

At-Sea Hake Observer Program



Sampling Manual & Information

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OVERVIEW

NOTE: This manual is a supplement to the North Pacific Groundfish Observer Manual, which contains much more detail, particularly about safety. Please review Chapter 17 in the NPGOP 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 fill out 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.

Observer Regulations & Coverage

Regulations making observer coverage mandatory in the at-sea hake fishery were approved in 2004. These regulations require 2 observers on each vessel, for every fishing day.

The catcher/processor fleet participates in a cooperative agreement (co-op). The co-op splits the quota into individual fishing quotas by company. Motherships, however, still engage in an open access style fishery.



Hake Fishery Background & 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 fishing vessels participated. Observers were first deployed in the fishery in the late 1970s. The fishery evolved into a joint venture with U.S. catcher vessels delivering the catch to foreign processing vessels in the 1980s. By 1991, the hake fishery was completely domesticated, allowing only U.S. vessels to fish and/or process.

There are three sectors in the at-sea hake fishery:

1. Motherships (open access)
2. Catcher/Processors (co-op)
3. Tribal

The hake tribal fishery is exclusive to the Makah tribe from Neah Bay, Washington. Each year the Makah are granted a variable percentage of the optimum yield (OY), which is 35,000 mt for 2008. All hake fishing for the tribe takes place in the Makah Usual and Accustomed Area (MUAA) located in Washington waters, near Neah Bay. Figure 1 shows the boundaries for the MUAA.

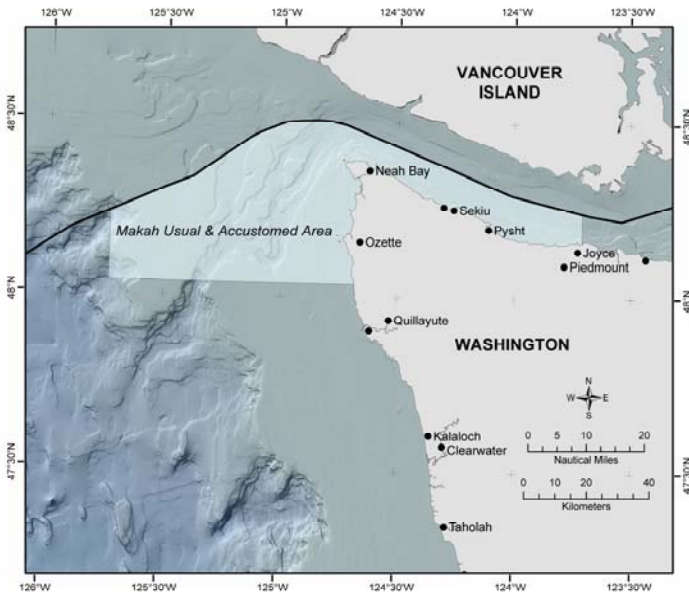


Figure 1 Makah Usual & Accustomed Area

The catcher vessel only shore-side hake fishery is considered separate from the at-sea fishery. This is the fourth year that shore-side vessels will carry video monitoring gear to ensure that the vessels are retaining 100% of the catch for delivery.

Bycatch limits and coordinating with vessel crew

Due to declines in populations of certain species of rockfish along the West Coast, the hake fishery has been held to lower and lower bycatch quotas. In 2004, the at-sea hake fishery came close to catching the entire canary rockfish allocation in one haul. Therefore, starting in 2005 for canary and widow and in 2006 for darkblotched, these species have fixed bycatch limits (often referred to as “hard caps”). For 2008, the allocation for canary is 4.7 mt, darkblotched is 40 mt and widow is 275 mt. If the allocation of one species is caught, the entire hake fishery will close for all three sectors and the shore-side fishery as well. As a result, the vessels have expressed interest in working with the observers to maximize sample size, in particular for hauls with rockfish and salmonid bycatch.

On April 7, 2005 the observer program attended a meeting with industry representatives in order to discuss possible means of avoiding small samples. At this meeting several strategies were agreed upon.

- First, is the concept of a **pre-cruise meeting on board the vessel**, which would include the observers, someone from the observer program, and key vessel personnel such as the captain, factory manager and bin operators. This meeting would allow for discussion of sampling techniques and challenges specific to the vessel. The focus would be on the vessel agreeing to cooperate with the observer to potentially slow down the sorting belt in the case of high bycatch of a sensitive species. Ideally, this would allow the observer to collect larger samples than would be possible without vessel assistance. Historically, vessels have not been willing to slow down the belts for observers, but the potential to close the fishery is driving changes in the other direction. 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 the observer's 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. Please contact the Observer Program if there are problems or confusion over this.
- Second, the vessels have suggested that they would be willing to designate **someone from the crew to assist the observer** on hauls that have high bycatch. What this really means is there will be another pair of hands to help sort, lift and carry. Full supervision would be necessary at all times. This means you cannot leave this person unattended at the belt to sort while you do lengths or weigh bycatch. All of the vessels agreed that this person would have to be completely available to help during a particular haul (i.e. would not have other responsibilities) and would speak and understand English so that communication wouldn't be a struggle. This assistant would only be available during high bycatch hauls when you would otherwise be forced to collect multiple small samples.



