NOAA FISHERIES

National Marine Fisheries Service
Northwest Fisheries Sience Center

Fisheries Observation Science Program



2020 Training Manual

West Coast Groundfish

Observer Program

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West Coast Groundfish Observer Program

2020 Training Manual

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West Coast Groundfish Observer Program

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TABLE OF CONTENTS

West Coast Groundfish Observer Program i
- Office Locations ii
- WCGOP Staff Locations and Contact Details iii

Introduction to the West Coast Fishery: 1-1
- Commonly Used Abbreviations 1-2
- Introduction 1-3
- U.S. Fisheries Management 1-3
- Pacific Coast Fishery Management 1-3
- Management Measures to Limit Fishery Access 1-3
- Data Used for Fishery Management 1-6
- West Coast Trawl Catch Share Program 1-7
- Fishing Vessel Descriptions and Terminology 1-9
- Trawl Gear Descriptions and Fishing Strategy 1-11
- Fixed Gear Descriptions and Fishing Strategy 1-15
- Glossary 1-23

The West Coast Groundfish Observer Program 2-1
- Introduction 2-2
- WCGOP Management Structure 2-2
- Observer Qualifications 2-4
- WCGOP Non-Catch Share Sampling Plan 2-5
- WCGOP Observers 2-6
- WCGOP Training Policy 2-8
- Statement of Nondisclosure 2-10

Observer Basics 3-1
- Introduction 3-2
- General Data Collection 3-2
- Duties and Priorities 3-2
- Introduction to Random Sampling Theory 3-3
- Catch Sampling 3-4
- Data Collection and Documentation 3-8
- Data Forms 3-8
- Observer Logbooks 3-10
- Additional Policies 3-12
- Reason for Discard Study Guide 3-24

Trawl Sampling 4-1
- Introduction 4-2
- Effects of Fleet Diversity on Sampling 4-2
- Data Collection on Trawlers 4-3
- Fishing Effort Information 4-3
- Observer Total Catch Estimates (OTC) 4-9
- Sampling Catch 4-10
- Weight Methods for Estimating Catch Category Weights 4-12
- Collecting and Documenting Species Composition 4-18
- Using the Trawl Deck Form 4-20
- Trawl Study Guide 4-24

Trawl Complications 5-1
- Introduction 5-2
- Working Smarter, Not Harder 5-2
- Trawl Complications 5-2
- Sampling in the Pink Shrimp Fishery 5-4
- Additional Policies and Forms in the Trawl Fisheries 5-6
- Sampling on Shoreside Hake/ Midwater Rockfish and Mothership Catcher-Vessels 5-13
- Trawl Example: Catch Shares 5-19
- Trawl Example: Non-Catch Shares 5-31

Fixed Gear Sampling 6-1
Introduction 6-2
Diversity of Fleet and Effects on Sampling 6-2
Duties and Priorities on Fixed Gear Vessels 6-2
Data Collection on Fixed Gear Vessels 6-3
Sampling Fixed Gear 6-5
Using the Fixed Gear Deck Form 6-11
Determining OTC on Fixed Gear Vessels 6-14
Recording Fishing Effort Information and Total Catch Estimates 6-15
Fixed Gear Complications 6-18
Examples: Longline 6-23
Examples: Pot 6-27
Fixed Gear Study Guide 6-31

Fixed Gear Sampling on Small Boats 7-1
Introduction 7-2
Data Collection on Small Fixed Gear Boats 7-2
Defining a Set 7-2
Sampling Small Fixed Gear Vessels 7-5
Documenting Tally Samples 7-7
Completing the Fixed Gear Deck Form 7-8
Examples 7-9
Fixed Gear Chapter 7 Study Guide 7-18

Biological Sampling 8-1
Introduction to Biological Sampling 8-2
Types of Biological Data Collected 8-2
Biological Sampling Procedures 8-3
Random Sampling 8-12
Data Collection Priorities 8-13
Documenting Biological Samples 8-14
Biological Data Collection Forms 8-22

Protected Resources 9-1
Introduction to Protected Resources 9-2
Observers and Protected Resources 9-3
Protected Resource Species Sampling 9-3
Documenting Samples 9-14

Health and Safety Information 10-1
Introduction 10-2
General Health and Safety 10-2
Equipment 10-11
Vessel Orientation and Safety Checklist 10-17
Emergencies on Board 10-25
Safety Regulations 10-27

Observer Life 11-1
Introduction 11-2
First Days 11-2
Communication and Contacting Vessels 11-2
Before and After a Trip 11-3
Gear 11-4
Data Collection and Data Entry 11-6
Debriefing 11-6

Gear 12-1
Gear Overview 12-3
Sampling Gear 12-7
Safety Gear 12-11
Marel M-1100 Marine Scale 12-26
Computers 12-33
PSMFC E-mail Account 12-38
Gear Pick Up: I'm An Observer Now! 12-39

Reporting a Problem 12-40
Gear Check-In Procedure 12-43
Shipping gear 12-44

Regulations and Compliance 13-1
Overview of Federal Groundfish Regulations 13-2
Observer Role In Regulatory Compliance 13-2
Regulations Applying to Observers 13-4
Partial Summary Of Federal Regulations 13-7
Observer Program regulations for the Catch Share fishery and Mothership catcher vessels 13-8
Observer Program regulations for the Limited Entry Fixed Gear and Open Access fisheries 13-10
Regulations Concerning Shark Finning 13-12
Regulations Concerning Taking of Marine Mammals 13-12
Observer Procedures During Law Enforcement Boardings 13-13
Coast Guard Role in Homeland Security 13-14
Observer Health and Safety 13-14
Marine Pollution (MARPOL) Regulations 13-15

Database 14-1
Introduction 14-3
OPTECS Sync/Upload 14-3
System Requirements and Access 14-4
Navigation 14-6
Data Entry 14-6
Trip Module 14-8
Trip Error Report 14-15
Trip Scans 14-16
Observer Module 14-17
Evaluation Module 14-21
Observed Vessels 14-22
Vessel Module 14-23
Vessel Selection Module 14-26
Waiver Module 14-26
Admin – Lookups Module 14-27
Common Problems and Solutions 14-28

