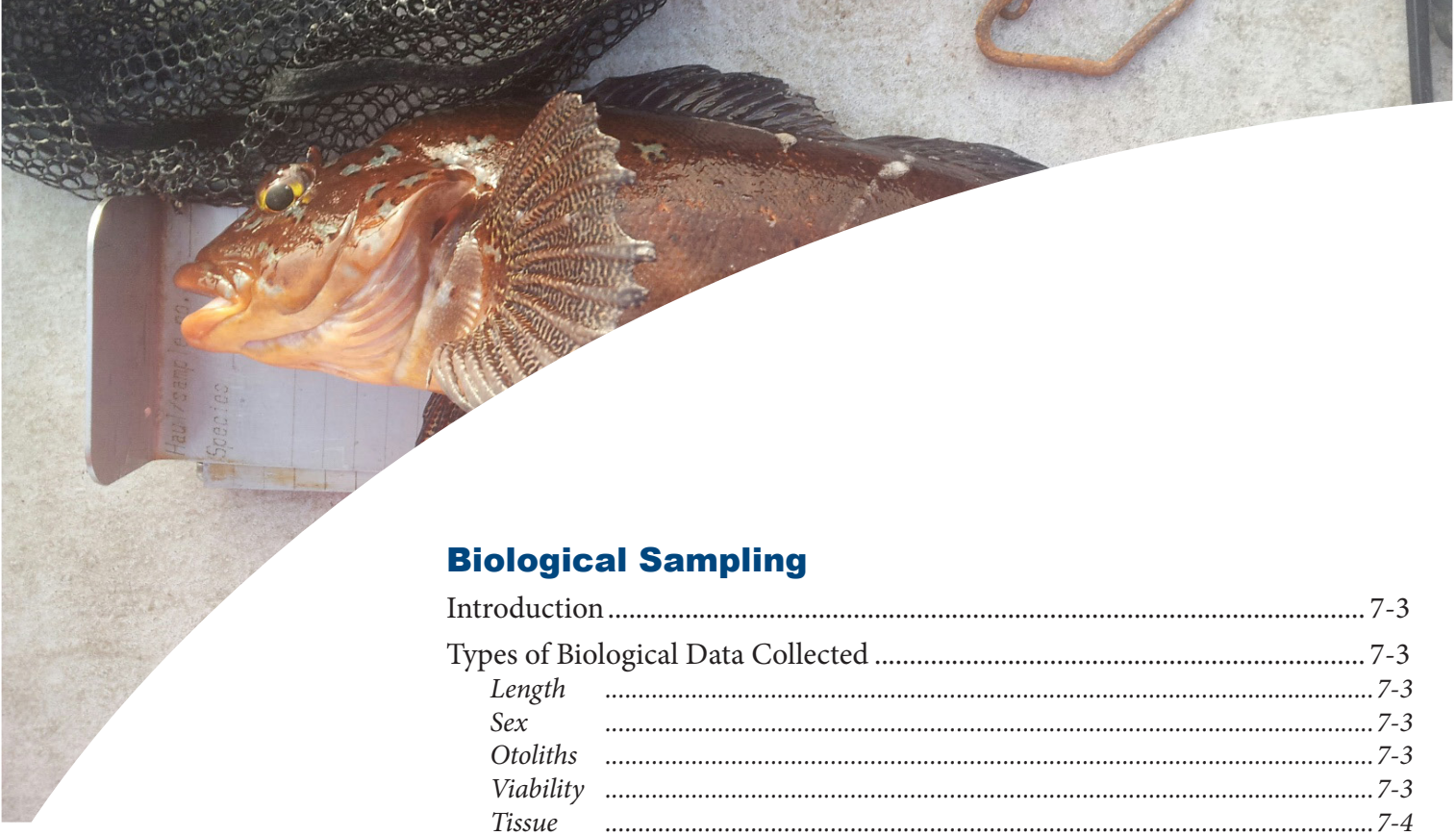

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7

Introduction

Observer programs provide an excellent way to collect biological information for use by fisheries biologists and stock assessment analysts. Observers in the WCGOP are asked to collect fish lengths, weights, sexes, otoliths, maturities, tissue samples and viabilities in an effort to improve understanding of various fish stocks.

In general biological information is collected for several species. These species are divided into two groups in the manual:

1. Species of interest, which include tagged fish (non-salmonid), priority species, corals, and Pacific halibut, are discussed in detail in this chapter.
2. Protected resource species, which include green sturgeon, marine mammals, salmon, seabirds, eulachon, and sea turtles, have additional biological sampling requirements, which are discussed in detail in Chapter 8, "Protected Resources".

Types of Biological Data Collected

There are six types of biological data WCGOP observers collect from non-protected resources. Biological data is specific information about an individual fish, including physical characteristics of an individual and dissections (the collection of structures, organs, or other body parts). Biological data collected by observers include:

- Length
- Sex
- Otoliths
- Viability
- Tissue
- Maturity

Length

Observers collect lengths from a variety of species, including rockfish, flatfish, sablefish, lingcod, spiny dogfish sharks, Dungeness crabs, and Longnose skates. Lengths from discarded fish are used in assessment models to determine selectivity of the gear and age population of the discard.

Sex

Observers collect sex information from rockfish, petrale sole, spiny dogfish shark, Longnose skate, Dungeness crab, kelp greenling, sablefish and California sheephead. Sex information can be used to determine male to female ratio of the discard.

Rockfish species, sablefish, and petrale sole are cut open to determine sex. The remaining species are sexually dimorphic and sex is determined externally.

Otoliths

Otoliths are calcium carbonate structures found in many fish species. Otoliths grow in size with the fish and display their growth in annual rings, or annuli. The number of annuli are counted (or read) by scientists to determine the age of the fish. Otoliths are collected from five species of rockfish: Cowcod, Yelloweye, Canary, Rougheye, and Shortraker. Otoliths are also collected from tagged sablefish.

Viability

Pacific halibut viability assessment (injury data) are used to assess the mortality rate of Pacific halibut due to commercial fishing. The injury data collected by

Collect biological data from discarded fish only.

observers are analyzed by staff from the International Pacific Halibut Commission (IPHC) and used to estimate yearly mortality rates.

Tissue

Genetic information from the tissue of corals is used by habitat scientists to identify where various coral species are encountered by the fishery. Fin clips are also collected from rockfish species.

Maturity

Female Dungeness crab egg presence/absence is used to determine the maturity stage of the individuals.

Biological Sampling Procedures

This section will address the procedures to follow when collecting the following fundamental biological samples:

- Length
- Sex
- Otoliths

Length

Preparing to Measure Fish

Before beginning to collect fish for length measurements, set up an area to measure fish. Create a "table" large enough to lay a fish on the stainless steel length strip. Use the stainless steel measuring board, baskets, deck bin boards, or the deck as a table.

Measuring boards marked at centimeter increments are used for length measurements. The first line printed on the strip is 4.5 cm, and the space between that line and the next line is 5.5 cm.

Measuring Fish

Fork length is the fish length measurement used by the WCGOP and other NOAA Fisheries researchers. This is used on all flatfish and roundfish, with the exception of skates and sharks. Fork length is the length from the tip of the snout or lower jaw (whichever sticks out most) to the end of the middle rays of the caudal fin (See Figure 7-1)

Measure fish using the following procedure:

1. Lay the fish flat on the measuring board parallel to the center line.
2. Pull the fish forward until its snout touches the vertical surface. This ensures that the fish is fully extended. Make sure the jaws are closed.
3. Spread out the caudal rays to find the middle rays.
4. Measure fork length, from the snout tip or lower jaw (whichever extends forward the most) to the end of the caudal fin.
5. Make a pencil mark on the measuring board in the space where the fork length falls (above the center line for males and below the center line for females). If the fork length falls on a printed line on the board, try re-measuring the fish first, then if the length still falls directly on the line, use the lower centimeter measurement.
6. After transferring the data to the appropriate form, clean the length board to remove the pencil marks and ready it for the next haul's lengths.

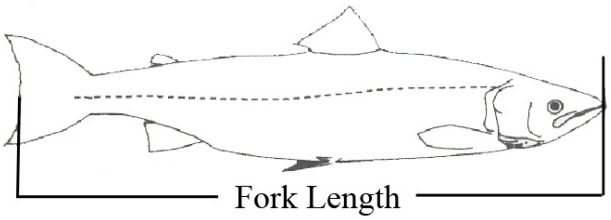

Figure 7-1: Measuring Fish Length

Figure 7-2: Stainless Steel Length Board

Measuring Sharks and Skates

For skates and sharks, measure total length, from the snout tip to most posterior part of tail (See Figure 7-3 and Figure 7-4). Disregard specimens that have had their snouts or tails shortened due to damage.

