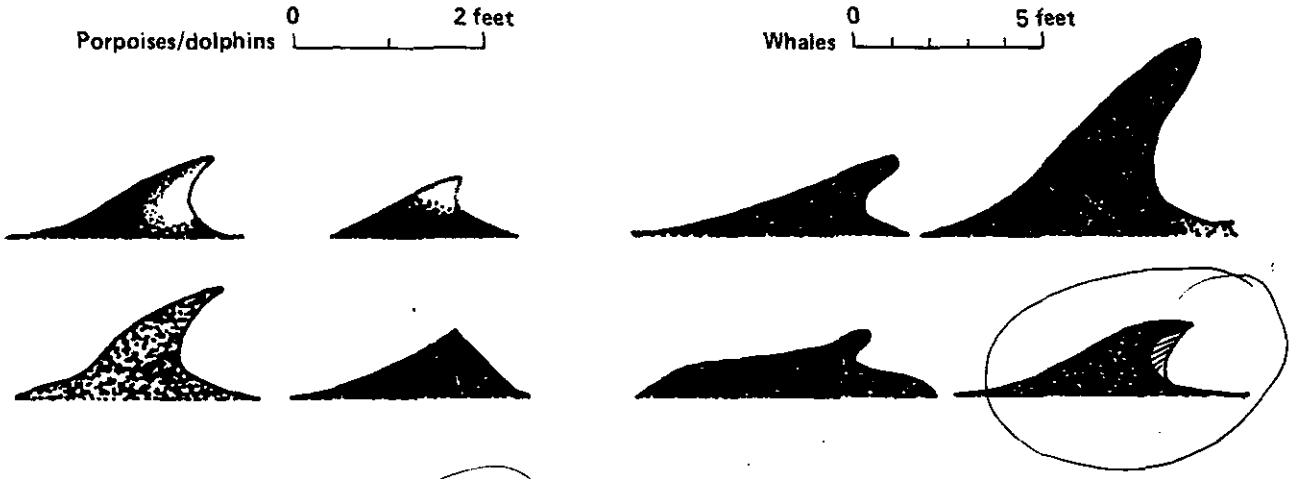
(65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80)

To aid in your identification of whales and porpoises, circle the characteristics corresponding to the features you observed.

Body length (estimation): < 10 feet | (10–25 feet) | 25–50 feet | 50–80 feet

Dorsal fin? (Yes) | No

Shape of dorsal fin:



Prominent blow? (Yes) | No

Number of blows before a long dive: N/A | 1–3 | 4–7 | 8–15

Length of dive: (≤ 2 minutes) | 5–7 minutes | 10–20 minutes

Shape of blow:

Showed flukes upon dive? Yes | (No)

Other behavior characteristics:

- No specific behavior
- Following vessel
- Breaching
- Stern riding
- Bow riding
- Slow rolling
- Porpoising
- Other Feeding?

Distinctive markings (scarring, white patches. etc.): None observed

Instructions for filling out Marine Mammal Sighting Effort Form 11(B)

Some observers want to do extra mammal work, and one possibility is the taking of marine mammal transit observations and recording them on marine mammal sighting effort forms. Effort forms are a record of continuous marine mammal sighting effort when the distance covered by the ship can be calculated from a beginning and ending position. Effort forms are to be filled out when the ship is not pulling a net and is in a straight line transit. Any marine mammal sightings during an effort period would be recorded on a sighting form (11 A).

Fill out the same information as you do on the sighting form. (Columns 1-6, 17, 52, and 56-62, are to be left blank.) In addition, there is one other item to fill in--transit flag (column 63).

Transit Flag - This is the method of recording effort. At the beginning of your marine mammal watch, fill in the name, vessel, date, time, position, and environmental conditions, and place a "1" in box 63 (Transit Flag). When you end a watch (i.e. go below, change course more than 5 degrees, change cruising speed more than 3 knots, or if the wave height or visibility change), also fill out the above information and place a "2" in box 63. Thus, at the end of a day, there may be many watches framed by transit flags--each signifying a period of constant search, course, speed, wave height, and visibility.

Transit observations should be at least 20 minutes in duration. Each transit should not exceed one hour in length. If you continue to watch for marine mammals longer than one hour, start a new transit line on the form. Do not maintain effort forms if your vessel is drifting or making very slow headway (e.g. while the ship is towing a net). Log mammals seen during these

periods on the sighting forms (11 A) and make note of the vessel's activity in the comments section. Do not maintain effort forms, if you are not actively searching the water for mammals. By the same token, if you are actively looking for mammals and don't see any, fill out the effort form. It is just as important to know where the animals aren't as where they are.

It is also helpful to note on what portion of the ship or boat that observations of marine mammals were made (e.g. bridge, stern deck) and what height your eye is above sea level. It would also be helpful to note what optical aids were used (7x50 binoculars, telescope, etc.).

FORM 11(B)

FOREIGN FISHING OBSERVER

MARINE MAMMAL SIGHTING EFFORT FORM

*DO NOT FILL IN BOXES PRECEDED BY AN ASTERISK

Cruise No. 442 Vessel Code K504

1	2	3	4	5	6

* Record I.D.

7	8	9	10	11	12
8	3	1	1	1	4

Year Month Day

Observer Name Charlie Tuna

Vessel Name Cheog Yang Ho

TIME (GMT)					LATITUDE					N/S *	LONGITUDE						E/W	WAVE HEIGHT (m)	WEATHER (and wind speed)	VISIBILITY	Vis. code *	±	Surface water Temp. (° C)	*	* Platform code	*	± *	Time zone *	Transit flag
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				52	53	54	55	56	57	58	59	60	61	62	63
0	5	3	0		4	8	0	0	3	N	1	5	3	0	0	2	W	Flat calm	Blue sky. Wind 3knts.	unlimited		+	0	6	1	9	9	4			0	1
0	6	3	0		4	8	1	2	5	↓	1	5	3	0	0	4	W	Rippled glass	Blue sky. Wind 5knts.	"		+	0	6	↓	↓	↓	↓			↓	2
1	1	3	0		4	6	2	6	0		1	5	3	1	8	0	W	Light chop - .3m	Partly cloudy. Wind 12 knts	8 mi.		+	0	7								1
1	2	3	0		4	5	4	3	7		1	5	3	2	3	5	W	same	" " . Wind 10 knts	8 mi.		+	0	7								2
1	3	5	1		4	5	4	3	8		1	5	3	2	4	6	W	same	Cloudy. Wind 10knts	8 mi.		+	0	7								1
1	4	3	0		4	5	3	0	0		1	5	3	2	3	7	W	Choppy - .5m	" . Wind 15 knts	6 mi.		+	0	7								2
1	6	0	0		4	5	1	8	2		1	5	3	2	3	9	W	Choppy - .5-1m	Overcast. Wind 15 knts.	3 mi.		+	0	7								1
1	7	0	0		4	5	0	5	1		1	5	3	2	0	1	W	Whitecaps - 1.5m	Fog. Wind 20 knts.	2 mi.		+	0	7								2
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				52	53	54	55	56	57	58	59	60	61	62	63

TAGGED FISH AND CRAB

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. Such information should normally include the date, location, and circumstances of capture, and the length, weight, sex, and stage of maturity of the fish. Otoliths and scales are often also very useful to the tagging agency.

The Pacific Biological Station at Nanaimo, B.C. injected a number of sablefish with a bone-marking chemical and tagged them with a small, yellow, plastic tube implanted just below the first dorsal fin. Obtain the otoliths and scales of these fish, and store them dry in an envelope to protect them from light which tends to fade the marking chemical. These samples, along with the accompanying data on date, position of capture, etc. will be forwarded to the Nanaimo laboratory after your return.

Tags from yellowfin sole, halibut, cod, pollock, and other fish will also be forwarded to the appropriate tagging agency.

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 $2 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.

Some agencies tag salmon by inserting a coded wire into the snout of fingerling salmon. These wire-tagged salmon are marked by clipping their adipose fins. If you find a salmon missing an adipose fin, check to see whether it is missing any other fins, collect a scale sample, record the usual data, and in

addition, weigh the gonads. Remove the snout by cutting well behind the eye, salt the snout, attach the completed data tag to the snout, and seal it in one of the provided plastic bags. After a few days, drain off any accumulated liquid and resalt the snout. Repeat the draining and resalting as needed. The tag should be filled out in pencil and the scale sample number written on the top.

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 as best you can to the nearest millimeter, even if you were not assigned calipers or dividers to measure crab. (Refer to "Length Measurements For Various Species" in the Appendix). Sometimes tagged crabs that have been caught 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.

Collecting and returning tags is an important way to help fishery research. Please remember to bring back tags with as much of the following information as possible:

1. Tag or tag serial number.
2. Scale and/or otoliths for aging.
3. Fish length (in mm if possible).
4. Fish weight (in gm if possible).
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).
8. Time and date of capture.
9. Capture location (latitude and longitude).
10. Capture depth.

SPAWNING POLLOCK STUDY

Instructions For Filling Out Form 6--Observations of Spawning Fish

(For Observers on Vessels in the Bering Sea and Gulf of Alaska, except for the Shelikof Straits area-621)

Pollock supports the largest single-species fishery in the world, and constitutes a major portion of the biomass of fish in the Bering Sea. Little is known however, about where and when pollock spawning occurs in the Bering Sea. The information which you collect for this study will be used to form a picture of the spawning dynamics of pollock, and in filling this gap in our knowledge of the biology and ecology of this species.

WHENEVER SPAWNING POLLOCK are observed, an entry should be made on FORM 6.

Pollock in a spawning condition are easily distinguished even without direct observation of the gonad. Eggs and sperm run easily from the fish when it is picked up. Most eggs are transparent,smooth, jelly-like spheres about 1 mm in diameter, and are loose in the ovary. Sperm is a white, milky liquid, easily extruded from the testes. The most useful criteria for determination of spawning, is the presence in the ovary of hydrated eggs. These eggs will look clear, and/or translucent. The egg sac will look speckled in appearance, instead of a uniform orange-yellow color because some of the eggs will have died and turned white, while others will have hydrated. The presence of hydrated eggs indicates that spawning is presently occurring, or will occur in a matter of hours. This criterion is better than the presence of flowing eggs, because it is less equivocal, and always indicates that spawning is very near, if not occurring. Very Important!: Be sure and note a description of the criteria that were used for determining spawning condition. These notes can be written directly on the form. Forms without notes on spawning criteria will not be used in the data base.

Please record the following information on Form 6 whenever you see spawning pollock:

- Date (month and day), set or haul number.
- Species code 201, and common name (i.e. "pollock").
- Whether or not length information was collected on pollock from that haul.
- Whether or not a collection of otoliths was taken from pollock from that haul.

Report 2o of spawning females

Keep an eye out for spawning pollock- grab a basket

- Whether or not feeding was observed. When you sex the pollock, examine a few stomachs to note whether food is: (1) present (1 = "yes" on Form 6) or (2) absent (2 = "no" of Form 6).
- Remarks. Any comments you have, for example: if large numbers of fish appear to be feeding; stomach contents, if you can roughly identify them (e.g. "small fish", "plankton"); problems you may have identifying spawning, etc.

Notes: Cruise number and vessel code should be filled in upon return to Seattle.

This form is intended for POLLOCK ONLY! Do not write in observations on the spawning of other species.

In conjunction with this information, we will be using data from your Haul Forms. Nothing different is required of you here, except to make sure that Water Temperature (bottom or gear depth) is recorded as consistently as possible. We are trying to correlate this with the location and timing of spawning.

Form 6 Observations of Spawning Fish

Cruise No.			Vessel Code				Year	
1	2	3	4	5	6	7	8	9

Date		Set/haul Number	Species Code	Common Name	Lengths Taken	Approx. % Spawn. Females	Age struct. Taken	Feeding Observed	Remarks
Mo.	Day				1=yes 2=no		1=yes 2=no	1=yes 2=no	
10 11 12 13		15 16 17	20 21 22		23	24 25	26	27	
0323		51	201	Pollock	1	85	2	1	About 15% feeding on krill

LOGBOOK ENTRIES

The observer logbook is not intended to be a personal diary but a record book of data not noted on any of the forms, and a place to document circumstances and information concerning any possible violations of fishing regulations. Include in here anything that you may later want to include or summarize in your final report; anything unusual that occurs on the cruise; or anything else that you feel may be of interest. Changes in sampling procedure, sampling problems, calculation of bin dimensions and densities, a detailed description of unidentified species, and conversations with the captain or officers on fishing strategy are all appropriate entries. Observer catch estimates, labeled with the date, haul, or set number should be recorded here, along with a description of how the estimate was obtained. It is also a good idea to keep a copy of all messages sent and received. Short comments on hauls sampled can go in the "remarks" section of Form 3, but additional explanation on anything unusual, such as a high percentage of rockfish in a hake ship trawl, or comments on hauls not sampled, can be entered in the logbook. Some observers have noted details on factory processing, or on the biology of the target species. Very little, for instance, is known about jack mackerel - what part of the water column do they concentrate in? Other observers have noted a high incidence of tumors on pollock in certain areas of the Bering Sea. At the end of the cruise, important entries should be summarized and entered in the final report.

It is essential that all suspected violations be fully documented in the logbook as soon after the occurrence as possible. Even if you can rely on your memory of the event, it is important that it be written down as soon as the problem is discovered. Although a complete report may be written upon

your return, the original notes may be needed as evidence. If a correction must be made, draw a line through the incorrect word(s) instead of erasing or blackening them out. All logbook entries should be in ink, and any events that are recorded should be in chronological order. Please put your name, vessel name(s) and dates aboard any vessel(s) on the inside cover of the logbook.

If the vessel you are on 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 thus 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.

DOUBLING UP - MORE THAN ONE OBSERVER PER SHIP

Occasionally two or more observers may be assigned to the same vessel. This may happen when a ship leaves the FCZ unexpectedly to return to their home port. Rather than bring the observer to shore, the departing vessel may be instructed to drop their observer off on another vessel that already has an observer onboard. Observers should realize that these seemingly temporary situations can continue much longer than initially planned. In the following text you will find a set of guidelines to be used with common sense in handling this situation.

While awaiting transfer to a new vessel, the visiting observer should assist the original observer with his/her work. The observers should immediately seek to increase the quantity of sampling. The original observer on the vessel will be assigned the cruise number and will be responsible for all of the data forms, regardless of the experience level of either observer. However, both observers will be responsible for the sampling and data form completion. The visiting observer should take part in all aspects of observer work and may be asked to contribute information to that cruise during debriefing. The ship's personnel may resist any increase in sampling effort, or personal differences may arise between the two observers. However, it is hoped that the observers cooperate and achieve the goal of increased sampling despite these difficulties.

Observers can increase their sampling effort by helping each other or by sampling separately on different shifts. They should strive to approximately double the normal workload. An increase in the number of hauls sampled for prohibited species and species composition is the most preferred method. If all the hauls are being sampled, then increase the sample sizes. In addition,

more haul estimates can be made or the ship's estimates can be verified by weighing and counting blocks of the product and conducting product recovery rate tests. Finally, if all of the above have been completed, try taking length frequency measurements from another species, doing more marine mammal watches or transects, or taking photographs of each other while sampling.

The visiting observer should do his/her special project as assigned. They should collect special project data and, where appropriate, combine this data with the data of the original observer. Be aware that if you are assigned to collect age structures, that a collection of less than fifty is of little value. Therefore, if the visiting observer decides to start his/her collection and is transferred to another vessel before at least fifty age structures can be collected, then the collection should be dumped and started again on the new ship.

In summary, remember that it is likely that a visiting observer may remain onboard longer than expected, there will be only one cruise number for that ship, and we expect cooperation and a doubling of the sampling effort.

DUTIES OF LEAD OBSERVERS

In certain instances, one of a group of observers going to a particular fishery may be asked to be a lead observer for that group. This is frequently the case in the Soviet coastal hake fishery and the Soviet yellow-fin sole fishery. Normally the designated observer is placed aboard the vessel with the fleet commander, if there is one.

Usually the main reason for having a lead observer is to coordinate embarkations and disembarkations and to keep logistics informed of pending vessel movements (ships leaving the grounds or new ships arriving). The lead observer may be advised on some matter and asked to pass the information to the other observers. In certain cases, the lead observer may be asked to collect information from the other observers, summarize it, and send it back. Other observers in the group should keep the lead observer informed if they find out their ship will be leaving the grounds or if they have to get off to attend to a medical problem or other matter.

EXTRA ACTIVITIES FOR THE BORED OR AMBITIOUS OBSERVER

Some observers have found extra time on their hands, whether because of receiving extra help in sampling, or because of the schedule of that particular ship. If you should find yourself in that position, and you wish to gather more information that would be of use, the following activities would be most beneficial:

1. Sample more hauls (sampling periods) for species composition and the incidence of prohibited species.
2. Increase the amount of catch sampled during a sampling period (larger sample size).
3. Make more observer total catch weight estimates.
4. Take pictures of yourself at work or of the factory processing.

Sometimes there are long periods when no fishing is done, so the observer has been unable to sample. At these times, some observers have inquired more about the operation of the ship or about processing and fishing methods, and have consequently brought back some interesting information in their reports. Some information may help explain differences in total tonnages or species composition of the catch by vessels of the same size class but different nationality, fishing strategy, or efficiency. If the ship is traveling to another fishing area, you can also make marine mammal transit observations from the bridge (see Observation of Marine Mammals).

Form 12 - Vessel Data Form

Form 12 is provided in a translated version as part of the contents of your translated packet. It should be given to the captain of your vessel at the beginning of your cruise so that he will have time to complete it and return it to you before you leave. After the form has been filled-out and returned to you, check it for completeness and look for any obvious errors. The information on this form will be used to fill out the "Vessel Statistics" portion of the first page of your report-two for that cruise. (Refer to subsequent pages of this manual for a complete description and further details concerning report-two.)

Form 12 - Vessel Data Form

Vessel Name _____

Permit Number _____ Vessel Type _____

Length _____ Width _____ Draft _____

Gross Tonnage _____ Net Tonnage _____

Engine Type _____ Horsepower _____

Year Commissioned _____ Radio Call Sign _____

Company _____

Home Port _____

Personnel: Captain _____

Fishing Master _____

Factory Manager _____

Number of Officers _____

Total Ship Complement _____

OBTAINING INFORMATION ON FISHING GEAR FROM VESSELS FISHING INDEPENDENTLY

Observers are provided with translated gear diagrams and asked to have the captain or one of the ship's other officers fill it out. In the past, however, observers have failed to verify or even question some of the information that was recorded, and as a result, due to misunderstanding or carelessness, much erroneous information was obtained.

Refer to "Commonly observed gear dimensions" in the Appendix - so that you can recognize dimensions that are questionable and thus verify them. While it is not expected that observers weigh the trawl doors or measure the total length of the trawl cable (warp length), there are some elements of the gear that can be easily checked. As you watch a haul come in, you can count the number of floats and bobbins and note their shape, approximate size, and material of which they are made. If there is more than one kind of float or bobbin, record each kind separately. Observe the trawl doors - note the shape, approximate dimensions, and the material of which they are made. Dubious headrope and footrope lengths can be checked using a tape measure on an occasion in which the net is not being used. As mesh size is quite important in many instances, check the measurements even if you feel the measurements you are given are reasonable. Refer to "How to measure mesh size" in the Appendix. The figure we want is the stretched measure, not the bar measure. If more than one trawl net is being used, and the dimensions vary, record the specifications of each. Note whether the trawl net has a net recorder and also note the presence of any other recording device such as an instrument to measure the amount of strain on the cables (as from a full net). Hook size and number of hooks per hachi can easily be verified by longliner observers. Refer to "Hook size chart for longliners" in the Appendix. Also pictured on the hook size

chart is a "circle hook." Longline observers should watch for the use of circle hooks. If they are used, draw a diagram of one (to size) and report on its use in Report #2.

When recording the verified information on your report diagrams, modify the diagrams where necessary to more accurately depict the actual gear used. For example, the pelagic trawl diagram has lines in the wing of the net instead of mesh--if the net you observe has large mesh instead, note it and record the mesh size.

FINAL REPORT FORM NO. 2

Copies of Final Report No. 2 are provided to observers before going out on the foreign vessels so that they can be used as a draft if there is enough time at sea to work on them. Upon return, the drafts should be completed and very neatly written in ink or typed on the final copies of the report form. Use complete sentences, not a telegraphic style, any time comments are requested. Please check spelling, grammar, and sentence structure. Observer reports are continually referred to by many people for a wide variety of reasons, so it is necessary for them to be well written, yet concise. The information revealed by the report is also one way that the observes performance will be evaluated.

The Final Report No. 2 example which is given on the following pages is intended to act as a guide in completing the report, and it should serve as an illustration of some of the items that can and should be included in this final report. See also "Logbook Entries" for a list of some of the topics that are of particular interest. Advice to future observers on the host vessel or suggestions for improvement in any aspect of the observer program can also be included in this report. Additional pages can be used for summary graphs, tables, discussion of sampling problems and data bias, observations on fishing technique, special projects, or vessel diagrams.

The reports, along with your data forms, will be the most complete record of what you have done on your cruise as an observer. They will be referred to in the future if any questions arise from your data; and therefore they should be very complete and detailed. Do not make reference to any other documents, such as reports #1 (Refer to the Enforcement Manual) or the observer manual, when writing report #2. Reports #1 and #2 will be filed in separate locations

and therefore much of the information and explanations will need to be duplicated. Use complete sentences, good grammar and correct spelling. No abbreviations, please.

The report form example illustrates a cruise in which the observer boarded his host vessel via the transit boat from Dutch Harbor and at the end of approximately one month, he was transferred to a second vessel. The report for the second vessel would repeat the first four lines in the itinerary but would give the arrival and departure dates for the second vessel. Other points to note:

1. Contracting Agency - This should be the agency with which you are employed. In the past, this has been the University of Washington, Oregon State University, or Frank Orth and Associates.
2. Enter local and GMT dates and times as indicated on the itinerary page.
3. U.S. Transfer Co. - The name of the agency or company which either took you out to the vessel or brought you back to port. It may be the Dutch Harbor Transit, The Alaska Tug and Salvage Company, the U.S. Coast Guard, or some other organization. If the ship came into dock, write "None, boarded/debarked at dock." If a joint venture catcher boat transports you in or out of a port, write "J.V. catcher boat" and the boat's name.
4. Fill out the gear diagram which most closely resembles the gear used on your host ship, and indicate modifications in the general design where necessary. The otter trawl diagram can be used to describe a pair trawler net, for example.

5. Remember to fill out a "List of Catcherboats for Motherships" form for all independent motherships and joint venture processors. Joint venture observers would only need to list the names of the U.S. catcher boats that fished for their processor.
6. Make vessel and factory diagrams fairly neat - preferably trace them onto plain white paper, 8 1/2" x 11".
7. Complete a copy of the map provided. Joint ventures should use their delivery positions.
8. Complete a copy of the rockfish and flatfish checklist. Be sure to fill in the correct region (BS, GOA, or WOC).

Report #2 CRUISE # 025 VESSEL CODE RS15

Vessel Name The Rising Star

Observer John Borden Contracting Agency Univ. of Wash., FRI

Itinerary : (Local dates and time)

Depart Seattle June 3, 1981 (18:05) Return Seattle August 7, 1981 (23:35)

Depart Port for Vessel June 5 (9:30) Return to Port from Vessel Aug. 6, (10:30)

Port of Departure Dutch Harbor Port of Return Dutch Harbor

U.S. Transfer Co. Dutch Harbor Transit U.S. Transfer Co. Dutch Harbor Transit

Arrival Aboard Vessel June 5 (18:30) Depart Vessel July 9 (14:00)

Dates Not Sampled (if any, and reasons why) June 21-22, transporting cargo;

July 5, rough seas - no fishing

Date Sampling Began June 6, 1981 Date Sampling Ended July 8, 1981

Total # Days Sampled 30

Sampling on Other Ships : Cr.# 31

Vessel Name Mys Svobodny

Dates Aboard July 9 - Aug. 4, 1981

Name and Dates Aboard Ships Used as Transport Only : Mys Grina, Aug. 5 - Aug. 6

MT dates and time

Customs Check : Location Dutch Harbor Date Aug. 6, 1981 Time 12:30
(Local dates and time)

Vessel Statistics Permit # UR-81-9995 Vessel Type Large stern trawler (BMRT)

Length 83.31 m Width 14.03 m Draft 5.65 m

Gross Tonnage 2336.0 Net Tonnage 842.0

Engine Type Diesel Horsepower 2000 H.P.

Year Commissioned 1975 Radio Call Sign EUDS

Company Korsakovskaia Baza Okeanicheskogo Rybolovstva

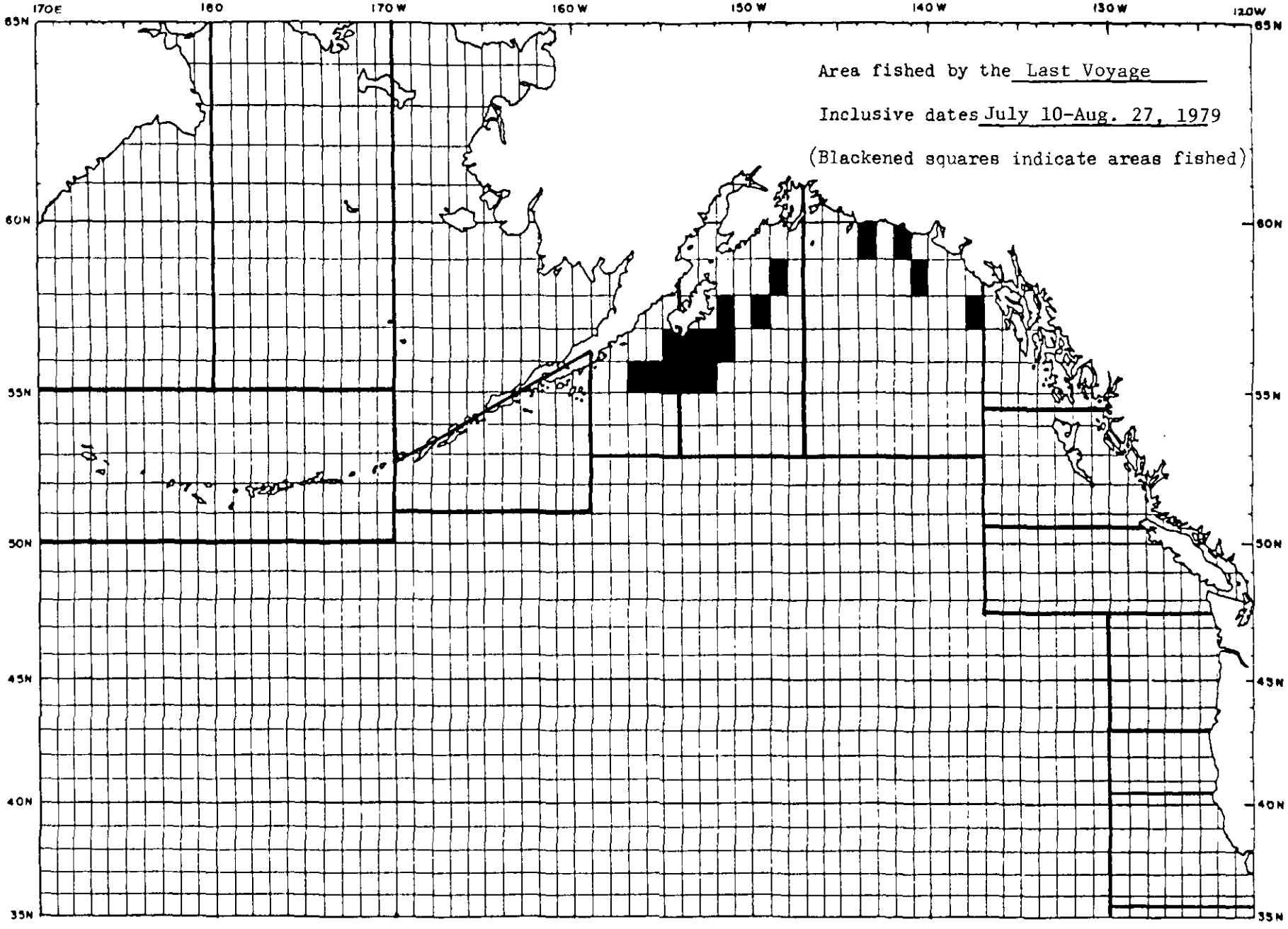
Home Port Korsakov, Sakhalin Island, USSR

Name and position of officers important in fishing operation, factory, sampling :

Captain Vladimir Petrenko Ivan Timoshenko, vessel manager

Boris Ksheminskyi, factory manager

Officers 22 #Crew 44 #Processing 26 Total Ship Complement 92


170E
180
170 W
160 W
150 W
140 W
130 W
120W
65N
60N
55N
50N
45N
40N
35N
Area fished by the Last Voyage
Inclusive dates July 10-Aug. 27, 1979
(Blackened squares indicate areas fished)

List Of Catcher Boats For Mothership Mineshima Maru

Vessel Type Pollock Mothership

Observation Period 9/5 - 11/12/78 **Observers** George Jones

	Vessel Name	Hull No.	Permit No.	Vessel Owner	Gross Tons	Horse Power	Length (m.)	Date Commissioned	No. In Crew
Danish Seiners	Kaiko Maru #8	109537	JA-77-0090	Nakazimaishizo Shoten	124.79	1300	31.46	10-71	19
	Ebisu Maru #21	102586	JA-77-0091	Maruhon Suisan Co.	124.66	1200	31.49	11-70	19
	Kaiun Maru #25	116697	JA-77-0092	Kaium Suisan Co.	124.53	1400	31.57	01-74	19
	Shosei Maru #15	110037	JA-77-0094	Showo Suisan Co.	124.50	1300	31.20	09-71	19
	Mitsu Maru #50	109535	JA-77-0095	Shuichi Nishimura	124.10	1300	31.51	09-71	19
	Heikyu Maru #25	110034	JA-77-0098	Sato Gyogyobu	124.59	1300	31.21	09-71	19
Pair Trawlers	Hakurei Maru	110939	JA-77-0018	Nippon Suisan	214.46	1400	36.50	05-71	13
	Shuyo Maru	109752	JA-77-0110	" "	154.51	1200	34.95	08-70	14
	Eiyo Maru	109753	JA-77-0111	" "	194.12	1200	34.95	08-70	13
	Koyo Maru	108837	JA-77-0112	" "	194.49	1200	34.95	06-70	14
	Fukuyo Maru	108838	JA-77-0113	" "	194.28	1200	34.95	07-70	13
	Katori Maru	108863	JA-77-0114	" "	194.69	1200	34.95	07-70	14
	Katsuki Maru	108864	JA-77-0115	" "	194.66	1200	34.95	07-70	13
	Aoba Maru	108865	JA-77-0116	" "	194.76	1200	34.95	09-70	14
	Wakaba Maru	108866	JA-77-0117	" "	194.97	1200	34.95	09-70	13
	Washima Maru	111168	JA-77-0122	" "	204.86	1200	36.54	11-71	14
	Toyoshima Maru	111169	JA-77-0123	" "	204.53	1200	36.50	11-71	13
Stern Trawlers	Otoha Maru	111081	JA-77-0010	" "	214.65	1400	36.50	06-71	14
	Kureha Maru	111082	JA-77-0011	" "	214.67	1400	36.50	07-71	13
	Hokkai Maru	110938	JA-77-0013	" "	214.77	1400	36.50	05-71	14
	Hokko Maru #77	116712	JA-77-0100	Hokkogyogyo Co.	349.62	3000	51.54	09-76	26
	Hokko Maru #57	116695	JA-77-0101	" "	348.77	2800	56.00	11-73	25

Bottom Trawl **Net Dimensions And Characteristics**

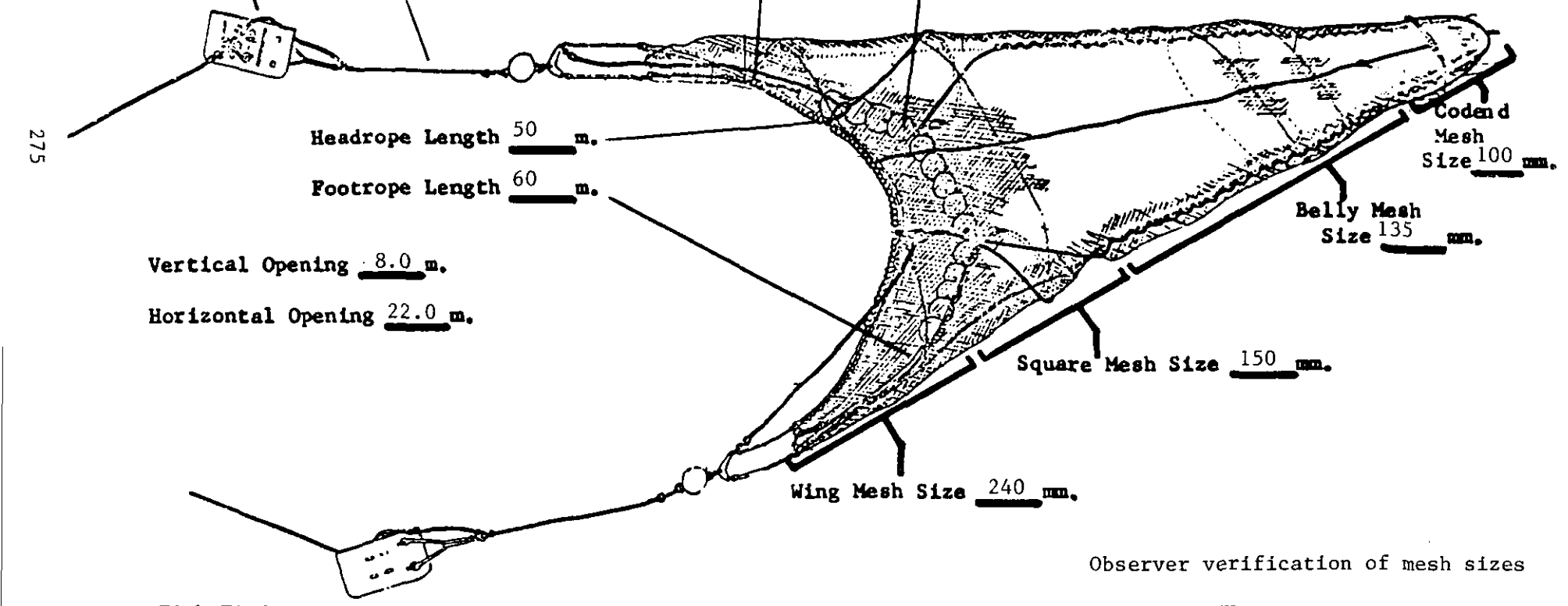
Vessel Type Large Stern Trawler **Observation Period** July 21 - August 28, 1981

Trawl Doors: **Shape** Rectangular, concave
Material Steel
Dimensions 3.8 m. x 2.4 m.
Weight 4000 kg

Dandyline Length 100 m.

