



Fixed Gear Sampling

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Introduction

Thirty percent of WCGOP observer days are spent on fixed gear vessels. These vessels target sablefish, thornyheads, rockfish, cabezon, lingcod, and a variety of other nearshore species. Fixed gear catch is generally more homogeneous than trawlers, with only the target and a few bycatch species being caught on a set. Trips aboard fixed gear vessels range from one to ten days.

Diversity of Fleet and Effects on Sampling

The fixed gear fleet on the West Coast is very diverse. Therefore, there are two manual sections devoted to sampling on fixed gear vessels: Chapter 5, “Fixed Gear Sampling,” and Chapter 6, “Fixed Gear Sampling on Small Boats.” Observer sampling aboard all fixed gear vessels follows a consistent protocol. However, characteristics including vessel size, target fishery, and average landing weight affect observer sampling. Below is a list of characteristics that influence catch sampling. Under each characteristic is an explanation of what is covered in Chapter 5, “Fixed Gear Sampling,” versus Chapter 6, “Fixed Gear Sampling on Small Boats.”

Fixed Gear Sampling	Fixed gear Sampling on Small Boats
Vessel size ranging from 35-70+ feet	Vessel size ranging from kayaks to 35 feet
Generally over 1500 lbs. in a single delivery	Generally 50-500 lbs. in a single delivery
Dead fish fishery	Live or dead fish fishery
Over 1500 hooks set in a day	Fewer total hooks fished

Fixed Gear Sampling	Fixed gear Sampling on Small Boats
Large sections of gear retrieved in sets with discernible start and end points.	Small sections or pieces of gear set and retrieved repeatedly throughout the day.
Easily defined sets with start and end buoys	Sets are often determined by location, depth, and time
Conventional longline and strings of pots: <ul style="list-style-type: none"> • Gear Types • 10 Fish Pot • 19 Longline (fixed hooks) • 20 Longline (snap-on hooks) 	Vertical longline (Portuguese set), stick, cable, troll, rod-and-reel, and individual pots or traps: <ul style="list-style-type: none"> • Gear Types • 7 Vertical hook and line • 8 Pole • 9 Other hook and line gear • 10 Fish pot • 15 All troll gear • 16 All other miscellaneous gear • 19 Longline (fixed hooks) • 20 Longline (snap-on hooks)

Fixed Gear and Fishing Strategy Descriptions

Fixed gear types encountered on larger boats have the following WCGOP Gear Type Codes and each gear type is reviewed in the following section.

- 10 Fish pot
- 19 Longline (fixed hooks)
- 20 Longline (snap-on hooks)

Gear Type 10 - Fish Pot

The words “pot” and “trap” are used interchangeably to mean baited cages set on the ocean floor to catch fish and shellfish. They can be circular, rectangular or

Fixed gear vessels range in size from kayaks to 70’.

Fixed gear vessels land between 50 lbs. and 10,000 lbs.per trip.

conical in shape. The pots may be set out individually or as strings with multiple pots attached to a groundline. Larger vessels tend to set gear in strings of pots (Chapter 5, “Fixed Gear Sampling”) whereas smaller vessels often set traps individually (Chapter 6, “Fixed Gear Sampling on Small Boats”). All pots contain entry ports and escape ports that allow undersized or unwanted species to escape. Additionally, all pots must have biodegradable escape panels or fasteners that prevent the pot from continuing to fish if lost.

Strings of pots are marked at each end with a pole and flag, and sometimes a light or radar reflector. Individual pots are marked with surface buoys.

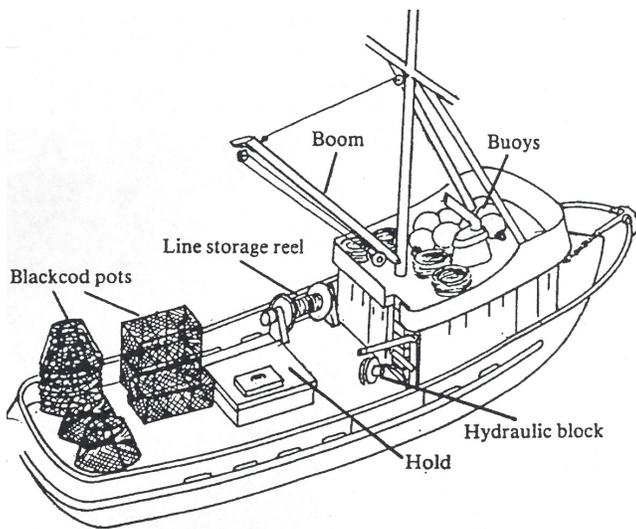


Figure 5-1: Pot Vessel

Sablefish Pots

Sablefish pots are fished in strings weighted with anchors at each end and marked at the surface with buoys and flagpoles. The pots are rectangular, trapezoidal, basket, or cylindrical in shape and usually weigh less than 50 pounds (See Figure 5-2). Basket-shaped pots have collapsible bottoms so more pots can be stacked on deck. Pots are set and retrieved using line haulers, hydraulic blocks and overhead hoists. Pots are baited with squid, hake, or herring.

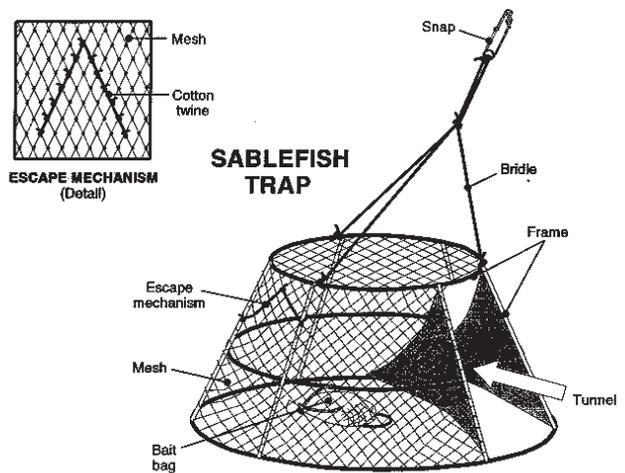


Figure 5-2: Sablefish Pot

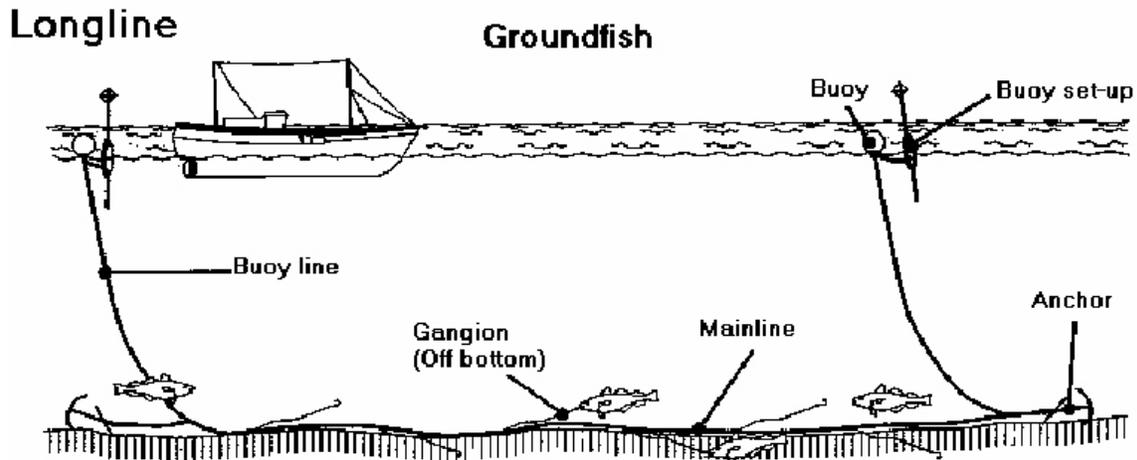


Figure 5-3: Longline Gear Set-Up

Gear Type 19 - Longline Gear (fixed hooks)

This gear type involves the setting out of a long horizontal line (**groundline/mainline**) to which other short lines (**gangions**) with baited hooks are attached. The groundline is secured between anchored lines and identified by floating surface buoys, bamboo poles, and flags. The groundline is laid along or just above the ocean floor (bottom longline) (See Figure 5-3).

Longline fishers usually further divide their gear into smaller segments in order to handle it aboard the vessel. A “set” consists of several segments of gear with the groundlines tied to one another. Segments of gear are usually referred to as skates or tubs.

To deploy longline gear, the vessel sets the first anchor and then steams ahead, following a selected pathway

with the groundline and baited hooks being set off the stern of the boat. Hooks are usually baited by hand with squid, herring, octopus, or cod. Hooks of various sizes are attached to gangions of various lengths that are tied on or snapped onto the line at desired intervals. Hook size and spacing, depth, and soak time (fishing time) vary.

Longline gear is retrieved by pulling in the groundline and landing one gangion and hook at a time. On most longliners, the vessel pulls the buoy aboard then pulls up the anchor using a **block**. The **rollerman** transfers the groundline to the block and begins hauling the groundline. The line comes in over the rollers, through the **crucifier**, over the block, and then is coiled. A rollerman stands at the railing of the vessel and helps the fish aboard. Some longliners on the West Coast manually

Groundline/Mainline: The length of line to which all of the hooks are attached. This line is the “backbone” of the longline gear.

Gangion: The length of line that connects the hook to the groundline. It is often one to two feet long.

Skates/Tubs: A segment of longline gear. Skates/tubs are tied together to form a set

Block: A hydraulically driven wheel into which the groundline is placed during gear retrieval. As the wheel spins the groundline is drawn aboard.

Rollerman: A crewman who stands where the fish

are coming in and brings them aboard using a gaff. The rollerman lands any commercially valuable fish and excludes any non-commercially valuable fish from being landed

pull the buoy, anchor and groundline aboard. Sablefish, Pacific halibut, spiny dogfish, and other groundfish are often targeted with longline gear.

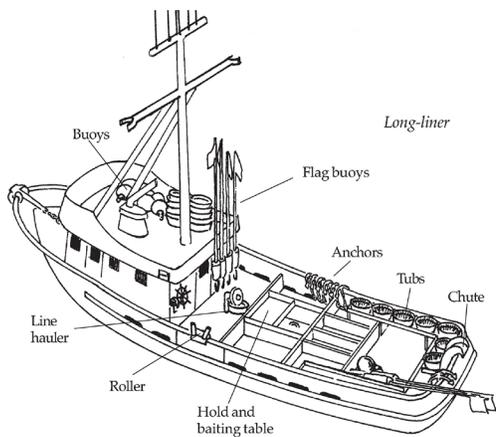


Figure 5-4: Longline Vessel

Gear Type 20 - Longline Gear (snap-on hooks)

Snap, or tube, gear is a variation on longline gear (See Figure 5-5). On snap gear, the gangions are “snapped” onto the groundline as it is being set and “tubes” refer to the garden hose gangions. The gangions are typically garden hose “tubes”, but monofilament line and other types of line are used. Snap gear does not have skates, which is the most significant difference between it and conventional longline gear.

Boats that use this gear type typically have a large drum on the back of the vessel that carries all the groundline. They set just as conventional longliners but typically have a tub of baited gear on the stern and snap on the gangions as the mainline is being set



Figure 5-5: Examples of snap gear hooks.

Safety Concerns on Fixed Gear Vessels

There are several safety concerns on fixed gear vessels of which observers should be especially aware. Remember: **Safety first!!**

It may be necessary to sample near the roller station or the block where moving hooks or pots pose a serious threat. It is not uncommon for crew members to be seriously injured by incoming and outgoing hooks or pots.