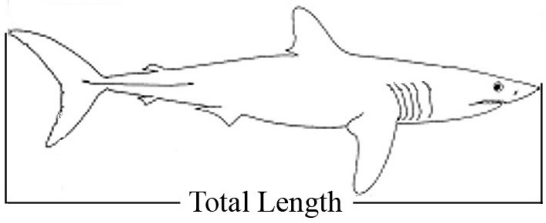

Figure 7-3: Measuring Shark Length

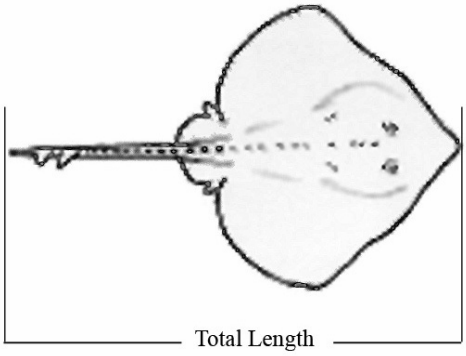

Figure 7-4: Measuring Skate Length

Measuring Dungeness Crab

1. All crab must be measured using the calipers provided by WCGOP. If you do not have calipers, do not measure crabs, as all other measurement techniques are invalid.
2. Lay the crab on a flat surface and hold the body down with one hand while you work the calipers with the other hand. Spread the calipers across the carapace of the crab and close the arms until the very tip of the calipers is touching on the designated spots. See Figure 7-5.
3. Dungeness Crab are measured are measured across the carapace. Measure the width across the back,

at the widest part of the carapace, but exclude any spines at the carapace edge.

4. Crab are measured to **the nearest millimeter**. Convert this number to centimeters on the Biospecimen form.

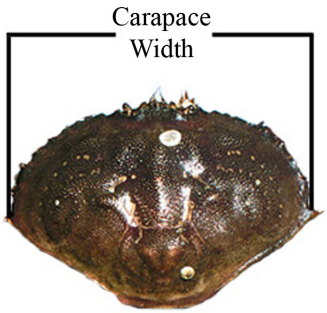

Figure 7-5: Measuring Dungeness Crab

Sexing Fish

Do not sex fish in the following situations:

1. When any individuals within that species are being discarded alive and the species has a high likelihood of survival. This includes live-fish fisheries and hardy species such as lingcod. You may still collect lengths on these fish, but only collect sex if all individuals are dead and therefore have a chance at being sampled (dead, tagged fish are an exception).
2. If a fish is dead and tagged, but the vessel will not allow you to cut the fish, as it will reduce the value. This is typical of sablefish boats, though some will allow you to cut the fish if you ask.

Tip: Sexing only the dead individuals of a species while only taking lengths from live individuals is a biased sample.

Note: If the sex cannot be determined, record "U - Undetermined". "U" signifies that the observer attempted, but was unable to determine the sex of the fish. Leaving the sex column blank on the form signifies sexing the fish was not attempted.

Preparing to Sex Fish

Sex determination can be done externally or internally, depending on the species. Rockfish, flatfish, sablefish and salmon are all sexed internally, and sex determination is done slightly differently between species due to variations in anatomy. Attention should be paid to the cut necessary to locate the gonads, the location of the gonads within the body cavity and the physical description of the gonads. Sharks, skates, crabs, Kelp Greenling, California Sheephead, and marine mammals are sexually dimorphic and may be sexed externally.

Sexing Roundfish

1. Gonads are typically found along the backbone, toward the rear of the visceral cavity (Figure 7-6).
2. Insert blade into anus and cut toward head.
3. Pull away viscera to locate sex organs along the spine; they are paired organs that come together and attach at the anus.
4. Female ovaries are paired pink or orange sacs (clear when immature), which are oval in cross-section. When ripe, the eggs will give the sacs a granular texture. Cod ovaries typically have a black lining around the sac.
5. Male testes are long and string-like organs, which are often fused together (Figure 7-7). Gadid (cod family) testes have a convoluted, wet ramen noodle appearance.

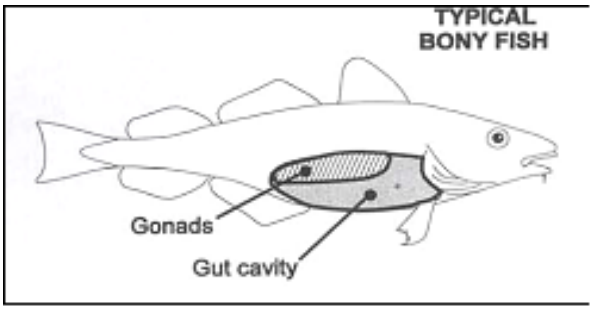

Figure 7-6: Typical Roundfish Gonad Placement

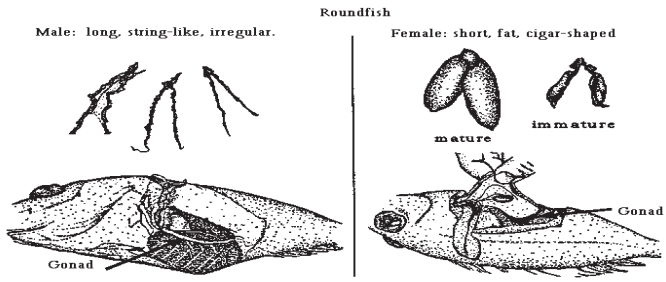

Figure 7-7: Typical Roundfish Gonad Appearance

Sexing Sablefish

1. Gonads are found along the backbone, toward the head of the fish.
2. Insert blade into anus and cut toward head.
3. Remove viscera to expose paired tubular gonads along spine. The gonads will become fused into one toward the anterior of the cavity, so examine gonads at their posterior end.
4. Probe the gonad lobes apart.
5. Females will appear as two tubes that are oval in cross-section (Figure 7-8).
6. Males also appear as two tubes, but on closer inspection you'll typically find the tubes are bifurcated, giving an appearance of four lobes (Figure 7-8).

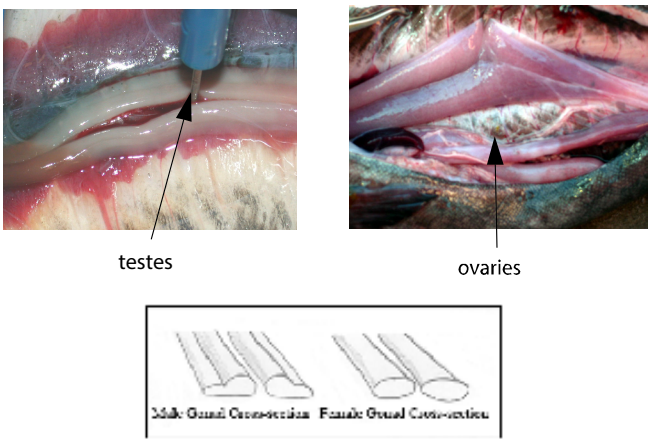

Figure 7-8: Sablefish Gonad Placement and Gonad Appearance

Sexing Rockfish

1. Gonads are found along backbone, towards the anus (Figure 7-9).
2. Insert blade into anus and cut toward head. Alternately, you may cut open the side of the abdomen, at the top of the visceral cavity.
3. Remove viscera to expose gonads.
4. Female gonads will appears as white, pink, yellow or orange elongated tubes. As they mature they become oval-shaped and will have granular appearance. Female gonads are oval in cross-section (Figure 7-9).
5. Males will be cream to pink in color. When mature they are triangular shape in cross-section; immature testes are still somewhat triangular and will have defined edges at the bottom (Figure 7-9).