Appendix: A-1
Fish Species List and Codes A-3
Invertebrate Species List and Codes A-7
Marine Mammal and Sea Turtle Species List and Codes A-9
Sea Turtle Species Codes A-9
Seabird Species List and Codes A-9
Miscellaneous List and Codes A-10
Catch Categories Code Lists and Target Strategies A-11
Minor Rockfish Species A-14
Office Locations A-16
Random Number Table A-19
Weights, Measures, and Conversions A-20
Injury Key for Trawl Caught Pacific Halibut A-22
Injury Key for Pot Caught Pacific Halibut A-23
Injury Key for Hook & Line Caught Pacific Halibut A-24
Radio Communications A-25
Processors A-27
Latitudinal and Depth Distribution of Groundfish Adult Species A-31
Bedbug Protocol A-35
Paperwork Reduction Act A-36
Useful Websites A-37
Vessel Monitoring System (VMS)* A-39
Electronic Monitoring EFP A-40
IFQ Species by Location Table A-42
Beaufort Scale A-44
Glossary A-45

Acknowledgements A-50



Introduction to the West Coast Fishery:

TABLE OF CONTENTS

Commonly Used Abbreviations . . . 1-2

Introduction . . . 1-3

U.S. Fisheries Management . . . 1-3

Pacific Coast Fishery Management . . . 1-3

Management Measures to Limit Fishery Access . . . 1-3
- WOC Groundfish Fishery . . . 1-3

Data Used for Fishery Management . . . 1-6
- Vessel Logbooks . . . 1-7
- Fish Tickets . . . 1-7
- Port Sampling Data . . . 1-7
- Observer Data . . . 1-7

West Coast Trawl Catch Share Program . . . 1-7
- Shoreside Individual Fishing Quota Sector . . . 1-7
- At-Sea Mothership and Catcher-Processor Sectors . . . 1-8

Fishing Vessel Descriptions and Terminology . . . 1-9
- General Vessel Anatomy and Terminology . . . 1-9

Trawl Gear Descriptions and Fishing Strategy . . . 1-11
- Trawl Gear . . . 1-11
- Trawl Gear Basics . . . 1-11
- Types of Trawl Nets . . . 1-12
- Fishing Strategy . . . 1-13
- Safety Concerns on Trawlers . . . 1-13
- Trawler Operations . . . 1-14

Fixed Gear Descriptions and Fishing Strategy . . . 1-15
- Gear Type 10 - Fish Pot . . . 1-15
- Sablefish Pots . . . 1-15
- Gear Type 19 - Longline Gear (fixed hooks) . . . 1-15
- Gear Type 20 - Longline Gear (snap-on hooks) . . . 1-17
- Safety Concerns on Fixed Gear Vessels . . . 1-17
- Gear Type 7 - Vertical Hook and Line . . . 1-18
- Gear Type 8 - Pole/Rod and Reel Gear . . . 1-18
- Gear Type 9 - Other Hook and Line Gear Stick, Pipe, and Cable Gear . . . 1-19
- Gear Type 10 - Fish Pots/Traps . . . 1-19
- Gear Type 15 - All Troll Gear . . . 1-20
- Groundfish Troll Fishery . . . 1-20
- Gear Type 19 - Longline Gear (fixed hooks) . . . 1-20
- Gear Type 20 - Longline Gear (snap-on hooks) . . . 1-20
- Safety on Small Boats . . . 1-20
- Operations on Small Fixed Gear Vessels . . . 1-21
- Gear for Small Boats . . . 1-22

Glossary . . . 1-23

Chapter 1

Commonly Used Abbreviations

ABC: Allowable Biological Catch

ACL: Annual Catch Limit

ACT: Annual Catch Target

A-SHOP: At-Sea Hake Observer Program

BAC: Block Area Closures

BBL: The Bird Banding Laboratory of the U. S. Geological Survey

BRA: Bycatch Reduction Area

BRD: Bycatch Reduction Device

CCA: Cowcod Conservation Area

CFR: Code of Federal Regulation

CMA: Conservation and Management Act

CPR: Cardiopulmonary Resuscitation

CPUE: Catch Per Unit Effort

DOC: Department of Commerce

DTS: Dover, Sablefish, Thornyhead species complex

EEZ: Exclusive Economic Zone

EFH: Essential Fish Habitat

EFP: Exempted Fishing Permit (aka Experimental Fishing Permit)

EM: Electronic Monitoring

EPIRB: Emergency Position Indicating Radio Beacon

ESA: Endangered Species Act

FMP: Fishery Management Plan

FRAM D: Fishery Resource Analysis and Monitoring Division

GCA: Groundfish Conservation Area

HMS: Highly Migratory Species

IBQ: Individual Bycatch Quota

IFQ: Individual Fishing Quota

LE: Limited Entry

MMPA: Marine Mammal Protection Act

MPA: Marine Protected Area

MSA: Magnuson-Stevens Fishery Conservation and Management Act

MSC: Marine Stewardship Council

MSY: Maximum Sustainable Yield

NGO: Non-Governmental Organization

NMFS: National Marine Fisheries Service (aka NOAA Fisheries)

NMML: National Marine Mammal Laboratory

NOAA: National Oceanic and Atmospheric Administration

NPGOP: North Pacific Groundfish Observer Program

NWFSC: Northwest Fisheries Science Center

OFL: Overfishing Level

OLE: Office of Law Enforcement (NMFS)

OTC: Observer Total Catch

OY: Optimum Yield

PacFIN: Pacific Coast Fisheries Information Network

PFD: Personal Flotation Device

PFMC: Pacific Fisheries Management Council

PRA: Paperwork Reduction Act

PSMFC: Pacific States Marine Fisheries Commission

PST: Pacific Standard Time

RCA: Rockfish Conservation Area

TAC: Total Allowable Catch

VMS: Vessel Monitoring System

WCGOP: West Coast Groundfish Observer Program

Introduction

NOAA Fisheries is an agency within the United States Department of Commerce responsible for management of the nation's marine fisheries. This chapter will introduce the basic framework of fishery management in the U.S. and describe in further detail the current management policies that have been enacted along the Pacific West Coast.