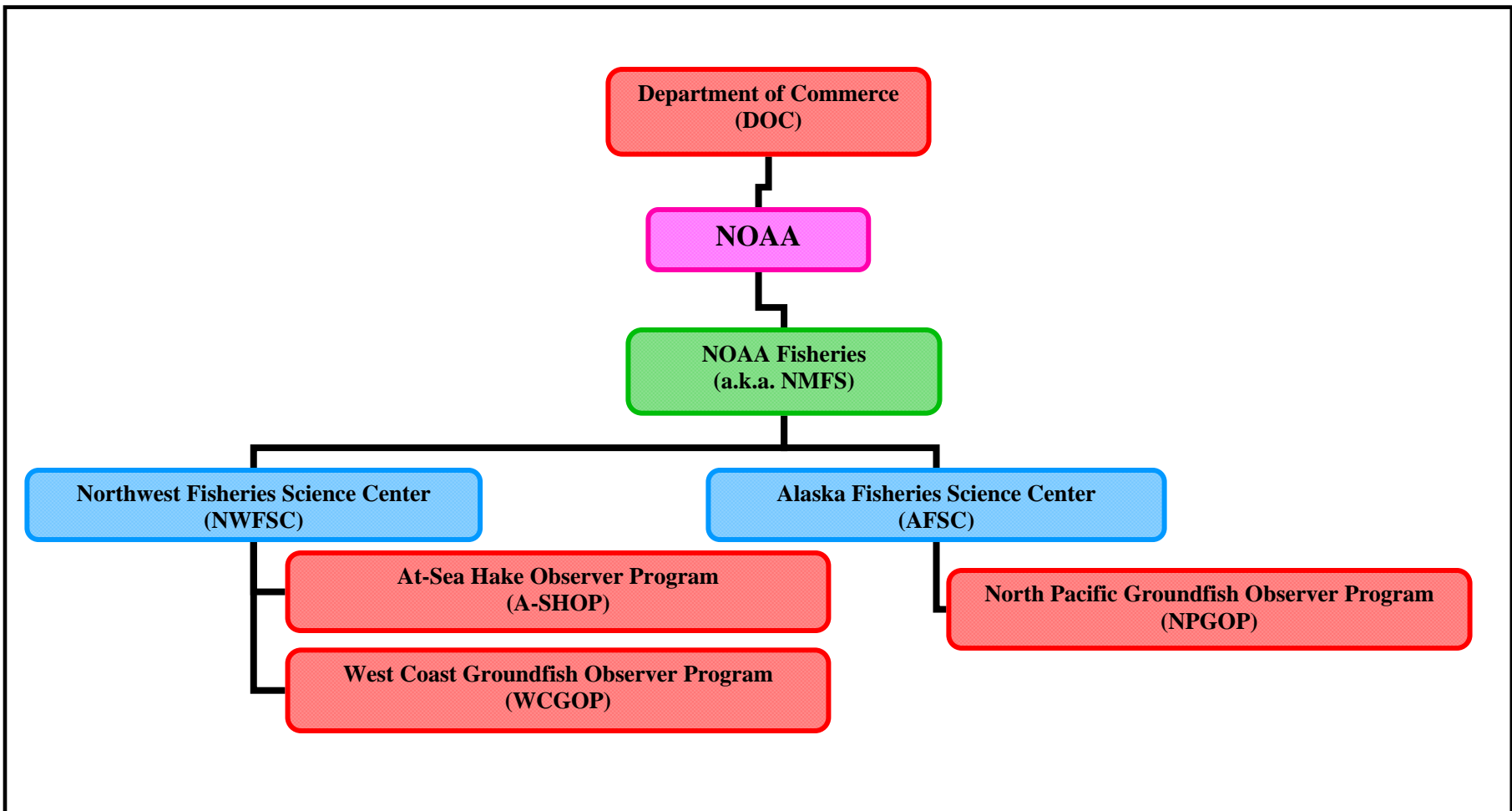
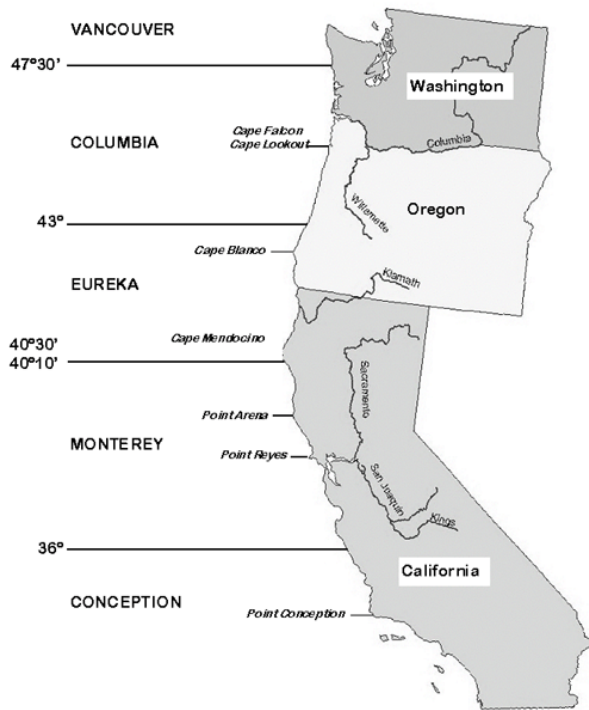


Figure 2 NOAA Organization chart

This chart shows the organization of the various 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.

Fishing Regulations

Vessel record-keeping and reporting on the West Coast is different than in Alaska. The logbooks are similar to the Alaska-issued logbooks, except there are no goldenrod copies for the observer to keep. Remember to double check for transcription errors between the vessel logbook, the VHF and ATLAS.



The fishing regulations for the WOC are different than those regulating Alaska fisheries. Two you should be aware of:

1. No fishing zone - No at-sea processing zone south of 42.00°N (near the CA-OR border)

2. Bycatch utilization - *“To increase the utilization of bycatch that is otherwise discarded as a result of trip limits, Amendment 13 to the Groundfish Fishery Management Plan implements an increased utilization program on June 1, 2001, which allows catcher/processors and motherships in the hake fishery to exceed Groundfish trip limits without penalty, providing specific conditions are met.”*

There are seven specific conditions for the above bycatch utilization. In short, these conditions are: the vessel must be carrying more than one NMFS-approved observer, no prohibited species may be retained, and any

bycatch which exceeds the trip limit for the vessel must be either turned into a no-value product or donated to a hunger relief organization.