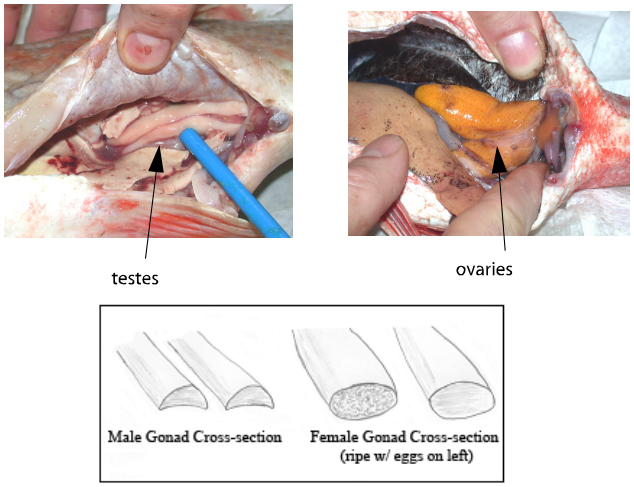

Figure 7-9: Rockfish Gonad Placement and Gonad Appearance

Sexing Flatfish

1. Flatfish gonads are found in small pockets posterior of the visceral cavity, on either side of the anal spine when it is present (Figure 7-10).
2. Insert blade into anus and cut back, toward the tail.
3. Female gonads will be creamy pink to orange or salmon colored. They appear as elongated triangles or flattened funnels and are somewhat firm (Figure 7-11).
4. Male gonads are creamy white in color. They are equilaterally triangular and tend to be somewhat mushy. They do not elongate toward the tail like ovaries (Figure 7-11).

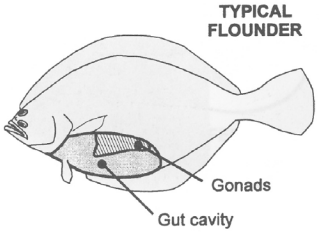

Figure 7-10: Flatfish Gonad Placement

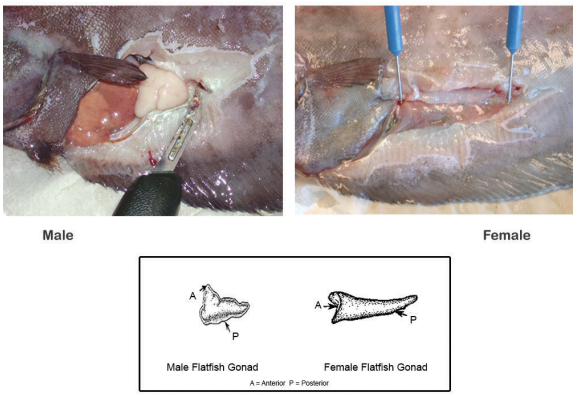

Figure 7-11: Flatfish Gonad Appearance

Sexing Externally - Sexually Dimorphic Species

The methods for sexing the following species will be discussed: Sharks, Skates, Dungeness Crab, Kelp Greenling, CA Sheephead.

Sexing California Sheephead

1. Never cut into fish. Sexual determination is by visual inspection only.
2. California Sheephead are protogynous hermaphrodites (born female and become males as they age). They display sexually dimorphic coloration that changes as they age/change sex. There are four

distinct life stages: juvenile, female, transitional, and male.

3. Juveniles are a bright orange-red or red with black spots on the fins and caudal peduncle. They frequently will have a white stripe along their sides from head to caudal fin (Figure 7-12).
4. Females are a faded rose to brownish red with a white chin (Figure 7-12).
5. Transitional fish are a dusky rose to deeper reddish-orange in color with darkening of the anterior and posterior thirds of the body. These areas may appear light brownish or grayish in color. The chin remains white (Figure 7-12).
6. Male fish are dark brown or black anteriorly and posteriorly. The central third is a deep orange-red to red. The chin is white (Figure 7-12).

Figure 7-12: Juvenile Sheephead (above left) and Female Sheephead (above right) Transitional Sheephead (below left) and Male Sheephead (below right)

Sexing Kelp Greenling

1. Never cut into fish. Sexual determination is by visual inspection only.
2. Females are gray or brownish with reddish brown to yellow or orange freckling. Fins are typically yellowish (Figure 7-13).
3. Males are gray or brownish with blue spots surrounded by reddish spots. Fins are typically brownish (See Figure 7-13).

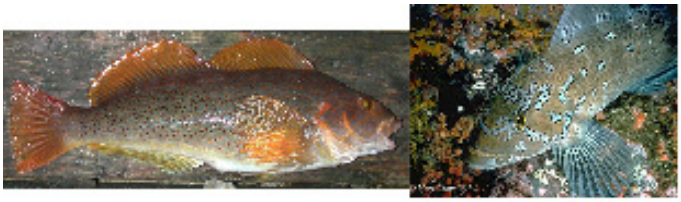

Figure 7-13: Female Kelp Greenling (left) Male Kelp Greenling (right)

Sexing Sharks and Rays

Male sharks and rays are distinguished from females by the presence of claspers attached to the pelvic fins. In immature males they will be small but still present (Figure 7-14).

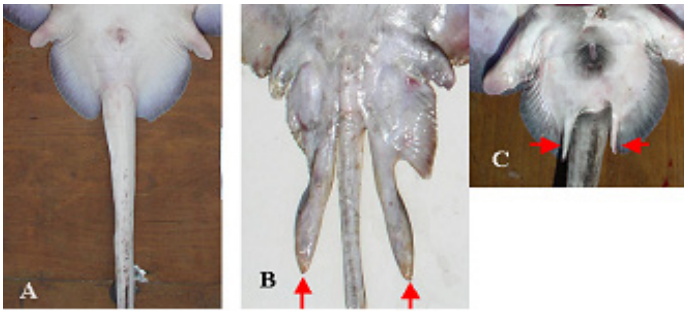

Figure 7-14: Female Skate (A), Male Skate (B), Immature Male Skate (C). Note presence of claspers in males.

Sexing Dungeness Crab and Checking for Egg Presence

The differences in the shape of the abdominal flap indicate the sex of the crab. Sex each crab before measuring it.

- Female Dungeness crab have an abdominal flap that completely covers the carapace bottom. It will be broad, rounded and will extend to the leg insertions on mature females (Figure 7-15). If you lift the flap slightly, you can determine if the females are carrying eggs. (Figure 7-16)
- Male Dungeness crabs have a triangular or U-shaped abdominal flap that does not cover the bottom of the carapace (Figure 7-15). When immature, the abdominal flap is shaped like a narrow finger. When crabs are mature, the abdominal flap is more V-shaped.

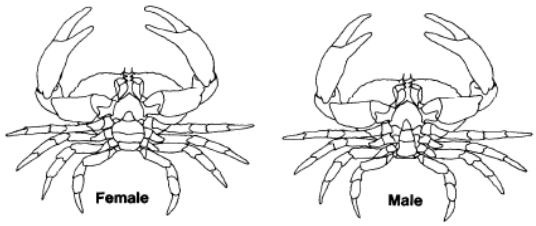

Figure 7-15: Sexing Dungeness Crab.

Figure 7-16: Gravid female Dungeness Crab.

Otoliths

Otoliths are calcium carbonate structures found in many fish species. Otoliths grow in size with the fish displaying their growth in annual rings or annuli. The number of annuli are counted (or read) by scientists to determine the age of the fish.

Tip: When collecting otoliths, remember to collect length, weight, and sex.

Otolith Location

Otoliths are located in two pockets, below the brain, just posterior of the eyes. Typically they are in line with the pre-opercular line, just below the upper margin of the eye (Figure 7-17).

The otoliths are located ventrally to either side of the brain tissue, just above where the pre-operculum is located. The common methods of cutting into a fish's head to remove the pair of otoliths are a vertical cut through the head above the pre-operculum or a horizontal cut through the head just above the eyes. The easiest method to use for most fish is to make a vertical cut down through the top of the head to the otolith pocket. This pocket is located at the two points on either side of the fish's head at which an imaginarily extended lateral line would meet the pre-operacular bone.

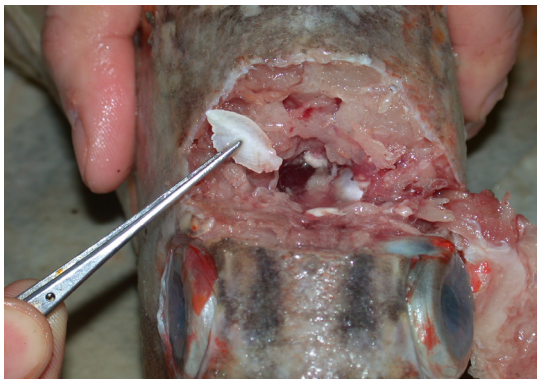

Figure 7-17: Otolith Locations

Broken Otoliths

Otoliths are fairly fragile and must be in good condition to be read accurately.

Before collecting otoliths that will be used as part of a scientific collection, collect a variety of fish sizes and practice removing the otoliths. Try a variety of cuts and knife sizes to get comfortable with the angle and amount of pressure required. Field coordinators are available to suggest alternate techniques in cases where otoliths are consistently being broken.