Floats: **Number** 45
Size 36 cm.
Material plastic
Shape spherical

Bobbins: **Number** 23
Size 53 cm.
Material Steel
Shape spherical



Observer verification of mesh sizes

Yes XX No

Fish Finder
Name Sanken
Model Number TV-16
Frequency 28,80, 194 kc.
Paper Type (wet) or dry)
Speed of Advance 12mm/min

Net Recorder
Name Furuno
Model Number FNR-100
Frequency 50 & 100 kc.

PELAGIC TRAWL NET DIMENSIONS AND CHARACTERISTICS

Vessel Type Large Stern Trawler

Observation Period July 16 - August 15, 1981

Wing section was composed of: (circle one)

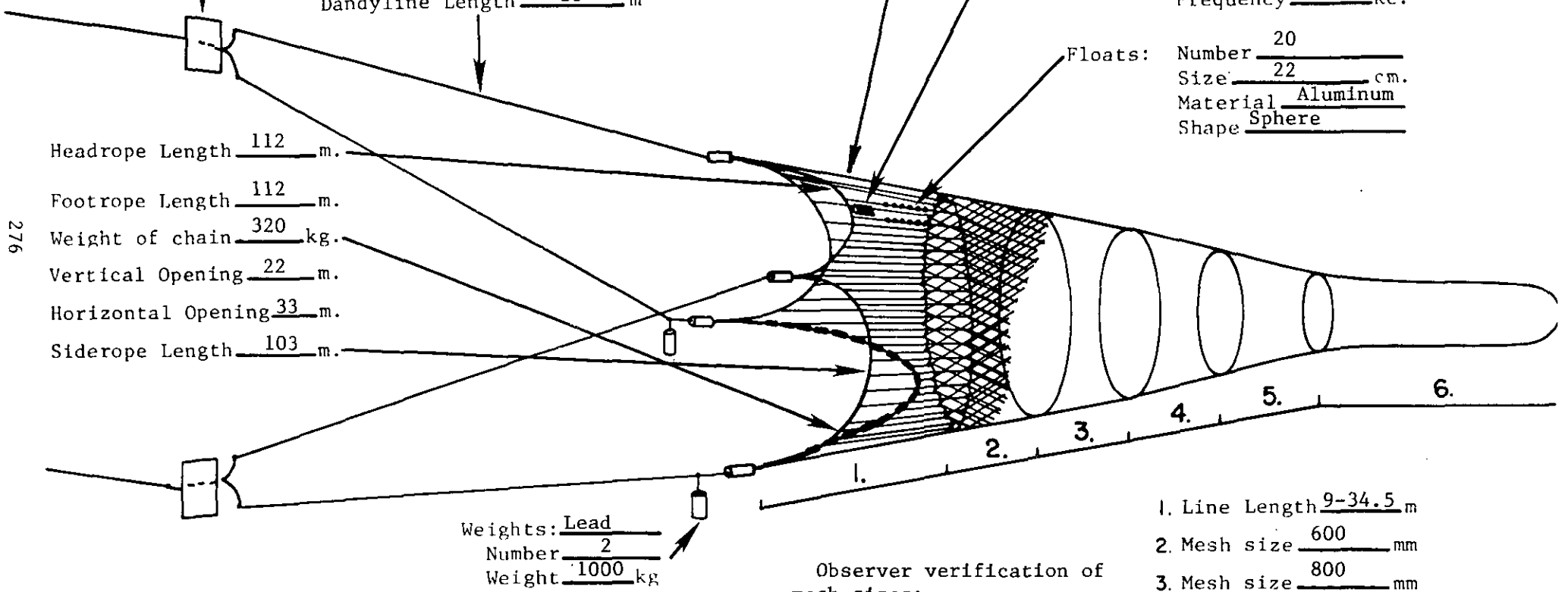
(ropelines) (as illustrated)
large mesh

Trawl Doors: Shape Rectangular
Material Steel
Dimensions 2.4 m. x 5.2 m.
Weight 1500 kg.

Dandyline Length 80 m

Net Recorder: Name ELAC-LAZ
Model Number 28445
Frequency 30kHz. kc.

Floats: Number 20
Size 22 cm.
Material Aluminum
Shape Sphere



Headrope Length 112 m.

Footrope Length 112 m.

Weight of chain 320 kg.

Vertical Opening 22 m.

Horizontal Opening 33 m.

Siderope Length 103 m.

Weights: Lead
Number 2
Weight 1000 kg

1. Line Length 9-34.5 m
2. Mesh size 600 mm
3. Mesh size 800 mm
4. Mesh size 400 mm
5. Mesh size 200 mm
6. Codend mesh size 120 mm

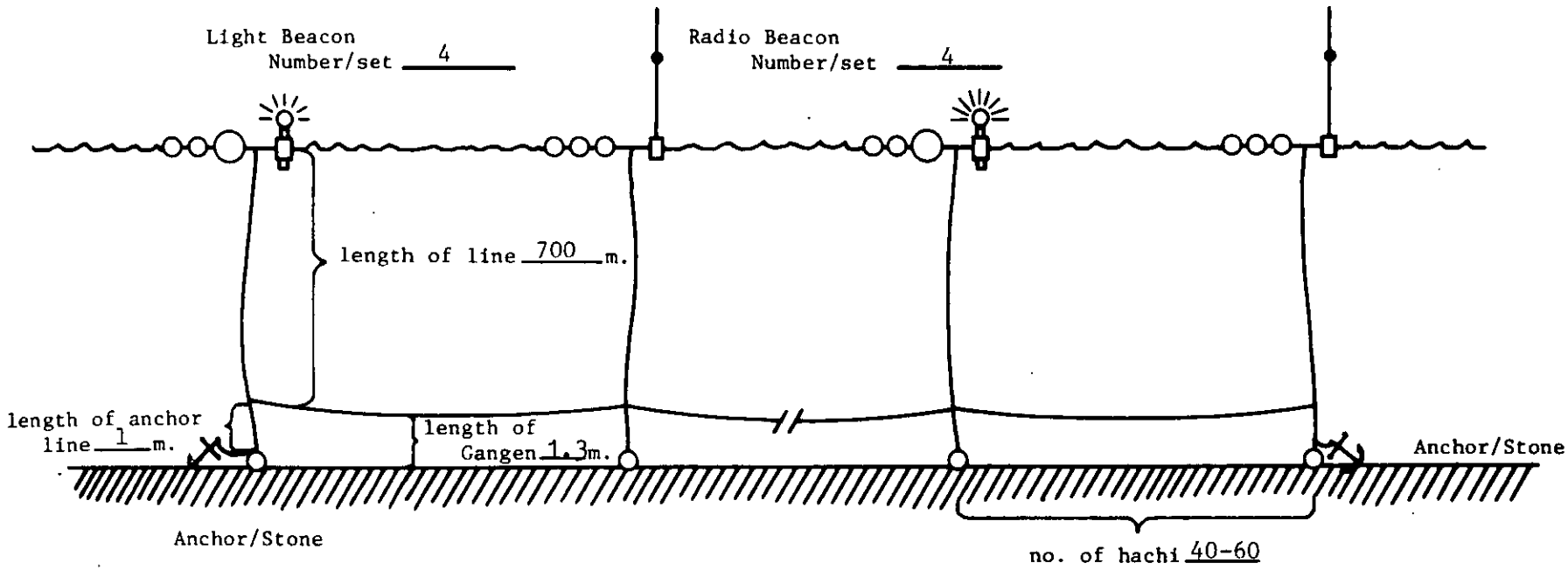
Net Length 65.2 m.

Fish Finder
Name ELAC - Superlodar
Model No. LAZ-44 119
Frequency 50kHz kc.
Paper type: wet or (dry)
Speed of Paper Advance 1cm/min

Observer verification of mesh sizes:

Yes XX Date 7/20/81
No

LONGLINE DIMENSIONS



Hachi Length 95 m

Average set Length 39.9 km.

Breaking strength of gangen 30 kg

Average number hachi/set 400

Average number hooks/hachi 40

Hook size #8

CHECKLIST OF ROCKFISH AND FLATFISH

Circle each rockfish and flatfish species that were caught on your ship. List all other rockfish and flatfish found in each area.

WASHINGTON, OREGON, CALIFORNIA COAST

Arrowtooth Flounder
Roughscale Sole
Deepsea Sole
Petrale Sole
Rex Sole
Flathead Sole
Pacific Halibut
Hybrid Sole
Butter Sole
Rock Sole
Slender Sole
Dover Sole
English Sole
Starry Flounder
Alaska Plaice ?
C-O Sole
Curlfin Sole
Sand Sole
Greenland Turbot
Pacific Sanddab
Speckled Sanddab
California Halibut
California Tonguefish

Rougheye Rockfish
California Scorpionfish
Pacific Ocean Perch
Kelp Rockfish
Brown Rockfish
Aurora Rockfish
Redbanded Rockfish
Shortraker Rockfish
Silvergray Rockfish
Copper Rockfish
Greenspotted Rockfish
Darkblotched Rockfish
Splitnose Rockfish
Greenstripe Rockfish
Puget Sound Rockfish
Widow Rockfish
Yellowtail Rockfish
Chillipepper Rockfish
Rosethorn Rockfish
Shortbelly Rockfish
Quillback Rockfish
Black Rockfish
Blackgill Rockfish
Vermillion Rockfish
Blue Rockfish
China Rockfish
Tiger Rockfish
Boccacio
Canary Rockfish
Redstripe Rockfish
Grass Rockfish
Yellowmouth Rockfish
Rosy Rockfish
Yelloweye Rockfish
Bank Rockfish
Stripetail Rockfish
Pygmy Rockfish
Sharpchin Rockfish
Shortspine Thornyhead
Longspine Thornyhead

List other flatfish and rockfish species that your ship caught in this area:

GULF OF ALASKA

Arrowtooth Flounder
Roughscale Sole
Deepsea Sole
Petrale Sole
Rex Sole
Flathead Sole
Pacific Halibut
Hybrid Sole
Butter Sole
Rock Sole
Yellowfin Sole
Dover Sole
English Sole
Starry Flounder
Alaska Plaice
Curlfin Sole
Sand Sole
Greenland Turbot
Pacific Sanddab

Rougheye Rockfish
Pacific Ocean Perch
Redbanded Rockfish
Shortraker Rockfish
Silvergray Rockfish
Copper Rockfish
Dusky Rockfish
Darkblotched Rockfish
Splitnose Rockfish
Greenstripe Rockfish
Puget Sound Rockfish
Widow Rockfish
Yellowtail Rockfish
Rosethorn Rockfish
Quillback Rockfish
Black Rockfish
Blue Rockfish
Boccacio
Northern Rockfish
Redstripe Rockfish
Yellowmouth Rockfish
Yelloweye Rockfish
Harlequin Rockfish
Sharpshin Rockfish
Shortspine Thornyhead
Longspine Thornyhead

List other species of flatfish and rockfish that your ship caught in this area:

BERING SEA

Acanthopsetta nadeshuyi
Kamchatka Flounder
Arrowtooth Flounder
Roughscale Sole
Deepsea Sole
Petrale Sole
Glyptocephalus stelleri
Rex Sole
Flathead Sole
Bering Flounder
Pacific Halibut
Hybrid Sole
Butter Sole
Rock Sole
Yellowfin Sole
I ghead Dab
Arctic Flounder
Dover Sole
English Sole
Starry Flounder
Alaska Plaice
Curlfin Sole
Sand Sole
Greenland Turbot
Pacific Sanddab
Sakhalin Sole

Rougheye Rockfish
Pacific Ocean Perch
Redbanded Rockfish
Shortraker Rockfish
Silvergray Rockfish
Dusky Rockfish
Darkblotched Rockfish
Sebastes glaucus
Black Rockfish
Sebastes melanostictus
Blue Rockfish?
Northern Rockfish
Redstripe Rockfish
Harlequin Rockfish
Shortspine Thornyhead
Longspine Thornyhead

List other species of flatfish and rockfish that your ship caught in this area:

Explanation of sampling procedures and problems; validity of data results:

Be sure to mention:

1. How is the "Total Catch" figure on form 1, 1L, 2, or 2JV derived?
2. If ships estimates were adjusted, how were the adjustments made?
3. How were the observer estimates of haul size made?
4. How was species composition and prohibited species sampling accomplished?
5. Discuss how biological data (i.e. length frequencies, sexing, etc.) were taken and explain any special projects.

General comments and conclusions; use additional pages as necessary to comment on problems, observations. Suggested entries:

6. Report the use of any innovative net design, navigational equipment, fishing strategy, or processing machinery.
7. Recount any unusual occurrence such as an accident or injury at sea.
8. Describe anything unusual concerning the catches.
9. Report anything that you feel the next observer or NMFS should know.
10. Describe any sampling problems and suspected violations.

(The following are guidelines for answering the report #2 questions listed above:)

QUESTION #1

Is the "total catch" figure coming from a summation of the weights recorded on "Section 2 - Catch" of the fishing logs or from the estimate recorded on "Section 1 - Effort"? Are there any species not included in the estimate? If so, which ones and why aren't they included?

QUESTION #2

A detailed description should be given any time the observer adjusted the ship's haul estimates. The formulas and sample calculations that were used should be shown, even if the "standard" manual method was used. Please do not make reference to the manual. A variety of people read these reports and they may not have access to the manual. You may make reference to your logbook for specific calculations and adjustment factors.

If some other "non-standard" method was used in adjusting the ship's estimates, give a thorough explanation and show some sample calculations or formulas. Also explain your reasons for using a method different than the one given in the manual.

Explanations should include why the estimates were being adjusted, what species or species groups were not being included in the estimates, and an estimate of percentages involved.

QUESTION #3

If the weight of fish was determined by volume and density of fish in the bin then the following should be answered:
- were the dimensions of the bin determined or at least checked by the observer?
- how many bins were there and did the observer check all or only some of the bins?
- how was the height of fish in the bin determined; were measuring tapes, measuring strips, or boards of equal width used?

If the weight of fish was determined by the volume and density of the codend then the following should be explained:
- were actual measurements made every time or were average measurements used?
- was a measuring tape used or standard reference points?
- what formula was used?
For any type of volume and density estimate the observer should explain how the density was determined and how often. The average density and range of densities should also be included.

Any other methods of estimating haul size should be thoroughly explained. Give your reasons for choosing this method and a sample of any calculations used.

QUESTION #4

This section should explain the who, what, when, where, why, and how of your sampling procedure. If your methodology changed with time, target species, or any other factor be sure to give explanations for each procedure used. Any method other than our "standard" basket sample or whole haul method should be thoroughly explained and justified. Below are some of the questions that should be explained in your answers.

WHO

-who collected the fish used for the samples; did an assistant and/or the observer collect the baskets of fish for basket sampling?
-if whole haul or partial whole haul sampling was done, who collected the non-target species?
-was the crew trusted to collect the non-target species?
-was the observer able to supervise the collection of all fish?
-how was the observer able to verify that everything was correctly collected?

WHAT

-what general type of sampling method was used (basket, whole haul, partial whole haul, or some other type of sampling)?

Explanations should be given for both species composition and prohibited species sampling unless they were both done simultaneously. Actual sample sizes should be given; for basket sampling the number of baskets or approximate weight sampled should be indicated. The methods used for calculating sample

weights for partial whole haul samples is very important and should be well explained. Of course, for whole haul sampling the sample weight will be the ship's non-adjusted or adjusted estimate.

WHEN

-when were hauls sampled?
-were hauls sampled throughout the day; it is strongly suggested that observers construct a bar graph as shown in the manual. This is a good way to demonstrate and check that hauls are being sampled from all times of the day.
-were the hauls sampled immediately or did the observer have to wait due to delays in the processing or the dumping of the haul?
-was sampling conducted throughout the dumping or processing of the haul or from one particular section of the bin or codend?

WHERE

-where was the sampling done?
-were samples collected on the deck or in the factory?
-were the fish collected from a certain bin or conveyor belt?
-were fish collected in one area and moved to another area to be counted and weighed; factory diagrams can be very useful in this section and can be referred to.

WHY

-why was the sampling site chosen?
-why was the particular method of sampling chosen; factors frequently considered here are: the species diversity of the haul, the frequency of hauls, haul size, dumping and processing procedures, factory layout, assistance, and the ability to get high quality samples.

HOW

-how were the fish actually collected for the samples; from the codend, bin, or conveyor belt?
-were the fish shoveled, scooped, picked up by hand or allowed to fall from a codend or bin?
-how did the observer insure that the samples were collected in a random and unbiased manner?

QUESTION #5

Briefly explain how the biological data were collected and how any special projects were carried out. The detail of the description will vary with complexity of the project. As a minimum, we would like to know how the sample, usually fish, was collected, how the data were collected, any unusual occurrences or deviations from the standard methods, and the validity of the data.

QUESTION #6

-the new computerized surimi plants.
-new navigational equipment; especially on small trawlers.
-any information about the ship's fishing strategy.
-any new net designs or modifications to prevent the catch of prohibited species, sablefish, or rockfish.
-blowout panels or catch indicators being used on American catcher boats.
-the dumping or "bleeding" of codends.

QUESTION #7

-any injuries to the observer or crew members.
-any major emergencies or dangerous situations on the vessel: fires, major breakdowns, ammonia leaks, electrical malfunctions, or fights among the crew.

QUESTION #8

-any unusual or uncommon species.
-any unusually large or small catches.
-any unusual diversity or lack of diversity in the catches.
-any species found outside their normal range.

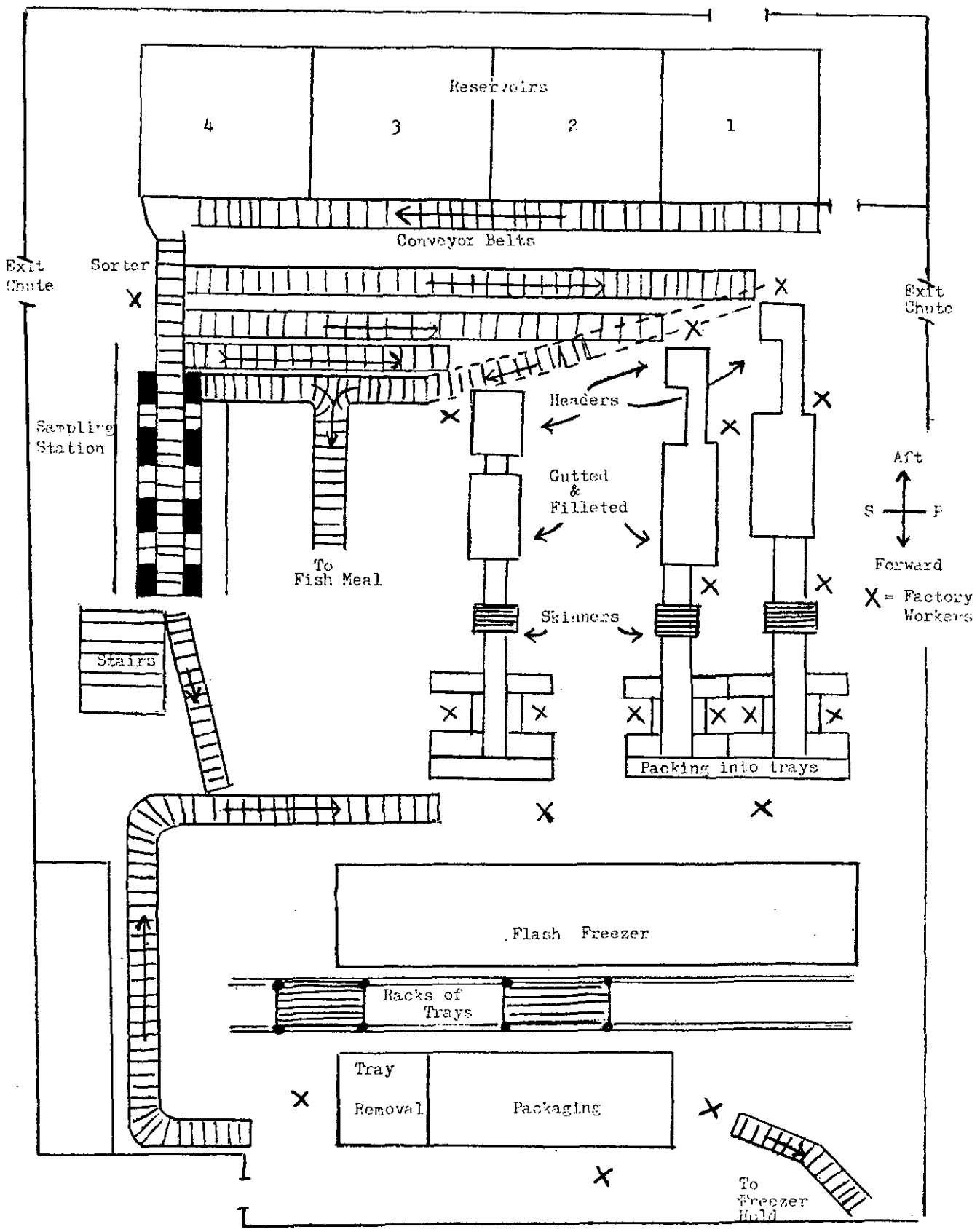
QUESTION #9

-living conditions and food aboard the vessel.
-tips for the next observer on things to bring to sea
-any problems with sampling or interactions with the crew.
-any conditions or situations that may endanger the observer.
-joint ventures: what was it like working with a joint venture representative and the U.S. catcher boats?

QUESTION #10

Any potential violations should also be described here. Any information on presorting or sampling interference is especially important. Also, anything else that may affect the validity of the data.

FACTORY LAYOUT
OF SEA CHALLENGER (Tool Room) Karen Teig



OBSERVER RETURN AND COMPLETION OF DUTY

As previously mentioned in "Transfers and Disembarkations," disembarkation arrangements are made between logistics personnel and the vessel, fishery agency, or fleet commander, and the observer should be informed of the plans. Due to the difficulties inherent in making the arrangements, however, the observer often is not given much advance notice, so be prepared when the time draws near. Continue sampling as long as it is practical, but allow enough time to pack your gear. Return all borrowed items and equipment, doublecheck your inventory list to make certain that you do not leave anything of value behind, remember to get the information on the last hauls (Data Forms 1, 1L, 2, or 2JV) especially if you sampled that day, and pack all water-sensitive items (especially data forms) in plastic bags. If the ship is going to be unable to meet the arranged disembarkation schedule, have the captain send a message as soon as possible with the new estimated time of arrival. Refer to "Radio-Telephone Procedure" in the Appendix for the correct procedure used in notifying the Coast Guard or port of your arrival at the pilot pickup point. The Appendix also contains charts of commonly used ports in Alaska (Dutch Harbor, Kodiak, and Seward) showing the pilot pick-up points. If the transfer boat does not appear as scheduled, contact them according to the embarking/disembarking directions in the section "Transport to the Ship"--Section I.

Upon arrival in the port, remember to report to the nearest Customs office (see "Customs")--Section I. Confirm your plane reservations, and arrange accommodations for yourself if you are unable to fly out the same day. You have an obligation to return directly to Seattle as soon as possible. Report to your contractor (either in person, or by phone) immediately upon your

return or according to their instructions. Your contractor will supply you with your cruise number and vessel code. All observers returning from the Washington-Oregon Coast should call Bill Dickinson, NMFS Enforcement, their first working day in Seattle and arrange a time to see him (526-6133).

In the past we have had problems with cockroach infestations in the building. In order to combat the problem without expensive and unpleasant spraying, we require that all observers place all gear that is to be returned to NMFS in our freezer in the wetlab at Sandpoint. The gear must remain in the freezer for three full days before it can be removed and turned in. There will be NO exceptions. We suggest that observers place their gear in the freezer at the first opportunity in order to avoid any delay in their departing Seattle. Instructions for the process can be found in the wetlab.

Following your return to Seattle, you will continue to be paid for five working days. On return, you have an obligation to your contractor to complete all paperwork and be available to answer any questions concerning your data. Below are some of the duties to be accomplished after your return:

The following should be complete before your initial interview with NMFS debriefing staff:

1. If you had an injury while at sea, report it to the contract organization and the debriefing staff, even if you expect no further problems from it. A form will need to be filled out as a record of your injury.

2. Organize and complete all forms. Write your name and ship name on the first page of each set of forms. (ie. forms 2JV, 3(1), 3(2), and etc.)

3. Any radio messages that were not sent at sea should be completed and turned in to debriefer immediately.

4. Turn in any salmon scales other than king salmon. Make sure that they are mounted properly in plastic slides and that your initials are on the paper envelopes. These scales will be looked at and the species of the salmon will be verified. Mounting instructions can be found in the debriefing room.

5. Times for gear check-in will be arranged daily. All gear should be clean, and metal parts should be oiled. The equipment will be inspected for cleanliness and damage. Point out any malfunctioning items of equipment, rips in the raingear or holes in the boots. Instructions for gear check-in can be found in the wetlab.

6. Enter all observer estimates of catch in the designated column of Form 1L, 2 or 2JV, opposite the proper set or haul. (Remember to include in the final report a description of how the ship estimates and observer estimates are made, possible reasons for any discrepancies, and percentage difference between the ship and observer estimates.)

During initial debriefing someone will glance over your forms to catch obvious errors in filling them out and to answer any questions you may have. At this time, point out any problems you had in sampling, any fishing violations, or anything unusual about the cruise. Be prepared to take notes during the interview. This will save a great deal of time later during the debriefing process.

<u>The following should be complete before you return to NMFS with your corrected data forms and reports:</u>

1. The RM-2 and RM-4 forms should be filled out correctly (radio message keypunch forms for species composition and prohibited species). If you need to correct any of your previously sent radio messages, enter the corrected radio messages on the keypunch forms and indicate in the margins that these are changes. If your last radio message did not include data from your final days on board, enter this information on the keypunch forms and label this as "last days' data." Turn in your radio message worksheets with your RM-2 and RM-4 forms. Be sure that they are easily understandable and completely filled out. Don't forget cruise numbers, vessel codes and page numbers, put your name, the ship name and your contractors name on the first page of each form.

2. Glance over each data sheet to see that they are filled out correctly. The section in the manual, <u>54 Most Common Errors,</u> should be consulted. All arrows, leading or trailing zeros, species codes, etc. should be in place. Check positions and times on 2JV. Check for mismatches between forms 3(1), 4, 7, and 9. All errors found during the initial debriefing should be corrected. <u>The data forms should be in perfect condition when they are turned in after the initial debriefing</u>.

3. Write your name, the ship's name and contractor's name at the top of the first sheet of each group of data forms. This information should thus be written at the top of the first sheet of Forms 1, 1L, 2, 2JV, 3(1), 4, 7, 8, 9, 10, 11, and radio-report worksheets for each ship.