This is a rather confusing set of regulations to understand and, as the observer, it is **not** your responsibility to interpret them. 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 this rule; instead, direct them to the factory manager or captain.



Remember! Interpreting regulations is not part of your observer duties.

SAMPLING & BIOLOGICAL DATA

Observer Priorities & Goals

1. Personal safety
2. Marine mammal (& Endangered Species) *sampling*
3. Collection of haul information and OCEs
4. Species composition sampling
5. Salmon snout collection
6. Age structure collection
7. Sexed lengths
8. Monitoring for marine mammals

Other tasks: fish collection, documentation of seabird interactions and sightings



Observer Catch Reporting

All vessels participating in the hake fishery have the ATLAS program. Total catch and bycatch numbers are evaluated daily so your data is needed promptly. *Sending your data through ATLAS must be done daily!* Remember to enter non-fishing day positions on days in which no fish were retrieved or delivered. This includes every day from the first day you board the vessel until the day you disembark.

Hake data is used in real time, i.e. the observer catch estimate (OCE) that observers send in on a daily basis is used to track how much is left of the quota. The bycatch numbers are also monitored daily, so it is very important to double check your work and your partner's work to ensure no data entry errors have been made. You should not transmit bogus OCEs. If you enter 999.99 it goes into the calculations! Wait to send your data until you have the correct OCEs for all the hauls for which you have entered data.

If your 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 NWFSC (see Appendix C).

Marine Mammal Sampling & Monitoring

Sampling for marine mammals is your second priority, meaning that if a marine mammal is caught, you should drop whatever you are doing and collect the appropriate samples and information. *Monitoring* for marine mammals is further down on the priority list and should be done primarily during the time 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.

Observer Catch Estimates (OCE)

Observers on vessels using a flow scale which is passing the daily test do not need to make any other observer estimates. Use the flow scale weight for the OCE and record a W in the 'B, C, or W' column on the OHF. Should the flow scale break, or the vessel fail to test it daily, then the observers should make independent observer estimates for all tows.

Bin Volume Estimates

Since the vessels installed flow scales, many vessels have altered their CDQ certified bins. If you are using bin volumes for Observer Estimates, you should verify any markings in the bins. This means actually getting in the bin when it is empty and verifying current bin dimensions. Do this between hauls when the bins are empty. Alert the entire deck crew you will be in there and *take someone with you*. Diagram the bins in your logbook, and include all measurements. The prescribed density for hake in bins is **0.92 mt/m³**.

Codend Volume Estimates

If you must use codend measurements, make actual measurements, using a measuring tape or marked stick. The prescribed density for hake in a codend is **0.97 mt/m³**.

Scale Testing

NOTE: Flow scale use is *not required* in the hake fishery. However, all vessels have been voluntarily testing and using them for the last 8 years.



Who performs the scale tests? Both the motion compensated platform scale (MCP or “observer scale”) and the flow scale must be tested every 24 hours. The MCP scale test is the observer’s responsibility. Test the scale using a certified weight at least once a day. In the hake fishery you need only test with one 25 kg weight. Record the result in your logbook on the scale testing page, even if it fails. A 0.5% variance is allowed to consider the 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 then re-test it, or try calibrating the scale and then retest.

The flow scale must be tested daily to ensure the accuracy of the data you are collecting. Testing the flow scale is the vessel’s responsibility, but an observer must be present for it to be valid. All vessels in the hake fishery have been voluntarily using and testing the flow scales, however, flow scale use and testing are not required by regulation in the hake fishery. If for some reason the vessel decides not to test the flow scale then you must obtain OCEs from other means such as bin volume, codend measurement or vessel estimate. Only two temporary flow scale breakdowns have occurred since 2002, and the observers had to measure codends for less than one day in

both instances. If the flow scale breaks, or the vessel does not test it daily, let your in-season advisor know immediately.

NOTE: Test your NMFS-issued 2 kg, 12 kg and 50 kg scales and record the results in your logbook before you go out, just in case the MCP breaks.

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 OCE.

Vessel personnel are required to fill out a “Record of Daily Tests” form when fishing in Alaska. They do not have to do this in the hake fishery, but they may do it anyway and ask you to sign it. Signing the form does not mean the scale passed the test. Rather, it means the test was conducted properly according to the Alaska regulations. It is the vessel’s responsibility to conduct the test in a manner that makes it possible for you to be present. You should 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 the crew will then verify the weight of the same 400+ kg of fish using the MCP scale. A 3% variance is allowed.

What happens if a flow scale fails the test? The vessel may continue to test the scale until it passes. If the flow scale does not pass the test you should document the situation, including: who did the test, how many times they tested it, the percent error it is failing by, why the scale is failing (if known), and any conversations you have regarding this issue. Contact your in-season advisor, but continue to sample. The vessel estimate can be used for total weight until you hear from your in-season advisor.

How can you ensure accurate weights (i.e. OCEs)? 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 OCE. The flow scale display panel should be sealed. The scale’s computer cannot be tampered with unless someone breaks the seal. If you suspect that the seal is broken, or that someone is tampering with the flow scale, document this fully in your logbook.

Clarification of pre-sorted organisms

If an organism is very large and is excluded on deck or removed before you sample, it never had the chance to fall in your species composition. Therefore, you record it as a presorted sample in your species composition. Record the number of organisms and enter ‘0’ for the weight. Measure and record the length and sex, if possible. Add the estimated weight to the flow scale weight to obtain the OCE for that haul and enter the OCE as the sample size for the pre-sorted sample.



If an organism makes it into the factory, it has a chance to be in your sample (even if it is too big to go over the flow scale). If you are sampling for species composition and a large organism is removed just prior to the flow scale, it is part of your sample. If possible, cut it up to weigh on your MCP scale. If you cannot weigh it on the MCP, record its length and estimated weight. For your total sample weight, add its weight to the flow scale weight of your sample. Then also add its weight to the haul's flow scale weight to obtain the OCE. If this occurs during a non-sample period, add the estimated weight to the flow scale weight to obtain your OCE, but do not include it in your sample data.

