



**Fixed Gear Sampling on Small Boats**

I. INTRODUCTION ..... 6-4

II. FIXED GEAR TYPES ENCOUNTERED ON SMALL BOATS ..... 6-4

*Vertical Longline* ..... 6-4

*Stick, Pipe, and Cable Gear*..... 6-5

*Rod-and-Reel Gear* ..... 6-6

*Troll Gear*..... 6-6

Groundfish Troll Fishery..... 6-7

*Handlines and Jigging* ..... 6-9

*Groundfish Traps*..... 6-9

*Operations on Small Fixed Gear Vessels* ..... 6-11

*Safety on Small Boats*..... 6-11

III.GEAR FOR SMALL BOATS..... 6-12

IV. DATA COLLECTION ON SMALL FIXED GEAR BOATS ..... 6-13

*Defining a Set* ..... 6-14

*Documenting Fishing Effort Information Haul Location, Depth and Time*..... 6-15

Recording Locations..... 6-16

Recording Depth..... 6-16

Additional Fishing Effort Information ..... 6-17

*Determining Amount of Gear in a Set* ..... 6-17

Determining the Number of Hooks per Gear Segment ..... 6-18

Actual Numbers of Hooks per Gear Segment ..... 6-19

Counting hooks on rod-and-reel vessels ..... 6-19

Number of gear segments in a set..... 6-20

Multiple Retrievals in a Set ..... 6-20

Single Retrieval per Set..... 6-21

V. SAMPLING SMALL FIXED GEAR VESSELS..... 6-21

*Tally Periods* ..... 6-21

**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**

<i>Where to Tally Sample</i> .....	6-22
<i>Equipment Needed</i> .....	6-22
<i>Tallying</i> .....	6-22
<i>Weighing on Small Fixed Gear Vessels</i> .....	6-23
Extrapolated and Actual Weights .....	6-23
Extrapolated Weight from “Like” Sets .....	6-27
Visual Estimates of Large Organisms .....	6-27
Visual Estimates for Retained Species.....	6-27
Fish Ticket Weights (Retained Fish Only).....	6-28
Pacific Halibut .....	6-29
<i>Tally Sampling Review</i> .....	6-29
VI.DOCUMENTING THE TALLY SAMPLE.....	6-29
<i>Catch Categories on Fixed Gear Vessels</i> .....	6-29
Weight Method 4 - Visual Estimate .....	6-30
Weight Method 6 - Other .....	6-30
Weight Method 9 - Pacific Halibut Length/ Weight.....	6-30
Weight Method 13 - Tally Sample .....	6-30
Fixed Gear Catch Form Instructions.....	6-31
<i>Species Composition Form Instructions</i> .....	6-36
Sample Method 4 - Fixed Gear Sample.....	6-35
Sample Method 5 - Fixed Gear Fish Ticket Verified .....	6-35
Sample Method 6 - Fixed Gear Fish Ticket Unverified.....	6-36
Using Delivery Weights for Average Weights of Tallied Individuals .....	6-36
Species Composition Form Instructions .....	6-36
VII.DETERMINING OTC ON FIXED GEAR VESSELS.....	6-41
<i>Weight Method 8 – Extrapolation</i> .....	6-41
<i>Weight Method 11 – Retained + Discarded</i> .....	6-41
VIII.RECORDING FISHING EFFORT INFORMATION.....	6-41
<i>Trip Form Instructions</i> .....	6-42
<i>Trip Form - Haul Locations</i> .....	6-47

IX. BIOLOGICAL SAMPLING ON NEARSHORE FIXED GEAR  
VESSELS ..... 6-50

X. TRIP DISCARD FORM INSTRUCTIONS..... 6-51  
*Dead Fish in a Live Fish Market*..... 6-51  
*Discard That Cannot Be Attributed to a Specific Haul*. 6-51  
Trip Discard Form Instructions ..... 6-51

XI. EXAMPLES..... 6-54  
*Stick Gear Example*..... 6-54  
*Rod and Reel Example*..... 6-58



## **I. Introduction**

Some fixed gear fisheries that are observed on the West Coast are conducted on very small vessels which present unique sampling situations. These situations are most often encountered in nearshore fisheries, such as live rockfish and cabezon, although they may also occur on small boats targeting sablefish or other deepwater fish.

Although some adaptations may be necessary to collect required data on small boats, the same basic sampling protocols are followed for all fixed gear vessels. For general instructions on data collection on fixed gear vessels, refer to Chapter 5, “Fixed Gear Sampling”. Chapter 6, “Fixed Gear Sampling on Small Boats” will address specific challenges and data collection techniques for smaller fixed gear vessels.

## **II. Fixed Gear Types Encountered on Small Boats**

### **Vertical Longline**

Vertical longline (or vertical hook and line or portuguese set) is a type of hook and line gear that consists of a single line weighted at the bottom and buoyed at the surface, with 30 to 300 hooks suspended in the water column to fish vertically. Baited hooks are tied to the mainline (See Figure 6-1)



Figure 6-1: Vertical Hook and Line Gear

Wind and waves jiggle the buoy, which wiggles the line and hooks to attract fish. Vertical longline gear is typically used to target rockfish.

### **Stick, Pipe, and Cable Gear**

Stick gear, also called pipe gear, is usually constructed of a piece of rebar (metal stake) or PVC tube with rebar or sand inside and line attached along the full length of the stick and connected to a buoy (See Figure 6-2). Some fishers use a flexible plastic-coated cable with a lead weight attached instead of a hard stick, referred to as “cable gear”. The sticks may range from 3 to 6 ft in length, and the number of hooks per stick or cable may vary from 3 to 10. Hooks are attached directly to the line by a lighter piece of line or monofilament and are typically baited with squid, mackerel, or bonita. There is usually just one stick per buoy line, but multiple sticks can be connected together by a groundline. This gear is typically used on shallow reefs, rock piles, or kelp and surf grass beds at depths of 0 to 40 feet, but is occasionally fished at depths of 100 feet or more. Stick, pipe and cable gear are primarily used to target shallow and deep nearshore rockfish, lingcod, greenling and cabezon.



Figure 6-2: Stick Gear

### **Rod-and-Reel Gear**

Rod-and-reel fishers use traditional fishing poles, usually with two or more hooks per pole (See Figure 6-3). Bait, flashers and a variety of lures may be used to attract fish to the hooks. Two common types of fishing lures are large plastic worms called “scampies” and plastic lures that resemble squid called “hoochies”. Lines are weighted with lead sinkers of different shapes and sizes. When multiple hooks are fished, each hook may be fished from a “dropper” line, or gangion, attached to the main fishing line. Weighted lines with hooks are cast into the water and allowed to descend to the desired depth, typically on or near the sea floor. Lines may be cast while the vessel is at anchor or drifting, or lines may be actively trolled while the vessel is under-way. For data entry purposes, we only use the term “rod-and-reel” to describe fishing that occurs while a vessel is at anchor or drifting. If the vessel is trolling (moving by power) and using rod-and-reel gear, we classify the gear type as “troll gear”. (Refer to description of troll gear.) Rod-and-reel gear is commonly used to target rockfish, sheephead, lingcod, greenling, cabezon and sanddabs.



Figure 6-3: Rod-and-Reel Gear and Catch

### **Troll Gear**

Trolling involves towing multiple fishing lines behind a vessel while it is under way (See Figure 6-4). Lines are

**Outrigger** - A stabilizing frame extending laterally beyond the main structure of the vessel.

**Gurdies**- powered spools or reels

attached to a pair of **outriggers** that are lowered to approximately 45-degree angles from the boat when fishing.

Fishing lines are set and retrieved using **gurdies** mounted on the vessel in sets of two, three or four. Each gurdy spool, usually powered by hydraulics, contains and works one line.