4. Separate your collections of otoliths by cruise if you have not already done so. Each box should contain samples from only one vessel and only one species. The otolith vials, rubber-banded in groups of ten, should be arranged by number within each box. Using a permanent felt-tip marker, write the following information on the ends of the boxes so that it can be easily read while the boxes are stacked.

Observer's name	Species name
Ship name	Vial numbers ___ through ___
Contractor's name	Box ___ of ___
Cruise number and vessel code	Area(s)
Month(s) of cruise and year	

(If you have 3 boxes of a given species for one cruise, mark them Box 1 of 3, Box 2 of 3, etc.)

After your salmon species identification has been verified and the scales have been returned to you, put them back into the original paper envelopes. Salmon scale packets should be separated into groups by cruise and species. A slip of paper bearing the same information as above should be attached to each group of scale packets.

Turn in the boxes of otoliths, packets of scale envelopes, and the completed Form 9's at the same time. These will be checked for proper organization and labeling. Remember to fill in the area on each page of Form 9. Instructions for completion and organization of form 9's and age structures can be found in the debriefing room.

5. Complete writing Report Form #1 (Enforcement Report). Neatly print it on new report forms in ink. Add your radio message and ship's log comparison sheets to the report. Be sure to follow the section in the enforcement manual on "Writing Better Reports". If an affidavit was written, hand in a rough draft as soon as possible.

6. Finish writing the Report Form #2 and print it on new report forms in ink. The miscellaneous forms associated with Report #2 should also be turned in at this time. Be sure to refer to the section of the sampling manual on "Final Report No. 2".

7. Turn in all of the following at the same time when complete:

FORMS 1, 1L, 2, or 2JV
FORMS 3(1) AND 3(2)
FORM 4
FORM 6 (if spawning pollock were observed)
FORM 7
FORM 8 AND WORK SHEETS
FORM 9 AND AGE STRUCTURES (salmon scales with a paper cover slip)
FORM 10
FORM 11A AND 11B
RM, RM-1, AND RM-3 WORKSHEETS
RM-2 AND RM-4
REPORT #1 AND LOGBOOK COMPARISONS
REPORT #2
CHECK-LIST FOR ROCKFISH AND FLATFISH
CUSTOMS FORM (if on a joint venture)
TAGGED FISH FORMS (if tagged fish were seen)
OBSERVER INJURY FORM (if observer sustained an injury)
SEA LION TEETH AND DATA FORM (if teeth were taken)
SALMON SNOUT AND DATA TAG (if snouts were brought back)
POLLOCK DISCARD/BLEEDING CODENDS FORMS (if either were observed)
SPECIMEN COLLECTION FORM (if specimens were brought back)
LOGBOOK (with observer name, vessel name(s), cruise number, vessel code, dates aboard, and contractor written inside the front cover.

After you have submitted your work a pre-keypunch check must be performed on all data forms and reports read before you leave. This may take from a few hours to a few days depending on the work load of the debriefing staff. You will be expected to remain in Seattle until all of your work has been completed to the satisfaction of the NMFS staff and all NMFS gear has been turned in.

Observers have an obligation to answer questions that may turn up later as the data is being processed. Before leaving make sure that your contractor has a phone number where you can be reached and a permanent mailing address.

All observer data collected are the property of the U.S. government. No observer can retain or copy any data or reports following their return unless granted express permission of the National Marine Fisheries Service. This includes information used as part of a school project, thesis paper, articles for publication, or interview with news media. The main reason for

this restriction is due to the Privacy Act, which protects the privacy rights of the vessel owners. NMFS also reserves the right to review for accuracy the draft for any article or publication concerning your observer experiences. Any questions concerning this or requests for permission should be directed to Russell Nelson.

Observer Name_____Debriefing Date_____

Trip Number_____ Contracting Agency_____ Training Class_____

Ship Name_____ Cr#_____ Vcode_____ Sampling days_____ Sea days____

Ship Name_____ Cr#_____ Vcode_____ Sampling days_____ Sea days____

Ship Name_____ Cr#_____ Vcode_____ Sampling days_____ Sea days____

Ship Name_____ Cr#_____ Vcode_____ Sampling days_____ Sea days____

Trainer's Review_____

_____

_____

_____Final Exam_____

DEBRIEFING INTERVIEW:

	5	4	3	2	1
A. Attitude: General interest and enthusiasm: Shows willingness to make data corrections or write affidavits. Was the observer helpful and patient or uncooperative and impatient? Did they display sincere desire to do a good job or improve their work? Was the observer willing to so extra work beyond what is required for minimal completion of the job?_____(5)					
B. FORM 1, 1L, 2, and 2JV: 1. Ship's Estimate of Catch Size: Did they find out how the ship's estimate were made? If adjusting was needed was it done correctly? Did observer make comparisons of radio messages and the ship's logs?_____(3)					
2. Observers Estimates of Catch Size: Did they figure out an accurate method for determining their estimates? Did they estimate an adequate number of catches?_____(6)					
3. Recording Data: Did the observer make an entry for every day? Was data taken from other sources checked for errors. Was the form generally filled out correctly and notes made for clarification? _____(1)					
C. FORM 3(1) and 3L(1): 1. Sample Size: Was the sample size calculated correctly? Was it large enough to be representative? Did they sample frequently enough?_____(5)					
2. Sample Quality: Were the prohibited species collected in an unbiased, random manner? Could the observer insure complete collection of all prohibited species? If the crew assisted, were the trusted too much? Were the prohibited species accurately counted and weighed?_____(7)					

	5	4	3	2	1
3. Recording data: Were sample weights, and numbers and weights of prohibited species recorded correctly? Were actual and estimated weights recorded correctly? Were subsamples and "over 99 individuals weighed" problems done correctly and notes made for clarification?_____(1)					
FORM 3(2) and 3L(2): 1. Samples Size: Was the sample weight calculated correctly? Was it large enough to be representative? Did they sample frequently enough?_____(5)					
2. Sampling Quality: Was the sample collected in a random and unbiased manner? Could the observer insure complete collection of the sample fish? If the crew assisted, were they supervised or trusted too much? Were the species accurately counted and weighed?_____(7)					
3. Identification: Were the species identified correctly? Did they <u>correctly</u> try to identify species beyond the condensed species list? Did they bring back specimens of unidentified fish?_____(2)					
4. Recording Data: Were the forms generally filled out correctly and completely? Were any species codes missing, incorrect, or duplicated? Was the 900 code handled correctly? Was math shown correctly in a non-keypunch area?_____(1)					
E. FORM 4: 1. Quality: Were the prohibited species correctly identified to species and sex? Were the halibut and crab condition judged correctly and frequently enough?_____(3)					
2. Recording Data: Were the numbers and weights of prohibited species recorded correctly? Were the forms generally filled out correctly and completely?_____(1)					
F. FORM 7: 1. Quality: Were the correct species recorded; including target species, prohibited species, and special project species? Were at least 150 lengths of the <u>correct</u> species collected daily?_____(3)					
2. Recording Data: Were the forms generally filled out correctly and completely?_____(1)					
G. FORM 8: 1. Ship's Data: Did the observer collect ship's product recovery data? Were the products described adequately? Was data recorded correctly?_____(1)					

	5	4	3	2	1
2. Observer's data: Was any observer data recorded? How many times did they collect PRR data? Did they check unit weights? Was the data recorded properly?_____(2)					
H. FORM 9: Were scales collected from salmon when they were available? Did the observer collect an unusually large number of scales?_____(1)					
2. Recording data: Were individual species arranged properly on each page? In general, were the forms filled out correctly?___(1)					
I. FORM 10 and 11: In general, were the forms filled out correctly and completely? Were the mammal descriptions well written and detailed?_____(1)					
J. SPECIAL PROJECTS: What was their special project? Was it done correctly and completely? Were the forms filled out properly?_____(4)					
PRE-KEYPUNCH DATA CHECKING:					
A. WILLINGNESS AND ABILITY TO MAKE DATA CORRECTIONS:_____(2)					
B. NEATNESS: Will sloppy writing cause keypunch errors?_____(1)					
C. RADIO MESSAGES: Were the RM, RM-1, and RM-3 extrapolations completed correctly? Were the radio message written properly and sent in a timely manner? Were RM-2 and RM-4 completed properly?_____(3)					
D. PROMPTNESS: Was all work completed in a timely manner?_____(1)					
E. PROBLEMS WITH DATA: 1. Form 1, 1L, 2, and 2JV:_____(2)					
2. Form 3(1) and 3L(1):_____(2)					

	5	4	3	2	1
3. Form 3(2) and 3L(2): _____ (2)					
4. Form 4: _____ (2)					●
5. Form 7: _____ (1)					
6. Form 8: _____ (1)					
7. Form 9: _____ (1)					
8. Form 10 and 11: _____ (1)					
9. Gear: Was gear turned in promptly? Was gear thoroughly cleaned and lubricated? Was gear restocked properly? _____ (1)					
REPORTS AND AFFIDAVITS:					●
# of Reports_____ # of affidavits_____ Logbook turned in?_____					
A. VIOLATIONS AND POTENTIAL VIOLATIONS: Was the situation handled correctly at sea? Was the proper investigation and documentation carried out? Did the observer display the correct amount of assertiveness and good judgement to help remedy the problem? _____ (4)					
B. AFFIDAVITS: Was the affidavit written in a clear, complete, and correct manner? _____ (1)					
C. REPORT ONE: Was the report clearly written and complete? Did they follow the guidelines? Did they explain everything in sufficient detail? (3)					
D. REPORT TWO: Was the report clearly written and complete? Did they follow the guidelines? Did they explain everything in sufficient detail? (3)					●

OTHER COMMENTS:

PRELIMINARY EVALUATION:

EXCELLENT	GOOD	AVERAGE	BELOW AVERAGE	POOR
460-415	415-345	345-255	255-165	165-90

FINAL EVALUATION:

EXCELLENT	GOOD	AVERAGE	BELOW AVERAGE	POOR
510-460	460-380	380-280	280-180	180-110

FINAL DATA PROCESSING:

5	4	3	2	1

A. Extent and type of problems and comments:(a summary of the attached sheets)

1. Form 1, 1L, 2, and 2JV_____(1)

2. Form 3(1) or 3L(1)_____(2)

3. Form 3(2) or 3L(2)_____(2)

4. Form 3(2) or 3L(2) Math errors:

# of errors_____(#hauls)(#entries)_____%tage_____(1)

5. Form 4:_____(1)

6. Form 7:_____(1)

7. Form 7 Math errors:

# of errors_____ # of lines_____%tage_____(1)

8. Form 9:_____(1)

OBSERVER EVALUATION GUIDELINES

These guidelines describe the quality and quantity of work that is expected from observers to receive the minimum acceptable score (average) and the maximum score (excellent). Parts of the evaluation process cannot escape subjectivity but under most normal circumstances these guidelines will cover the evaluation criteria. Data recording sections are evaluated based on 60 sampling days. If an observer has completed a cruise that is less than 60 sampling days or does not have particular forms that apply to their cruise, the debriefers have to evaluate that individual based on an overall average of the other scores on that observer's evaluation. The preliminary debriefing counts 66 percent of the entire preliminary evaluation. The pre-keypunch check section of the evaluation is 22 percent, and reports are 12 percent of the evaluation. A percent is shown after each evaluation question indicating the value for each observer duty in relationship to the total preliminary evaluation score.

A. ATTITUDE: (5.4%)

General interest and enthusiasm: shows willingness to make data corrections, write affidavits and take criticism. Was the observer helpful and patient or uncooperative and impatient? Did they display a sincere desire to do a good job or improve their work? Was the observer willing to do extra work beyond what is required for minimal completion of the job?

Average: Observers should have their forms and logbook with them at the time of debriefing. The average observer has difficulty explaining their sampling program because they have not organized their materials. They have not taken sufficient care to clean-up mistakes or possible problems with the data. Most observers completing satisfactory work answer questions but do not offer additional information that may help the debriefer assess an observer's interest and enthusiasm. Any criticism the debriefer has about an observer's sampling or recording of data should be discussed, not argued. References to the manual about basic procedures are common. Many observers seem to be more interested in how soon they can leave than in doing good quality work in Seattle.

Excellent: Observers need to be prepared for the interview by having information pertinent to questions on the evaluation written down or be able to recall the information with adequate detail from memory. Great care must be taken in reviewing the data to clear-up problems before and after debriefing. The debriefers want to determine the quality and quantity of work completed at sea. An observer's qualitative and quantitative preparation for debriefing will help debriefers evaluate attitude. What percentage of total hauls did you estimate total catch? Calculate percentages of hauls sampled by number and weight. What was the average percent of haul weight and percent of total cruise weight sampled? What was the average number of hauls taken each day? Determine the average number of length frequencies taken by day and percentage of scale samples taken from those salmon in the samples. Identify and discuss any missed sampling days.

We want observers to be honest about accomplishments and problems with sampling. Any extenuating circumstances an observer encountered should be discussed. Observers need to express to the debriefers why they felt they did above average work. The observer program will evaluate you on your ability to deal with constructive criticism and willingness to comply with the debriefers requests. Additional points are given on the evaluation if an observer is willing to volunteer time after his data is turned in to debriefing to help out by working in the gear room or assisting staff.

The opposite side of the debriefing instructions handout has areas to record corrections for the data forms. WRITE DOWN any corrections the debriefer gives so you can identify the errors, correct them, and score higher on the "pre-keypunch check" section of the evaluation.

After the reports and affidavits section of the preliminary evaluation there is an area for staff personnel to write comments about observer involvement with logistics personnel, contractors, and/or special project instructors.

B.(1) SHIP'S ESTIMATE OF CATCH SIZE: (3.3%)

Did they find out how the ship's estimates were made? If adjusting was needed, was it done correctly? Did the observer make a comparison of radio messages and ship's fishing logs?

Average: Ship's estimates of target species are usually under stood to a certain degree by observers; but bycatch estimates are unclear. Logs may be checked daily but no written comparison is made.

Excellent: Discuss how the hail weight was determined and how all total catch estimates were made (sections 1 and 2 of the ships fishing log and forms 2JV, 2, 1, 1L). How was the product weight calculated? How did the ship estimate bycatch totals for "OTH" and "NON", and count prohibited species? What about unsampled hauls when observer data was not available? Be able to give an example of adjusted ship's estimates if adjustments were made. Ship's logs should be checked daily and written comparisons made from weekly, daily and haul by haul totals on a RM-1 worksheet.

B.(2) OBSERVER'S ESTIMATE OF CATCH SIZE: (6.5%)

Did they figure out an accurate method for determining their estimates? Did they estimate an adequate amount of catches?

Average: On stern trawlers, bin volume or codend estimates are the methods normally used to calculate total catch. When bin volume estimates are made, the average observer determines the height of fish in the bin based on only a few measurements. Density is only calculated once per day. The codend estimates are initially based on only a few measurements. Known deck dimensions or visual estimates are used to determine heights, widths, and lengths after the first few weeks of sampling. Longline observers usually verify the number of hooks/hachi but do not verify the total number of hachi being set. Independent mothership observers may only verify the ship's scale calibrations a couple of times throughout the cruise. Average observers commonly only estimate total catch for the hauls they sampled.

Excellent: We want valid quantitative methods used for total catch determinations. For excellent work a second method may be used to compare estimates weekly (ie. codend and bin volume). Any calculations used in total catch determinations should be presented at debriefing (e.g. codend formulas, bin volumes, PRR, and longline set calculations). If a bin volume method was used to calculate total catch, the bin should be measured by the observer and height of the fish in the bin determined using more than 4 measurements. Density calculations should be summarized for your reports and is helpful to the debriefer to know average, high, and low densities. Density should be calculated for each sampled haul using at least 6 baskets of randomly collected fish. If using any other volumetric method for density calculations, then the larger the volume the better (e.g. small bin, oil barrel, or box). Observer density methods should reflect the method of haul size estimation by the ship. For instance, if the ship uses a codend method for total catch estimation; then the observer should use tightly packed baskets or a standard density of 1.0 when determining a density to use in their observer catch estimate. Excellent observers should estimate catches in addition to those sampled. Observers should be sampling at least 3-4 hauls per day. When making codend estimates a standard 1.0 density may be used. Longline observers need to check the number of hooks/hachi and the number of hachi/set weekly. Independent mothership observers must verify calibration accuracy of the ships scale weekly.

B(3). RECORDING DATA: (1.1%)

Did the observer make an entry for every day and get a noon position when required? Was the form generally filled out correctly and notes made for clarification?

Average: Most observers do not check positions and times or make notes on the forms of unusual data. On joint ventures, if tow data was not available through the JV representative then no real effort was made to get the information. Average observers usually make a few mistakes in recording (e.g. omitted data, catcher boat abbreviation corrections, continuations, positions, and/or times).

Excellent: Refer to the manual description for forms 2, 2JV, 1 and 1L. Tow data on JV can be acquired through a JV representative. If tow data is not given, then observers must make an effort to get the data. Any unusual times or positions need to be identified and corrected at sea or marked with and asterisk and a note written on the data form explaining the situation (e.g. shortwiring, lost codend etc.). There must be no recording errors based on a 60 day cruise.

C. FORM 3(1) AND 3L(1):

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1. SAMPLE SIZE: (5.4%)

Was the sample size weight calculated correctly? Was it large enough to be representative? Did they sample frequently enough?

Average: Sample size is usually determined based on a quantitative method but often uncontrolled variables affect the accuracy of the sample weight calculation. The debriefers determine your rating based on how hard and effective you worked. We expect average observers to work a minimum of 8 hrs. per day sampling.

a. Stern trawlers and Joint Ventures: Most average observers whole haul sample when catches are relatively small and pure. If sampling takes more than a couple of hours, then pure catches are partial whole haul sampled. If difference in bin volume is not the chosen method to determine sample size, then only one alternative method is used. These alternative methods for determining a partial whole haul sample size can be excellent ways to get a sample size; however, most observers make too many assumptions, for instance, constant processing rates, constant diversity, or they base calculations on one test. Most average observers sample 2 or 3 times daily or try to sample 50 percent of the hauls. When partial whole haul sampling, usually 10-20 percent by weight of the haul is sampled.

b. Longliners: Observers must sample at least 20 percent of the set divided among a minimum of 3 sampling periods.

c. Motherships or (2 observers on a ship): Each observer should sample3 times a day. When JV fishing, each observer should sample at least 50 percent of a haul by weight.

Subsample sizes must be large enough to acquire at least 70 Tanner crab and 20 halibut, king crab or salmon per sample.

Excellent: Sample size must be determined using a quantitative method. The debriefers determine your rating based on how hard and effective you worked. We expect observers to sample at least 12 hrs. per day.

a. Stern trawlers and Joint Ventures: Whole haul sampling is preferred whenever possible. Some species may be whole haul sampled while others which make up a larger percentage of the haul must be partial whole haul sampled. The preferred method of determining a partial whole haul sample size is difference in bin volume (basing the partial whole haul sample size on the ships total catch estimate). If another method is chosen; then a cross check of a couple of methods is necessary. Any cross check tests should be repeated at least weekly. Alternative methods might be: use of other volumes, wt per time, product recovery, filling baskets and applying average weight per basket, or use of brails. The best methods are those incorporating the least assumptions. To get an excellent rating one should sample at least 3-4 times daily or sample all the hauls if possible.

b. Longliners: Observers must sample at least 25 percent of the set to qualify for a good and at least 30 percent of the set to get an excellent. Samples should be randomly taken from a minimum of 3 areas of the set. Each sample should be taken from the same number of hachi.

c. Motherships or (2 observer ships): Both observers total work should cover at least 50 percent of the hauls brought aboard. Observers should sample 60 percent of the fish per haul by weight to qualify for excellent work.

Subsamples should contain more than 100 individuals. Subsample sizes must be large enough to acquire 100 or more individuals if possible. The sample size should be increased if the frequency of individuals is low.

2. SAMPLE QUALITY: (7.6%)

Were the prohibited species collected in an unbiased, random method? Could the observer insure complete collection of all prohibited species from the sample? If the crew helped sort, were they trusted too much? Were the prohibited species accurately counted and weighted?

Average: Observers usually sample around the times the ship has set up for meals and sleep. These "times" are usually the most convenient times to sample. It is important for the observer not to miss all the meals or necessary rest but the ships time schedule should not determine the observers sampling schedule. Night time sampling is infrequently done.

If an observer whole haul samples by presorting catch on deck, then the observer may check the factory for a short period of time for any missed prohibited species. Observers on longliners may not be able to see or record halibut and crab that dropped off the line.

Observers MUST ALWAYS be present in the factory or on deck when crew are assisting in sampling. NO EXCEPTIONS! Average observers accept the fact they may not be able to see all crewman involved in the moving or sorting of fish and assume they are receiving all the prohibited species.

When various prohibited species become abundant, basket sample weights from the species composition sample are used as the sample weight for the prohibited species sample.

Excellent: Observers need to determine where the diversity in the catch is occurring. Is diversity occurring throughout the day between hauls, or is diversity occurring within the haul? Observers need to sample more frequently when diversity is occurring through out the day. If most hauls are generally the same in composition or lack diversity, then one can increase the sample size and decrease the number of hauls sampled for the day (minimum 3). Longline observers must be able to see halibut that fall off the line and try to estimate their approximate lengths.

Observers MUST ALWAYS be present in the factory or on deck when crew are assisting in sampling. NO EXCEPTIONS! Observers may have crewmen assist them in sampling but must verify that any involvement is monitored and no presorting possible. Crewmen on deck or in the bin pushing fish should be visible during sampling.

If subsamples are taken for any species group which is over-abundant, observers must be able to show how their subsamples are representative. Factory diagrams need to be made prior to debriefing so the debriefer can easily follow your sampling program. Graphs should be made to show percentage of catch sampled over time so the debriefer can see that the observer was conscious about getting representative samples for the day.

3. RECORDING DATA: (1.1%)

Were sample weights and numbers and weights of prohibited species recorded correctly? Were actual and estimated weights recorded correctly? Were subsamples and "over 99 individuals weighted" problems done correctly and notes made for clarification?

Average: Evaluations are based on approximately 60 pages of data. Most observers have omitted some numbers or not thoroughly checked their math calculations for samples containing over 99 of one species group. Notes identifying any mismatch numbers or weights with form 4 and/or calculations of subsample numbers and weights are missing.

Excellent: Evaluations are based on approximately 60 pages of data. For an observer to score excellent, the data must have no errors. The manual should be reviewed to double check the format on your forms. Notes must be made on the 3(1) form to identify any subsamples or math used in calculating numbers or weights. If any legitimate mismatch occurs between forms, then a note explaining the situation should be written on the form.

D. FORM 3(2), 3L(2):

1. SAMPLE SIZE: (5.4%)

Was the sample weight calculated correctly? Was it large enough to be representative? Did they sample frequently enough?

Average: Sample size should be determined using a quantitative method. The debriefers determine your rating based on how hard and effective you worked. We expect average observers to sample at least 8 hrs. per day.

a. Stern trawlers and Joint Ventures: Most average observers partial whole haul sample when catches are relatively pure. If sampling takes more than a couple of hours, then semi-pure catches are basket sampled. Sample size is almost always determined based on only one method. The methods are usually difference in bin volume or basket sampling. It is often necessary for observers on Soviet or Polish vessels to use brails as a method to determine sample size. When basket sampling or using a brail, a minimum of 340kg per sample should be collected randomly throughout the processing or dumping of the catch. A minimum of 3 baskets of randomly collected fish should be used for determination of average weights when whole haul or partial whole haul sampling. Some observers, if the fish are large, will use 50 randomly collected fish per sample to calculate average weights. Most average observers sample 2 or 3 times daily or try to sample 50 percent of the hauls. When partial whole haul sampling, usually 10-20 percent by weight of the haul is sampled.

b. Longliners: Observers must sample at least 20 percent of the set divided among a minimum of 3 equal sampling periods.

c. Motherships or (2 observers per ship): Each observer should sample 3 times a day. When JV fishing, each observer should sample at least 50 percent of a haul by weight.

Excellent: Sample size must be determined using a quantitative method. The debriefers determine your rating based on how hard and effective you worked. We expect excellent observers to sample at least 12 hrs. per day.

a. Stern trawlers and Joint Ventures: When catches are relatively pure, whole haul sampling is best, if possible. If an observer must partial whole haul sample, then the preferred method of determining a sample size is difference in bin volume (deriving the observer partial weight estimate from the ships total catch estimate). More than 4 measurements should be taken per bin to determine the height of fish in the bin. If a partial whole haul method is chosen, then a cross check of a couple of methods is necessary. Alternate methods are: use of other volume determinations, weight per time, product recovery, or brail net. When catches are diverse, then basket samples or brails should be used to get a random, representative sample throughout the processing or dumping of the catch. Partial whole haul samples should be at least 50 percent of the haul by weight. When there are 2 or 3 predominant species (not flatfish), an observer should whole haul sample for those species and base the percentage of each species in the catch on a random basket sample of 8-10 baskets.

To get an excellent rating one should sample 3-4 times per day minimum. When catches are diverse, basket or brail sampling is the preferred method. Samples should be 500kg minimum to qualify for an excellent rating. Baskets need to be taken throughout the haul to get representative samples. For whole haul sampling, average weights should be taken from 50 Pacific cod or any other large fish that would not equal at least 50 fish in 4 baskets.

b. Longliners: Observers must sample at least 25 percent of the set to qualify for a good and at least 30 percent of the set to get an excellent rating.

c. Motherships or (2 observers per ship): Both observers combined total work should cover at least 50 percent of the hauls brought aboard. Observers should sample at least 60 percent of the fish per haul by weight to qualify for excellent work.

2. SAMPLING QUALITY: (7.6%)

Was the sample collected in an unbiased and random manner? Could the observer insure the complete collection of the sample fish? If the crew helped, were they supervised or trusted too much? Were the species composition species accurately counted and weighed?

Average: Observers usually sample around the times the ship has set up for meals and sleep. These "times" are usually the most convenient times to sample. It is important for the observer not to miss all the meals or miss necessary rest but that should not determine the observers sampling schedule. Night time sampling is usually infrequent.

If an observer whole haul samples by presorting catch on the deck, he may check the factory for a short period of time for any missed bycatch. Observers on longliners may not be able to see all species that drop off the line.

Observers MUST ALWAYS be present in the factory or on deck when crew are assisting in sampling. NO EXCEPTIONS! Average observers accept the fact that they may not be able to see all crewmen involved in the moving or sorting of fish and assume they are receiving all bycatch.

Excellent: Observers need to determine where the diversity in the catch is occurring. Is diversity occurring throughout the day between hauls, or is diversity occurring within the haul? Observers need to sample more frequently when diversity is occurring throughout the day. If most hauls are generally the same in composition or lack diversity, then one can increase the sample size and decrease the number of hauls sampled for the day (minimum 3). Longline observers must be able to see all catch that is on the line and account for any that may drop off.

Observers MUST ALWAYS be present in the factory or on deck when crew are assisting in sampling. NO EXCEPTIONS! Observers may have crewmen assist them in sampling but must verify that any involvement is monitored and no presorting possible. Crewmen on deck or in the bin should be visible during sampling.

When baskets of fish are collected, the observer must insure the sample is random and representative of the catch.

3. IDENTIFICATION: (2.2%)

Were the species from the species composition sample identified correctly? Did they correctly try to identify species beyond the condensed species list? Did they bring back specimens of unidentified fish?

Average: All flatfish and rockfish should be identified to species with written descriptions in the logbook. Any other commercially important fish should also be identified to species. All other fish should be lumped into report groups based on families. Invertebrates with the exception of crab may be lumped in general categories or placed in the invertebrate unidentified category. Descriptions are often lacking complete details and encounters of uncommon fish are not documented well.

Excellent: All flatfish and rockfish must be identified to species with concise written descriptions in the log book that contain good detail (e.g. fin ray, gill raker, scale counts). All other fish should at least be identified to genus and possibly species based on available text information. If any species is caught outside of its normal range or size limit, or if an observer is unable to identify it, then the specimen should be frozen and brought back for identification in Seattle.

4. RECORDING DATA: (1.1%)

Were the forms generally filled out correctly and completely? Were any species codes incorrect or duplicated? Was the miscellaneous code handled correctly? Was math shown correctly in a nonkeypunch area?

Average: Evaluations are based on approximately 60 pages of data. For an observer to score average, the data will usually contain more than 3 errors of any kind. There is usually omitted data, species code corrections or format problems.

Excellent: Evaluations are based on approximately 60 pages of data. For an observer to score excellent, the data must have no errors. The manual should

be reviewed to double check format and recording procedure on your forms. Notes must be made on the form to identify any subsamples or math used in the calculation of numbers and weights.

E. Form 4:

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1. QUALITY: (3.3%)

Were the prohibited species correctly identified to species and sex? Was the halibut and crab condition judged correctly and frequently enough?

Average: An average observer may have minor confusion about species identification of some of the prohibited species (salmon usually). The criteria used to determine viability is vague. Viability data is collected from only those that occurred in the sample.

Excellent: One should be prepared to offer good concise species descriptions of all prohibited species. Viability on crab and halibut should be taken on all those in the sample plus additional crab and halibut. One may find it necessary to perform viability determinations on those halibut and crab not in the sample due to biased handling of prohibited species caused by the way prohibited species sampling was done. Criteria used to determine viability needs to be the criteria specifically mentioned in the manual.

2. RECORDING OF DATA: (1.1%)

Were numbers and weights of prohibited species recorded correctly? Were the forms generally filled out correctly and completely?

Average: Data recording of form 4 is based on 60 sampling days. A few errors are expected on the forms. Most average observers have omitted data, incorrect species codes, or didn't follow proper format.

Excellent: Evaluation of data recording is based on 60 sampling days. There must be no errors for an observer to score excellent. Observers should refer to the manual to double check format and recording procedures. The possibility of mismatches is greatest between the form 4 and form 3(1); therefore time must be spent to check that the numbers and weights of the prohibited species recorded on both forms are the same. Any legitimate mismatches require a written explanation on the form, unless it's a result of estimated individuals on the 3(1) form.

F. FORM 7:

---

1. QUALITY: (3.3%)

Were the correct species recorded, including target species, prohibited species, and special project species? Were at least 150 lengths of target

species and/or an adequate amount of special project species collected daily?

Average: Collect approximately 150 lengths per day on sampling species. Any species from which you were assigned to collect age structures, stomachs, or fecundity data is the sampling species. If an observer has not been assigned a sampling species or special project, then one should take lengths from the target species. Many observers try to collect all 150 lengths from one haul during the day. There may be a few days when lengths were not taken due to poor planning or lack of communication with the ship. All halibut, salmon and crab (if measured) that are part of a sample need to match form 4 and form 3(1) for that same sample unless noted on the form 7 that a subsample for lengths was taken.

