

OBSERVER PROGRAM MANUAL
FOR SAMPLING OF
CENTRAL BERING SEA POLLOCK FISHERIES

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CENTRAL BERING SEA OBSERVER MANUAL

This manual has been prepared to assist you in your duties as an observer aboard fishing vessels operating in the Central Bering Sea pollock fishery. This manual, in addition to training sessions, should adequately prepare you for your observer experience. It must be remembered, however, that conditions can change and that no set of instructions can ever be complete. It is therefore the responsibility of the observer to evaluate each 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.

ROLE OF THE OBSERVER IN THE CENTRAL BERING SEA POLLOCK FISHERY

The international area of the Bering Sea has an important fishery resource. In order to maintain the resource, biological information must be collected from the region. Biological observers will be placed on board vessels fishing in this area to collect the information needed to assess the resource.

The primary objectives of the observers are to record fishing effort, obtain daily catch rates, determine species composition of the catches, determine the incidental takes of salmon and marine mammals, and to gather data on pollock sizes and ages. The estimates of catch rates obtained by the observers may be compared with data reported by vessels to enable scientists to estimate total daily landings of pollock.

Data collected by observers will be used in helping to assess the status of the pollock stock, estimating the bycatch rates of species other than pollock, and investigating population interrelationships.

Data obtained by the observers on catch size and species composition will give fishery scientists an idea of the catch per unit effort of pollock, an important factor in determining the status of the stock. Length frequencies and otolith collections are also vital in determining the condition of the fishery resource, and hence, of determining how much is available to be caught without causing fishery deterioration. Mathematical models used to assess the pollock population are dependent upon a measure of the current age composition of the commercial catch. Without these data and models, the ability of fishery scientists to determine the condition of the pollock stock would be diminished.

Data obtained by observers should be useful in studying particular fisheries questions, such as the stock relationships between pollock caught in the Central Bering Sea and those caught in the Eastern or Western Bering Sea. In addition to planned uses, there are many other uses of data which are not always

anticipated.

Because scientists depend on the data obtained by observers in order to assess the impact of fisheries upon the stocks, the necessity for accuracy in data collections, accurate determinations of species, and complete fulfillment of the sampling plan cannot be over stressed. Data forms must be carefully completed and checked. Sample forms in this manual serve as guidelines.

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. You will need to adapt the sampling methods covered in this manual and in your training to the situation experienced aboard your ship.

OBSERVER DUTIES AND PRIORITIES

Primarily, the observer's duties and priorities consist of collecting catch information, determining catch weight estimates, sampling for species composition of the catch, and collecting biological data on pollock. A list of the observer's main duties is given below.

1. Record daily fishing effort and catch weight information. This manual contains instructions describing methods of obtaining these estimates and how your estimates of catch should be used.
2. Record species, numbers, and viability of incidentally caught marine mammals and salmon.
3. Determine the species composition of the catch according to instructions in this manual.
4. Obtain biological data and samples from pollock as directed. This may include length frequencies, sexes, otoliths for determining age, stomach content samples, or other information as requested.
5. Prepare a final report for the vessel which includes all information that is pertinent.

CONFIDENTIALITY OF OBSERVER DATA

Fishermen are concerned that information you are collecting can be obtained by anyone who may be interested in finding out where they caught fish. If this is brought up to you, reassure them that the information you are collecting is handled under strict

rules of confidentiality and that you (the observer) are bound by the confidentiality rules as well. If you are asked by vessel personnel about another vessel you were on, explain that just as you can't talk about this vessel after you get off it, so you can't tell them about a previously observed vessel.

Observers must know that all data collected are the property of their government. No observer can retain or copy any data or reports following their return unless granted express permission from their government.

STANDARDS OF OBSERVER CONDUCT

Observers are expected to conduct themselves in a manner which will reflect favorably upon the observer program. This means acting in an honest, professional, business-like manner in all situations. Observers should try to abide by these basic standards of conduct:

1. Observers must diligently perform their assigned duties.
2. Observers must accurately record their sampling data, write reports, and report honestly on the fishing activities of their observed vessel.
3. Observers must keep all collected data and observations made on board the vessel confidential.
4. Observers must refrain from engaging in any activities that would reflect negatively on their image as professional scientists, on other observers, or on the observer program as a whole.