While aboard pot vessels, observers should be conscious of their surroundings at all times. Be aware of coils of line attaching the buoys to the pot. These are deployed as the pot is launched and have been known to wrap around ankles and drag crew overboard.

Decks are often awash with water, fish entrails, and whole fish, making them very slippery. In order to reduce the risk of injury, always be conscious of dangers in the immediate area.

Crucifier: A pair of rollers or steel pegs which stand vertically with only enough room for the groundline to pass between.

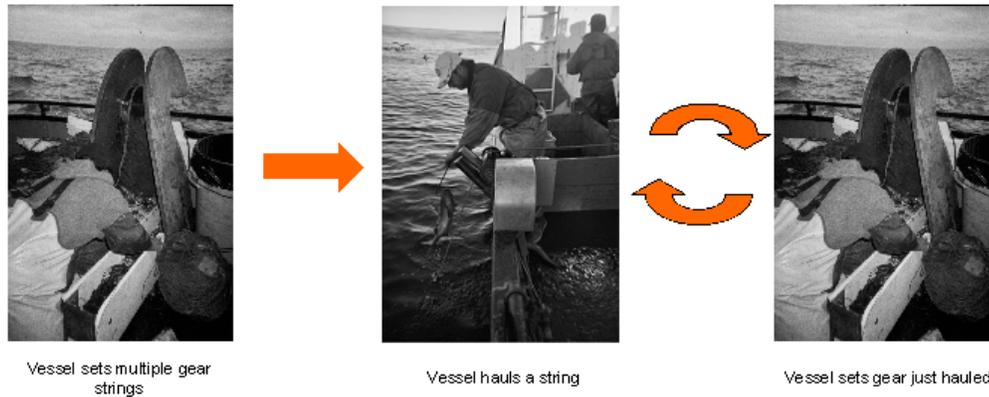


Figure 5-6: Operations of a Fixed Gear Vessel

Duties and Priorities in Fixed Gear Fisheries

1. Record incidental takes and collect appropriate biological information from protected species: marine mammals, sea turtles, seabirds, green sturgeon, and salmon.
 2. Record interactions of marine mammals, sea turtles, and seabirds with fishing gear.
 3. Record fishing effort information, including location, time date, and depth for all hauls/sets.
 4. Conduct hook counts per segment, or count all hooks.
 5. Verify total segments per set.
 6. Tally sample for species composition:
 - a. Tally sample 100% of the gear for species composition.
 - If this is not possible a minimum of 50% of the gear is to be tally sampled.
 - Count all **retained** and **discarded** organisms by species, or species group.
 - Verify the number of segments, or hooks, in your sample.
 - Tally sample discards by discard reason.
 - b. Sample Pacific halibut:
 - Visually estimate the length of all PHLB (longline vessels).
 - Actually measure all PHLB (trap vessels).
 - c. Obtain weights of fish:
 - Target species: obtain an average weight subsample of at least 30 individuals
 - Bycatch species: Weigh all individuals or obtain a minimum subsample weight of at least 15 individuals.
- Priorities 1- 6 must be completed on ALL hauls*
7. Record weight, length, sex, and take necessary dissections from tagged fish.
 8. Complete species identification forms.
 9. Take biological samples, including viabilities, length, sex, otoliths, tissue, etc. from discarded individuals.
 10. Maintain observer logbook.
 11. Document sightings of ESA listed species.
 12. Document sightings of non-ESA listed marine mammals and seabirds.
 13. Enter data within 3 days of disembarking and complete all data forms.

Data Collection on Fixed Gear Vessels

There are six fisheries that may use conventional longline and pot strings.

- Sablefish Endorsed (limited entry)*
- Non-Sablefish Endorsed (limited entry)*
- OR Black/Blue Rockfish Nearshore (open access)
- OR Black/Blue Rockfish (open access)
- CA Nearshore (open access)
- WC Open Access Fixed Gear (open access)

*Most commonly use conventional longline, snap gear and pot strings. Other fisheries often use gear discussed in Chapter 6, “Fixed Gear Sampling on Small Boats.”

Managers have the same data needs for fixed gear vessels as they do for trawl. The data flow for sampling fixed gear vessels is:

1. Defining a Set.
2. Determining Amount of Gear in a Set.
3. Tally Sampling.
4. Recording Catch, Species Composition, and Fishing Effort Information.
5. Collecting Biological Data

Tip: Biological Data is collected on every haul if possible. Biological Data collection is described in detail in Chapter 7, “Biological Sampling” and Chapter 8, “Protected Resources.”

On the Steam Out

There are a few pieces of information that should be learned prior to the first set or retrieval.

1. Ask the skipper how many hooks or pots the vessel will fish with during the trip. Also ask him how many sets are typically retrieved every day.
2. Determine the normal operational pattern. This will help determine a good sampling plan. Find out if the vessel haul-sets, haul-sets, haul-sets or hauls-hauls-hauls, sets-sets-sets.

Tip: On the steam out is a good time to conduct hook counts on the gear which is used to determine average hooks per skate or tub. A minimum of 1/5 of the total gear on board should have hook counts conducted.

Defining a Set

Defining a set of conventional longline or pot gear is straightforward. A set begins at a buoy and ends at a buoy. The set includes all of the hooks or pots in between the two buoys.

Generally, conventional longline sets have thousands of hooks and span two or more miles. Pot sets range from 10 to 50 pots per string. All hooks or pots set together in a string, even those lost prior to retrieval, are considered a set and included.

Determining Amount of Gear in a Set

In order to devise an appropriate sampling frame, you must determine the amount of gear in the set. There are two types of longline gear.

- The first type of gear has no divisible units, rather it is one long line with hooks. An example of this type of gear is **snap gear**.
- The second type is gear that can be divided into units, called skates or tubs. Vessels fishing with skate gear

Terms often used when discussing sampling longline gear:

Set: Another word for haul.

Skate: A string of hooks that can be tied together to form a set.

Tally count: Also called tally sampling, which is counting all the retained and discarded fish

with a hand clicker or slash marks in the raw data.

Tally period: A block of time when observer is tally counting retained and discard catch.

NON-tally period: A block of time where tally counting is suspended and fish are collected for actual weight data.

can vary how many hooks are fished in each set by increasing or decreasing the number of skates tied together.

Interview your captain to determine whether or not the gear is divisible into skates. Determining the number of hooks/pots in a set is dependent on the type of gear being used.

Snap longline or other gear that is not divided into skates

To determine the number of hooks set, you will need to count all of the hooks in the set. The options for counting hooks, in order of preference, are:

1. Count hooks while they are being baited.
2. Count hooks while the gear is stored on the vessel.
3. Count hooks during gear deployment (the setting of gear).
4. Count hooks while gear is being retrieved on sampled hauls and ask skipper if any gear was lost. This can be extremely difficult, especially when you need to sample for species composition at the same time. Also, counting hooks in the evening, morning, and night can be difficult.
5. Count hooks while gear is being retrieved on unsampled hauls. If you do not believe you can obtain an accurate hook count using any other method, you can take one haul off per day to count hooks. This only works well if all sets have the same number of hooks!

Gear that is divided into skates

Determining the number of hooks set can be easier with this type of gear. There are two things you must determine:

Snap Gear requires every hook be counted and tally sampled.

Document all hook counts in your raw data, record calculations used to determine average hooks per skate in the trip notes section.

- Average number of hooks per skate.
- Number of skates in a set.

Average number of hooks per skate:

Vessels generally have a consistent number of hooks per skate. Always document in the Observer Logbook when hook counts were done and why that time was chosen.

1. Count the number of hooks on a skate for at least 1/5 of the gear being used each trip.
2. Sum the hook counts for all the skates counted and divide by the number of skates counted to determine average number of hooks per skate.

Calculation

$$\text{Average \# Hooks per Skate} = \frac{\sum \text{Hooks Counted}}{\# \text{ of Skates Counted}}$$

Number of skates in a set:

Count the number of skates in a set:

- During deployment of gear.
- During retrieval of gear. If skate counts are done during retrieval of gear, ask skipper if any gear was lost. It can be difficult to count the number of skates during retrieval, as skate markers are sometimes hard to distinguish, especially at dawn and dusk.

If you cannot get an accurate count of the total number of skates set, ask the captain for an estimate. If you need to rely on the captain's estimate, a verification of skates per set must be done once each day. This can be accomplished by counting skates during one of the following times:

- While gear is being set.

- After a set is completed and all gear is on board vessel.
- While gear is being retrieved.

Determining the Total Number of Hooks in a Set

Calculation

Total Hook Count = Total # of Skates x Average # Hooks per Skate

Vessels Where Hook Counts Are Impossible

There are a few vessels in Southern California and Port Orford fishing longline gear where it is impossible for observers to verify hook counts. The following circumstances combine to make counting hooks impossible:

1. All hooks must be tallied. This situation can occur for one of two reasons:
 - Single unit longline gear is being fished.
 - The skate knots marking the break between gear units are not readily discernible during gear retrieval.
2. Vessel is retaining live fish and discarding live fish so the observer must weigh fish quickly during the retrieval.
3. Gear is baited at an alternate location. Many fishers pay to have their gear baited. After a trip, they give their gear to the baiters who take it to a shop and bait it. When the gear is returned, it's ready to be set.

To determine the number of hooks per skate on these vessels:

1. Ask the skipper after EACH skate/tub how many

hooks were on that specific skate/tub.

AND

2. Ask the skipper after EACH haul how many hooks were hauled. This is a way to double-check that the skate counts are correct. If there is a large discrepancy between the count the skipper gave you for each skate/tub and the total count for the haul, interview the skipper further about why this discrepancy occurred. If the skippers estimates are used, the reason **MUST** be thoroughly documented in the Observer Logbook daily notes section. Notes should also indicate perceived accuracy of hook counts provided.

Tally Sampling Fixed Gear

Tally sampling (counting all the retained and discarded catch) on fixed gear vessels is conducted as the gear is being retrieved. When tallying on a line vessel, the observer counts every individual that comes up on the line, including drop-offs. When tallying on a pot vessel, the observer counts every individual in a pot. The observer has to determine if 100% of the gear can be tally sampled or if less than 100% of the gear can be tally sampled. If less than 100% of the gear is sampled, the tally sampling process can be divided into blocks of time, tally periods (when only tally counting of the catch is conducted) and non-tally periods (when sub-samples of discarded fish are weighed and other duties are completed as needed).

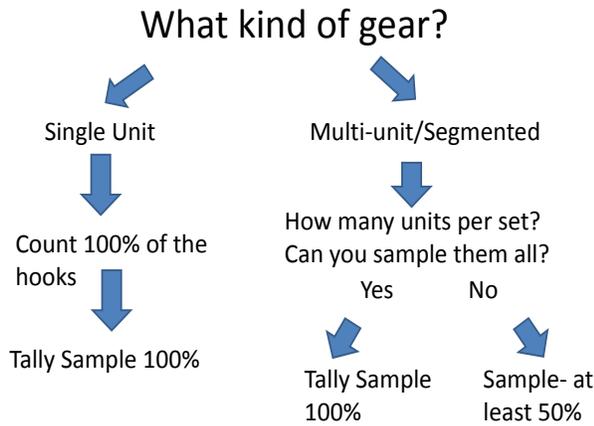


Figure 5-7: Fixed gear sampling flowchart

Determining the Amount of Gear to Sample

The most important thing to remember when tally sampling is to always tally the same number of hooks or pots for all retained and discarded species.

1. Vessels that use snap gear or gear that is NOT divided into skates: 100% of the hooks in a set must be tallied sampled.
2. Vessels that use line gear that IS divided into skates or that use pots/traps: a minimum of 1/2 (50%) of the hooks/ pots in each set must be tallied sampled.