Excellent: Collect 200 lengths or more per day on sampling species. Any species from which you were assigned to collect age structures, stomachs, or fecundity data is your sampling species. If you cannot collect 200 lengths per day from your sampling species, then 200 lengths of the target species should be taken in addition to lengths taken from as many of the sampling species as possible. Lengths should be taken on sampling species during each sample to ensure the sample is representative. All prohibited species from your sample must be measured and entered on form 7 with the possible exception of crab (if not measured).

2. RECORDING DATA: (1.1%)

Were the forms generally filled out correctly and completely?

Average: Data recording of form 7 is based on 60 sampling days and the amount of lengths taken. The average observer will make a few errors. Most observers have omitted data, missing sums of lengths, missing sums of numbers, missing continuation arrows, or incorrect species codes. Any apparent math errors automatically creates questions about all other math.

Excellent: Data recording for form 7 is based on 60 sampling days and the amount of lengths taken. For excellent ratings, the data must have no apparent math errors or missing numbers. Observers should refer to the manual to double check format and recording procedures.

G. Form 8:

1. SHIP'S DATA: (1.1%)

Did the observer collect ship's product recovery data? Were the product descriptions adequate? Was the data recorded correctly?

Average: Data on the form 8 is written in but incomplete. The product descriptions may need additions. The comments section usually has nothing written about ships product recovery determinations. Average observers usually have some omitted data.

Excellent: Observers must collect all product recovery rates and unit weights that the ship uses. If the high and low figures are available, these figures should both be entered on the form 8. Notes should be written in the comments section to discuss the frequency of the ship's PRR tests. Complete product descriptions should be written out (e.g. fillets - code 31 is incorrect, fillets with skin on one side - code 31 is correct). This form is usually only a few pages; therefore there must be no errors on the forms for an excellent rating.

2. OBSERVER'S DATA: (2.2%)

Was any observer data recorded? How many times did the observer check PRR? Did they check unit weights? Was the data recorded correctly?

Average: Observers should be running product recovery tests at least weekly on major products. The minimum sample size needs to be 30 large fish (Pacific cod) or 60 small fish per sample. Units weight data should be collected at least monthly on major products. A minimum of 10 pans per sample should be weighed for observer unit weight calculations.

Excellent: Tests must be run every 4 days on major products and at least twice during the cruise on minor products. For minor products, observers should be aware of the rare opportunities to get suitable sample sizes for minor products. The minimum sample size needs to be 30 large fish (Pacific cod) or 60 small fish per sample. Unit weight tests should be run every 10 days. A minimum of 20 pans per sample should be weighed for observer unit weight calculations. Worksheets should be brought to debriefing and turned in with the form 8's.

H. FORM 9:

1. QUANTITY: (1.1%)

Were scales collected from salmon when they were available? Did the observer collect an unusually large number of scales?

Average: Scale samples should be taken from all salmon that came up in your sample unless there are large numbers of salmon. A subsample of at least 20 salmon should be used to get scale samples. Observers should not take any scales from salmon not in their sample. There may be some identification problems with non-chinook salmon.

Excellent: Scale samples should be taken from all salmon that came up in your sample that have any scales. Observers should not take scales from any salmon not in their sample. All salmon must be identified correctly to get an excellent rating.

2. RECORDING DATA: (1.1%)

Were individual species arranged correctly on each page? In general were the forms filled out correctly and completely?

Average: Evaluation rating on this form is based on approximately 10 pages of data. There are usually some corrections dealing with omitted or mismatched data, or with following proper format. Commonly coverslips and scale mounting are done incorrectly.

Excellent: Evaluation rating on this form is based on approximately 10 pages of data. There must be no errors for an observer to get an excellent rating. Observers should refer to the manual to double check format and recording procedures. Form 9 coverslips and scale mounting procedures must be followed for an above average rating. There must be no mismatches between form 4, form 7, and form 9 for number and/or weights of salmon, and/or dates and hauls.

I. FORM 10 AND 11: (1.1%)

In general were the forms filled out correctly and completely? Were the mammal descriptions well written and concise?

Average: Form 10 is usually missing the "total number of hauls while the observer is aboard" and/or adequate descriptions of marine mammals that were in the catch. Either of these errors puts an observer in the average rating group.

Form 11's may need more detailed description of sightings and/or need to fill in column 40. Scientific names commonly need to be filled in. Average observers that do not encounter any marine mammals do not spend time doing any marine mammal watches.

Excellent: Observers should refer to the manual to double check format and recording procedures. Since there are not many pages produced in a typical cruise, it is important not to have any errors to insure an excellent rating. An observer must have form 11A's and/or 11B's in addition to form 10's (stern trawlers and joint ventures). If sea lions are encountered in the catch, snouts should be taken if possible to get an excellent rating. Descriptions should be written out with specific detailed information recorded making it possible for someone to verify the identification. Sketches of the animals should also be included on the forms. Information about behavior should be concise and detailed.

J. Special project: (5.4%)

What was their special project? Was it done correctly and completely? Were the forms filled out properly?

(a). Age structures:

Average:
Usually collections of 200 age structures are assigned to observers. More than 20 age structures are collected in a given day. Sexes are not segregated on the forms. The collection may have been partially completed due to lack of communication with ship or with NMFS.

Excellent:
Age structures should only be taken from individuals that were part of the length frequency sample. Usually collections of 200 age structures are assigned to observers. Only 20 age structures should be collected in a given day if possible. Sexes should be segregated for each day and age structures taken from not more than 5 fish/sex/centimeter group. If you select a species that cannot provide a total of 200 for the collection after filling all size categories, from the length frequency samples, do not collect additional age structures.

(b). Stomachs:

Average:
The food habits lab gives the debriefers an observer rating based on quantity and quality of the samples. Observers that have done satisfactory work are those which might not have filled their bucket with stomachs or have completed less than the 100 scans assigned.

Excellent:
The food habits lab gives the debriefers an observer rating based on quantity and quality of the samples. Usually an observer must fill their bucket and do excess of 100 stomach scans to get an above average rating.

(c). Measure crab:

Average:
An observer properly measures at least 70 crab per species per sample.

Excellent:
An observer must properly measure all crab in their samples unless there are too many crab to measure. To get an excellent rating, a minimum of 100 crab per sample should be measured.

(d). Misc. special project:

If assigned photography, fecundity, or collection of fish, etc. Then usually those scientists that developed the special project will debrief and give the observer a rating.

PRE-KEYPUNCH DATA CHECKING: (22% of entire preliminary evaluation)

Scoring for this section of the evaluation is based on 2 months of sampling. If an observer sampled less than approximately 50-60 days then debriefers are unable to assign the observer an excellent rating. Good ratings for data are typical of short cruises with flawless forms.

A. WILLINGNESS AND ABILITY TO MAKE DATA CORRECTIONS: (2.2%)

Average: Some corrections may be trivial but must be done for the computer to accept the data. Many observers don't take time to cover the details. During debriefing many mentioned corrections are addressed but the observer doesn't make note of them during the initial interview. Some corrections are not made between the initial interview and the time the data is turned in for the pre-keypunch check. Observers occasionally want to take shortcuts in making corrections; therefore errors usually are the result.

Excellent: All corrections discussed at the initial interview are made before the data is turned in for the pre-keypunch check. The data is checked closely and corrections are made complete and thorough.

B. NEATNESS: (1.1%)

Average: Observers are evaluated for neatness based on legibility. Average observers make numbers that may cause a keypuncher to enter the wrong numbers. The debriefers expect the data to be read easily.

Excellent: Observers must have text quality numbers and printing, and data entered in the proper columns.

C. RADIO MESSAGES: (3.3%)

Were the RM, RM-1, and RM-3 extrapolations completed correctly? Were the radio messages written correctly and sent in a timely manner? Were RM-2 and RM-4 filled out correctly?

Average: Observers will make some careless errors but no conceptual errors. Some commonly made errors are mismatches between RM-1 and RM-2 and/or RM-3 with RM-4. Report groups may not be correctly placed in the right category, trace occurrences of some report groups incorrectly not reported, or minor math errors made when making calculations.

Excellent: Radio messages are sent correctly and on time. Observers must have no errors on the worksheets. All radio message forms are organized and filled out properly.

D. PROMPTNESS: (1.1%)

Was the data submitted in a timely manner? (Consider extenuating circumstances such as major corrections in radio messages and data, or affidavit writing.) Was all work completed before leaving Seattle?

Average: Most observers need a few days to organize their data and reports before they begin debriefing. On the average, it takes approximately three days for an observer to prepare for debriefing after returning to Seattle. Following the initial interview, work is eventually completed. The observer may take extra time to have the data finished correctly. Usually five days are necessary to have all data completed.

Excellent: Observers must have made preparations at sea by reviewing data and writing reports so they can be debriefed within 1-2 days following their return to Seattle. After the initial interview, corrections are made, and all materials are turned in for the pre-keypunch check the same day. All data and reports are completed to the programs satisfaction.

E. PROBLEMS WITH DATA: (13.0%)

Average: Most observers submit data with a few minor errors on each type of form. Occasional mismatches between forms, missing data, incorrect codes, or minor math errors. All errors found in the initial debriefing and any conceptual problems should have been corrected.

Excellent: Data at this point should be perfect for an excellent rating.

REPORTS, AFFIDAVITS, AND ENFORCEMENT DUTIES (12.0 % of preliminary evaluation)

A. and B. VIOLATIONS AND AFFIDAVITS (5.4%)

Was the situation handled correctly at sea? Was the proper investigation and documentation carried out? Did the observer display the correct amount of assertiveness and good judgement to help remedy the problem? Was the affidavit written in a clear, complete, and correct manner?

Average: Most observers will have a few minor problems with compliance. They get the problem solved within a fairly short period of time. Documentation is usually minimal. They may not be very certain about all regulations. May have compared their data with ship's logs, but failed to record the information. Commonly, differences are seen between the observer's data and ship's data, yet they fail to investigate the discrepancy adequately.

Excellent: A few observers are completely on top of the situation. They are familiar with all the regulations and aware of what actions constitute a violation. They immediately start documenting any problems. They speak to the proper personnel on the vessel to alleviate the problem immediately. If the problem persist they document every incident properly and attempt to collect additional evidence. All differences between the observer's data and the ship's data are resolved.

C. and D. *REPORTS ONE AND TWO* (6.5%)
Was the report clearly written and complete? Did they follow the guidelines? Did they explain everything in sufficient detail?

Average: Observers generally follow the guidelines and may only be missing some minor detail. Their sampling is usually outlined quite well, but general comments are usually minimal. There are usually a few errors in spelling and grammar and handwriting is usually legible. They may or may not have included factory or bin diagrams. Thoughts are not organized as well as possible.

Excellent: The guidelines have been followed perfectly. All aspects of the sampling methods are explained in great detail. Following observers should be able to duplicate sampling methods without any problems. The observer took some time while at sea to collect information for the general comments section. Grammar, spelling, and handwriting should all be perfect. Reports are well organized and easy to follow. Diagrams are included for the factory, fish bins, and sampling area. Also included are graphs and tables summarizing data.

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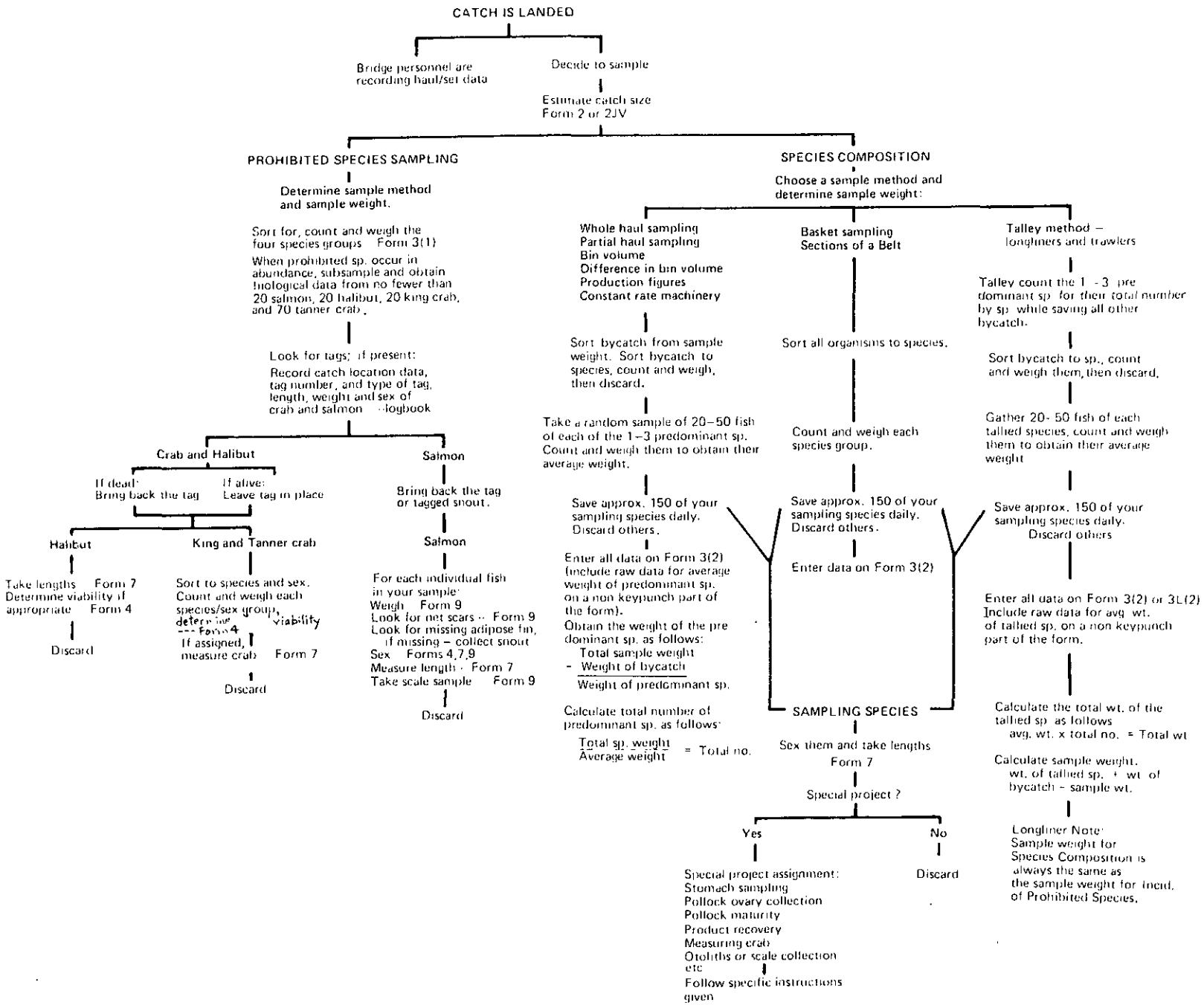


SAMPLING FLOW CHART

COMPLETE LISTING OF SAMPLING DUTIES

Every Haul, Delivery or Set:

1. Haul, delivery or set data -- Form 2, 2JV, or 1L.
2. Monitor for compliance to U.S. fishing regulations.

Sampled Hauls, Deliveries or Sets:

1. Observer estimate of catch weight (does not have to be done for every sampled haul and can be done for unsampled hauls) -- Form 2, 2JV, or 1L.
2. Species composition -- Form 3(2) and 3L(2).
3. Incidence of prohibited species -- Form 3(1) and 3L(1).
4. Species composition by sex for king crab, Tanner crab, and salmon -- Form 4
5. Halibut, king crab and Tanner crab viability -- Form 4.
6. Probability of marine mammal predation on halibut -- Form 4.
7. Lengths and sex of salmon -- Form 7.
8. Lengths of halibut -- Form 7.
9. Check salmon for net-scars and take scales for aging -- Form 9.
10. Check salmon for missing adipose fin, and other fish and crab for tags.
11. Record species descriptions if needed in logbook.
12. RM and RM-3 radio message worksheets.
13. Incidental catch of marine mammals -- Form 10.
14. Collect canine teeth from dead marine mammals.

Every Day:

1. Approximately 150 length measurements and sex of sampling species (target and/or other species) -- Form 7.
2. Special project assignment-(complete according to directions).
3. RM-1 radio message worksheet.
4. Logbook entry.

Each Week:

1. Product recovery rate and unit weight tests --Form 8 Worksheet.
2. Fishing logs/RM-1 comparison sheet.
3. Send radio message.
4. Sampling proportion graph (see "Observer Objectives").

Per Cruise:

1. Product recovery rate and unit weight summaries -- Form 8.
2. Vessel statistics (see translated packet) -- Form 12
3. Gear diagram (see translated packet).
4. Complete report #1 (Enforcement Report)
5. Complete report #2 (Cruise Report)

Upon Occurrence:

1. Spawning pollock -- Form 6.
2. Incidental catch of a marine mammal -- Form 10.
3. Marine mammal sighting -- Form 11A.
4. Marine mammal transit watch -- Form 11B.
5. Tagged Fish or Crab -- logbook.
6. Netting Samples -- Trawl Web Sample Data Form
7. Priority Species work -- Form 7 and 9

CONVERSION TABLES
POUNDS TO KILOGRAMS

Lb.	Kg	Lb.	Kg.	Lb.	Kg.
.5	.2	34.0	15.4	77.0	35.0
1.0	.5	35.0	15.9	78.0	35.4
1.5	.7	36.0	16.3	79.0	35.9
2.0	.9	37.0	16.8	80.0	36.3
2.5	1.1	38.0	17.3	81.0	36.8
3.0	1.4	39.0	17.7	82.0	37.2
3.5	1.6	40.0	18.2	83.0	37.7
4.0	1.8	41.0	18.6	84.0	38.1
4.5	2.0	42.0	19.1	85.0	38.6
5.0	2.3	43.0	19.5	86.0	39.0
5.5	2.5	44.0	20.0	87.0	39.5
6.0	2.7	45.0	20.4	88.0	40.0
6.5	3.0	46.0	20.9	89.0	40.4
7.0	3.2	47.0	21.3	90.0	40.9
7.5	3.4	48.0	21.8	91.0	41.4
8.0	3.6	49.0	22.2	92.0	41.8
8.5	3.9	50.0	22.7	93.0	42.3
9.0	4.1	51.0	23.2	94.0	42.7
9.5	4.3	52.0	23.6	95.0	43.2
10.0	4.5	53.0	24.1	96.0	43.6
11.0	5.0	54.0	24.5	97.0	44.1
12.0	5.4	55.0	25.0	98.0	44.5
13.0	5.9	56.0	25.4	99.0	45.0
14.0	6.4	57.0	25.9	100.0	45.5
15.0	6.8	58.0	26.3		
16.0	7.3	59.0	26.8		
17.0	7.7	60.0	27.2		
18.0	8.2	61.0	27.7		
19.0	8.6	62.0	28.1		
20.0	9.1	63.0	28.6		
21.0	9.5	64.0	29.1		
22.0	10.0	65.0	29.5		
23.0	10.4	66.0	30.0		
24.0	10.9	67.0	30.4		
25.0	11.4	68.0	30.9		
26.0	11.8	69.0	31.3		
27.0	12.3	70.0	31.8		
28.0	12.7	71.0	32.2		
29.0	13.2	72.0	32.7		
30.0	13.6	73.0	33.1		
31.0	14.1	74.0	33.6		
32.0	14.5	75.0	34.1		
33.0	15.0	76.0	34.5		

metric ton = 1000 kg. = 2204.6 lb.

meter = 100 cm = 1000 mm = 3.2808 ft.
= .54681 fathoms

foot = .3048 meter = .1667 fathoms

nautical mile = 1.15078 miles (statute mile)
= 1 minute of latitude

statute mile = 5280 ft. = 1.609 km.
(1000 meters = 1 km.)

liter = 1.0567 U.S. quarts

Relationship of Pacific halibut lengths (cm) to kilograms - round (live) weights

Length (cm)	Kilograms	Length (cm)	Kilograms	Length (cm)	Kilograms
10	.007	55	1.821	100	12.635
11	.010	56	1.930	101	13.049
12	.013	57	2.045	102	13.472
13	.017	58	2.163	103	13.905
14	.022	59	2.286	104	14.347
15	.027	60	2.414	105	14.799
16	.033	61	2.547	106	15.260
17	.040	62	2.685	107	15.731
18	.049	63	2.828	108	16.213
19	.058	64	2.976	109	16.705
20	.069	65	3.129	110	17.206
21	.080	66	3.288	111	17.718
22	.094	67	3.452	112	18.240
23	.108	68	3.621	113	18.773
24	.124	69	3.801	114	19.317
25	.141	70	3.978	115	19.871
26	.161	71	4.165	116	20.437
27	.182	72	4.358	117	21.013
28	.205	73	4.558	118	21.600
29	.229	74	4.763	119	22.200
30	.255	75	4.975	120	22.810
31	.284	76	5.193	121	23.431
32	.315	77	5.417	122	24.065
33	.348	78	5.649	123	24.710
34	.383	79	5.887	124	25.366
35	.421	80	6.132	125	26.035
36	.461	81	6.384	126	26.716
37	.504	82	6.642	127	27.409
38	.550	83	6.909	128	28.115
39	.598	84	7.182	129	28.832
40	.649	85	7.463	130	29.563
41	.715	86	7.751	131	30.306
42	.760	87	8.046	132	31.062
43	.820	88	8.350	133	31.831
44	.884	89	8.661	134	32.613
45	.950	90	8.981	135	33.408
46	1.021	91	9.307	136	34.216
47	1.095	92	9.644	137	35.038
48	1.172	93	9.987	138	35.874
49	1.253	94	10.340	139	36.723
50	1.337	95	10.700	140	37.586
51	1.426	96	11.070	141	38.463
52	1.519	97	11.447	142	39.354
53	1.615	98	11.834	143	40.259
54	1.716	99	12.230	144	41.178
				145	42.111

Relationship of Pacific halibut lengths (cm) to kilograms - round (live) weights (cont'd)

Length (cm)	Kilograms	Length (cm)	Kilograms
146	43.060	198	116.003
147	44.023	199	117.450
148	45.000	200	119.373
149	45.993	201	121.318
150	47.001	202	123.284
151	48.024	203	125.273
152	49.062	204	127.283
153	50.115	205	129.316
154	51.184	206	131.371
155	52.269	207	133.448
156	53.370	208	135.548
157	54.486	209	137.671
158	55.618	210	139.817
159	56.767	211	141.985
160	57.932	212	144.177
161	59.113	213	146.392
162	60.311	214	148.631
163	61.526	215	150.893
164	62.757	216	153.179
165	64.005	217	155.489
166	65.271	218	157.822
167	66.553	219	160.180
168	67.830	220	162.562
169	69.170	221	164.968
170	70.505	222	167.399
171	71.858	223	169.854
172	73.229	224	172.334
173	74.617	225	174.840
174	76.024	226	177.370
175	77.448	227	179.925
176	78.891	228	182.506
177	80.353	229	185.112
178	81.833	230	187.745
179	83.332	231	190.402
180	84.850	232	193.085
181	86.387	233	195.795
182	87.943	234	198.531
183	89.518	235	201.293
184	91.113	236	204.081
185	92.727	237	206.897
186	94.360	238	209.739
187	96.014	239	212.607
188	97.688	240	215.503
189	99.109	241	218.426
190	101.095	242	221.376

(cont'd)

Relationship of Pacific halibut lengths (cm) to kilograms - round (live) weights (cont'd)

Length (cm)	Kilograms	Length (cm)	Kilograms
191	102.829	243	224.354
192	104.576	244	227.359
193	106.359	245	230.392
194	108.155	246	233.452
195	109.972	247	236.541
196	111.810	248	239.658
197	113.668	249	242.803
		250	245.977

SEXING FISH

During training you will have been instructed on the proper way to determine the sex of various fish species. Due to lack of availability of specimens of certain species for dissection purposes, you may not have been able to practice on your particular sampling species, but you should be able to determine the sex with practice by referring to photos of roundfish and flatfish gonads in the species photo guide. See also the table in the appendix "Sex Determination for Select Target and Incidental Species." In determining sex, it is generally easiest to start with large, mature fish and work down in size to small, immature specimens.

Jack mackerel have been found difficult to sex by some observers because of their large amounts of fatty tissue. Males often have thread-like gonads running through the fat (scrape the thread and look for a small amount of milt coming out of a cut end). Refer to the diagram and instructions in the Appendix: "How to Determine Sex and Remove Otoliths from Jack Mackerel." Thoroughly dissect a few fish and identify the various internal structures so that you know what you are looking for.

Some Japanese have shown observers a way of telling the sex of pollock without cutting them open. This method uses the relative size and shape of the pelvic fins to distinguish male from female. Since this method requires a fair amount of judgment and works consistently only for the larger specimens, we recommend that this method not be used. Pollock can be more accurately sexed by splitting the belly and inspecting the gonads, and with practice this can be accomplished very rapidly.

Halibut should not be sexed, but all other pertinent data should be obtained before releasing the fish. Halibut have a greater likelihood of

surviving upon release, so do try to get them back to the sea as soon as possible (and away from the reach of sea lions if feasible). Most salmon have a very poor chance of surviving after being caught in a trawl net, especially if many scales have been lost, so identify the species and obtain the individual lengths, weights, scale samples, and sex before returning the fish. If a salmon is vigorous and has minimal scale loss, then the observer may quickly determine species, weight, and length and return the fish to the sea. Some observers, often as a result of pressuring from anxious crewmen, have been so eager to get salmon overboard that they have neglected to collect the necessary information. The gonads in salmon are up against the dorsal wall of the body cavity close to the backbone. When identifying the sex of salmon, make sure to slit the belly far enough forward to see the rounded sacks which are the ovaries of immature females. Male gonads are frequently two white tubes running right along the back bone.

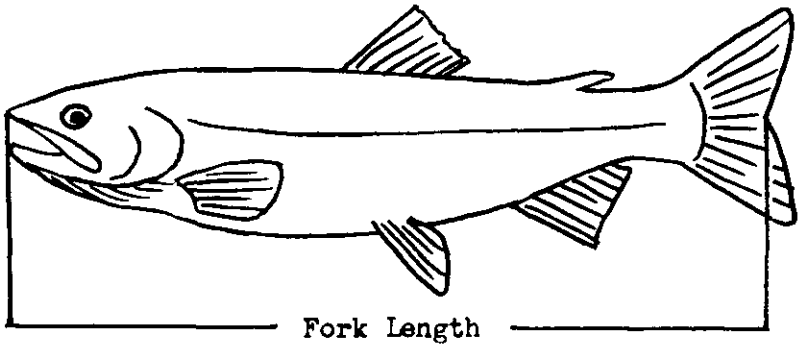
SEX DETERMINATION FOR SELECT TARGET AND INCIDENTAL SPECIES

	Walleye Pollock (Roundfish)	Pacific Halibut (Flatfish)	Pacific Ocean Perch (Rockfish)	Pacific Hake (Roundfish)
FEMALE				
Immature ovary	smooth, pink egg sacks; small, opaque eggs	triangular with a long tail lobe extending posteriorly	firm and yellow to flabby and red and gray	pinkish, small eggs not yolked
Gravid ovary	smooth, pink egg sacks, greatly enlarged; they fill cavity	same, white, eggs usually visible	firm and yellow; embryos present	pink, eggs yolked, some eggs translucent to all eggs translucent
MALE				
Immature testes	white, rippled membrane	same as female without tail lobe; pink, fibre texture		same as pollock
Ripened testes	white to pink ribbon-like folds, enlarged	same as immature male but soft, plump, pink to white and enlarged	all cases will be hard, finger-like projection extending to posterior; white	same as pollock
Spent testes	white to pink ribbon-like folds	same as immature male		same as pollock

LENGTH MEASUREMENTS FOR VARIOUS SPECIES

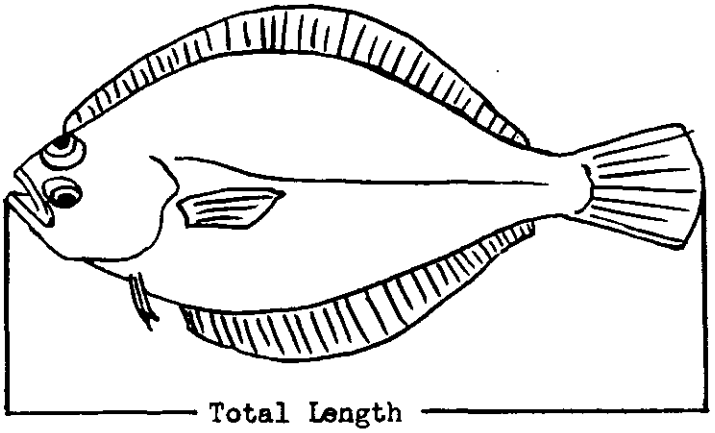
Fork Length Measure:

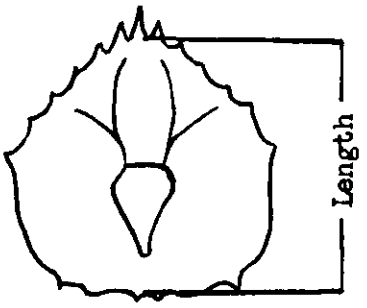
Roundfish
Rockfish
Salmon



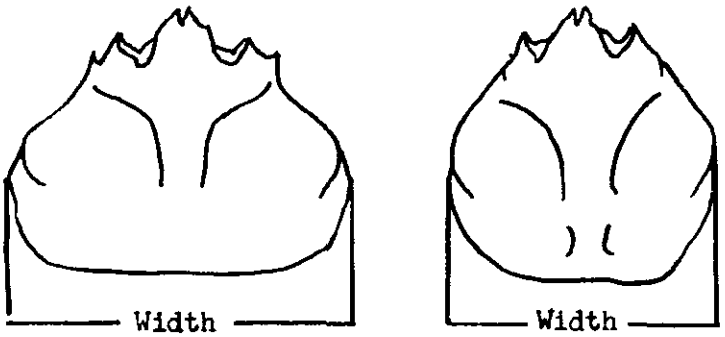
Total Overall Length:

Flatfish
From snout to middle
of tail.