SPECIAL CAUTION ON DEPARTMENT

1. When conflicts or sampling problems occur which affect your attempts to get unbiased samples of the catch (pre-sorting of fish for example), you can usually work it out by talking with the crewmen, factory foreman or fishing master. If this doesn't help, talk to the captain and ask him to help you but don't be demanding in your attitude. Present a case which shows you have thought about both sides. Listen and consider their objections. Negotiate compromises as long as they don't interfere with your ability to get good data. If talking fails, try to get the best data possible anyway, and make notes on the problems to discuss when you return home.
2. Maintain a friendly but professional demeanor to vessel personnel. Your behavior should be governed by remembering that you are highly visible. Before acting in any given

situation, be mindful of the sensitivity of your position. Tactful, mature handling of problems is expected. Remember, you are on the job 24 hours per day.

3. Observers should never accept gifts as this may appear to compromise your impartiality. You may not accept payment for any work you perform for the vessel during your employment as an observer.
4. As an observer you should abide by the rules and regulations relating to conduct on your host vessel. Do not accept or transport any item violating laws relating to endangered or protected species.
5. Once you are aboard your sampling ship, avoid making visits to other vessels. Sometimes other ships, tenders, or catcher boats may tie up to your vessel. Consider going aboard only if your transfer there and back can be made under 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.
6. Consider safety first in everything you do.

THE TRAINING PERIOD

Training will consist of learning how to identify the species of fish expected to be found in the Central Bering Sea pollock fishery, explanations of the sampling procedures, and information on safety and living conditions at sea. 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.

Observer Training Topics

Observer sampling duties - emphasis on terminology, visual orientation and safety on board.

Seasickness, medical advice, living accommodations, clothing and other items to bring.

Hardships, deportment, and conduct.

Duties: objectives and priorities, workload.

Species Identification: a general review of identification terminology of various Bering Sea species.

General instructions on data forms, ratio and proportion.

Obtaining haul information: Haul Summary Form.

Estimation of catch size - by the observer and by the ship.

Catch Composition Sampling: determining a sample weight.

Data entry on Species Composition Form.

Methods for random, representative and unbiased sampling.
Classroom practice of sampling methods and data entry.
Classroom practice of haul weight estimation.
Collecting biological information from salmon in samples: weights and lengths, sex, and scale sampling.
Collecting data on tagged fish.
Obtaining vessel production information and product recovery sampling.
Length frequency sampling, Length Frequency Form.
Otolith and scale sampling, Biological Sample Form.
Fish dissection and otolith removal: lab practice.
Discussion on hypothermia, medical emergencies at sea, fire control and sea and shore survival.
Recording information on marine mammals as incidental take.
Species identification of salmonids and lab practice review
Species identification exam.
Gear issue: familiarization and care of equipment, gear check-out and calibration of scales.
Final Exam.
Observer's logbook entries, methods of documentation.
Preparation for first day aboard.

OBSERVER CLOTHING AND EQUIPMENT

Observers will be supplied with the equipment necessary for the collection of biological data at sea. The observer is responsible for the transport and return of the sampling gear issued. The observer must make an effort not to lose and to prevent theft of the gear issued to him.

Observers will provide their own personal clothing, warm work clothes for wearing under rain gear, toilet articles including a towel, and other items of a personal nature. The vessel upon which the observer is to be stationed will be expected to provide adequate quarters and meals. It is expected that the vessel captain will allow the observer an adequate and safe space in which to carry out the sampling duties.

The following pages are lists covering the clothing and equipment necessary to perform 60 - 90 days sampling.

Suggested Sampling Equipment

Observer sampling manual
pencils and pens
eraser
calculator
sampling baskets
rope for hanging scale and securing baskets
cleaning powder for baskets and equipment

lubricating oil for scales
50 kg scale
5 kg scale
2 kg scale
large hooks for hanging scales
fish gaff
measuring tape, 30 meter or 50 meter length
measuring tape, 2 meter
sponges for cleaning equipment
scale envelopes
otolith containers
alcohol for preserving otoliths
plastic bags
clipboard
plastic sheets for recording data
data forms
binder for holding data forms
forceps
knife
scalpel
whet stone
rain pants and jacket
rubber gloves
hard hat
rubber boots

Personal Items Supplied by Observer

The following is a recommended list of personal clothing. The amount and type of heavy clothing depends on personal preference. Weather in the Bering Sea is generally cold and storms are common.