U.S. Fisheries Management

With the passage of the **Magnuson-Stevens Fishery Conservation and Management Act (aka Magnuson-Stevens Act)** in 1976, the U.S. Government declared management authority over fishery resources located three to 200 nautical miles from U.S. shores, an area known as the Exclusive Economic Zone (EEZ). The primary goals of the Magnuson-Stevens Act were to Americanize the fishery and to implement fishery management plans (FMPs) that maintain optimum yield (OY) of the resource while simultaneously rebuilding depleted stocks. Additionally, the Magnuson-Stevens Act established eight regional councils to manage the nation's fisheries.

In 1996, the Magnuson-Stevens Act was amended to focus on rebuilding overfished fisheries, protecting fish habitat, and reducing bycatch. As recently as 2006, it was amended to include such key provisions as:

- Mandating Annual Catch Limits (ACLs)
- Ensuring accountability for overages of harvest levels
- Establishing national guidelines for Limited Access Privilege Programs (LAPP's)
- Developing technologies and methods to reduce bycatch and mortality

Pacific Coast Fishery Management

Prior to 1982, Washington, Oregon, and California were each independently responsible for management of the domestic groundfish fisheries off their respective coasts. With the approval of the Pacific Coast Groundfish Fishery Management Plan(FMP) in 1982, the Pacific Fisheries Management Council (PFMC) assumed responsibility for the EEZ off the coasts of these states. Under this FMP, the PFMC now manages over 90 species of groundfish and PFMC members represent states, tribes, NOAA Fisheries, industry, and other interested parties.

The PFMC has introduced several management measures since 1982 in response to the changing status of west coast groundfish stocks. Beginning in 1999, stock assessments have revealed unsustainably low stock sizes for a number of species. The most concerning findings were the "overfished" stocks including: lingcod (1999, rebuilt **in 2005)**, widow rockfish (2001, **rebuilt in 2012**), petrale sole (2009, **rebuilt 2015)**, canary rockfish (2000, **rebuilt 2015**), Pacific ocean perch (1999, **rebuilt** in 2017), darkblotched rockfish (2001, **rebuilt 2017)**, bocaccio rockfish (1999, **rebuilt 2017**), cowcod rockfish (2000, **rebuilt in 2019**), and yelloweye rockfish (2002, **rebuilding as of 2017**). In 2000, in accordance with the Magnuson-Stevens Act which requires that certain measures are taken to protect overfished stocks, the PFMC began escalating its management strategy in response to the above findings. In general, management measures enacted by the PFMC fall into one of two themes:

- Limiting fishery access
- Limiting catch of species or species complex

Management Measures to Limit Fishery Access

Overcapitalized fisheries are not only harmful to fish stocks but they're also economically unsustainable for the fishing industry. To avoid such overcapitalization, one way fishery managers regulate catch rates is by limiting the number of people who have access to the fishery.

The PFMC first limited access to the fishery by creating limited entry and open access sectors. In order to participate in the limited entry sector, which allows greater access to fish resources, a federal permit is required. Limited entry permits were issued in 1994 based on the fishing history of qualifying vessels. Open access fisheries do not require a federal permit, however, a state permit is often required.

WOC Groundfish Fishery

In 2001, the PFMC used a permit stacking program for the Limited Entry Sablefish Endorsed fishery to control capacity. The program allows for up to three sablefish-endorsed permits to be stacked on a single vessel, potentially removing two-thirds of vessels from the fishery.

In 2003, the U.S. government enacted a voluntary fishing capacity reduction program for the Pacific Coast groundfish fishery. "The buyback", as it later became known permanently removed 91 vessels and 239 fishing permits from the Pacific groundfish LE trawl fishery and associated corollary fisheries of Dungeness crab and pink shrimp. This represented around 50% of trawl fleet effort. The program invited bids from owners of groundfish trawl permits (except those harvesting and processing whiting) that were willing to surrender their fishing privileges. Bids were scored in a reverse auction against the value of bidders' harvests and accepted bidders surrendered their federal groundfish permits, as well as all other federal fishing licenses, and other fishery privileges issued to vessel. The buyback program was financed with $10 million in public funding and a $36 million loan to be repaid over 30 years with fees on landings. The program's aim was to increase the remaining harvesters' productivity, help financially stabilize the fishery, and ultimately conserve groundfish stocks.

Management Measures to Limit Catch of a Species or Species Complex

Another way fishery managers regulate catch rates is by limiting the annually allowed harvest amount of a species or species complex. This unit is called an Annual Catch Limit (ACL). The Magnuson-Stevens Act requires regional management councils to set an ACL for all FMP species/complexes.

One of the goals of the FMP is to maintain a year-round fishery. In order to accomplish this, the PFMC uses a system of trip limits to control the rate of catch over the year (See Figure 1-1). Trip limits are multifaceted as they have spatial (e.g. North/South of 40°10'), temporal (e.g. Jan-Feb), fishery sector (e.g. limited entry), and gear type (e.g. trawl, fixed gear) requirements. The PFMC reviews cumulative in-season landings periodically during the year and adjusts trip limits based on end-of-year projections of harvest.

In mid-2006, the Pacific Fishery Management Council (Council) established Essential Fishing Habitat Conservation Areas (EFHCAs) to protect important habitat from potential damage by fishing with bottom-contact gear. In 2018 and 2019, the Council adopted changes to EFHCA, including both opening and closing new areas to fishing. These areas are closed year-round to fishing

Table 1 (North) to Part 660, Subpart D -- Limited Entry Trawl Rockfish Conservation Areas and Landing Allowances for non-IFQ Species and Pacific Whiting North of 40°10' N. Lat.

This table describes Rockfish Conservation Areas for vessels using groundfish trawl gear. This table describes incidental landing allowances for vessels registered to a Federal limited entry trawl permit and using groundfish trawl or groundfish non-trawl gears to harvest individual fishing quota (IFQ) species.

Other Limits and Requirements Apply -- Read § 660.10 - § 660.399 before using this table 07/25/2019

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
Rockfish Conservation Area (RCA)[1/]:							
1	North of 45°46' N. lat.	100 fm line[1/] - 150 fm line[1/]					
2	45°46' N. lat. - 40°10' N. lat.	100 fm line[1/] - modified[2/] 200 fm line[1/]					

See provisions at § 660.130 for gear restrictions and requirements by area. Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry groundfish trawl fishery landing allowances in this table, regardless of the type of fishing gear used. Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry fixed gear non-trawl RCA, as described in Tables 2 (North) and 2 (South) to Part 660, Subpart E.