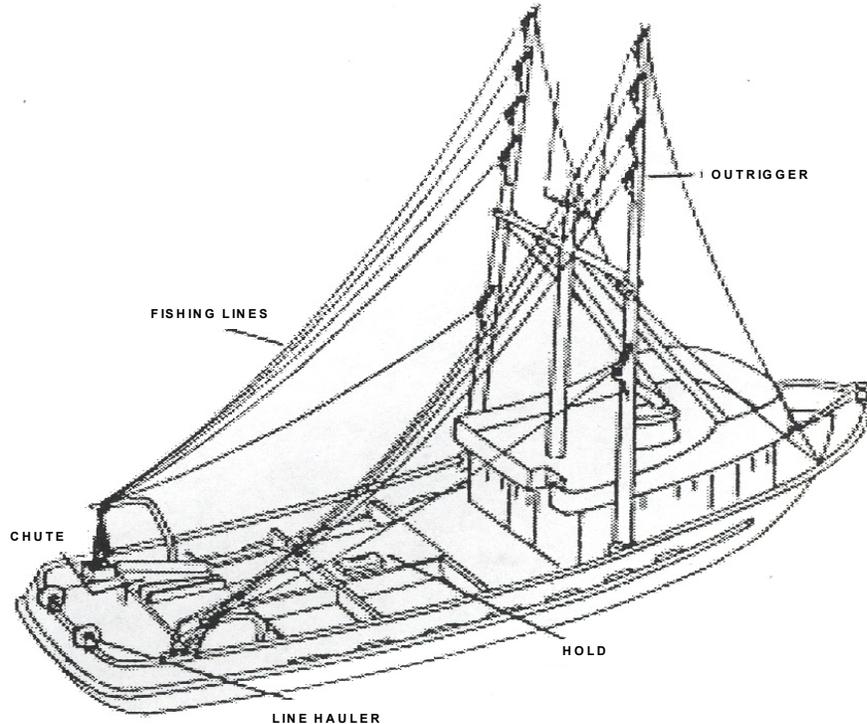


Figure 6-4: Troll Gear (with outriggers in non-fishing position)

### *Groundfish Troll Fishery*

Groundfish are targeted with other troll gear configurations. The lines are typically weighted with some sort of lead weight or bar and fished at or near the sea floor. Groundfish gear may resemble that of an albacore troller, but may also consist simply of weighted rod-and-reel lines with hooks being dragged along the bottom of the ocean. Multiple jigs or baited hooks may be attached to the troll line by leaders

or gangions. A variety of fishing lures, such as hoochies and scampies, are also commonly used. To target rockfish congregating at different depths and around rock pinnacles, some troll gear configurations utilize floats to keep the hooks suspended in the water column. By adjusting the floats, weights, length of main line and location of gangions, the hooks can be set up to fish at a range of depths within the desired band (See Figure 6-5).

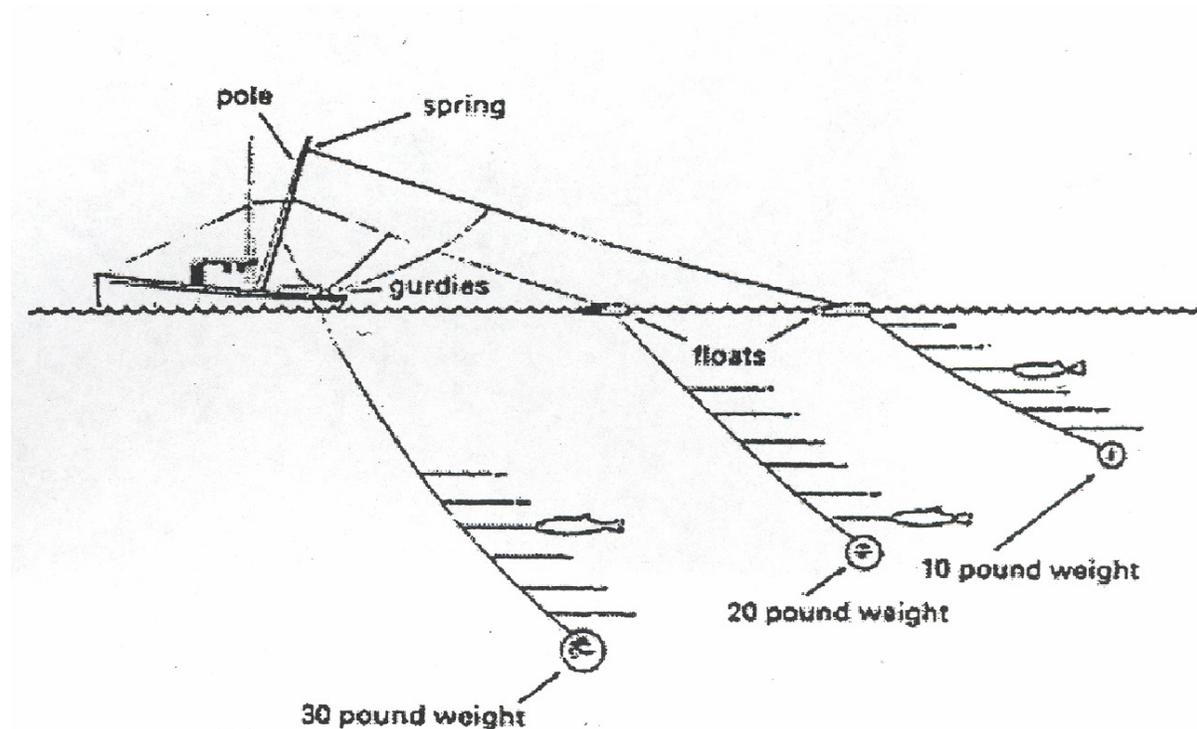


Figure 6-5: Groundfish Troll Gear

One type of groundfish troll gear is sometimes called 'dingle bar' gear because there is a distinct 'ding' transmitted up the steel trolling wire any time the bar touches bottom. The gear is designed to be fished three to six feet above rocky bottom and the iron bar is allowed to touch the bottom only occasionally to adjust for varying depths. Jigs are hung from multiple gangions attached to each line. The jigs have fishing lures, and are sometimes tipped with bait. This gear

is very selective and is primarily used to target lingcod or Pacific halibut.

### Handlines and Jigging

**Jigging** – A method of fishing where fishing line is mechanically or manually manipulated. The movement of the line creates a bouncing of the lure within the water column or along the substrate.

Handline and **jig** fisheries use vertical, weighted monofilament lines with baited hooks attached at intervals with swivels. The hooks are dressed up with colorful segments of rubber surgical tubing, “hoochies”, or bait (squid, herring or other fish). The jig is dropped to the bottom either by hand or with mechanical gear. Then the line is usually lifted a short distance off the bottom and jigged vertically up and down to lure the fish to bite the bait or hoochies.

Mechanical jigs are automated to let out and reel in line as programmed. They can be programmed to sense when the gear hits the seabed and automatically pull in enough line so that the hooks stay a few feet above the bottom to avoid snagging. When the pre-set weight of fish has been hooked, the jigger can automatically reel in the line. Mechanical jiggers will generally utilize between six and sixteen hooks on separate gangions, and many lines can be actively jigged. Handlines and jigs are commonly used to harvest lingcod, greenling, cabezon and rockfish.

For data collection purposes, this type of gear could be classified in a couple of different categories. If the vessel is stationary or drifting and using fishing poles, then this should be recorded as “rod-and-reel”. If the vessel is under way, this would be considered “trolling”. (See previous descriptions above.) If the fishing activity cannot be described by “rod-and-reel” or “troll gear”, it should be recorded as “other hook and line”.

In Chapter 6, “Fixed Gear Sampling on Small Boats”, pots are referred to as traps, as that is the common terminology used by fishers.

