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FISHERIES
SERVICE

2015 Observer Sampling Manual At-Sea Hake Observer Program

A-SHOP



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Paperwork Reduction Act Statement for the At-sea Hake Observer Program

Information collected through the observer program is used to: (1) monitor catch and bycatch; (2) understand the population status and trends of fish stocks and protected species, as well as the interactions between them; (3) determine the quantity and distribution of net benefits derived from living marine resources; (4) predict the biological, ecological, and economic impacts of existing management actions and proposed management options; and (5) ensure that the observer programs can safely and efficiently collect the information required for the previous four uses. In particular, these biological and economic data collection programs contribute to legally mandated analyses required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order 12866 (EO 12866), and other applicable law. Most of the information collected by observers is obtained through "direct observation by an employee or agent of the sponsoring agency or through non-standardized oral communication in connection with such direct observations". Under the Paperwork Reduction Act (PRA) regulations at 5 C.F.R. 1320.3(h)(3), facts or opinions obtained through such observations and communications are not considered to be "information" subject to the PRA. The public reporting burden for responding

to the questions that observers ask and that are subject to the PRA is estimated to average 20 minutes per trip, including the time for hearing and understanding the questions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: At-sea Hake Observer Program, 2725 Montlake Blvd. East, Seattle, WA 98112. Providing information related to observer and vessel safety is mandatory under regulations at 50 C.F.R. 600.746. However, all other requested information is voluntary. Although you are under no legal obligation to answer non-safety related observer questions, we would appreciate your support as it ensures observer data can be used for its intended purpose. The information collected will be kept confidential as required under Section 402(b) of the MSA (18 U.S.C. 1881a(b)) and regulations at 50 C.F.R. Part 600, Subpart E. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number. OMB Control No. 0648-0593

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Reference in this document to trade names does not imply endorsement by NOAA Fisheries.

Cover photo by A-SHOP observers Daniel Warren and Mark Inc.

FUN FACT - if a giant cylindrical tube were fitted exactly around the base of the Space Needle, the hake caught in 2013 would fill that tube and spill out the top, surpassing the aircraft warning beacon by 10 feet. That's a lot of fish sticks!

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This manual is a supplement to the North Pacific Observer Manual, which is more detailed, particularly about safety. Please review Chapter 19 in the Alaska manual for an in-depth safety review.



Safety

Safety must be every observer's top priority. When you board your vessel, both observers need to physically locate each piece of equipment on the vessel safety checklist, fill out the checklist, and sign the form. This is mandatory. Any observer who fails to complete the vessel safety checklist will receive an automatic zero as an evaluation score, because s/he has failed to recognize safety as their number one priority. As an observer, you must take responsibility for your own safety and do everything in your power to be aware of and avoid known dangerous situations.

Specific safety goals:

- Create an observer emergency plan with your partner
- Learn location of hydraulic shut-off(s) in observer sampling area
- Be aware of diverter board and conveyor belt pinch points
- Use hearing protection in the factory
- Be extra vigilant during at-sea transfers and skiff rides

Observer Regulations and Coverage

Regulations requiring 100% observer coverage for catcher-processors (C/Ps) and motherships went into effect in 2004, even though observers have been deployed in the hake fishery since the late 1970s. In 1997, the C/P sector entered into a cooperative agreement (co-op) which split the hake quota into individual fishing quotas by company. Prior to 2001, observers on hake vessels were deployed by the North Pacific Groundfish Observer Program. The At-Sea Hake Observer Program (A-SHOP) was created in 2001, at the same time as the West Coast Groundfish Observer Program, to manage observers deployed on the West Coast. In 2011, West Coast trawl fisheries, including all sectors of the hake fishery, began operating under a catch shares program. Under catch shares, the allowable bycatch for certain species was divided into individual quotas, increasing vessel accountability. Also in 2011, the mothership sector entered into a co-op for the first time.

All observer information must be kept confidential. Observers may not post observer information on the internet, including but not limited to social networking sites and other file sharing sites. Observer information is defined as "...any information collected, observed, retrieved, or created by an observer ... including fish harvest or processing observations, fish sampling or weighing data, vessel logbook data, vessel or processor specific information (including any safety, location, or operating condition observations), and video, audio, photographic, or written documents."

Hake Fishery Background and Information

While the vessels and sampling situations will be familiar to most North Pacific Groundfish Observers, the regulations, management, and species encountered in the hake fishery are different from those in Alaska.

The at-sea Pacific hake (*Merluccius productus*) fishery dates back to 1966 when foreign vessels participated. The fishery evolved into a joint venture with U.S. catcher vessels delivering to foreign processing vessels in the 1980s. By 1991, the hake fishery was completely domesticated, allowing only U.S. vessels to catch and process fish.

The at-sea hake fishery consists of three sectors:

1. Motherships
2. Catcher/Processors
3. Tribal

The hake tribal fishery is exclusive to the Makah, Quileute, Hoh, and Quinault tribes from the northern Washington coast. To date, only the Makah tribe has participated in the fishery. The allocation for this sector is set aside as a fraction of the coast-wide total allowable catch (TAC). All hake fishing for the tribes takes place in each tribe's Usual and Accustomed Areas (UAA) located in northern Washington waters. Figure 1 shows the boundaries for the four tribe's UAAs. The Makah area extends north of the area illustrated here, but is shown within the bounds of both the fishery management area and the U.S. exclusive economic zone.

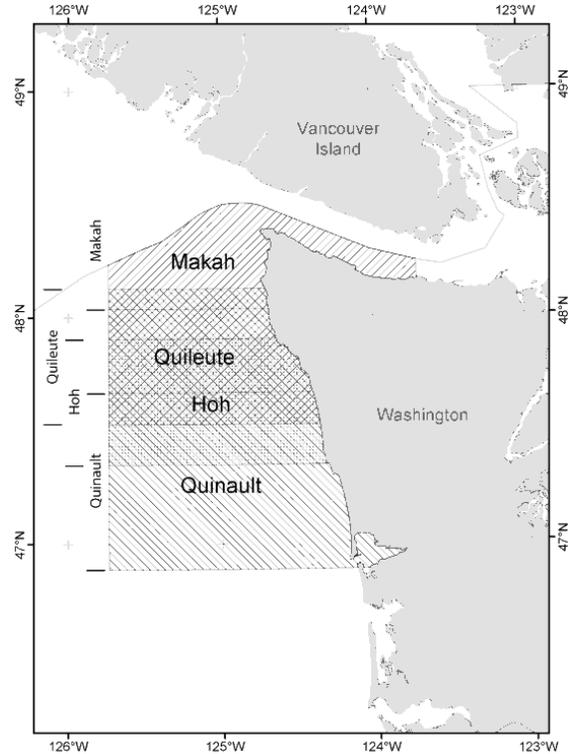


Figure 1. Tribal Usual & Accustomed Areas

In the tribal fishery, observers sample all hauls as usual. On the Vessel Haul Form (VHF), a tribe-specific code is entered in the Community Development Quota (CDQ) column for each haul. This does not mean it's a CDQ fishery, but simply designates the delivery as the tribal fishery. M01 (M zero one) is the Makah tribal code. In the tribal fishery there will not be observers or electronic monitoring (EM) on the catcher vessels delivering to the motherships, as there is in the mothership co-op sector.

Bycatch Limits and Coordinating with Vessel Crew

Due to declines in populations of certain rockfish species along the West Coast, the hake fishery has been held to bycatch quotas for specific species. The term **“species of concern”** refers to any species which is **potentially limiting to the fishery**. This includes species that are considered overfished and rebuilding (e.g. POP and darkblotched rockfish), species with low quotas (e.g. widow), and prohibited species (e.g. salmon). In 2004, the at-sea hake fishery came close to catching the entire canary rockfish allocation in one haul. Therefore, some rockfish species have bycatch limits, or “hard caps”. In 2011, these bycatch limits were split between the co-ops as part of the Catch Shares program. As a result, the vessels expressed interest in working with the observers to maximize sample size when a species of concern is present in the haul.

In 2005, the observer program attended a meeting with industry representatives to discuss possible means of avoiding small samples. At this meeting, several strategies were agreed upon (see below). Please contact the Observer Program if there are any questions about this.

1. All vessels stated that they are willing to help the observers during hauls with high bycatch of species of concern. They may do this by designating **someone from the crew to assist the observer**. What this really means is there will be another pair of hands to help sort, lift, and carry. Full supervision is required at all times. You cannot leave this person unattended at the belt to sort while you measure lengths or weigh bycatch. This assistance is only available during hauls with high bycatch of species of concern, when you would otherwise be forced to collect multiple small samples. NOTE: in order to get this assistance from the vessel you must *ask for help*.
2. Another method for maintaining a large sample size is to **adjust the flow of fish**. This might mean slowing the belts down so you are able to collect every piece of bycatch, or speeding them up to thin out the layer of fish for easier sighting of bycatch. Ideally, this would allow you to obtain larger samples than would be possible without vessel assistance. As the observer, you need to keep in mind that collecting the largest sample possible is a high priority, but it can only be achieved if every single piece of bycatch can be collected. In the end, sample size will be dictated by your ability to collect all bycatch in the sample. If you are unable to obtain a large sample, you will need to explain to the captain and/or factory manager what it was that prevented a larger sample from being collected and, if possible, work with them to prevent it from happening again.
3. **Notification of species of concern:** If you are watching the codend dump and notice large amounts of species of concern, make sure the vessel is aware of the situation. This is a good time to indicate to the factory foreman, etc. that you may need help sampling.
4. **Pre-cruise meetings:** When you board your vessel, it is a good idea to discuss sampling options and strategies with the captain and factory supervisor(s) before fishing begins. *Refer to the 'Pre-Cruise Vessel Bycatch Meeting Outline' in the appendix for topics to cover.*

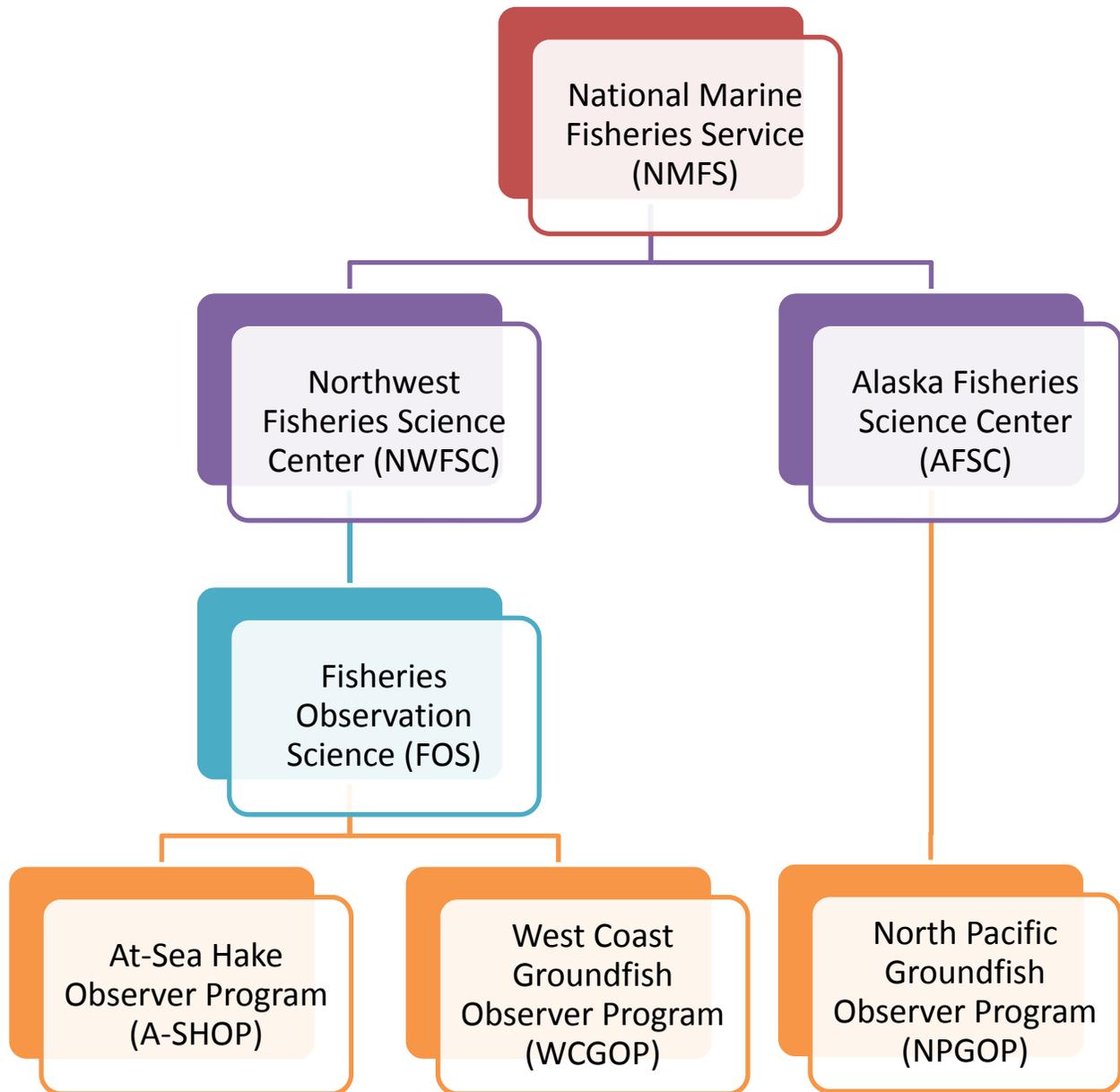


Figure 2. NOAA Fisheries Organization Chart

This chart shows the basic structure of the observer programs based in Seattle. The Northwest Fisheries Science Center (NWFSC) is located at 2725 Montlake Blvd. E (at the south end of the Montlake bridge, near the southern part of the UW campus), and the Alaska Fisheries Science Center is located in Building 4 at the Sand Point NOAA facility.

Vessel Regulations

NOAA's West Coast Region does not currently issue vessel logbooks in the hake fishery. Instead the captain will record haul information in a generic logbook, notebook, or an electronic logbook (ELB) from which you will get the VHF data. Please make photocopies or printouts of the vessel's haul information to turn in along with your other data for debriefing. Remember to double check for transcription errors between the vessel's haul information, the VHF, and ATLAS.