See § 660.60, § 660.130, and § 660.140 for Additional Gear, Trip Limit, and Conservation Area Requirements and Restrictions. See §§ 660.70 660.74 and §§ 660.76-660.79 for Conservation Area Descriptions and Coordinates (including RCAs, YRCA, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).

State trip limits and seasons may be more restrictive than federal trip limits, particularly in waters off Oregon and California.

3	**Minor Nearshore Rockfish, Washington Black rockfish & Oregon Black/blue/deacon rockfish**	300 lb/ month					
4	**Whiting[3/]**						
5	midwater trawl	Before the primary whiting season: CLOSED. -- During the primary season: mid-water trawl permitted in the RCA. See §660.131 for season and trip limit details. -- After the primary whiting season: CLOSED.					
6	large & small footrope gear	Before the primary whiting season: 20,000 lb/trip. -- During the primary season: 10,000 lb/trip. -- After the primary whiting season: 10,000 lb/trip.					
7	**Oregon Cabezon/Kelp Greenling complex**	50 lb/ month					
8	**Cabezon in California**	50 lb/ month					
9	**Shortbelly rockfish**	Unlimited					
10	**Spiny dogfish**	60,000 lb/ month					
11	**Big skate**	5,000 lb/ 2 months	25,000 lb/ 2 months	30,000 lb/ 2 months	70,000 lb/ 2 months	20,000 lb/ 2 months	20,000 lb/ 2 months
12	**Longnose skate**	Unlimited					
13	**Other Fish [4/]**	Unlimited					

TABLE 1 (North)

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours, and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to the RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ The "modified" fathom lines are modified to exclude certain petrale sole areas from the RCA.

3/ As specified at §660.131(d), when fishing in the Eureka Area, no more than 10,000 lb of whiting may be taken and retained, possessed, or landed by a vessel that, at any time during the fishing trip, fished in the fishery management area shoreward of 100 fm contour.

4/ "Other Fish" are defined at § 660.11 and include kelp greenling off California and leopard shark.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Figure 1-1: Trip Limit Table example (Table 1 North)

with bottom-contact gear and ensure that targeted fish are able to access healthy habitats to maintain their populations. The Council also has the ability to enact Block Area Closures (BACs) and Bycatch Reduction Areas (BRAs) along the west coast to respond to specific concerns that could arise during the fishing year. Off the Washington coast, Rockfish Conservation Areas (RCAs) will provide an additional tool for managers to close specific areas. Managers also use size restrictions, species-to-species ratios, and other tools in the management of the west coast groundfish fishery. The Trawl Catch Share Program, implemented in 2011, is a management measure that limits both access and catch. More information is available later in this chapter.

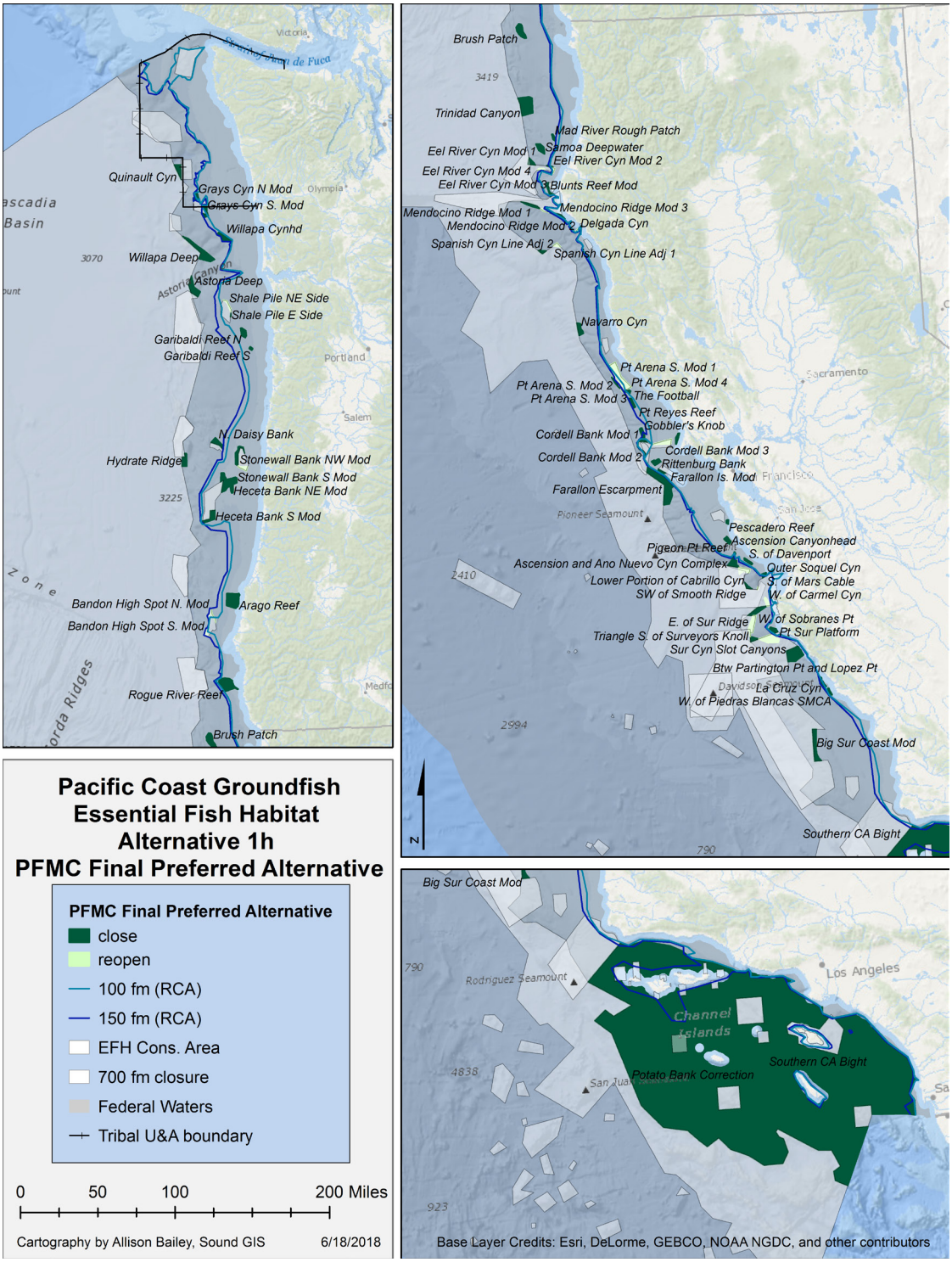


Figure 1-2: Changes in EFH closed areas for Amendment 28, applies to all bottom trawl gear. Deep-water closure off CA not shown.

