



At-Sea Hake Observer Program Observer Sampling Manual

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NOAA Fisheries
Northwest Fisheries Science Center
Fishery Resource Analysis & Monitoring Division

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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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This manual is a supplement to the North Pacific Groundfish 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. Observers who fail to complete the vessel safety checklist will receive automatic zeros as evaluation scores, because they have 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.

Safety concerns specific to factory vessels:

- Create an observer emergency plan with your partner
- Know location of hydraulic shut-off(s)
- Be aware of diverter board and moving 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 C/Ps and motherships went into effect in 2004, though observers have been deployed in the hake fishery since the late 1970's. In 1997, the catcher-processor (C/P) sector entered into a cooperative agreement (co-op) which split the hake quota into individual fishing quotas by company. In 2011, the mothership sector entered into a co-op for the first time as West Coast trawl fisheries began operating under a trawl rationalization program, including all sectors of the hake fishery. Under trawl rationalization, the allowable bycatch for certain species is now divided into individual quotas, increasing vessel accountability

All observer information must be kept confidential. Observers must 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 only 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, but the other tribes have expressed interest in entering the fishery recently. 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.

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. Note this does not mean it's a CDQ fishery, but simply designates which tribe the delivery came from. Contact your in-season advisor for the appropriate code if your vessel is participating in the tribal fishery. In the tribal fishery there will not be any observers on the catcher vessels delivering to the motherships, as there is in the mothership co-op sector.

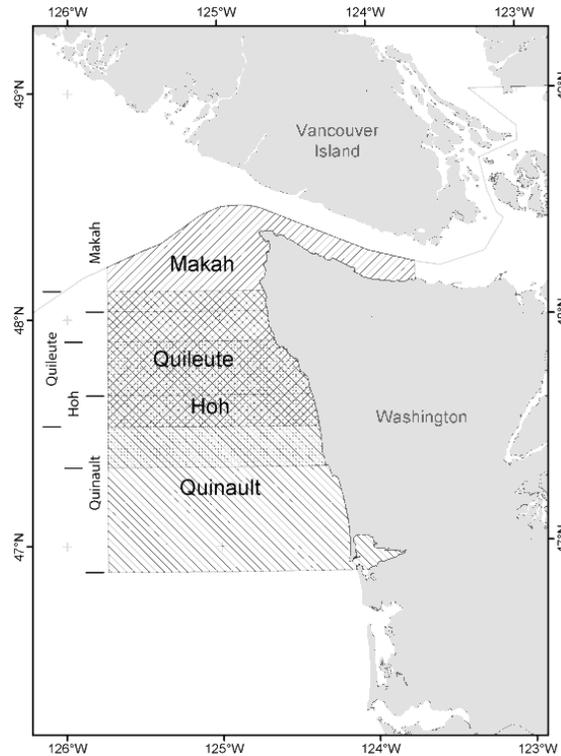


Figure 1 Tribal Usual & Accustomed Areas

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 lower bycatch quotas. In 2004, the at-sea hake fishery came close to catching the entire canary rockfish allocation in one haul. Therefore, some rockfish species have specific bycatch limits (often referred to as “hard caps”). In 2012, these bycatch limits were split between the co-ops. 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.

On April 7, 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. Please contact the Observer Program if there are any questions or confusion about this.

1. All vessels stated that they are willing to help the observers during hauls with high bycatch levels 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 assistant 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 collect 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 of high priority, but it can only be done if every single piece of bycatch can be accounted for. In the end, sample size will be dictated by your ability to account for all bycatch in the sample. If you are unable to collect a large sample, you will need to explain to the captain and/or factory manager what it is that is preventing 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 you should 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.*

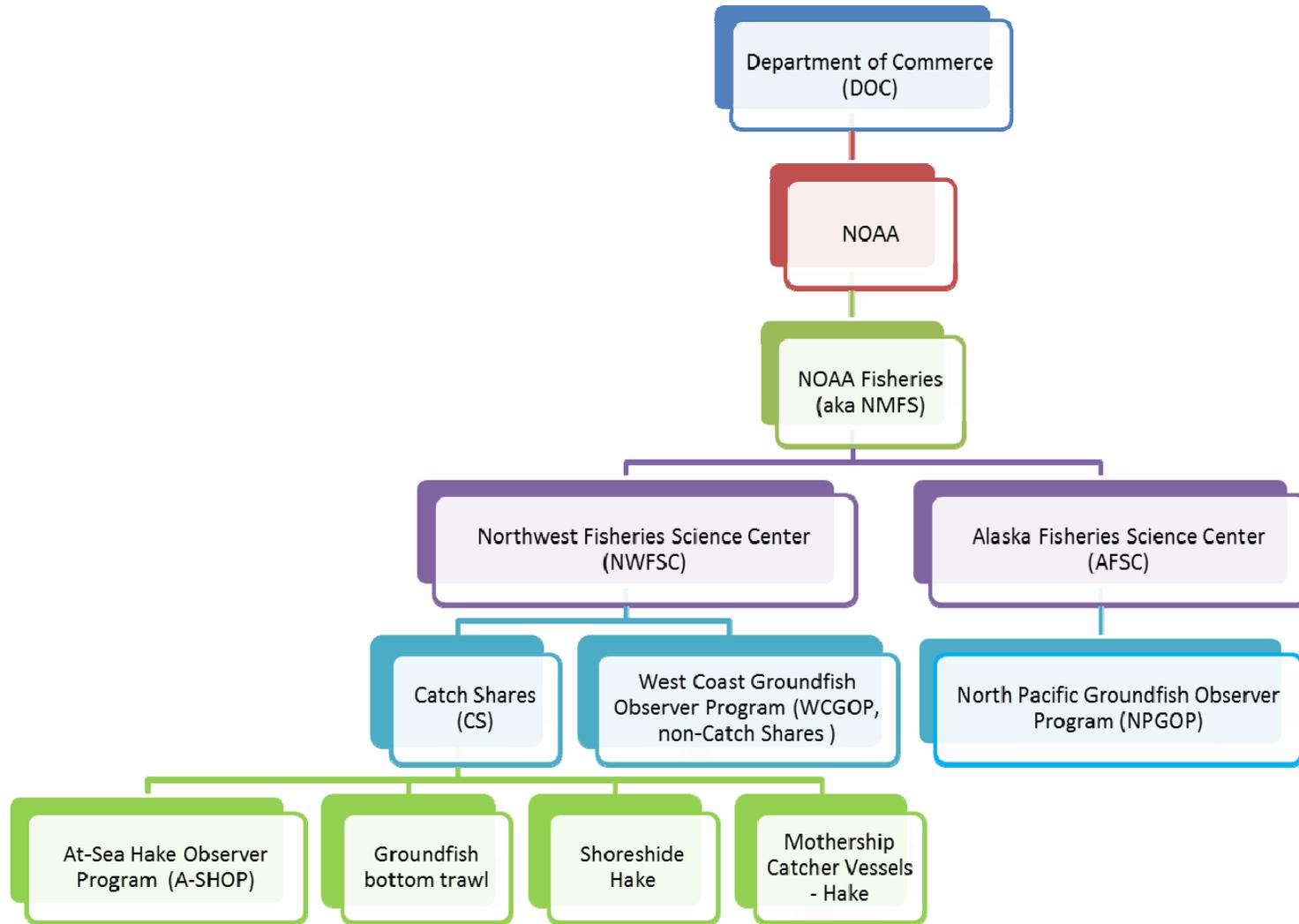


Figure 2 NOAA Organization chart

This chart shows the components of the observer programs on the West Coast. 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.

At-Sea Hake Observer Program

Fishing Regulations

Vessel record-keeping and reporting on the West Coast are different than in Alaska. NMFS does not issue vessel logbooks in the hake fishery. The captain will record haul information, in a logbook or notebook, from which you will get the VHF data. Please make copies 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 similar to Alaska went into effect in 2011. Verify sample station dimensions in your observer logbook.

Fishing regulations for the West Coast are different than those regulating Alaska fisheries. Be aware of:

No processing zone: No at-sea processing is permitted south of 42.00°N (near the CA-OR border).