Some otoliths may break or be cut accidentally during at sea collection. If both pieces are present, keep samples with otoliths that have a single break. Discard samples with a shattered otolith or with only one otolith.

Otolith Removal

1. Make cut on the dorsal edge at the preopercle down until resistance lessens noticeably.
2. Break open incision and remove otolith from pockets just under brain.
3. Alternately, you can cut back from just above the eye to meet with the downward cut, to remove a wedge (Figure 7-18).
4. Be gentle when cutting into fish and when removing otoliths. Otoliths are fragile. If you break an otolith, ensure you collect both pieces.
5. Always wipe off all tissue and dry otoliths. Dirty otoliths become stained and unreadable. Wet otoliths lose their calcium and are no longer usable. Wet or damp otoliths are required to be air dried by the observer before submitting it to the debriefer.

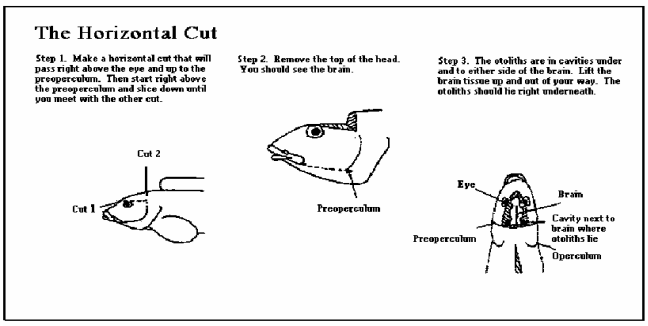

Figure 7-18: The Horizontal (or Wedge) Cut

Collecting Otoliths from Sablefish

Sablefish have very tiny otoliths. Employ a horizontal cut when working with this species (See Figure 7-19).

Collect sablefish otoliths using the following procedure:

1. Firmly grasp the fish's head.
2. Make a horizontal slice into the head just above the eye. Stop slicing when the knife is just before the preopercle.
3. Make a second vertical cut down into the head until

the level of the first cut is reached.

4. Remove the wedge of cut skull. If the cut is correct, no blood should flood the cavity and the brain tissue should be visible.
5. Grasp the brain tissue with forceps and pull it out or peel it back from the cavity.
6. On either side of the brain cavity there is a fluid-filled pocket containing an otolith. Insert forceps into the pockets to remove the bony structures floating within the fluid.
7. Carefully clean the otoliths by rubbing them between your fingers in water, or on a wet sponge or cloth to remove slime and tissue.
8. Dry the otoliths as much as possible and place the pair of otoliths into a vial (only one pair of otoliths per vial). It is important to get the otoliths clean and as dry as possible before storing them to prevent rotting.

Figure 7-19: Sablefish otoliths

Collection and Documentation of Biological Samples

Biological information is collected from individual fish for a variety of reasons. There are four methods that can be used to collect biological samples, which translate into the sample methods on Length Frequency and Biological Specimen data forms (see Figure 7-23 and Figure 7-24). The four methods are differentiated by:

1. Random vs. non-random.
2. Individual was or was not present in a species composition sample.

This topic is discussed in each section of the Biological Sampling chapter under the Random/Non Random and Inside/Outside subheadings.

Random Sampling

In most cases, individuals used for biological sampling will need to be collected randomly. This is necessary because most biological information collected will be used to make assumptions about the population as a whole.

Random Sampling Within a Species Composition Sample

Selecting individuals for biological sampling from within a species composition sample is encouraged. When collecting individuals from inside a species composition sample, all of the individuals of a single species make up a population (see Chapter 3, "Observer Basics" for a review of **Random Sampling Theory**). There are two ways that a random sample can be taken from a population.

- All individuals in the population are selected.
- A random subsample of the individuals in the population is selected.

> **Tip:** Be sure to consider all members of the population when collecting a random subsample. A species can exist in more than one catch category within a haul. If this is the case, a random subsample of individuals must be taken from each catch category in which the species exists.

Subsamples may be taken using any one of the following random sampling methods:

- **Spatial**: Randomly select a unit of gear or an area (portion of deck or bin, specific basket) to collect individuals from.
- **Temporal**: Randomly select a point in time to collect individuals.
- **Systematic**: Select a random start point (spatial or temporal) and take individuals at set intervals. In order to use a systematic system you must know approximately how many of the target species are in the population.

Systematic Example:

1. The crew on a trawler is sorting out a scupper and the observer is whole hauling the discard.
2. The observer estimates that 100 Pacific Ocean Perch (POP) will be discarded. There are no other priority species present.
3. The observer refers to the Biological Sampling chapter in his manual and verifies that he needs to take sex/ lengths from 5 of the discarded POP.
4. The observer decides to do a systematic subsample of the POP within his species composition sample.
5. The observer divides the estimated number of POP in the haul by the number he needs to sample (100 /5 = 20). This tells him he need to collect 1 fish out of every 20.
6. The observer randomly selects a number between 1 and 20. He selects 5. This will be the first POP collected.
7. The observer collects the fifth POP the crew sorts and every 20th POP thereafter (5th, 25th, 45th, 65th, 85th) for biological sampling.
8. The POP sex/ lengths will be recorded on the Length Frequency Form with a sample method of 9 – Inside and Random.

Random Sampling Outside a Species Composition Sample

Biospecimens may, in some instances, be collected from tagged fish, Pacific halibut, or coral that was not part of a species composition sample. ***When collecting individuals for discarded priority species biosampling, always use individuals from inside a species composition sample!***

The following is an example of a situation where biospecimens would be collected from individuals outside the species composition sample.

Example:

1. The observer on a trawl vessel notices that there are a few lively Pacific halibut present in the trawl alley directly after the codend is dumped. The observer visually estimates about 12 large halibut.
2. The crew wants to immediately toss these P. halibut overboard so that they have a better chance for survival.
3. The observer needs to sample 5 P. halibut for viability, so he decides if he sampled every other fish, each individual would have an equal opportunity to be selected. He uses the random number table to pick a

Random Sampling Theory: When random sampling is used to subsample, every member of the population must have an equal probability of occurring in the sample.

number between 1 and 2. He selects 2.

4. The observer asks the crew to cooperate by showing him each P. halibut before it is tossed overboard. He uses the Key to Injury Codes For Trawl Caught Pacific Halibut to assess viability for the 2nd fish and every other fish after that (2nd, 4th, 6th, etc.). He quickly gets actual lengths of all 12 presorted P. halibut caught. Since the observer whole hauled all other discard in the haul, he knows there were no other P. halibut in the haul.
5. The lengths and viability assessments are recorded on the Biological Specimen Form with a sample method of 7 - Outside and Random.

Data Collection Priorities

Biological information is taken from:

- Tagged Fish (non-salmonid)
- Priority Species
- Coral
- Pacific halibut

> **Tip**: Even though biological sampling should only be undertaken after collecting comprehensive catch and species composition information (with the exception of viabilities), it is an important part of observer duties. If necessary, a smaller species composition may be taken to allow sufficient time for biological sampling.

This section will detail what is collected and when from each of the above groups. The following information will be covered:

- **Sample type(s)**: This section lists the types of samples, such as length, sex, and otoliths, that are taken from the group.
- **Random/Nonrandom and Inside/Outside**: This section details when biosampling is performed in either a random or nonrandom manner and if the individuals fall inside or outside of species composition samples.
- **Biosampling protocol**: This section details the logistics of collecting biosamples.
- **Documentation**: This section details which of the five forms the biological information is documented on. For Instructions on completing forms, see "Data Collection Forms" on page 7-24.

Tagged Fish (Non-salmonids)

Fish are tagged by a variety of educational institutions, state agencies, and federal agencies. Tagged fish are used to study fish migration, stock separation, fishing related mortality, and population dynamics.

Tagged species include Pacific cod, Pacific halibut, California halibut, pollock, sablefish, rockfish, shortspine thornyhead, and Dungeness crab.

Sample types collected from non-salmonid tagged fish:

1. Length
2. Weight
3. Sex
4. Otoliths

Recognizing Tagged Fish

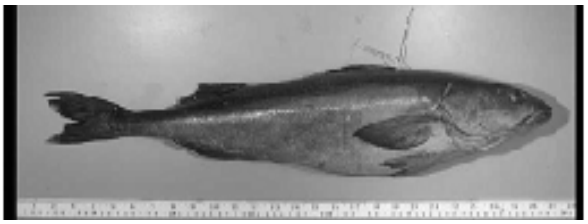

Figure 7-20: Tagged Sablefish

Tags for fish other than salmon are usually externally located on the dorsal surface or on the gill cover. Spaghetti tags are the most common type of external tag but some fish may have disc-shaped tags.