Data Used for Fishery Management

Fishery managers require robust data in order to ensure the economic and biological sustainability of a fishery (See Figure 1-3). Managers need to know the status of the stock as well as how much of a species is being harvested, and they need biological information on the species. The west coast groundfish fishery uses multiple data sources for management including vessel logbooks, fish tickets, observer data, and port sampling data. All LE vessels in the groundfish fishery are also required to have a **Vessel Monitoring System** (VMS) which is primarily used to ensure compliance with spatial management restrictions. The NOAA Office of Law Enforcement (OLE) and state enforcement personnel are responsible for ensuring compliance with all federal regulations, including VMS.

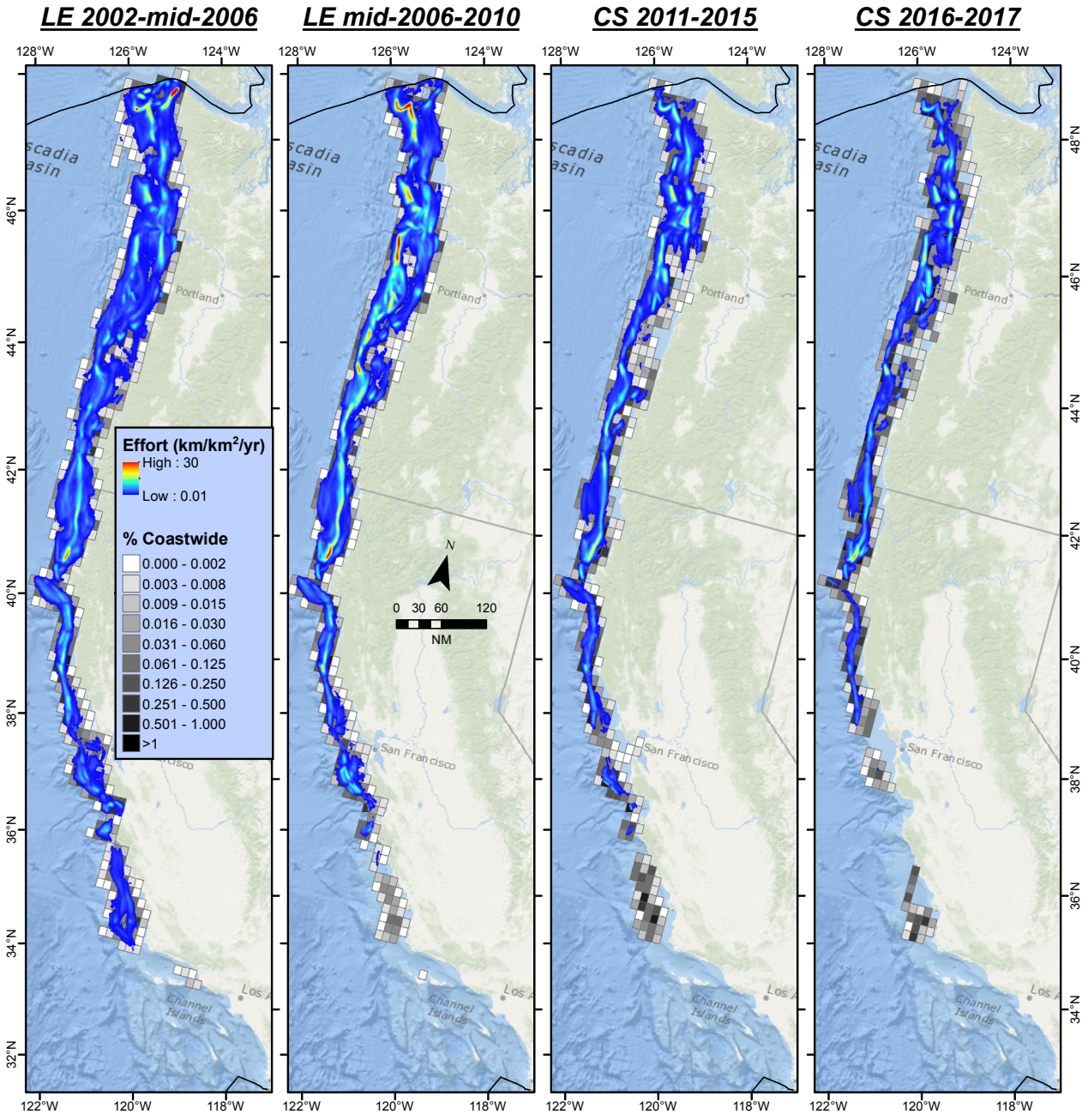


Figure 1-3: Bottom trawl fishing effort over 4 time periods.

Vessel Logbooks

Haul location, depth, target strategy, and estimates of retained catch obtained from vessel logbooks are used to map the spatial and temporal distribution of fishing effort (See Figure 1-1). Maintaining a logbook is not federally mandated throughout all West Coast fisheries, and different states have different requirements. All trawl vessels participating in the Catch Share fishery, however, are required under federal regulations to maintain a vessel logbook.

Fish Tickets

Shoreside processors produce fish tickets, or landing receipts, which are trip level summaries that include the total landing weight of each species/complex based on mandated sorting requirements. To ensure proper sorting and accurate scale weights Catch Monitors observe offloads in the Catch Share program.

Port Sampling Data

State biologists also take species composition samples and collect biological data on landed catch. These data are used in genetic analysis and for stock assessments to understand the length/age distribution of landed catch.