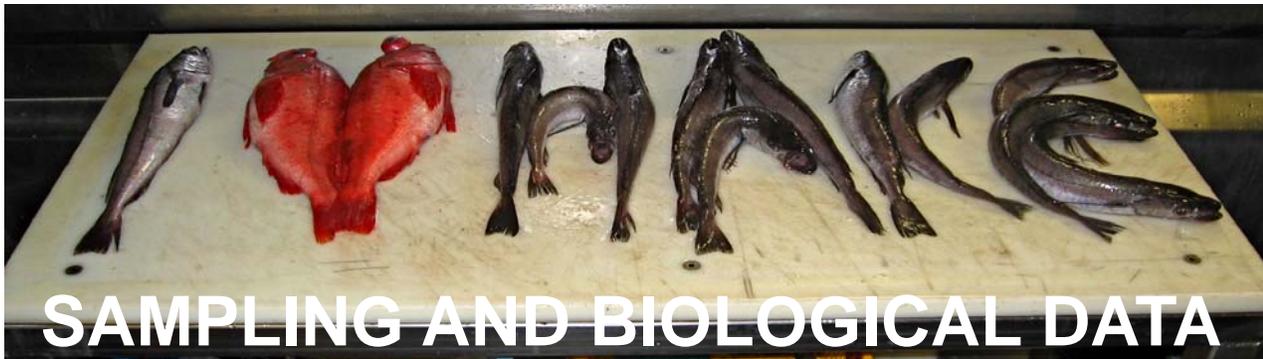
Mothership catcher vessels may fish south of 42.00°N, but must return north to deliver the fish.

Interpreting regulations is **not** part of your observer duties.

Retention: The vessel is completely responsible for knowing what they may or may not retain. If someone on the vessel asks you if they are allowed to retain something (i.e. 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: Hake mothership catcher vessels carry West Coast Groundfish Observer Program (WCGOP) observers for every fishing day. These observers primarily record retention and estimate any at-sea discards. Mothership observers will be instructed by the A-SHOP, via in-season text message or during debriefing, when discard amounts from the catcher vessels need to be added to the mothership Observer Catch Estimates and discard weights.





Observer Priorities

1. Personal safety
2. Marine mammal *samples*
3. Haul information and catch estimates
4. Species composition samples
5. Protected species samples (salmon & sturgeon)
6. Age structures (and ovaries, on designated vessels)
7. Sexed lengths
8. Monitor for marine mammals and seabirds
9. Fish collection and other tasks

Observer Catch Reporting

Your 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. Inform your in-season advisor of significant events (e.g. hauls with large amounts of species of concern, non-fishing days due to the vessel needing repair, etc.) and any questions you have while deployed.

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. It is critical to ensure no data entry errors have been made by double checking your work and your partner's work. You should not transmit bogus catch estimates. Wait to send your data until you have the correct catch estimates for all the hauls up to that point.

While fishing for hake, record “**HAK**” in the “purpose code” field on the VHF 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 and Seabirds

Sampling for marine mammals is your second highest priority. If a marine mammal is caught, collecting the appropriate samples and information takes precedence over other sampling duties. *Monitoring* for marine mammals is lower on the priority list and should be done primarily 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 haul backs and codend dumping for marine mammals. In other words, monitoring for marine mammals should not negatively affect your sample size.

Clearly label all marine mammal specimens with the lead observer’s cruise number, species name and haul information. Refer to Chapter 14 of your Alaska manual for more information on marine mammals, in particular on how to collect specimens. 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, not in species composition data.

Refer to Chapter 16 of your Alaska manual for detailed information on seabird sightings and interactions. 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 specimens, with albatross species being the highest priority. Enter species, count and weight in species composition data for birds that 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 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.

Short-tailed albatross are a species of interest and sightings off the West Coast have increased in recent years. Every sighting and interaction with a short-tailed albatross needs to be recorded on the Bird Interaction, Activity and Species Form in ATLAS, as well as on paper forms. For more information, see page 16-9 of the Alaska manual.

Observer Catch Estimates

All at-sea hake vessels have flow scales and must test them once every 24 hours. The regulations requiring this basically mirror the flow scale regulations in Alaska. See Chapter 4 of your Alaska manual, starting on page 4-5 for the details of flow scale use. Use the flow scale weight for catch estimates, 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 and to track the cumulative total catch weight for the vessel. 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. This can be compared against the vessel’s printout of each haul weight to verify the catch estimates. Turn in copies of the vessel’s flow scale printouts with your OHF.

If part of a codend is dumped, or you see fish escaping through a blow-out panel in the net, visually estimate the weight and add it to the flow scale weight for your total observer catch estimate. 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 your logbook on the “Flow Scale Catch Estimate Calculations” page.

Mothership Haul Recording

Record hauls in order of gear retrieval date and time on the VHF. Motherships number hauls in the order they are received from the catcher vessel, not by gear retrieval date and time (*see figure 3.1*). To keep track of which haul is running over the flow scale, use the mothership’s haul numbers. This means haul numbers may be recorded out of sequence on the VHF (*see figure 3.2*).

Tow #	Boat	Date	Time	Set Time	Set Position	Bottom Depth	Net Depth	Stop Time	Haul Position
79	Gi	5-18-13	1015	0650	4657 12456	420	185	0755	4701 12451
80	Ri		1300	0800	4653 12458	380	160	1030	4655 12455
81	Sc		1550	0830	4652 12455	370	175	1015	4653 12458
82	Qu		1730	1145	4649 12454	395	150	1340	4648 12459
83	Tc		2020	1250	4651 12459	415	125	1520	4654 12457
84	Ob	5-19-13	1100	0630	4701 12453	280	115	0730	4659 12456
85	Ki		1230	0600	4705 12457	265	105	0655	4703 12453
86	Es		1440	0820	4658 12454	295	90	1030	4701 12454
87	Yu		1715	1045	4702 12452	370	125	1255	4705 12457

Figure 3.1 Mothership vessel logbook – hauls numbered in the order received

Vessel Haul Form

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Cruise	Permit	Year	Gear type	Pur. Code
11333	76	2013	2	HAK

Observer Name Muddy Waters Resubmission (Circle All Changes)

Vessel Name Sally Deg

Trip No.	Haul No.	CDQ No.	Vessel Type	Gear Performance Location Code	Deployment Information										Retrieval Information												
					Month	Day	Time	Latitude (N)			E or W	Longitude			Average Bottom Depth	Average Gear Depth	M or F	Month	Day	Time	Latitude (N)			E or W	Longitude		
								Deg.	Min.	Sec.		Deg. (100)	Min.	Sec.							Deg.	Min.	Sec.		Deg. (100)	Min.	Sec.
1	79	N	21	R	05	18	0650	46	57		W	24	56		420	185	F	05	18	0755	47	01		W	24	51	
1	81	N	21	R	05	18	0830	46	52		W	24	55		370	175	F	05	18	1015	46	53		W	24	58	
1	80	N	21	R	05	18	0800	46	53		W	24	58		380	160	F	05	18	1030	46	55		W	24	55	
1	82	N	21	R	05	18	1145	46	49		W	24	54		395	150	F	05	18	1340	46	48		W	24	59	
1	83	N	21	R	05	18	1250	46	51		W	24	59		415	125	F	05	18	1520	46	54		W	24	57	
1	85	N	21	R	05	19	0600	47	05		W	24	57		265	105	F	05	19	0655	47	03		W	24	53	
1	84	N	21	R	05	19	0630	47	01		W	24	53		280	115	F	05	19	0730	46	59		W	24	56	
1	86	N	21	R	05	19	0820	46	58		W	24	54		295	90	F	05	19	1030	47	01		W	24	54	
1	87	N	21	R	05	19	1045	47	02		W	24	52		370	125	F	05	19	1255	47	05		W	24	57	

Figure 3.2 Mothership observer VHF – hauls recorded in order of gear retrieval date and time

Scale Testing

The observers must test the motion compensated platform (MCP) at least once a day. Test the MCP scale using certified weights at 10, 25, and 50 kg. Record the results in the “Daily Observer MCP Scale Test Log” in your logbook, even if it fails. 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 retesting it or try calibrating the scale and then retest.

Both the motion compensated platform (MCP) scale and 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. The vessel will complete a daily flow scale test record form. For an example of the “Record of Daily Scale Tests”, see Appendix H. There is a place for the observer who witnessed the test to sign. This simply means you witnessed the test, not that the flow scale passed.



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 3% variance is allowed.

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 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 objects removed on deck or anything 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, document this fully in your logbook.

Presorted Organisms

Although presorting is never legal, removing very large animals on deck to prevent them from entering the factory or live tanks is sometimes unavoidable. 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 if necessary. Documenting presorted organisms does not validate the illegal practice of presorting. Observers should remind the deck crew that organisms such as ragfish or large skates should not be sorted on deck.

If a very large organism is excluded on deck or removed 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 '0' for the weight, or use the appropriate length/weight table. Measure and record the length and sex, 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. If you're able to cut the organism up and weigh the pieces, this weight data will help us develop new length to weight tables for species which are very large and not often weighed. Length to weight tables for Pacific sleeper sharks, Pacific halibut, big skates, and longnose skates can be found in Appendix O-Q in the Alaska manual. You must take an actual length measurement to use them.



If an organism makes it into the factory, it has a chance to be in your sample. Individuals of certain species, such as ragfish, may be too large or bulky to go up the incline belt. Direct crewmembers 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 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.