Sample station regulations went into effect in 2011. Ask the captain for the vessel's sample station certification letter and make a copy of it. **Verify sample station dimensions in your observer logbook.** Documentation of actual sample station features is needed to ensure compliance or document corrections that need to be made.

Updated MARPOL regulations went into effect in 2013.

The discharge of all garbage, most importantly all forms of plastic, is prohibited into the navigable waters of the United States and into all other waters except as specifically allowed below. A person who violates these requirements is liable for civil and/or criminal penalties.		
Within 3 nautical miles of land	3 to 12 nautical miles from land	12 or more nautical miles from land
Discharge of all garbage is prohibited.	<u>Permitted</u> Ground food waste that is able to pass through a screen with openings no larger than 1 inch.	<u>Permitted</u> Food waste. Wash water. Cargo residues and cleaning agents may be discharged en route if not harmful to the marine environment.

*Observers record what they see, but interpreting regulations for the vessel is **not** part of observer duties.*

West Coast fishing regulations to be aware of:

No processing zone: No at-sea processing is permitted south of 42.00'N (near the California-Oregon border). Mothership catcher vessels may fish south of 42.00'N, but must return north to deliver the fish.

Retention: The vessel is entirely responsible for knowing which species they may or may not retain. If someone on the vessel asks you if they are allowed to retain something (e.g., a tasty-looking rockfish) do *not* try to interpret any rules; instead, direct them to the factory manager or captain. As an observer, it is **not** your responsibility to interpret any regulations.

Mothership catcher vessels: From the inception of catch share regulations in 2011, through 2014, hake mothership catcher vessels carried West Coast Groundfish Observer Program observers for every fishing day. These observers estimate any at-sea discards and record any protected species interactions. In 2015, several mothership catcher vessels will be operating under exempted fishing permits (EFPs), using cameras to record discard amounts. Mothership Observer Catch Estimates and discard data must include catcher vessel discards. Specific instructions for catcher vessel discard accounting are in the “Mothership Catcher Vessel Discard Accounting” section.

Identification Verification and Signing Documents

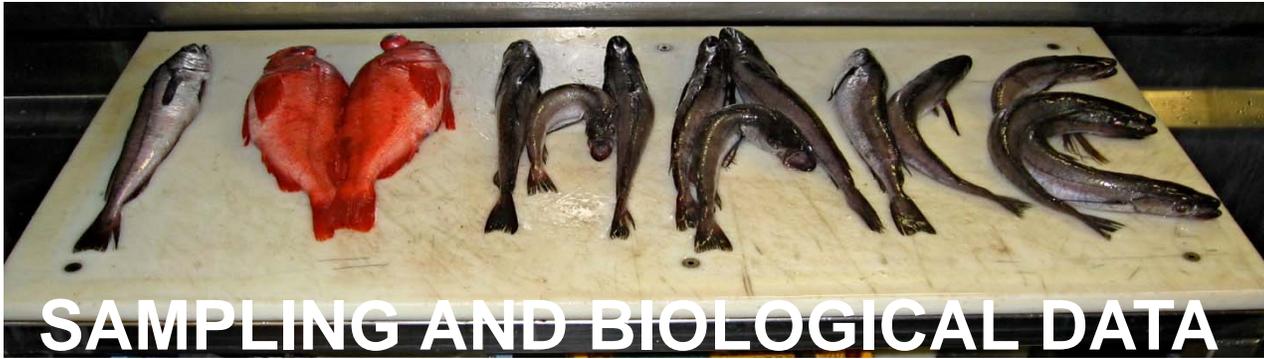
In accordance with the Real ID Act of 2005, access to the NOAA Western Regional Center and issuance of observer badges now requires specific forms of identification, such as:

- State issued Real ID Compliant Driver's Licenses and Identification Cards
- Enhanced Driver's License, and Identification Cards from the states of Washington, Minnesota, and New York
- U.S. Passport

The U.S. Coast Guard is required to obtain information on all vessels that could transport foreign nationals into the country. Prior to entering a port, each vessel must submit the full name, date of birth, nationality, identification information, and position or duty on the vessel, as applicable, of each crew and passenger. The Real ID compliant identification you use to get your observer badge should fulfill this requirement.

It is critical that you **do not sign any document related to your data collection or duties.**

You should sign the flow scale test record form to indicate you witnessed it. You may also be asked to sign documents or forms *not* related to your data collection or duties, which may include safety or compliance issues, or video release forms. Contact your employer and NMFS for advice on how to proceed if this happens. Additionally, written statements should be prepared only for NMFS staff. If vessel personnel want more information, please have them contact the Observer Program.



Observer Priorities

1. Personal safety
2. Marine mammal, seabird, and sea turtle samples
3. Haul information and catch estimates
4. Species composition samples
5. Species ID forms
6. Protected species samples (salmon & sturgeon)
7. Age structures, genetics samples, and ovaries on designated vessels
8. Sex/lengths
9. Monitor gear retrieval for marine mammals and seabirds
10. Fish collection and other tasks

Observer Catch Reporting

Data must be sent via ATLAS every day. Remember to enter and transmit non-fishing day positions on days when no fish are retrieved or delivered. This includes every day from the first day you board the vessel until the day you disembark. Ask your in-season advisor any questions you have while deployed and inform them of significant events (e.g. hauls with large amounts of species of concern, non-fishing days due to the vessel needing repair, etc.).

Observer catch estimates and species composition data are used by both NMFS and the vessel to track how much is left of the hake and bycatch quotas. Wait until you have the final flow scale weights before transmitting data. It is critical to ensure no data entry errors have been made by double checking your work and your partner's work.

While fishing for hake, record "**HAK**" in the purpose code field on the VHF and in ATLAS to indicate the hake fishery. Observers on motherships need to record the ADFG number of the catcher boats which are making deliveries. The catcher boat ADFG numbers are in Appendix D of this manual.

If ATLAS is not working, please contact **Glenn Campbell** as soon as possible at **206-526-4240**. For all other problems and questions please contact the A-SHOP (*see Appendix C*).

Marine Mammals, Seabirds, and Sea Turtles

Sampling marine mammals, seabirds, and sea turtles is your second highest priority. If one is caught in the gear, or ends up on deck, collecting the appropriate samples and information takes precedence over other sampling duties. **Clearly label all mammal and bird specimens** with the lead observer's cruise number, species name, and haul information. Please **thoroughly describe the interaction and characteristics** used to determine species ID in the comments section.

Note that snouts/skulls are collected from pinnipeds, while tissue samples are collected from cetaceans. Marine mammal data is only entered on the Marine Mammal Interaction and Specimen Form in ATLAS, not in species composition data. Refer to Chapter 14 of your Alaska manual for more information on marine mammals, in particular on how to collect specimens.

Limited numbers of seabird specimens have been collected off the West Coast so there is an interest in data and specimens from *all* seabird species. Collect and freeze all seabird carcasses, with **albatross** species being the highest priority. Enter species, count, and weight in species composition data for birds that were caught with the gear and occur in your species composition sample. Complete the Bird Interaction, Activity and Species Form in ATLAS for all birds that interact with the vessel and for

Short-tailed albatross are a species of interest and sightings off the West Coast have increased in recent years.

specimens collected. Observers on catcher-processors will enter the appropriate "Haulback Bird Obs Code" and "Shortwired?" on the OHF. For mothership observers, the "Haulback Bird Obs Code" is always "0" for No Monitoring and "Shortwired?" is always "U" for Unknown. Refer to Chapter 16 of your Alaska manual for detailed information on seabird sightings and interactions.

Encountering a sea turtle is highly unlikely. If one is caught by the vessel, refer to the sea turtle guide included in the A-SHOP species ID guide. **Most importantly, take photos** of the carapace and head before returning it to the water. Inform the Observer Program as soon as possible if a sea turtle is encountered.

Monitoring for marine mammals and seabirds is lower on the priority list and should be done when you are not sampling. For example, if you are sampling 50% of the haul, then the other 50% of the processing time could be used for monitoring gear retrieval and codend dumping for marine mammals and seabirds.

Observer Catch Estimates

All at-sea hake catcher-processors and motherships are required by regulation to have flow scales and must test them once every 24 hours. Use the flow scale weight for the observer catch estimate, record a “W” on the OHF, and enter the flow scale weight in kilograms.

The flow scale is used by the vessel to record total catch weight for each haul. Keep track of which haul is running across the scale. Record the display weight at the end of each haul’s processing when you can. Request copies of the vessel’s flow scale printouts *daily* to verify catch estimates and retain them for debriefing.

If part of a codend is spilled or dumped before retrieval, or you see fish escaping through a blow-out panel in the net, visually estimate the weight. Add the estimated weight to the flow scale weight for your total observer catch estimate, and to the discard for your total estimated discard weight. Also, adjust the percent retained accordingly. If an entire codend is lost, you or the captain should visually estimate the weight, record it as your observer catch estimate, and enter code 6 (codend lost) for gear performance on the VHF. Record this information in the Catch Estimate Calculations section of the logbook.

Scale Testing

Each observer must test the motion compensated platform scale (MCP) during their shift. Test the MCP scale using certified weights at 10, 25, and 50 kg. Record the results on the decksheet and in the “Daily Observer MCP Scale Test Log” section in your logbook. A 0.5% variance is allowed to consider the MCP scale usable and accurate. The scale must pass this test in order for you to use it for your species composition sample, and also so that the flow scale test can be conducted. If the MCP scale fails, try calibrating the scale, and then retest.

Test the motion compensated platform (MCP) scale every shift. The flow scale must be tested every 24 hours.

The flow scale must be tested once every 24 hour time period to ensure data accuracy. Testing the flow scale is the vessel’s responsibility, but an observer must be present for the test to be valid. It is the vessel’s responsibility to conduct the test in a manner that makes it possible for you to be present. Work with the vessel so you can be present for the test at a time convenient to everyone. The crew will run 400+ kg of fish, or sand bags, over the flow scale and then verify the weight of the same 400+ kg using the MCP scale. A $\pm 3\%$ variance is allowed. The vessel will complete a daily flow scale test record form.



For an example of the “Record of Daily Scale Tests”, see Appendix G. There is a place for the observer who witnessed the test to sign the form. This simply means you witnessed the test, not that the flow scale passed. When you sign the form, **check to see if the flow scale passed or failed**, so that you know if you can use it for sampling and catch estimates. Record the results in the ATLAS Flow Scale Test Form (see p. 18-7 in your Alaska manual for more details on entering this data in ATLAS).

If the flow scale fails the test, it may be re-tested as many times as the crew wishes. The scale may *not* be relied on as a source for total catch weight until it has passed the daily test. ***If total catch is weighed on a flow scale that did not pass the test, do not use that weight as the Observer Estimate.*** You must report only the vessel estimate, leave the observer estimate blank, and notify your in-season advisor. If the flow scale fails, the captain decides whether or not to continue fishing. If the vessel continues to fish, sample for species composition using the MCP scale (assuming it has passed). Your sample sizes will be limited by the fact that you must weigh the entire sample on the MCP scale. Notify your in-season advisor, and document the situation in your logbook. *Do not refuse to sample, or tell the vessel they cannot fish, if the flow scale isn't functioning.*

How can you ensure accurate weights? Everything in the catch must pass over the flow scale to be weighed. Document all situations where everything is not weighed, such as large organisms removed on deck or organisms removed in the factory prior to the flow scale. Add these weights, or estimated weights, to the flow scale weight in order to calculate the correct catch estimate. The flow scale display panel should be sealed. If you suspect the seal is broken, or that someone is tampering with the flow scale, talk to the captain, and document this fully in your logbook.

Presorted Organisms

Although presorting is never legal, occasionally very large animals are sorted on deck to prevent them from entering the factory or live tanks. When a large organism (e.g. salmon shark) is presorted on deck, the observer must be informed and allowed access to the organism for identification and sampling. Documenting presorted organisms does not validate the illegal practice of presorting. Observers should remind the deck crew that medium-sized organisms, such as ragfish or skates, *should not be presorted on deck.*

If a very large organism is excluded on deck or removed from the live tank before your sample, it never had the chance to fall in your species composition sample. Record it as a **presorted** sample and enter the number of organisms and the estimated weight, or use the appropriate length/weight table. Measure and record the length and sex (leave halibut unsexed), if possible. Add the estimated weight to the flow scale weight to obtain the catch estimate for that haul and enter the catch estimate as the sample size for the presorted sample.



Individuals of certain species, such as ragfish, may fit through the live tank doors and make it into the factory, but may be too large or bulky to go up the incline belt. Direct crew members to pull them off prior to the incline and place them on the belt that feeds to the flow scale so their weight is included in the total haul weight. If an organism is too large to go over the flow scale, cut it up into pieces and weigh it on the MCP scale, if possible. If you cannot weigh it on the MCP scale, record its length and estimated weight. Add the organism's weight to your total sample weight and to the flow scale weight to get the total catch estimate. If this occurs during a non-sample period, add the estimated weight to the flow scale weight to obtain your catch estimate, but do not include it in your species composition sample data, or discard estimate.

Sampling for Large Sharks

If you're able to cut the organism up and weigh the pieces, this weight data will help us develop new, and improve existing, length to weight tables for species which are very large and not often weighed. In particular, this data would be useful for **salmon sharks**, as they are the most commonly presorted species in the hake fishery. Before you cut the shark up, please measure *both the fork length and total natural length*, and record the sex. Enter the *fork length* into ATLAS, but also record the total natural length on your decksheet. Even if you don't have time to cut up and weigh the shark, please measure the lengths, record the sex, and use the length to weight table to get the corresponding weight. If entering the weight from the length to weight table, do not enter the length in ATLAS.

Length to weight tables for **salmon sharks**, **Pacific sleeper sharks**, **Pacific halibut**, **big skates**, and **longnose skates** can be found in Appendix P-R in the Alaska manual. You must take an actual length

measurement to use them. For salmon sharks and Pacific sleeper sharks, the length to weight tables use the total natural length – tip of snout to posterior margin of the upper caudal-fin lobe with the fin in its natural position.