### Groundfish Traps

**Traps** used on smaller vessels are typically lightweight rectangular traps (See Figure 6-6), although other

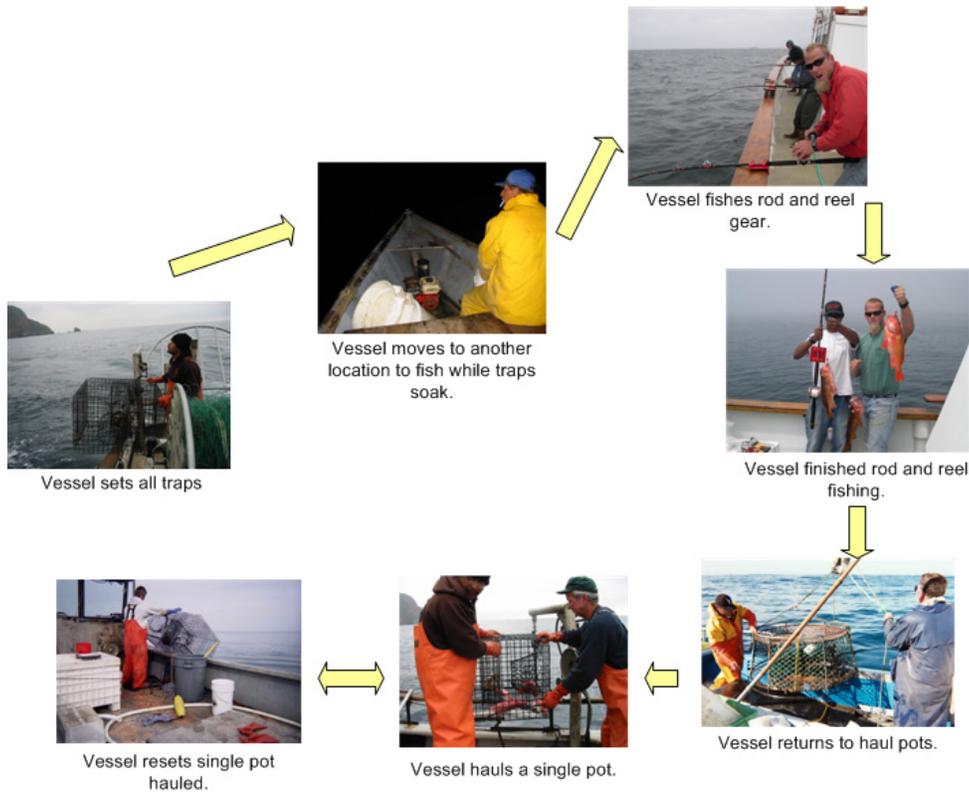
**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**

configurations may also be encountered. Small trap vessels typically fish for live fish markets. Common nearshore target species are California sheephead, cabezon, greenling, rockfish, and California scorpionfish. Some small vessels also use traps to target sablefish in deeper waters.



Figure 6-6: Sheephead Trap

## Operations on Small Fixed Gear Vessels



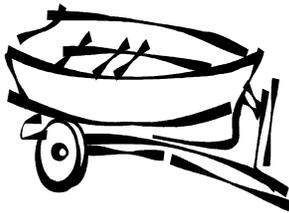
## Safety on Small Boats

Observers should be aware of unique safety issues that arise on small vessels. Small vessels are often not required to carry the same amount and types of safety gear as larger vessels, especially when they are only operating within 3 miles of shore. These vessels also run a higher risk of capsizing. When moving about on the vessel, take note of how much your movement causes the vessel to rock back and forth. On very small vessels, sudden movement could cause you or someone else to fall overboard. Carefully stow your EPIRB and immersion suit, and wear a Personal Flotation Device (PFD) at all times.

These vessels generally fish under good weather conditions, but conditions can change quickly. There is often little or no

shelter on small boats, so if the wind or waves pick up, you can get soaked quickly. Do not neglect to bring along raingear and wear clothing that is easily layered. It is also good to bring drinking water, sunscreen and a hat to protect from sunburn and dehydration. Remember, you may have no shelter from the weather or sun all day.

### **III. Gear for Small Boats**



Carefully consider what gear to bring when observing on vessels with extremely limited space. Many small vessels only make one-day trips. It isn't necessary to bring much personal gear on board, but remember to be prepared for changing weather conditions.

Working on small vessels requires a good working relationship with the fisher. Ask for their help in determining where to be while under way (not fishing) and where to sample that will minimize interference with fishing operations.

On most small boats, there is very little room to work, and it will not be possible to bring a platform scale and baskets. Observers commonly find that they can pack all of the sampling gear they will need into a 5-gallon bucket or a single observer basket. The goal is take up as little space as possible without compromising your ability to collect the required data. The following is a list of sampling gear needed on small vessels:

- 6-pound and 25-pound hanging scales
- Lightweight bucket with holes drilled in the bottom.



**Tip\*** If an appropriate bucket is not included in the sampling gear that is issued, contact PSMFC or acquire one at a local hardware store. Small plastic paint buckets work well.

- Portable GPS unit

- Length Frequency strip
- Clipboard, deck forms, and other items normally used to collect and record data

Although vessels are normally expected to provide food for observers, fishermen who day trip are less likely to provide food and drink. Discuss this before the trip or plan to bring enough drinks and snacks to get through the day.



#### **IV. Data Collection on Small Fixed Gear Boats**

The fisheries that small fixed gear vessels participate in include:

- \*Non-Sablefish Endorsed (limited entry)  
OR Nearshore (open access)  
OR Rockfish (open access)  
CA OA Fixed Gear (open access)  
CA Nearshore (open access)

\*Most commonly use conventional longline and pot strings, but also includes small vessels.

The data flow on small fixed gear vessels is generally the same as for large fixed gear vessels. (See Chapter 5, “Fixed Gear Sampling”.) The primary differences are due to the following factors:

- Defining a set and recording location information is less straightforward on small boats.
- Determining the amount of gear in a set is often complicated by repeated sets and retrievals of small units of gear.

The data flow for sampling small fixed gear vessels is:

1. Defining a Set
2. Documenting Fishing Effort Information

3. Determining Amount of Gear in a Set
4. Tally Sampling
5. Recording Catch, Species Composition, Fishing Effort Information

### **Defining a Set**

A grouping of gear can be considered one set if the following are the same:

1. Date
2. Gear Type
3. Geographic Area
4. Depth
5. Species

Unlike vessels using traditional longline and pot gear with two end buoys, defining a set on vessels that use other types of fixed gear can be somewhat complicated. Small pieces of gear (gear with 4 to 8 hooks per piece) with individual buoys are often set haphazardly in a general area or fishing spot. The gear is frequently set and retrieved over and over again, with individual pieces of gear soaking for as little as 5 minutes between retrievals. If each retrieval was considered a set, one day of fishing could have over fifty sets, with each set only having one or two fish caught. Obviously, this would create an unreasonable quantity of paperwork for the amount of data collected. Therefore, individual pieces of gear can be grouped to form a single set using a standard set of criteria. When it is not possible to easily define a set as the retrieval of a distinguishable string of gear, any grouping of gear that meets all of the following criteria can be considered the same set:

1. **Date** - Data collected on the same day can be considered for grouping into a set. If the vessel is fishing for multiple days, data from each day should be grouped separately.
2. **Gear Type** - Data collected from the same gear type can be considered for grouping into a set. If more than one gear type is being used, data must be recorded separately for each gear type.
3. **Geographical Area** - Data that is collected in the same general area can be considered for grouping into a set. An area may be defined by a physical feature, such as a cove or reef or it may simply be defined by distance.

There is not an assigned distance used to determine if data should be recorded separately or together. Dividing data into separate hauls based on geographical area is up to the discrepancy of the observer. If you are unsure how to record your data, you should discuss the situation with a Debriefor or Lead observer in your area.