Steps in Designing a Random Sample Frame

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

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.

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 healthy 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 entirely on observer data, therefore, it is vital that the data be both randomly collected and of the highest quality. Implementing a random sample frame is usually simple since these 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.

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. all fish run out of tanks). 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 tank doors and run out all the fish on the belts at the start and end of your sample.

If you cannot see and collect all species for which you are sampling, you must either reduce your sample size or work with the boat to run the fish in a thinner layer. 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 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).

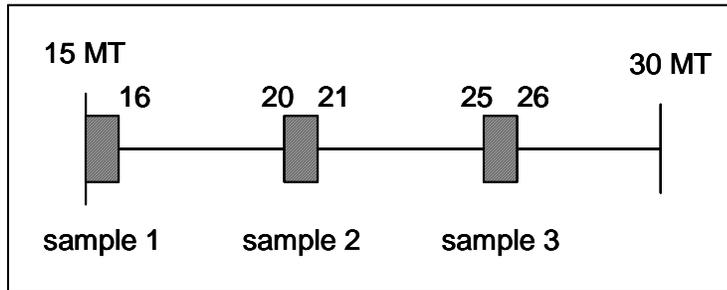


Figure 4

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

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. 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. $\left[\frac{\text{discards from species composition sample}}{\text{species composition sample weight}} \right] \times \text{observer catch estimate}$
2. Multiply discards in species composition sample by 2 (for hauls where ~50% was sampled)
3. Visually estimate (for bag overflow)

Average Weight Samples (referred to as subset sampling in Alaska manual)

The average weight of hake from every haul is necessary for resource managers. Randomly collect an average weight sample of ~50 hake from every haul (about half a basket) and record the weight and number of fish. **The average weight sample is a logical place to get your length and otolith fish.**

Average weight sampling is a good option to minimize your workload while maximizing sample size, by reducing the number of organisms you need to count within your sample. For an average weight sample, record a count and weight for ~50 randomly collected individuals. Record the weight for the remaining individuals of that species with a 0 count. For very large organisms (e.g. ragfish), it is acceptable to only count and weigh ~15 and just weigh the rest. Average weights are collected once per haul, not per sample. For an illustration, see Appendix E. Subsampling Decksheet Example.

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

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 ragfish 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 ragfish and hake go by and collects all other bycatch. At 27 tons (the beginning of the 4th ton of his sample), he has the belts prior to the flow scale stopped and records the weight. He starts the belts and pulls everything but hake off the belt. After about a ton, he stops the belts again and records the 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 Example.

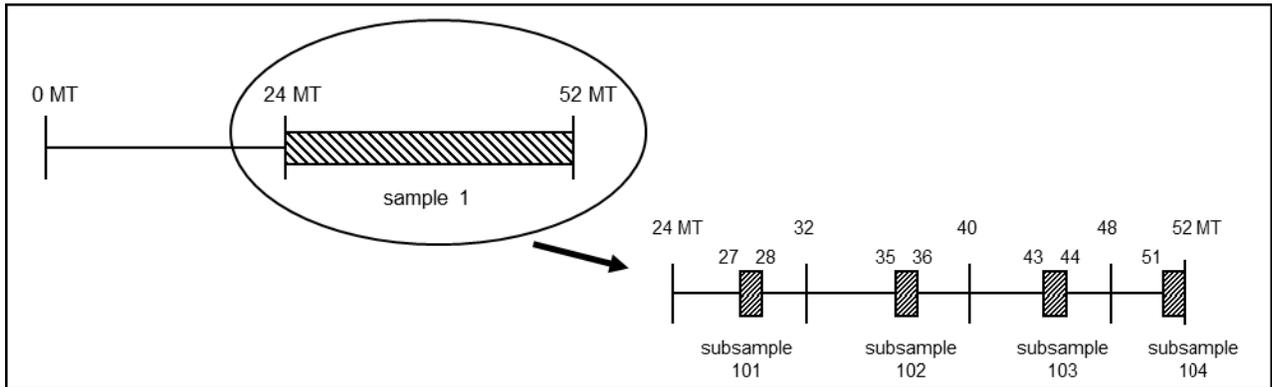


Figure 5

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).

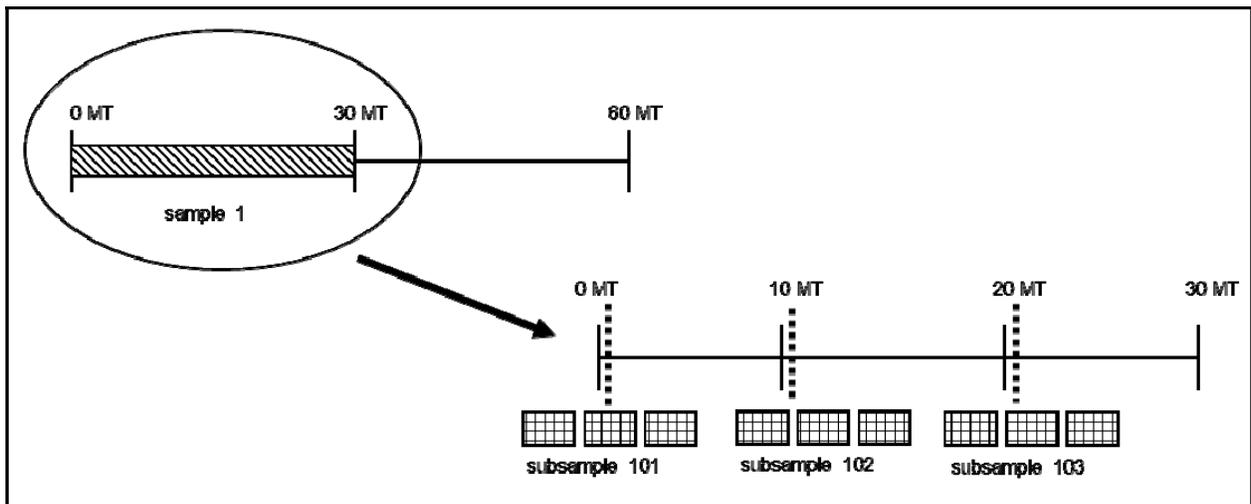


Figure 6

High Bycatch Sampling Options

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 a large amount of 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.