Steps to Design a Random Sample Frame

1. Define the population: *every fish in the haul*
2. Define the sampling frame: *spatial*
3. Define your sampling units: *metric tons*
4. Number all of the sampling units in your sampling frame
5. Randomly select units to sample: *use RNT, dice, etc.*

Random Number Table

Excerpted from AK manual: How to Use the Random Number Table

To use the random number table, enter the table at a random point. The easiest way to do this is by closing your eyes and placing your finger on the table. The column and row nearest your finger is the starting point. Determine how many digits you will use in the row (e.g. if you need numbers between 1 and 25, use two digits in the row). Decide in which direction you will move through the table. Then proceed in any direction through the table (even diagonally), recording appropriate numbers and skipping numbers too high or repeated, until you have enough random numbers. You should decide on a direction and enter the table at a different random starting point every time you use it. *For example*, if you need to choose 3 numbers between 1 and 15, you could enter the table by placing your finger on the table to choose a column and row. Your criterion is two digit numbers between 01 and 15 (inclusive). For this example, you decided to work up the column from your starting point. As you move up the column, the first number you encounter is 14. This is a two-digit number between 01 and 15; it fits the criterion, so you write it down. The next number is 09; it also fits the criterion, so you write it down. The next number is 58 and does not fit the criterion so you skip this number. Keep moving up the column, skipping the numbers that do not fit the criterion, until you have chosen all the numbers you need.

Random Sample Table

You and your partner should set up opposite work shifts and sample every haul. In the event that one observer gets sick or injured and is unable to sample, contact your in-season advisor and a decision will be made as to whether the random sample table should be used. Generally, if the sickness is

expected to last only a day or two, then the well observer will continue to sample during her/his normal shift. If the sickness might last longer than two days, then the random sample table needs to be used so that the samples aren't all coming from the same time period. Your contractor and the A-SHOP should always be notified of any injury or illness.

Species Composition Sampling

The hake fishery is managed using your observer data, therefore, it is vital that the data be both randomly collected and of high quality. Implementing a random sample frame is straightforward since the processing vessels all have flow

scales. Either estimate the size of the haul yourself, or ask the factory manager for her/his estimate.

Divide the weight into two equal parts and randomly select which half to sample for species composition. Make sure your sample frame allows all organisms in the haul an equal opportunity to be sampled. If you are on a vessel that pulls up codends with large catches (>75 MT), consider breaking the haul up into 4 units and randomly choosing two units to break up the sampling effort.

*The A-SHOP does **not** require three distinct samples from each haul, which is different from Alaska requirements.*

Sampling 50% of the haul for species composition is the norm in the hake fishery and is possible on all hake vessels. For smaller or very clean hauls, you may be able to sample the entire haul.

Keep in mind that your sample frame is based on an estimate and your goal for a typical haul is 50%. If you are sampling the first half, start at the beginning of the haul and stop at the estimated halfway point. If you are sampling the second half, start at the estimated halfway point and sample until the end of the haul (i.e., the tank is empty). Your sample weight is the weight you actually sampled. Occasionally, weight will be added to the flow scale after all the fish have been run out of the tank (e.g., water sprayed over flow scale to clean it). If you sampled the second half and see that the end flow scale weight on the flow scale print-out doesn't match what you recorded, don't change your observed sample weight to the flow scale print out. If you need to stop during your sample period (e.g., bathroom break), end the sample and start a new one when you return. **To minimize incline belt bias and maintain discrete start and stop points for your sample, have a crewmember close the live tank doors and run out all the fish on the belts at the start and end of your sample.**

Sampling Options

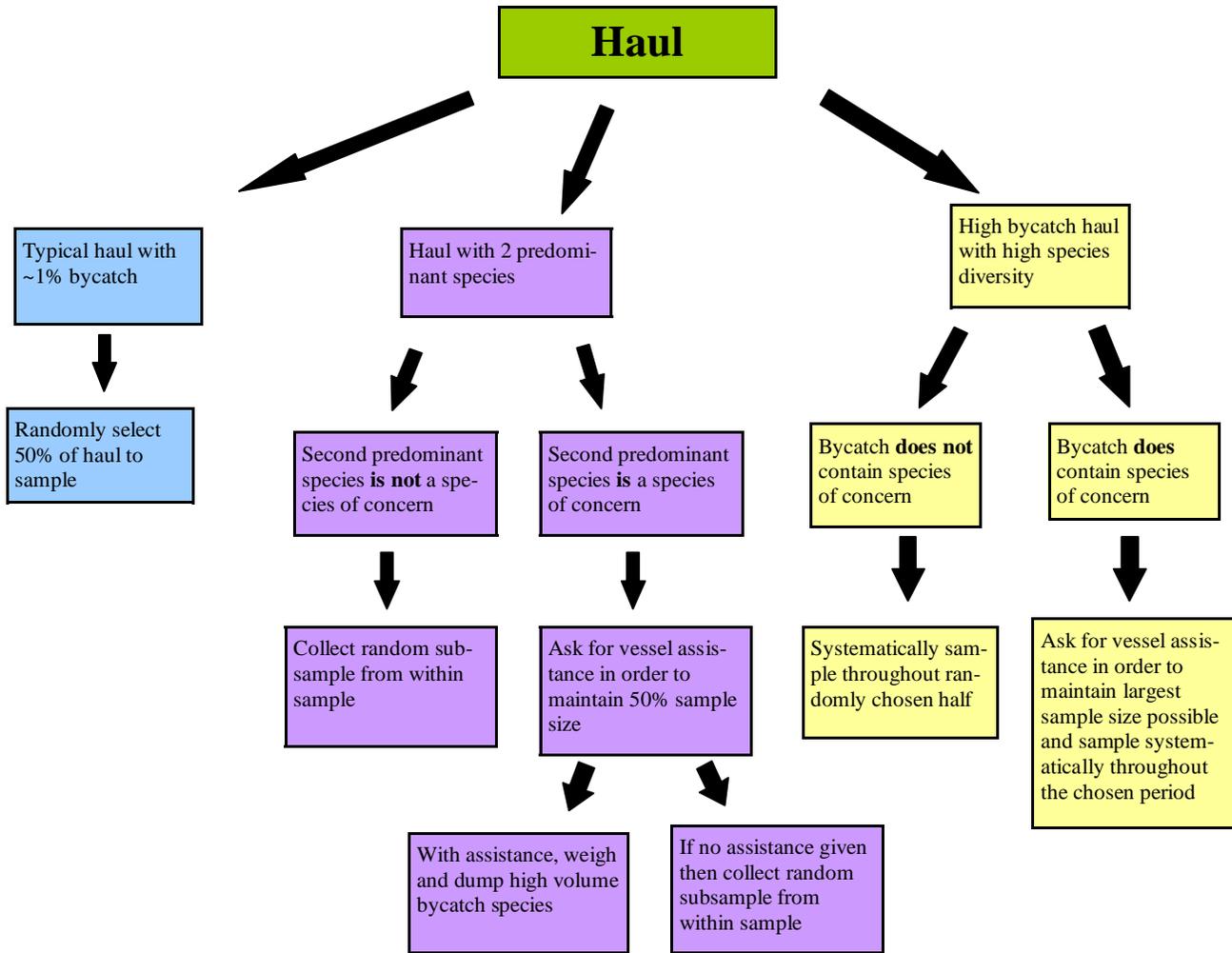


Figure 3. A-SHOP sampling flow chart

In recent years, the vessels have been very concerned with bycatch of species of concern. The vessels are interested in working more closely with the observers to ensure that the largest and most accurate sample be taken. This requires cooperation between the observer, the person controlling the belts, and any sorters who might be standing at the belt. Please do all you can to avoid small samples for hauls with species of concern. Keep in mind that you must be able to account for every piece of bycatch.

If you cannot see and collect all species for which you are sampling, you must either reduce your sample size, or work with the vessel crew to achieve your sampling goal. If you find that you have to reduce your sample size for species composition due to large amounts of bycatch, then systematically sample throughout your chosen half using equally sized units. *Keep sampling options in mind when setting up your sample frame.*

Example: Karen randomly selects the 2nd half of a 30 MT bag with lots of spiny dogfish, American shad, and jack mackerel visible during the dump. She coordinates with the back line crew to run fish slowly while she's sampling and decides she can sample systematically for 1 MT, then take 4 MT off to work up the sample. She breaks her sample into 5 MT units, chooses a random start point, and then samples systematically through the end of the haul (see Figure 4).

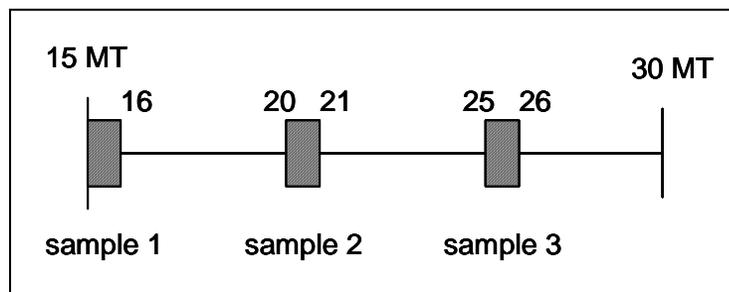


Figure 4. Systematic sample example

Keep the **priority list** in mind while sampling. For high bycatch hauls, it is acceptable to omit lengths and otoliths in order to maintain the 50% sample size.

Average Weight Samples (referred to as “subset samples” in the Alaska manual)

Randomly collect an average weight sample of at least 50 hake from every haul, and record the weight and number of fish. The average weight sample is a logical place to get your length and otolith fish. This is also when you should record your **Flow Scale – MCP scale weight test**.

Flow Scale-MCP weight test / average weight sample:

1. Stop the belts prior to the flow scale and record the flow scale weight
2. Run a basket's worth of fish over the flow scale and collect all of it
3. Record the flow scale weight again
4. Weigh on the MCP – unsorted for comparison test / only hake for average weight sample
5. Record weights in the Flow Scale – MCP Weight Comparison Form in ATLAS (see Alaska manual p. 18-10 for details)

Samples from a trawl fishery are weighed samples. **Every organism must have a weight** – either from the flow scale or from the MCP scale.

Minimize your workload by collecting average weight samples for abundant bycatch species. Count and weigh at least 50 **randomly** collected individuals. Record the weight for the remaining individuals of that species with a 0 count. Average weights are collected once per haul, not per sample. For an illustration, see Appendix E. Subsampling Decksheet Example.

Subsampling For Two Predominant Species

When there are two predominant species (*not species groups – i.e. not “shark unidentified”*) in a haul, subsampling is a good option to maintain large sample sizes and minimize workload. The size of your subsamples will depend upon the predominance of the two species. At a minimum, subsamples should be taken from at least two parts of the sample and weigh no less than 80 kilograms each. **Use random systematic subsampling** to accurately capture the ratio of the two species in your sample.

Subsample Option #1: “The flow scale is your friend” / large (~1 MT) subsamples using the flow scale

Example: Richard estimates the bag is ~48 MT and randomly selects the second half. He sees a fair amount of yellowtail rockfish during the dump. With the goal of 3 subsamples, he divides the sample size of 24 tons by 3 to get intervals of 8 tons. He randomly selects ‘4’ to be the start of his first subsample. During his sample, he lets the yellowtail and hake go by and collects all other bycatch. At 27 tons (the beginning of the 4th unit of his sample), he has the belts prior to the flow scale cleared of fish and records the flow scale weight. He starts the belts and pulls everything but hake off the sorting belt. After about a ton, he clears the belts again and records the flow scale weight to get his first subsample weight, then continues with his sample. The bag is actually 52 MT so he maintains his sample frame until the end of the haul, collecting his ~1 MT subsamples at 35, 43 and 51 MT (*see Figure 5*). For an illustration, see Appendix E. Subsampling Decksheet Examples.

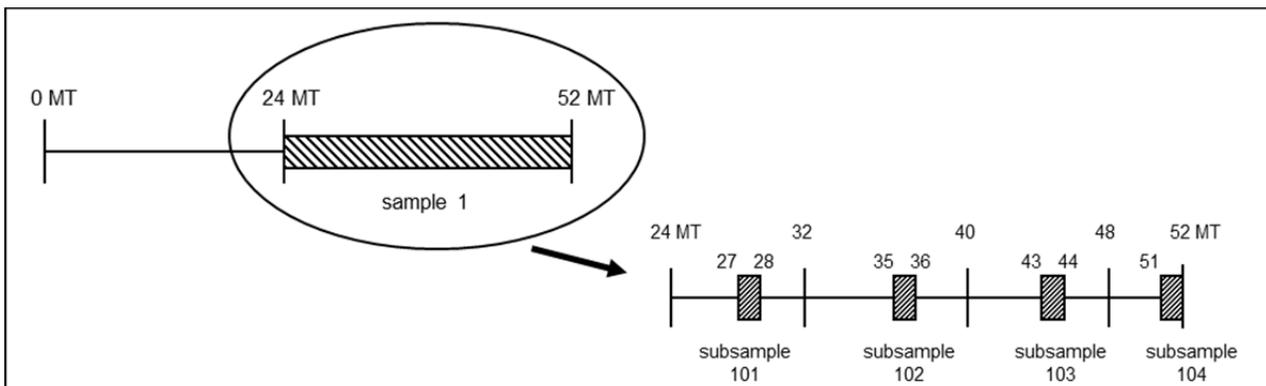


Figure 5. “The flow scale is your friend” subsampling example

Subsample Option #2: Use baskets

Example: Barbara estimates the bag is ~60 MT and randomly selects the first half. During the bag dump, she sees a lot of spiny dogfish mixed in with the hake and little other bycatch. She breaks her 30 ton sample into 3 intervals of 10 tons and randomly selects '1' to be the start of her first subsample. During her sample, she lets the dogfish and hake go by and collects all other bycatch. She collects 3 baskets each at ~0 tons (during the first ton), ~10 tons and ~20 tons for her 3 subsamples (see Figure 6). For an illustration, see Appendix E. Subsampling Decksheet Examples.