4. **Depth** - Data that is collected in the same depth range can be considered for grouping into a set. Like geographic area, there is not an assigned depth change that requires data being recorded in separate sets. However, if the species composition or fish size changes noticeably, the depth has changed enough for the data to be grouped separately.
5. **Species** - Data that is collected that has the same target species or species assemblage can be considered for grouping into a set. Any noticeable change in species composition requires the data to be grouped separately.

The following 3 criteria are often closely related and should be considered together when deciding if data can be grouped:

- Geographical area
- Depth
- Species



### **Documenting Fishing Effort Information Haul Location, Depth and Time**

Fixed gear vessels are not required to keep vessel logbooks. There are two options for getting haul location, depth and time information:

- Skipper's Personal Logbook - Most small boats do not keep records of fishing locations and depths
- Observer Collects Information

### ***Recording Locations***

If the vessel does not keep a logbook, there are two sources for location information:

1. Vessel Equipment - Many vessels have Loran or GPS devices, but be wary of using location information from electronic devices on small boats as they are sometimes inaccurate.
2. Handheld GPS - You may be issued a handheld GPS unit for noting haul locations. These devices have handy features that allow you to save positions as way points that you can reference later. Write down the positions or way points on the back of your Fixed Gear Catch Form at the same time that time and depths are noted.

### ***Recording Depth***

To determine fishing depths either:

1 fathom = 6 feet
-------------------

1. Use the vessel's depth finder (preferred)



**Tip\*** Check to see if the depth is displayed in feet or fathoms. If the vessel is fishing in a nearshore fishery, the depth will mostly likely be displayed in feet.

OR

2. Use locations and chart - If the vessel does not have a depth finder, use position information (lat/longs) and charts to estimate fishing depths.



**Tip\*** Record the depth range, the shallowest depth to the deepest depth.

**At minimum, for each set record:**

- Location, depth and time of first gear to be deployed

- Location, depth and time of final gear retrieval



**Tip\*** If you don't write it down as it is happening, you will not have critical information needed to complete your data forms.

### *Additional Fishing Effort Information*

Write down additional locations, times, and depths as the vessel moves around throughout the day, being sure to note starting and end positions if there are multiple hauls. Marking multiple way points in a handheld GPS is a convenient way to look at where the vessel moved throughout the day, and may help determine if data should be divided into separate hauls.

Observers should document at least three positions if there was only one haul in a day. Additional location, time, and depth information can be taken any time during a day but information that is evenly spread out (every hour) is the most representative of vessel activity. The Observer should attempt to document positions that mark the boundaries of the general fishing area rather than multiple positions in nearly the same spot. If the vessel doesn't move around very much, fewer positions need be recorded.



**Tip\*** The additional information must be recorded on the Trip Form – Haul Locations and entered into the database. See the Trip Form – Haul Locations instructions and example.



### **Determining Amount of Gear in a Set**

Once you have defined the set, the number of hooks or traps in the set must be determined. To determine the amount of gear in a set on small fixed gear vessels, determine the:

1. Number of hooks per gear segment (Hook and Line Gear Only)
2. Number of gear segments in a set



**Tip\*** On small boats, it is usually possible to sample 100% of the gear. Therefore, the total number of hooks or traps will be equal to the number of hooks or traps sampled, unless gear has been lost.

### ***Determining the Number of Hooks per Gear Segment***

Two approaches can be used to determine the number of hooks per gear segment:

- Average number of hooks per gear segment
- Actual number of hooks per gear segment

#### **Average number of hooks per gear segment:**

Vessels generally have a consistent number of hooks per gear segment. Always document in the Observer Logbook when average hook counts were done and why that time was chosen. To determine average number of hooks:

- Count the number of hooks in each gear segment. If it is not possible to count all of the gear, a minimum of **1/5** of the gear should be counted and an explanation of the circumstances that made it impossible to count all of the gear should be documented in the Observer Logbook.
- Sum the hook counts for all gear segments counted and divide by the number of gear segments counted.



$$\text{Average \# Hooks per Gear Segment} = \frac{\sum \text{Hooks Counted}}{\text{\# of Gear Segments Counted}}$$



$$\text{Total Hooks} = (\text{Total Gear Segments}) \times (\text{Average Hooks per Gear Segment})$$

### *Actual Numbers of Hooks per Gear Segment*

If sets are composed of gear segments with varying numbers of hooks, it may be possible to keep track of the actual number of hooks retrieved rather than using average counts. To use actual counts:

Actual Numbers of hooks per gear segment are done on stick, rod-and-reel, and other similar gear types.

- Create columns on your raw data sheet with each possible hook count (per gear segment).
- Each time gear is retrieved, put a tally mark in the column with the correct number of hooks that are present.
- When the set is complete, count the total number of hooks retrieved by multiplying each tally by the corresponding number of hooks. Then, sum the results.

### *Counting hooks on rod-and-reel vessels*

When multiple lines are fished simultaneously, it may not be possible to keep track of each retrieval while also collecting species composition data.

In these situations, the number of hooks may be determined by using a random temporal sampling strategy:

1. Randomly select time units when gear retrievals will be counted.
2. Count the number of gear retrievals that occur during the selected sample periods.
3. Multiply the number of gear retrievals by the average or actual numbers of hooks per gear segment (as described above) to determine the total number of hooks retrieved during the randomly selected time period.

4. Determine the total amount of time that fishing occurred for the set.
5. Extrapolate the number of hooks retrieved during the random sample periods to the total fishing time to estimate the total number of hooks in the set.

### **Temporal Subsample - Total Hook Count Calculation:**



$$\text{Total Hooks} = \frac{\text{Total \# Hooks in Sample} \times \text{Total Time (min) of Set}}{\text{Minutes Elapsed During Hook Count Sample}}$$

**Gear Segment** – A single skate, pole, cable, or other unit of gear.

### ***Number of gear segments in a set***

Determining the number of **gear segments** in a set depends upon how a vessel is fishing. Many small vessels set and haul the same gear segments multiple times in the same set. When this fishing pattern is observed, gear should be counted each time it is set and retrieved. The number of gear segments is the total number set rather than simply the total amount of gear being used to fish. (For example, if a segment of gear is set and retrieved 5 times in the same set, that piece of gear is counted 5 times rather than once when determining the total amount of gear in the set.)

### ***Multiple Retrievals in a Set***

There are two options for counting the number of gear segments in a set when a vessel hauls and sets the same gear segments multiple times:

1. Count each gear segment retrieved, accounting for gear that is lost (not retrieved).
2. Count each time a gear segment is set.



**Tip\*** To keep track of the total amount of gear in the set, tally the number of sets or retrievals on the back of the Fixed Gear Catch Form with the raw data.

### *Single Retrieval per Set*

Some vessels will set the gear one time for a defined set. If the gear is set and retrieved only one time in a set, the options for counting gear segments are similar to options used on traditional longline and pot vessels:

1. Count hooks/traps while they are being baited.
2. Count hooks/traps while the gear is stored on the vessel.
3. Count hooks/traps during gear deployment (the setting of gear).
4. Count hooks/traps while gear is being retrieved. This can be extremely difficult on hook and line vessels, 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 due to available light.

Unlike on larger, traditional longline and pot vessels discussed in Chapter 5, “Fixed Gear Sampling”, counting hooks or traps during the retrieval of an unsampled set is not typically an option on small vessels because the Observer will generally sample all hauls. (See Chapter 5, “Fixed Gear Sampling” for more information on determining the amount of gear in a set on longline vessels.)

## **V. Sampling Small Fixed Gear Vessels**

### **Tally Periods**

Tally sampling 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 all individuals in a pot.