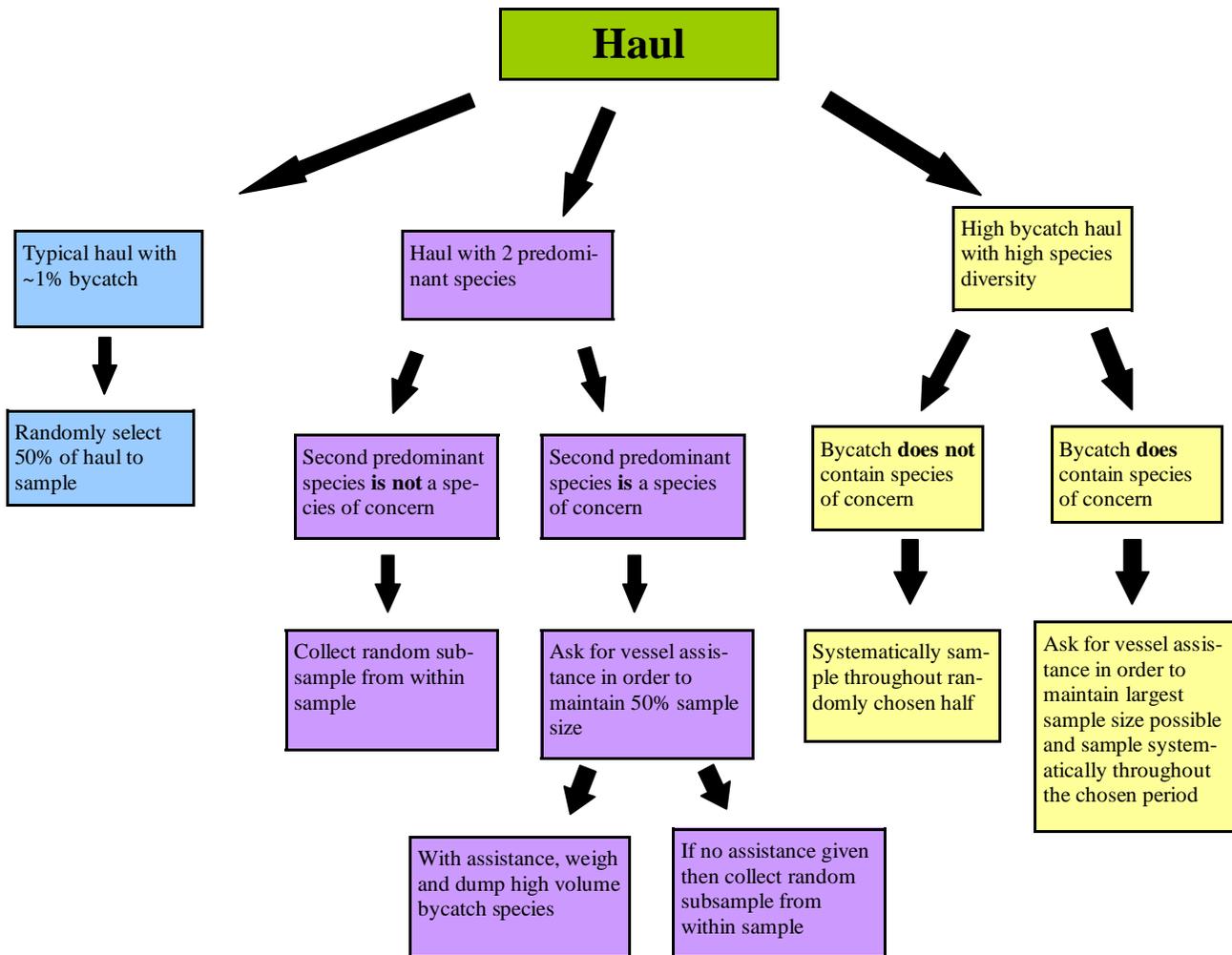


Figure 7 A-SHOP sampling flow chart

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. Unlike in Alaska, 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 Species Sampling

Salmon and sturgeon species are protected under the Endangered Species Act (ESA). When these species 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 might want haul-by-haul salmon numbers from you, so they can identify and 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 find you cannot 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!

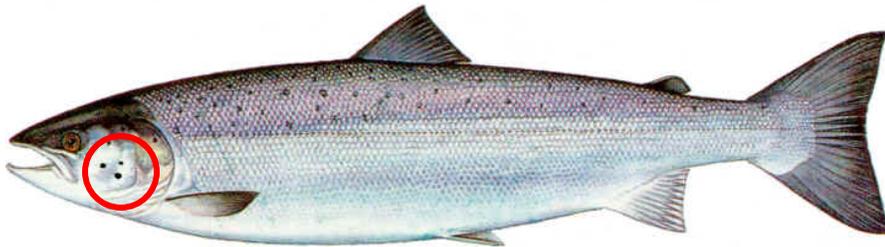
Be careful with salmon identification. Salmon can be more challenging to identify off the West Coast than in Alaska, and the usual characteristics for identification may be faint or absent. If you are uncertain of the identification, freeze that salmon and bring it back with you. (Yes, the whole fish.)

In lieu of collecting salmon scale samples for verifying species **you will collect 5 whole specimens of each species you see, from *inside* your 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, NPGOP and WCGOP with salmon specimens for their fish training. It is unlikely that each observer will have more than 10 specimens apiece. These 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.

Atlantic Salmon

No Atlantic salmon have been caught in the hake fishery to date, but they have been caught in both B.C. and Alaska. The key distinguishing feature of an Atlantic salmon is black spots on the gill cover.



If you encounter an Atlantic salmon - *keep the whole fish, even if it was not in your sample.* If you do get one in your sample, record it in your data like normal and enter it as salmon unidentified.

Salmon Sampling

1. Species Composition Sampling

- a. Identify species
- b. Determine sex
- c. Weigh

2. Coded-wire Tag and Chinook Genetics Sampling

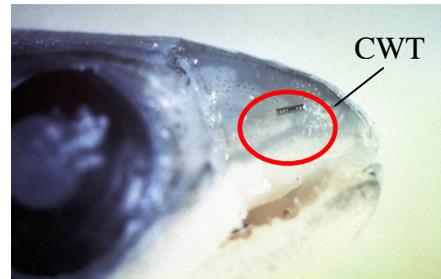
- a. Measure length and record sex
- b. Individual weight
- c. Check for CWT, remove snout and freeze if tagged (Chinook and Coho)
- d. Take fin clip for genetics (Chinook only)
- e. Record CWT and genetics data on A-SHOP Salmon Sampling Deck Form

3. Species ID Verification

- a. Freeze five whole specimens for species verification (all species)

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.



CWT data is collected and recorded on the A-SHOP Salmon Sampling Deck Form for every Chinook and coho salmon, whether they are tagged or not. Collecting this data will help determine the relative percentages of salmon that are tagged, the salmon's age, whether it is a hatchery or wild salmon, and the salmon's origin. One water-resistant 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; however, if you do encounter one, bring back the whole fish.

1. Scan **all** Chinook and coho **inside** the species composition sample for the presence of CWTs.
 - Pass the wand, in direct contact with the salmon's skin, along the exterior of the entire upper snout (*see Figure 8*).



Figure 8 Scanning salmon for presence of CWT



Figure 9 Salmon snout with 'A-SHOP' tag in zip-top bag

2. Collect all tagged snouts.
 - Cut straight down directly behind the eye to collect the upper snout only.
 - Place an 'A-SHOP' tag with the snout inside a zip-top bag (*see Figure 9*) and freeze.
 - Record the tag number in the 'A-SHOP snout #' 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 they all return to debriefing with you.
3. **Record data for all scanned salmon, even those *not tagged*,** on the A-SHOP Salmon Sampling Deck Form (*see Figure 10*).

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** by storing them clean, dry and in a 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.

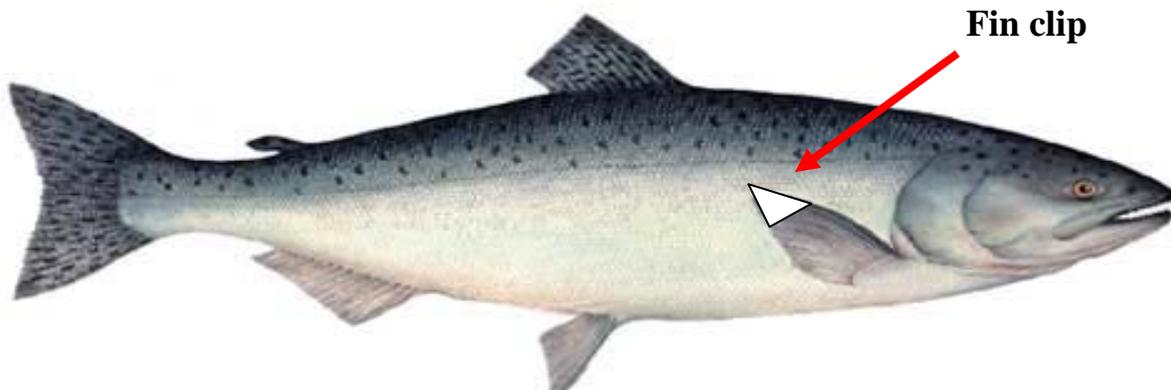
Chinook Genetic Sampling

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 that 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.

- Snip off a small piece of pectoral fin (no larger than this ) with scissors.



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



- Record cruise number, haul number and A-SHOP Snout # (if CWT tagged) on envelope.

Keep the envelopes clean. Slime or blood from other fish will 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 End of 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 genetics sampling is done in conjunction with CWT sampling (i.e. do both or neither). Indicate that you subsampled on the A-SHOP Salmon Sampling deck form (circle “Yes” next to “Subsampled?”) and describe your subsampling method. Sex/length/weight data is only collected for Chinook that are sampled for CWTs and genetics, so collect only sexed-length data for Chinook outside the subsample. The relatively few coho you will see should *all* be sampled for CWTs.

Example: 5 cohos and 4 baskets of Chinooks are in the species composition sample. Sample all 5 cohos for CWTs and randomly select 3 of the 4 baskets of Chinook to subsample for CWTs and genetics.

Collect sexed-lengths on Chinook outside of subsample.

Note: Hauls with this level of Chinook bycatch are rare.

Completing the Salmon Sampling Deck Form

Record species composition data for salmon and other species on the ATLAS deck form and enter into ATLAS. **All CWT and genetics data must be recorded on the A-SHOP Salmon Sampling deck form.** As with other forms, the lead observer's name and cruise number are recorded in the form header. The A-SHOP Salmon Sampling deck form is set-up for data entry into ATLAS and into SnoutBase (described in following section). Chinook genetics data are entered into ATLAS specimen data. Record the barcode on the Chinook genetics envelopes as the specimen number for both the sex/length/weight (specimen type 3) and fin clip (specimen type 4) entries. Chinook and coho CWT data are entered into SnoutBase.