Observer Data

The **Northwest Fisheries Science Center (NWFSC)** runs two observer program, the At-Sea Hake Observer Program (A-SHOP) and the West Coast Groundfish Observer Program (WCGOP).

Observer data are primarily used to estimate the at-sea discard of all species. Haul-level observer data are "matched" to trip-level fish ticket data to create haul-level estimates of total catch, including retained and discard. In fisheries with less than 100% observer coverage, analysts estimate total discard based on discard ratios and total landed catch. Together, these estimates of total discard and records of total landings are compared to annual harvest goals to assess if species or species complexes are being overutilized. Observers collect biological data on the discarded catch, which are used for genetic analyses and in stock assessments to understand the length/age distribution of discarded catch.

While FMP groundfish stock assessment is a large focus of fishery managers, it is not their sole concern. They must also weigh the economic productivity of the fishery against concerns about it's long-term and cumulative environmental impacts. This includes considering the effect of fishing on habitat, other non-groundfish species, and species of concern, including ESA listed marine mammals, seabirds, sea turtles and fish species. Observer data provides one of the best tools managers have to estimate the overall impact commercial fishing effort has on west coast marine ecosystems.

West Coast Trawl Catch Share Program

The implementation of the West Coast Trawl Catch Share Program, also known as Trawl Rationalization, was an important milestone in the management of the LE Groundfish Trawl sector. As of 2010, the groundfish trawl fishery was still marked by serious biological, social, and economic concerns, despite the fleet buyback and other management measures put in place to promote fishing opportunities. Due to the large number of participating vessels, the existing regulatory approach, and the status of certain groundfish stocks, the fishery was not economically sustainable.

When developing the Catch Share program for the West Coast limited entry groundfish trawl fishery, fisheries managers aimed to increase net economic benefits, create individual economic stability, fully utilize the trawl sector allocation, consider environmental impacts, and achieve individual accountability of catch and bycatch.

There are three sectors of the Catch Share Program:

- Shoreside IFQ
- At-sea mothership cooperative
- At-sea catcher-processor cooperative

Shoreside Individual Fishing Quota Sector

The shoreside IFQ sector includes vessels that land groundfish, including Pacific hake, to shoreside processors. Vessels can use trawl, longline, or pots to take shoreside IFQ quota. Over 60 species are included in the 24 IFQ species/complexes see "IFQ Species/Complexes" on page 1-9.

Permit holders "own" their quota and can choose to harvest that amount of fish or sell/lease IFQ for others to harvest. The IFQ fishery requires 100% at-sea and shoreside monitoring.

To determine the amount of quota for each permit, a species/complex ACL is divided between the catch share and non-catch share fishery sectors based on inter-sector allocation decisions made by the PFMC. The catch share sector allocation is then divided into quota for each permit. The management units used in the catch share sector are **quota shares (QS)** and **quota pounds (QP)**.

All catches of IFQ species/complexes are subtracted from the vessel's quota pounds. Vessels use the **Northwest Regional Office Vessel Account System (VAS)** to track attainment of their quota pounds. Landings data from fish tickets and discard data from observers are sent to the VAS where fishers can view total allocated quota pounds, quota pounds caught, and remaining quota pounds for each species/complex.

Rules of the IFQ program limit the amount of quota an entity can hold to prevent undue influence of one or a few participants

and distribute the economic benefits more equitably. There are two accumulation limits, one that prevents a single entity from owning over a given percentage of QS and one that prevents a single vessel from harvesting over a given percentage of QP.

A variety of other management tools are also used in the IFQ fishery, such as EFHCAs, RCAs, trip limits, and seasonal constraints, which were discussed earlier. Trip limits are still in place for the "Other Species" FMP complex which includes Pacific spiny dogfish shark and minor nearshore rockfish. The Shoreside hake and non-EFP rockfish midwater trawl fisheries have closed and open seasons depending on the area.

At-Sea Mothership and Catcher-Processor Sectors

The at-sea fleet includes motherships, mothership catcher-vessels, and catcher-processors. These vessels use mid-water trawl nets to harvest Pacific hake and process the catch at-sea. Both sectors operate using cooperatives, which are industry-based groups that work together to manage an overall allocation/quota. Bycatch in the Pacific hake sectors is very low (less than 1% of the total catch). As a result, the Catch Share allocations for these fisheries encompass only five species: Pacific hake, widow rockfish, canary rockfish, darkblotched rockfish, and Pacific ocean perch. Trip limits and other harvest measures are used to ensure catch of other FMP species are constrained.

The at-sea sectors are similar to Catch Shares in that 100% observer coverage is required, however, two observers are assigned to each mothership and catcher-processor. To ensure all discard is accounted for, observers are also required on mothership catcher-vessels, when electronic monitoring (EM) devices are not present. The At-Sea Hake Observer Program manages observers on the motherships and catcher-processors while the WCGOP manages mothership catcher-vessel observers.