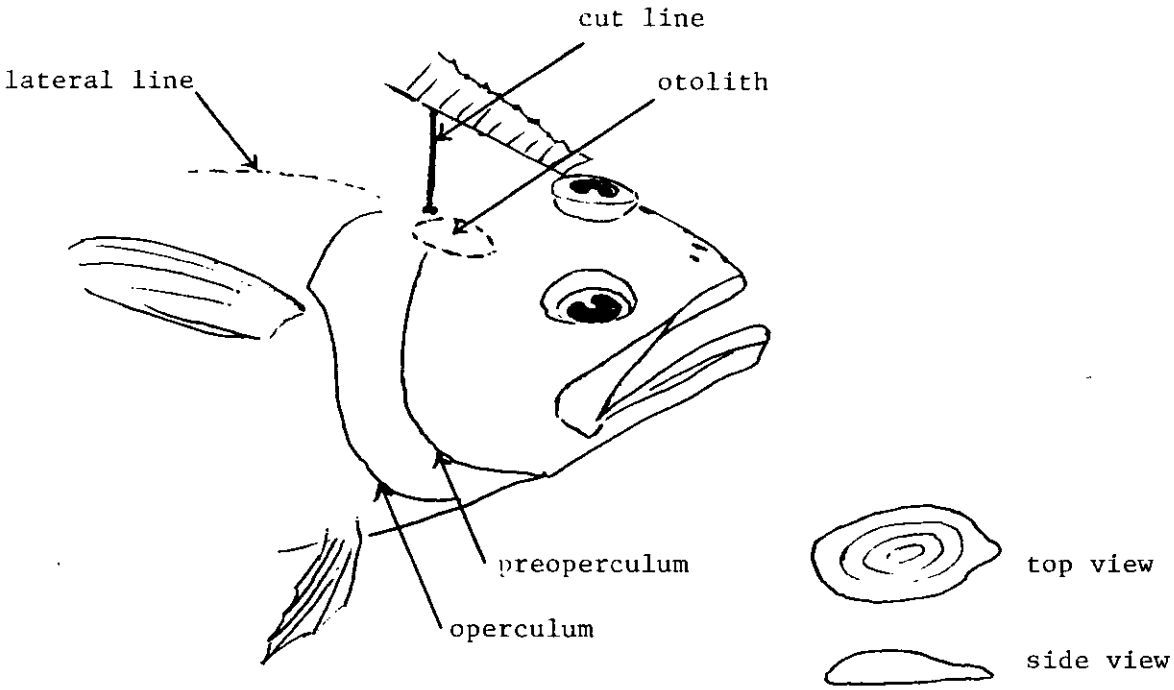
King Crab
Right eye socket to middle
of posterior margin.



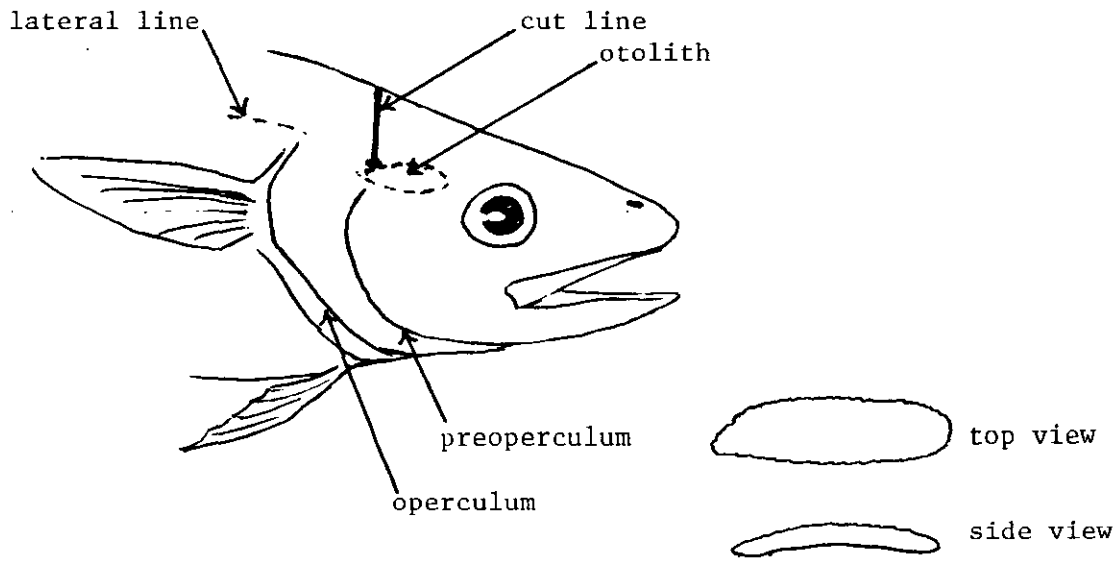
Tanner (Snow) Crab
C. bairdi C. opilio

Otolith and Scale Collection for Select Species

Species	Sample Type	Storage Container	Storage Media
Walleye pollock	Otolith	Plastic vial	50% alcohol 50% water
Yellowfin sole (or other flatfish)	Otolith	Plastic vial	Glycerol/Thymol Solution
Atka mackerel	Otolith	Plastic vial	50% alcohol 50% water
Pacific cod	Otolith & Scale (both in same vial)	Plastic vial	50% alcohol 50% water
Pacific hake	Otolith	Plastic vial	50% alcohol 50% water
Jack mackerel	Otolith	Plastic vial	Dry
Sablefish	Otolith & Scale (both in same vial)	Plastic vial	50% alcohol 50% water
Salmon	Scale	Paper envelope	Dry
Rockfish	Otolith	Plastic vial	50% alcohol 50% water



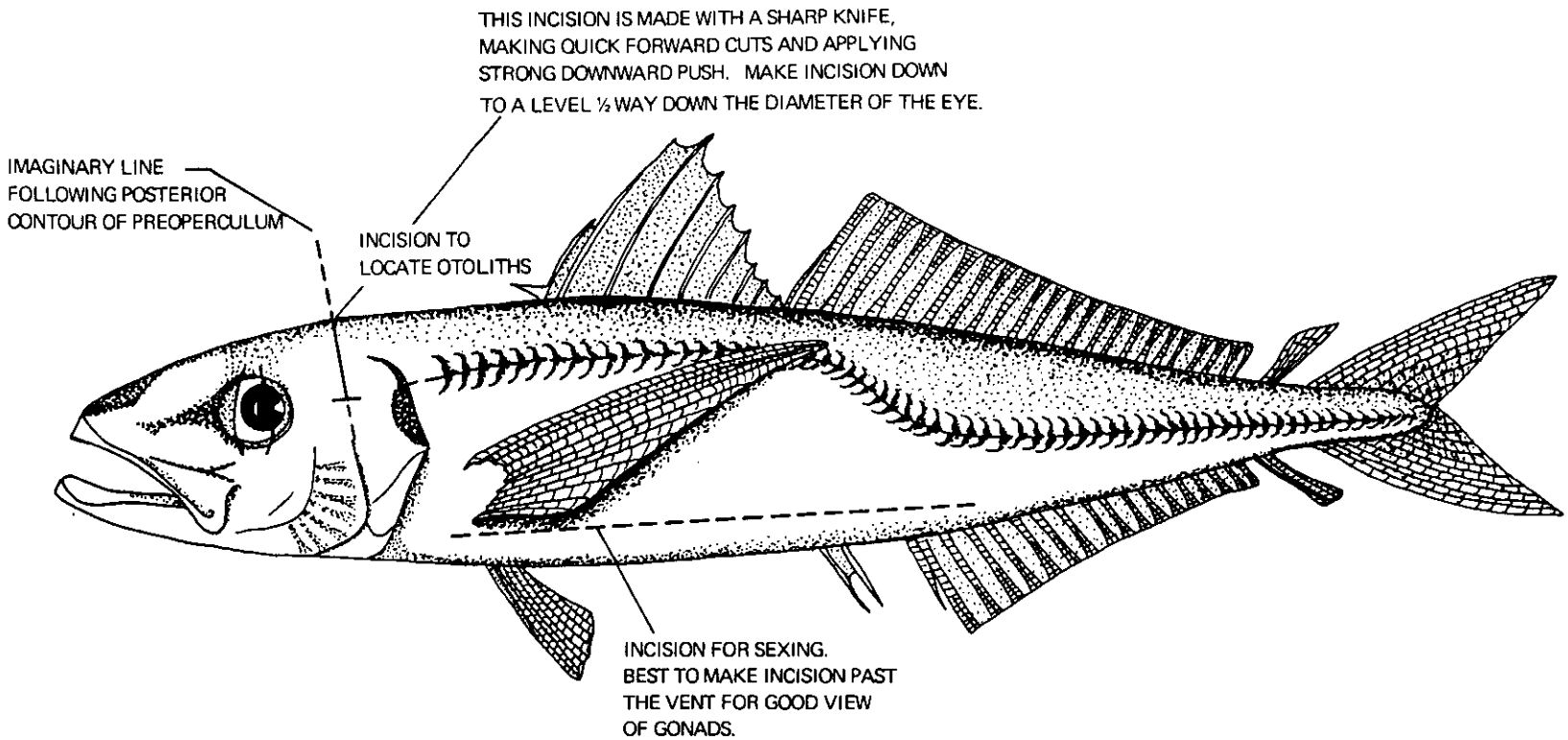
Arrowtooth Flounder
Atheresthes stomias

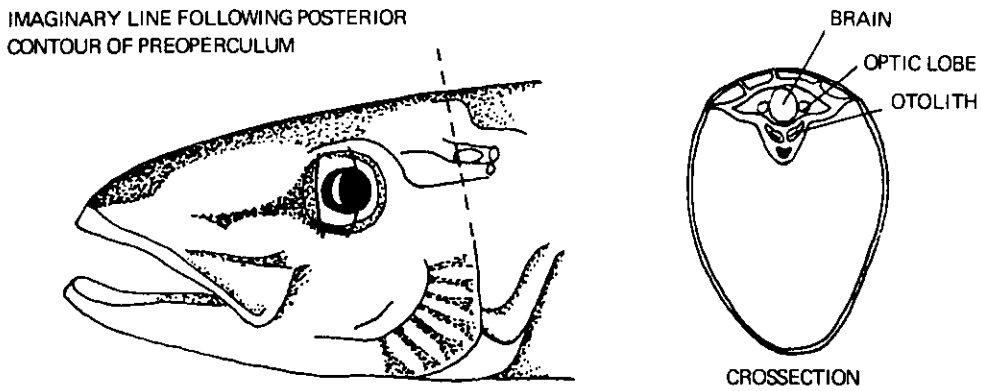


Walleye Pollock
Theragra chalcogramma

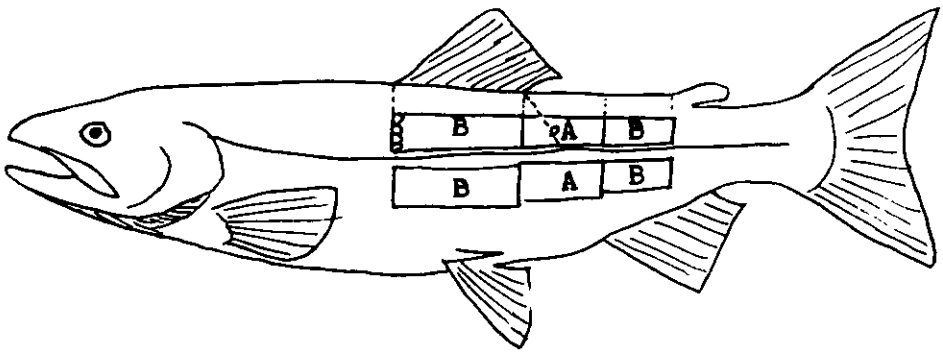
Approximate location of the otoliths (sagittal) and the cut for the removal of otoliths from flatfish and roundfish

HOW TO DETERMINE SEX AND REMOVE OTOLITHS FROM JACK MACKEREL

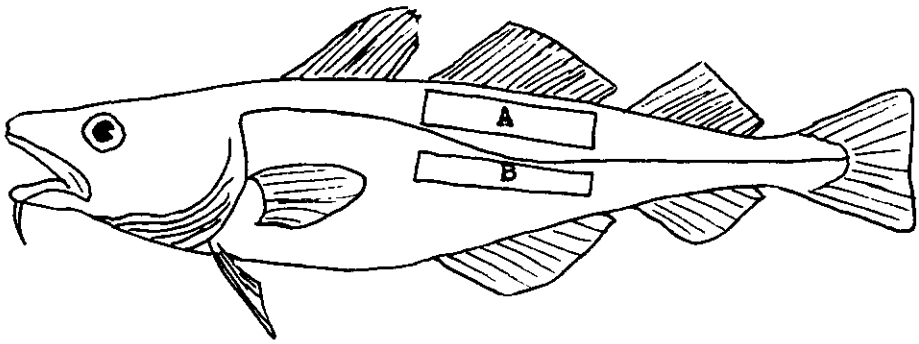




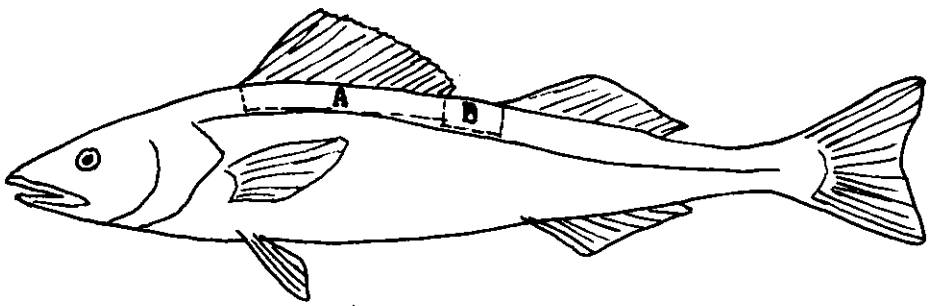
LOCATION OF PREFERRED SCALE SAMPLING ZONES
(Do not take lateral line scales)



SALMON - Follow the diagonal scale row from the posterior insertion of the dorsal fin to the lateral line of either side. Two scale rows up from the lateral line (on the diagonal) are the preferred scales.



PACIFIC COD - Scrape along either side of the back directly below the second dorsal fin.



SABLEFISH (BLACK COD) - If assigned to collect scales, scrape the scales from the dorsal surface directly below the first dorsal fin.

How To Collect Fish

Keep in mind that a large frozen specimen or a specimen collection becomes a piece of luggage so limit the size to what you can handle. Freeze the fish quickly after deciding to collect it. Lay the fish flat and straight to freeze it. Make an identifying label and put it with (in) the fish before freezing. Fill out a Specimen Collection Form and keep that with your paperwork. When the fish is frozen, glaze and reglaze it a couple times.

When debarkation is near, pad and package it well. While in transit do your best to keep it frozen. You can:

A) In Dutch Harbor let Carolyn know, and/or maybe the Unisea Inn will hold it for you in their kitchen freezers.

B) Tell the airlines at check-in that you have a package to keep frozen.

C) In Seattle on a weekend, take it to the Seattle Aquarium if you can't keep it at your lodgings. Their weekend, daytime phone number is: 625-5018 or 625-5019 and their 24-hour phone number is: 625-4359. Tell the aquarium staff you are a NMFS observer, get directions and ask them to hold it for you until Monday. On weekdays bring frozen specimens into our freezer in the wetlab. Tell your debriefer you have a specimen and turn in your form.

SPECIMENS NEEDED FOR TEACHING COLLECTION
(small (20-35 cm) specimens preferred)

I. Gadidae
- Pacific Cod, Gadus macrocephalus

II. Flatfishes
- Rough-scale Sole, Clidoderma asperrimum
- Alaska Plaice, Pleuronectes quadrituberculatus
- Longhead Dab, Limanda proboscidea
- Rex Sole, Glyptocephalus zachirus
- Curlfin Sole, Pleuronichthys decurrens *
- C-O Sole, Pleuronichthys coenosus
- Greenland Turbot, Reinhardtius hippoglossoides
- Arrowtooth Flounder, Atheresthes stomias
- Kamchatka Flounder, Atheresthes evermanni
- Deepsea Sole, Embassichthys bathybius *
- Dover Sole, Microstomus pacificus
- Hybrid Sole, Inopsetta ischyra
- English Sole, Parophrys vetulus
- Butter Sole, Isopsetta isolepis
- Slender Sole, Lyopsetta exilis
- Petrale Sole, Eopsetta jordani
- Flathead Sole, Hippoglossoides elassodon
- Bering Flounder, Hippoglossoides robustus *
- Arctic Flounder, Liopsetta gracialis *

III. Rockfishes
- Longspine Thornyhead, Sebastolobus alascanus *
- Darkblotched Rockfish, Sebastes crameri
- Harlequin Rockfish, Sebastes variegatus
- Redstripe Rockfish, Sebastes proriger
- Shortraker Rockfish, Sebastes borealis *
- Northern Rockfish, Sebastes polyspinus
- Redbanded Rockfish, Sebastes babcocki
- Silvergray Rockfish, Sebastes brevispinis
- Dusky Rockfish, Sebastes ciliatus
- Black Rockfish, Sebastes melanops
- Blue Rockfish, Sebastes mystinus

IV. Incidentals
1. Any unusual fish
2. Look especially for:
   - Dragon poacher, Percis japonicus
   - Bering Wolffish, Anarhichas orientalis
   - Sablefish, Anoplopoma fimbria
   - Flathead Pomfret, Taractes asper
   - Giant Wrymouth, Delolepis gigantea
   - Atka Mackerel, Pleurogrammus monopterygius
   - Oxeye Oreo, Allocyttus folletti
   - Capelin, Mallotus villosus
   - Eulachon, Thaleichthys pacificus
   - Pacific Sandfish, Trichodon trichodon
   - Prowfish, Zaprora silenus

* = collect any size

Specimen Collection Form

Collector:_____ Cruise No.:_____ Vessel Code:_____

Date:_____ Vessel Name: _____

Haul No.:_____ Lat. & Long.: _____

Depth:_____(meters) Water Temp.: _____(degrees C.)

Collector's Identification: _____

Length: _____(cm) Weight: _____(kg)

Notes on in vivo coloration, unusual scale patterns or spines:_____

_____

Sketch if necessary:

When completed, return this form to a debriefer.

Identification confirmed by:_____ Date:_____

Common Name:_____

Scientific Name:_____

Comments:_____

_____

Specimen Collection Form

Collector:_____ Cruise No.:_____ Vessel Code:_____

Date:_____ Vessel Name: _____

Haul No.:_____ Lat. & Long.: _____

Depth:_____(meters) Water Temp.: _____(degrees C.)

Collector's Identification: _____

Length: _____(cm) Weight: _____(kg)

Notes on in vivo coloration, unusual scale patterns or spines:_____

_____

Sketch if necessary:

When completed, return this form to a debriefer.

Identification confirmed by:_____ Date:_____

Common Name:_____

Scientific Name:_____

Comments:_____

_____

Specimen Collection Form

Collector:_____ Cruise No.:_____ Vessel Code:_____

Date:_____ Vessel Name: _____

Haul No.:_____ Lat. & Long.: _____

Depth:_____(meters) Water Temp.: _____(degrees C.)

Collector's Identification: _____

Length: _____(cm) Weight: _____(kg)

Notes on in vivo coloration, unusual scale patterns or spines:_____

_____

Sketch if necessary:

When completed, return this form to a debriefer.

Identification confirmed by:_____ Date:_____

Common Name:_____

Scientific Name:_____

Comments:_____

_____

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE

Permit to Import Marine Mammals and Endangered Species
Permit No. 578

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.

A. Number and Kind of Marine Mammals:

An unspecified number of specimen materials may be imported from:

1. All Cetacean species
2. All Pinnipedia species, except walrus (Odobenus rosmarus)

B. Special Conditions:

1. The specimen material may be imported from anywhere in the world. The material shall have been collected from animals:

   a) Taken in fisheries for such animals in situations where such taking is legal;

   b) killed incidental to fishing or other operations;

   c) found dead floating at sea or beached; or

d) that have died of natural causes.

2. All specimen materials collected under the authority of this Permit shall be maintained according to accepted curatorial standards in bona-fide scientific collections. In the event that fluid tissue specimens are disposed of upon completion of a project, the disposal shall be reported as required by Section B.

3. The Holder must coordinate activities within the United States with appropriate Federal, state and local resource management agencies.

4. The Holder shall submit written notification to the Protected Species Division and the appropriate Regional Director(s) of names of designated agents and the dates which their designation is valid at least two weeks prior to their activity under the Permit. An annually updated list of agents and NMFS personnel authorized to operate under this Permit shall be provided to the Protected Species Division and appropriate Regional Directors.

5. The Holder shall notify the appropriate Regional Director(s) sufficiently in advance of importation or transfer of specimen material. This notification shall include the destination of the specimen materials.

6. The Holder shall submit a report within 30 days of the importation authorized herein listing the items imported and the dates of importation.

7. The Holder shall submit an annual report by December 31 of each year the Permit is valid. The report shall include but is not limitted to, 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 if known; the date and location of each importation; and the name and location of each institution maintaining specimen materials collected under this Permit.

8. The Holder shall submit a final report within 90 days of the expiration date of the Permit which includes a summary describing the materials that have been imported and their dispostion. All reports shall be submitted to the Office of Protected Species and Habitat Conservation, National Marine Fisheries Service, U.S. Department of Commerce, Washington, D.C. 20235.

9. The provisions of this permit may be amended upon reasonable notice by the Assistant Administrator for Fisheries depending upon the species and circumstances involved.

10. This Permit does not relieve the Holder from the requirement of full compliance with all provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). For those species listed on any of the Appendices to CITES valid and appropriate permit(s) authorizing import must be obtained prior to shipment.

11. The authority to collect and import this material shall extend from the date of issuance through December 31, 1991. The terms and conditions of this permit (Sections B and C) shall remain in effect as long as the material imported hereunder is maintained under the authority and responsibility of the Permit Holder.

C. All General Conditions attached as Section C shall apply and are made a part hereof.

William E. Evans
Assistant Administrator for Fisheries
National Marine Fisheries Service

Date

COMMONLY OBSERVER GEAR DIMENSIONS IN INDEPENDENT FISHING

Trawl Dimensions	Vertical opening	Horizontal opening	Headrope length	Footrope length
	(dimensions are in meters)			
Japanese				
Dependent stern trawlers	4-9	24-30	36-54	57-65
Pair trawlers	7.5	56	130	148
Danish seiners	7	35	115	128
Large independent stern trawlers	7-27	22-35	50-85	54-90
Small independent stern trawlers	3.5-7.5	12-30	55-65	50-70
Soviet				
Bottom trawl	4.5-8	16-28	31-50	35-60
Pelagic trawl	25-30	35-45	70-120	70-120
Korean	6-7.5	22-40	64-80	75-100
Polish	18-23	20-68	55-112	55-112

Japanese Longline Dimensions

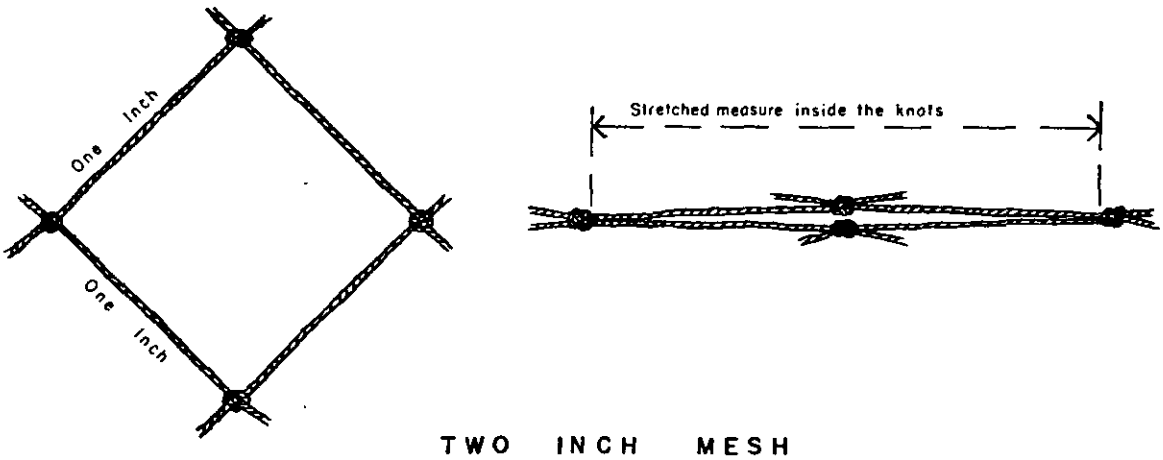
hachi length 70-100 m
average set length 24-40 km
breaking strength 20-40 kg
average number of hachi/set 390-420
average number of hooks/hachi 35-51

HOW TO MEASURE MESH SIZE

The mesh size measurement requested on the gear diagram is the stretched measure, that is, the distance between two diagonal knots when the mesh is tightly stretched (see second diagram below). In order to obtain this measurement, the net must be empty and the mesh pulled tightly enough so that two opposite knots of the mesh square meet and all four knots are in the same plane; measure the distance inside the two most distant knots in the mesh square.

An easier way of obtaining the same measurement (the net does not have to be empty) is to measure the distance between two adjacent knots in a mesh square (the side of a square) and multiply by two. Check several meshes in each part of the net.

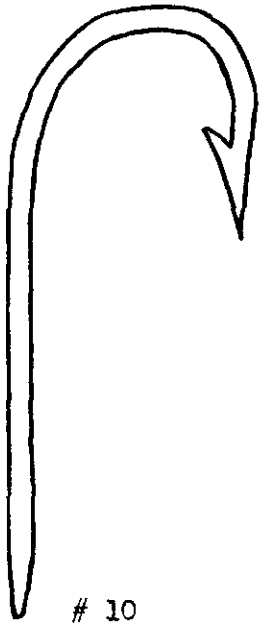
W. L. Scofield



TWO INCH MESH

A two-inch mesh, open (left) and stretched. This points up variables inherent in web measure and consequent difficulties. Common yardstick is "stretch measure."

HOOK SIZE CHART FOR LONGLINERS



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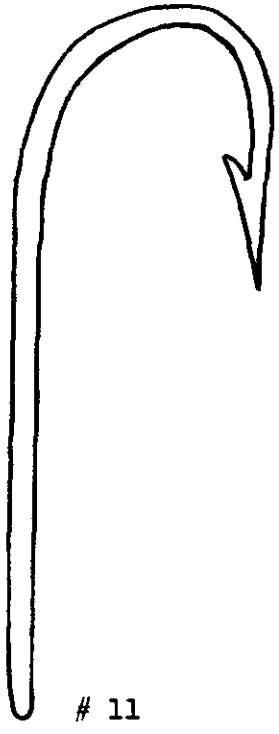

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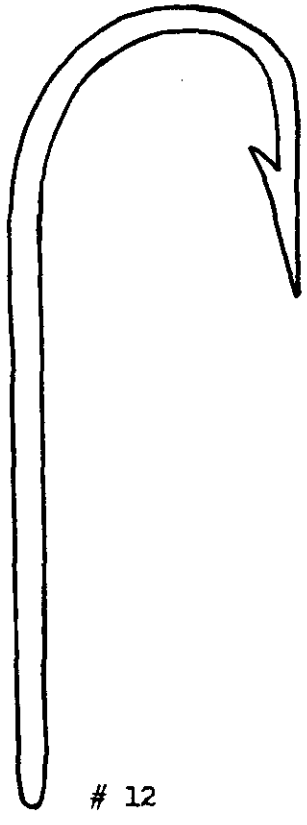

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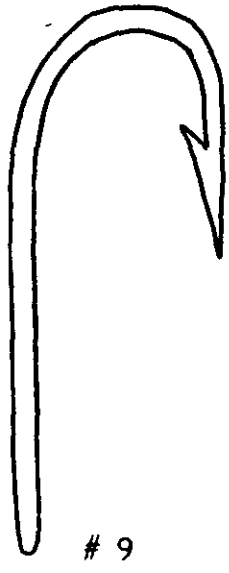

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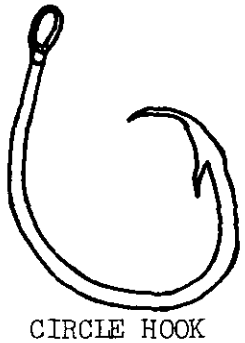


CIRCLE HOOK

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.

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

Single Side Band radio is a special version of AM (Amplitude Modulation) radio specifically intended for long-range communication. As a consequence of the "skip" phenomenon (the tendency of a transmitted signal to reflect off the barrier created by the ionosphere), High Frequency skywaves can reach stations up to several thousand kilometers away (depending on ionospheric conditions and other environmental factors). The very nature of the transmitted skywave, however, means a signal very much poorer in quality than a typical VHF or UHF (Ultra High Frequency) signal, and one that is very susceptible to slight atmospheric shifts. HF propagation can vary with time of day, month of the year, sunspot activity, etc., so it becomes extremely important to use more than one frequency to ensure communications under differing conditions.

A number of specific characteristics must be considered when discussing skywaves in an HF-SSB system. One of the most important is the operating frequency of the system. In general, the lower frequencies are used for medium distances, and the higher frequencies for greater distances. As a general rule of thumb for daytime operations, multiply the frequency in MHz by 100 to obtain the approximate skywave coverage distance in miles: 4 MHz equals 400 miles, and 12 MHz equals 1200 miles. At night, these ranges are from 2 to 3 times greater. The nature of the ionosphere is such that its effective position varies with the time of day, tending to move higher up after sundown. This means that the same frequency will reach farther at night, and it is therefore common practice to use lower frequency at night for coverage of the same distance.

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").

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 emergency 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 - "Any Coast Guard Station, Any Coast Guard Station; this is Uniform Uniform Delta Gulf, the Soviet trawler Danko; this is Uniform Uniform Delta Gulf, the Soviet trawler Danko, on channel 16, over."

   C.G.- "Uniform Uniform Delta Gulf, trawler Danko, this is Coast Guard Station Coos Bay, over."

   You - "Coast Guard Station Coos Bay, this is trawler Danko, shift to channel 8, over."

   C.G.- "Trawler Danko, this is Coast Guard Station Coos Bay, shifting to channel 8, out."

   You - "This is the Danko, shifting to channel 8, out."

   You - "Coast Guard Station Coos Bay, Coast Guard Station Coos Bay, this is the Soviet trawler Danko on channel 8, over."

   C.G.-"Trawler Danko, this is Coast Guard Station Coos Bay, send your traffic, over."

   You - "Coast Guard Station Coos Bay, this is the trawler Danko. I am an American observer talking for the captain. A Soviet sailor has broken his leg and needs hospitalization. Can you evacuate the sailor? Over."

   C.G. - "Trawler Danko, this is Coos Bay. Affirmative. What is your current position? Over."

   You - "Coos Bay this is Danko. Position 44 degrees zero 4 minutes north, 124 degrees, 24 minutes west, over." etc.

8. When you call "Any Coast Guard Station, etc. his first response may be:

   "Trawler Danko this is Coast Guard Station Coos Bay, shift and answer on channel 11, out."

   This means he doesn't want any more talk on the emergency channel. So without broadcasting again on channel 16, switch to 11 and go through the entire routine on eleven.

9. On your day to return to land, your ship will approach the designated port and wait offshore. The people ashore will wait for your radio call before they send the boat out to get you. A typical message is as follows:

For ships approaching Dutch Harbor:

You - "Mrs. Griffin, Mrs. Griffin. This is Juliet Alpha Oscar Foxtrot. Anyo Maru No. 21, the Anyo Maru No. 21 on channel 16, over."