A-SHOP SALMON Sampling Deck Form Page 4 of

Cruise	Permit	Observer: <u>Hake S. Coker</u>
<u>97531</u>	<u>10987</u>	Vessel: <u>Merluzza</u>

Haul #	Sample #	Subsampled? <input checked="" type="radio"/> NO <input type="radio"/> Yes
<u>17</u>	<u>1</u>	if Yes, method: _____

	ATLAS	ATLAS	ATLAS	ATLAS				
	Species	Sex	L (cm)	Chinook genetics #	Wt. (kg)	Snout taken?	A-SHOP snout #	Adipose present?
	SnoutBase	SnoutBase	SnoutBase	SnoutBase	SnoutBase	SnoutBase	SnoutBase	SnoutBase
1	Chinook	F	47	504 740	1.73	N	—	Y
2	Chinook	M	53	504 741	1.98	N	—	Y
3	Chinook	F	52	504 742	1.87	Y	1411	N
4	Chinook	F	61	504 743	2.83	N	—	N
5								
6	Coho	M	63	—	3.01	N	—	Y
7								

Figure 10 Example of A-SHOP Salmon Sampling Deck Form

Enter in ATLAS:

- Length data
 - Species
 - Sex
 - Length
- Specimen data
 - Specimen type 3
 - Chinook genetics #
 - Weight
 - Specimen type 4
 - Chinook genetics #
 - 0 for weight

Enter in SnoutBase:

- Species
- Sex
- Length
- Weight
- Snout taken? Y/N
- A-SHOP snout #
 - If snout taken
- Adipose present? Y/N

Entering Data into SnoutBase

Data for all Chinook and coho salmon, whether they are tagged or not, are entered into SnoutBase. SnoutBase is part of the West Coast observer program's database, just as ATLAS is the Alaska observer program's data entry program. ATLAS does not have all necessary CWT data fields, so the CWT data must be entered into SnoutBase. Detailed directions for how to access and use the on-line forms for entering CWT data into SnoutBase are located in Appendix F. "SnoutBase Data Entry Instructions". Please follow the directions and enter your data while at-sea.

Sturgeon

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

Observers who return without forms for all rockfish and salmon species will be at risk for receiving a zero as an evaluation score for that deployment.

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.

Suggested photo file labeling format: Label a folder with your name, cruise number, vessel and year. Label the individual pictures *inside* the folder with species name and haul number. Alternatively, label each picture with species, haul number, cruise number and initials (*e.g. Canary_H18_97731_BK*).

Length and Age Structure Sampling

All lengths and age structures should 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. If hake is not the predominant species in a haul, you should still collect hake lengths and otoliths. For a review of sample design and methods refer to the Alaska manual, Chapter 13. If you are having difficulty coming up with a random method for collecting fish to measure 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 (and remember 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.

Length and Age Structure Protocols (in order of priority)

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

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. Because you can't predict when one of these rockfish species will show up in the haul, rockfish lengths and otoliths should be collected whenever they are seen in the species composition sample (i.e. every haul if they are present, as time allows). If there are only a few individuals for several species of otolith rockfish, it is fine to collect otoliths from all of them.

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

Example 1: You have a haul with many POP, darkblotched and widow. POP and darkblotched are higher priority than widow, so you would collect otoliths and sex/lengths from POP and darkblotched.

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

Rockfish lengths should be collected randomly. To ensure a random sample, these length fish must come from your species composition sample. Predicting when and how many of a species you will see is impossible. Ideally, you should collect all in your sample and then randomly choose your length sample. However, this may be difficult or impossible if you have more than a few baskets worth of fish. In those cases, you will need to devise 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 sample. Rockfish lengths must be sexed as they are of no use for stock assessment without sex data. 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 11*).

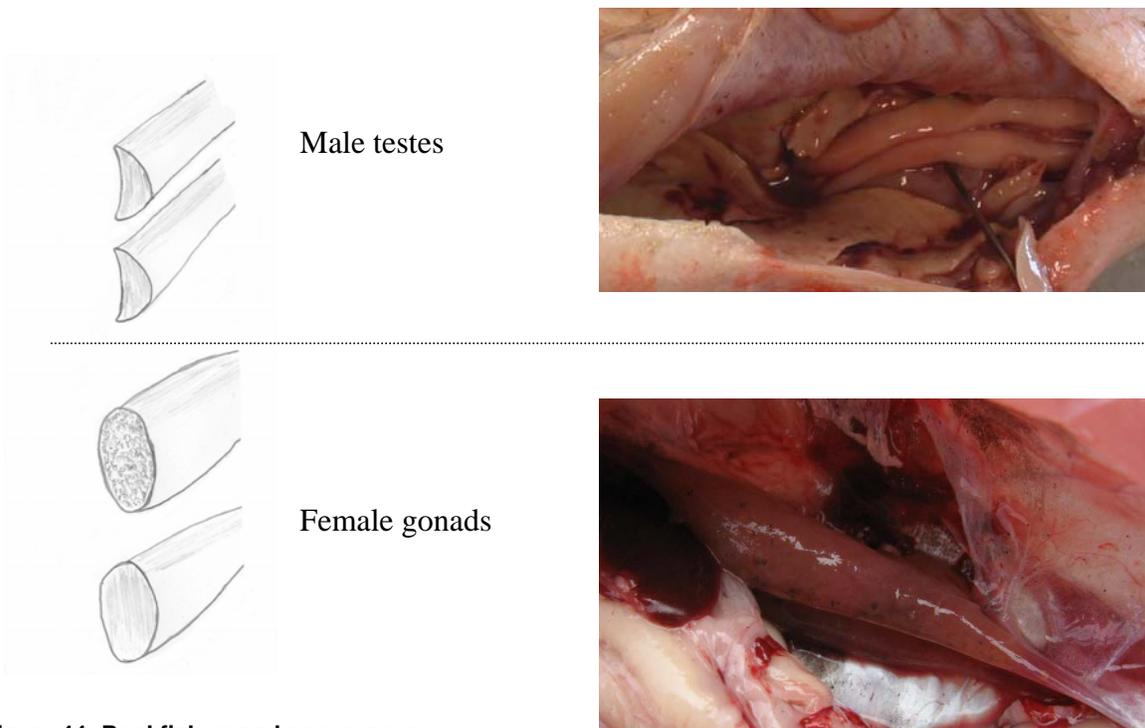


Figure 11 Rockfish gonad appearance

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, vials will *not* need to be hydrated during debriefing as they are shipped dry to age readers so it is very important otoliths are cleaned and dried at-sea.



Hake Maturity Project – Ovary Collection

The 2013 hake stock assessment review recommended that maturity data be collected during months when the hake and groundfish surveys are not also collecting 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 some 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**, when there are 10 or more in your species composition sample.

The data users want these data spread out both temporally and geographically, so only collect sex/lengths and spines when there are **10 or more spiny dogfish in your sample**. 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 12). For spiny dogfish, measure the fork length (FL) from tip of the snout to the fork in the tail (see Figure 13).

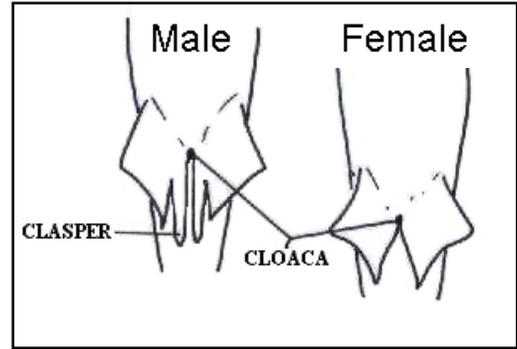


Figure 12 Ventral surface of sharks

For spiny dogfish spine and vertebrae collection, the two structures can be 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 while trimming excess tissue (see Figure 13). 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.

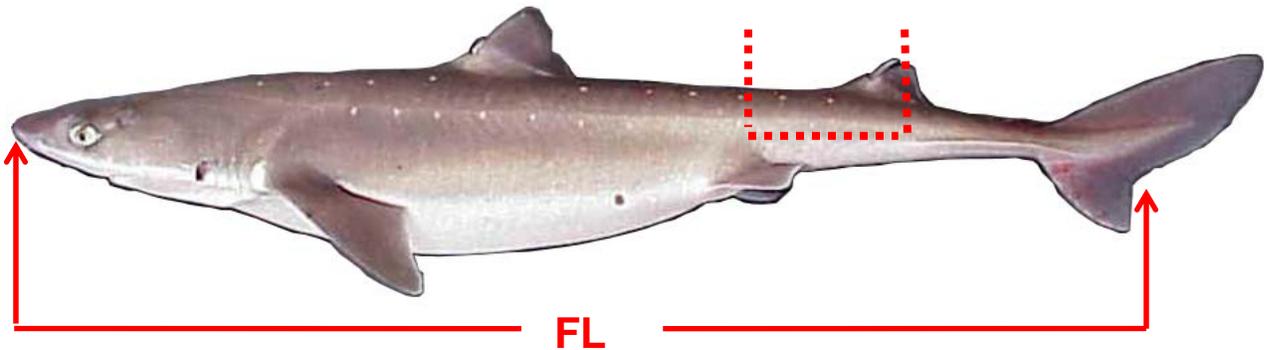


Figure 13 Spiny dogfish fork length and age structure collection

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.