Random Sample Table Use

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 can be made as to whether the random sample table should be employed. Generally, if the sickness is expected to last only a day or two then the well observer would just 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. In addition, the contractor should always be notified of injury or illness.

Species Composition Sampling

The hake fishery is managed almost 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 2 equal parts and randomly select which half to sample for species composition. Make sure your sampling 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.

.....
: **NOTE:** The A-SHOP is **not** requiring three distinct samples from :
: each haul, which is different from the new NPGOP requirements. :
.....

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.*

Observer Sampling Record (optional)

Vessel name: F/V Hitchiker

Haul number: ①st Half / ②nd Half Species: used deck of cards on steam out - red = ① black = ② Hake Otoliths Haul (Y/N)

| Number | Sampling Unit | Hake Otoliths Haul (Y/N) |
|--------|---------------|--------------------------|
| 1 | ② | |
| 2 | ① | |
| 3 | ② | Yes |
| 4 | ② | |
| 5 | ① | |
| 6 | ① | |
| 7 | ② | |
| 8 | ① | Yes |
| 9 | ② | |
| 10 | ② | |
| 11 | ① | |
| 12 | ① | |
| 13 | ② | Yes |

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



Keep in mind that 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 sampling.*

Example: Randomly selected 2nd half of 100 mt bag with multiple species of rockfish visible during dump. Start sample at 50 mt and sample for 5 mt, take 5 mt off to work up sample, continue 5 on / 5 off until end of haul.

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

High bycatch sampling options

In recent years, the vessels have been very concerned with bycatch and are interested in working more closely with the observers to ensure that the largest and most accurate sample be taken. This might entail slowing the processing rate so that you are able to take a larger sample than you would be able to without vessel assistance. This will require a large amount of cooperation between the observer, the person controlling the belts and any sorters who might be standing at the belt. You should do all you can to try and avoid small samples for hauls with species of concern, but keep in mind that you must be able to account for every piece of bycatch.

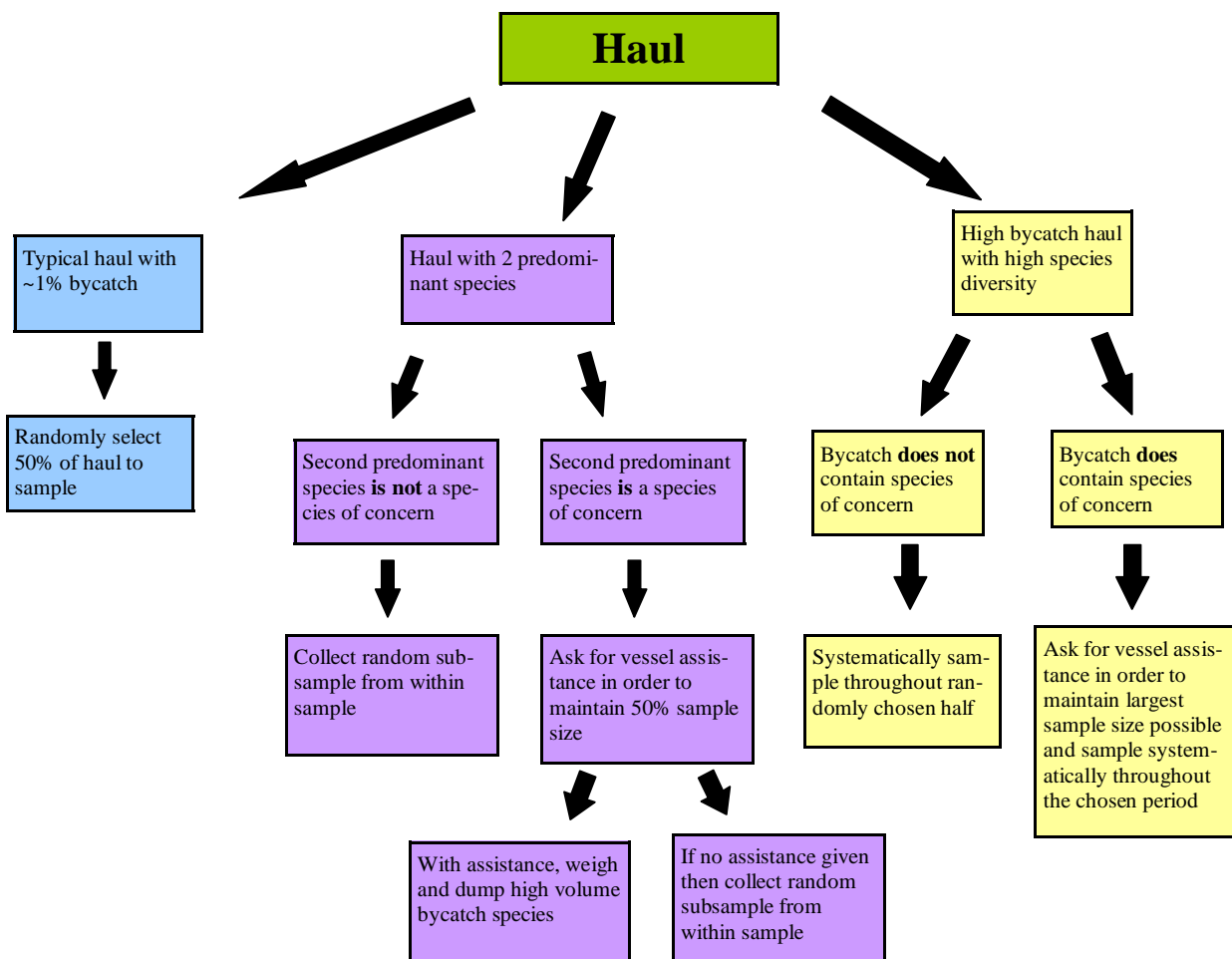


Figure 3 A-SHOP sampling flow chart

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 off Washington and Oregon. Herring, tanner crabs, and king crabs are *not* prohibited species in the hake fishery.