If less than 100% of a set is going to be sampled, a random sampling frame must be designed. There are two choices for designing a random sample frame:

- Systematic Spatial (preferred).
- Random (Non-systematic) Spatial.

Spatial sampling involves randomly selecting individual

or groupings of skates to sample. Fixed-gear vessels routinely set over a depth gradient or across different bottom types. Therefore, the catch can vary significantly along a set. The best way to account for the variability caused by setting across a depth gradient or different bottom types is to use a systematic sampling frame. Examples of systematic and non-systematic spatial sampling follow:

Step-by-Step Instructions for Systematic Spatial Sampling

1. Determine the number of skates in the set.
Examples A and B: 50 skates
2. Divide the number of skates in the set into equal units. This can be one skate or a grouping of skates (5 skates).
Example A: 50 units (1 skate = 1 unit)
Example B: 10 units (5 skates = 1 unit)
3. Number all sample units.
Example A: Number units 1 - 50.
Example B: Number units 1 - 10.
4. Determine how many of the sample units will be sampled (minimum 1/2 of set).
Examples A: Sample 1/2 of set = 25 skates.
Example B: Sample 1/2 of set = 5 units
5. Divide total number of sample units by the number of units that will be sampled. The outcome is considered “n” in the following steps.
Example A: $50/25 = 2$
Example B: $10/5 = 2$
6. Randomly select a number between 1 and “n”. This will be the first sample unit in your sample.
Example A: 1 randomly selected

Example B: 2 randomly selected

7. Sample every *n*th unit thereafter.

Example A: The following skates would be sampled: 1, 3, 5, 7, 9....49.

Example B: The following skates (sampling units) would be sampled: 6 - 10 (2), 16 - 20 (4), 26 - 30 (6), 36 - 40 (8), and 46 - 50 (10).

Example A: 50 units of 1 skate, *n* = 1

Unit #	1	2	3	4	5	6	7	8	9	10	47	48	49	50
Skates	1	2	3	4	5	6	7	8	9	10	47	48	49	50

Example B: 10 units of 5 skates, *n* = 2

Unit #	1	2	3	4	5	6	7	8	9	10
Skates	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50

Figure 5-8: Systematic Spatial Sampling

Step-by-Step Instructions for Random Spatial Sampling

- Determine the number of skates in the set.
 - Examples A and B:** 100 skates
- Divide the number of skates in the set into equal units. This can be one skate or a grouping of skates (5 skates).
 - Example A:** 4 units (25 skates = 1 unit)
 - Example B:** 10 units (10 skates = 1 unit)
- Number all sample units.
 - Example A:** Number units 1 - 4.
 - Example B:** Number units 1 - 10.
- Determine how many of the sample units will be sampled (minimum of 1/2 of set).
 - Examples A:** Sample 2/3 of set = 3 units.
 - Example B:** Sample 2/3 of set = 7 units
- Randomly select numbers between 1 and the maximum sample unit. These will be the skates you

will include in your sample.

Example A: select 3 numbers between 1 and 4: 1, 2, 3. Sample the selected skates: 1-25 (1), 26-50 (2), 51-75 (3).

Example B: select 7 numbers between 1 and 10: 1, 2, 3, 5, 8, 9, and 10 randomly selected. Sample the following skates: 1-10 (1), 11-20 (2), 21-30 (3), 41-50 (5), 71-80 (8), 81-90 (9), 91-100 (10).

Random Spatial Sampling

Example A: 4 units of 25 skates; random #'s 1, 2, 3

Unit #	1	2	3	4
Skates	1-25	26-50	51-75	76-100

Example B: 10 units of 5 skates, random #'s 1, 2, 3, 5, 8, 9, 10

Unit #	1	2	3	4	5	6	7	8	9	10
Skates	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100

Figure 5-9: Random Spatial Sampling

General Instructions for Tally Sampling

- Determine the amount of gear to tally sample.
 - As discussed in the prior section, either 100% of the gear will be sampled or less than 100% of the gear will be sampled. If less than 100% of the gear is sampled, retained and discarded fish will be counted during the randomly selected tally periods. No counts are taken during the non-tally period.
- Collect the equipment needed to tally sample:
 - A clipboard and pencil, three to six hand counters, and a Catch Form. The tally sample raw data is documented on the back of the Catch Form. The next section will discuss how to document tally samples.
- Place two or more observer baskets next to the rollerman for discarded species to be thrown in.

- Be aware of vessel space constraints. These discarded fish will be weighed by the observer and used for the average weight calculations.
4. Find a location on deck to tally sample, which is known as the “tally station”.
 - The tally station should be no more than six meters from where the fish are brought aboard and have a clear line of sight. From the tally station, observers must be able to clearly identify fish to species as they come aboard and see drop-offs and individuals preyed upon. Discuss your needs with the crew and work with them to determine the best location that is a safe distance from where the gear is hauled aboard and that reduces interference with the crew as much as possible.
 5. Count each individual that comes up on the line or in the pot during the randomly selected tally periods.

Tip: An actual count of individuals is required for all fixed gear data.

Tips for Documenting Tally Samples

- The back of the Catch Form is divided into two sections, **Retained** and **Discarded**. Write down species names that are likely to be caught down the middle of the form.

Tip: See examples of how to document tally sampling in the raw data on Trip Examples at the end of the chapter and see Figure 5-10 and Figure 5-11.
- **Drop-offs and Predation of retained species:** While tally sampling, some fish that would have been retained drop off the line or are preyed upon and discarded. These discarded fish, which would have been retained, should be documented in the raw data as such. Be prepared by creating an area on the deck form to document all drop-offs and individuals

preyed upon for the retained target species (See Figure 5-10).

- **Small individuals of retained species:** While tally sampling, some fish that would have been retained are considered too small by the vessel to keep and are discarded. These discarded fish, which would have been retained, should be documented in the raw data as such. Create a space on the back of the Catch Form to document “smalls” of the retained target species (See Figure 5-10).
- **Pacific halibut:** Actual weights cannot be obtained from Pacific halibut due to their large size and because vessels often don’t bring them aboard. Observers must make a visual estimate of PHLB length in centimeters onboard longline vessels or take actual lengths on pot vessels. On longline vessels, be prepared by creating an area on the deck form to document PHLB visual lengths and clearly indicate its a visual estimate (See Figure 5-10). This will allow for a quick documentation of PHLB while tally sampling. If an actual length measurement of all Pacific halibut is obtained, designate an area of the form to document this data and clearly indicate its an actual length.

Tip: See examples of how to document tally sampling in the raw data on Trip Examples at the end of the chapter and see Figure 5-10 and Figure 5-11.

- **Species similar in appearance:** Some species, such as Shortraker and Rougheye rockfish and Shortspine and Longspine rockfish, are similar in appearance and cannot be distinguished unless they are examined closely in the observer’s hand. Tally count them as a mixed group naming them “Rougheye/Shortraker” or “Shortspine/Longspine”.

Species that are known to be retained by the vessel will have some fish that are discarded. Tally sample these separately in the raw data:

Drop-off: Fish that fall off the line as they leave the water line. These individuals do not make it aboard the vessel.

Predation: Fish that have been damaged by whales, sand fleas, hagfish, lingcod or other animals.

Smalls: Fish that are considered by the vessel to be too small and not profitable to keep

Set #	Date	Time	Latitude		Longitude		Depth (ft)
			Degrees	Minutes	Degrees	Minutes	
Start							
End							
Additional Locations							

Gear Units Set	Gear Units Sampled	Gear Units Lost	Tally Sample	Fit #	16	Avg. Soak Time	
22				Cal. Wt.	11.0		

Retained	Discarded		
	Drop-off	Predation	Smalls
Sablefish			
Roughey Rockfish	Shortraker/Roughey DO		
	Longnose skate (visuals)		
SSPN			
	PHLB		
	50		
	60		
	70		
	80		
	90		
	100		
	110		

Figure 5-10: Example of Catch form before sampling with commonly used labels written in.

During each tally sampling period, count each species that comes up on the line or in the pot by disposition (retained versus discarded). Species that are caught in small numbers can be accounted for using the box method. (See Figure 5-11) Each side of the box represents one fish. The fifth fish is represented by a slash inside of the box from corner to corner. This tally method is preferred over hash marks, which can be difficult to record clearly on deck. For species that are caught in large quantities, use a hand counter to keep track of fish counts and write these counts in the raw data next to the species name.

Always tally the same number if gear units for retained and discarded species. For example, do not tally half of a set for retained species and the whole set for discarded species.

Set #	Date	Time	Latitude		Longitude		Depth (ft)
			Degrees	Minutes	Degrees	Minutes	
Start							
End							
Additional Locations							

Gear Units Set	Gear Units Sampled	Gear Units Lost	Tally Sample	Fit #	16	Avg. Soak Time	
22				Cal. Wt.	11.0		

Retained	Discarded		
	Drop-off	Predation	Smalls
Sablefish	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
Roughey Rockfish	<input type="checkbox"/>	Shortraker/Roughey DO	
		Longnose skate (visuals)	
		lbs 20 15 35 40 25	
SSPN	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>		
		PHLB	
		50	
		60 <input checked="" type="checkbox"/>	
		70 <input type="checkbox"/>	
		80	
		90 <input type="checkbox"/>	
		100	
		110	

Figure 5-11: Example of raw data on fixed gear vessel for species similar in appearance.

Collecting Weights

During each set/haul, the observer is responsible for counting each individual that is on the line or in the pot (i.e. tally sampling) and collecting weights for each species. During each set/haul the observer sometimes will be able to collect weights for 100% of the catch and sometimes will be able to collect weights for LESS than 100% of the catch. The methods for determining weights on fixed gear vessels are listed below in order of preference:

1. Weigh individuals from within the same set.
2. Use weights collected from another "like" set.
3. Visually estimate weight of individuals.
4. PHLB Length/Weight Conversion (only for P. Halibut)

Weight estimates for drop-offs and fish affected by predation are based on the average weight for retained individuals of the same species

Weights from individuals within the same set

Whether or not you'll be able to weigh all individuals in the set depends on the quantity and diversity of the catch, which is influenced by gear type, depth, and location of fishing. Pot vessels tend to have little bycatch diversity and there are few individuals. Longline vessels tend to have more bycatch diversity, and it can occur in high numbers.

In general, observers on pot vessels are able to collect and weigh all bycatch species. If the catch rate is low, you may also be able to weigh all of the target species. On longline vessels observers typically take subsamples for average weight since it is not possible to weigh all of the individuals and tally sample at the same time.

If you are not able to weigh all individuals, collect a subsample for average weights. At a minimum collect:

30 individuals from the target species

15 individuals from non-target species

Individuals can be collected to weigh during a tally sampling period or during the non tally periods.

- **During tally period:** The preferred method for discarded species and non-target retained species is to collect individuals during the tally period. When individuals are collected during the tally period, it ensures that all species in the sample are present.
- **During non-tally period:** Target species are often collected during the non-tally period due to space limitations and/or time constraints. Be aware: If non-target individuals are collected only during the non-tally period, all species that occur in the tally sample may not be present.

Tip: Fish carcasses or skeletons should not be weighed. These fish are tallied as fish discarded due to predation. Use the average weight derived for the species from whole specimens

Weights from "Like" Sets

There may be one or more species for which it was not possible to collect individuals to determine average weight of the species. This usually happens if only a few individuals of a given species are caught. If this occurs, use the weight of the same species from a similar haul.