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. For example, there have been two dusky rockfish and a yellowfin sole collected off Oregon, where they have not historically ranged. If you see an Atlantic salmon or a steelhead trout, bring the entire fish 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 so all of your frozen specimens return to debriefing with you.

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 should work together to collect the best data possible.

Mid-Season Data Checks

Every observer in the at-sea hake fishery 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, over e-mail 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 again to Alaska.

Turn in prior to debriefing:

1. Vessel & Observer Haul Forms
2. ATLAS deck forms
3. logbook
4. salmon sampling deck forms
5. species ID forms
6. vessel survey
7. memory stick with ATLAS archival data
8. specimens collected

Pick up an A-SHOP Pre-Debriefing Checklist before completing your vessel survey.

Deliver salmon snouts, dogfish samples, and clearly labeled specimens to the hake section of the Building 4 wet lab freezer. Inform your in-season advisor ahead of time if you need to drop off frozen specimens (e.g. whole salmon that won't fit in observer apartment freezer) over the weekend or federal holiday and arrangements can be made.

Contractors need to notify the A-SHOP when their observers return from their deployment so a computer and debriefing time and date can be scheduled. If an observer is *unable to arrive on time* for their scheduled appointment, the A-SHOP 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 your logbook lists recommended amounts of Alaska gear (e.g. otolith vials, 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 salmon wand is very expensive. Please take care of it. Most factory boats have a dry area near the observer sampling stations where you can store the wand and extra gear.

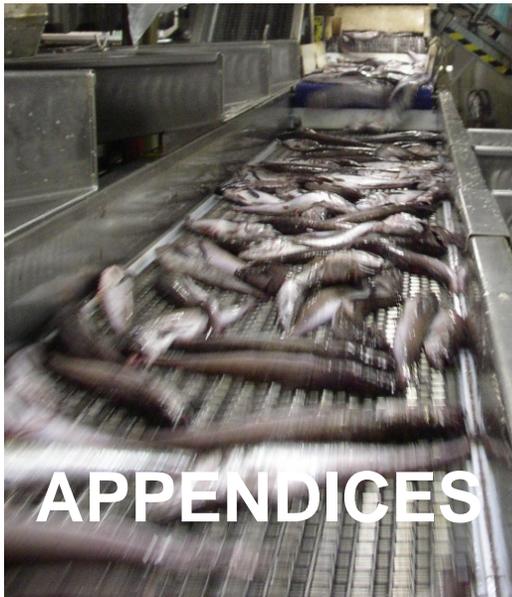
Gear Check-in Protocol

When you return from your hake cruise, make an appointment with Dan Decker (526-4198) or Karen Teig (526-4191) to return your gear. 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 (listed on the A-SHOP Gear Sheet) to your debriefer.

Photo Credits

Thanks to observers Lauren Ackein, John Bieraugel, Cassandra Donovan, Elise Hopkins, Roy Morse, Liz Perkins, Ben Riedesel, Ellen Sikes, 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.



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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 within the 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 3-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 3-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 at meeting? 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 2013

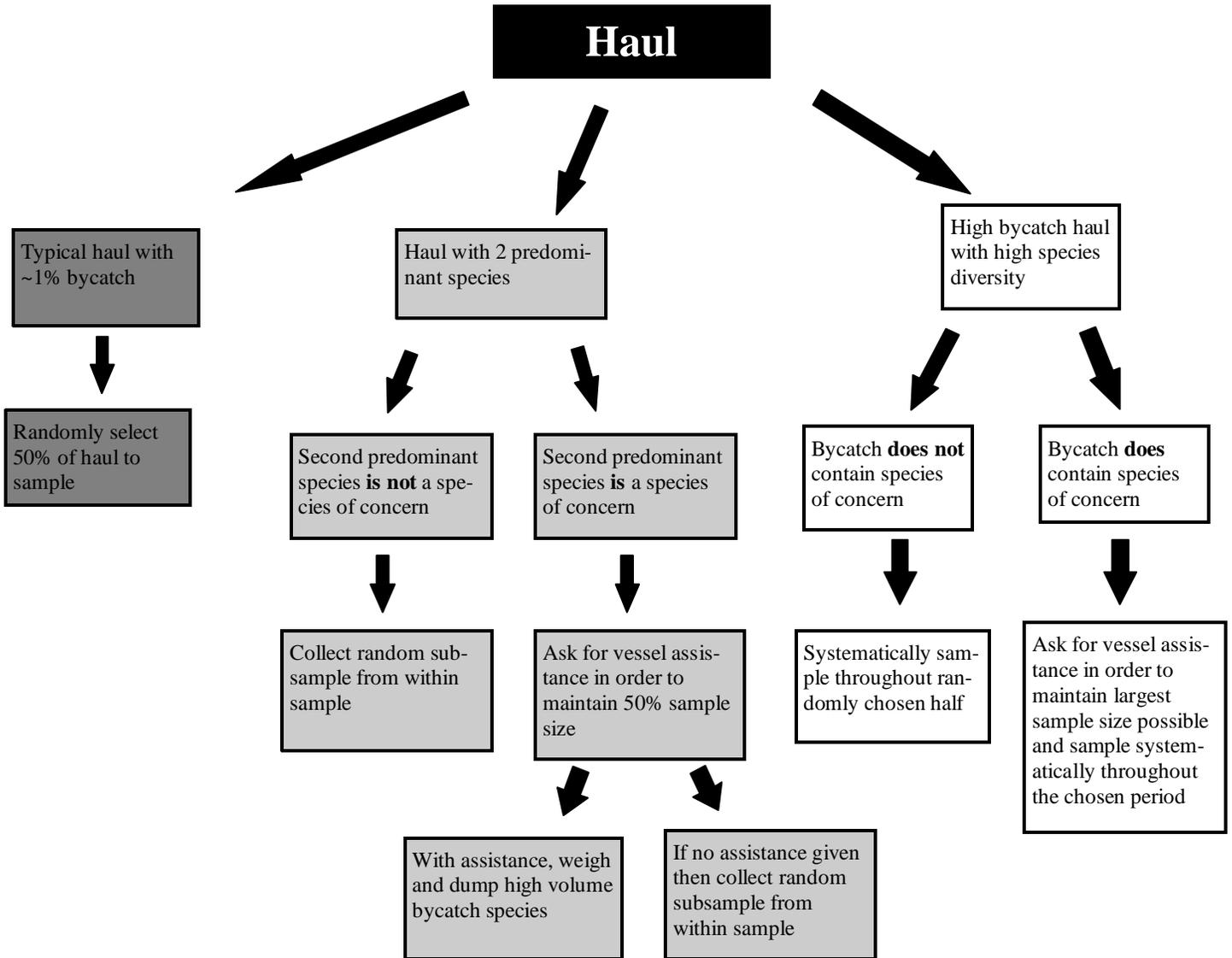
Suggested thresholds of action - If a species of concern is thought to be present in following amounts, the observer may require assistance to maintain large sample sizes

Hauls with **>200 kg** of canary (~100 fish)
Hauls with **>2 mt** of darkblotched (~2500 fish)
Hauls with **>500 kg** of POP (~500 Fish)
Hauls with **>50** Chinook (individual fish)
Hauls with **>10 mt** of widow (~9,000 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 where species of concern is 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 and POP, canary and darkblotched rockfish.