Her - "Anyo Maru number 21 this is Mrs. Griffin. Shift to channel 8, over."

You - "Mrs. Griffin, this is the Anyo Maru number 21 shifting to channel 8, out."

You - "Mrs. Griffin, this is the Anyo Maru number 21 on channel 8, over."

Her - "Anyo Maru this is Mrs. Griffin. You must be observer Jack Adams, and you must be eager to get off. Where are you, over?"

You - "Mrs. Griffin, we are underway approaching Dutch Harbor. We will be at the pilot point in one half hour, over."

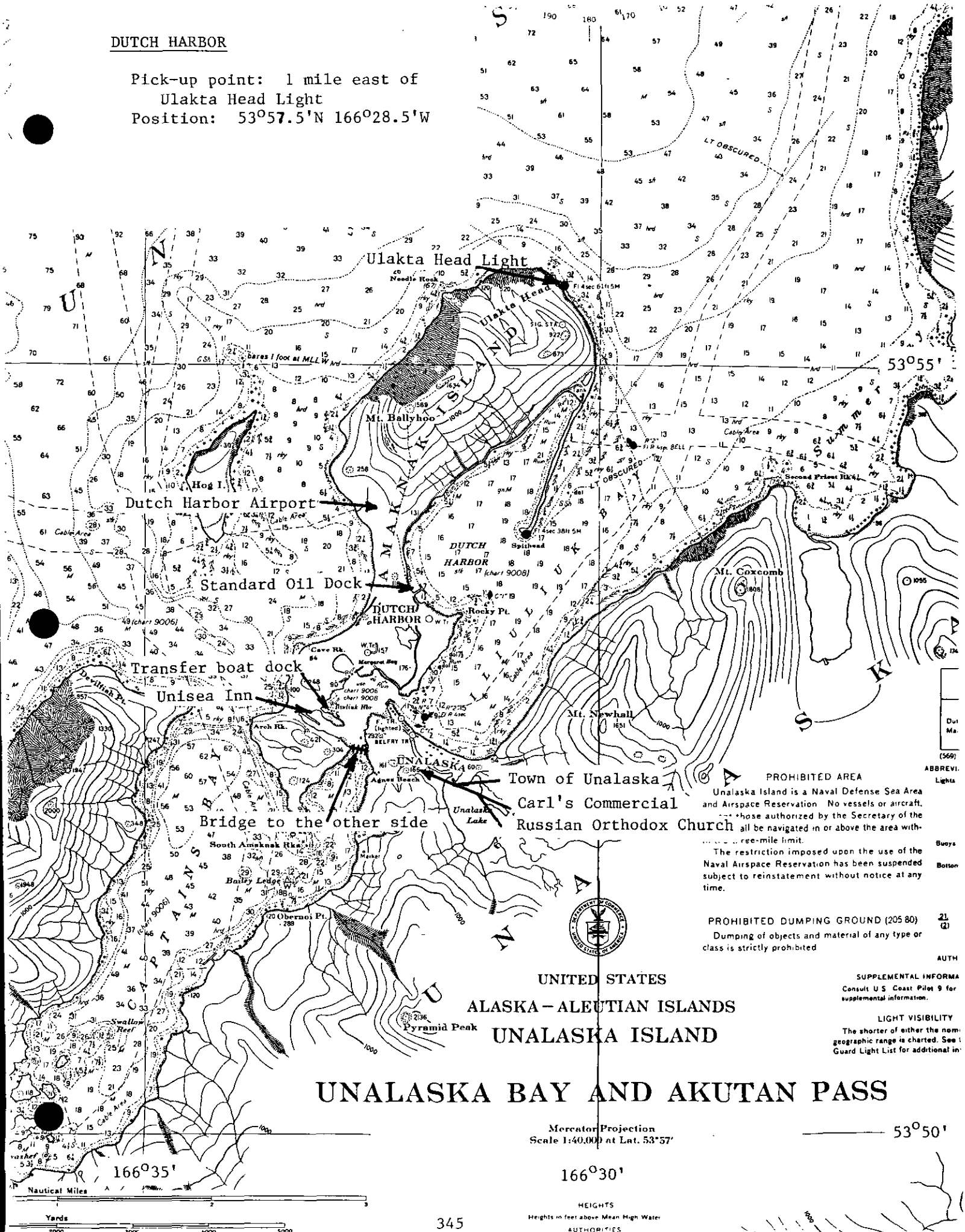
Her - "This is Mrs. Griffin. O.K. I'll have the boat come out to get you. You may have to wait for awhile, over."

You - "This is the Anyo Maru. Roger, we will be waiting. Out."

Her - "This is Mrs. Griffin, out."

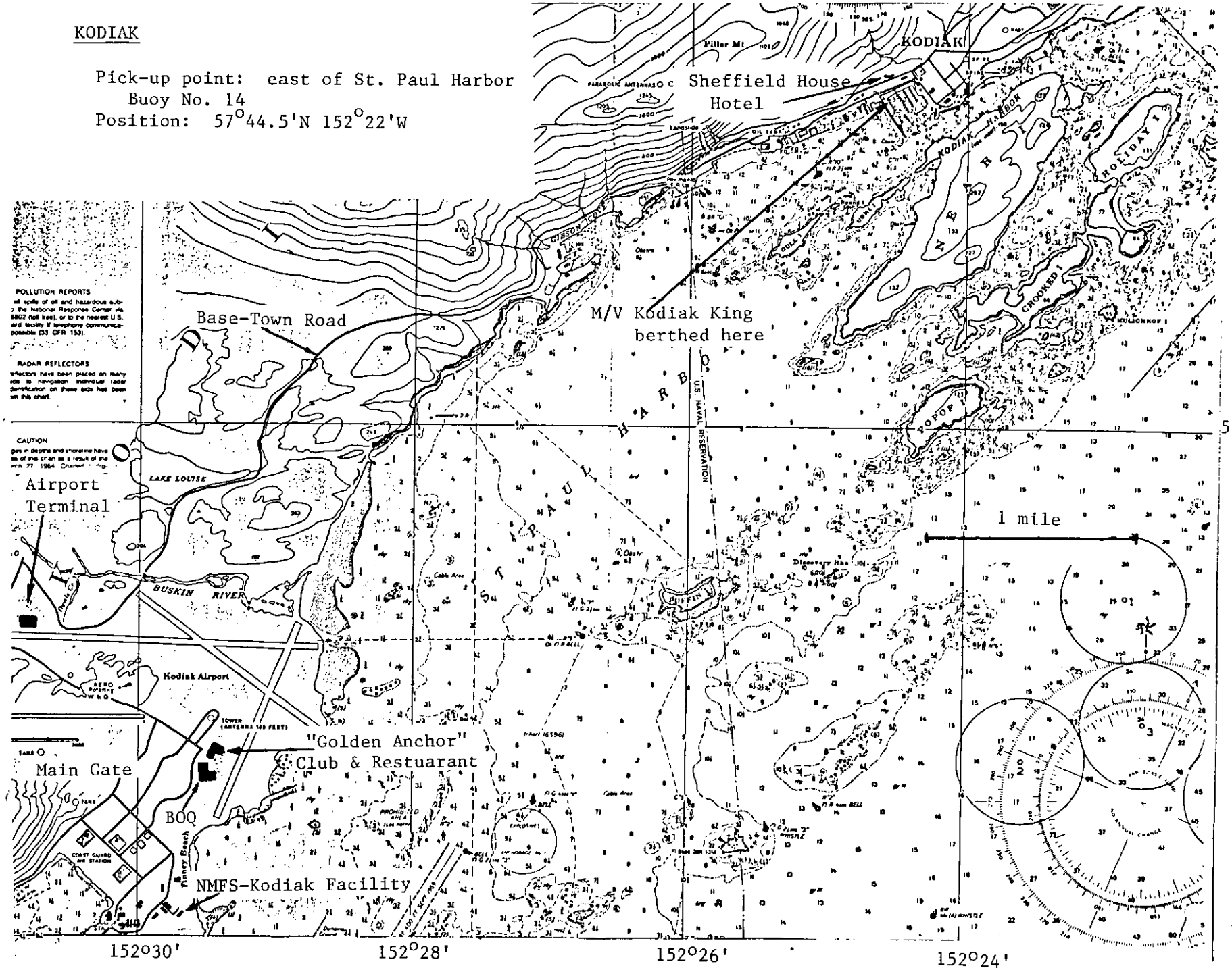
DUTCH HARBOR

Pick-up point: 1 mile east of
Ulakta Head Light
Position: 53°57.5'N 166°28.5'W



KODIAK

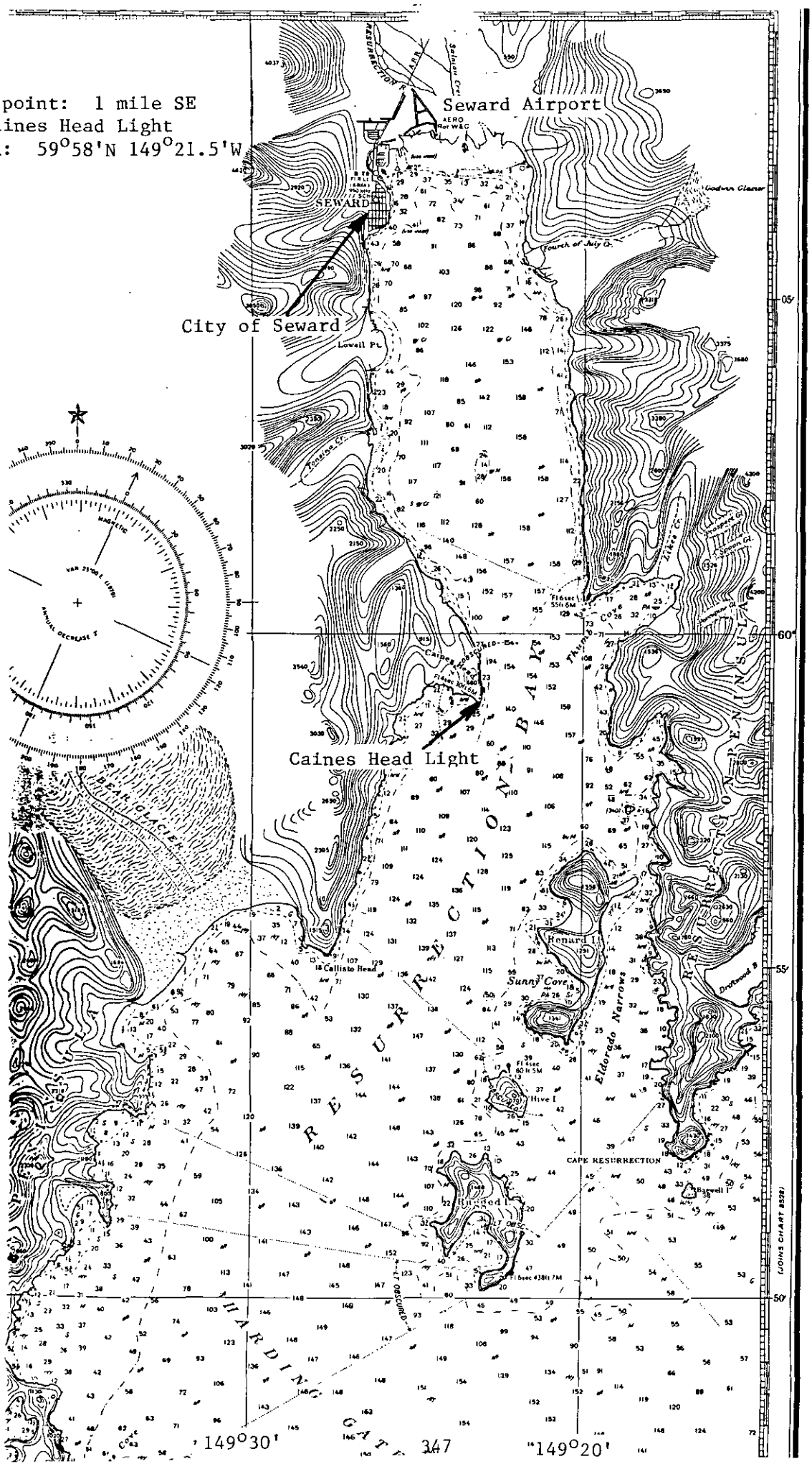
Pick-up point: east of St. Paul Harbor
Buoy No. 14
Position: 57°44.5'N 152°22'W



SEWARD

Pick-up point: 1 mile SE of Caines Head Light

Position: 59°58'N 149°21.5'W



CALCULATION GUIDELINES: THE ROUNDING RULE

For in-class work only: The calculated result should be carried out to one more decimal place than your least accurate measurement; and, round as you go.

Example: 380.6 x 1.22 = 464.33 and 464.33 x 0.16 = 74.293

In all your data: >= 5 is rounded up, < 5 is rounded down.

Example: rounded to two decimal places: .52499 = .52

However, in consideration of practicality, form constraints, and precedence, follow these guidelines:

Form 2, 2JV, 1, 1L:
Estimates of total catch should be recorded to no more than two decimal places, i.e. .01.

Form 3(1):
Follow the rounding rule when calculating sample weight. Total weight of a species group when the number estimated or weighed is less than 100, is the measured weight. In cases when the number estimated or weighed exceeds 99 individuals the total weight column should reflect the weight of only 99 individuals. This weight is calculated by multiplying the unrounded average weight (full field of calculator) times 99 individuals. Record Sample Weight (mt) and Total Weight (kg) to two decimal places. Record average weight to four decimal places on the form.

Form 3(2):
The only computation on Form 3(2) is for the number of predominant species in large samples, or the number and weight when two or three species predominate. Average weight should be used and recorded to two decimal places; percentage by weight of the predominant species should be calculated and rounded to two decimal places - the nearest whole percent.

Form RM and RM-1:
When computing the weight by species in column D, round and record the result to the nearest .001 mt. Tonnages of .00049 or less may be recorded to the nearest .0001 and carried through the calculations to the summary for the week. All weights in the radio message should be reported to either two or three decimals consistently.

Form RM-3:
Follow the instructions in the manual; the decimal places are specified.

The 54 Most Common Mistakes on Data Forms

Form 1, 1L, or 2:

1. Latitude, longitude, or on/off bottom time recorded with greater than 60 minutes.
2. Using 2400 for nets on/off bottom time instead of 0000.
3. A haul retrieved at 0000 attributed to the previous day.
4. Not putting the noon position under "Trawl Position" on non-fishing days. Also, missing sea codes and water temps. on non-fishing days.
5. Overlapping haul times; overlapping on and off bottom times of one haul or between hauls.
6. Omitting the trailing zero in water temperatures.
7. On Form 1 or 1L, entering catch weight to more than one decimal place. Also, on form 2, recording the haul weight to more than two decimal places
8. Positions that are too far from the previous position to be plausible during the time recorded--the ship could not travel that fast.

Form 2JV:

9. Leaving haul number blank on non-fishing days is incorrect; enter a zero. Also, missing sea codes and water temps. on non-fishing days.
10. Location I.D. (column 23) omitted.
11. No location listed at all -- you should go back to the fishing log and look up the delivery position, or if it's too late for that, interpolate one from the positions before and after the missing one.
12. Fishing depth and/or bottom depth listed without the accompanying F/M identifier and fishing depths deeper than bottom depths.
13. Omitting trailing zeros in ship's and observer's catch estimates and recording them to more than tow decimal places.
14. Something is wrong when there is >4 hours difference between a catcher boats off bottom time and the delivery time for a haul.

Form 3(1) and 3L(1):

15. Omitting trailing zeros in Sample Weight and Total Weight columns.
16. Miscalculating the entry for 99 when greater than 99 individuals were estimated or weighed.
17. Longline observers: Not splitting samples correctly when the number observed is greater than 99.
18. Listing prohibited species, whose weight was calculated from the average weight of "actual", as "estimated" (should be listed only as observed).
19. Not having haul numbers or sample numbers in sequence within a day.
20. Numbers and weights of actually measured crab and salmon don't match combined totals of same on Form 4. This is called a "mismatch".

Form 3(2) and 3L(2):

21. Numbers and/or weights don't add up correctly, do check your math!
22. Species code listed without data accompanying it.
23. A species code listed twice within a day.
24. Species code doesn't match written name.
25. Species code 900 with a quantity greater than 1.
26. Decimal point not included in every weight figure.
27. A weight listed without a number.

28. On whole haul samples, "*" written too close to the weight. It obscures the number.
29. Recording weights to > two decimal places--the computer won't accept them.
30. An asterisk not entered by the weight when the weight was obtained by subtraction.
31. Haul number doesn't match the date (as listed on Form 2).
32. Not having haul numbers or sample numbers in sequence within a day.
33. Recording a fish species that is out of it's normal range or normal depth. (Bring back a specimen for verification if this is the case.)

Form 4:

34. Not checking for mismatches with Form 3(1). (See the last item for Form 3(1).)
35. Halibut numbers, weights, or sex included on the form.
36. Predation or viability data omitted. (Remember, predation and viability data are for halibut only.)
37. Putting estimated or calculated weights and numbers on Form 4.
38. Recording weights to > two decimal places--the computer won't accept them.

Form 7:

39. Summations incorrect! (Recheck and double-check your math!)
40. Reversing the size group and the frequency.
41. Haul numbers and dates don't match Form 2.
42. Putting estimated lengths on Form 7.

Form 8:

43. More than one digit past the decimal point on unit weights.
44. Incorrect product code.

Form 9:

45. Not writing weights out to two decimal places. Do include trailing zeros!
46. Not grouping sexes together.
47. Numbering pages by area instead of by species.
48. Not separating the otolith collections taken on different boats. (See "General Instructions for Data Forms" section in your manual.)
49. Duplicate otolith or scale number within one species collection.
50. An otolith or scale number is skipped without any note as to why.

Form 10:

51. Not filling them out.
52. Not filling them out for each haul sampled or viewed.
53. Writing in hauls not actually sampled--using crew information to fill out the form. (The entries on the front of Form 10 should only be of hauls the observer actually viewed or sampled.)

For All Forms:

54. Haul and/or set numbers not matching dates.

Captain / Fishing Master

Deck	Factory	Bridge	Radio Room	Engine Room	Galley
	Factory Manager	Chief or 1st Officer	Chief Radio Operator	Chief Engineer	
	Assistant Manager	2nd Officer	2nd Radio Operator	2nd Engineer	
Bosun (or Bossman)	2nd Assistant	3rd Officer		3rd Engineer	Chief Steward
Able Seamen	Chief Worker	4th Officer		Oilers	Chef
Sailors	Factory Crew			Motormen	Kitchen Crew

INTERCULTURAL COMMUNICATING

This material was condensed from a publication entitled
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You are about to have one of the most rewarding experiences of your life. Your new insights and your broadened understanding of other people can be invaluable to you throughout your life. This paper is not intended to teach you about a specific culture. Rather, it will help you see that much of what you feel and the way that you are, is largely due to your American culture, and that the world does not revolve around your system of values, beliefs, and attitudes.

As you enter a new environment, you will encounter many variations in language, food, dress, customs, religion, and basic attitudes.

People in each culture have unique traits and it is normal for them to feel that their particular way of doing things is better than any other. [This is called "ethnocentrism".] Perhaps when you see things done differently, you will catch yourself thinking, "Back home we know how to do it right." If you then ask yourself, "But why is it right?" you will probably be forced to say, "I don't know; it's just better." This is a normal reaction to your own upbringing.

Getting along in another culture will be easier when you understand that other's traits and attitudes are not necessarily right or wrong, better or

worse--they may just be different.

Until one has had frequent and in-depth interaction with people of different cultures, it is difficult to imagine what differences actually do exist between cultures. And you can be sure they do exist...and can be fun to learn about and work with. The exercise below is designed to help you see that the people and culture of the United States are as "different" as any others.

Choose the answer that you consider appropriate in the following situations:

1. [] In casual conversation you should stand two to four feet from the other person.

   [] In casual conversation you should stand very close, within a foot; and as you talk, you should purposefully breathe in the other person's face.

You probably selected the first situation, unless you have lived with some people in the Middle East or Latin America. In America, two to four feet is the polite and customary distance to stand apart in casual conversation. An American would consider a closer distance between casual friends as rude or strange. However, in some Middle Eastern cultures it is a sign of politeness to let an acquaintance feel your breath as you talk. There are no international rules as to how far apart two people should stand or sit while talking. You may become aware of possibly distracting behavioral differences such as this.

2. [] It is unacceptable for two men to hold hands as they walk together in public.

   [] It is appropriate for two men to hold hands in public as they walk together.

   Being an American, you probably chose the first example. In America it

is not acceptable for men to hold hands in public unless one of them needs physical assistance. In many countries of the world, (China for example) it is acceptable and common for men (and women) to hold hands in public. The connotation that Americans place on such an action (that the two men must be lovers) is a result of our culture and does not necessarily apply to other peoples.

3. [] It is preferable to evade a direct and forthright answer, skirting the subject, leading up to it gradually and indirectly.

   [] Being direct and forthright is an admirable quality, because it shows that the speaker is honest and unafraid to say what he believes.

Of course, subject matter will often dictate a direct or an indirect answer, but Americans generally prefer that a speaker be direct and forthright. Often we equate this directness with honesty. However, in many countries of the world it is often considered more polite to skirt an issue or subject, arriving at it indirectly. Directness is seen as a lack of finesse. Listed below are a few more examples of how a single gesture, facial expression, or custom does not necessarily mean the same thing worldwide.

1. Our "simple" gesture of waving goodbye doesn't always communicate a farewell. If you wave goodbye to a Korean, holding the palm down and wagging the fingers, he may return and ask what else you want, rather than leave. In many countries, the gesture meaning to "come" is made with the palm down, much like the American way of waving goodbye.

2. To impress someone with your honesty and forth-rightness, you, as an

American, would probably look directly at the person while speaking. If you think someone is lying, you may even say, "He couldn't look me straight in the eye." But in many cultures, lowered eyes indicate, rather than an admission of guilt, an attitude of respect. Even in America, however, it is considered impolite to look at a person for long. This may be why Americans sometimes interpret the Frenchman's tendency to hold a gaze as being forward.

3. In Europe, if you are trying to ask a ticket clerk for one ticket, you would probably raise your index finger to tell him you want one. If you do, don't be surprised when you receive two. In Europe, if counting on the fingers, "one" is often indicated by the thumb. In other countries, the American finger count for "two" (first and second fingers in a V-shape) may be offensive and usually should be avoided.

You may be asking, "So just what can I rely on when I live and work in another culture? If gestures mean different things, if facial expressions are not always indicative of what I usually interpret them to be, how will I know if I am making myself understood, and how can I figure out what people are really feeling and thinking?"

People are people no matter where they live. They have certain feelings and emotions in common. The "difference" is that diverse cultures have different ways of interpreting and showing such universal feelings. These ways are what you may not be accustomed to. What angers you may not disturb an Asian and vice versa. In fact many forms of emotional display may differ between cultures.

Actually, the people of each culture will "tell" you what they are

feeling and thinking--in their own way. They will "tell" you through their reactions, behaviors, orientations, communication patterns and lifestyles. They will always give feedback. It is your responsibility to somehow understand what's going on--to receive the answer within its context.

You may have some preconceived ideas about what Japanese, Koreans or Russians are like, just as many people throughout the world have some stereotyped notions about what "an American" says and does. If you suspend your judgment and take time to observe yourself and your normal pattern or life, the more you will learn about yourself and the other culture.

You don't have to give up being an American. On the contrary, you will probably make others feel uncomfortable if you try to be something you are not. Even so, you may be confused if it appears that the local people expect you to act like them. At other times they may expect you to act very differently than themselves. They may even treat you in ways that are not acceptable in their own culture. What is socially acceptable often will depend on the situation and the people involved. Though you can't live exactly as you do in your own culture, it may be inappropriate to try to live exactly like the people in the culture you are visiting. You will need to find a balance between maintaining your own identity and avoiding "cultural imperialism."

WHAT IS "THE AMERICAN WAY"?

You have certain attitudes, feelings, and reactions that are distinctly "American." This is because we have more in common with other members of our own society than with people of other nations. In the following examples we will look at how the "typical" American feels and how other cultural viewpoints may differ from our own.

1. Americans are accustomed to many things which are considered luxuries in other lands. In many cultures, you will be considered "rich" simply because you are an American. Therefore you will be required to modify your lifestyle to conform to circumstances and comforts available. Suspend judgment and be patient with necessary limitations.

2. Americans believe that in large part they can create their own destiny; that a person can achieve what he is willing to plan, sacrifice, and work for. The people of many cultures believe that people have very little to say about what comes in life; that fate deals out what is in store for them. It is proper to accept one's fate without questioning.

3. Americans are competitive and aggressive and admire those who achieve success through hard work. Some cultures consider it inappropriate or impossible for one to alter the social position or status into which he is born.

4. America is one of the few countries in which people of all social classes engage in physical labor--working in their yard and doing their own housework. In many cultures, manual labor is considered demeaning.

5. In America, there is great emphasis on looking, acting, and feeling "young." The old are often cared for in nursing homes. In many cultures grey hair is considered a symbol of wisdom and the elderly are greatly respected and honored.

6. American families are mostly nuclear, consisting of only the parents and children. Many families in the world are "extended," consisting of several generations, and many other more distant relatives.

7. Americans are accustomed to great freedom of choice, movement, and

expression. The people can limit government control. Many forms of government conflict with the American ideal of freedom of choice and action. Many countries have had difficulty maintaining government stability.

8. Americans are very mobile. They think nothing of moving thousands of miles if their job requires it, leaving family and friends and making new friends quickly and easily. Many of the world's peoples have never traveled more than fifty miles from their places of birth. Their acquaintances are those they have known all their lives.

9. Americans consider themselves independent individuals. They want to make their own decisions and expect and enjoy recognition for individual achievement. In many cultures, the groups one identifies with may be more important than individual efforts or individual recognition.

10. The American is informal and usually outgoing. First names are almost always used. Social manners are generally informal. Most cultures preserve formality in public interaction. Public displays of affection and informality in dress may be offensive.

11. Americans have relatively little respect for rank or authority, especially inherited authority. They think a person should "earn" his right to rule. Many people of the world willingly accept their station in life, and seldom question those in power.

12. Americans are frank and outspoken. They consider it a sign of honesty to speak candidly. In some cultures directness and open criticism are considered extremely offensive. Delicate negotiations are often handled by intermediaries.

In summary below, are the typical ways in which "others" see "Americans". Can

you cope with how the people of other cultures view Americans, and help others understand you, so that you can communicate with them?

* CARELESS (with dress, possessions, time, money, rules, manners, ceremonies, natural resources, relationships, politics, and more)
* GENEROUS/HOSPITABLE (as victors in war, as neighbors, as U.N. benefactors, as "friends in time of need")
* SELF-INDULGENT (pursuing "material happiness")
* SENTIMENTAL/ROMANTIC (prone to extremes in emotional expression; open)
* MATERIALISTIC (usually honest; ambition and "success" seem paramount; material wealth is vast)
* CONFIDENT and SELF-CONFIDENT (even brash, yet demand almost too much of selves)
* COMPLACENT yet ARROGANT (peculiarly ethnocentric, embarrassingly so; misunderstand "honor")
* COLONISTIC (ethnocentrically imperialistic; disregard for other systems; overly proud of own systems)
* COMPETITIVE yet EQUALITARIAN (this is exhibited in Americans from children to adults and appears as a paradox to those of other cultures; class and "rank" may be temporary; no real "aristocracy")
* RESOURCEFUL (combining all of the above; lovers of "common sense" and "results", inventions, innovations, and flexibility; "now" oriented)
*INDEPENDENT and DIFFERENT (individualistic; wanting not to "fit the mold" but fiercely defensive if character or identity is encroached upon)

ABSORBING CULTURE SHOCK

Many people think that knowing and using some of the language of a people insures automatic communication with them. But when we consider that "communication" includes all behavior and circumstances, it is clear that a knowledge of the written and spoken language by itself may be insufficient. Your peace of mind and efficiency depend on hundreds of signs and symbols about which you are largely unaware. These signs or cues that you use to orient yourself to the situations of daily living include: when and how to greet people, eat food, get from place to place, and talk informally with others.

When you enter a strange culture, all or most of these familiar cues are removed. You may be like a fish out of water. No matter how broad-minded or full of good will you may be, props have been knocked out from under you and you will be affected. The mental and emotional adjustment required of those living abroad is real.

The problems of adjustment come to all, but to each with varying intensity. It helps to know that such problems will arise and to know what it is you are experiencing. This difficulty in confronting and coping with new cultural circumstances has been termed "culture shock." An intercultural experience is a potent and personal teacher; it forces you into realizations about others and about yourself. Indeed, the greatest "shock" may not be in the encounter with a different culture but in the recognition of how your own culture has shaped you and what you do.

Accepting the fact that adjustment is a challenge, but remembering that it is a temporary condition that will pass as you become familiar with the language, mannerisms, and local customs, is the first step toward adjustment. You may not like to believe that you are experiencing emotional stress, but it

is wise to admit it when it happens. Even mild cases generally involve four phases and occur during the earliest part of a stay abroad.

Phase 1: "How quaint!"

The spirit of adventure carries you through the "honeymoon" phase. Generally someone will help you get settled, you will be excited about the "newness of it all," and possibly things will go well. You are comfortable as long as you can see similarities between your native culture and your new environment. Normally this phase does not last if you remain abroad and must seriously cope with real conditions of life.

Phase 2: "It's just not like home."

When the newness and excitement wear off (from a few hours to a few days), the real challenge starts. As you begin to see and feel differences, things may go wrong, and you may begin to feel disoriented. Because language is the most common communication tool in any society, if offers the greatest security in personal relationships. In almost all cases, you will not be able to speak the language and thus you will be stripped of your primary means of interaction. You will be unable to display your education and intelligence, symbols that give you status and security back home. As you meet other educated and intelligent people, but are not able to respond to them on their own level, you may feel that you are on the level of a child again. This could prove most frustrating.

You will feel many frustrations and finally they will be highlighted by a terrible longing to be back home, eat the foods you're accustomed to, visit familiar places and relatives, and in general, talk to people who "really make sense."

This phase may also be characterized as a "culture fatigue," something

like battle fatigue. One just gets tired of not being home. In spite of his ability to cope on a daily basis or in specific cases, he eventually becomes generally uncomfortable.

Phase 3: "It's starting to make sense."

The first sign of your recovery from this critical phase is the return of your sense of humor. You enter the third phase when you begin to recognize communicative cues: people's faces, actions, and tones. Studies have shown that only about 5-10 percent of usual face-to-face communication depends on "words" used. Approximately a third comes from how the voice is or is not used. Over half is communicated by facial expressions and body movements. It is suggested that the visitor temporarily suspend judgment about conditions he finds unpleasant or confusing until he learns more about the people and the reasons they think and act as they do. The recovery stage progresses rapidly as he begins to empathize with the natives of the host culture.