Salmon may be of particular concern to your vessel due to the declines in salmon populations along the West Coast. Remember that salmon bycatch is managed by numbers of fish, not by weight. The vessel might want haul-by-haul salmon numbers from you to identify and reduce incidental take. There is no Salmon Retention program in the hake fishery.

California halibut is *not* a prohibited species. They are similar to Pacific halibut, but are in the left-eyed Bothidea family, which means they can be either left or right-eyed (~50% left, ~50% right), and they have less than 77 dorsal soft-rays. Pacific halibut almost always have their eyes on the right side of the head, and will have greater than 80 dorsal soft-rays. It is very unlikely that you will see a California halibut.

Salmon

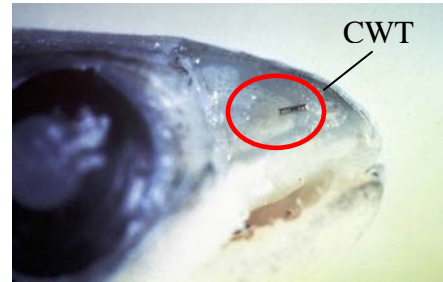
Be careful with salmon identification. Salmon can be more challenging to identify off the West Coast than in Alaska, and the usual characteristics for identification may be faint or absent. If you are uncertain of the identification, freeze that salmon and bring it back with you. (Yes, the whole fish!)

In lieu of collecting salmon scale samples for verifying species you are asked to collect 5 whole specimens of each species you see, from *inside* your sample. This is required for each individual observer, just as scale samples are required in Alaska. 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 collections. Although this might sound like it could be burdensome, it is unlikely that each observer would have more than 10-15 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.

For Chinook and coho, try to collect non-CWT tagged specimens. If you are collecting a CWT-tagged salmon for your whole specimen collection, leave the snout intact and place a numbered A-SHOP salmon snout tag and a specimen collection label with it, record the data on your decksheet and enter that on your snout form. In the comments section on the snout form, write “whole specimen collected”. For all other salmon species encountered, collect the usual data and fill out a specimen collection label to include with the whole specimen.

Some salmon are tagged with coded wire tags (CWTs).

These are tiny 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, hatcheries now clip the adipose fin on all fish they release; therefore, electronic means must now be used to determine if a tag is present. Additionally, both Chinook and coho sometimes have double index tags (DITs) which means they may have CWTs, but the adipose fin has *not* been clipped as a visual indicator.



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. Water-resistant metal detecting “wands” are used to determine the presence of CWTs. One wand will be issued to each observer pair.

Salmon Snout Collection



Purpose: To monitor for the presence of CWTs in salmon. *This project applies to Chinook, coho, and steelhead only.* Steelhead are rarely seen in this fishery; however, if you do find one you should bring back the whole fish.

How to collect a salmon snout: collect the upper snout only, by cutting just behind the eye. Do not collect the whole head. You will be issued small sequentially numbered tags printed on waterproof paper. The ‘A-SHOP’ indicates the snout came from the At-Sea Hake Observer

Program (which doesn’t need to be recorded on the form), and the numbers are unique. Place the tag with the snout inside a Ziploc bag and freeze. It’s a good idea to store all of the snouts together in a clearly labeled bag in the freezer, to ensure that they all return to debriefing with you.

NOTE: Record **all** salmon snout data on the ATLAS decksheet, including the presence/absence of the adipose fin, sex, weight, length and species. Then transfer this data to the salmon snout forms.

Salmon Snout Sampling Details

- **All** Chinook and coho *inside* the sample should be checked for the presence of CWTs. Collect all tagged snouts.
- If you are over-whelmed with salmon and cannot check them all for CWTs, then a random sub-sample should be checked. (i.e. If there are greater than 40 salmon, then ‘wand’ every *nth* salmon.) Sub-samples should taken by species, not by total number per haul.

Example: 43 Chinooks and 3 cohos are in the sample – randomly select every *nth* Chinook and ‘wand’ all 3 cohos.

NOTE: Wands are assigned to observers, not to vessels. Bring it with you when you disembark a vessel, even if other observers are continuing on that vessel. The wand case must be stored in a clean, dry place.

- The wand must be passed along the exterior of the upper snout and for larger salmon, the tip of the wand placed inside the salmon’s mouth to detect more deeply embedded tags.
- Beware of nearby metal that can set the wand off. Your wrist watch, belt buckle or nearby metal in the factory may cause false positives.



- Take care of the wands by storing them clean, dry and out of harms way. They are expensive and should be treated with care.
- If the wand is not functioning properly (i.e. weak or prolonged sounds), try changing the battery. Contact you in-season advisor if that doesn’t fix the problem. *If the wand stops working, contact your inseason advisor immediately for directions on how to sample for CWTs without a wand.*

Completing the Salmon Snout Form

All raw data should be recorded on your deck sheets and transferred to the salmon snout form.