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 Example

DECK FORM					Page 49 of _____ for vessel/plant RD																	
Date	Cruise	Permit	Haul No.	Offload No.	Page 1 of 3 for haul/offload																	
5/27/13	13579	9876	42																			
Sample number: 1	Sub-sample number:	Sample size: 29 340		<input checked="" type="checkbox"/> Key punch pots	Combined <input type="checkbox"/>	Presorted <input type="checkbox"/>																
Species	Sex	#	Weight	% ret.	length, viability, injury, specimen, and tally data																	
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	70	84.62	<input checked="" type="checkbox"/>	~48 MT 1 (2) lots of rag fish!																	
Hake	<input checked="" type="checkbox"/>	0	0	100	~1 MT subsamples																	
Ragfish	<input checked="" type="checkbox"/>	0	0	0	RNT = (4)/8																	
Squid unid		57	13.98	100																		
Squid unid		0	35.60	100	27-28 35-36 43-44																	
Squid unid		0	29.18	100	hake avg wt - RNT = (1)/3																	
Am shad		8	2.32	100	<table border="1"> <tr><th colspan="2">POP</th></tr> <tr><th>F</th><th>M</th></tr> <tr><td>42</td><td>(39)</td></tr> <tr><td>(45)</td><td>(47)</td></tr> <tr><td></td><td>48</td></tr> </table>		POP		F	M	42	(39)	(45)	(47)		48						
POP																						
F	M																					
42	(39)																					
(45)	(47)																					
	48																					
POP		5	3.54	100	start: 24047 end: 53387 F-45-0.84-510847 M-39-0.52-510848 M-47-0.98-510849																	
Sample number:	Sub-sample number: 101	Sample size: 1121		<input checked="" type="checkbox"/> Key punch pots	Combined <input type="checkbox"/>	Presorted <input type="checkbox"/>																
Species	Sex	#	Weight	% ret.	length, viability, injury, specimen, and tally data																	
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	63	1121.00	<input checked="" type="checkbox"/>	start: 26993																	
Hake	<input checked="" type="checkbox"/>	0	1013.78	100	end: 28114																	
Hake		57	24.12	100	<table border="1"> <tr><th colspan="2">hake</th></tr> <tr><th>F</th><th>M</th></tr> <tr><td>32</td><td>29</td></tr> <tr><td>34</td><td>33</td></tr> <tr><td>36</td><td>35</td></tr> <tr><td>37</td><td>36</td></tr> <tr><td>40</td><td>36</td></tr> <tr><td>42</td><td>38</td></tr> </table>		hake		F	M	32	29	34	33	36	35	37	36	40	36	42	38
hake																						
F	M																					
32	29																					
34	33																					
36	35																					
37	36																					
40	36																					
42	38																					
Ragfish		1	39.20	0	sample wt 1121.00																	
Ragfish		1	42.85	0	- hake avg - 24.12																	
Am shad		1	0.15	100	- bycatch - 83.10																	
Squid unid		3	0.90	100	hake wt = 1013.78																	

National Marine Fisheries Service/Fisheries Monitoring and Analysis Division

Ver 08

GPO: U.S. GOVERNMENT PRINTING OFFICE 2008-779-291

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.
5/27/13	13579	9876	42	

Page 50 of _____ for vessel/plant RD

Page 2 of 3 for haul/offload

Sample number:	Sub-sample number: 102			Sample size: 1078	<input checked="" type="checkbox"/> <small>NO</small> Holds guts	Combined <input type="checkbox"/>	Presorted <input type="checkbox"/>
Species	Sex	#	Weight	% ret.	length, viability, injury, specimens, and tally date Start: 35019 end: 36097 sample wt 1078.00 - bycatch - 76.30 <hr/> hake wt = 1001.70		
----- KEYPUNCH -----	<input checked="" type="checkbox"/>	2	1078.00	<input checked="" type="checkbox"/>			
Hake		1	1001.70	100			
Rag fish		1	41.08	0			
Rag fish		1	35.22	0			

Sample number:	Sub-sample number: 103			Sample size: 1076	<input checked="" type="checkbox"/> <small>NO</small> Holds guts	Combined <input type="checkbox"/>	Presorted <input type="checkbox"/>
Species	Sex	#	Weight	% ret.	length, viability, injury, specimens, and tally date Start: 42971 end: 44047 Sample wt 1076.00 - bycatch - 89.54 <hr/> hake wt = 986.46 RE-F-51-2.92-510850		
----- KEYPUNCH -----	<input checked="" type="checkbox"/>		1076.00	<input checked="" type="checkbox"/>			
Hake		1	986.46	100			
Ragfish		2	53.78	0			
Ragfish		1	32.64	0			
Squid mid		2	0.20	100			
Rageye		1	2.92	100			

DECK FORM

Date	Cruise	Permit	Haul No.	Offload No.
5/27/13	13579	9876	42	

Page 51 of _____ for vessel/plant RD

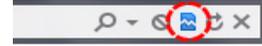
Page 3 of 3 for haul/offload

Sample number:	Sub-sample number: 104			Sample size: 944	<input checked="" type="checkbox"/> <small>NO</small> Holds guts	Combined <input type="checkbox"/>	Presorted <input type="checkbox"/>
Species	Sex	#	Weight	% ret.	length, viability, injury, specimens, and tally date Start: 51107 end: 52051 sample wt 944.00 - bycatch - 48.75 <hr/> hake wt = 895.25		
----- KEYPUNCH -----	<input checked="" type="checkbox"/>		944.00	<input checked="" type="checkbox"/>			
Hake		1	895.25	100			
Ragfish		1	47.80	0			
Squid mid		5	0.95	100			

Appendix F. SnoutBase Data Entry Instruction

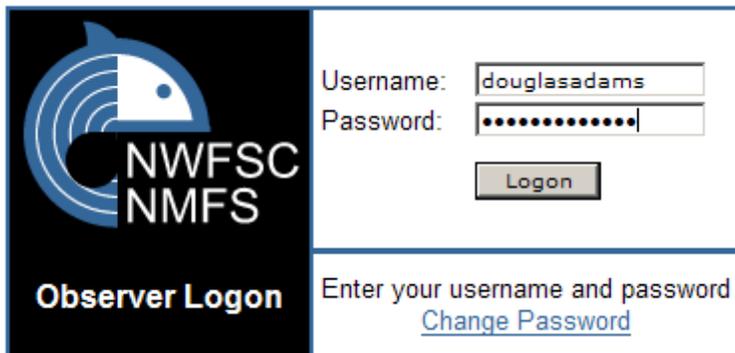
Must use  Internet Explorer to go to NWFSC Observer Logon website:
<http://nwcoa3.nwfsc.noaa.gov/obsprod/logon.display>

If you are using Internet Explorer 10x, you have to run the browser in compatibility mode. To do this, click the compatibility view button in the address bar, and then log into the database.



1) Log on using username and password

- Username: first and last name (e.g. Douglas Adams username: douglasadams)
- Password: temporary password given during training, you will be prompted to change your password the first time you log in
- SnoutBase temporary password: _____

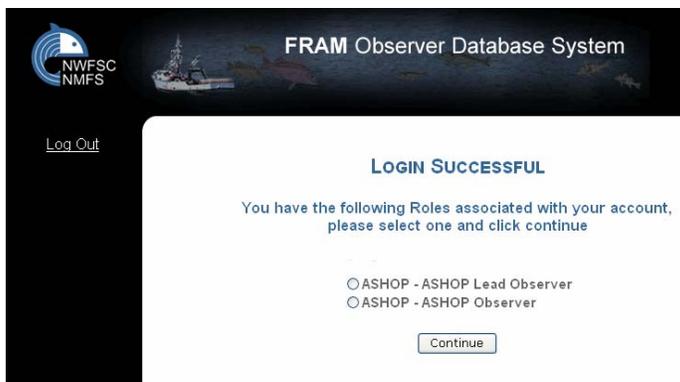


Username:

Password:

Enter your username and password
[Change Password](#)

2) **‘Choose Role’**: Lead observers select ‘ASHOP Lead Observer’. Second observers select ‘ASHOP Observer’. Then click ‘Continue’. *Data can be entered by either observer.*



Log Out

FRAM Observer Database System

LOGIN SUCCESSFUL

You have the following Roles associated with your account, please select one and click continue

ASHOP - ASHOP Lead Observer

ASHOP - ASHOP Observer

3) 'Welcome Page': Click on 'ASHOP' on the navigation bar on the left of the screen



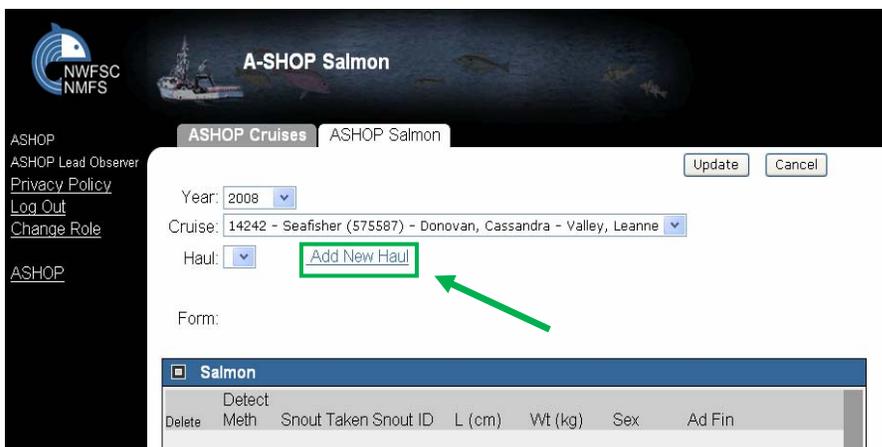
4) In the ASHOP Cruises tab, you can select the year from the dropdown to view your active deployments – *this is for informational purposes, you don't need to enter anything*

5) To enter data:

- Go to **ASHOP Salmon tab**, select the year from the dropdown and select the cruise for which you are entering data



6) Click on the 'Add New Haul' button, which will take you to the Haul page



- 7) Enter haul information:
 - a. Enter the haul number
 - b. Subsampled for that haul/species? N or Y
 - c. Species:

(a)

(b)

(c)

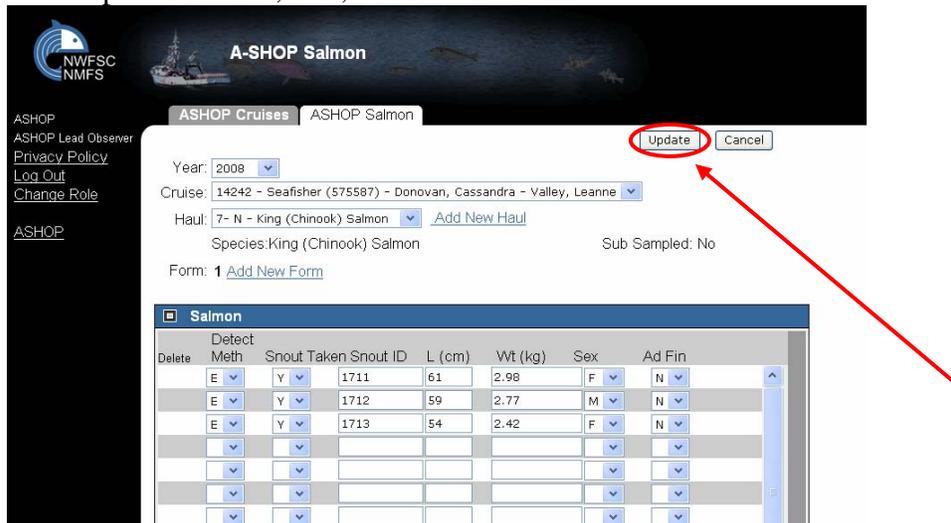
Click on the 'Update' button to save this information, which will take you back to the ASHOP Salmon screen

IMPORTANT! Update = SAVE, if you don't click 'Update' your data will NOT be saved when you switch screens

- 8) Once the haul/subsampled/species info has been entered, **it will show up in the 'Haul' dropdown** on the ASHOP Salmon screen
- 9) Click on the **'Add New Form'** to enter data for the selected haul/species

10) **Enter data** for selected haul/species:

- Detection Method: E = wand
- Snout Taken?: N or Y
- SnoutID (from A-SHOP tag) *leave blank for non-tagged salmon*
- Length (cm)
- Weight (kg)
- Sex: Female, Male, Unknown
- Adipose Fin: No, Yes, Unknown



Click on the ‘Update’ button to save information for selected haul/species

IMPORTANT! Update = SAVE, if you don’t click ‘Update’ your data will NOT be saved when you switch screens.

Note: SnoutBase auto-populates a negative number in the “SnoutID” field for salmon that are not CWT-tagged (Snout Taken = N, SnoutID is blank) and have an adipose fin (Ad Fin = Y).

11) Once you hit Update, the Notes column will appear. Click on the Notes field to add comments and a text box will open.



12) To **add data** for another haul or a different species from the same haul, go back to ‘**Add New Haul**’

13) **Once you click Update, your data is saved and you can exit the program.** You can review, edit or add to your data by logging back in.

Appendix G. 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 out to the whole haul?

Discards should be extrapolated to the whole haul. See "discard estimation options" on page 17 of your hake manual.

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. For further info, see p.5-33 in your Alaska manual.

What changes if the vessel starts fishing for Tribal?

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 ADF&G numbers for the catcher vessels need to be recorded on the OHF. 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.

I can't login to SnoutBase, what do I do?

Make sure you are using Internet Explorer. If you are using Internet Explorer 10x, you must run the browser in compatibility mode before logging into the database. Data can be entered under either observer's log-in. Did you try the other observers log-in? SnoutBase data is not used real-time so you can enter all your salmon when access is granted or when you come in to debrief. Send your in-season advisor a text message.

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.

Can I delete a misnumbered haul in Snoutbase?

No, you cannot delete hauls once entered so just delete the individual records and re-enter them under the correctly numbered haul. Send a message to your in-season advisor so they can have the SnoutBase database manager delete the haul.

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 rougheye 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?

Inform the A-SHOP as soon as possible if this is the only time you can drop off specimens. At Sandpoint, call 206.526.4100 and tell the guard that answers the phone that you are an observer and you need to be let into the Building 4 wet lab so you can drop off frozen fish. They will be doing rounds so it could take 5-10 minutes for them to make it to the main gate. They will escort you to Building 4 and let you into the wet lab. Make sure you have your OBSERVER BADGE.

Put salmon snouts and dogfish samples in the small blue "A-SHOP" tote and neatly pile your clearly labeled bags/boxes of fish in the hake section of the freezer. Feel free to use the empty baskets in the hake section of the freezer.

Appendix H. 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 I. 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)

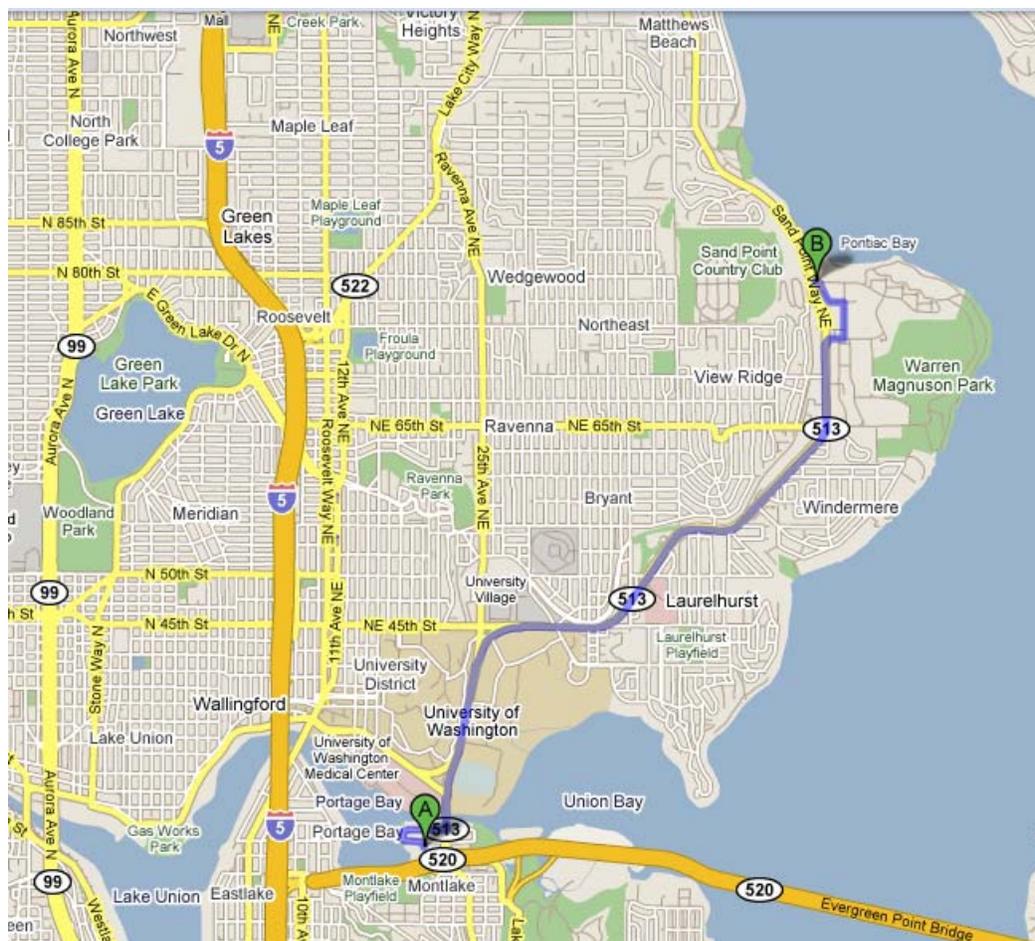
733 N. Street
Anchorage, AK 99501
Phone: (907) 276-3241
Fax: (907) 258-5999
E-mail: stacey.hansen@saltwaterinc.com
E-mail: joann@saltwaterinc.com
www.saltwaterinc.com

TechSea International Inc.

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

Appendix J. Seattle Maps Showing NWFSC and AFSC

Map of: **A)** Northwest Fisheries Science Center (NWFSC), 2725 Montlake Blvd. E, Seattle, WA 98112 and **B)** Alaska Fisheries Science Center (AFSC) 7600 Sand Point Way NE, Seattle, WA 98115



Appendix K. 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
EEZ	Exclusive economic zone
EFH	Essential fish habitat
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
ODF&W	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 L. 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/observer/atseahake.cfm>

Insert new web url

Northwest Regional Office

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

Groundfish Management

<http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/index.cfm>

Whiting Fishery Management

<http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/Whiting-Management/index.cfm>

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