Phase 4: "I understand."

The fourth and final phase will carry you through your stay abroad. Now that you are willingly adjusting to the new culture, you can accept it as "just another way" of living. It does not mean that you are enthusiastic about everything the people do or about the way they do it; it does mean that you can accept and understand the differences. You will still have moments of strain and times of misunderstanding, but you will begin to feel more "comfortable" and will genuinely enjoy yourself.

Some people "take to" another culture sooner than others do. Then again, you may adapt more quickly to one culture than to another. The more a culture differs from your own, the more difficult you might expect your adjustment to be. However, if you have had previous intercultural experience, you will

probably have fewer problems than a "first timer."

Cultivating awareness

Awareness of self: You need a positive self-image and must have the ability to adapt. You need to be emotionally stable in situations that challenge personal feelings. Self-motivation allows you to act positively rather than react negatively to a strange environment.

Awareness of others: A tolerance of ambiguity and uncertainty makes it easier to understand others.

Awareness of circumstances: A sensitivity to circumstances allows you to pick up behavior patterns more quickly. If you look, listen, and appropriately imitate, you will communicate more effectively with people around you, and you will be able to establish pleasant relationships.

In Summary:

Intercultural encounters may require a degree of sensitivity not needed in situations involving similar cultures. In every culture certain feelings or assumptions influence how a member of that culture will act, and they determine what roles he will assume and what values he will place on certain things, events, and ideas. These feelings and assumptions may not necessarily be right or wrong, not even better or worse; they may just be different.

There are differences between intercultural encounters. Your "style" may or may not be effective in an intercultural setting. As you anticipate an encounter, the challenge is to familiarize yourself with the ways of the people in the other culture, so as to enhance rather than hinder communication.

Adjusting to a new culture can be a powerful learning tool. Although you

may suffer temporary frustration, discomfort, and anxiety, these feelings can facilitate self-understanding and personality development. Because you must deal with the situations yourself, you will learn. Half the battle of cultural adjustment is won if you realize you will experience it. And the other half is won by using your cultural sensitivity to learn and make the adjustment a positive experience.

MEDICAL DIAGNOSTIC CHART (MDC)

One of the most important functions an observer can perform during a medical emergency is the collection and maintenance of a medical history. This history and its communication to the Coast Guard is essential to the further treatment of an injured person.

There are two histories to be aware of. The first deals with the patient's bodily make-up and past medical concerns. The second history is a record of the accident or illness and how it is affecting the patient over time. These two pieces of information will give doctors and corpsmen, hundreds of miles away, a greater diagnostic tool of what's happening inside the patient's body and what complications may lie ahead.

The patient's past medical history is the "frame work" for which you will later fill in the "details". The frame work on your "MDC RADIO WORK SHEET AND FLOW CHART", consists specifically of numbers 7 through 13. The information within these numbers begins to paint the picture. For example: 30 yr. old /male/145 lbs.(65.9 kg.)/ 5 ft. 7 in. (165 cm.)/ medium build/ no allergies/ no medications///. Please note that what is underlined would be in your radio message and that the metric information is not being used. (It would be improper to use the English Standard System with a Japanese doctor however.) (1.0 kg = 2.2 lbs.) (100 cm = 3.28 ft.) This "frame work" information is just as important as the details you are about to fill in.

Without previous training and using what is available, you can observe and record the nature of the accident and the patient's vital signs. Numbers 14 through 18 are observation questions of "what's happened" (#'s 7-13 are to whom), and numbers 19 through 25 are the observation questions of "what's happening now". An example of what's happened might be:

INJURED BY A BROKEN CABLE ON JAN. 24 AT 0300 GMT/PATIENT HAS SUSTAINED A HEAD INJURY/ COMPLAINS OF SEVERE PAIN IN THE UPPER LEFT QUADRANT OF ABDOMEN/ COMPOUND FRACTURE TO RIGHT HAND/ POSSIBLE FRACTURE TO LEFT ARM BELOW ELBOW/ POSSIBLE INTERNAL BLEEDING IN THE ABDOMEN, AREA HARD AND TIGHT, SOME BLOOD IN URINE/ RIGHT HAND AND LEFT ARM SPLINTED, EXTERNAL BLEEDING CONTROLLED///

"What's happening now" is information on the vital signs: level of consciousness, eye reactions, pulse, blood pressure, respiration, skin condition and body temperature. Here is an example of what's happening now: VITAL SIGNS/ LOC, ALERT/ EYES, E-R/ PULSE, 64 STEADY BUT WEAK/ B-P UNAVAILABLE, DISTAL PULSE PRESENT, CAP REFILL GOOD/ LUNGS, CLEAR AND EQUAL/ RESP, 30 AND SHALLOW/ SKIN PERSPIRATION, NORMAL; COLOR, NORMAL; TEMPERATURE, NORMAL/ BODY TEMPERATURE, 102.2///

Don't forget to have ready, the patient's name, the vessel agent's name and address in the U.S. and the vessel owner's name and address. All of this extra information is necessary to expedite travel and personnel transfers and to inform family members.

The procedure and interpretation of the worksheet is as follows:

Numbers 1,2 and 3: Contained in the heading of the radio message.

Numbers 4 and 5: Self-explanatory.

Number 6: Very important, don't forget it.

Numbers 7-11: Can be estimated when there is a lack of good communication.

Numbers 12 and 13: Very critical, must be exact!

Number 14: Self-explanatory.

Number 15: Should be self-explanatory, however there are three things to be aware of: 1) the definition of a soft tissue injury; 2) trying to localize

abdominal pain; and 3) the various types of bleeding. Soft tissue injuries are injuries related to the organs (ie: eyes, kidneys,testes, etc.). Whenever possible, locate the abdominal pain using the navel as the center point. This will give the doctors and corpsmen a better idea of which organs are traumatized.

Number 16: Fill this out carefully. Bleeding is not only an injury, but also an indicator of further problems and therefore must be observed in greater detail. Identify the type of bleeding as: profuse, shallow, pulsating, steady, and/or internal. Internal bleeding is difficult to identify but can be suspected, if an area such as the abdomen which is normally soft, is now hard and rigid; if that area or another is tender, swollen and/or has a bruised appearance to it. Look for the presence of blood in the eyes, ears, mouth, vomit and urine. Blood in the vomit needs specific identification as to its consistency and color (ie: is the blood fluid-like in appearance or does it appear clumped together like coffee grounds, is it dark red or bright red?). All of these observations are necessary to determine the nature and origin of the bleeding.

Numbers 17 and 18: Self-explanatory, basic observations that shouldn't need further elaboration.

Numbers 19 through 25: The vital signs, these are the indicators of the patient's present physiology. Essentially, to record the vital signs all you need other than your good judgment is a watch with a second hand and a flashlight. Number 19, a patient's Level Of Consciousness (LOC) is generally described in terms of Alert, Vocal, Pain or Unconscious. Determining a patient's LOC is standard. The method used to determine Alertness is "Time, Date, Place Orientation." A person is considered Alert if they can answer

simple questions, "What is your name, where are we, what is today's date?" Do not ask questions like, "How many fingers do I have up?" Number skills involve an entirely different set of motor functions in the brain. A person who is incoherent, semi-conscious, or mumbling without direction is considered Vocal. When a patient is unconscious but responsive to Pain (a thin pinch on the bottom of the foot or under the armpit should do the trick) then this should be noted differently than the state of Unconscious, since it denotes a higher state of consciousness.

Number 20: You will need a flashlight for this one. Open both eyes, shine the light into one eye from the side of the face (not directly into the eye from the front of the face), look into the other eye. Both pupils should constrict equally, quickly, and simultaneously. If you have any doubts, repeat this procedure and compare results with those of people around you.

Number 21: Pulse is counted at beats per 30 seconds times 2, and rated per minute. The pulse is best taken at the wrist (follow the thumb down to the beating area...) or at the throat (off to either side of the windpipe, under the jaw). Again, if in doubt, compare. A description of the pulse should follow: strong, weak, bounding, etc.

Number 22: Without a blood pressure cuff, accurate B-P information is unavailable. However, other data you are collecting, the qualitative information on the pulse and skin conditions, will assist in a general qualitative assessment of the B-P. With that, there are two other direct indicators of B-P quality, they are: Distal Pulse; and Capillary Refill. Distal pulse is a pulse taken at a location distant from the heart. The two most common places are: 1) below and behind the ankle; and 2) top center of the foot. The presence and quality of this pulse is your data. (NOTE: these pulses

are difficult to find on a healthy person and if you are unable to find them on your patient try to find them on yourself or on someone around you). Capillary refill is your other index of quality. Pinch a little bit of skin on the fore finger and toe. Note how quickly color is lost and then returns. That speed in which skin color returns is your indicator. Capillary refill is diminished by cold.

Number 23: Filling out the information on lungs and respirations should be self-explanatory. In the event that you don't have a stethoscope, then place your ear on the patient's chest, both sides, high and low. With a stethoscope, check the lungs high middle and low on the chest, and high and low on the back. Respirations should be timed and qualified the same way as the pulse is. One word of caution, don't let the patient know that you are monitoring their breath, they will breath differently.

Number 24: Skin perspiration, color and temperature is monitored by sight and touch. This should not present any problems, do not confuse skin temperature with body temperature.

Number 25: Place a thermometer in the patient's mouth or armpit and record your findings. To convert centigrade to fahrenheit use the equation given on the worksheet.

The flow chart which follows is simply an update of Numbers 19 through 25 every 15 or 30 minutes as necessary. For the first half hour it is good to monitor your patient every 10 minutes, every 15 minutes for the next hour and a half, and every half hour after that.

An example of your first radio message should look something like the following, with subsequent radio messages updating the patients condition as necessary.

NOJ DE vessel call sign MSG MDC
TO: COAST GUARD KODIAK
FROM: your name, vessel name, vessel permit number, present lat. and long., time & date

REQUEST MEDICAL ASSISTANCE/ CREWMAN JOE MISFORTUNATE/ 30 YR./MALE/ 145 LBS./ 5 FT. 7 IN./MEDIUM BUILD/NO ALLERGIES/NO MEDICATIONS///

INJURED BY A BROKEN CABLE ON JAN. 24 AT 0300 GMT/ PATIENT HAS SUSTAINED A HEAD INJURY/ COMPLAINS OF SEVERE PAIN IN THE UPPER LEFT QUADRANT OF ABDOMEN/ COMPOUND FRACTURE TO THE RIGHT HAND/ POSSIBLE FRACTURE TO THE LEFT ARM BELOW ELBOW/ POSSIBLE INTERNAL BLEEDING IN THE ABDOMEN, AREA HARD AND TIGHT, SOME BLOOD IN URINE/ RIGHT HAND AND LEFT ARM SPLINTED, EXTERNAL BLEEDING CONTROLLED///

VITAL SIGNS/ LOC, ALERT/ EYES, E-R/ PULSE 64 STEADY BUT WEAK/ B-P UNAVAILABLE, DISTAL PULSE PRESENT, CAPILLARY REFILL GOOD/ LUNGS CLEAR AND EQUAL/RESPIRATIONS 30 AND SHALLOW/ SKIN: PERSPIRATION, NORMAL; COLOR, NORMAL; TEMPERATURE, NORMAL/ BODY TEMPERATURE 102.2///

VESSEL AGENT, CHICKEN'S OF THE SEA, SEATTLE, WA/ VESSEL OWNER, TAIKUM FROMDACEE, SEOUL, KOREA///

PLEASE ADVISE BEST COURSE OF ACTION///

MDC RADIO WORKSHEET AND FLOW CHART

(1) VESSEL'S NAME & CALL SIGN _____

(2) VESSEL'S LAT. & LONG. _____ (3) TIME & DATE _____ (GMT)

(4) VESSEL AGENT'S U.S. NAME & ADDRESS _____

(5) VESSEL OWNER'S NAME & ADDRESS _____

(6) PATIENT'S NAME _____ (7) AGE _____ (8) SEX _____

(9) HT. ' " (10) WT. # (11) BUILD _____ (12) ALLERGIES _____

(13) PRESENTLY ON MEDICATIONS Y/N _____ WHAT _____

(14) DATE, TIME & NATURE OF INJURY _____

(15) TYPE OF INJURIES OR ILLNESS

___ Airway	___ Abdominal Pain (general)	___ Fracture	___ Swelling
___ Cardiac Arrest	___ Upper Left Quadrant	___ Burn	___ Bleeding
___ Head	___ Upper Right Quadrant	___ Poisoning	___ Alcohol On Breath
___ Soft Tissue	___ Lower Left Quadrant	___ Seizure	___ Other _____
___ Chest Pain	___ Lower Right Quadrant	___ Psychiatric	_____

(16) TYPE OF BLEEDING

___ Profuse ___ Internal

___ Shallow

___ Pulsating

___ Steady

Blood in the:

___ Eyes ___ Ears ___ Vomit

___ Nose ___ Mouth ___ Urine

(17) LOCATION OF INJURIES

___ Head/Face	___ Upper Extremities
___ Neck/Spine	___ Abdomen
___ Chest	___ Pelvis
___ Back	___ Lower Extremities

(18) TREATMENT

___ Cleared Airway	___ Wound Care
___ Oxygen	___ Splint
___ CPR	___ Neck/Spine Immobilized
___ Controlled Bleeding	___ Other _____

VITAL SIGNS

(19) LEVEL OF CONSCIOUSNESS

___ Alert

___ Vocal (but not alert)

___ Pain (responsive to)

___ Unconscious

(20) EYES

___ Pupils EQUAL & REACTIVE

___ UNEQUAL but reactive

___ Sluggish

___ Dialated (Enlarged)

___ Constricted (Small)

___ NON-REACTIVE

(21) PULSE (#'s & quality)

___ XX Beats per minute

___ Strong

___ Steady

___ Weak

___ Irregular

(22) BLOOD PRESSURE (B-P)

#'s this/that Distal Pulse Present Y/N____

B-P Cuff Only Capillary Refill Quality ____ Good ____ Poor

____ Fair ____ Unavailable

(23) LUNGS & RESPIRATIONS

Lung sounds are:

___ Clear ___ Equal

___ Congested ___ Unequal

___ Raspy

Respirations are:

___ XX per minute ___ Short

___ Deep ___ Irregular

___ Shallow ___ Strained

___ Weak

(24) SKIN (perspiration, color & temperature)

PERSPIRATION

___ Very Dry

___ Normal

___ Sweating

COLOR

___ Flushed

___ Normal

___ Pale/Ashened

___ Cyanotic (blue)

TEMPERATURE

___ Hot

___ Normal

___ Cool/Cold

(25) BODY TEMPERATURE

_____

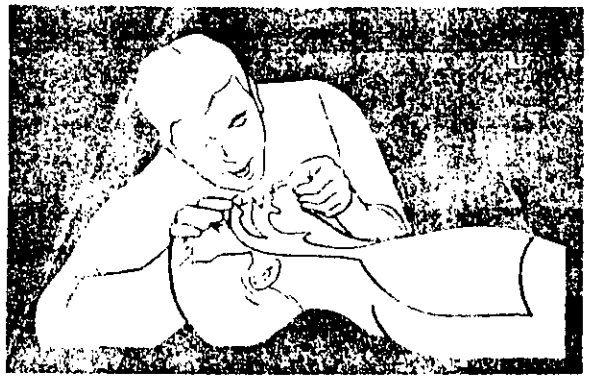
°F = °C x 1.8 + 32

FLOW CHART					FLOW CHART		FLOW CHART	
TIME (GMT)	19 LOC	20 EYES	21 PULSE & qual	22 B/P	23 RESP (# & qual)	24 SKIN (p-c-t)	25 BODY TEMP	OTHER

Cardiopulmonary Resuscitation (CPR)

SHAKE OR SHOUT TO DETERMINE UNCONSCIOUSNESS

Airway



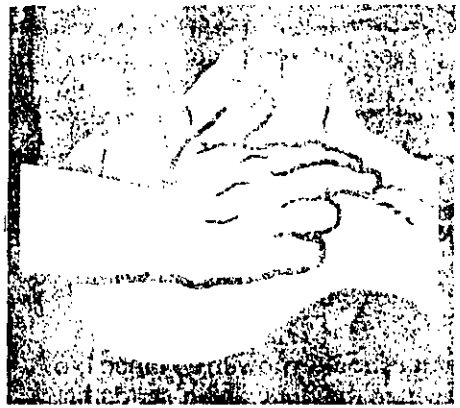
If no response:

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.

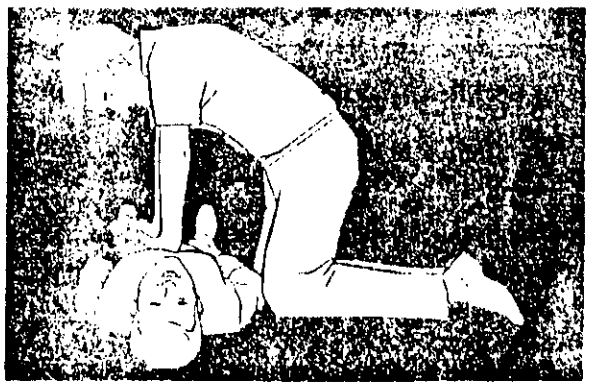
Breathing

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)

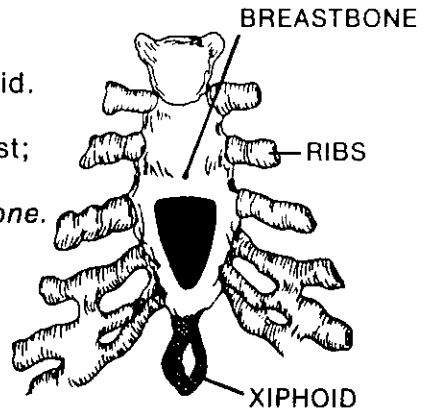


Circulation



If no pulse:

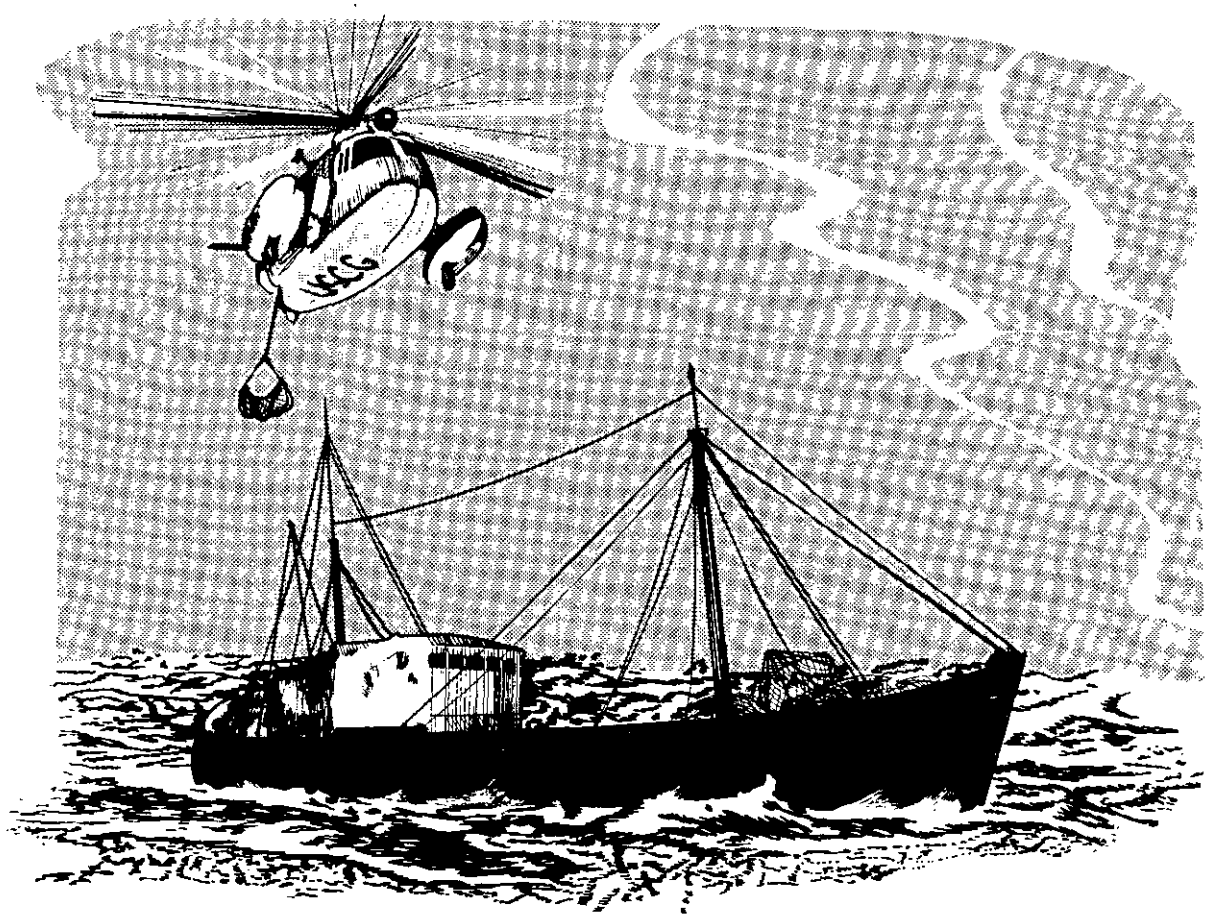
REMOVE obstructive clothing from chest.
FEEL for lower end of breastbone with 2 or 3 fingers on xiphoid.
PLACE heel of one hand just above fingers so that you are on lower one-half of breastbone, **PLACE** other hand on top of first; **KEEP** arms straight.
Small child — use heel of one hand at midpoint 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.



HELICOPTER EVACUATION

Helicopter evacuation is a hazardous operation and should only be attempted in a life or death situation. The following information provides the capabilities and requirements of the Coast Guard for evacuation at sea.

RANGE:
Helicopters can operate only 100 to 150 miles offshore weather conditions permitting.

REQUEST FOR ASSISTANCE:
▲ Determine patients condition and call the nearest Coast Guard station listed on NMFS Medical Assistance Placard.
▲ Give position, course, speed, weather conditions, type and characteristics of vessel.
▲ Conserve time by heading towards rendezvous point.

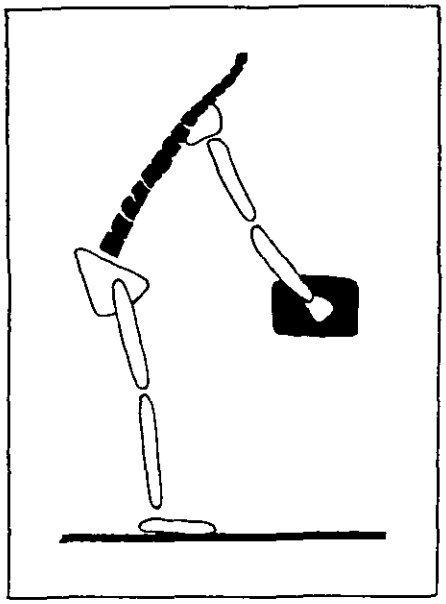
PREPARE FOR ARRIVAL:
▲ Stand by on 2182 kHz or specified alternate if not available.
▲ Display distress signal.
▲ Clear hoist area, preferably aft, with maximum horizontal clearance. If area *is mid-ships lower antenna and secure* running gear.
▲ At night, light area, DO NOT shine lights on helicopter.

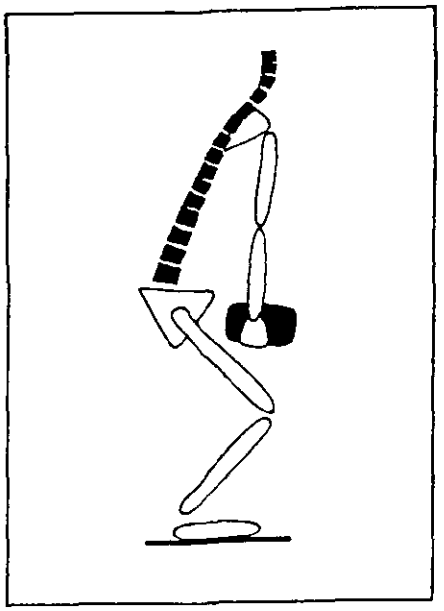
HOISTING:
▲ Tag patient, indicate medication given and conditions doctor should be aware.

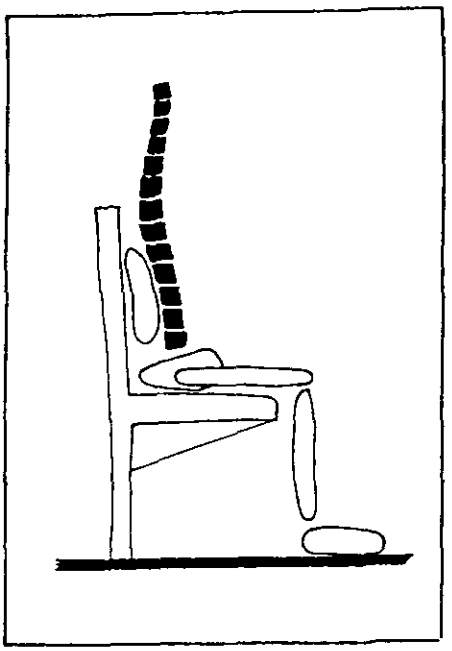
Keep vessel into wind or with wind about 20° on port bow at 10 to 15 knots.
▲ Hoist instructions will be given by pilot. Allow stretcher or basket to touch deck to discharge static electricity. Wear dry cotton or rubber gloves.
▲ If stretcher is needed it will be equipped with a hoisting bridle.
▲ Conditions permitting, have patient in life jacket, strapped in, face up, and hands clear of sides.
▲ DO NOT secure hoist cable to vessel or attempt to move stretcher without first unhooking cable.
▲ With patient strapped in signal pilot *to lower hoist. Steady stretcher.*
▲ Use trail line to steady stretcher. Make sure line is clear of rigging and crew.

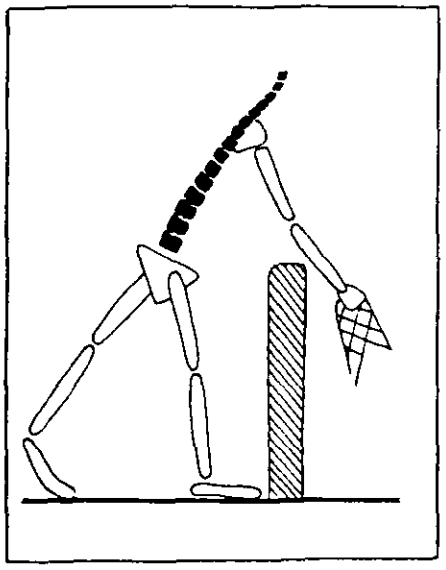
U.S. Department of Commerce, National Oceanic and Atmospheric Administration
National Marine Fisheries Service, Fisheries Extention Service, Northeast Region, Gloucester, Massachusetts

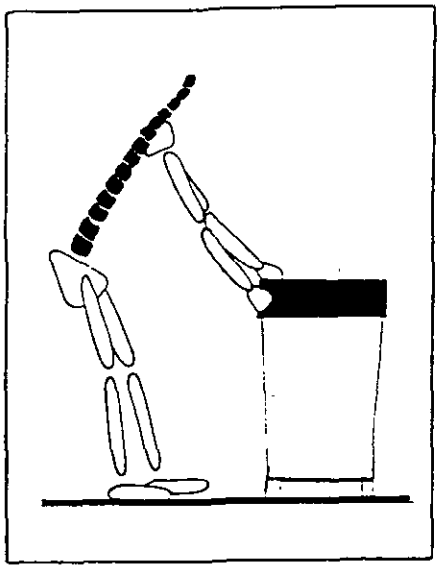
PREVENTING BACK INJURIES

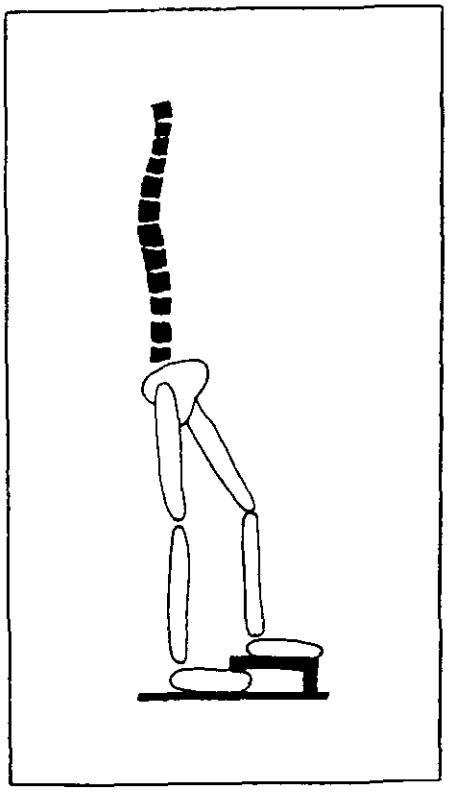












1. The stress on the back is increased when the work is too far away from the body.

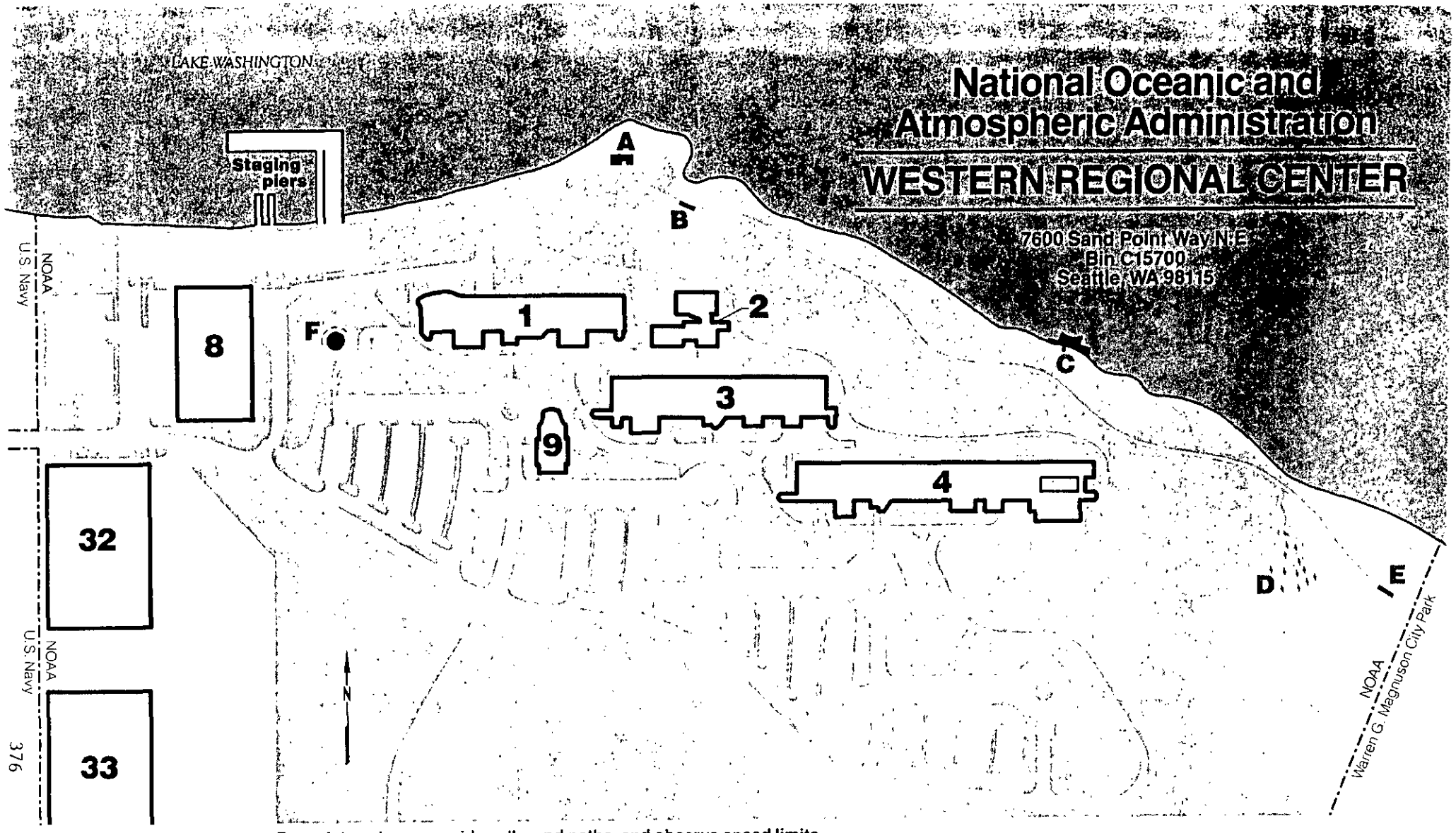
2. Taking the time to get a load directly in front of and close to you will reduce the chance of hurting your back. Always bend your knees and lift with a straight back.