Random/Nonrandom and Inside/Outside

Tagged fish are sampled in a **nonrandom** manner. Tagged individuals are sampled specifically because they are tagged and not because they are representative of the population.

Tagged fish can be taken from inside or outside a species composition sample.

Biosampling Tagged Fish

All tagged fish caught should be collected and sampled. Sample retained and discarded tagged fish.

1. Inform skipper and crew members that all tagged fish will be sampled and that their help in the collection of these fish would be appreciated. Tagged fish should be given to the observer prior to any processing (i.e. heading and gutting).
2. Upon receipt of a tagged fish:
   - If fish is **dead,** remove the external tag. ***Do not remove tag from LIVE fish just record the tag number.***
   - Weigh fish.
   - Length fish.
   - Sex fish: ***Do not sex live fish.***
   - Collect otoliths, if required. ***Do not collect otoliths from LIVE fish.***

Documenting Tagged Fish

- Complete a **Tagged Fish Form**. See Figure 7-25.

> **Tip:** The Tagged Fish Form requires information from the crew member who found the tag. This allows them to receive a reward. Always fill out the Tagged Fish Form as soon as possible.

- Complete a **Biospecimen Form**. Record the tag number in the "Barcode or Tag/Band ID" field and enter the barcodes for the vials containing otoliths. See Figure 7-24.

Discarded Priority Species Biosampling in the Trawl Fishery

Priority species are ones that are in the Pacific Coast Groundfish FMP whose population status is either currently being assessed or soon to be assessed. There are over 40 such species. Priority species sampling varies by fishery, with different priorities for trawl fisheries, non-nearshore fixed gear fisheries, and the nearshore fixed gear fisheries. The following section details priority species sampling in the trawl fisheries.

> **Tip**: Biological sampling of priority species is fishery specific. Refer to the WCGOP field manual for biological sampling responsibilities that pertain to a specific fishery.

Sample types to collect from priority species:

1. Length
2. Weight
3. Sex
4. Otoliths
5. Maturity
6. Tissue

Depending on the species, one or more of these sample types are required.

Random/Nonrandom and Inside/Outside

All discarded priority species sampling must be done randomly so the individual will be considered representative of the entire population.

Discarded priority species biological samples must be from inside a species composition sample.

Biosampling Priority Species on Trawlers:

There are 42 species that are sampled in the trawl fishery. The sampling protocol is designed to ensure that enough individuals are sampled for stock assessment purposes. Frequently caught species are split into three groups, biosampling lists 1, 2, and 3. An additional list includes 16 rarely caught, lower priority species.

There may be additional fishery-specific biological sampling priorities. Refer to the WCGOP Field Manual for further instruction.

Overall Biological Sampling Goal: Using fish from DISCARDED species composition samples only, collect biological samples from at least 5 individuals from as many species as possible. Take up to 40 samples per haul.

1. For each trip, sample ALL priority Discarded:

Cowcod rockfish FL, O, S	Yelloweye rockfish FL, O, S	Canary rockfish FL, O, S

   - Collect up to 5 sets of otoliths from these species
   - Collect up to 25 individuals for length/ sex.

2. For each trip, randomly select which of the three biosampling lists to use on the first haul. **Document the list being used on the top of the Species Composition Form.**
   - Use the Random Number Table to select a number between 1 and 3. Use the randomly selected list on the first haul.
   - Use the next list for the second haul. For instance, if you randomly selected to start with biosampling list 2, use biosampling list 3 on haul 2. If you randomly selected biosampling list 3 to start with, use biosampling list 1 for haul 2.

     Tip: If none of the species on the biosampling list being used is in a **DISCARDED** species composition sample, skip to step 4 below. Cycle to the next biosample list ONLY when sampling the next haul.

3. Collect the appropriate sample types from up to 5 individuals of each species, starting with the first species and working down the list. Collect up to 3 individuals of the species marked with an asterisk (*).
   - **FL** = Fork Length,
   - **TL** = Total Length
   - **CL** = Carapace Length,
   - **O** = Otolith
   - **S** = Sex
   - **E** = Egg presence/absence
   - **T** = Tissue (Fin clip)

BIOSAMPLING LIST 1	BIOSAMPLING LIST 2	BIOSAMPLING LIST 3
1. Bocaccio rockfish [FL]	1. Bocaccio rockfish [FL]	1. Bocaccio rockfish [FL]
2. Pacific Ocean Perch [FL,S]	2. Pacific Ocean Perch [FL,S]	2. Pacific Ocean Perch [FL,S]
3. Rougheye rockfish [FL,O,S,T]	3. Rougheye rockfish [FL,O,S,T]	3. Rougheye rockfish [FL,O,S,T]
4. Shortraker rockfish [FL,O,S,T]	4. Shortraker rockfish [FL,O,S,T]	4. Shortraker rockfish [FL,O,S,T]
5. Lingcod [FL]	5. Darkblotched rockfish [FL,S]	5. Sablefish [FL]
6. Petrale sole [FL,S]	6. Splitnose rockfish [FL]	6. Flathead sole [FL]
7. Rex sole [FL]	7. Aurora rockfish [FL]	7. English sole [FL]
8. Greenstriped rockfish [FL]	8. Big skate [TL, S]	8. Dungeness crab [CL, S, E]
9. Spiny dogfish shark [TL, S]	9. *Pacific sanddab [FL]	9. Longspine thornyhead [FL]
10. Shortspine thornyhead [FL]	10. *Dover sole [FL]	10. *Longnose skate [TL, S]
	11. *Arrowtooth flounder [FL]	

4. If 40 or more individuals have been sampled, biological sampling duties are complete.
5. If less than 40 individuals were sampled, collect the appropriate sample types from up to 5 individuals of each of the species below until, at minimum, 40 individuals per haul have been used for biological sampling. Collect information from as many of the species below as possible.

Bronzespotted rockfish [FL]	Silvergray rockfish F[L]	Rock sole [FL]
Bank rockfish [FL]	Sharpchin rockfish [FL]	Sand sole [FL]
Blackgill rockfish [FL]	Yellowtail rockfish [FL]	Starry flounder [FL]
Chilipepper rockfish [FL]	Greenspotted rockfish [FL]	Pacific cod [FL]
Redbanded rockfish [FL]	Stripetail rockfish [FL]	
Redstripe rockfish [FL]	Widow rockfish [FL]	

Documenting Priority Species:

- **Species Composition Form:** Ensure the randomly selected biosamples trawl list is clearly documented on the species composition form and the sample data type clearly documented in the raw data.
- **Length Frequency Form**: Used to record length or length/sex data. (See Figure 7-23)
- **Biological Specimen Form:** Used when information in addition to length and sex (i.e. weight, otoliths, other) is collected. (See Figure 7-24)

Discarded Priority Species Biosampling in Non-Nearshore Fixed Gear Fisheries

Sample types to collect from priority species:

1. Length
2. Sex
3. Otoliths

Depending on the species, one or more of these sample types are required.

Tip: Biological sampling of priority species is fishery specific. Refer to the WCGOP field manual for biological sampling responsibilities that pertain to a specific fishery.

Q: What if there is only one individual of a species on the biosampling list in species composition sample?

A: Take the appropriate samples from that individual.

Random/Nonrandom and Inside/Outside

All **discarded** priority species sampling must be done **randomly** as the individuals are considered representative of the entire population.

Discarded priority species biological samples must be from inside a species composition sample.

Biosampling Priority Species in the Non-Nearshore Fixed Gear Fisheries

There are only 16 species that are caught in the non-nearshore fixed gear fisheries from which biological samples need to be collected.

Overall Biological Sampling Goal: Using only fish in **DISCARDED** species composition samples, collect biological samples from two to five individuals from as many of the 16 species as possible. ***Take up to 40 samples per set***.

1. Take Lengths and Otoliths from all DISCARDED Cowcod rockfish FL, O, S, Yelloweye rockfish FL, O, S, and Canary rockfish FL, O, S.
2. Take lengths from five randomly selected, **DISCARDED Sablefish**[FL].
3. Collect up to five individuals from each species on the following list that is in a **DISCARDED** species composition sample.
   - If there is only one individual of a species in the **DISCARDED** species composition sample, take samples from that individual.
4. Collect the appropriate sample types from individuals. Sample types needed are listed next to each species.