Electronic (Wand) CHINOOK Salmon Snout Collection Form

Observer: Douglas Adams Cruise #: 14242 Page 3 of 3
 Vessel: Hitchhiker

Subsampled? Y*/N _____ adipose fin present = Y/N _____
 * requires explanation/method _____

| Haul | Sub sampled? | Species | Snout_ID | L (cm) | Wt (kg) | Sex | adipose fin | COMMENTS |
|------|--------------|---------|----------|--------|---------|-----|-------------|------------------------|
| 13 | N | Chinook | 357 | 67 | 3.95 | F | Y | "whole fish collected" |
| 20 | N | Chinook | 358 | 59 | 2.97 | M | N | "photos - chinook 1-5" |
| 17 | N | Chinook | 1481 | 54 | 2.48 | F | N | |
| 17 | | Chinook | 1482 | 63 | 3.11 | M | N | |
| 19 | | Chinook | 1483 | 58 | 2.86 | F | N | |
| 20 | | Chinook | 1484 | 57 | 2.89 | F | Y | |
| 23 | | Chinook | 1485 | 61 | 3.02 | F | N | |
| 25 | | Chinook | 1486 | 49 | 1.98 | M | N | |
| 30 | | Chinook | 1507 | 55 | 2.54 | M | Y | |
| 30 | ✓ | Chinook | 1508 | 59 | 2.99 | F | N | |
| 30 | N | Chinook | 1509 | 62 | 3.07 | M | N | |

Figure 4 Salmon snout form

Heading: Record lead observer's name and cruise number, vessel name and page number

Haul: Record haul salmon snout was collected from

Sub-sampled?: N - all salmon in species composition sample were 'wanded'

Y* - indicate on a species per haul basis

*comments section - reason for sub-sampling and method

Species: pre-filled as Chinook or coho

Snout_ID: Record number printed on 'A-SHOP' tag

Length: Salmon fork length in centimeters

Weight: Salmon weight in kilograms

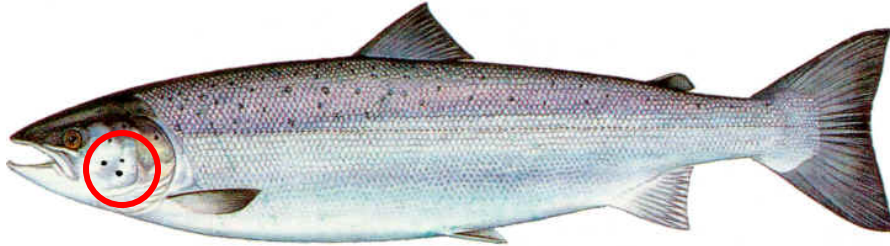
Sex: Female, Male, Unknown

Adipose fin: Record whether the adipose fin is present – Yes, No, Unknown

Comments: Photos taken, unusual markings, sub-sampling method/reason, etc.

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.



What do you do if you find 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.

Species ID Forms

Lists of the species each observer has completed verified species ID forms for will be provided during training. For every new species encountered during hake you need to fill out a species ID form. Fill out 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 replaces any part of an accurately detailed form.

Length & Age Structure Sampling

All lengths and age structures should be collected randomly according to NPGOP manual instructions (Chapter 11). If hake is not the predominant species in a haul, you should still collect hake lengths and otoliths. If you are having difficulty coming up with a random method for collecting fish to measure, contact your in-season advisor for assistance. If you are not sure if your method is truly random, describe it to your advisor and ask for feedback.

Hake Sexed Lengths

Collect ~15 / haul

Hake Otoliths

Collect 5 pairs from length sample, every 5th haul. Hake otoliths are more fragile than most, so use caution while cutting.



Rockfish sexed lengths and otolith sampling (in order of priority)

1. canary
2. yelloweye
3. bocaccio
4. POP
5. darkblotched
6. rougheye / shortraker
7. widow
8. yellowtail

Remember! All rockfish lengths must be randomly collected from *inside* the species composition sample.

Rockfish Sexed Lengths and Otoliths

The data collected from rockfish in the hake fishery is invaluable to stock assessors. For certain low abundance species, the data collected by hake observers accounts for the bulk of the data collected for those species. The goal is to collect otoliths and sexed-lengths from the two topmost 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.

Example 1: You have a haul with many POP, Darkblotched and Rougheye. POP and Darkblotched are higher priority than Rougheye, so you would collect 5 otoliths / 20 lengths from POP, and 3 otoliths / 20 lengths from Darkblotched.

Example 2: In your sample there are: 2 Canary, 3 Yelloweye, 1 Bocaccio, 1 POP. You should collect sex-lengths and otoliths from all of them (time permitting).

Like any length and age data these rockfish lengths *must* be collected randomly. For example, if you come down into the factory and the sorter has collected a basket of canaries, you cannot be sure that s/he wasn't just collecting only the largest canaries. To ensure a random sample these length samples must come from your species composition sample. These 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 hake. The gonads are found up near the backbone, much like salmon. Female gonads will appear as white, pink, yellow or orange elongated tubes. As they mature they become oval-shaped and will have a granular appearance. Female gonads are oval in cross-section. Males will be cream to pink in color. When mature they are triangular shaped in cross-section; immature testes are still somewhat triangular and will have defined edges at the bottom (Figure 5).



Gonad placement along backbone

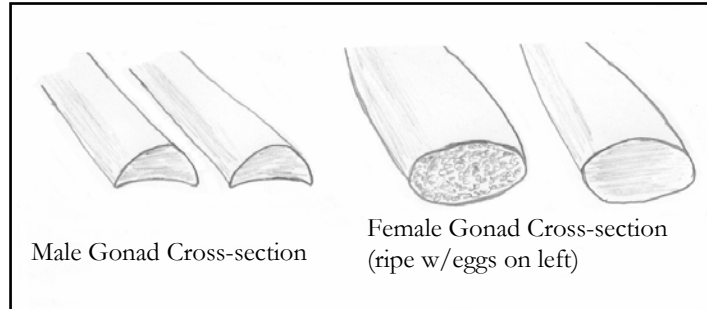


Figure 5 Rockfish gonad appearance

Spiny Dogfish sexed lengths & spine collection

Spiny dogfish are a common bycatch species in the hake fishery and are slated to have a stock assessment conducted in 2009. Therefore, there is a need to gather size composition data from the hake fishery. The second dorsal spines on dogfish are used to determine the age. The dogfish protocol is to randomly collect ~20 sexed lengths and two second dorsal spines per haul. Once you have used the 50 barcoded spine bags, continue to collect sexed-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 (Figure 6).