3. If you have to sit for a long period, make sure the seat supports the lower back. If it doesn't, put a rolled-up sweater or towel behind your waist.

4. If you have to reach over something to do a job, put your weight on one leg and stretch the other leg straight out behind.

5. If you have to pull or push an object, take the extra step to get it straight in front of you.

6. If you must stand for a long period, put one foot up on a low ledge or rail.



National Oceanic and Atmospheric Administration

WESTERN REGIONAL CENTER

7600 Sand Point Way N.E.
Bin C15700
Seattle, WA 98115

For safety sake—use sidewalks and paths, and observe speed limits

Building 32
NMFS Resource Assessment and Conservation Engineering

Building 33
Warehouse

Building 8
Pacific Tide Party, PMC.
Western Regional Diving Facility.
Shops.
Warehouse.

Building 1
NW Regional Office, NMFS.
NW Regional Counsel.
NW Ocean Service Center.
Public Affairs.
Office for Civil Rights.
National Weather Service Forecast Office.
Western Administrative Support Center.

Building 2
Cafeteria.
Health care facility.

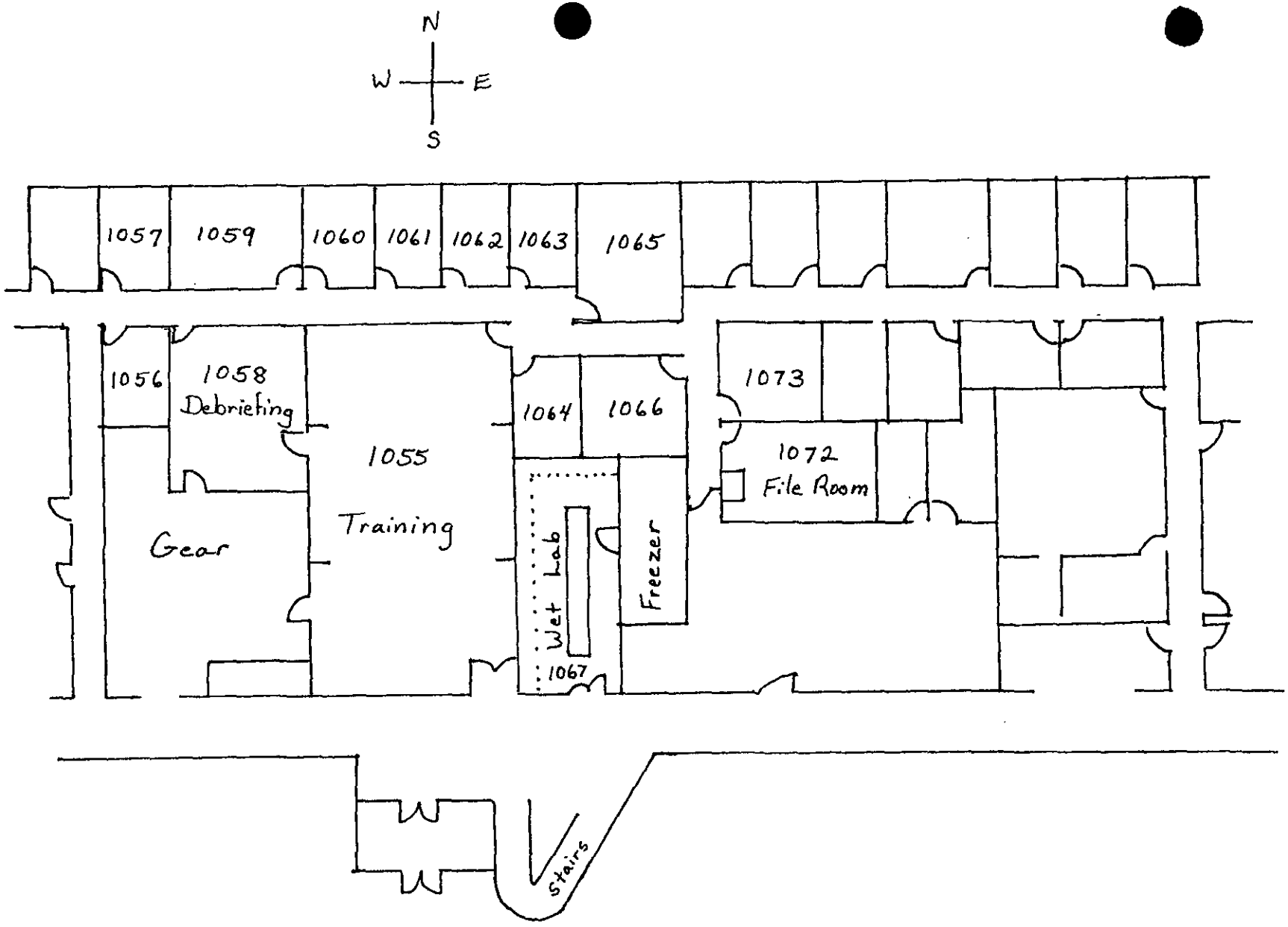
Building 3
Pacific Marine Environmental Laboratory.
Nautical Chart Branch, PMC.
Library & Information Services Division.
Ocean Assessments Division, NOS.

Building 4
Northwest & Alaska Fisheries Center, NMFS

Building 9
Auditorium and seminar rooms

Artworks

- **A** Viewpoint
- **B** NOAA Bridge
- **C** Berth Haven
- **D** A Sound Garden
- **E** NOAA Bridge
- **F** Kn[illegible]or NOAA



Observer Program Facilities, Building 4 ground floor

Glossary

Aft - towards the stern of a vessel

Benthic - living in direct relation with the bottom

Bin - a large compartment built into a ship for holding fish

Bosun - chief of the deck crew

Bottom - 1) ocean floor, or 2) fishing depth, or 3) a ship hull. Which meaning to apply must be taken from context.

Breech - a behavioral characteristic of some marine mammals such as humpback whales, where they rise vertically out of the water, and then with most of their body above the surface, they fall to their back or side.

Chaffing gear - protective carpeting (or strands of nylon forming a carpet pile) on the outer, underside of the trawl net to keep it from catching and ripping on obstacles on the bottom.

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.

Compliance - in accordance with the fishing regulations.

Dependent stern trawler - a stern trawler that delivers its catch to a mothership for processing.

Directed - a vessel fishing independently, under it's own nation's quota.

Disembark - to get off a vessel.

EEC - Exclusive Economic Zone (see FCZ).

Embarkation - to board a vessel.

FCZ - Fisheries Conservation Zone; the 200 mile limit.

Flatfish - fish which are laterally compressed and who orient themselves in the water with their lateral surfaces or sides towards the surface and bottom.

Forecastle - the forward part of a ship where sailor's quarters are located.

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. Large Japanese stern trawlers are either freezer trawlers or surimi trawlers. Fresh weight - the weight of the whole fish (or animal) as it was when alive.

FUS - Fully Utilized Species.

Gallows - the large upright framework that spans the trawl deck; used for suspending or supporting.

Gangen - the leader line, about a meter in length, tied into a longline with a hook tied to it's free end.

Gantry - see gallows.

Gas bladder - a sac filled with air or similar gases in the body cavity. May or may not be attached to the throat by a duct.

Gill rakers - bony toothlike structures on the anterior edges of the gill arches. For protection or straining out food.

Gunnel or Gunwale - the upper edge of the side of a boat.

Hachi - 1) a flat, broad, circular basket onto which a longline is coiled, or 2) the length of longline which can be coiled onto the basket. In the U.S. longline fleet the hachi is called a "skate". Hachi is also the Japanese word for the number 8.

Hatch - an opening in a deck or bulkhead of a ship.

Haul - a catch of fish from one tow of a net

Independent stern trawler - any of various sized fishing vessels which trawl a conical shaped mesh net through the water, haul it up a ramp through the stern of the ship, empty, and process the catch to make a wholesale fish product. These vessels may fish for several months at sea without support.

Joint Venture - a cooperative fishing/processing effort between vessels of different nationalities.

Lee, Leeward - the side protected from the wind,opposite the "windward" side

Master - fishing master and/or captain.

Mothership - a processing vessel whose fish come from dependent catcher boats. In the case of an independent mothership, the catcher boats are foreign, in a joint venture mothership, the catcher boats are American.

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.

Peritoneum - the lining of the gut cavity

Pod - a group of marine mammals traveling in association

Pond - see "bin", the Koreans use this term for a fish bin.

Porthole - a window in the hull or the outside bulkhead of a ship.

Radio Call Sign - four letters and numbers which are an international identifier of a vessel.

Rostrum - a bony or calcarious extension on the snout of a fish.

Regenerated scale - a fish scale which has grown in to replace one that was lost.

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.

Surimi - minced fish meat paste usually produced from pollock.

Trawl - the towing of a mesh net behind a vessel to catch fish.

Vessel Code - A code used only by the observer program to identify a ship.

Wing - the sides off a trawl net near the opening, usually with larger mesh than the rest off the net.

Zulu - another name for GMT.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1988—594-012

CODE OF FEDERAL REGULATIONS

TITLE 50

PART 611 -- FOREIGN FISHING

SUBPART A -- GENERAL

§611.12 GEAR AVOIDANCE AND DISPOSAL.

(a) Vessel and gear avoidance.

(1) FFV's arriving on fishing grounds where fishing vessels are already fishing or have set their gear for that purpose must ascertain the position and extent of gear already placed in the sea and must not place themselves or their fishing gear so as to interfere with or obstruct fishing operations already in progress. Vessels using mobile gear must avoid fixed fishing gear.

(2) The operator of each FFV must maintain on its bridge a current plot of broadcast fixed-gear locations for the area in which it is fishing as required by the regulations for the fishery in which the FFV is engaged (see Subparts C through G of this part).

(b) Gear conflicts The operator of each FFV which is involved in a conflict or which retrieves the gear of another vessel must immediately notify the appropriate Coast Guard commander identified in Appendix A to this subpart and request disposal instructions. Each report must include:

(1) The name of the reporting vessel;

(2) A description of the incident and articles retrieved including the amount, type of gear, condition, and identifications markings;

(3) The location of the incident; and

(4) The date and time of the incident.

(c) Disposal of fishing gear and other articles.

(1) The operator of an FFV in the EEZ may not dump overboard, jettison or otherwise discard any article or substance which may interfere with other fishing vessels or gear, or which may catch fish or cause damage to any marine resource, including marine mammals and birds, except in cases of emergency involving the safety of the ship or crew, or as specifically authorized by communication from the appropriate Coast Guard commander or other authorized officer. These articles and substances include but are not limited to fishing gear, net scraps, bale straps, plastic bags, oil drums, petroleum containers, oil, toxic chemicals or any manmade items retrieved in an FFV's gear.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

References Cited

Burch, J.B. 1975. Freshwater Unionacean Clams (Mollusca: Pelecypoda) of North America. Malacological Publ. 204 pp.

Clarke, A.E. 1987. Status Survey of *Lampsilis streckeri* Frierson (1927) and *Arcidens wheeleri* (Ortman and Walker 1912). A report to the U.S. Fish and Wildlife Service. 24 pp. + field notes.

Frierson, L.S. 1927. A Classified and Annotated Check List of the North American Naiades. Baylor University Press, Waco, Texas. 111 pp.

Johnson, R.I. 1980. Zoogeography of North American Unionacea (Mollusca: Bivalvia) North of the Maximum Pleistocene Glaciation. Bull. Mus. Comp. Zool. 149(2):77–189.

Author

The primary author of this proposed rule is James Stewart (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99–625, 100 Stat. 3500 (1986), unless otherwise noted.

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under "CLAMS", to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population with endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CLAMS							
Pocketbook, speckled	*Lampsilis streckeri*	U.S.A.(AR)	NA	E		NA	NA

Dated: June 27, 1988.

Susan Recce,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88–16604 Filed 7–22–88; 8:45 am]

BILLING CODE 4310–55–M

SHOW THIS TO THE CAPTAIN

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 611

[Docket No. 71143–7243]

Foreign Fishing; Minimum Health and Safety Standards

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Proposed rule.

SUMMARY: This proposed rule would establish minimum health and safety standards aboard foreign fishing vessels to which United States observers are deployed. The Secretary of Commerce is required by the Magnuson Fishery Conservation and Management Act (Magnuson Act), to prescribe, by regulation, minimum health and safety standards that must be maintained aboard each foreign fishing vessel to which a United States observer is deployed. These health and safety standards apply to the facilities for the quartering of observers and the carrying out of observer functions.

DATE: Comments on the proposed rule must be submitted on or before September 8, 1988.

ADDRESS: Send comments to Special Agent Gary A. Wood, National Marine Fisheries Service, F/EN13, Washington, D.C. 20235.

FOR FURTHER INFORMATION CONTACT: Gary A. Wood, 202–673–5299.

SUPPLEMENTARY INFORMATION: Section 201(i) of the Magnuson Act requires that a United States observer be stationed aboard each foreign fishing vessel while it is engaged in fishing in the exclusive economic zone. Section 201(i)(1)(B) requires that the Secretary of Commerce (Secretary) establish, by regulation, minimum health and safety standards with respect to the facilities provided aboard the vessel for the quartering of observers and carrying out of observer functions.

Prior to the amendment that requires publication of health and safety standards, section 201(i)(2)(B)(ii) of the Magnuson Act (now superseded) provided that foreign fishing vessels could be exempted from observer coverage if the facilities aboard were such that the health or safety of the observer would be jeopardized. However, a vessel exempted from observer coverage because of substandard health or safety conditions could continue to fish. The alternatives than were to deploy observers to vessels where their health or safety might be jeopardized, or allow a vessel to fish without observers coverage. Neither alternative was considered tenable, since one subjected observers to undue risks, while the other eliminated any reliable means available to NOAA to collect necessary management, compliance and scientific data from the exempted vessels. By amending section 201(i) of the Magnuson Act to delete the exemption provision, observer coverage can be withheld from vessels which fail to meet minimum health or safety standards, and fishing activity can be prohibited by such vessels because no observer is aboard.

The proposed rule requires that foreign fishing vessels to which observers are deployed maintain working radar and required navigation lights, station qualified personnel on the bridge while the vessel is underway, have readily available and in good repair sufficient lifeboats and lifejackets

to accommodate all persons aboard in the event of an emergency, have aboard and in good repair ring life buoys with water lights, have aboard appropriate distress and other signaling devices, and maintain aboard the vessel clean and sanitary conditions in living, food service and work spaces. The cost incurred by the owners and operators of foreign fishing vessels to meet the health and safety standards established by these regulations is deemed to be minimal, and should not prohibit access to U.S.-managed fisheries by otherwise eligible vessels.

This action is categorically excluded from the requirement to prepare an environmental assessment by NOAA Directive 02-10.

The NOAA Administrator determined that this proposed rule is not a "major rule" requiring a regulatory impact analysis under Executive Order 12291, because it will not result in (1) a major increase in costs or prices to consumers, individual industries, Federal, State or local government agencies, or geographic regions; or (3) significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that this proposed rule, if adopted, will not have a significant economic impact on a substantial number of small business entities because it applies only to the owners or operators of foreign fishing vessels. As a result, a regulatory flexibility analysis was not prepared.

This rule does not contain a collection of information for purposes of the Paperwork Reduction Act.

List of Subjects in 50 CFR Part 611

Fish, Fisheries, Foreign relations.

Dated: July 18, 1988.

James W. Brennan,

Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR 611 is proposed to be amended as follows:

PART 611—[AMENDED]

1. The authority citation for Part 611 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.*, 16 U.S.C. 1971 *et seq.*, and 16 U.S.C. 1361 *et seq.*

2. Section 611.8 is amended by redesignating paragraphs (d) through (j) as paragraphs (e) through (k), and by adding a new paragraph (d) to read as follows:

§ 611.8 **Observers.**

* * * * *

(d) *Health and safety standards.* All foreign fishing vessels to which an observer is deployed must maintain, at all times that the vessel is in the EEZ of the United States, the following:

(1) At least one working radar;

(2) Functioning navigation lights as required by international law;

(3) A watch on the bridge by appropriately trained and experienced personnel while the vessel is underway;

(4) Lifeboats and/or inflatable life rafts with a total carrying capacity equal to or greater than the number of people aboard the vessel. Lifeboats and inflatable life rafts must be maintained in good working order and be readily available;

(5) Life jackets equal or greater in number to the total number of persons aboard the vessel. Life jackets must be stowed in readily accessible and plainly marked positions throughout the vessel, and maintained in a state of good repair;

(6) Ring life buoys, equipped with automatic water lights, positioned at intervals of 25 feet along the length of the vessel. Ring life buoys must be 30 inches in diameter, maintained in a state of good repair and secured in such a way that they can be easily cast loose in the event of an emergency;

(7) At least one VHF-FM radio with a functioning channel 16 (156.8 MH_z), International Distress, Safety and Calling Frequency, and one functioning AM radio (SSB-Single Side Band) capable of operating at 2182 KH_z. Radios will be maintained in a radio room, chartroom or other suitable location;

(8) At least one Emergency Position Indicating Radio beacon (EPIRB), stowed in a location so as to make it readily available in the event of an emergency;

(9) At least 6 hand-held rocket-propelled, parachute, red-flare distress signals, and 3 orange-smoke distress signals stowed in the pilothouse or navigation bridge in portable watertight containers.

(10) All lights, shapes, whistles, foghorns, fog bells and gongs required by and maintained in accordance with the International Regulations for Preventing Collisions at Sea.

(11) Clean and sanitary conditions in all living spaces, food service and preparation areas and work spaces aboard the vessel.

* * * * *

3. In § 611.8, newly redesignated paragraph (f) is amended by changing the reference "(h)" to read "(i)"; newly redesignated paragraph (h)(1) is amended by changing the reference "(g)(4)" to read "(h)(4)"; newly redesignated paragraph (h)(2)(ii) is amended by changing the reference "(i)(2)" to read "(j)(2)" and newly redesignated paragraph (k)(1)(i) is amended by changing the reference "(g)(2)" to read "(h)(2)".

[FR Doc. 88-16462 Filed 7-22-88; 8:45 am]

BILLING CODE 3510-22-M

OCCURRENCE OF MOLTING C. BAIRDI AND RED KING CRAB IN TRAWL FISHERIES

One of the concerns of those involved with the issues of controlling the bycatch of crab (both Tanner and king crabs) in trawl fisheries off Alaska, is the possibility that the trawl fisheries are conducted during times and in areas where crab molt. Molting crab may be more susceptible to mortality from the trawl as it is towed along the ocean bottom. There are two species of crab that are of the most concern right now. They are Chionoecetes bairdi Tanner crab and red king crab (Paralithodes camtschatica). We are asking you to collect this data on only these two species at this time. The objectives of this special observer project are to:

1. Identify and define the times and areas where molting crab are encountered by the flounder trawl fisheries.

2. Determine if the time and areas differ by sex.

3. Determine the percentage of molting C. bairdi Tanner crab and red king crab in the bycatches of these two species.

DESCRIPTION OF MOLTING

A recently molted crab will have a soft and pliable carapace. You will be able to bend it without breaking it. We would also like you to look for pre-molt crab and include them with the recently molted crab. (Consider them to have a "soft" shell also.) In pre-molt king and Tanner crab the membranes between the leg segments tend to swell and turn pink. With practice, many pre-molt crab can be identified at sight.

The "dactyl test" is definitive for identifying pre-molt crab. Break 1/2 inch off the end of a dactyl (pointed outermost segment of a walking leg). If a well-formed underlying dactyl tip is present then the crab is pre-molt.

INSTRUCTIONS

The molting crab work will consist of further classifying the crab examined daily for viability as to their shell condition (i.e. hard shelled or soft shelled). For all of the C. bairdi Tanner crab and red king crab examined and recorded on Form 4 to determine species composition, sex composition and viability, you will need to further identify the crab as being hard shelled or soft shelled. This information will be recorded on a separate set of Form 4's (you will also record and maintain a standard set of Form 4's following standard Form 4 instructions).

Data will be recorded by sex. For each haul from which you record C. bairdi Tanner crab and red king crab viability data, record the following information on the separate set of Form 4's for the crab molting study:

1. Cruise Number - Columns 1-3
2. Vessel Code - Columns 4-7
3. Date - Columns 8-13
4. Haul Number - Columns 15-16
5. Species Name
6. Species Code - Columns 19-21
7. Sex - Column 22
8. Number of individuals - Columns 23-25
9. Shell condition - Columns 26-34 RECORD THE LETTER "H" FOR CRAB IN THE HARD SHELLED CONDITION AND THE LETTER "S" FOR CRAB IN THE SOFT SHELLED CONDITION.

(Remember that the total number of each species by sex on your standard Form 4 viability must equal the number of crab recorded for the molting crab Form 4).

Form 4 – SPECIES COMPOSITION OF SALMON, KING CRAB, TANNER CRAB; VIABILITY OF HALIBUT, KING CRAB AND TANNER CRAB

Cruise No.		
1	2	3
2	3	1

Vessel code			
4	5	6	7
Q	S	9	1

Date					
Year		Mo.		Day	
8	9	10	11	12	13
8	8	0	3	2	1

1. Record individuals from form 3(1) or a random subsample.
2. Leading zeros in columns 1,2,10 and 12 only as needed.
3. Sex: male = M; female = F; unknown = U.
4. Probability of predation; none (0 sea lions) = 1; moderate (1-3) = 2; high (≥4) = 3.
5. Skip a line after each haul/set sample.

Keypunchers: right-adjust all columns.

Set	Haul or sample number		Species Name	Species code	Sex	No. of indiv.	Total weight with decimal point	Halibut/crab condition			Probability of marine mammal predation on halibut
								Number excellent	Number poor	Number dead	
14	15	16		19 20 21	22	23 24 25	26–34	35 36 37	38 39 40	41 42 43	44
1	4	7	Red King Crab	13	M	6	H				
			" " "	13	M	1	S				
			" " "	13	F	4	H				
			C. bairdi	4	M	17	H				
			↓	↓	M	5	S				
	↓		↓	↓	F	23	H				
1	4	7	C. bairdi	4	F	6	S				

NEWS

FEDERAL COMMUNICATIONS COMMISSION
ANCHORAGE FIELD OFFICE
6721 WEST RASPBERRY ROAD, ANCHORAGE, ALASKA 99502 907-243-2153

AVAILABLE MARINE CHANNELS AND THEIR USES

Your VHF radio is intended mainly for short range communications, generally within about twenty miles of a coast station. Caution must be maintained in selecting and using channels in accordance with their authorized purpose.

It is the responsibility of a ship station licensee to equip the ship station with the channels of the coast or other stations with which communications are desired, and not the responsibility of a coast station to operate on all assigned frequencies so that it can communicate with any vessel within range.

(VHF - MHz)

Ch. No.	Ship Transmit	Ship Receive	
DISTRESS, SAFETY & CALLING			
16	156.800	156.800	
INTERSHIP SAFETY			
06	156.300	.....	Intership Only
LIAISON, U.S. COAST GUARD			
22	157.100	157.100	
PORT OPERATIONS			
01	156.050	156.050	Intership And
63	156.175	156.175	Ship to Coast
05	156.250	156.250	" "
65	156.275	156.275	" "
66	156.325	156.325	" "
12	156.600	156.600	" "
73	156.675	156.675	" "
14	156.700	156.700	" "
74	156.725	156.725	" "
77	156.875	.....	Intership Only
20	157.000	161.600	" "
NAVIGATIONAL			
13	156.650	156.650	Intership And
67	156.375	156.375	Ship to Coast
AIRCRAFT			
06	156.300	156.300	Intership Safety
67	156.375	156.375	Intership And
08	156.400	156.400	Commercial
68	156.425	156.425	Intership And
09	156.450	156.450	Noncommercial
72	156.625	156.625	And Ship to Coast
16	156.800	156.800	Distress
18	156.900	156.900	Intership, Ship to Coast And Commercial
DIGITAL SELECTIC CALLING			
70	156.525	156.525	Intership And Ship to Coast
ENVIRONMENTAL & CLASS C EPIRBS			
15	.....	156.750	Coast to Ship
STATE CONTROL			
17	156.850	156.850	Intership/Ship to Coast
COMMERCIAL			
01	156.050	156.050	Intership And
63	156.175	156.175	Ship to Coast
07	156.350	156.350	" "
67	156.375	.....	Intership Only
08	156.400	.....	" "
09	156.450	156.450	Intership And
10	156.500	156.500	Ship to Coast
11	156.550	156.550	" "
18	156.900	156.900	" "
19	156.950	156.950	" "
79	156.975	156.975	" "
80	157.025	157.025	" "
88	157.425	.....	Intership Only
NONCOMMERCIAL			
68	156.425	156.425	Intership And
09	156.450	156.450	Ship to Coast
69	156.475	156.475	" "
71	156.575	156.575	" "
72	156.625	.....	Intership Only
78	156.925	156.925	Intership/Ship to Coast
PUBLIC CORRESPONDENCE			
24	157.200	161.800	Ship to Public Coast
84	157.225	161.825	" "
25	157.250	161.850	" "
85	157.275	161.875	" "
26	157.300	161.900	" "
86	157.325	161.925	" "
27	157.350	161.950	" "
87	157.375	161.975	" "
28	157.400	162.000	" "
88	157.425	162.025	" "

ADDITIONAL AVAILABLE MARINE FREQUENCIES December 1, 1987

To communicate over distances beyond twenty miles, you will need another type of radiotelephone, operating on medium or high frequencies using single sideband emmission of SSB. Note: AM(amplitude modulate) equipment was used prior to SSB and is no longer used in the marine radio service.

You cannot obtain a ship station license for SSB installation alone - you must also have a licensed VHF radiotelephone station. For proper operation, the SSB installation requires considerable care, and unlike VHF, SSB requires a good ground system and must be installed by an FCC licensed technician.

All ship radiotelephone stations in the 2-3 MHz band must be capable of operating on 2182 kHz, the international distress and calling frequency and at least two other frequencies.

CARRIER FREQUENCIES
(SSB - kHz)

SHIP, PUBLIC & PRIVATE COAST STATIONS
International Distress, Urgency & Safety
Also call & reply only
2182.0

SHIP, PUBLIC & PRIVATE COAST STATIONS
Distress & Safety Communications

*4125.0	6215.5	8257.0	12392.0	16522.0

SHIP TO SHIP
Safety & Operational Communications

2082.5	2214.0	2670.0	*2738.0
2093.0	2638.0		*2830.0

SHIP TO SHIP & SHIP TO PRIVATE COAST
Business & Operational Communications

2096.5	6218.6	8291.1	16587.1	22124.0
	6221.6	8294.2	16590.2	22127.1
4125.0	6521.9	12429.2	16593.3	22130.2
4143.6		12432.3		22133.3
4419.4		12435.4		22136.4

SHIP TO SHIP & SHIP TO ALASKA PRIVATE FIXED
Private Communications

1619.0	1705.0	2419.0	2506.0	3258.0
1622.0	1709.0	2422.0	2509.0	3261.0
1643.0	1712.0	2427.0	2512.0	4366.7
1646.0	2003.0	2430.0	2535.0	4369.8
1649.0	2006.0	2447.0	2538.0	4397.7
1652.0	2115.0	2450.0	2563.0	4403.9
	2118.0	2479.0	2566.0	4422.5
	2379.0	2482.0	2590.0	4425.6
	2382.0		2616.0	*5167.5

SHIP TO PUBLIC COAST
Alaska Working Frequencies
Transmit/Receive

2131.0	2309.0	Kodiak
2134.0	2312.0	Sitka & Cold Bay
2237.0	2397.0	Cordova & Ketchikan
2240.0	2400.0	Juneau & Nome

*5167.5 kHz is DESIGNATED FOR EMERGENCY COMMUNICATIONS IN THE STATE OF ALASKA. This channel may also be used in the Alaska Private Fixed Service for calling and listening, but only for establishing communications before switching to another frequency.

*2738 and *2830 kHz may be used between aircraft and commercial fishing vessels for operations that require direct communications. *4125 kHz may also be used for distress and safety communications between aircraft and ships.

The fact that a radio is frequency synthesized or that frequency crystals may be legally installed does not mean that all the frequencies may be used. Prior authorization is required for the use of specific frequencies.

For additional information on stations on shipboard in the maritime service, contact F. Louise Stewart, Public Service Specialist, at the Anchorage Office, 907-243-2153, or CONSULT PART 80 OF THE FCC'S RULES AND REGULATIONS FOR COMPLETE DETAILS OF CONDITIONS OF USE FOR EACH FREQUENCY.