Documenting Priority Species:

- **Length Frequency Form**: Used to record length or length/sex data. (See Figure 7-23)
- **Biological Specimen Form**: Used when information in addition to length and sex (i.e. weight, otoliths, other) is collected. (See Figure 7-24)

ALL Discarded (no preyed upon fish)	First 5 Discarded (no preyed upon fish)			
				Lingcod[FL]
Cowcod rockfish[FL, O, S]	Sablefish[FL]	Shortraker RF[FL,O,S,T]	Rougheye RF[FL,O,S,T]	Shortspine thornyhead[FL]
Yelloweye rockfish[FL, O, S]	Blackgill RF[FL]	Darkblotched RF[FL]	Yellowtail RF[FL]	Longspine thornyhead[FL]
Canary Rockfish[FL, O, S]	Bocaccio RF[FL]	POP[FL]	Widow RF[FL]	Spiny dogfish shark[TL, S]

Figure 7-21: Non-Nearshore Fixed Gear Priority Species

Discarded Priority Species Biosampling in Nearshore Fixed Gear Fisheries

Sample types to collect from priority species:

1. Length
2. Sex (**VISUAL ONLY**)

Depending on the species, one or both of these sample types are required.

> Tip: Biological sampling of priority species is fishery specific. Refer to the WCGOP field manual for biological sampling responsibilities that pertain to a specific fishery.

Random/Nonrandom and Inside/Outside

All **DISCARDED** priority species sampling must be done randomly as the individuals are considered representative of the entire population.

Discarded priority species biological samples must be from inside a species composition sample.

Biosampling Priority Species in Nearshore Fixed Gear Fisheries

Overall Biological Sampling Goal: All DISCARDED commercially important species should be sampled.

1. Take biological samples from ALL DISCARDED individuals of the following species:

First 5 or ALL Discarded (no preyed upon fish)	All Discarded (no preyed upon fish)	
Lingcod[FL]	Cabezon[FL]	All other rockfish species[FL]
Blue rockfish[FL]	California scorpionfish[FL]	White croaker[FL]
Black Rockfish[FL]	Canary RF[FL]	Kelp greenling[FL, S]
California sheephead[FL, S]	Rock greenling[FL]	

2. Collect the appropriate sample types from individuals. Sample types needed are listed next to each species in the table above.
   - **FL** = Fork Length
   - **S** = Sex**

Nearshore discard is usually released alive. All sexing must be based on visual characteristics only.* ***Never cut open live discard in the nearshore fishery to determine sex!

Documenting Priority Species:

- **Length Frequency Form**: Used to record length or length/sex data. (See Figure 7-23)
- **Biological Specimen Form:** Used when information in addition to length and sex (i.e. weight, otoliths, other) is collected. (See Figure 7-24)

Data Collection from Coral

Corals are part of a group referred to as structure forming mega-faunal invertebrates. This group also includes sponges (Phylum Porifera) and Hydrocorals (Hydrozoa). Coral groups found along the West Coast include, but are not limited to: black corals (Antipatheria), coral

anemones (Corallimorpharia), sea anemones (Actiniaria), gorgonian corals (Gorgonacea), sea pens, whips and fans (Pennatulacea), soft corals (Alcyonacea), and stony corals (Scleractinia). Collection of specimens will aid in positively identifying where various coral species are encountered.

Structure Forming Mega-Faunal Invertebrates on the West Coast*

Scientific Name	Common Name/ Group Name	Collect?
Phylum Porifera	Sponges (sponges)	No
Phylum Cnidaria		
Class Anthozoa		
Sub-class Alcyonaria (Octocorallia)		
Order Gorgonacea	Gorgonian, unid.	Yes
Sub-order Scleraxonia	Spongy Gorgonians	Yes
Sub-order Holaxonia	Horny Gorgonians	Yes
Sub-order Calcaxonia	Sea Fans, Bamboo Corals	Yes
Sub-order Pennatulacea	Sea Whips, Sea Pens, Sea Pansies	Yes
Order Alcyonaceans	Soft corals (corals)	Yes
Sub-class Zoantaria (Hexacorallia)		
Order Actiniaria	Sea anemones (anemones)	No
Order Antipatheria	Black corals (corals)	Yes
Order Scleractinia (Madreporaria)	Stone corals (corals)	Yes
Class Hydrozoa		
Order Filifera	Hydrocorals (corals)	Yes

** Five additional Anthozoan orders may be present on the coast (Stolonifera, Telestacea, Zoanthidea, Corallimporphiria, and Ceriantharia)*

Sample types to collect from coral

- Tissue sample.

Random/Nonrandom and Inside/Outside

Coral samples should be taken from all live or recently dead coral species, therefore, they are randomly collected. Coral will generally be from inside of a species composition sample, unless a visual estimate was used for weight.

Biosampling Coral

1. Collect a representative specimen for each live or recently dead coral species in the haul. The determination of being alive or recently dead is made by the presence of soft tissue that does not appear to have deteriorated.

2. Use the WCGOP Invertebrate ID manual to separate mega-faunal invertebrates into one of the following groups: Spongy Gorgonians (Scleraxonia), Horny Gorgonians (Holaxonia), Sea Fans/ Bamboo Coral (Calcaxonia), Sea Whips/ Sea Pens, Sea Pansies (Pennatulacea), Soft Corals (Alcyonaceans), Black Corals (Antipatheria), Stone Corals (Scleractinia), and Hydrocorals (Filifera).
   - If unable to identify the specimen, record it as unidentified, at the most discrete level possible (e.g. – coral, unidentified; Gorgonian, unidentified).
   - Weigh the coral specimen.
3. Collect **two** small tissue samples from a representative specimen for each coral species in the haul except sea pens and sea whips. Collect one sample from sea pens and sea whips.

Tip: On the biospecimen form, document 0.05 lbs for weight of the coral sample

Coral Tissue Collection Methodology

1. Collect two small tissue samples from a representative specimen of each live or recently dead coral species encountered using non-serrated forceps; sea pens and sea whips require only one sample. The determination of a species being alive or recently dead is made by the presence of soft tissue that does not appear to have deteriorated. If polyps are present at all, consider the coral recently dead, and collect a sample.
2. Each tissue sample should be 4-5 cm long. Try to ensure that each of the two sample pieces includes polyps.
3. Place each sample in separate, previously barcoded vials.
4. Thoroughly clean forceps between each sample to avoid tissue build up. Care should be taken not to contaminate samples.
5. Freeze specimens as soon as possible. Use the vessel freezer if possible, and keep frozen until they are shipped to Newport. After data are debriefed, mail the invertebrate specimens to the Newport office for preservation. Ensure they are shipped frozen with ice packs and an insulated cooler.
6. Record data on the Biological Specimen Form.

Documenting Coral Information:

- **Biospecimen Form:** Document dissection type 4 - Tissue/ Fin clip. (See Figure 7-24)

Tip: If coral species are documented in a species compositions and a soft tissue sample was not collected, be sure to document why in the raw data.

Data Collection from Pacific Halibut

Two types of data are collected from Pacific Halibut: an assessment of viability and a length estimate. The purpose of taking viabilities is to document the condition of the fish when it returns to the sea. Viabilities are taken from randomly selected DISCARDED Pacific halibut that have undergone NORMAL handling by the crew. Whenever a viability assessment is done, an ACTUAL length is required. Visual length estimates are done for individuals not selected for viability assessment. Visual estimates of individual P. halibut lengths help to describe the size composition in the sample.

The injury criteria and viability codes used to assess Pacific halibut viabilities vary by gear type. Make sure to use the correct set of criteria and codes when making injury assessments.

Sample types to collect from Pacific halibut

1. Length
2. Viability

Figure 7-22: Pacific halibut

Random/Nonrandom and Inside/Outside

Pacific halibut viabilities must be collected randomly so they will be representative of the population.

Pacific halibut viabilities will be from **outside** of a species composition sample. Observers only collect lengths and viabilities from PHLB in the Catch Shares fishery, so the individuals are not entered on the Species Composition form. Never weigh PHLB. Enter the lengths/viabilities on the Biospecimen and/or Length/Frequency form, the database will calculate the weight, and record the weight from the database on the Catch Form.

Visual length estimates must also be collected randomly. These estimates will always be **outside** of a species composition sample.

Biosampling Pacific halibut

Viabilities

Overall Biological Sampling Goal: Using fish from DISCARDED Pacific halibut that have undergone NORMAL handling by the crew, collect actual lengths and viabilities from all Pacific halibut. P. Halibut viabilities must also be collected RANDOMLY. If Pacific halibut exists in more than one catch category, viability samples must be taken from each catch category.