Tip: like sets are:

1. Close in proximity
2. In same depth range
3. Similar in soak time
4. Targeting the same species

Visual Estimates for Retained Species

If possible, observers should actually weigh retained species or obtain a subsample of retained individuals to determine average weights. In some of the fixed gear fisheries, the vessel may be delivering live fish. In these fisheries, the vessel may not want the observer to handle the retained fish. If this occurs, the weight of the retained species will need to be visually estimated by one of the following methods (in order of preference):

- Record visual estimate of every retained individual as it comes aboard and sum estimates by species.
- For more abundant species, use a systematic sampling strategy to visually estimate the weight of every *n*th fish. Determine the average of these visual estimates and multiply by the total number tallied.

- When a retained species is consistent in size, apply a visually estimated average weight to the total tally. With this method, rather than visually estimating the weight of individual fish, the tally is multiplied by an “overall” average weight estimate for that species.

Tip: When visual estimates are used for retained species, the same average weights must be applied to fish of the same species that are discarded due to drop-off or predation. These are also recorded as visual estimates.

Visually Estimated Weights of Large Organisms and Discarded Catch

It may be necessary to visually estimate the weight of large organisms and some discarded species.

Large organisms, such as sharks and skates, often fall off the line prior to being brought aboard or are too large/awkward to handle. Visually estimate the weight of each individual by species while tally sampling.

If a species that would not have been retained drops-off the line, is deteriorated due to predation, or if no individuals of a species is collected for weights on the set or on previous sets, then visually estimate its weight while tally sampling.

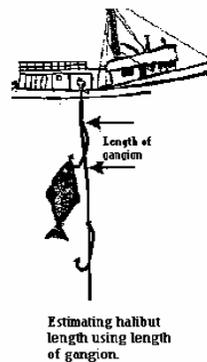
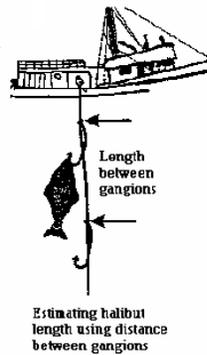
Pacific Halibut

Pacific halibut caught on longline vessels are often too large to obtain an accurate weight with the scales provided, and large individuals may not be brought on board the vessel at all. To obtain weights for P. Halibut aboard longline vessels, observers will visually estimate the length of each P. Halibut in the sample. Any P. halibut

caught on pot vessels will be landed and can be measured using an actual length. The IPHC has developed a length-to-weight table that lists approximate weights of Pacific halibut based on the length in centimeters (see Appendix: Pacific halibut Length/Weight Table). The database will calculate the total catch weight of P. halibut based on the length data as entered in the lengths page or the specimens page of the database. For more information on these forms, please refer to Chapter 7, “Biological Sampling.”

The following suggestions will help with estimating the length of Pacific halibut on longline vessels:

- Measure the distance from the roller to weld marks on the side of the vessel or the waterline, if weather permits.
- Measure the distance between the gangions on the groundline and measure the length of the gangions themselves. On most longline vessels, the distance between the gangions and the length of the gangions are consistent. During normal operations, the observer will be able to see the fish being pulled by the groundline and gangion. Estimate the length of the Pacific halibut in reference to the length of groundline between the gangions or the length of the gangion itself.
- Use the length of the gaff or the pole gaff to compare to the lengths of the Pacific halibut.
- Pre-measure the length of the



longline trough. Some Pacific halibut will be brought on board by accident. Having several marked measurements in the trough will allow the observer to quickly estimate the length of any landed Pacific halibut.

Random Sampling for Collecting Average Weights

There are two methods used to randomly collect individuals. These two methods, random spatial and systematic sampling, are detailed below.

Random Spatial Sampling

Spatial sampling is a good method to use for species caught in small quantities.

1. Select gear segments to use for collecting individuals using one of the following two methods:
 - Select all non-tally-sampled gear segments.
 - Randomly select one or more gear segments from the entire set.
2. Collect all individuals.
3. Weigh and count the collected individuals to determine average weights.

Example of Random Spatial Sampling

1. The Blue Dragon sets 20 pots.
2. The observer on the Blue Dragon randomly selects 13 of the 20 pots to tally sample by pulling numbers out of a hat.
3. The observer uses the remaining 7 pots to collect and weigh individuals for average weight determinations.

Systematic Sampling

Systematic sampling is a good method to use for species caught in large quantities and in live fish fisheries.

1. Select gear segments to use for collecting individuals for average weights using one of the following methods:
 - Select all non-tally-sampled gear segments.
 - Randomly select one or more gear segments from the entire set.
 - Sample throughout entire set. (If 100% of the gear was tally-sampled, then sampling throughout the entire set is recommended.)
2. Systematically collect a portion of the total number of individuals.
 - Estimate the total number of individuals that will be caught while individuals are being collected for weights.
 - Divide the estimated total individuals by the number of fish needed (at least 15) to determine the collection frequency (n).
 - Collect every nth individual beginning with a randomly chosen starting point.
3. Weigh and count the collected individuals to determine the average weight.

Example of Systematic Sampling

1. The Miss Fish sets a longline with 10 skates.
2. The observer randomly selects skate 2 for obtaining the average weight of sablefish by selecting a number from a random number table.
3. The observer estimates that 250 sablefish will be caught in skate 2.
4. The observer wants to collect 30 sablefish to use for

an average weight determination.

5. The observer determines the frequency to collect sablefish by dividing 250 by 30 to get a collection frequency of 8.
6. The observer randomly chooses a number between 1 and 8 from a random number table and gets the number 4. Starting at the beginning of skate 2, the observer collects the 4th fish and then every 8th sablefish after (12, 20, 28, etc.) until the end of skate 2 is reached.
7. The observer weighs all the sablefish collected in skate 2.

Documenting Tally Samples

The tally sample is normally documented on the back of the Catch Form (See Figure 5-12), along with the weights of individuals of each species weighed. Once sampling for the haul is complete, the Catch Form and Species Composition Forms can be completed.

Catch Categories on Fixed Gear Vessels

As a review, there are two rules that apply to catch categories:

- Retained and discarded individuals are always in separate catch categories.
- Individuals are grouped in the same catch category when they are sampled together. All individuals in the catch category must have the same weight method and sample method. Typically, it is only when a visual estimate or *P. halibut* length/ weight conversion is used to determine weight that a species is not grouped with a retained or discarded catch category.

Set #	Start	Date	Time	Latitude		Longitude		Depth (fm)
				Degrees	Minutes	Degrees	Minutes	
	End							
Additional Locations								

Gear Units Set: 15	Gear Units Sampled: 15	Gear Units Lost: 0	Tally Sample	Fit #: 18	Avg. Soak Time: _____
				Cat. Wt: 11.0	

Retained		Discarded
7 @ 57.80		Drop-off
8 @ 71.95		Predation
10 @ 86.90		Smalls
6 @ 53.85		
8 @ 61.40		
	262 Sablefish	
		Arrowtooth <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 15 @ 77.0 (market)
		Starfish <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 11 @ 10.25 (market)
14 @ 55.00	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> L	Red-Banded <input type="checkbox"/> (drop off)
		Longnose skate (visuals)
		lbs 40 30 45 60
	8 @ 13.60 <input checked="" type="checkbox"/> <input type="checkbox"/> SSPN <input type="checkbox"/> (drop off)	
		PHLB <input type="checkbox"/> L
		50
		60 <input checked="" type="checkbox"/>
		70 <input type="checkbox"/>
		80
		90 <input type="checkbox"/>
		100
		110 <input type="checkbox"/> L

Figure 5-12: Tally Sample Example for Longline

Grouping, Assigning Weight Methods, and Naming Catch Categories on Fixed Gear Vessels

On fixed gear vessels, catch category grouping depends upon the method used to obtain the weight of the species. In most cases these will be PHLB length/ weight conversions, weights (either average or all weighed), and visual estimates.

1. All species whose weight was determined by weighing individuals from the same set or from "like" sets, should be grouped in the same catch category by disposition (retained and discarded). On the Catch Form, these catch categories will have **Weight Method 13 - Tally Sample**.

- As these catch categories will have a species composition sample, the name of the catch category is irrelevant. ZMIS is most commonly used.

Tip: Tally Sample means the weight was derived by weighing organisms on a scale. Use Tally Sample when you weigh all of a species, or you averaged the weight from a subset of individuals.

2. Species whose weight was determined by a visual estimate should be placed in their own catch categories. On the Catch Form, these catch categories will have **Weight Method 14 - Visual Experience**.
 - As these catch categories will not have a species composition sample, the most descriptive catch category code possible should be used. To determine catch category code, in order of preference, use:
 - Species specific code (i.e. ARRA, Aurora rockfish)
 - Species grouping code (i.e. SKAT, Skates and Rays)
 - **INVT:** invertebrate discard.
 - **MBOT:** miscellaneous bottom items, including rocks, mud, logs, bones, garbage, etc.
 - **ZMIS:** Mixed catch which can include fish species, invertebrates, and bottom items (like rocks, logs, etc.). For unsampled catch categories, ZMIS should only be used when a more specific name is not available.
3. Pacific halibut whose weight is determined using the length-to-weight table should be placed in its own catch category, by disposition. The catch category weight method on the Catch Form will be **WM-9 P. Halibut Length/Weight Conversion**. This weight

method is used when lengths are visually estimated OR actually measured and the weights are calculated by the database using the IPHC Pacific halibut Length/Weight conversion table.

- As these catch categories will not have a species composition sample, the most descriptive catch category code, **PHLB**, should be used.
- The visually estimated lengths will be documented on the Length Frequency form using sample method 10 -P. Halibut visual length estimate. The actual lengths taken will be documented on the Biospecimen form. See Chapter 7 “Biological Sampling” for more information.

Catch Form Instructions

The Catch Form (See Figure 5-13) is used to document catch categories, sample weights, and other catch information. A Catch Form should be completed for all hauls.

Tip: The “Catch/ Sample Weight” column on the Catch Form is filled out differently for fixed gear and trawl vessels. For fixed gear, the weights recorded are sample weights; for trawl, the weights represent total weight estimates for the catch category.

- **Haul Number:** Record the number of the haul.
- **Page _ of _:** Number forms sequentially with in each haul. Haul forms (Catch, Species Composition, Length Frequency, and Biospecimen) are numbered consecutively, separate from Trip forms.
- **Date:** Record the date as MM/DD/YY.
- **Trip Number:** This number is automatically generated by the database. Complete this field once the trip has been started in the database.
- **Visual OTC:** This is used on trawl vessels only. For

fixed gear vessels, leave this field blank.

- **Catch Number:** Number the catch categories consecutively, starting from 1 for each haul. The numbers on the paper Catch Form must match the numbers assigned by the database when data is entered.
- **R or D:** Record whether the catch category is R – Retained or D – Discarded.
- **Catch Category:** Record each catch category, in capital letters, using the 3 or 4-letter PacFin code. For a list of PacFin catch category codes, see Appendix.
- **Catch/ Sample Weight:** Record the sample weight of the tally sample in pounds.

Tip: The “Sample Weight” field should not be filled in for catch categories with weight method 13- Tally Sample until after the Species Composition form is completed. At this stage, only complete the “Sample Weight” column for catch categories with weight method 14.

Tip: If there is a species composition sample for the catch category, the Sample Weight should be the same as the Keypunch Weight on the Species Composition Form! If not, there is a problem.

Tip: Do not enter a catch weight for P. halibut. After entering the Fish # and Weight method on the Catch form, and then entering the length estimates of P. halibut on either the Length Frequency or Biospecimen form, the catch weight of P. halibut will be generated by the database. Document this value on the paper Catch form.