For dogfish, measure the fork length (FL) from tip of the snout to inside of the fork in the tail (Figure 7).

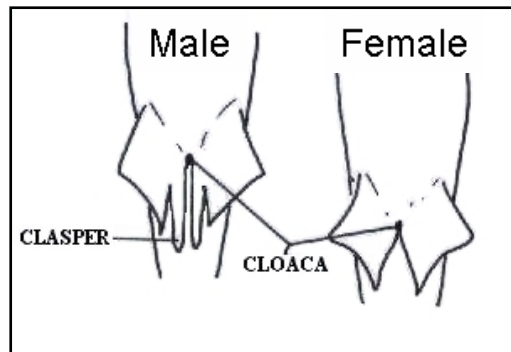


Figure 6 Ventral surface of sharks

Cut the entire **second** dorsal spine off, making sure to get all the way to the base of the spine. The easiest way to do this is cut down at an angle just in front and behind the spine making a wedge (see Figure 7). Leave the flesh attached, place the spine 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 6 (spines).

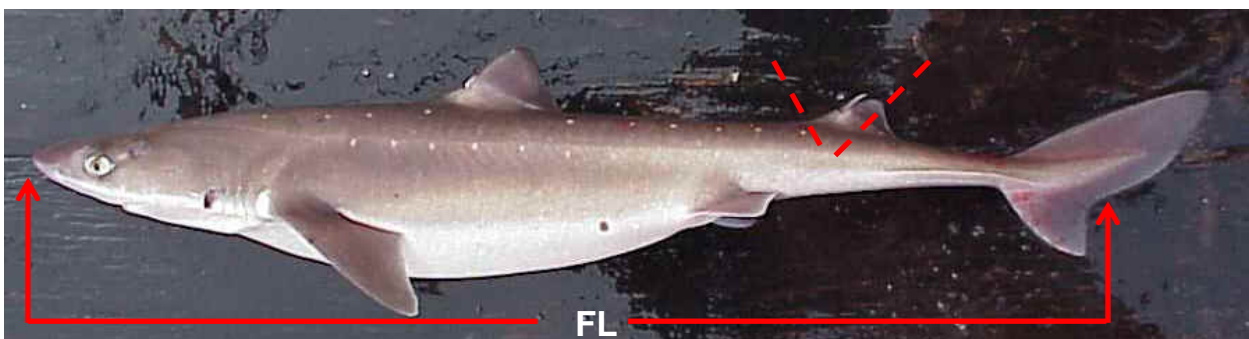


Figure 7 Spiny dogfish fork length and second dorsal spine collection

Humboldt Squid length collection

The geographic range of Humboldt squids seems to be expanding and the population also seems to have increased. Researchers are very interested in gathering more data and the A-SHOP has been asked to collect unsexed length data.

Randomly collect ~20 mantle lengths (ML) per haul. Measure the dorsal side of the organism by placing the squid dorsal side up. The dorsal side of the squid is defined by the fin insertion and the ventral side by the presence of the funnel. Measure the mantle length from the anterior tip of the squid to the posterior edge of the mantle (Figure 8). Only collect squid lengths when you have more than 10 in your sample.

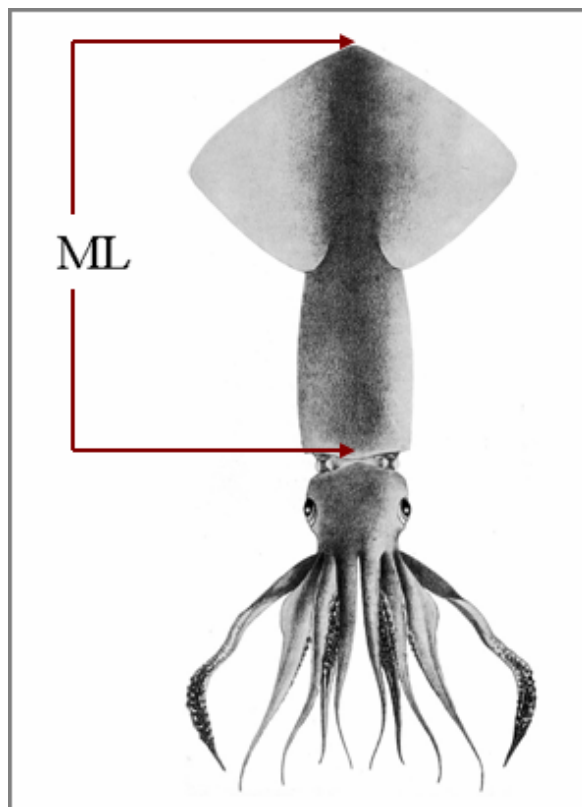


Figure 8 Humboldt squid mantle length

Fish Collection

The observer program can always use fresh fish specimens of just about anything of reasonable size. If you see a rare or uncommon fish or a fish that is out of its listed geographic range, you should always bring it back. There have been two *dusky rockfish* and one *yellowfin sole* found off Oregon in places where they have not historically ranged. Please bring them back if you see one. 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.



NOTE: 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, and will likely be debriefed together. Check each other's deck sheet calculations and entry into ATLAS on a daily basis. 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, but 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, before being deployed again to Alaska.

Turn in prior to debriefing:

1. Vessel & Observer Haul Forms
2. ATLAS deck sheets
3. logbook
4. salmon snout data sheets
5. species ID forms
6. vessel survey
7. memory stick with ATLAS backup data
8. marine mammal data forms
9. specimens collected

Clearly labeled specimens, salmon snouts and dogfish spines should be dropped off in the hake section of the Building 4 wet lab freezer.