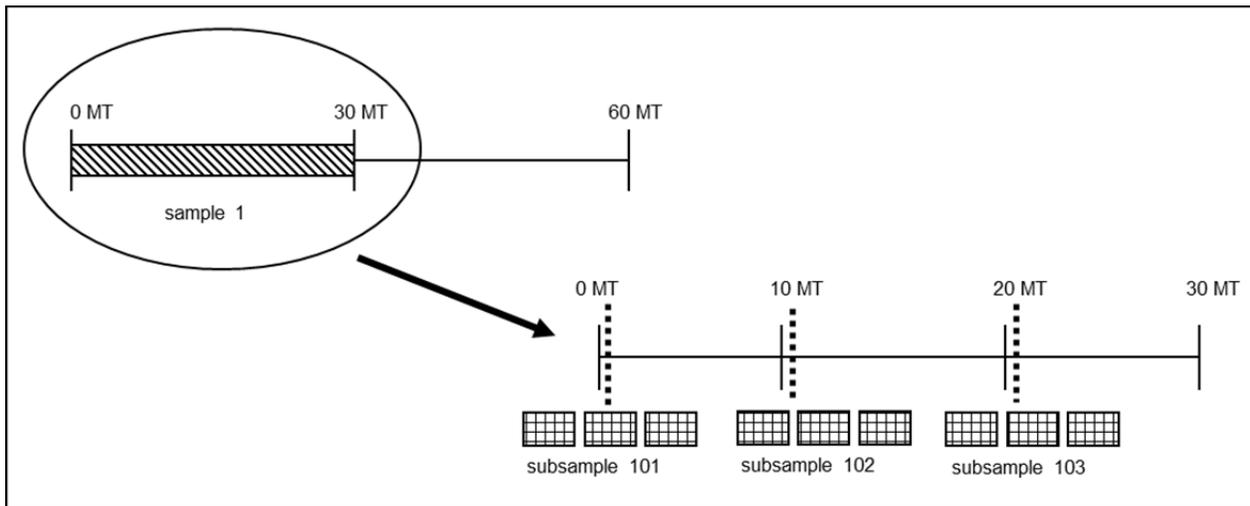


Figure 6. “Use baskets” subsample example

Percent Retained and Discard Estimates

Estimate percent retained for each species in your species composition sample. These estimates should reflect what the vessel does, or intends to do. When disposing of your sample, mimic what the vessel does. Fish specimens that you collect should not affect the vessel’s percent retained. If necessary, ask for help getting your bycatch onto the correct belt. Total discard for the haul is a calculated value which includes the calculated weight of all discarded species (see options below). **Percent retained and discard estimate data are important to resource managers and should be as accurate as possible.** Ask the vessel crew which belts are going to fish meal (retained) and which are going over-board (discard) so that you can accurately estimate and calculate these values.

Discard estimation options:

1. **Typical haul:**

$$\left[\frac{\sum \text{Sample Discards}}{\text{Sample Size}} \right] \times \text{OCE} = \text{Estimated Discard Weight}$$

2. **When subsampling for 2 predominant species:**

- a. Calculate the discards for the subsample

$$\left[\frac{\sum \text{discards of 2 predominant spp}}{\sum \text{wt of subsamples}} \right] \times \text{OCE} = [\text{A}] \text{ Subsample discard}$$

- b. Calculate the sample-level discards (*using option 1 above*) = [B] Sample discard

- c. [A] + [B] = Estimated Discard Weight

3. **Visual estimate** (for bag overflow, blow-out, etc.)

Use percent retained in your discard calculations for species that are not entirely discarded.

Example: The galley kept most of the lingcod (36.55 kg) and yellowtail (70.03 kg) from H# 54 so Oprah recorded them as 75% retained. Spiny dogfish (21.08 kg), ratfish (1.16 kg), and squid (64.65 kg) were all discarded. Sample size = 24718 kg and observer estimate = 49256 kg.

Discard calculation using option 1:

$$\frac{((36.55 + 70.03) * 0.25 + 21.08 + 1.16 + 64.65)}{24718} * 49256 = 226\text{kg}$$

Mothership Catcher Vessel Discard Accounting

Mothership Observer Catch Estimates and discard data must include catcher vessel (CV) discards.

Some vessels will have a West Coast Groundfish Observer Program (WCGOP) observer onboard, while others will be equipped with a camera system for electronic monitoring (EM). The WCGOP observer will estimate discard amounts for each haul. Vessels using EM will not have observers onboard and the captain will estimate discard amounts for each haul. Either way, the *CV captain will send the mothership captain discard estimates*, along with the haul information. Please use the following protocols to track and record catcher vessel discards. The transfer and recording of this data must happen in a systematic and careful way to ensure the data is accurate.

1. CV discard amounts recorded by the mothership observer **MUST MATCH** what the CV observer, or captain, has recorded, so that it will all match up at the end of the trip.
 - a. For vessels carrying WCGOP observers, the CV captain should be transmitting the discard estimates from the CV observer, to the mothership captain.
 - b. For EM vessels, the CV captain should be transmitting his/her discard estimates (which are also recorded in his/her logbook) to the mothership captain.
2. The CV discard weights may be in pounds (lbs), or kilograms (kg), or tons. To convert the discard weight to kg, use: 1 lb = 0.4536 kg or 1 mt = 1000 kg. **Check with the captain(s) to determine what units are being used.**
3. Add the CV discard weight:
 - a. to the flow scale weight to get the total *Observer Catch Estimate* on the OHF.
 - b. to the mothership discard weight to get the total *Estimated Discard Weight* on the OHF.
4. Clearly document all Observer Catch Estimate and discard calculations in the “Mothership Catch Estimate and Discard Calculations” section of the logbook (*see Figure 7-1 for example*).
5. Calculate the percent of catch delivered to determine if percent retained needs to be adjusted.
 - a. Determine the percent of catch delivered by **dividing the delivered catch weight** (*flow scale weight + large items = [B]*) **by the final observer estimate** (*[B] + CV discards*).
 - b. If the percent of catch delivered is <100%, adjust the percent retained for all species in the species composition sample on the decksheets and in ATLAS by multiplying the original percent retained by the percent of catch delivered (*see Figure 7-2 for example*).

Catcher vessel discard data will be reviewed and verified during debriefing.

Mothership Vessel Name Starlord

Haul #	Catcher Vessel Name	Flowscale End - Start = Flowscale Weight (kg)	[A] + Large Items Not Weighed on Flowscale (kg)	CV discard estimate (lb)	CV discards (kg) = [C] x 0.4536 kg/lb	MS discards (kg)	record on OHF	record on OHF	% of catch delivered = ([B] / [F]) x 100
							Estimated Discard Weight (kg) = [D] + [E]	Observer Catch Estimate (kg) = [B] + [D]	
		[A]	[B]	[C]	[D]	[E]	[F]		
11	Poseidon	49075	49075	500	227	89	316	49302	100%
12	Groot	38468	38468	-	-	107	107	38468	100%
13	Amelia Marie	41357	41357	5000	2268	153	2421	43625	95%

Figure 7-1. Mothership Catch Estimate and Discard Calculations section of logbook

Sample #: 1	Sub-Sample #:	Sample Size: 20,786	<small>Kgs Segments pots</small>	# of Sampled Hooks:
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>	
Species	Sex	#	Weight	% ret.
----- KEYPUNCH -----				
Hake		0	20629.70	100 95
Hake		59	29.42	100 95
Squid		89	38.90	0
Squid		67	25.75	0
Jack mack		14	23.99	50 48

Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:

start: 20,571
end: 41,357

discards
 $64.65 + (23.99 \times 0.5) \times 41,357$
 $20,786$
 $= 152.50 \text{ kg}$

~40MT
1 (2)

Figure 7-2. Adjusted percent retained, due to CV discards, recorded on decksheet

Prohibited Species

SPECIES	PROHIBITED	LENGTHS
Salmonids (all species)	YES	YES
Pacific halibut	YES	YES + viability
Dungeness crab	YES	NO
Herring	NO	NO
Tanner crab	NO	NO
King Crab	NO	NO

All salmonids, Pacific halibut, and Dungeness crab are prohibited species in the hake fishery.

Herring, tanner crabs, and king crabs are *not* prohibited species.

Pacific Halibut is a prohibited species so remember to collect viabilities at the point of discard.

California halibut is *not* a prohibited species. They are similar to Pacific halibut, but are in the left-eyed Bothidae family. This means they can be either left or right-eyed (~50% left, ~50% right), and pelvic fins are asymmetrically placed at the abdominal ridge. It is very unlikely that you will see a California halibut.

Protected Fish Species Sampling

Some salmon, sturgeon, and eulachon populations on the West Coast are protected under the Endangered Species Act (ESA). When salmon or green sturgeon are encountered in your sample, additional biological sampling is required.

Salmon

Salmon is of particular concern in the hake fishery due to the declines in certain populations along the West Coast. Salmon bycatch is managed by numbers of fish, not by weight. The vessel



may want haul-by-haul salmon numbers from you so they can reduce incidental take. There is no Salmon Retention program in the hake fishery, so do not enter any data in that section of ATLAS.

Every salmon in your sample must be weighed and counted. If you are unable to do this, you must either ask for help to maintain your sample size or reduce your sample size. Because salmon bycatch is such a sensitive issue on the West Coast, the vessel should be willing to help you maintain your sample size, so ask for help!

For hake, you *no longer need to record salmon in your species composition sample by sex*. Simply record count and weight by species, then set them aside for the biological sampling as outlined below.

Be careful with salmon identification. Salmon can be more challenging to identify off the West Coast than in Alaska, and the usual characteristics for identification may be faint or absent. If you are uncertain of the identification, freeze that salmon and bring it back with you. (Yes, the whole fish.)

In lieu of collecting salmon scale samples for verifying species **you will collect 5 whole specimens of each species you see, from *inside* your species composition sample**. This is required for each individual observer. These specimens serve to verify observers' ability to correctly identify salmon as well as providing the A-SHOP, WCGOP, and NPGOP with salmon specimens for fish training. It is unlikely that each observer will have more than 10 specimens apiece. Hake vessels have ample freezer space and most of them come into Seattle for offloads, so the logistics of transporting the samples should not be difficult. As with all whole fish specimens, include a specimen collection label with the whole salmon. Large bags and twist-ties are provided with your A-SHOP gear to facilitate salmon specimen collection.

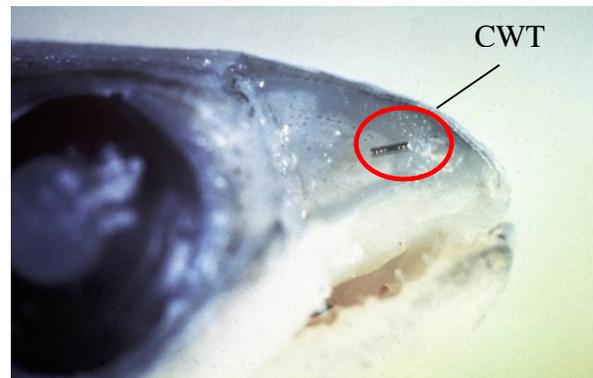
If you have observed in the hake fishery for 5 years or more and collected 25 correctly identified specimens of one species, you do not need to collect any more for that species. If you think you fall into this category, ask before you deploy.

Salmon Sampling

1. **All Species → Species Composition Sampling**
 - a. Identify species
 - b. Count and weigh
2. **All Species → Collect sex/lengths**
3. **Chinook → Coded Wire Tag (CWT) and genetics sampling**
 - a. Record individual weight and whether adipose fin is present
 - b. Scan for CWT
 - c. Collect fin clip
4. **Coho → CWT sampling**
 - a. Record individual weight and whether adipose fin is present
 - b. Scan for CWT
5. **All Species → Freeze 5 whole specimens for species verification**

Coded-Wire Tag Sampling

Some salmon are tagged with coded-wire tags (CWTs). These are tiny metal tags inserted into the snouts of juveniles. In the past, when a CWT was inserted, the adipose fin was clipped to indicate the presence of a tag. However, West Coast hatcheries now clip the adipose fin on all fish they release; therefore, electronic means must be used to determine if a tag is present. Additionally, both Chinook and coho sometimes have double index tags (DITs) which means they have CWTs, but the adipose fin has purposely *not* been clipped.



Every Chinook and coho scanned for CWTs must be recorded on the A-SHOP Salmon Sampling Deck Form, whether they are CWT-tagged or not. This data allows us to calculate the mark recapture rate and is reported to a regional database with all other CWT recoveries. One metal detecting wand will be issued to each observer pair to determine the presence of CWTs.

Sampling details: this project applies to Chinook, coho, and steelhead only. Steelhead are rarely seen in this fishery; if you do encounter one, bring back the whole fish.

1. **Scan all Chinook and coho** inside the sex/length sample for the presence of CWTs.
 - Pass the wand, in direct contact with the fish, along the exterior of the entire upper snout (*see Figure 8*).

2. **Collect all tagged snouts.**
 - Cut straight down directly behind the eye, to collect the upper snout only.
 - Place the snout inside a barcoded zip-top bag (*see Figure 9*).
 - Record the barcode number in the ‘Snout barcode’ column on the A-SHOP Salmon Sampling Deck Form (*see Figure 10*).
 - Store the snouts in a clearly labeled bag in the freezer, to ensure that all return to debriefing with you.

3. **Record data for every Chinook and coho scanned for CWTs, even those not CWT-tagged,** on the A-SHOP Salmon Sampling Deck Form (*see Figure 10*).



Figure 8. Scanning salmon for presence of CWT



Figure 9. Salmon snout in barcoded zip-top bag

Notes about salmon wands:

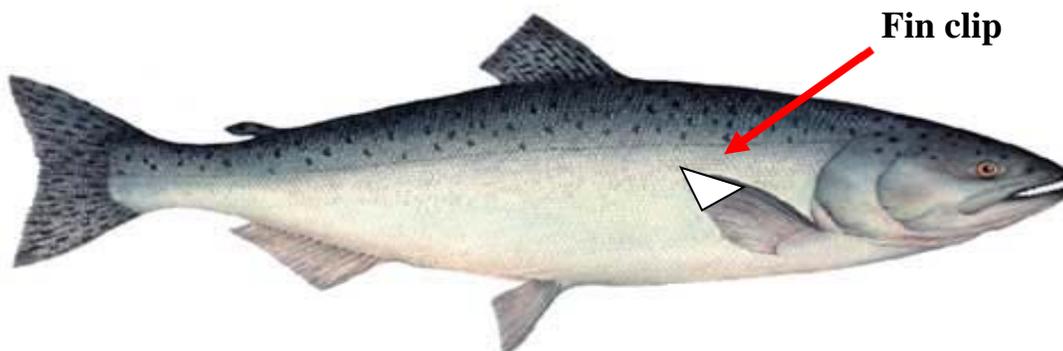
- Beware of nearby metal that can set the wand off. Your wrist watch, belly button ring, or nearby metal in the factory may cause false positives.
- **These wands are very expensive. Please take good care of them.** The wand is water-resistant, not water-proof. Store it in a clean, dry, and safe location. If the wand is not functioning properly (i.e. weak or prolonged sounds), try changing the battery. There is a spare 9-volt battery in the wand case. Contact your in-season advisor if that does not solve the problem. *If the wand stops working, contact your in-season advisor immediately for directions on how to sample for CWTs without a wand.*
- Wands are assigned to observers, not to vessels. Bring it with you when you disembark a vessel, even if other observers are replacing you on that vessel.