- **Volume:** Leave this field blank on fixed gear vessels.
- **Density:** Leave this field blank on fixed gear vessels.
- **Fish #:** The total number of fish in the catch category must be documented for the following weight methods: 14 - Visual Experience (if actual number) and 9 - P. Halibut Length/Weight conversion.

Tip: Do not record the number of fish for weight method 13 - Tally Sample; these are recorded on the species composition form.

- **Hooks/Pots Sampled:** Record the number of hooks or pots that were tally sampled.
- **Weight Method:** Document the weight method used to estimate the sample weight for each catch category.

- 6 Other
- 9 Pacific halibut length/weight conversion
- 13 Tally sample
- 14 Visual experience

- **Catch Purity:** If catch category was sampled for species composition, record M- Mixed if more than one species was within sample. Record P - Pure if there was only one species in species composition sample.

If the catch category was not sampled, record as P – Pure if the catch category is composed of 95% or greater a single species or as M – Mixed if the catch category is composed of less than 95% a single species.

- **Discard Reason:** Record the skipper/crew’s discard reason for discarded catch categories for Weight Method 9 - PHLB Length/Weight Conversion and Weight Method 14 - Visual Experience. Whenever a catch category does not have an associated species composition sample, discard reason must be documented on the catch form.

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

Tip: Look only at the primary reason for discard. For instance, if the vessel is not retaining P. hake and one drops-off, do not record the reason for discard as drop-off. Even if it had made it on the vessel, the fish would not have been retained. This also applies to fish preyed upon that drop-off. If a fish that would have been retained drops off because it's been preyed upon, the reason for discard should be predation (even if the fish made it aboard it would not have been retained due to predation)

- **Comments:** Document anything important about each catch category. Species names should be recorded here if catch category is not accompanied by a species composition sample and catch category name does not indicate species. For example: INVT, MBOT and OSRK.
- **Keypunch checks:** These are required fields for Catch/ Sample Weight, Fish #, and # of Hooks/ Pots sampled by catch category columns. Sum up the entries in each column and place the total in the corresponding keypunch box at the bottom of the form.

Tip: The keypunch check value for Catch/ Sample Weight will include any P. halibut catch weight as generated by the database.

Back of the Catch Form Instructions

The back of the Catch Form (See Figure 5-14) is used for organization of fixed gear raw data.

- **Haul Locations Table:** Optional fields. This table is helpful when the observer must obtain locations on their own
 - **Additional Locations:** Optional fields. Additional locations can be obtained to provide a better description of fishing area on vessels using gear that is not defined by buoy to buoy.
 - **Gear Units Set:** Record the # of gear units set for gear type 19 or the # of gear units (individual hooks or pots) for other gear types.
 - **Gear Units Sampled:** Record the number of segments or units that were tally sampled.
 - **Gear Units Lost:** Record the number of gear segments or units that were lost.
 - **Fit Number/Calibration Weight:** Record the Fit number from your marine calibration followed by the displayed weight of your 5KG test weight in pounds on every haul. This field will not be entered into the database.
 - **Average Soak Time:** Optional field. If set was not defined by buoy to buoy and gear type is not pole (e.g. Vertical Longline or individual Sablefish Traps, not on a string), document the average range of soak time of a single unit of gear. (Gear types 7 and 9 always; Gear types 10, 19 and 20 sometimes). This is a required field on the front of the trip form.
 - < 1 minute
 - 1 to 5 minutes
 - 5 to 15 minutes
 - 15 to 30 minutes
 - 30 to 45 minutes
 - 45 to 60 minutes
 - 60+ minutes
 - 1-2 hours
 - 6 hours
 - 12 hours
 - 24 hours
 - 36+ hours
 - **Retained and Discarded Tally Sample Area:** This is where fixed gear raw data is recorded. Tally and fish weights will be recorded here. This raw data will be sub totaled by species and recorded on the species composition form.
 - **Biospecimen Table:** This table should be used to complete a biospecimen form, but will not be directly entered into the database.
-

Set #	Date	Time	Latitude		Longitude		Depth (fm)
			Degrees	Minutes	Degrees	Minutes	
	Start						
	End						
Additional Locations							

Gear Units Set: _____ Gear Units Sampled: _____ Gear Units Lost: _____ **Tally Sample** Fit # _____ Avg. Soak Time _____
 Cal. Wt. _____

Retained

Discarded

Species:									
Length	Bios / Freq.								

Figure 5-14: Back of Catch Form

Completing the Species Composition Form

In order to complete the Species Composition Form, the total weight of each species in the tally sample needs to be determined. Average weight calculation will need to be done for species whose weight was determined by:

1. A random subsample of all individuals caught were weighed (all individuals of species not weighed).
2. Fish ticket weights use for retained species AND trip had more than one haul (See Haul Complications section).

Average Weight Calculations

For species that all the individuals in the tally sample were not weighed, an average weight calculation is used to calculate the sample weight of the species. To determine sample weight:

1. Weigh and count randomly selected individuals by species.
2. Divide the weight of individuals weighed by the number of individuals weighed and then multiply by the total number of individuals of that species in tally sample.

Calculation

$$\text{Total Sample Wt} = \frac{\text{Wt of Subsample}}{\# \text{ in subsample}} \times \text{Total \# in Tally Sample}$$

Sample Methods on Fixed Gear Vessels

There are three sample methods that describe species composition sampling on fixed gear vessels. Remember, only catch categories with weight method 13 - Tally sample will have species composition samples. Refer to the section titled Fixed Gear Complications for instructions on using fish ticket weights.

Sample Method 4 – Fixed Gear Sample

Used for species whose weight is determined by actual weight from individuals in the same set or in “like” sets.

Tip: It is not necessary to place a species whose weight is extrapolated in a different catch category than species where each individual was weighed. They should ALWAYS be in the same catch category

Tip: If an average weight from like “set(s)” is used, be sure to document in raw data the haul number(s) that were used

Sample Method 5 - Fixed Gear Fish Ticket Verified

Used for species whose weight is determined by using the fish ticket (landing receipt) weight AND when the observer has “verified” that the weight on the fish ticket represents the number of individuals per species in the retained tally sample. For a fish ticket weight to be considered verified, the observer must monitor the landing and be 100% confident that all fish in the tally sample are weighed at landing.

Sample Method 6 - Fixed Gear Fish Ticket Unverified

Used for species whose weight is determined by using the fish ticket (landing receipt) weight AND when the observer was not able to see the landing or is not confident all individuals in the tally sample were included in the fish ticket weight.

Species Composition Form Instructions

Species composition information is recorded on the Species Composition Form (See Figure 5-15).

- **Haul number:** Record the number of the haul that

the sample came from.

- **Page _ of _:** Number forms sequentially with in each haul. Haul forms (Catch, Species Composition, Length Frequency, and Biospecimen) are numbered consecutively, separate from Trip forms.
- **Date:** Record the date as MM/DD/YY.
- **Trip Number:** This number is automatically generated by the database. Complete this field once the trip has been started in the database.
- **Fit number/Calibration Weight:** If these data were documented on the back of the Catch Form, leave this field blank. Record the Fit number from your marine calibration followed by the displayed weight of your 5KG test weight in pounds on every haul. This field will not be entered into the database
- **Trawl Biosampling List:** Leave this field blank on fixed gear vessels. The same list, either Nearshore or Non-Nearshore Fixed Gear, will be used for all hauls.
- **Catch Number:** Record the number that corresponds to the catch category on the Catch Form.
- **Catch Category:** Record each catch category, in capital letters, using the 3 or 4-letter PacFin code. For a list of PacFin catch category codes, see Appendix F.
- **Sample Method:** Record the method used to sample the catch category.
 - 4 Fixed gear
 - 5 Fixed gear - fish ticket verified
 - 6 Fixed gear - fish ticket unverified
- **KP Weight and KP Number:** Sum up the total weight of all species in the catch category sample and place the total weight in the Keypunch (KP) Weight box. Sum up the total number of all individuals in the catch category sample and place the total number in the Keypunch (KP) Number box.

Tip: Check to be sure the KP Weight on the Species Composition Form is the same as the Catch Category Sample Weight on the Catch Form! (If not, there is a problem).

- **Species:** Record the common name of each species in the sample. This column must be filled in with the species name. Do not simply enter the species code! The common name listed on the paperwork must match the common name used in the database. Species specific PacFin codes are acceptable (e.g. DSRK, ARTH).
- **Species Code:** Record the species code of the corresponding species. It is not necessary to complete this field while on deck. For a list of all species codes see Appendix A-E.
- **Sample Weight:** Record the total weight of the species in the sample (can be extrapolated).
- **Fish Number:** Record the number of fish of each species in the sample (can NOT be extrapolated).
- **Discard Reason:** Record the skipper's/crew's reason for discard for each discarded species (refer to Chapter 3 "Observer Basics" for more information on these codes).

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

Tip: Look only at the primary reason for discard. For instance, if the vessel is not retaining P. Hake and one drops-off, do not record the reason for discard as drop-off. Even if it had made it on the vessel, the fish would not have been retained. This also applies to fish preyed upon that also drop-

off. If a fish that would have been retained drops off because it's been preyed upon, the reason for discard should be predation (even if the fish made it aboard it would not have been retained due to predation)

- **Release method:** This column is documented in the Nearshore fishery only. See Chapter 6, “Fixed Gear Sampling on Small Boats”.
- **Basket Weight and Number:** Use these columns on deck to document numbers and weights. These columns are not commonly used for fixed gear data. Tally sample raw data is usually recorded on the back of the Catch Form.

Once the Species Composition Form is completed, fill in the “Sample Weight” column on the Catch Form with the “Keypunch Weight” for those catch categories with weight method 13.

Determining OTC on Fixed Gear Vessels

The following weight methods may be used to calculate OTC on fixed gear vessels.

Weight Method 6 - Other

There are two situations where weight method 6 - Other is used on fixed gear vessels. For more information, refer to Fixed Gear Complications at the end of this chapter.

- Haul is not sampled/ Entire set is lost.
- Hauls where the number of hooks sampled is not consistent for all catch categories.

Weight Method 8 - Extrapolation

This method is used when less than 100% of the gear is tally sampled.

Calculation

$$\text{OTC} = \frac{(\sum \text{All Catch category weights on Catch Form}) \times (\text{Total \# of Hooks in Set})}{\text{Number of hooks sampled}}$$

Note: When GEAR IS LOST, Weight Method 8 - Extrapolation must be documented for the OTC weight method, gear performance must be 5 - other gear lost, and # gear units/ segments lost must be completed in order to account for the unsampled (lost) gear. An extrapolation for lost gear is made when a gear segment, such as a skate of hooks or trap is lost, but NOT when individual hooks break off.

Weight Method 11 - Retained + Discarded

This method is used when 100% of the gear is tally sampled. The total # of gear segments units set will equal the # of gear segments/ units sampled.

Calculation

$$\text{OTC} = \sum \text{All Catch Categories on Catch Form}$$

Q: Why are observers required to record Fish Ticket Numbers?

A: When observer data is analyzed, the total landed weight from the Fish Ticket is used to estimate the amount of discard by species per landed weight of target(s).

Recording Fishing Effort Information and Total Catch Estimates

Fishing effort information must be recorded for every set a vessel makes while the observer is on board. The fishing effort information is recorded on the Trip Form.