Small Fixed Gear vessels generally haul very little gear per day and catch less than 1000 lbs of fish per day. For that reason, **hauls are 100% tally sampled.**

**NOTE:** If you are on a vessel that must be subsampled, see Chapter 5, “Fixed Gear Sampling”.

### **Where to Tally Sample**

The tally station is where the observer stands to count organisms as the groundline or pot is being retrieved. The tally station should be no more than six meters from where the fish are landed and the observer should have a clear line of sight to the fish as they are coming aboard. From the tally station, observers must be able to clearly identify fish, including drop-offs.

### **Equipment Needed**

A Fixed Gear Catch form, one or two thumb counters, and a clipboard will be needed. Since the gear is 100% tally sampled on these vessels, weights and biological samples are generally taken throughout the tally sample period. Therefore, scales, buckets or baskets, and a length-frequency strip will also be needed.

### **Tallying**

When tally sampling, everything that comes up on the line must be counted. All individuals should be recorded to species. .



**Tip\*** Always tally the same number of gear units for retained and discarded species. (For example, **do not** tally 1/3 of a set for retained species and the whole set for discard species.)

- **Species similar in appearance** - Some species, such as Shortraker and Rougheye rockfish, are similar in appearance and cannot be distinguished unless they are

**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 creature.



in hand. For these species, tally as a mixed group such as Rougheye/Shortraker or Shortspine/Longspine

- **Drop-offs and Predation** - If any individual that *would have been retained* drops off the line or is preyed upon, it should be tallied as such.
- **Small individuals of retained species** - Often, vessels will discard individuals of the target species if they are below a certain size. These should be tallied independently of other discarded individuals of that species, including discards resulting from drop-offs or predation.

### **Weighing on Small Fixed Gear Vessels**

The order of preference for the type of weight used on fixed gear vessels is:

1. Extrapolated or actual weight from individuals in same set
2. Extrapolated weight from individuals in “like” sets
3. Visually estimated weight
4. Fish ticket weight (retained individuals and individuals discarded due to drop-off or predation ONLY)

The exception is Pacific halibut for which the PHLB Length/Weight Conversion chart can be used.

**NOTE:** If the observer is unable to obtain samples of retained fish for average weights, visual estimates are preferred over the use of fish ticket weights.

### ***Extrapolated and Actual Weights***

On many small boats, it is possible to weigh everything that is caught. When it is not possible to weigh everything in a tally sample, average weights can be used to determine to

the total sample weight.. In cases where the vessel operator



**Tip\*** Collect, at minimum, 15 individuals from non-target species for average weight calculations. Count and weigh at least 50 individuals from target species.

is reluctant to allow the observer to handle retained catch, it may be possible to weigh a subsample of the retained fish. Instances where average weights should be used for discarded catch include drop-offs and fish discarded due to predation. Also, when large numbers of a single species are discarded, an average weight can be obtained from a subsample and applied to the total tally.



**Tip\*** Fish carcasses or skeletons should not be weighed when determining tally sample weights. The sample weight should be an estimate of whole fish weight based on the number of fish that were caught.

### **Random Sampling when Collecting Individuals for Average Weights**

The preferred method for collecting individuals for average weight determinations on small fixed gear vessels is to use a systematic sampling frame with a random start, and to collect individuals throughout the entire set.

Individuals may be collected systematically by one of the following methods:

- Systematically select individuals throughout entire set.
- Weigh all individuals from systematically selected gear units throughout set.

### **Systematically Sampling Individuals Throughout Entire Set**

1. Systematically collect a portion of the total number of individuals.
  - Estimate the total number of individuals that will be caught in the set.
  - Divide the estimated total by the number of fish needed (at least 15) to determine the collection frequency (n).
  - Collect every n<sup>th</sup> individual beginning with a randomly chosen starting point.
2. Weigh the collected individuals for average weight determinations.

### **Example of Systematically Sampling Individuals**

1. The observer estimates that 100 kelp greenling will be caught in the set.
2. The observer wants to collect 20 kelp greenling to use for average weight determination.
3. The observer determines the frequency to collect kelp greenling by dividing 100 by 20 to get a collection frequency of 5.
4. The observer randomly chooses a number between 1 and 5 from a random number table and gets the number 4. Starting at the beginning of the set, the observer collects the 4<sup>th</sup> fish and then every 5<sup>th</sup> kelp greenling after that (9, 14, 19, etc.) throughout the entire set.
5. The observer weighs the kelp greenlings and divides the weight by the actual number of fish collected to calculate the average kelp greenling weight.

### **Systematic Sampling of Gear Segments**

This method works well when a species is caught consistently throughout the entire set and when the gear can be divided into segments, such as sticks, traps, or strings of traps.

1. Systematically select gear units throughout entire set.
  - Estimate the total number of gear segments in the set.
  - Estimate the number of gear segments needed to obtain the number of individuals desired for the average weight sample.
  - Divide the estimated total gear segments by the number of gear segments you wish to sample to determine the collection frequency ( $n$ ).
  - Collect all individuals from every  $n^{\text{th}}$  gear segment, beginning with a randomly chosen starting point.
2. Weigh the collected individuals for average weight determinations.

### **Example of Systematically Sampling Gear Segments**

1. The observer estimates that 150 traps will be included in the set.
2. The observer estimates that 250 cabezon will be caught. To obtain approximately 50 cabezon for an average weight sample,  $1/5$  of the gear, or 30 traps, should be sampled.
3. The observer determines the frequency to sample traps by dividing 150 by 30 to get a collection frequency of 5.
4. A number between 1 and 5 is randomly chosen from a random number table and the number 2 is selected.
5. Starting at the beginning of the set, the observer collects all cabezon from the 2<sup>nd</sup> trap, and then collects all cabezon from every 5<sup>th</sup> trap after that (7, 12, 17, 22, etc.).
6. The observer weighs the cabezon and divides by the number of cabezon collected.

### *Extrapolated Weight from “Like” Sets*

There may be one or more species that were impossible to collect individuals to use for average weights. This usually happens if only a few individuals of a given species is caught. If this occurs, use average weights of the same species from a similar haul.

### *Visual Estimates of Large Organisms*

On many small boats, there isn't space for a platform scale and the observer will only be able to weigh organisms up to 25 lbs on hanging scales. When an organism is too large to weigh, a visual estimate is made. Visually estimated animals are not recorded on the Species Composition Form; they will be recorded on the Catch Form only. Large organisms commonly encountered on small boats include sharks and skates.

**For example:** Large skates will usually break the gangions when they leave the water. This means the observer will not be able to get a weight for large skates and using an average weight from smaller skates would be biased. Therefore, taking a visual estimate of the weight is the best option.

### *Visual Estimates for Retained Species*

If possible, observers should actually weigh retained species or get a subsample of retained individuals for average weights. However, on some live fish vessels, it may not be possible to obtain a random sample of retained fish because the vessel operator will not allow the observer to handle the live catch or due to physical constraints aboard the vessel. In these cases, it may be necessary to use visual estimates. There are 2 options for making visual estimates of retained species:

- Visual estimates may be recorded for each retained individual.

- The observer may make a visual estimate of the average weight of each retained species and apply the visually estimated average to the actual tally to extrapolate a weight estimate.

NOTE: If visual estimates are used for retained catch, individuals of the same species discarded due to drop-off or predation must also be visually estimated.



### ***Fish Ticket Weights (Retained Fish 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:



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

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



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

### *Pacific Halibut*

Pacific halibut are not commonly encountered on most small fixed gear vessels. For specific instructions regarding Pacific halibut, see Chapter 5, “Fixed Gear Sampling”.

### **Tally Sampling Review**

1. Count each individual by species that comes up on the line or in the pot, including drop-offs.
2. Use hand counters or hash marks to count species. Document tally sample on the back of the Fixed Gear Catch Form.
3. Collect and weigh individuals of each species in tally sample and record weights on back of Fixed Gear Catch Form.