Tip: Viability data collection can be difficult on longline vessels, as most vessels do not normally land P. halibut. Unless the normal handling of P. halibut by the crew involves bringing these fish on board, do not assess viability.

1. Collect all or a random subsample of **DISCARDED** Pacific halibut.
   - If more than 10 are present in the haul, devise a **random systematic sampling frame** in order to get lengths and viabilities for at least 10 individuals from throughout the haul.
   - For hauls containing **50 or more** PHLB, use a **random systematic sampling frame** to collect 1/5 of the individuals for lengths and viabilities.
2. Measure the fork length of the Pacific halibut

   Tip: An actual length is required when assessing P. halibut viability.
3. Closely examine the Pacific halibut on both sides for injuries.
   - Use the appropriate Pacific halibut injury key to assign a viability code to the fish. Injury keys are located in the appendices as follows: Trawl, Pot, or Hook and Line (see the Appendix).

Visual Length Estimates

On fixed gear vessels, P. halibut are rarely landed on the vessel. To work around this, P. halibut weight on these vessels is estimated by visually estimating the length of each individual fish (usually to the nearest centimeter).

In 2015, a Pacific halibut viability study will be conducted. Observers on trawl vessels will document the time on deck, in seconds, as each P. halibut is assessed for viability. Sea temperature and air temperature will be documented for each haul, as well. Data will be documented on a separate form. See Chapter 4, "Trawl Sampling" for more information.

The database will calculate the total weight based on the lengths. Record this weight on the Catch Form. The visually estimated lengths can also describe the size composition of the fish in the haul. Since this information is taken from all **DISCARDED** P. halibut in the fixed gear sample, the data are collected **RANDOMLY**.

Documenting Pacific Halibut Information:

- **Length Frequency Form:** Used to record visually estimated lengths of P. halibut. (See Figure 7-23)
- **Biological Specimen Form:** Used when actual length and viability information are collected. (See Figure 7-24)

Documenting Biological Samples

There are five sample methods for biological sampling. The primary factors used to differentiate these methods are:

- Whether the individuals used for biological sampling were within the species composition sample
- Whether the individuals used for biological sampling were randomly selected.
- Whether the individual used for biological sampling is a PHLB with a visually estimated length.

Biological Sampling Methods

Sample Method 6 – Outside and Nonrandom

- Individuals are not part of a species composition sample and have NOT been randomly selected.
- Use this method for tagged fish that have been collected opportunistically during a haul/set.

Sample Method 7 – Outside and Random

- Individuals are not part of a species composition sample and have been randomly selected.
- Use this method for Pacific halibut when actual lengths/viabilities have been taken for randomly selected individuals from the haul/set but there was not a species composition sample because actual weights of halibut were not obtained.

Sample Method 8 – Inside and Nonrandom

- Individuals are part of a species composition sample and have NOT been randomly selected.
- Use this method for tagged fish that have been collected opportunistically from a species composition sample.

Sample Method 9 – Inside and Random

- Individuals are part of a species composition sample and have been randomly selected.
- Use this method when taking biological data from all individuals or from randomly selected individuals of a particular species within a species composition sample. **This method must be used when sampling discarded priority species**.

> **Tip:** If average weight individuals were taken from outside of the tally sample on a fixed gear vessel and those same individuals are used for biological sampling, they are considered inside and random

Sample Method 10 - PHLB visual length estimate

- Individuals are PHLB with visually estimated lengths.
- Use this method to record visual lengths of PHLB on the length form. The database will calculate the total weight of PHLB based on the visually estimated lengths.
- This method is ONLY used for PHLB with a visual length estimate.

Data Collection Forms

There are four data collection forms for documenting biospecimen information from non-protected resources.

1. **Length Frequency Form:** Use this form to record species, length (including visually estimated lengths of P. halibut), and sex data when only this information is collected. (See Figure 7-23)

2. **Biospecimen Form:** Use this form to record data for individual fish when any information beyond species, sex, and length has been collected. Always use this form when dissections are taken (otoliths, tissues). (See Figure 7-24)

   Tip: Record data on either the Length Frequency or the Biospecimen Form. **NEVER** record data from a single fish on both forms or the fish will be counted twice

3. **Tagged Fish Form:** Use this form to record data for non-salmonid tagged fish.

4. **Specimen Collection Label:** Use this label to when:
   - Salmon snouts have been collected
   - Whole fish/invertebrates have been collected.

Length Frequency Form Instructions

Complete the Length Frequency Form for fish when only length (including visually estimated lengths of P. halibut) or length and sex information is collected. An example of the form is included as Figure 7-23.

- **Haul Number:** Record the number of the haul that the sample came from.
- **Date:** Record the date as MM/DD/YY.
- **Trip Number:** This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Page _ of _:** Number forms sequentially within a haul.
- **Catch #:** Record the number that corresponds to the catch category on the Catch Form.
- **Catch Category:** Record in capital letters the catch category the species is in as recorded on the Catch Form.
- **Species Name:** Record the **common name** of the species the length frequencies were taken from. Do not only enter the species code! The common name listed on the paperwork must match the common name used in the database.
- **Species Code:** Record the species code of the corresponding species. See the Appendix for lists of species and species codes.
- **Sample Method:** Record the Biological Sampling Method used to obtain fish for length frequencies.

  6 Outside and non-random
  7 Outside and random
  8 Inside and non-random
  9 Inside and random
  10 Pacific halibut visual length estimate

- **Discard Reason:** Record the same reason for discard as was documented on the Species Composition form for the species.

  11 Incidental/accidental
  12 Drop-off
  13 Market
  14 Other
  15 Predation
  16 Regulation
  17 Safety

Inside vs. Outside: Was the individual being sampled for biological specimens documented on the Species Composition Form?

Yes = inside sample

No = outside sample

18 Market - dockside only

19 Utilized on board

- **Sex:** Record **M** – Male, **F** – Female, **U** – Unknown (individuals where the sex cannot be determined), **T** - Transitional, or **J** - Juvenile. If you did not attempt to sex the individual, **LEAVE THE COLUMN BLANK!**
- **Length:** Record the length of the fish, in centimeters. All individuals of the same length and sex should be grouped together on one line.
- **Freq:** Record the number of individual fish in each length and sex group.
- **KP Length:** Sum up all of the lengths **by species** and note total of all lengths in the KP Length (keypunch length) column.
- **KP Frequency:** Sum up all of the frequencies **by species** and note total of all frequencies in KP Freq (keypunch frequency) column.

Haul # ☐☐ Length Frequency Form Page ____ of ____

Date ☐☐☐☐☐☐ Trip Number ☐☐☐☐☐

Catch #	Catch category		Catch #	Catch category		Catch #	Catch category		Catch #	Catch category		Catch #	Catch category	
Species Name			Species Name			Species Name			Species Name			Species Name		
Species Code	Sample Method	Discard Reason	Species Code	Sample Method	Discard Reason	Species Code	Sample Method	Discard Reason	Species Code	Sample Method	Discard Reason	Species Code	Sample Method	Discard Reason
Sex	Length	Freq	Sex	Length	Freq	Sex	Length	Freq	Sex	Length	Freq	Sex	Length	Freq
KP			KP			KP			KP			KP		

Sample Methods: 6 - Outside and Nonrandom 7 - Outside and Random 8 - Inside and Nonrandom 9 - Inside and Random 10 – PHLB visual length estimate

Figure 7-23: Length Frequency Form

Biospecimen Form Instructions

Complete the Biospecimen Form any time data beyond species, sex, and length are collected on an individual fish. Complete this form when collecting weights, Pacific halibut viabilities, fish otoliths, fish or coral tissues, maturities or tags. This form is also often used to record individual weights and lengths of fish caught in the live fish fishery. An example of the form is included as Figure 7-24.

- **Haul Number**: Record the number of the haul that the sample came from.
- **Date**: Record the date as MM/DD/YY.
- **Trip Number:** This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Page _ of _:** Number forms sequentially within a haul.
- **Catch #**: Record the number that corresponds to the catch category on the Catch Form.
- **Catch Category**: Record in capital letters the catch category the species is in as recorded on the Catch Form.
- **R or D**: Record whether the sample came from an **R** – Retained or **D** – Discarded catch category.
- **Species Name**: Record the common name of the species. This column must be filled in with the species name. Do not only enter the species code! The common name listed on the paperwork must match the common name used in the database.
- **Species Code**: Record the species code of the corresponding species. See the Appendix for lists of species and species codes.
- **Discard Reason**: Record the same reason for discard as was documented on the Species Composition form for the species.