Seabird Avoidance Gear

Vessels that fish with hook and line gear often have seabirds following the vessel, attacking hooks as they are set. In order to prevent bait from being stolen and birds from dying, some vessels use a seabird avoidance device while setting their gear. Common types of seabird avoidance gear include:

WCGOP seabird avoidance gear codes are:

- 0 No
- 3 Buoy line
- 4 Weights
- 5 Night setting (exclusively)
- 6 Other (describe in haul comments)
- 7 Single streamer line
- 8 Double streamer lines

Seabird Avoidance Gear Descriptions

3 - Buoy Bag Line: A buoy bag line consists of a length of line (no streamers attached) and one or more float devices at the terminal end.

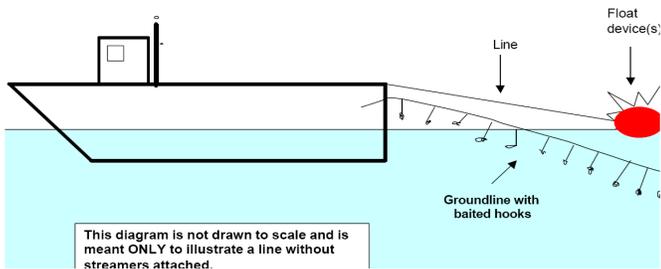


Figure 5-16: Buoy Line Diagram

4 - **Weights:** Crew adds extra weights to the groundline for the purpose of sinking gear more quickly.

5 - **Night Setting (exclusively):** The vessel sets at night to avoid seabird bycatch.

6 - **Other:** Vessel uses a different method to avoid/reduce seabird bycatch. Describe method used in observer logbook and in haul comments.

7 - **Single Streamer Line:** One streamer line used during gear deployment. Streamer/ory lines consist of a length of line, streamers (smaller pieces of line) attached along a portion of the length, and one or more floats at the terminal end.

8 - **Double Streamer Line:** Double/ paired streamer lines consist of two streamer lines, one deployed on each side of the main groundline. Each streamer line consists of a length of line, streamers (smaller pieces of line) attached along a portion of the length, and one or more floats at terminal end.

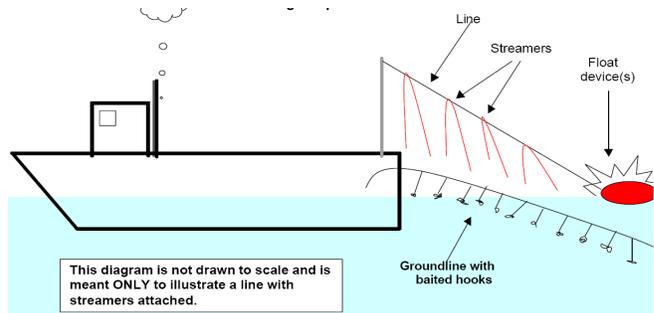


Figure 5-17: Streamer Line Diagram

Trip Form Instructions

A Trip Form must be completed for all observed trips. (See Figure 5-18)

- **Fishery Sector** (along top right hand border): Circle the fishery type the vessel participated in. (CS = Catch Share, LE = Limited Entry, OA = Open Access, or EFP = Exempted/Experimental Fishing Permit).
- **Page Number:** All Trip Forms are numbered together by trip and separate from all other forms. If there are five trip forms on one trip, number them 1/5 through 5/5.
- **Trip Number:** This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **USCG Number:** Record the six or seven digit USCG vessel number posted on the exterior of the vessel or found in the database. *If the vessel does not have a USCG number, leave field blank and fill in the State Registration Number field.*
- **State Registration Number:** Use this field only if the vessel does not have a USCG number. The state registration number will begin with a CF in California, OR in Oregon, and WN in Washington.

- **Observer Name:** Record your first and last name.
- **Year:** Fill in with appropriate year.
- **Vessel Name:** Record the full name of the vessel as it appears on the vessel. For example, record Capt John, not Captain John.
- **Partial Trips:** Check the box if the trip included more days than were observed. (Fish ticket includes unobserved catch.).
- **Total # of fishing days (KNOWN):** Document the total number of days the vessel fished before landing. **This field is only completed when the trip is a partial trip.**
- **Fishery:** Record the name of the fishery the vessel was selected for:

- Limited Entry Sablefish
- Limited Entry Zero Tier
- CA Nearshore
- OR Blue/Black Rockfish Nearshore
- OR Blue/Black Rockfish
- WC Open Access Fixed Gear

- **Vessel logbook name:** Record the name of the logbook the vessel is using to record fishing effort information. The following logbook can be used:

Fishery	Vessel Logbook Name
Limited Entry Sablefish	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name. If logbook name is not available in the database, contact the Database Manager.

Limited Entry Zero Tier	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name. If logbook name is not available in the database, contact the Database Manager.
CA Nearshore	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name. If logbook name is not available in the database, contact the Database Manager.
OR Black/Blue Rockfish and OR Black/Blue Rockfish Nearshore	OR Nearshore
WC OA Fixed Gear	OR Fixed Gear (Oregon vessels only)
California and Washington	do not require logbooks. However, if vessel is recording information in a logbook, document the logbook's name. If logbook name is not available in the database, contact the Database Manager.

- **Permit/ License #:** Document the permit/license number being used. All fixed gear fisheries, with the exception of WC Open Access Fixed Gear, must have a permit/license number documented. Limited Entry Sablefish vessels can have up to three permits stacked. All permit numbers associated with the vessel must be documented. Vessels use at least one groundfish permit which starts with GF, in capital letters, and is followed by 4 digits, all with no spaces. For example: GF0432. Permit numbers should be acquired by asking the captain of the vessel or can be looked up at: <http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Permits/index.cfm>
- **Vessel logbook page number:** The Vessel Logbook number is the page number(s) where the skipper is

recording the trip information. Do not record the number of the entire Logbook! Document additional vessel logbook page numbers in the trip notes.

- **First Receiver** (Catch Share Only): Leave this field blank.
- **Observer Logbook Number:** Record the number on the front page of the Observer Logbook used to document information about the trip.
- **Skipper's Name:** Record the first and last name of the skipper. If your skipper is not in the database, contact your debriefer to have it added.
- **Number of Crew** (including captain): Document the number of crew on the vessel. This should include the skipper, but not the observer.
- **Departure date/time:** Document the date and time the vessel left port. Date must be documented as MM/DD/YYYY. Time must be documented using military time (e.g. 1400).
- **Return Date/Time:** Document the date and time the vessel returns to port. Date must be documented as MM/DD/YYYY. Time must be documented using military time (e.g. 1400).
- **Departure Port:** Document the port the vessel departs from.
- **Return Port:** Document the port the vessel returns to.
- **Fish Ticket Number(s):** Obtain the numbers of all landing receipts (fish tickets) from the vessel skipper, the port biologist, or the fish plant. This is a required field for all fisheries and trips!
 - CA fish tickets begin with a letter followed by six digits.
 - OR fish tickets are seven digits.

- WA fish tickets begin with a letter followed by six digits.

- **WOC:** The state agency code is: C - for California deliveries, O - for Oregon deliveries, or W - for Washington deliveries.

Tip: always confirm that you have received all fish ticket information for each trip. Plants often record landings from a single trip on more than one fish ticket.

- **Date:** Document the date in MM/DD/YY that is recorded on the fish ticket.

Haul Information Instructions

- **Haul/Set Number:** Number hauls consecutively, starting with one for each trip.

Tip: Hauls must be numbered in the order retrieved! If hauls are numbered in the order they were set, all Catch, Species Composition, and Trip Information will need to be renumbered at debriefing.

- **Observer Total Catch Estimate (OTC):** Record the total catch estimate to two decimal places. Observer Total Catch estimate is recorded in pounds.
- **Weight Method:** Enter the number that represents the weight method used to obtain the observer total catch estimate. The weight methods that may be used for fixed gear OTC are:

- 6 Other
- 8 Extrapolation
- 11 Retained + Discard

- **Gear Performance:** Record one of the following codes to document gear performance:

- 1 No problem
- 2 Pot was in haul

- 3 Net hung up
- 4 Net ripped
- 5 Trawl net or codend lost, pot(s) lost, other gear lost
- 7 Other problem. Document other gear-related problem(s) in the comments section.

Tip: If line parts but all gear is retrieved, use 1- No Problem and put a note in comments

- 8 Retrieved gear previously lost

- **Total Hooks/ Pots Set:** Record the total number of hooks or pots in the set. This number should include lost gear.

Tip: Use Weight Method 8-extrapolation when gear is lost or less than 100% is tallied; use weight method 11-Retained + Discard when 100% of the gear is tallied.

- **# of Hooks/Pots Lost:** Record the total number of pots that were lost during the set, or the number of hooks lost (rounding to the nearest whole number). Do not record individual lost hooks, only sections of gear with multiple hooks.
- **Seabird Avoidance Gear (Gear types 7, 9, 19, & 20 only)-** Document the number that describes the type of seabird avoidance gear used or document "0" (No) if not used. Note: only document gear that was used specifically to prevent bait from being stolen and birds from dying.

- 0 No
- 3 Buoy line
- 4 Weights
- 5 Night setting (exclusively)
- 6 Other (describe in haul comments)
- 7 Single streamer line
- 8 Double/ paired streamer lines

- **Avg. Soak Time:** If set was not defined by buoy to

buoy and gear type is not pole, document the average range of soak time of a single unit of gear. (Gear types 7 and 9; Gear type 10 sometimes (if pots are not attached to a groundline); Not used for gear types 19 and 20 (defined by bouy to bouy)).

- < 1 minute
- 1 to 5 minutes
- 5 to 15 minutes
- 15 to 30 minutes
- 30 to 45 minutes
- 45 to 60 minutes
- 60+ minutes
- 1-2 hours
- 6 hours
- 12 hours
- 24 hours
- 36+ hours

- **Comments:** Document any important information about the haul that is not adequately conveyed by the other fields. This should include notes on any hauls with gear performance 7-other.
- **OTC Keypunch Check:** Sum the OTC's for an entire trip and record total weight of trip in OTC keypunch check box. (If more than one Trip Form is used, sum total catch estimates of all hauls to obtain keypunch check.)
- **Total Hooks/Pots Keypunch Check:** Sum all of the hooks/pots counts for an entire trip and record total hooks/pots count of trip in this column. (If there are multiple Trip Forms, add total hooks/pots counts of all hauls to obtain keypunch check.)

Trip Form – Haul Locations

Tip: Fixed gear vessels are not required to use a logbook so observers are often required to record haul location information on their own.

- **Trip Notes:** Document any information pertinent to understanding the trip.
- **Haul/Set Number:** Number hauls consecutively, starting with one for each trip.
- **Start Date:** Document the date the haul was set as MM/DD.
- **End Date:** Document the date the haul was retrieved as MM/DD.
- **Start Time:** Document the Pacific Standard Time (PST) when the first hooks were put into the water for the start time.

Tip: Fixed gear can be set prior to the beginning of the trip. Record start time when the gear was set, not the start of retrieval.

- **End Time:** Document the time when the last hook or pot is brought on board during retrieval
- **Start and End Latitude:** Document the latitude (in degrees, minutes, 1/100th of a minute) that the haul was set and retrieved.
- **Start and End Longitude:** Document the longitude (in degrees, minutes, 1/100th of a minute) that the haul was set and retrieved.

Tip: When an observer boards a vessel that has a GPS, check to be sure that it is recording in degrees, minutes, 1/100th of a minute. If it's not, ask the captain to change the view to 1/100th of a minute instead of seconds. (See Figure 5-19)



Figure 5-19: GPS Showing Latitude and Longitude

- **Depth:** Document the fishing depth in fathoms.
- **Gear Type:** Enter a code for the gear type based on the configuration of the gear, and how it is being fished. (Example: If the vessel is using a fishing pole while under way (trolling), the gear type would be recorded as 15 - All Troll Gear.)
 - 7 Vertical hook and line
 - 8 Pole
 - 9 Other hook and line gear
 - 10 Fish pot
 - 15 All troll gear
 - 16 All other miscellaneous gear
 - 19 Longline (fixed hooks)
 - 20 Longline (snap-on hooks)

If the fishing vessel is not using one of the above gear types, this is most likely the wrong section of the manual.