## **VI. Documenting the Tally Sample**

The tally sample is documented on the back of the Fixed Gear Catch Form 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 noted earlier, the same 2 rules apply for catch categories on fixed gear vessels as trawl vessels.

- Retained and discarded individuals are always in separate catch categories.
- All individuals with the same weight method and sample method are recorded in the same catch category.\*

There are only four weight methods that can be used for Catch Categories on Fixed Gear Vessels. They are:

*Weight method 4 - Visual Estimate*

*Weight method 6 - Other*

*Weight method 9 - Pacific Halibut Length/Weight*

*Weight method 13 - Tally Sample*

**Remember, no matter which weight method is used, actual counts must be obtained for all individuals in the sample.**

#### ***Weight Method 4 - Visual Estimate***

This weight method is used for species that have a count but ONLY a visual weight. When a visual estimate is used, there is no species composition sample associated with the catch category. Therefore, the catch category should be assigned the most descriptive name possible. (Example: Visually estimated skates should be recorded under the code SKAT.) For a list of PacFin catch category codes, see Appendix F: Catch Categories and Target Strategies on page 22.

#### ***Weight Method 6 - Other***

This weight method should never be intentionally used. It creates confusion for end users and debriefers because it does not indicate how the weight was actually derived. If this method is used, document what happened in the Observer Logbook and on the paperwork.

#### ***Weight Method 9 - Pacific Halibut Length/Weight***

This weight method is ONLY used for Pacific halibut. Actual lengths or visually estimated lengths can be used.

#### ***Weight Method 13 - Tally Sample***

This weight method is used for species that are counted AND an actual, extrapolated, or fish ticket weight has been obtained.

### *Fixed Gear Catch Form Instructions*

The Fixed Gear Catch Form (See Figure 6-7) is used to document sample weight and other catch information. A Catch Form should be completed for all hauls.



**Tip\*** The “weight” column is filled out differently on the Fixed Gear Catch Form than on the Trawl/Prawn Catch Form. For Fixed Gear, the weights recorded are samples weights; for Trawl/Prawn, the weights represent total weight estimates for the catch category.

- **Haul Number** – Record the number of the haul.
- **Date** – Record the date as MM/DD/YY.
- **Trip Number** – Record the trip number generated by the database system.
- **USCG #** – Record the USCG vessel number (if they have one.) If the vessel does not have a USCG number, leave this field blank.
- **Catch #** - 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 from **R** – Retained or **D** – Discarded catch.
- **Catch Category** – Record, in capital letters, the catch category sampled in the 3 or 4-letter PacFin code. For a list of PacFin catch category codes, see Appendix F: Catch Categories and Target Strategies on page 22.

- **Sample Weight** – Record the weight of the tally sample for the catch category in pounds.



**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).

- **Numbers of Fish** – You **MUST** record the total number of fish in the catch category if Weight Method 4 – Visual Estimate or Weight Method 9 – Length/Weight conversion is used. Do not record the number of fish for weight method 13 – Tally Sample.
- **Hooks/Pots Sampled** – Record the number of hooks or pots that were tally sampled.
- **Weight Method** – Document the weight method used to estimate the catch category.
  - 4 - Visual Estimate.
  - 6 - Other
  - 9 – Length/Weight Conversion (Pacific halibut only)
  - 13 – Tally sample
- **Catch Purity** – If the catch category was *sampled* for species composition, record a M - Mixed if more than one species was within the sample. Record P - Pure if there was only one species in the species composition sample.



If the catch category was *not sampled*, record a 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 skippers/crews reason for discard for unsampled (no species composition sample taken) discarded catch categories only.

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



**Tip\*** Look only at the primary reason for discard. For instance, if the vessel is not retaining Starry Flounder 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)

- **Vessel Estimate** – This column is blank on fixed gear vessels.
- **Comments** – Document anything important about each catch category.
- **Keypunch Checks** – These are required field for Sample Weight, Numbers of Fish, and Numbers of Hooks/Pots columns. Sum up the entries in each column and place the total in the corresponding keypunch box at the bottom of the form





## Sample Methods for Species Composition

There are three sample methods for species composition sampling on fixed gear vessels.



**Tip\*** Only catch categories with a weight method of 13 - Tally Sample will have species composition samples.

### *Sample Method 4 - Fixed Gear Sample*

Used for species whose weight is determined by

1. Extrapolated or actual weight from individuals in the same set.
2. Extrapolated weight from individuals in a "like" set.

### **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. Randomly collect individuals to be weighed.
2. Weigh and count individuals.

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.



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

### *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 observe the landing and be 100% confident that all fish in their tally sample are weighed at the 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 tally sample were included in the fish ticket weight.

***Using Delivery Weights for Average Weights of Talled Individuals***

1. 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.
2. Calculate average weight of species by:



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

3. For each haul, calculate the weight of retained species:



$$\text{Species Wt By Haul} = \text{Average Species Wt} \times \text{\# of Individuals Caught in Haul}$$

***Species Composition Form Instructions***

The species composition information is recorded on the Species Composition Form (See Figure 6-8).

- **Haul Number** – Record the number of the haul that the sample came from.
- **Date** – Record the date as MM/DD/YY.

- **Trip Number** – Record the trip number generated by the database system.
- **Coast Guard Number** – Record the USCG vessel number (if they have one.) If the vessel does not have a USCG number, leave entry field blank.
- **Catch #** - Record the number that corresponds to the catch category on the Catch Form.
- **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
- **# of Baskets** - This field is blank on fixed gear vessels. (Species Composition form v.4 does not have this column.)
- **Catch Category** – Record, in capital letters, the catch category in the 3 or 4-letter PacFin code. For a list of PacFin catch category codes, see Appendix F: Catch Categories and Target Strategies on page 22.
- **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 species 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).

- **R or D** – Record whether the catch category sampled was **R** – Retained or **D** – Discarded.

- **Species** – Record the common name of the 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. See Appendix A: Fish Species List and Codes on page 2, Appendix B: Invertebrate Species List and Codes on page 14, Appendix C: Marine Mammal and Sea Turtle Species List and Codes on page 17, and Appendix D: Seabird Species List and Codes on page 19 for a list of species.
- **Species Code** – Record the species code number of the corresponding species. This can be done prior to entering and not on deck. See Appendix A: Fish Species List and Codes on page 2, Appendix B: Invertebrate Species List and Codes on page 14, Appendix C: Marine Mammal and Sea Turtle Species List and Codes on page 17, and Appendix D: Seabird Species List and Codes on page 19 for a list of species.
- **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**).
- **Reason for Discard** – Record the skippers/crews reason for discard for unsampled (no species composition sample taken) discarded catch categories only..
  - 11 - Incidental/Accidental
  - 12 - Drop-off
  - 13 - Market
  - 14 - Other
  - 15 - Predation
  - 16 - Regulation
  - 17 - Safety



**Tip\*** Look only at the primary reason for discard. For instance, if the vessel is not retaining Starry Flounder 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)11 - Incidental/Accidental

- **Basket Weight and Number** – Use this column on deck to document numbers and weights. Be sure to fill the “Sample Weight” column in with the total weight of the species in the sample only!



## VII. Determining OTC on Fixed Gear Vessels

There are only two ways to calculate OTC on fixed gear vessels.

### Weight Method 8 – Extrapolation

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



$$\text{OTC} = \frac{\sum \text{All Catch Category Wt on Catch Form} \times \text{Total \# Hooks in Set}}{\text{\# of Hooks Sampled}}$$

**NOTE:** When GEAR IS LOST, *Weight Method – 8* Extrapolation must be used to calculate OTC in order to account for the unsampled (lost) gear. An extrapolation for lost gear is made when a gear segment, such as a stick 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.