Chinook Genetic Sampling

The goal of this study is to obtain an accurate estimate of the stock composition of Chinook salmon bycatch and to better understand the spatial and temporal distribution of Chinook bycatch. This information is intended to help managers better evaluate the impacts on specific salmon stocks, including those listed as threatened or endangered under the Endangered Species Act.

Sampling details: this project applies only to Chinook salmon.

1. Collect genetic samples (fin clips) from **all Chinook** salmon inside your sample.
 - o Snip off a small piece of pectoral fin (no larger than a pencil eraser) with scissors.



2. Place fin clip flat on paper, fold paper over to maintain a layer of paper between the fin clip and the envelope, and seal the envelope.



3. Record on envelope: lead cruise, haul, *and snout barcode, if CWT tagged*
4. Record all data on A-SHOP Salmon Sampling Deck Form.

Keep the envelopes clean. Slime or blood from other fish can contaminate samples. Rinse scissors and forceps in salt or fresh water between sample collections. Samples need to dry out as fast as possible. The longer they stay wet, the more the tissue breaks down.

Sample Storage at the End of the Day

Do not put samples in plastic containers as they will not dry. You will be given a large manila envelope, which is an excellent storage option.

Salmon Subsampling

The majority of salmon encountered in the hake fishery are Chinook salmon. *All Chinook should be sampled for both CWTs and genetics.* If you are overwhelmed with Chinook salmon in a particular haul and are not able to sample all of them for both CWTs and genetics, then a random subsample may be selected with a goal of 25 samples per haul. Chinook biological sampling includes both genetics and CWT sampling, so the subsampled Chinook are sampled for both genetics and CWTs. Indicate that you subsampled on the Salmon Sampling deck form (circle “Yes” next to “Subsampled for Chinook genetics and CWTs?”) and describe your subsampling method. The relatively few coho you may see should *all* be sampled for CWTs.

Example: 3 cohos and 4 baskets of Chinooks are in the species composition sample. Randomly select 3 of the 4 baskets of Chinook to subsample for CWTs and genetics and work them up. Sample all 3 cohos for CWTs. *Note: Hauls with this level of Chinook bycatch are rare.*

Using the Salmon Sampling Deck Form

All CWT and genetics data must be recorded on the Salmon Sampling deck form. The Salmon Sampling Form is waterproof and designed for use in the factory.

A-SHOP SALMON Sampling Deck Form Page 5

record species comp data on Deck Form
record all Chinook and coho SALMON SPECIMEN data here*

*It's Rite in the Rain for a reason

Lead Cruise	Permit	Haul	Sample	Vessel Name
97531	1098	17	1	Merluzza

Subsampled for Chinook genetics and CWTs? NO Yes if Yes, method: _____

#	Species	Sex	Length (cm)	ATLAS Specimen #	Weight (kg)	Chinook genetics barcode	Snout barcode (if CWT-tagged)	Adipose present?
1	Chinook	F	47	174	1.73	504740	—	Y
2	Chinook	M	53	175	1.98	504741	—	Y
3	chinkook	F	52	176	1.87	504742	809611	N
4	Chinook	F	61	177	2.83	504743	—	N
5								
6	coho	M	63	178	3.01	—	—	Y

Figure 10. Example of A-SHOP Salmon Sampling Deck Form

Sturgeon

If you encounter a green sturgeon, please follow the sampling protocol found in your species ID guide, at the end of the Bony Fishes section. The directions explain how to collect biological information and a genetic specimen from each fish. Green sturgeon are quite rare in this fishery; only two have been caught in the last ten years.

Species ID Forms

Correct species identification is the cornerstone of the observer program. Species ID forms are documents that verify to the program, and to the fishery participants, that each observer is able to correctly identify species. A list of the species each observer has completed a verified species ID form for will be provided during training. **Complete a species ID form for every new**

species encountered during hake deployments. Complete the form with sufficient detail to clearly convey that the species was identified correctly. Digital pictures and frozen specimens are a helpful *supplement* to these forms, but neither of these items replaces any part of an accurately detailed form (i.e., you must complete a drawing for each form). Each species ID form should be filled out with the fish in hand, which you keyed out yourself, from a haul you sampled. **Observers who return without forms for all rockfish and salmon species will be evaluated as having not met program expectations.**

Identify species only to the level to which you are confident. Collect any unknown fish and record as “fish unid” in the data.

Digital cameras will be issued to each pair of observers this year. This camera is intended as a supplement to your species ID forms. Please take a picture of each new species you see and any rare and usual species. A digital image does not replace any part (not even the drawing) of your species ID forms. If needed, you can e-mail fish photos to your in-season advisor if you are unsure of the species. In order for your photographs to be used as a supplement to your ID form, the photos must be labeled and of sufficient quality (full body and not blurry) to easily determine it is the correct species. Please turn in a photo folder labeled with your name, cruise number, and vessel name with individual photos labeled inside (e.g. folder name: Barbara Kingsolver_99942_Prodigal Summer, photo file names: Canary1, Canary2, POP, sorting belt).

Length and Age Structure Sampling

All lengths and age structures must be collected randomly, from inside the species composition

sample. For hake, the randomly selected average weight sample is a logical place to get your length and otolith sample. When subsampling for two predominant species, length and age structure fish can come from either the sample or the subsamples, as long as they are randomly selected. For a review of sample

Remember! Record the individual weight of age-structure fish.

design and methods, refer to Chapter 13 of the Alaska manual. If you are having difficulty coming up with a random method for collecting fish for lengths and otoliths or if you are not sure if your method is truly random, contact your in-season advisor for help.

On the rare occasion that your average weight sample for hake is collected opportunistically (you must collect an average weight sample from every haul), do not collect hake lengths or otoliths from that haul. All lengths must be randomly collected.

The data collected from rockfish in the hake fishery is invaluable to stock assessors. In fact, biological data collected from the A-SHOP is used in 8 different stock assessments. **The goal is to collect otoliths and sex/lengths from the two highest priority rockfish species in your sample.** If there are only a few individuals from several different species of otolith rockfish, it is ideal to collect otoliths from all of them.

Predicting when and how many rockfish you will see is impossible. Ideally, you would set aside all that are in your sample and then randomly choose your length and otolith fish. However, this may be difficult if you have more than a few baskets of fish. In those cases, you will need to use other means of randomization. One method would be to break the haul into even units (fourths, thirds, tons) and randomly choose a point within the sample to start the collection, collecting the next 20 individuals of that species as your length and otolith sample.

Refer to the “Wet Manual” for the specific protocols for all sampling priorities and biological data collections.

Example 1: You are sampling the first half of a 60MT haul with a fair number of POP, darkblotched and widow. You break your 30MT sample into 3 units of 10MT and randomly select the third unit. Starting at 20MT, you set aside the first 20 POP and darkblotched for sex/lengths, otoliths, and darkblotched fin clips, since they are higher priority than widow.

Example 2: In your sample there are: 3 canary, 1 rougheye, and 1 POP. Collect otoliths and sex/lengths from all of them, including a fin clip from the rougheye (time permitting).

Keep otoliths organized during your deployment. You will be issued a permanent marker and rubber bands with your hake gear. Labeling the vials with species and haul number (e.g. “RE H13” for a Rougheye from Haul #13) will make for a smoother debriefing. Also, the vials will *not* be hydrated during debriefing as they are shipped dry to age readers, so it is very important otoliths are cleaned and dried at-sea.



Length and Age Structure Protocols (in order of priority)

Species	Sex-lengths / haul	Age structures / haul
Hake	15	3 every 3 rd haul
Yelloweye	<i>collect whole fish - up to 5 per observer</i>	
Bocaccio	20	20
Canary	20	20
POP	20	3
Darkblotched	20	1 + fin clip
Rougheye	20	1 + fin clip
Yellowtail	20	2
Widow	20	2
Spiny dogfish	10	1 (2 nd dorsal spine + vertebrae)

Rockfish Genetics

As a tool to inform resource management, there is an increasing interest in genetic data from species that occur in the hake fishery. Pectoral fin clips (identical to Chinook genetics fin clips) will be collected from **rougheye and darkblotched** rockfish this year.

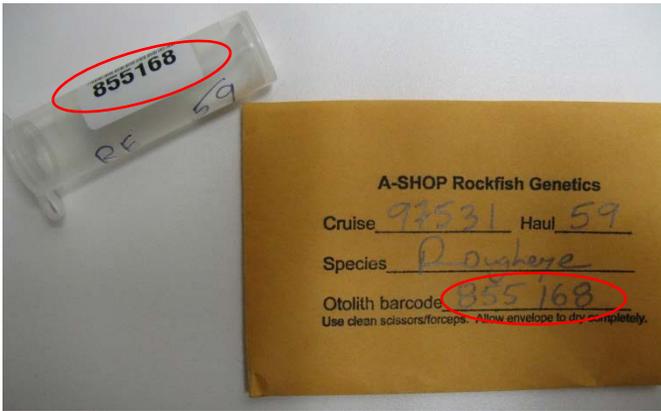


Figure 11. Rockfish genetics envelope with corresponding otolith vial

The protocol is to collect a pectoral fin clip from your randomly selected otolith fish. You will be issued rockfish genetics collection envelopes with your hake gear. Record the lead cruise number, haul number, species, and *otolith barcode* number on the envelope (see Figure 11).

Rockfish lengths must have an associated sex, as they are of no use for stock assessment without it. If you are *unable to determine the sex of a specific individual*, record it as “unknown”. **Rockfish can be more difficult to sex than other round fish.** The gonads are found up near the backbone, much like salmon. Female gonads will appear as white, pink, yellow or orange elongated tubes leading to paired sacs. When mature, they are oval in cross-section and have a granular appearance. Immature female gonads are translucent and thin, without defined edges. Testes are an opaque cream to pink color and are triangular shaped in cross-section; immature testes are still somewhat triangular and will have defined edges at the bottom (see Figure 12).

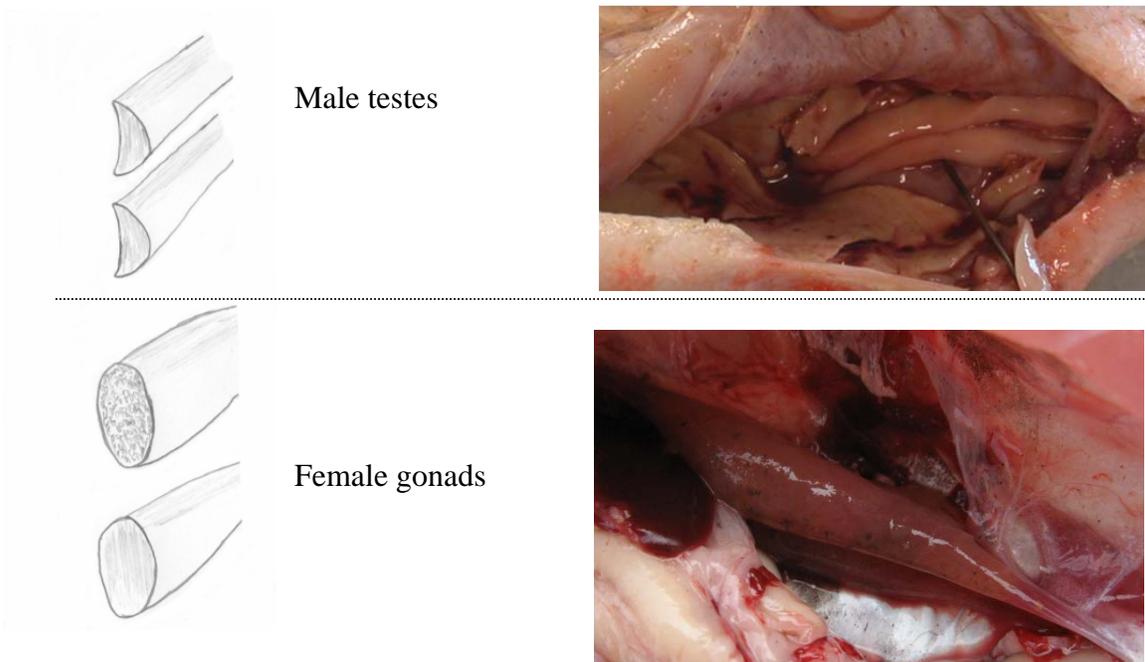


Figure 12. Rockfish gonad appearance

Hake Ovary Collection Project

The hake stock assessment review recommended that maturity data be collected during months when the hake and groundfish surveys are unable to collect maturity data. Therefore, the A-SHOP has been tasked with collecting ovary samples from May – June and then again in the fall and winter. Very little is known or understood about hake spawning and this data will help fill in the gaps. This ovary collection project will be assigned to specific vessels. If your vessel is assigned this project, please follow the written protocols included with the sampling gear.

Spiny Dogfish Protocols

Spiny dogfish are a common bycatch species in the hake fishery. Recent age data indicates that one dogfish spine collected from the hake fishery, from a 100 cm female, was 88 years old. The second dorsal spine and vertebrae on dogfish are used to determine the age. **The dogfish protocol is to randomly collect ~10 sex/lengths and one second dorsal spine plus vertebrae section per haul.** You will be issued 50 barcoded bags with your hake gear. Once the 50 bags have been used, continue to collect sex/lengths only.

To determine the sex of a shark, look for the presence of claspers around the cloaca. Male sharks have claspers, females do not (*see Figure 13*). For spiny dogfish, measure the fork length from tip of the snout to the fork in the tail (*see Figure 14*).