Federally Managed Catch Shares Fisheries							
Sector	**Sub-Sector**	**Permits**	**Gear(s)**	**Target(s)**	**Vessel Length (m)**	**Depths (m)**	**Management (since 2011)**
Limited Entry (LE) Trawl	LE Trawl	LE permit with trawl endorsement	Bottom Trawl Hook & Line Pot	Groundfish	15-40	10-1600	IFQ May use EM in lieu of 100% observer coverage
	Midwater Rockfish	LE permit with trawl endorsement	Midwater Trawl	Midwater Rockfish	15-33	>70	IFQ May use EM in lieu of 100% observer coverage
	Midwater Hake	LE permit with trawl endorsement	Midwater Trawl	P. hake	17-40	>70	IFQ May use EM in lieu of 100% observer coverage
At-Sea Hake	Mothership-Catcher Vessels (MSCV)	LE permit with trawl endorsement	Midwater Trawl	P. hake	8-138	53-460	IFQ May use EM in lieu of 100% observer coverage
	Catcher-processors (CP)	LE permit with trawl endorsement	Midwater Trawl	P. hake	82-115	60-570	IFQ
	Tribal	*none*	Midwater Trawl	P. hake	<38	53-460	IFQ
Federally Managed Fisheries (Non-Catch Shares)							
Non-Nearshore Fixed Gear	Sablefish endorsed	LE permit with fixed gear endorsement and sablefish quota	Longlines, Pots	Sablefish	7-32	20-1300	Sablefish tier quotas 7-month season
	Sablefish non-endorsed (a.k.a Zero Tier)	LE permit with fixed gear endorsement w/o sablefish quota	Longlines, Pots	Sablefish, rockfish flatfish	7-32	20-1300	Trip Limits
	Open Access	*none*	Longlines, Pots	Sablefish, other groundfish	3-30	20-1300	Trip Limits
IPHC Pacific Halibut Directed		IPHC P. Halibut permit	Longlines	Pacific halibut	3-32	40-400	10-hour fishing periods South of Pt. Chehalis, WA Legal size >82 cm Trip limits
State Managed Fisheries (Non-Catch Shares)							
Open Access (OA) California Halibut		CA Halibut permit1	Bottom trawl	California halibut	9-22	10-200	Fish mainly within the CA Halibut Trawl Grounds Minimum mesh sizes 7-month season
Nearshore Fixed Gear		CA or OR state nearshore permits and endorsements	Variety of hand lines, pot gear, stick gear, rod and reel	Rockfish Cabezon Greenlings	3-15	<100	Federal and state regulations Area closures 2-month trip limits Minimum mesh size
Pink Shrimp		WA, OR, or CA state pink shrimp permit	Shrimp trawl	Pink shrimp	11-33	60-800	State regulations Bycatch reduction devices Trip limits on groundfish landings
CA Ridgeback Prawn		Prawn permit	Shrimp or Bottom trawl	Golden, Spot, Ridgeback or other prawn	9-19	45-700	Oct-May season Trip limits Area restrictions Landing requirements
CA Sea Cucumber		Sea cucumber trawl permit	Bottom trawl	California sea cucumbers	9-12	<100	Logbook requirement Area and seasonal closures

Figure 1-4: *WCGOP observed commercial groundfish fishery sectors.*

IFQ Species/Complexes				
Priority Species	Dwarf-red rockfish	Pygmy rockfish	Stripetail rockfish	Pacific halibut
Cowcod rockfish*	Flag rockfish	Redbanded rockfish	Swordspine rockfish	Pacific sanddab
Yelloweye rockfish*	Freckled rockfish	Redstripe rockfish	Tiger rockfish	Petrale sole
Rockfish	Greenblotched rockfish	Rosethorn rockfish	Vermilion rockfish	Rex sole
Aurora rockfish	Greenspotted rockfish	Rosy rockfish	Widow rockfish	Rock sole
Bank rockfish	Greenstriped rockfish	Rougheye rockfish	Yellowmouth rockfish	Sand sole
Blackgill rockfish	Halfbanded rockfish	Sharpchin rockfish	Yellowtail rockfish	Starry flounder
Bocaccio rockfish	Harlequin rockfish	Shortraker rockfish	**Flatfish**	**Roundfish**
Bronzespotted rockfish	Honeycomb rockfish	Shortspine thornyhead	Arrowtooth flounder	Lingcod
Canary rockfish	Longspine thornyhead	Silvergray rockfish	Butter sole	Pacific cod
Chameleon rockfish	Mexican rockfish	Speckled rockfish	Curlfin sole	Pacific whiting
Chilipepper rockfish	Pacific ocean perch	Splitnose rockfish	Dover sole	Sablefish
Darkblotched rockfish	Pink rockfish	Squarespot rockfish	English sole	
Dusky rockfish	Pinkrose rockfish	Starry rockfish	Flathead sole	