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

## VIII. Recording Fishing Effort Information

The 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, which is separated into two sections (See Figure 6-9 and (See Figure 6-11).

**EFP** -Permits that allow fishing activities that would otherwise be prohibited. The permits are usually written by the states and must pass a vote by the PFMC.

**Question:** What's a trip?

**Answer:** A trip is a fishing activity that typically results in the completion of a fish ticket (landing receipt). The exception is when the vessel fished but did not retain any species.

## **Trip Form Instructions**

- **Fishery Type** – Circle the fishery type the vessel participated in. (**LE** = Limited Entry, **OA** = Open Access, or **EFP** = Exempted/Experimental Fishing Permit)..
- **Page** – All Trip Forms are numbered together by trip. (If there are 5 trip forms on one trip, number them 1 - 5)
- **Trip Number** - This is an automatically generated number by the database. Complete this field once the trip has been started in the database.



**Tip\*** Some observers find it easier to start a trip prior to leaving port. Doing this allows the observer to fill in the Trip Number while at-sea rather than when the observer returns to port.

- **Observer Name** - Record your first and last name.
- **Year** - Record the year as YYYY.
- **USCG #** - Record the USCG vessel number. Request this six or seven digit number from the vessel skipper or a coordinator. **If the vessel does not have a USCG number, leave entry 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.
- **Vessel Name** - Record the full name of the vessel.

- **Partial Trips** - Check the box if the trip included more days than were observed. (Fish ticket includes unobserved catch.)



**Tip\*** Partial trips usually occur when a vessel fishes multiple day trips in a row.

- **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.**



**Tip\*** Do not guess or make an assumption to complete this field. If you do not know how many days the trip lasted, leave column blank.

- **Fishery** - Record the name of the fishery the vessel was selected for..

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

- **Vessel Logbook Number (from "WOC Groundfish Logbook" Only)** - This column is left blank for fixed gear vessels. However, vessel logbooks may be used. Record the name of the logbook and the page number used to record the information in the Trip Notes.
- **Skipper's Name** - Record the first and last name of the skipper.

- **Observer Logbook #** - Record the number on the front page of the Observer Logbook used to document information about the trip.
- **Departure Date/Time** - Document the date and time the vessel left port.
- **Departure Port** - Document the port the vessel departs from.
- **Landing Date/Time** - Document the date and time the vessel returns to port.
- **Landing Port** - Document the port the vessel returns to.
- **Fish Ticket Numbers** - Obtain the numbers of all landing receipts (fish tickets) from the vessel skipper, the port biologist, or the state liaison. **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 will be **C** - for California deliveries, **O** - for Oregon deliveries, or **W** - for Washington deliveries.
- **Date** - Document the date in MM/DD/YY of fish ticket issuance.
- **Haul/Set Number** - Number hauls consecutively, starting with 1 for each trip.

**Question:** Why are observers required to record Fish Ticket Numbers?

**Answer:** 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).



**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.
- **Volume of Codend or Trawl Alley/Bin** - This column is left blank on fixed gear vessels.
- **Density** - This column is left blank on fixed gear vessels.
- **Weight Method** - Enter the number for the weight method used to obtain the observer total catch estimate. The weight methods that may be used for fixed gear OTC's are:
  - 8 - Extrapolation
  - 11 - Retained + Discarded
- **Total Hooks/Pots** - Record the total number of hooks or pots in the set. This number should include lost gear.
- **Gear Performance** - Record one of the following codes to document gear performance.
  - 1 - No problem
  - 2 - Pot was in the 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 in the comments section
- **Beaufort Scale** - This is not a required field at this time. Do not fill in unless otherwise directed by program staff.
- **Comments** - Document any information that is important about the haul.
- **OTC Keypunch Check** - Sum the OTC's for an entire trip and record total weight of trip in the OTC keypunch check box (If there is more than one Trip Form, sum total catch estimates of ALL hauls to obtain keypunch check.).

**Total Hooks/Pots**

Always record the number of pots /hooks set, not retrieved in this column. If gear is lost, use gear performance code 5 and document how much gear is lost in the comments sections.



## Trip Form - Haul Locations

(See Figure 6-11)



**Tip\*** 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 1 for each trip.
- **Start and End Date** - Document the date the haul was set and the date the haul was retrieved as MM/DD.
- **Start and End Time** - Document the Pacific Standard Time (PST) when the first hooks were put into the water for the start time. **Document the time when the last hook is brought on board during retrieval for the end time.**



**Tip\*** When additional positions and depths are recorded, they are noted in the lines below the start and end times for the corresponding haul. The times entered in the additional lines should fall between the start and end times, which are entered in the first two rows for the haul.

### Loran

If observers are on a vessel that is using Loran C, document the Loran coordinates. Send these to the coordinator in an Excel spreadsheet and they will return the latitude and longitude positions.

- **Start and End Latitude** - Document the latitude (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 the it's 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 6-10).

- **Start and End Longitude** - Document the longitude (in degrees, minutes, 1/100th of a minute) that the haul was set and retrieved.



Figure 6-10: GPS Showing Latitude and Longitude

**Fathoms**  
1 fathom = 6 feet

- **Depth** - Document the fishing depth in **fathoms**.
- **Gear Type** - Enter a code for the gear type based on the configuration of the gear rather than how the gear is being fished. (Example: If the vessel is using a fishing pole while under way (trolling), the gear type would still be recorded as 8 - Pole.)
  - 6 - Longline or Set net
  - 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

**\*\*If the fishing vessel is not using one of the above gear types, this is most likely the wrong section of the manual. Please refer to Chapter 4, “Trawl Sampling”.**

- **Target Strategy** - Enter the vessel's target strategy. Refer to Appendix F: Catch Categories and Target Strategies on page 22.

TRIP FORM - HAUL LOCATIONS

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

Trip Notes:

Figure 6-11: Trip Form – Hauls Location



## **IX. Biological Sampling on Nearshore Fixed Gear Vessels**

The species encountered in the nearshore fishery are very different than those in most other fisheries on the West Coast. Therefore, the biological sampling protocols for nearshore vessels are specifically designed to capture data from this unique species assemblage. (See Chapter 7, “Biological Sampling” for more instructions.) Observers do not take otoliths from nearshore discarded individuals, as they are usually released alive. Sexes are determined by external features only, when applicable.

**REMEMBER:** Only collect biological data from **discarded individuals**, and only collect data from the requested species listed below.

Take biosamples from ALL discarded individuals of the following species:

All rockfish species <sup>L</sup>	White croaker <sup>L</sup>
Lingcod <sup>L</sup>	Rock greenling <sup>L</sup>
Kelp greenling <sup>L,S</sup>	California scorpionfish <sup>L</sup>
Cabazon <sup>L</sup>	California sheephead <sup>L,S</sup>

**L = Length**

**S = Sex**

NOTE: Discard is generally released alive, therefore base sex assignment on visual characteristics only!!

If it appears that a single species will be discarded in large numbers (more than 30 to 40 in a single set), a systematic sampling scheme with a random starting point is a recommended for sampling fewer fish.

## **X. Trip Discard Form Instructions**

### **Dead Fish in a Live Fish Market**

When vessel operators are selling to live fish markets, they generally do not want to land dead fish. Quotas for nearshore fisheries are relatively small, sometimes as low as 100 pounds for a 2-month period for a particular species. Dead fish have a small fraction of the value of live fish, and in some cases, buyers of live fish will not buy dead fish at all. When fish die in the live tank some vessel operators will keep them for personal use, while others may discard them before making a delivery. Fish retained for personal use may or may not be recorded on the fish ticket. If dead fish are brought in to port, they should be recorded in observer data as retained catch. If fish are discarded prior to the end of the trip, they should be recorded as discarded catch.