- **Excluder Presence:** Leave blank for fixed gear vessels.
- **Target Strategy:** Enter the vessel's target strategy. See the Catch Categories List. Only one target strategy may be documented. If the vessel documents more than one target strategy, use the species or grouping that is most prevalent in the haul.

TRIP FORM - HAUL LOCATIONS

Trip Notes:

- Gear Type Codes:**
 1-Trawl, small footrope (<8 inches)
 2-Trawl, large footrope (>8 inches)
 3-Midwater trawl
 4-Danish/Scottish Seine
 5-Other trawl gear,
 7-Vertical Hook and Line
 8-Pole (Commercial)
 9-Other Hook and Line
 10-Fish Pot
 12-Shrimp trawl single rigged
 13-Shrimp trawl double rigged
 14-All net gear except trawl
 15-All Troll gear
 16-All other Miscellaneous gear
 17-OR set back flatfish net (pineapple net)
 19-Longline (fixed hooks)
 20-Longline (snap-on hooks)
- Excluder Presence Codes:**
 1 - Present
 2 - Absent
 Leave field blank if not collected

Haul/ Set #	Date	Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Excluder Presence	Target Strategy
			Month	Day	Degrees	Minutes				
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									
	Start									
	End									

Figure 5-20: Trip Form - Haul Locations

Fixed Gear Complications

There are several complications that can occur during the sampling of fixed gear. For most cases, observers should discuss complications with their debriefer. This section will address known issues.

Unsampled Sets

For sets that are not sampled,

- **Trip Form:**
 - Leave the OTC column blank, and document weight method 6-other.
 - Document total hooks/pots set.
 - Document gear performance must **not** be code 5 - Gear lost.
 - It should be noted in the Haul Comments that the set was not sampled.
- **Catch Form**
 - No data required.
- Document what happened thoroughly in the logbook.

Tip: Never use the vessel's estimate for OTC on a fixed gear vessel.

Lost Sets

Occasionally, vessels lose an **entire** set. If this happens record the following on the forms:

- **Trip Form:**
 - Record the fishing effort information the same as with any other set except use the Landing date and time from the Trip Form as the haul end time. Copy the set latitude, longitude and depth.

Keep in mind that hauls are numbered in the order they are retrieved, so lost sets will be your last set for the trip

- Leave the OTC column blank on the Trip Form, and document weight method 6-other.
- Document gear performance code 5 - Gear lost.
- Document Total Hooks/ Pots Set.
- # Hooks/ Pots lost should equal Total Hooks/ Pots Set.

- **Catch Form**
 - No data required.
- Document what happened thoroughly in the logbook.

Occasionally, vessels lose a part of a set. They may lose pots or skates due to entanglement of gear. If this happens, record the following on the forms:

- **Trip form:**
 - OTC must not be blank. Use weight method 8-Extrapolation.
 - Document gear performance code 5 - Gear lost.
 - Document Total Hooks/ Pots Set.
 - Document amount of gear lost in # Hooks/ Pots Lost.

- **Catch form:**
 - # of Hooks/Pots sampled by catch category should not include the lost hooks or pots.
- Tip:** OTC does not have to be extrapolated if only individual hooks were lost
- Document what happened thoroughly in the logbook.

Fish Ticket Weights (Retained Species only)

Because fishers participating in the live fish market are extremely concerned about the condition of their fish, collecting samples of retained individuals may not be possible. If it is not possible to collect and weigh a sample of retained fish for average weights and visual estimates were not made, delivery weights (fish tickets) can be used to calculate the average weights of retained species. When using delivery weights:

1. **Tally ALL retained individuals by species by haul.**
2. Observe the weighing of the fish by species upon landing, if possible. If not, ask the skipper for a copy or look at the weights on the fish ticket.
3. Calculate average weight of species by:

Calculation

$$\text{Average Species Wt} = \frac{\text{Landing Weight of Species (lbs)}}{\text{\# of Individuals of Species Caught During ENTIRE Trip}}$$

4. For each haul, calculate the weight of retained species.

Calculation

$$\text{Species Wt by Haul} =$$

$$(\text{Average Species Wt}) \times (\text{\# of Individuals Caught in Haul})$$

Predated Pacific Halibut in Pot Gear

Occasionally Pacific Halibut may be predated upon by sand fleas, crabs, or other fish inside of a pot. Identification of these P. halibut is usually possible using the remaining parts of the fish, even when predation is severe. However if predation is severe, only the head and tail may be left in the pot making it impossible to length the fish.

In the event this occurs during your trip, do your best to estimate what the length of the fish would have been. Make a good note on your decksheet and discuss it with your debriefer.

Trip Discard

On rare occasions, a vessel will discard fish from the hold. This happens if market conditions change during a trip or if they are catching larger fish that are worth more money. Record discard that cannot be attributed to a specific haul on the Trip Discard Form (See Figure 5-17).

The Trip Discard Form is not entered into the database system. Document the information from the Trip Discard Form in the Trip Notes on the Trip Page in the database.

- **Trip Number:** Record the trip number generated by the database system.
- **Page Number:** The Trip Discard Form is numbered separate from all other forms. It should be numbered Page 1 of 1.
- **Date:** Document the month (MM) and day (DD) that the trip discard took place.
- **Time:** Document the time, in PST military time, that the trip discard took place.
- **Species:** Document the common name of the species that was discarded.
- **Weight:** Document the weight, in pounds, of species discarded.
- **Number of Fish:** Document the number of fish discarded (if known.).
- **Weight Method:** Document the weight method used to estimate the species weight.

Vessels that Head and Gut Sablefish at Sea

Observers collect biological information from retained sablefish caught on OR and WA fixed gear vessels, processing catch at sea. This processing involves removal of the head and guts from retained sablefish. In order to obtain this data that is important for stock assessment, observers are instructed to sample 5, randomly selected, retained sablefish per haul on head and gut vessels. Sex, length, and weight information and otolith extraction is collected from each individual before they are processed. All retained sablefish information collected, including the otoliths, is submitted to the state, by the observer or their debriefer.

Retained Sablefish Sampling Protocol

Objective: Collect 5 retained sablefish biological samples from each set/haul on vessels that head and gut the retained sablefish while at sea. This data will **not** be entered into the WCGOP database. This pertains to all vessels that process sablefish at sea, regardless of gear type.

Background: Approximately 90% of the fixed gear sablefish landed in Washington are head and gutted at sea. Because of this, port samplers are unable to obtain age structure information. Therefore, the WCGOP collects this information and provides it to the state.

On board, the crew will be using an “H” or “J” cut on these sablefish. Most likely, they will not want you cutting the retained fish to determine sex, unless you are knowledgeable in one of these two cuts. So, you will need

to work with the crew members to collect the appropriate data. It is best to discuss your sampling needs prior to retrieving the first set/haul. Remember, to make it clear that you will need to retain the head for otolith extraction.

****NOTE:** Retained Sablefish data collection protocols are different for the F/V Ossian. Only sample 2 sablefish per set when observing aboard this vessel.

Procedures:

1. Inform the crew that you will be taking biological samples from 5 retained sablefish.
2. Randomly collect 5 retained sablefish. Preferably, these 5 individuals are collected from throughout the set/haul. (Example: Collect 1 retained sablefish from 5 randomly selected gear units within the set.)
3. Weigh and take the length of each fish. Record its weight and length on the Commercial Sablefish Specimen Data form.
4. Ask a crew member to “cut” the fish, then look for the reproductive organs. Record the sex on the Commercial Sablefish Specimen Data form.
5. Ask the crew member to retain the head, so that otoliths can be collected.
6. Take otoliths from the head. After carefully cleaning the otoliths of all slime and tissue, place the otoliths in a barcode labeled vial. Write the last three digits of the vial on the Commercial Sablefish Specimen Data form.

Tip: If you plan to wait until the set/haul is complete before extracting otoliths, it is helpful to mark the heads with your knife, so you don't forget which head belongs to which fish.

Documentation: Complete the Commercial Sablefish Specimen Data form. Document the header information

ONCE for an entire trip on the first page. Subsequent pages only need the Vessel Name, Departure Date, and Sheet Number.

- **Sheet #:** Number each sheet, both front and back, by trip. Start with sheet 1 for each trip.
- **Vessel Name:** Document the complete name of the vessel.
- **Landing Date:** Leave blank (port sampler will complete).
- **Sample # (State):** Leave blank (port sampler will complete).
- **USCG #:** Document the six or seven digit USCG number.
- **INPFC Area:** Leave blank (port sampler will complete).
- **Sample # (NMFS):** Leave blank (port sampler will complete).
- **Fish Ticket #:** Leave blank (port sampler will complete).
- **Departure Date:** Document the departure date. Be sure this matches the departure data documented on the Trip Form.
- **Gear:** Circle the type of gear used. If other, please include a description.
- **Depth (fm):** Using the Trip Form, document the maximum depth and minimum depth for the Trip. These fields should show the range of depths fished, from the deepest to the shallowest on a trip.
- **Landing Weight of Whole fish:** Leave blank (port sampler will complete).
- **Landing Weight of Processed fish:** Leave blank (port sampler will complete).

Each column of 5 represents a set. Therefore, 9 sets worth of data can fit on each side of the form. Complete each column as follows:

- **Haul #:** Document the set/haul number.
- **State Area Code:** Oregon ONLY. See attached table of OR state area codes.
- **Sex:** Document the sex of the individual.
- **Length:** Document the length, in cm, of the individual.
- **Weight:** Document the weight, in pounds, of the individual.
- **3-Digit Barcode #:** Document the last three digits of the barcode number.

On the steam-in for WA trips: In order to make this as seamless as possible, call the port sampler in the delivery port on the steam in. This will allow them to be at the plant to pick up forms, otolith vials, and if necessary, to sample the delivery. If the port you are returning to does not have a port sampler, contact the nearest port sampler. If unable to contact port sampler, send to Bob LeGoff.

Bob LeGoff
Port Sampler
Supervisor
48 Devonshire Rd,
Montesano 98563
360-249-1295
legofbsl@dfw.wa.gov

Vicky Okimura
Bellingham Sampler
20 Harbor Mall,
Bellingham 98225
360-676-2031
okimuvso@dfw.wa.gov

Donna Luchsinger
Westport/Ilwaco
Sampler
48 Devonshire,
Montesano 98563
360-249-1294
luchsdel@dfw.wa.gov

Brian Walker
Neah Bay Sampler
400 Storm King Rd,
Port Angeles 98363
360-580-6286
walkebw@dfw.wa.gov

For OR trips: Give the retained SABL data forms and otoliths to your debriefer for delivery to Carla Sowell.

For All Trips: Please organize the otolith vials as follows:

1. Rubber band the otolith vials from each set/haul together.
2. Attach a piece of paper with the set number to each bundle.
3. Place all otoliths from one trip together in a plastic bag. Label the bag with the Vessel name and the Departure Date. If multiple bags are required to hold all of the otolith vials, label each bag with the set numbers of the otoliths (e.g. Vigorous, 02/29/2006, sets 1-5).

Where does this data go? Give all the Commercial Sablefish Specimen Data forms and otolith vials to the port sampler or your debriefer. **Do not document the retained fish information on WCGOP forms or in the WCGOP database.** If you have any questions regarding the form or protocol, call Ryan Shama (206) 437-1629.