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 - 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
Pillowcase - 1
Toilet articles
Duffel bag - sturdy, medium size, old or inexpensive - 1
Small day pack or knapsack - 1
If corrective lenses are used for eyesight - a spare pair

Optional/Recommended Items

Felt/wool boot insoles (not liners) - 2 pair
Needle and thread, safety pins, and duct tape for repairs
Camera and film
Watch and alarm clock
Medication for seasickness
Athlete's foot cream
Vitamins
Hand cream
Books and magazines
Water bottle - to keep drinking water in your cabin

Vessel Data Forms for 3 months:

Haul Summary Form	20
Species Composition Form	150
Species Description Forms	20
Length Frequency Form	45
Biological Sample Form	30
Gear Diagrams	3

Preparation and Care of Sampling Equipment

1. Protect your gear from loss overboard and from theft. Do not leave gear items such as baskets and scales on the weather deck unless there is no alternative and they are well secured. Stow all sampling gear when you are finished using it and inform the skipper and crew not to borrow or use your equipment without your permission.
2. Keep all paper products and small, loose equipment (pencils, pens, thumb tacks, scissors, counters, etc.) protected from moisture throughout your trip.
3. Most important: Every day before use, the weighing scales must be checked over. Keep them cleaned and oiled. Adjusting screws must be kept coated with grease. The scales have steel springs inside which will rust - oil must be squirted up inside the scales.
4. 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 data forms, since pencil marks tend to wipe off a slick surface).

Calibrate your scales when you get them. Then prepare a known weight by selecting items which may be easily assembled later. (i.e. a basket, wheels, and books). 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.

Prior to using your baskets or other containers for weighing, weigh the empty containers so you will know how much to subtract from each weight figure to reflect the weight of the 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. Keeping the length of the ropes to the basket short also helps. Scales located close to the center of the ship tend to swing less. If a shipboard scale is available for your use, you should use it, but check it for accuracy first.

ARRIVAL ABOARD THE SHIP

Observers must be aware that fishing schedules are often changed by weather, mishap, break-down or fishing success and these events often change observer schedules.

Vessel conditions vary widely depending on the ship type and size, company and skipper's policies, and the fishing success. "Conditions" include cleanliness and upkeep, safety, comfort of quarters, quality of food, general attitude, and good personnel management. Observers must be flexible as only a few generalities on what to expect can be made. Personal quarters are usually small. The most personal luggage one should ever carry on is a duffle bag.

Your work on board your fishing vessel will be very different than the work of the rest of the crew. In order for you to be able to do your job with the fewest problems, there are some guidelines which have been developed from experience. Show respect to others and it will be returned to you. One way to accomplish this is to make a conscious effort to remain clean and neat. Clean up after yourself and help where you can, as you will need their help in return. Do your best to maintain a good attitude. Adaptable observers with a good attitude are apt to receive more consideration than those who criticize and make demands.

Illness and Accidents Aboard

Seasickness often hampers observers at the beginning of a cruise, but give it time - most of the effects of seasickness disappear after a few days. Indigestible stomach contents, unpleasant fumes or cooking smells, and anticipatory fear will trigger seasickness. The symptoms are nausea, headache, drowsiness, and depression. This is normal, it is just difficult to live with. Remember, no one ever dies of seasickness, but weakness and dehydration can be dangerous. You must make yourself drink water or some non-acidic juice, not coffee, tea or alcohol, and try to eat some mild food such as rice or bread to keep up your strength. Take some seasickness medication along even if you don't plan on using it.

These actions may help you overcome seasickness and adapt to your vessel:

Try not to think about seasickness, put it out of your mind, force yourself to think of other things.

Practice releasing the tension in your muscles; as soon as you begin to feel apprehensive try and relax.