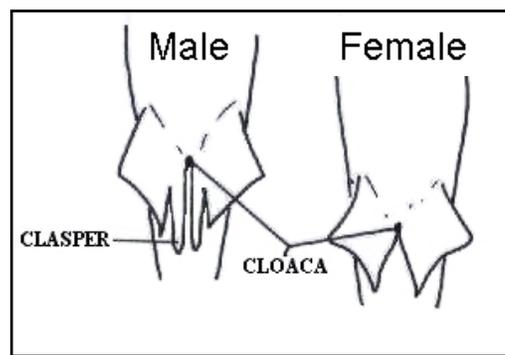


Figure 13. Ventral surface of sharks

For spiny dogfish spine and vertebrae collection, the two structures are removed together. Starting with a vertical cut behind the second dorsal spine, cut down through the vertebrae. Then cut horizontally towards the head for about 10 cm, keeping the blade ventral to the vertebrae. Make another vertical cut about 10 cm forward of the spine to remove the spine and vertebrae as one piece. The vertebrae must be intact so take care not to nick it if trimming excess tissue to fit in bag (*see Figure 14*). Place the spine and vertebrae in a barcode-labeled bag, and freeze. Record the barcode number, sex, fork length, and weight on your deck sheet and enter the data into ATLAS as specimen code 5 (vertebrae). Store the dogfish specimens all together in a clearly labeled bag in the freezer, to ensure that they all return to debriefing with you.

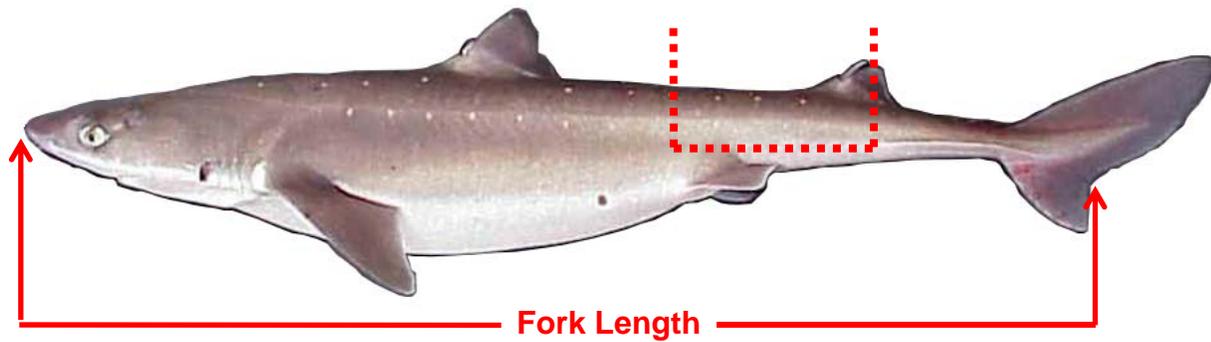


Figure 14. Spiny dogfish fork length and age structure collection

Keep in mind that while using the basket dump method works for many species; it does *not* work for spiny dogfish, which have sandpaper-like skin and tend to clump and stick together. Other methods to randomly select your length and spine collection fish must be used, such as choosing a random start point within your sample and setting aside the next 10 dogfish.

Example: Haul #27 has a fair amount of spiny dogfish, so Douglas decides to collect the first 10 dogfish after his hake average weight sample to use for sex/lengths and 2nd dorsal spine + vertebrae collection.

Fish Collection

The observer program can always use frozen fish specimens of just about anything of reasonable size. Please **wrap fish individually and label clearly**. If you see a rare or uncommon fish, or a fish that is out of its listed geographic range, please bring it back. High quality pictures of fish or invertebrates are always appreciated, especially of rare species.



It's a good idea to keep a freezer inventory to ensure all of your frozen specimens return to debriefing with you.

Entering Specimen Data in ATLAS

The ATLAS Specimen Form has additional fields for specimen data in the hake fishery, triggered by the "HAK" haul purpose code. **For all specimens, enter the unique specimen number you assign and the weight**, which will automatically check specimen type 3.

Salmon specimens

Chinook and coho CWT and Chinook genetics data are entered into ATLAS specimen data (*see Figures 15 and 16*).

- **For Chinook and coho:**

- Record whether the adipose fin was present by selecting Y, N, or U from the “Adipose Present?” dropdown, which will automatically check specimen type 13.
- If you collected the snout from a CWT-tagged specimen, enter the snout barcode in the “Snout Bar code” field, which will automatically check specimen type 12.

- **For Chinook only:**

- Record the Chinook genetics barcode in the “Otolith Bar code” field, which will automatically check specimen type 1, and check the specimen type “4 Fin Clips” checkbox.

Figure 15. ATLAS entry for Chinook genetics for CWT-tagged and non CWT-tagged specimens

Figure 16. ATLAS entry for coho CWT-tagged and non CWT-tagged specimens

Hake ovaries:

For hake ovary specimens, record the otolith barcode in the “Otolith Bar code” field, which will automatically check specimen type 1, and check the specimen type “8 Maturity” checkbox. When you click “Add/Save”, a pop-up box asking “Do you have a maturity weight?” will come up. Click “No” (because we are collecting the ovaries) and the specimen will be saved (see Figure 17).

Species: 206 PACIFIC HAKE
 Sample Design: Simple Random
 Sex: F
 Length Size: 30
 Frequency: 1

Specimen	Number of Specimens	Delete
541	3	Delete Sp...

Specimen No. 541 Weight 0.37

Specimen Type	Specimen Collected
1 Otoliths	<input checked="" type="checkbox"/>
2 Scales	<input type="checkbox"/>
3 Length-Weight Sample	<input checked="" type="checkbox"/>
4 Fin Clips	<input type="checkbox"/>
5 Vertebrae	<input type="checkbox"/>
6 Spines	<input type="checkbox"/>
7 Maturity Scan	<input type="checkbox"/>
8 Maturity	<input checked="" type="checkbox"/>
9 Stomach	<input type="checkbox"/>
10 Is...	<input type="checkbox"/>
11 O...	<input type="checkbox"/>
12 S...	<input type="checkbox"/>
13 A...	<input type="checkbox"/>

Otolith Bar code: 871524
 Maturity scan:
 Maturity Wt:

code:
 esent?:

Weight Not Entered
 Maturity Weight Field is Missing, Do you have a maturity weight?
 Yes No

Figure 17. ATLAS entry for hake ovary specimen

Rockfish genetics:

For rougheye and darkblotched genetic specimens, record the otolith barcode in the “Otolith Bar code” field, which will automatically check specimen type 1, and check the specimen type “4 Fin Clips” checkbox (see Figure 18).

Species: 307 ROUGH-EYE ROCKFISH
 Sample Design: Census
 Sex: M
 Length Size: 57
 Frequency: 1

Specimen	Number of Specimens	Delete
12	3	Delete Sp...

Specimen No. 12 Weight 2.56

Specimen Type	Specimen Collected
1 Otoliths	<input checked="" type="checkbox"/>
2 Scales	<input type="checkbox"/>
3 Length-Weight Sample	<input checked="" type="checkbox"/>
4 Fin Clips	<input checked="" type="checkbox"/>
5 Vertebrae	<input type="checkbox"/>

Otolith Bar code: 804575

Figure 18. ATLAS entry for rockfish genetics specimen

Spiny dogfish age structures:

For spiny dogfish age structure specimens, record the age structure barcode in the “Otolith Bar code” field, which will automatically check specimen type 1, and check the specimen type “5 Vertebrae” checkbox (see Figure 19).

Species: 66 SPINY DOGFISH SHARK
 Sample Design: Simple Random
 Sex: F
 Length Size: 45
 Frequency: 1

Specimen	Number of Specimens	Delete
5	3	Delete Sp...

Specimen No. 5 Weight 0.85

Specimen Type	Specimen Collected
1 Otoliths	<input checked="" type="checkbox"/>
2 Scales	<input type="checkbox"/>
3 Length-Weight Sample	<input checked="" type="checkbox"/>
4 Fin Clips	<input type="checkbox"/>
5 Vertebrae	<input checked="" type="checkbox"/>
6 Spines	<input type="checkbox"/>

Otolith Bar code: 12345

Figure 19. ATLAS entry for spiny dogfish age structure specimen

Data Quality Control

Although all data is recorded under the lead observer's cruise number, both observers are responsible for accurate data collection and entry. Check each other's deck sheet calculations and entry into ATLAS on a daily basis. Develop a data-entry/data-check system to ensure all data is entered and checked for accuracy (e.g., checkmarks, date/time). A colored pencil will be issued with your hake gear to help you track which data has been double-checked and entered into ATLAS. Each pair of observers is a team and will most likely debrief together. Please work together to collect the best data possible.

Communication

Please bring any questions, concerns, and suggestions to program staff during training, deployment, or debriefing. We encourage you to communicate directly with A-SHOP staff or with Jon McVeigh, Program Manager for the West Coast Observer Programs (see Appendix C for contact information). Following your debriefing, please fill out the anonymous exit survey, which provides us with valuable feedback about the program.

Mid-Season Data Checks

Every observer will have a mid-season data check. This will be similar to a mid-cruise, and will likely be conducted via text messages in ATLAS or by phone. After your first few days on board, you will be sent a list of questions asking about sampling methods to ensure that the protocols are clear and easy to follow. You are expected to answer them completely and promptly. If you or the observer program feels the interview should be done verbally, a time will be arranged so that it can be conducted over the phone.

All hake vessels will have an in-season advisor. In addition to the manual, the advisor is a good source for answering sampling questions and responding to any problems that may arise. S/he will also let you know about any data errors found which can be fixed at sea, thereby speeding up your debriefing process.

Debriefing and Specimen Turn-in

You will need to debrief from your hake cruise as soon as you return, and before deploying to Alaska.

Turn in all of your data and specimens prior to debriefing. Deliver salmon snouts, dogfish samples, and clearly labeled specimens to the hake section of the Building 4 wet lab freezer.

Check in with the A-SHOP staff and pick up a Pre-Debriefing Checklist upon arrival at Sand Point.

Contractors need to notify the A-SHOP when their observers return from deployment so a pre-debriefing appointment can be scheduled. If an observer is *unable to arrive on time* for their scheduled appointment, the debriefer needs to be notified beforehand.

Gear Check-Out and Care

Every observer will check out a set of standard Alaska sampling gear and *each observer pair* will be issued hake-specific sampling gear. The “A-SHOP Gear Sheet” in the front of the logbook lists recommended amounts of Alaska gear (e.g. decksheets, species ID forms) as well as your hake-specific gear. Store any extra gear (otolith vials, deck forms, Chinook genetics envelopes, etc.) in your stateroom. The CWT-detecting wand is an expensive and sensitive piece of scientific equipment; please find a dry area near the observer sampling station where you can store the wand and extra gear.

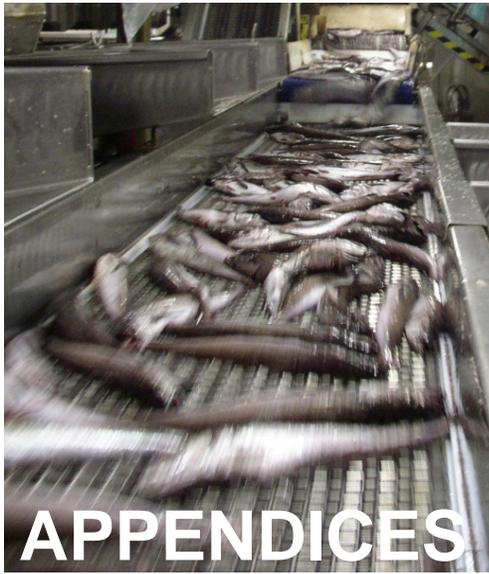
Gear Check-in Protocol

When you return from your hake cruise, make an appointment with Dan Decker (206-526-4198) or Gina Tolbert (206-526-4517) to return your baskets, etc. Turn in your PLB to Dan Decker, follow the protocols posted in the wet lab and be sure your gear is *clean*. Return gear issued by the A-SHOP to your debriefer.

Photo Credits

Thanks to observers Lauren Ackein, John Bieraugel, Cassandra Donovan, Lauren Hartman, Merri Strayer and Mark Wormington for the photographs.

The A-SHOP really appreciates you sharing copies of photos taken during your deployment. We use observer photos in training materials, fish lectures, and scientific presentations. If you do not wish for your photos to be used for these purposes, please let us know when you give them to us.



Appendices Table of Contents

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Appendix A. At-Sea Hake Observer Program (A-SHOP) Guidelines & Policies

Observer Eligibility and Training Requirements

Eligibility requirements:

- Observer has completed the North Pacific Groundfish Observer Program's (NPGOP) 3-week training or a 4-day NPGOP briefing for the current calendar year.
- Observer has completed one or more satisfactory deployments (Deployment scores: 1 = satisfactory and 0 = unsatisfactory) with the NPGOP.
- Observer has received satisfactory deployment scores for every vessel/plant from their most recent deployment.
- If an observer receives an unsatisfactory deployment score on an A-SHOP deployment, the observer must complete an A-SHOP 4-day training prior to deploying again in the hake fishery.

Training requirements:

- Observer must complete the safety training and meet any requirements for participating in drills and donning equipment, including donning an immersion suit in less than 60 seconds.
- Observer must pass the fish exam with an 80% or better.
- Observer must pass the written quiz with an 80% or better. This quiz is closed book.
- Observer must attend the full 4-day A-SHOP training.
 - Arrive on time, at the beginning of each day and returning from breaks. Tardiness may result in being dropped from the class.
- Observer must successfully complete any homework or in-class exercises and make any corrections requested by the trainers.
- Use of electronic devices during fish lab and exam is prohibited.

Additionally, new trainees must be able to demonstrate to the trainer that they have the attitude and ability required to perform a difficult job independently, and to act professionally in stressful situations.

Observers who do not pass both the fish exam and the written quiz must take the full A-SHOP training again. In the spring, when back-to-back trainings are offered, observers in the first training may not repeat the training immediately afterwards, due to class size limits.

Training class size is limited to 25 observers unless the Program allows more, as deemed necessary.

Appendix B. Pre-Cruise Vessel Bycatch Meeting Outline

NOAA Fisheries At-Sea Hake Observer Program

Purpose of meeting: To stress cooperation and communication between observer and vessel personnel in order to maximize sample sizes for hauls with species of concern.