Fields in Yellow should be completed by the Port Sampler

Commercial Sablefish Specimen Data
WCGOP collected Specimen Data

Sheet# _____ of _____

Vessel Name _____ Landing Date _____ Sample # (State) _____

USCG # INPFC: VAN COL Other _____ Sample # (NMFS) _____

Fish Ticket # Departure Date: _____ Gear: Trawl Pot Line Other _____

Depth (fm) Max Min Landing Weight of Whole Fish (lbs) Landing Weight of Processed fish (lbs)

Haul #:	State Area Code	#	Sex	Length (cm)	Weight (lbs)	3-digit barcode
<input type="text"/>	<input type="text"/>	1	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	2	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	3	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	4	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	5	_____	_____	_____	_____

Haul #:	State Area Code	#	Sex	Length (cm)	Weight (lbs)	3-digit barcode
<input type="text"/>	<input type="text"/>	1	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	2	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	3	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	4	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	5	_____	_____	_____	_____

Haul #:	State Area Code	#	Sex	Length (cm)	Weight (lbs)	3-digit barcode
<input type="text"/>	<input type="text"/>	1	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	2	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	3	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	4	_____	_____	_____	_____
<input type="text"/>	<input type="text"/>	5	_____	_____	_____	_____

OMB Control No. 0648-0593 expires 11-30-2015

Figure 5-18: Commercial Sablefish Specimen Data form

Examples: Longline

In the following examples, be aware that biological sampling duties are not addressed. Biological sampling duties are described in Chapter 7 “Biological Sampling” and Chapter 8 “Protected Resources.”

Page 1 of 4

Haul # **CATCH FORM***

Date - Trip Number Visual OTC _____

Catch #	R or D	Catch Category	Catch/Sample Weight	Volume	Density	Fish # <small>Req. for WMs 8, 9, 19 & 14 (if actual)</small>	# Hooks/Pots sampled by catch category	Wt Method	Catch Purity	Discard Reason	Comments
1	R	ZMIS	2684.83				4200	13	M		
2	D	ZMIS	615.63				4200	13	M		
3	D	LSKT	65			2	4200	14	P	13	
4	D	PHLB	514.71			20	4200	9	P	16	
Keypunch Check			3880.17			22	16800				

OMB Control No. 0548-0050 expires 11/30/2015
Combined Catch Form v.1 September 2013

*Combined form for all gear types

Figure 5-19: Longline Gear Catch form front

Set #	Date	Time	Latitude		Longitude		Depth (m)
			Degrees	Minutes	Degrees	Minutes	
	Start						
	End						
Additional Locations							

Gear Units Set: 21 Gear Units Sampled: 21 Gear Units Lost: 0 Tally Sample Fit # 14 Avg. Soak Time _____
 Cal. Wt. 11.00

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Average hook count = 200	Retained 7 @ 64.95 10 @ 57.70 9 @ 61.60 5 @ 33.20	(381) Sable <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> SSPN DO 8 @ 7.75 5 @ 4.55	Discarded small DO <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 @ 8.15 small 1 @ .60 Longnose skate <input type="checkbox"/> <input type="checkbox"/> 3 @ 37.7 2 @ 29.9 3 @ 51.8 Giant Wrymouth 1 @ 13.80 Spiny dogfish <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 11 @ 39.25 9 @ 29.10 Redbanded 1 @ 2.95 Rosethorn <input type="checkbox"/> 2 @ 2.10 Arrowtooth <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 9 @ 49.70 8 @ 44.95 Urchin 1 @ .30 Starfish <input type="checkbox"/> 2 @ .90 Sandpaper skate <input type="checkbox"/> 2 @ 5.45 Hagfish 1 @ .90	Pred Visual 1 @ 35 Visual 1 @ 30
---	--	---	--	---

PHLB Visual (Discards)
 cm
 60
 70 | 15 PHLB
 80
 90
 100
 110
 120 |
 130 |

Species: PHLB		Species: SABL		Species: SSPN		Species: Dogfish		Species:	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.
82	MI	23	1	26	1	26	1		
85	MI	19	1			32	2		
103	MO	25	1			40	1		
94	MI					28	1		
116	MI								

Figure 5-20: Longline Catch form back

Haul #

SPECIES COMPOSITION FORM

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Date - -

Trip #

Fit # _____
Cal. Wt. _____

Trawl Biosampling List
1 2 3

Catch #	Catch Category	Sample Method	KP Weight		Species	Species Code	Sample Weight	Fish #	Discard Reason	Release method	Basket Weight	#	Basket Weight	#
				KP Number										
1	ZMIS	4	2684.83	394	SABL	203	2672.53	381						
						SSPN	350	12.3	13					
2	ZMIS	4	615.63	117	SABL	203	8.15	3	13					
						SABL	203	84.17	12	12				
					SABL	203	7.01	1	15					
					SSPN	350	.60	1	13					
					THDS	349	1.89	2	12					
					LSKT	554	119.4	8	13					
					Giant Wrymouth	760	13.8	1	13					
					DSRK	66	123.03	36	13					
					Redbanded	308	2.95	1	13					
					Rosethorn	309	2.1	2	13					
					Arrowtooth	141	244.98	44	13					
					Urchin	54	.3	1	13					
					Starfish	20	.9	2	13					
					Sandpaper Skate	555	5.45	2	13					
					Hagfish	67	.9	1	13					

Trawl Sample Methods 1 - Whole haul 2 - Single basket 3 - Multiple basket
 Fixed Gear Sample Methods 4 - FG Sample 5 - FG (Verified Fish Ticket) 6 - FG (Unverified Fish Ticket)
 Reasons for Discard 11-Incidental/Accidental 12-Drop-off 13-Market 14-Other 15-Predation 16-Regulation 17-Safety 18-Market (Dockside)
 Release Methods for RF (Nearshore Fisheries Only) TO-Tossed over MV-Mostly Vented DC-Mostly released at depth by cage DW-Mostly released at depth weighted line DO-Mostly released at depth other method OM-Other release method used NC-Not Collected
 WCGOP CS Species Composition Form September 2012 OMB Control No. 0648-0593 Expires 11-30-2015

Figure 5-21: Longline Species Composition form front

Species	Species Composition Measurements and Calculations
	<p>SABL = $\frac{217.45 \text{ lbs}}{31 \text{ fish}} \times 381 \text{ fish} = 2672.530645 = 2672.53 \text{ lbs}$</p> <p>SABL DO = $\frac{217.45 \text{ lbs}}{31 \text{ fish}} \times 12 \text{ fish} = 84.17419354 = 84.17 \text{ lbs}$</p> <p>SABL Pred = $\frac{217.45 \text{ lbs}}{31 \text{ fish}} \times 1 \text{ fish} = 7.014516129 = 7.01 \text{ lbs}$</p>
	<p>THDS = $\frac{12.3 \text{ lbs}}{13 \text{ fish}} \times 2 \text{ fish} = 1.892307692 = 1.89 \text{ lbs}$</p> <p>DSRK = $\frac{68.35 \text{ lbs}}{20 \text{ fish}} \times 36 \text{ fish} = 123.03 \text{ lbs}$</p>
	<p>ARTH = $\frac{94.65 \text{ lbs}}{17 \text{ fish}} \times 44 \text{ fish} = 244.9764705 = 244.98 \text{ lbs}$</p>

Figure 5-22: Longline Species Composition form back

Examples: Pot

Page 1 of 3

Haul # **CATCH FORM***

Date - Trip Number Visual OTC _____

Catch #	R or D	Catch Category	Catch/Sample Weight	Volume	Density	Fish # Req. for WMs 8,9,19 & 14 (if actual)	# Hooks/Pots sampled by catch category	Wt Method	Catch Purity	Discard Reason	Comments
1	R	ZMIS	190.45				12	13	P		
2	D	ZMIS	163.72				12	13	M		
Keypunch Check			354.17				24				

OMB Control No. 0648-0158 expires 1/13/2015
Combined Catch Form v.1 September 2013

*Combined form for all gear types

Figure 5-23: Pot Catch form front

Set #	Date	Time	Degrees	Minutes	Degrees	Minutes	Depth (fm)
		Start					
		End					
Additional Locations							

Gear Units Set: **24** Gear Units Sampled: **12** Gear Units Lost: **1** **Tally Sample** Fit # **21** Avg. Soak Time _____
 Cal. Wt. **11.00**

Retained

 3 @ 16.95
 5 @ 27.85
 3 @ 17.75
 6 @ 32.80
| 8 @ 44.25
| 6 @ 50.85

SABL

Discarded

Smalls 3 @ 11.80 **Predated**
 2 @ 7.05
3 @ 12.25

Last pot snapped off the line and was lost

Starfish U **(191)** 19 @ 3.80
34 @ 6.35

Viper fish 1 @ .10

Crinoids | 5 @ .20

Hair crab 2 @ 3.15

Species: SABL		Species:		Species:		Species:		Species:	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.
22	1								
20	2								
31	1								
27	1								

Figure 5-24: Pot Catch form back

Species	Species Composition Measurements and Calculations
	$\text{SABL Pred} = \frac{190.45 \text{ lbs}}{31 \text{ fish}} \times 15 \text{ fish} = 92.1532258 = 92.15 \text{ lbs}$
	$\text{Starfish Unid} = \frac{10.15 \text{ lbs}}{53 \text{ fish}} \times 191 \text{ fish} = 36.5783017 = 36.58 \text{ lbs}$
	$\text{Crinoids} = \frac{.20 \text{ lbs}}{5 \text{ fish}} \times 16 \text{ fish} = .64 \text{ lbs}$
	$\text{OTC} = \frac{354.17 \text{ lbs}}{12 \text{ pots}} \times 24 \text{ pots} = 708.3399998 \text{ lbs} = 708.34 \text{ lbs}$

Figure 5-26: Pot Species Composition form back

TRIP FORM - HAUL LOCATIONS

Trip Notes:

Gear Type Codes:
 1-Trawl; small footrope (<8 inches)
 2-Trawl; large footrope (>8 inches)
 3-Midwater trawl
 4-Danish/Scottish Seine
 5-Other trawl gear,
 7-Vertical Hook and Line
 8-Pole (Commercial)
 9-Other Hook and Line
 10-Fish Pot
 12-Shrimp trawl single rigged
 13-Shrimp trawl double rigged
 14-All net gear except trawl
 15-All Troll gear
 16-All other Miscellaneous gear
 17-OR set back flatfish net (pineapple net)
 19-Longline (fixed hooks)
 20-Longline (snap-on hooks)

Excluder Presence Codes:
 1 - Present
 2 - Absent
 Leave field blank if not collected

Haul/ Set #	Start	End	Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Excluder Presence	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
1	Start		10	12	2100	44	28.46	124	52.16	195	19		SABL
	End		10	13	0915	44	37.13	124	52.54	185			
2	Start		10	12	2326	44	21.23	124	41.26	176	19		SABL
	End		10	13	1320	44	24.56	124	40.12	184			
3	Start		10	13	1005	44	25.87	124	32.61	196	19		SABL
	End		10	14	0834	44	27.80	124	33.42	200			
4	Start		10	13	1814	44	26.53	124	24.56	175	19		SABL
	End		10	14	1145	44	25.00	124	25.76	180			
5	Start		10	12	2015	44	26.38	124	33.13	181	19		SABL
	End		10	14	2450	44	26.38	124	33.13	181			
	Start												
	End												
	Start												
	End												
	Start												
	End												
	Start												
	End												
	Start												
	End												

Figure 5-28: Completed fixed gear Trip Form example (back)