NOTE: Pick up an A-SHOP Pre-Debriefing Checklist prior to completing your vessel survey.

Gear check-in protocol

When you return from your hake cruise you should make an appointment with Dan Decker (526-4198) or Karen Teig (526-4191) to turn in 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 (salmon snout wand and supplies, rockfish guide, Miller & Lea book, species key, etc.) to your debriefer.

Photo credits

Thanks to observers **Keri Barber, John Bieraugel, Cassandra Donovan, Roy Morse, Ben Riedesel, Merri Strayer** and **Mark Wormington** for the photographs.

APPENDICES

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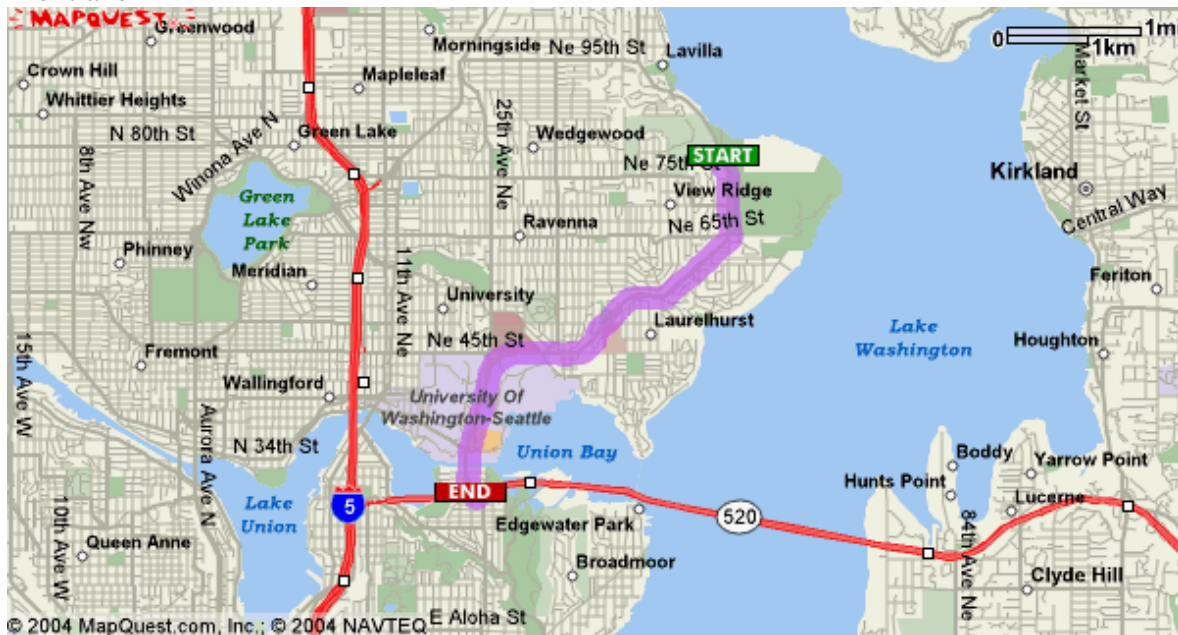
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Appendix A. Seattle Maps Showing NWFSC and AFSC

Map 1 Northwest Fisheries Science Center (NWFSC) (red star), 2725 Montlake Blvd. E, Seattle, WA 98112



Map 2 Route from the Alaska Fisheries Science Center at Sand Point, to the NWFSC at Montlake



Appendix B. Common fisheries abbreviations

ABC - acceptable biological catch

AFSC – Alaska Fisheries Science Center

A-SHOP - At-Sea Hake Observer Program

CDF&G - California Department of Fish & Game

CPUE – catch per unit effort

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

LOA - length overall

MARPOL - Marine Pollution

MPA - marine protected areas

MSFCMA - Magnuson-Stevens Fishery Conservation and Management Act

NPGOP – North Pacific Groundfish Observer Program

MSY - maximum sustainable yield

NWFSC - Northwest Fisheries Science Center

ODF&W - Oregon Department of Fish & Wildlife

OY - optimum yield

PFMC - Pacific fishery management council

SFA - Sustainable Fisheries Act

TAC - total allowable catch

WCGOP – West Coast Groundfish Observer Program

WDFW - Washington Department of Fish & Wildlife

WOC - Washington – Oregon – California coasts

Appendix C. Observer Program Contact Information

At-Sea Hake Observer Program
NOAA Fisheries
Northwest Fisheries Science Center
Seattle, Washington

Primary contacts:

Vanessa Tuttle 206-860-3479
 Vanessa.Tuttle@noaa.gov

Cassandra Donovan 206-526-6724
 Cassandra.Donovan@noaa.gov

Address: At-Sea Hake Observer Program
 NOAA Fisheries, FRAM
 Attn: Vanessa Tuttle
 2725 Montlake Blvd. E.
 Seattle, WA 98112

NOTE: Please leave a message if we don't answer, we are likely just away from our desks for a few minutes. Also, listen to what the message says. When either of us is out at sea the message will say so, and then you should contact the next person on this list.

Alternate contacts:

Jonathan Cusick 206-465-7555
 Jonathan.Cusick@noaa.gov

Janell Majewski 206-860-3293
 Janell.Majewski@noaa.gov

ATLAS questions or problems:

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

Northwest Region – questions about regulations

Becky Renko (NWR): 206-526-6110
 Becky.Renko@noaa.gov
 Fax: 206-526-6736
 <http://www.nwr.noaa.gov>

Appendix D. 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

NWO, Inc.

654 5th Avenue South #203
Edmonds, WA 98020
Phone: (425) 673-6445
Fax: (425) 673-5995
E-mail: Alaska@nwoinc.com

Saltwater, Inc. (SWI)

733 N. Street
Anchorage, AK 99501
Phone: (907) 276-3241
Fax: (907) 258-5999
E-mail: Diana@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 E. 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>

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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