Who should attend: Observers, captain, factory manager/foreperson, backline operator

Agenda:

1. Introductions:

- a. Who's in attendance? Who's not at the meeting that needs to be in the loop (i.e. backline operator)?
- b. What is the preferred order of communication on the vessel? (i.e. foreperson → factory manager → captain)

2. Review bycatch limits: Discuss the threshold for species of concern in 2015

Suggested thresholds of action - If a species of concern is thought to be present in the following amounts, the observer may require assistance to maintain large sample sizes

Hauls with **>200 kg** of canary (~100 fish)

Hauls with **>1 mt** of darkblotched (~1200 fish)

Hauls with **>100 kg** of POP (~100 Fish)

Hauls with **>10 mt** of widow (~9,000 fish)

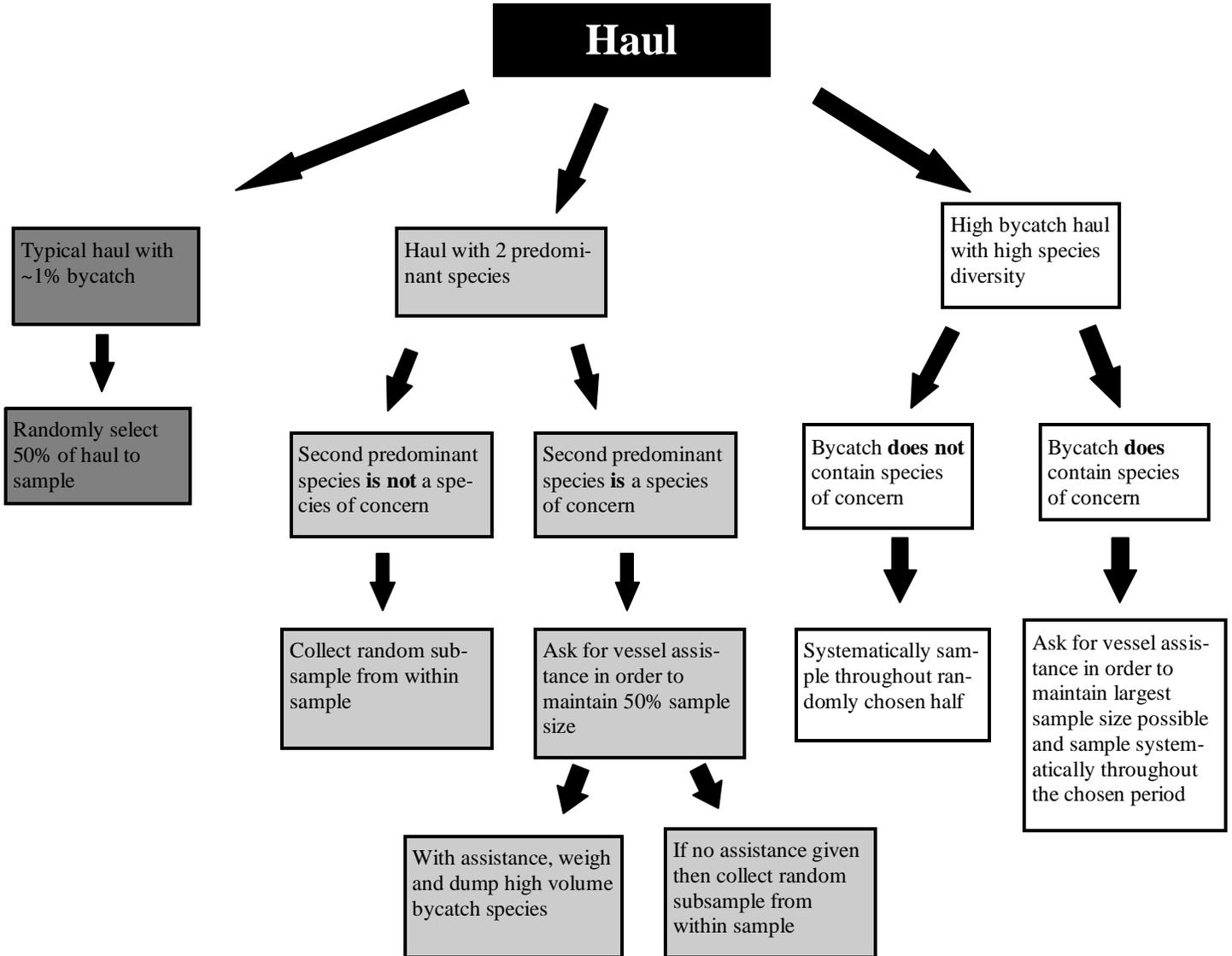
Hauls with **>500 kg** of roughey (~250 fish)

Hauls with **>50** Chinook (individual fish)

3. Sampling goals: Remind crew that the observer will collect 50% samples whenever possible. Use the flow chart below to go over the sampling options for tows with species of concern. Discuss the actions that can be taken to maximize sample size when the haul is dirty or when species of concern are an issue:

- A. Vessel providing help (assistance with sorting, lifting, dumping)
- B. Adjusting belt speed
- C. Notifying observers of dirty hauls (making observer aware of bycatch if they were not present at the codend dump)
- D. Collecting multiple small samples (with cooperation from bleeder and sorters)

A-SHOP Sampling Protocol Review



Species of concern include any prohibited species, POP, canary, darkblotched, roughey, or widow rockfish.

Appendix C. Observer Program Contact Information

A-SHOP contacts

Office location: Sand Point, Building 4, Room 1155

Cassandra Donovan Phone: 206-526-6724
E-mail: Cassandra.Donovan@noaa.gov

Tom Holland Phone: 206-526-6782
E-mail: Thomas.Holland@noaa.gov

Vanessa Tuttle Phone: 206-860-3479
E-mail: Vanessa.Tuttle@noaa.gov

Jon McVeigh Phone: 206-302-2423
E-mail: Jon.McVeigh@noaa.gov

Note: Please leave a message, including a phone number, if we don't answer. We're likely just away from our desks for a moment and will call you right back. Also, listen to what the voice mail message says. When one of us is out at sea, the message will say so, and then you should contact the next person on this list.

ATLAS questions or problems

Glenn Campbell (AFSC): Phone: 206-526-4240
Email: Glenn.Campbell@noaa.gov

Enforcement – *if you would like to report directly to an enforcement agent, please contact:*

Special Agent Maile Schneider Phone (office): 206.526.4307
Phone (cell): 206.255.6400
Email: maile.schneider@noaa.gov

Special Agent Michael S. Killary Phone (office): 206.526.6134
Phone (cell): 206.348.9100
Email: michael.killary@noaa.gov

King County Sexual Assault Resource Center (KCSARC)
24 hours a day at 1-888-99-VOICE (1-888-998-6423), www.kcsarc.org

Appendix D. Catcher Vessel ADFG numbers

Catcher Vessel	ADFG #
Alyeska	45
Arctic Fury	68869
Bay Islander	49618
Blue Fox	62892
Caitlin Ann	59779
California Horizon	33697
Collier Brothers	54648
Crysan	575942
Leslie Lee	56119
Lisa-Melinda	41520
Marathon	49617
Mar-Gun	12110
Mark I	6440
Messiah	66196
Miss Berdie	59123
Miss Sarah	64109
Miss Sue	580055
Misty Dawn	68858
Muir Milach	41021
Neahkahnne	32858
New Life	21845
Nordic Fury	200
Nordic Star	961

Catcher Vessel	ADFG #
Pacific Challenger	6931
Pacific Fury	33
Pacific Prince	61450
Pacific Ram	61792
Papado II	55512
Pegasus	57149
Perserverance	12668
Predator	33744
Raven	56395
Sea Clipper	62
Sea Storm	40969
Sea Dawn	77
Seeker	59476
Starward	39197
Traveler	58821
Western Dawn	22294
Winona J	43383

Appendix E. Subsampling Decksheet Examples

Subsample Option #1: "The flow scale is your friend"

RD

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.	Page <u>49</u> of _____ for Vessel/Plant
5/27/14	13579	9876	42		Page <u>1</u> of <u>3</u> for Haul/Offload

Sample #: <u>1</u>	Sub-Sample #: _____	Sample Size: <u>29340</u> <small>Kgs Segments pots</small>	# of Sampled Hooks: _____
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>

Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes														
-----KEYPUNCH-----	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>															
Hake		Ø	Ø	100	248MT 1 (2) lots of yellowtail!														
Yellowtail		Ø	Ø	100															
Squid unid		57	13.98	0	~1 MT subsamples RNT = (4)/8														
Squid unid		Ø	35.60	0															
Squid unid		Ø	29.18	0															
Am shad		8	2.32	100	<p>hake avg wt RNT = (1)/3</p> <p>start: 24047</p> <p>end: 53387</p>														
POP		5	3.54	100															
					<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">POP</td> </tr> <tr> <td style="text-align: center;">F-45-.84</td> <td style="text-align: center;">E/M</td> </tr> <tr> <td style="text-align: center;">510847</td> <td style="text-align: center;">42 (39)</td> </tr> <tr> <td style="text-align: center;">M39-.52</td> <td style="text-align: center;">(45) (47)</td> </tr> <tr> <td style="text-align: center;">510848</td> <td style="text-align: center;">48</td> </tr> <tr> <td style="text-align: center;">M47-.98</td> <td style="text-align: center;">Tally K/P</td> </tr> <tr> <td style="text-align: center;">510849</td> <td></td> </tr> </table>	POP		F-45-.84	E/M	510847	42 (39)	M39-.52	(45) (47)	510848	48	M47-.98	Tally K/P	510849	
POP																			
F-45-.84	E/M																		
510847	42 (39)																		
M39-.52	(45) (47)																		
510848	48																		
M47-.98	Tally K/P																		
510849																			

Sample #:	Sub-Sample #: <u>101</u>	Sample Size: <u>1121</u> <small>Kgs Segments pots</small>	# of Sampled Hooks: _____
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>

Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes																
-----KEYPUNCH-----	<input checked="" type="checkbox"/>		1121.00	<input checked="" type="checkbox"/>																	
Hake		Ø	1013.78	100	start: 26993 end: 28114																
Hake		57	24.12	100																	
Yellowtail		24	39.20	100	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">hake</td> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">M</td> </tr> <tr> <td style="text-align: center;">32</td> <td style="text-align: center;">29</td> </tr> <tr> <td style="text-align: center;">34</td> <td style="text-align: center;">33</td> </tr> <tr> <td style="text-align: center;">36</td> <td style="text-align: center;">35 r</td> </tr> <tr> <td style="text-align: center;">37</td> <td style="text-align: center;">36 r</td> </tr> <tr> <td style="text-align: center;">40 r</td> <td style="text-align: center;">38</td> </tr> <tr> <td style="text-align: center;">42</td> <td></td> </tr> </table>	hake		F	M	32	29	34	33	36	35 r	37	36 r	40 r	38	42	
hake																					
F	M																				
32	29																				
34	33																				
36	35 r																				
37	36 r																				
40 r	38																				
42																					
Yellowtail		26	42.85	100																	
Am shad		1	0.15	100	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">sampled 1121.00</td> </tr> <tr> <td style="text-align: center;">- hake avg</td> <td style="text-align: center;">-24.12</td> </tr> <tr> <td style="text-align: center;">- bycatch</td> <td style="text-align: center;">-83.10</td> </tr> <tr> <td colspan="2" style="text-align: center;">hake wt = 1013.78</td> </tr> </table>	sampled 1121.00		- hake avg	-24.12	- bycatch	-83.10	hake wt = 1013.78									
sampled 1121.00																					
- hake avg	-24.12																				
- bycatch	-83.10																				
hake wt = 1013.78																					
Squid unid		3	0.90	0																	

National Marine Fisheries Service/Fisheries Monitoring and Analysis Division Ver. 2010

DECK FORM

RD

Date	Cruise	Permit	Haul No.	Offload No.
5/27/14	13579	9876	42	

Page 50 of _____ for Vessel/Plant

Page 2 of 3 for Haul/Offload

Sample #:	Sub-Sample #: 102	Sample Size: 1078	<input checked="" type="checkbox"/> Segments pots	# of Sampled Hooks:
Presorted <input type="checkbox"/>	Combined <input type="checkbox"/>	Unable to Follow Design <input type="checkbox"/>	No Fish in Sample <input type="checkbox"/>	
Species	Sex	#	Weight	% ret.
----- KEYPUNCH -----	<input checked="" type="checkbox"/>		1078.00	<input checked="" type="checkbox"/>
Hake		1	1001.70	100
Yellowtail		25	41.08	100
Yellowtail		21	35.22	100

start: 35019
end: 36097

sample wt 1078.00
- bycatch 76.30
hake wt = 1001.70

Sample #:	Sub-Sample #: 103	Sample Size: 1076	<input checked="" type="checkbox"/> Segments pots	# of Sampled Hooks:
Presorted <input type="checkbox"/>	Combined <input type="checkbox"/>	Unable to Follow Design <input type="checkbox"/>	No Fish in Sample <input type="checkbox"/>	
Species	Sex	#	Weight	% ret.
----- KEYPUNCH -----	<input checked="" type="checkbox"/>		1076.00	<input checked="" type="checkbox"/>
Hake		1	986.46	100
Yellowtail		33	53.78	100
Yellowtail		20	32.64	100
Squid unid		2	0.20	0
Rougheye		1	2.92	100

start: 42971
end: 44047

sample wt 1076.00
- bycatch - 89.54
hake wt = 986.46

RE
F-51-2.92
510850 otb if in dip

DECK FORM

RD

Date	Cruise	Permit	Haul No.	Offload No.
5/27/14	13579	9876	42	

Page 51 of _____ for Vessel/Plant

Page 3 of 3 for Haul/Offload

Sample #:	Sub-Sample #: 104	Sample Size: 944	<input checked="" type="checkbox"/> Segments pots	# of Sampled Hooks:
Presorted <input type="checkbox"/>	Combined <input type="checkbox"/>	Unable to Follow Design <input type="checkbox"/>	No Fish in Sample <input type="checkbox"/>	
Species	Sex	#	Weight	% ret.
----- KEYPUNCH -----	<input checked="" type="checkbox"/>		944.00	<input checked="" type="checkbox"/>
Hake		1	845.17	100
Yellowtail		29	47.80	100
Yellowtail		32	50.08	100
Squid unid		5	0.95	0

start: 51107
end: 52051

sample wt 944.00
- bycatch - 98.83
hake wt = 845.17

Subsample Option #2: Use baskets

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.
5/28/13	13580	9876	44	

Page 55 of for Vessel/Plant BN

Page 1 of 3 for Haul/Offload

Sample #: <u>1</u>	Sub-Sample #: <u> </u>	Sample Size: <u>29668</u>	<input checked="" type="checkbox"/> Segments pots	# of Sampled Hooks: <u> </u>	
Presorted <input type="checkbox"/>	Combined <input type="checkbox"/>	Unable to Follow Design <input type="checkbox"/>	No Fish in Sample <input type="checkbox"/>		
Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes: RNT 1/2 (1) 2 ≈ 60MT LOTS OF Dog Fish!! Will sample 2 predom using BASKETS, sample ≈ 30 tons, 3 sub samples 0-10 RNT 0-30 tons BASKETS @ 0, 10, 20 9 ——— 10 ——— 20 ——— 30 Sample 101 Sample 102 Sample 103 Basket #1 HAKE S/L Dog Fish S/L + SPECIMENS STOP STOP 29668 29668 Tally K/P
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	<u>10</u>	<u>11.64</u>	<input checked="" type="checkbox"/>	
Hake		<u>0</u>	<u>0</u>	<u>100</u>	
Spiny Dog		<u>0</u>	<u>0</u>	<u>0</u>	
Widow		<u>3</u>	<u>1.98</u>	<u>0</u>	
Yellow Tail		<u>6</u>	<u>9.64</u>	<u>0</u>	
Lamprey (mid)		<u>1</u>	<u>0.02</u>	<u>0</u>	