  11 Incidental/accidental
  12 Drop-off
  13 Market
  14 Other
  15 Predation
  16 Regulation
  17 Safety
  18 Market - dockside only
  19 Utilized on board

- **Method:** Record the Biospecimen Sampling Method used to obtain fish for biospecimens.

  6 Outside and non-random
  7 Outside and random
  8 Inside and non-random
  9 Inside and random

- **Sex:** Record **M** – Male, **F** – Female, **U** – Unknown (individuals where the sex cannot be determined), **T** - Transitional, or **J** - Juvenile. If you did not attempt to sex the individual, LEAVE THE COLUMN BLANK!
- **Length:** Record the length of the individual fish in whole centimeters.
- **Weight:** Record the weight of the individual fish. **Do not use extrapolated or halibut conversion weights.**
- **Viability:** Record the viability for **Pacific halibut ONLY**. Refer to the Appendix of more info for viability criteria.

  Trawl and Pot Gear Codes
  D = Dead
  P = Poor
  E = Excellent

Hook and Line Gear Codes

D = Dead
S = Severe
MO = Moderate
MI = Minor

- **Adipose Present?:** Documented for salmon only. See chapter 8: "Protected Resources". Document a "Y" if present or an "N" if not present.
- **Eggs Present?**: Document "Y" if a Dungeness crab female had eggs present or a "N" if a Dungeness crab female did not have eggs present. This field must be left blank for male Dungeness crab.
- **Dissection Type**: Record the type of dissection that was taken:

  1 Otoliths
  2 Scales
  3 Snout
  4 Tissue/ fin clip
  5 Fin ray (Dead GSTG only)
  7 Whole Specimen

- **Barcode #**: Record the barcode number of the vial, envelope, or other container that the dissected part was placed in.
- **Dissection Type**: Record the type of the second dissection that was taken:

  1 Otoliths
  2 Scales
  3 Snout
  4 Tissue/ fin clip
  5 Fin ray (Dead GSTG only)
  7 Whole Specimen
  8 Tag/ Band
  9 Tagged by Observer

- **Barcode # or Tag/ Band ID**: If two dissections were taken from the same individual, record the barcode number of the vial, envelope, or other container that the dissected part was placed in. If the individual had an external band applied to its body, or if you are scanning/inserting a tag (See Chapter 8, "Protected Resources"), document the tag or band number in this field.
- **Comments**: Document any important information regarding the individual fish.
- **KP length**: Sum up all of the lengths by species and note total of all lengths in the KP Length (keypunch length) column.
- **KP weight**: Sum up all of the weights by species and note total of all weights in KP Freq (keypunch frequency) column.

Haul # ☐☐

BIOSPECIMEN FORM

Page ____ of ____

Date ☐☐☐☐☐☐

Trip Number ☐☐☐☐☐

Catch #	Catch Category	R or D	Species Name	Species Code	Method	Discard Reason	Sex	KP Length / KP Weight	Length	Weight	Viability	Adipose Present?	Eggs Present?	Dissection Type	Barcode #	Dissection Type	Barcode # or Tag/Band ID	Comments

Biosample Method: 6 - Outside and Nonrandom 7 - Outside and Random 8 - Inside and Nonrandom 9 - Inside and random 10 - PHLB visual length estimate

Dissection Type: 1 – Otoliths 3 – Snout 4 – Tissue 5 - Fin ray 7 - Whole fish 8 - Tag/Band 9 - Tagged by observer

Biological Sampling Form v.2015 Oct 2014 OMB Control No. 0648-0593 expires 11/30/2015

Figure 7-24: Biospecimen Form

Tagged Fish Form Instructions

Only complete the Tagged Fish Form when information is collected from a tagged fish. Attach the tag and otoliths with tape directly to the form, if fish was dead. These forms are turned in to your debriefer. An example of the form is included as Figure 7-25.

- **Trip Number**.: This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Vessel ID Number**.: Record the USCG vessel number posted on the exterior of the vessel or request this six or seven digit number from the vessel skipper or a coordinator. **If the vessel does not have a USCG number, leave this column blank**.
- **Base Permit Number**.: Record the Groundfish Permit number. Skippers and coordinators are good sources for base permit numbers.
- **Observer Name**: Record your first and last name.
- **Vessel Name**: Record the name of the vessel on which the tag was collected.
- **Captain (or reward recipient's) name**: Record the name of the person who found the tag or to whom any reward will be given. If the observer finds the tag, record the name of the vessel skipper or as otherwise instructed by the skipper.
- **Address**: Record the address of the reward recipient.
- **Species**: Record the common name of the species from which the tag was collected.
- **Tag Prefix and Serial Number**: Record the tag number.
- **Tagging Agency**: Circle which agency/lab tagged the specimen as recorded on the tag (if discernible).
- **Time and Date of Capture**: Record the retrieval time of the haul/set as MM/DD/YY.
- **Capture Location**: Record the retrieval position (latitude and longitude) of the haul/set.
- **Sex and Maturity of Gonads**: Record the sex of the fish. Do not record maturity stage.
- **Length**: Record the fork length of the fish in centimeters.
- **Weight**: Record the weight of the fish in pounds.
- **Capture Depth**: Record the retrieval depth of the haul/set in fathoms.
- **Vessel/Gear Type**: Record what gear type was utilized when the fish was captured (bottom trawl, midwater trawl, pot, longline, etc.)
- **General Appearance**: Note condition of the body including any wounds, scars or abnormalities.
- **Condition of Tagging Wound**: Note condition of the area around tag (open wound, scarred over, etc).
- **Other Comments**: Note anything else unusual or pertinent to the tagged fish.

TAGGED FISH FORM

Trip #: _____ Vessel ID: _____ Observer Name: _____

Vessel Name: _____ Base Permit No: _____

Captain (or reward recipent's name): _____

Address: _____

_____

_____

Species: _____

Tag Prefix (often a two letter code and Serial #): _____

Tagging Agency (circle one): Seattle Auke Bay Nanaimo Shimizu IPHC Other _____

Date and Time of Capture: ____/____/_____ _____

Capture Location (Lat and Long): [ ][ ]o[ ][ ].[ ] N 1[ ][ ]o[ ][ ].[ ] W

Capture Depth (fathoms): _____

Vessel Gear Type: _____

Sex and Maturity of Gonads (immature, mature, spawning): _____

Length (fork length in cm): _____

Weight (total wt. in lbs.): _____

General Appearance (poor body condition, good body condition):

Condition of Tagging Wound (healthy healed tissue, open wound):

Other Comments:

Attach Tag or vial here (with tape):

Tagged Fish Form: v.1 October 2013 OMB Control No. 0648-0593 expires 11-30-2015

Figure 7-25: Tagged Fish Form

Specimen Collection Label Instructions

Complete the Specimen Collection Label when sablefish heads have been collected or when a whole fish or invertebrate has been collected. Use a pencil to complete this form. An example of the form is included as Figure 7-26.

Tip: Before going to sea, take 10 – 20 specimen collection labels and place a WCGOP bar code sticker on the back of the each label while the labels are clean and dry.

- **Vessel Name**: Record the name of the vessel on which the specimen was collected.
- **Haul Number**: Record the haul number from which the specimen was collected.
- **Trip Number**: This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Date**: Enter the date that the haul/set was retrieved as MM/DD/YY.
- **Species Identification**: Record the common name of the species.
- **Entered As:** Record the species name entered into the database, if this differs from the above (e.g. you entered it as rockfish, unidentified but believe it was a canary rockfish).
- **Depth (FM)**: Record the retrieval depth of the haul/set in fathoms.
- **Length (cm)**: Record the length of the fish, in centimeters.
- **Weight (lb)**: Record the weight of the fish, in pounds.
- **Sex**: Record the sex of the fish (if applicable).
- **Observer Name**: Record your first and last name.
- **Bar code sticker:** Affix a WCGOP bar code sticker to the back of the specimen label in order to uniquely identify the specimen and document number on Specimen Collection Label.

FISH/ INVERT SPECIMEN COLLECTION LABEL
West Coast Groundfish Observer Program
DOC/NOAA/NMFS/NWFSC/FRAMD
2032 SE OSU Newport, OR 97365
(use pencil ONLY!)

VESSEL NAME_____ TRIP NUMBER_____

HAUL NUMBER_____ DATE_____

SPECIES IDENTIFICATION_____

ENTERED AS_____

DEPTH(FM)_____ LENGTH(CM)_____

WEIGHT(LB)_____ SEX (if applicable)_____

OBSERVER NAME_____

Figure 7-26: Specimen Collection Label