Avoid unpleasant smells (especially tobacco, damp clothing, and vomit). Stay away from the galley

Below deck: lie down, keep your eyes closed.

In the saloon: fix your eyes on a freely suspended object.

Seek out cool, fresh air and take calm, deep breaths.

Where possible, keep away from enclosed spaces, go out on deck.

Reduce the amplitude of the motion stimuli: keep amidships or astern, avoid the forward end of the ship.

Try not to sit and let yourself be rocked passively back and forth with the motion of the boat.

When standing, avoid leaning against anything, stand erect and make active compensatory movements to keep your balance.

Try to move your head as little as possible.

Focus on the horizon; watch the swell and anticipate the movement of the waves

Participate in the normal duties on board.

At all events see a job through to the end, do not give up on it.

Determine that you will persevere through the mental and physical discomfort due to seasickness, do not dwell on fear. It is simply a matter of adjustment. If severe discomfort persists for more than five days let the captain know. He may not be able to help you, but he will be aware of your condition in case your health gets much worse.

Safety Aboard Vessels

Fishing vessels have many potentially dangerous areas. The observer must always be alert and should take care to avoid injury. 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 galley, and other locations where you spend a lot of time.
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.
3. Be cautious whenever wading through fish since fish spines can penetrate rubber boots and cause painful wounds to the feet.
4. Clothing with loose strings or tabs should be avoided, as they might become caught in the equipment or conveyor belts.
5. Don't run aboard ships, particularly up stairwells. Slipping, tripping, and falling are the most common sources of observer injury. These accidents often happen when an observer is in a hurry. Specifically, watch out for slick spots where the deck is wet and oily or frozen, step carefully over the half-foot coaming rising from the bottom of metal hatch doors and passageways, and look out for low overheads in vessel stairwells and watertight doors.
6. The observer should not stay outside on the aft deck during rough seas. Fishermen are often swept forward on the deck by waves rolling up the stern ramp. When the observer is outside, he should remain in full view of another person at all times.
7. Cables which break under strain frequently kill sailors. Whenever a cable is subjected to tension, stand in a place where a backlash would not hit you. If your sampling station is on deck, do not work while a trawl is being set or retrieved. Instead, 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 will fall when the suspending cables part.
8. When working near the exit chutes in the factory floor, where bycatch and factory offal wash out, the observer should be extremely cautious not to slip and fall in the

wash of bilge water.

9. Observers are cautioned not to pry loose any fish caught in the spaces of conveyor belts or other machinery, since this may result in getting a finger or hand mangled in the machinery.
10. Factory processing areas are crowded with machinery, electrical lines, and conveyor belts. It is often difficult to get to the area where an observer needs to sample because of the maze of equipment. Climbing over, under and around heading, filleting, and skinning machines on oily and wet floors is extremely hazardous. Observers must watch carefully where they step and where they grab for handholds.
11. Treat all minor cuts, especially those on hands, with antiseptic to avoid infection from fish slime. Poisoning from fish slime is called cellulitis and is a form of staph infection. Should a staph infection be left untreated and allowed to develop, your lymphatic system becomes involved and the threat to your health becomes much more serious than simply a pair of inoperative hands. Wash hands thoroughly after sampling in a solution of very hot water and an antiseptic such as iodine. Disinfectants such as chlorine bleach or alcohol tend to remove your skin's natural chemicals and prolonged use may make you even more vulnerable to fish poisoning.
12. Take extra precautions against infection when handling dead marine mammals. As these animals have similar biological systems to our own, organisms which infect them can infect us. "Seal finger" is a fungal infection of the hands which can easily be contracted.
13. Ask ship personnel which water sources are safe to drink. Some ships have lines containing water for washing and not drinking.

Safety in At-Sea Transfers

Some observers will board and disembark their vessel at dock, but a transfer at sea may be necessary for many observers. Transfers between vessels are potentially hazardous, especially in rough weather. The observer must assume responsibility for deciding whether or not to transfer based upon his own evaluation of the transfer conditions.

There are general guidelines for allowable safety limits during transfers. Conditions such as method of transfer and vessel size, swells versus waves, current and impending weather, good visibility and distance to cross affect the decision as to whether or not to transfer. Observers must use their best