Sample #: <u>101</u>	Sub-Sample #: <u>101</u>	Sample Size: <u>99.23</u>	<input checked="" type="checkbox"/> Segments pots	# of Sampled Hooks: <u> </u>	
Presorted <input type="checkbox"/>	Combined <input type="checkbox"/>	Unable to Follow Design <input type="checkbox"/>	No Fish in Sample <input type="checkbox"/>		
Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes: From Sample 1 Widow Yellow Tail m F m F (36) (37) 41 42 41 41 OTOLITHS 43 731511 m 36 0.70 (45) 731512 F 37 0.76 OTOLITHS 731513 F 43 1.18 731514 F 45 1.26 3 BASKETS @ 0 Tally K/P
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	<u>167</u>	<u>99.23</u>	<input checked="" type="checkbox"/>	
Hake		<u>41</u>	<u>28.41</u>	<u>100</u>	
Hake		<u>38</u>	<u>26.98</u>	<u>100</u>	
Hake		<u>32</u>	<u>25.72</u>	<u>100</u>	
Spiny Dog		<u>56</u>	<u>18.12</u>	<u>0</u>	

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.
5/28/13	13580	9876	44	

Page 56 of _____ for Vessel/Plant **BN**
 Page 2 of 3 for Haul/Offload

Sample #: _____	Sub-Sample #: 102	Sample Size: 101.06	(Kg) Segments pots	# of Sampled Hooks:	
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>		
Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	41	101.06	<input checked="" type="checkbox"/>	3 baskets @ 10 Basket 1 S/L and Dog
Hake		0	31.64	100	No more Hake counting.
Hake		0	29.02	100	
Hake		0	25.26	100	Hake
Spiny Dog		41	15.14	0	m F
					37 38x2
					39x2 40
					41 41x2
					42 42x3
					43x3 44
					45
					SPiny
					m F
					42 44x2
					43x2 (47)
					46 63
					73
					501179
					F 47 0.48

Sample #: _____	Sub-Sample #: 103	Sample Size: 108.60	(Kg) Segments pots	# of Sampled Hooks:	
Presorted <input type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input type="radio"/>	No Fish in Sample <input type="radio"/>		
Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	45	108.60	<input checked="" type="checkbox"/>	3 baskets @ 20
Hake		0	32.16	100	
Hake		0	28.72	100	
Hake		0	30.42	100	
Spiny Dog		44	17.28	0	
Lamprey Und		1	0.02	0	

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.
5/28/13	13580	9876	44	

Page 57 of _____ for Vessel/Plant **BN**
 Page 3 of 3 for Haul/Offload

Sample #: 2	Sub-Sample #: _____	Sample Size: 62277.85	(Kg) Segments pots	# of Sampled Hooks:	
Presorted <input checked="" type="radio"/>	Combined <input type="radio"/>	Unable to Follow Design <input checked="" type="radio"/>	No Fish in Sample <input type="radio"/>		
Species	Sex	#	Weight	% ret.	Length, viability, injury, specimen, tally data, measurements, bird observations, sample design, notes:
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	1	129.85	<input checked="" type="checkbox"/>	Shark
Salmon Shark		1	129.85	0	Cut Shark 1470
					3 pieces
					#1 45.96
					#2 42.18
					#3 41.71
					Total 129.85 Kg
					Final FlowScale
					presort
					62148
					+ 129.85
					62277.85

Appendix F. Frequently Asked Questions

I can't log into ATLAS or I can't transmit, what do I do?

Contact Glen Campbell. His contact information is in Appendix C of your hake manual.

Which estimate do I use as the vessel estimate on the OHF? What they tell me when the bag is hauled up or the one they write down in the logbook?

Always use the vessel estimate recorded in the logbook.

For "Estimated Discard Weight" on the OHF, do I use the actual weighed discards from my sample or should I extrapolate it up to the whole haul level?

Discards should be extrapolated to the whole haul. See "Percent retained and discard estimates" on page 21 for discard estimation options.

How do I calculate percent retained?

Percent retained is an estimate. Visually estimate how much of each species is being retained by the vessel. Ask vessel crew which belts are going over-board (discard) and which are going to fish meal (retained) so that your percent retained estimates are as accurate as possible.

I'm on a mothership and the captain is recording catcher vessel discards in the vessel logbook. How do I account for these discards in my data?

Use the protocols in the "Mothership Catcher Vessel Discard Accounting" on page 22 for how to track and record catcher vessel discards.

I'm on a mothership and the captain hasn't received any discard info from one of the catcher vessels. What do I do?

Ask the MS captain to obtain the catcher vessel's discard amounts from the catcher vessel captain. Catcher vessel discard data will be reviewed and verified during debriefing. Discard data not received in-season will be added during debriefing.

What changes if the vessel is participating in the tribal fishery?

You will enter a tribal code in the CDQ column for each haul. Each tribe has its own code. Contact the A-SHOP for the appropriate code. The vessel you are on will receive catch from tribal catcher vessels, so "Vessel Type" is code 2 (mothership) and the ADFG numbers for the catcher vessels need to be recorded on the OHF. Tribal vessels do not carry observers or EM so there will not be CV discard data. All other sampling and data protocols remain the same.

What are the haulback notification guidelines for hake?

The vessel is required to notify you 15 minutes prior to haulback. Regardless of this requirement, it is your responsibility to know what is going on during your shift. Never assume the crew is going to inform you - it is not their job to search the boat for you. It's reasonable to say that you'll either be in the factory, the galley or the wheelhouse. If reasonable notification efforts are not made, discuss the situation with the captain, document it in your logbook and inform your in-season advisor.

Whose name/cruise number goes on the Salmon Sampling form and Chinook genetic envelopes?

The lead observer's information goes on both, regardless of who collected the data.

We are almost out of Chinook genetics envelopes. What do we do?

Contact the A-SHOP. We will send you a series of barcode numbers. Ask the vessel for copier paper, scissors and tape. MacGyver time! If you will be doing another trip, make sure to arrange to pick up more during your offload.

I have 10 spiny dogfish sharks and 1 spiny dogfish shark part in my species comp sample. I took sex/lengths from all 10 whole fish - do I use sample design code 10 (census) or another code?

Include the weight of the shark part in with the weight of the 10 whole sharks and record the lengths as census code 10.

For sex/lengths, when do I use sample design code 10?

Sample design codes are used at both the haul level for species comp samples and sex/length sample level - they are independent of each other. For example, if you sampled half of a haul, by randomly choosing the first or second half, your sample design code would be 6 - simple random. If you took sex/lengths from all the roughey rockfish in your species comp sample, your length sample design would be 10 - census.

What do we do if it is time to change shift and the observer whose shift is ending is in the middle of a sample?

The usual protocol for shift-crossing samples is for the observer coming on shift to come to the factory, check-in with the observer currently sampling about haul specifics (size, diversity, average weight sample coming up, etc.) or check the decksheet where all this is written and then say something along the lines of 'OK, I got it from here, have a good off shift, don't eat too much ice cream,' and then take over sampling the haul.

What if I need to drop off frozen specimens on a Saturday, Sunday or federal holiday?

Access to the NOAA Sand Point campus is allowed from 6am – 6pm, Monday-Friday (excluding federal holidays). Most hake boats remain in port for several days at the end of hake deployments so if you disembark on the weekend, you should be able to return on Monday to pick up your frozen specimens and bring them to the NOAA campus. If the boat will be leaving port before Monday morning, inform the A-SHOP as soon as possible and arrangements can be made.

Appendix G. Record of Daily Scale Tests

Revised 4/10/13

OMB Control No. 0648-0330
Expiration Date: 11/30/2015



RECORD OF DAILY SCALE TESTS

Vessel Name: _____ Date: _____

Time test started: _____

I. TEST PLATFORM SCALE

10kg _____
(9.95-10.05kg)

25kg _____
(24.88-25.13kg)

50kg _____
(49.75-50.25kg)

II. WEIGH FISH ON OBSERVER PLATFORM SCALE

BASKET #	WT FISH + BASKET (kg)	BASKET #	WT FISH + BASKET (kg)	BASKET #	WT FISH + BASKET (kg)	BASKET #	WT FISH + BASKET (kg)
1		8		15		21	
2		9		16		22	
3		10		17		23	
4		11		18		24	
5		12		19		25	
6		13		20		26	
7		14		Total weight all fish+baskets		0.00	

III. CALCULATE PERCENT ERROR OF FLOW SCALE

Scale Indicator _____

Begin Test: _____ kg

End Test: _____ kg

TOTAL WEIGHT FISH AND BASKETS (kg)	-	WEIGHT OF BASKET	=	PLATFORM SCALE WEIGHT OF FISH (kg)	WEIGHT OF FISH ON FLOW SCALE (kg)	ERROR (B) - (A)	% ERROR = (C) ÷ (A) X 100
				(A)	(B)	(C)	

IV. SEA CONDITIONS (BEAUFORT SCALE) AT TIME OF SCALE TEST (CHECK ONE):

0 1 2 3 4 5 6 7 8 9 10 11 12

SIGNATURE OF VESSEL OPERATOR _____

I observed this test and to the best of my knowledge it was conducted in accordance with 50 CFR 679.28 (b)(3)

Signature of observer _____

INSTRUCTIONS

1. Test platform scale using standard test weights of 10kg, 25kg and 50kg. Record weights in Section I. The displayed weight must be accurate to +/- 0.5%.
2. Collect approximately 400 kg of fish in baskets and weigh the baskets of fish on the platform scale. Record the weight of each basket of fish (basket plus fish) in Section II.
3. Record the total weight of all baskets plus fish in the first box in Section III.
4. Record the weight of the baskets in the second box. Subtract the weight of the baskets from the total weight of fish plus baskets to determine the weight of the fish only, record this weight in the third box in Section III. This is the platform scale weight of the fish (A).
5. Record the weight displayed on the flow scale before and after the test fish are weighed.
6. Weigh the fish from the baskets on the flow scale. Record the weight in the fourth box of Section III (B).
7. Calculate error of flow scale by subtracting the platform scale weight (A) from the flow scale weight (B). Record the error (C) in the fifth box of Section III.
8. Calculate percent error by dividing the error (C) by the known weight of the fish (A) and multiplying by 100. Record this information in the last box of Section III. The scale is weighing within 3 percent error if the result is between -3.0% and +3.0%.
9. Record the Beaufort Scale sea conditions at time of test, Section IV.
10. Have form signed by vessel operator and observer.

Appendix H. Contractor Information

Alaskan Observers, Inc. (AOI)

130 Nickerson, Suite 206
Seattle, WA 98109
Phone: (206) 283-7310
Fax: (206) 283-6519
E-mail: aoistaff@alaskanobservers.com
www.alaskanobservers.com

Saltwater, Inc. (SWI)

733 N. Street
Anchorage, AK 99501
Phone: (907) 276-3241
Fax: (907) 258-5999
E-mail: stacey.hansen@saltwaterinc.com
E-mail: joann.alvarez@saltwaterinc.com
www.saltwaterinc.com

TechSea International Inc.

2360 W. Commodore Way
Seattle, WA 98199
Phone: (206) 285-1408
Fax: (206) 285-1535
E-mail: Troy@techsea.com
E-mail: Michael@techsea.com
www.TechSea.com

Appendix I. Common fisheries abbreviations

ABC	Allowable biological catch
ACL	Annual catch limit
AFSC	Alaska Fisheries Science Center
A-SHOP	At-Sea Hake Observer Program
CDFG	California Department of Fish & Game
CPUE	Catch per unit effort
CS	Catch Shares
DFO	Department of Fisheries & Oceans (Canada)
EEZ	Exclusive economic zone
EFHCA	Essential fish habitat conservation area
EIS	Environmental impact statement
EPIRB	Emergency Position Indicating Radio Beacon
ESU	Evolutionary significant units
FMP	Fisheries management plan
MARPOL	Marine pollution
MPA	Marine protected areas
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NPGOP	North Pacific Groundfish Observer Program
NWFSC	Northwest Fisheries Science Center
ODFW	Oregon Department of Fish & Wildlife
OFL	Overfishing level
PFMC	Pacific Fishery Management Council
TAC	Total allowable catch
WCGOP	West Coast Groundfish Observer Program
WDFW	Washington Department of Fish & Wildlife
WOC	Washington – Oregon – California coasts

Appendix J. Useful Websites

Northwest Fisheries Science Center

<http://www.nwfsc.noaa.gov/>

Fishery Resource Analysis & Monitoring Division

<http://www.nwfsc.noaa.gov/research/divisions/fram/index.cfm>

At-Sea Hake Observer Program

http://www.nwfsc.noaa.gov/research/divisions/fram/observation/catchshares_how.cfm

Northwest Regional Office

<http://www.westcoast.fisheries.noaa.gov/>

Groundfish Management

<http://www.westcoast.fisheries.noaa.gov/fisheries/groundfish/index.html>

Whiting Fishery Management

http://www.westcoast.fisheries.noaa.gov/fisheries/management/whiting/pacific_whiting.html

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