### **Discard That Cannot Be Attributed to a Specific Haul**

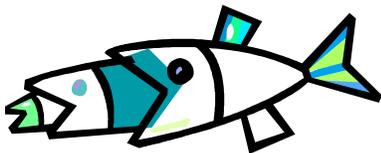
If there were multiple hauls in a fishing trip and discard occurs at the end of the trip, it is unlikely that the observer will be able to attribute the discard to a specific haul. In instances where the discarded species was only caught in one particular haul, the discard can be applied to that haul. Otherwise, discard that cannot be attributed to a specific haul is recorded on the Trip Discard Form.

### ***Trip Discard Form Instructions***

The Trip Discard Form is not entered into the database system. Document the information from the Trip Discard (See Figure 6-12) in the Trip Notes on the Trip Page in the database.

- **Trip Number** - Record the trip number generated by the database system.

- **USCG #-** Record the USCG vessel number (if they have one.) If the vessel does not have a USCG number, leave entry field blank.
- **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.
- **# Of Fish** - Document the number of fish discarded (if known.)
- **Weight Method** - Document the weight method used to estimate the species weight.
  - 1-Actual Weight
  - 2-Bin/Trawl Alley Estimate
  - 3-Basket Volume Determination
  - 4-Visual Estimate
  - 5-OTC-Retained
  - 6-Other
  - 7-Vessel Estimate
  - 8-Extrapolation
  - 9 - PHLB Length/Weight
- **Discard Reason** - Record the skipper's/crew's reason of discard for each species.
  - 11 - Incidental/Accidental
  - 12 - Drop-off
  - 13 - Market
  - 14 - Other
  - 15 - Predation
  - 16 - Regulation
  - 17 - Safety





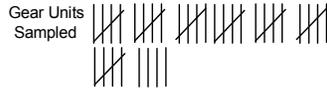
## XI. Examples

### Stick Gear Example

Date: 07/04

Official Total Catch Calculations

10 sticks pulled  
multiple times



Average Soak Time/Gear Unit: 30 minutes

# hooks/gear unit: 3

**Retained**

**Discarded**

5.0 lbs, 2.5 lbs, 2.5 lbs, 3.0 lbs, 3.5 lbs,  
2.75 lbs, 2.75 lbs, 2.0 lbs

Cabezon

1.75 lbs, 2.0 lbs, 4.0 lbs, 1.25 lbs (regs)

1.75 lbs, 1.0 lbs

Kelp Greenling

1.25 lbs

Black and Yellow RF

.75 lbs, 1.5 lbs, .75 lbs, .75 lbs, .75 lbs,  
.75 lbs, .75 lbs (regs)

3.0 lbs, 3.25 lbs, 2.25 lbs, 2.25 lbs, 3.75  
lbs, 1.89 lbs

Grass RF

1.0 lbs, 2.6 lbs (regs)

1.0 lbs

Kelp RF

Swell Shark

4.5 lbs

Blue RF

2.7 lbs, .89 lbs, 2.0 lbs, 3.3 lbs (market)

Lingcod

12.0 lbs, 9.0 lbs (regs)

Gopher

.50 lbs, 2.1 lbs (regs)

Sunstar

1.0 lbs, .5 lbs, .5 lbs

Depth

36	14.467	125	44.114	10	0935
36	14.449	125	44.121	12	1030
36	14.460	125	44.128	11	11.30
36	14.489	125	44.138	10	1250

Total Hooks in Set = 39 sticks X  $\frac{3 \text{ hooks}}{\text{stick}}$  = 117 hooks

OTC = Retained + Discarded = 45.39 lbs + 57.59 lbs = 102.98 lbs

**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**

TRIP FORM - HAUL LOCATIONS

Trip Notes:

Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Target Strategy
		Month	Day		Degrees	Minutes	Degrees	Minutes			
1	Start	07	04	0935	36	14 47	125	44 11	10	9	CBZN
	End	07	04	1250	36	14 49		44 14	10		
1	Start	07	04	1030	36	14 45		44 12	12	9	CBZN
	End	07	04	1130	36	14 46	↓	44 13	11		
	Start										
	End										
	Start										
	End										
	Start										
	End										
	Start										
	End										
	Start										
	End										
	Start										
	End										
	Start										
	End										
	Start										
	End										

**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**

Haul #

**FIXED GEAR CATCH FORM\***

Page 1 of 2

Date  Trip Number  USCG #

Catch #	R or D	Catch Category	Sample Weight	#'s of Fish Req. for wt. methods 4, 6, 9	# Hooks/Pots sampled by catch category	Weight Method	Catch Purity	Discard Reason	Vessel Estimate	Comments
1	R	ZMIS	45.39		117	13	M			
2	D	ZMIS	57.59		↓	13	M			
Keypunch Checks			102.98		234					

\*Gear Types 6, 7, 8, 9, 10, 15, 16

January 2004  
Fixed Gear Catch Form v. 4

**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**

Haul #

**SPECIES COMPOSITION FORM**

Page 2 of 2

Date

Trip Number

USCG #

Catch #	Catch Category	Sample Method	Basket #	KP Weight	R or D	Species	Species Code	Sample Weight	Fish #	Discard Reason	Basket Weight	#	Basket Weight	#								
				KP Number																		
1	ZMIS	4		45.39	R	Cabezon	689	24.0	8													
				18																		
2	ZMIS	4		57.59	D	Cabezon	689	9.0	4	16												
				26																		

Trawl Sample Methods : 1-Whole haul species 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

## Rod and Reel Example

Official Total Catch Calculations

Gear Units Sampled		Average Soak Time/Gear Unit:	
			# hooks/gear unit: 6
Set: 38 21.59	120 16.478	0730	50 FEET (8 fathoms)
Up: 38 21.79	120 16.482	1030	

**Retained**

**Discarded**

Black and Yellow RF

2 @ 1.5 lbs	1 @ .75 lbs	
1 @ .75 lbs	2 @ 1.75 lbs	
1 @ .75 lbs	1 @ .75 lbs	(regs)
1 @ .75 lbs	1 @ .75 lbs	

Vermillion RF

Gopher RF

Lingcod

1 @ 2.75 lbs	1 @ 2.25 lbs	
1 @ 3.75 lbs	1 @ 2.25 lbs	
1 @ 3.50 lbs	1 @ 4.50 lbs	(regs)
1 @ 2.00 lbs	2 @ 6.50 lbs	
1 @ 4.00 lbs	1 @ 7.00 lbs	

Cabezon

2 @ 1.75 lbs	
1 @ 1.25 lbs	
1 @ 1.00 lbs	
1 @ 1.50 lbs	(regs)
1 @ 1.00 lbs	

Kelp Greenling

Total Hooks in Set = 59 rods ~~61~~ hooks = 354 hooks  
 stick

OTC = Retained + Discarded = 40.23 lbs + 52.75 lbs = 92.98 lbs



**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**

Haul #

**SPECIES COMPOSITION FORM**

Page 2 of 2

Date

Trip Number

USCG #

Catch #	Catch Category	Sample Method	Basket #	KP Weight	R or D	Species	Species Code	Sample Weight	Fish #	Discard Reason	Basket Weight	#	Basket Weight	#
				KP Number										
1	ZMIS	5		40.23	R	Black N Yellow RF	355	11.05	12					
				21		Vermillion RF	331	5.8	2					
						Gopher RF	364	2.38	3					
						Lingcod	603	21.0	4					
2	ZMIS	4		52.75	D	Black N Yellow RF	355	7.75	10	16				
				27		Cabezon	689	38.5	11	16				
						Kelp Greenling	392	6.5	6	16				

Trawl Sample Methods : 1-Whole haul species 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



**CHAPTER 6**  
**Fixed Gear Sampling on Small Boats**