*IFQ Priority Species Tracking Form

Fishing Vessel Descriptions and Terminology

General Vessel Anatomy and Terminology

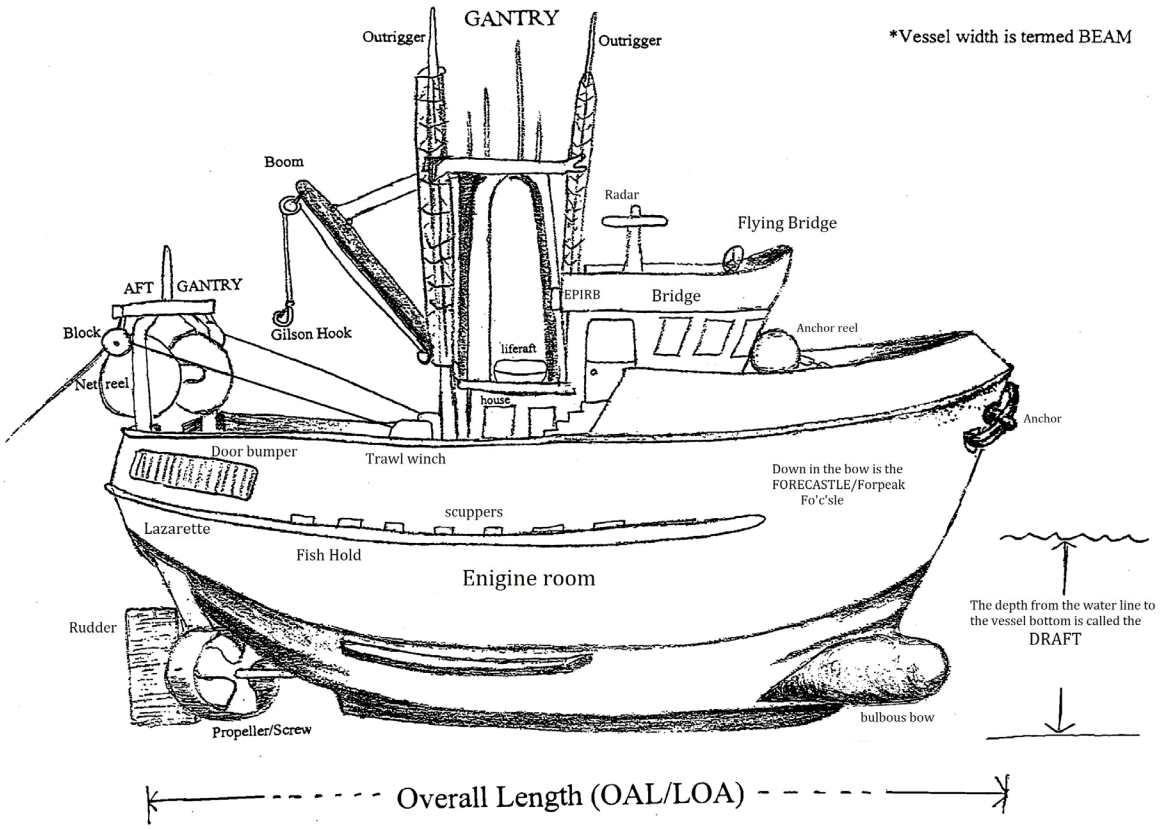


Figure 1-5: *Vessel diagram with teminology-side view.*

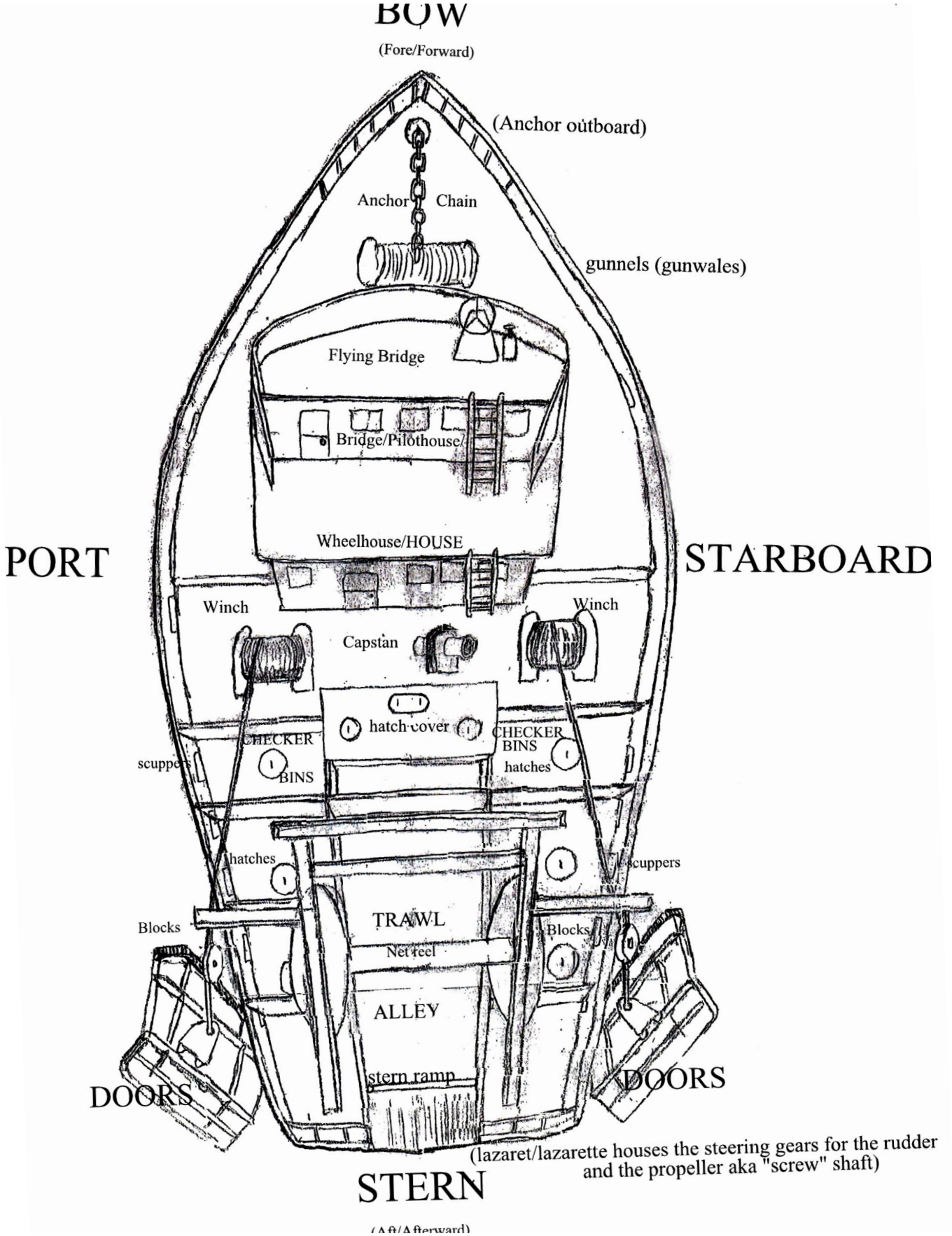


Figure 1-6: *Vessel diagram with teminology-top view.*

Trawl Gear Descriptions and Fishing Strategy

Trawl Gear

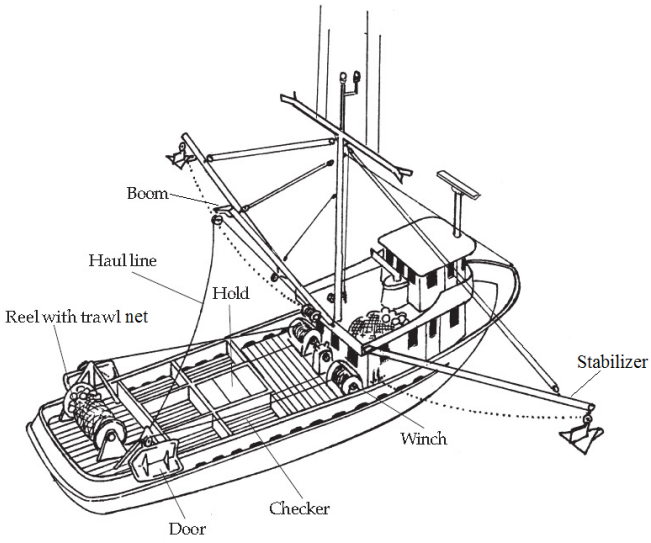


Figure 1-7: *Diagram of a trawl fishing vessel configuration.*

Most trawl vessels on the west coast are stern trawlers. They use one net that is set and retrieved off the sloping stern ramp at the back of the vessel (See Figure 1-8). However, there are also side haulers. These vessels set and retrieve their nets over the side of their vessels (See Figure 1-10).

Trawl Gear Basics

Trawling involves the towing of a funnel-shaped net behind the fishing vessel (See Figure 1-9). Trawl nets may be towed on or near the seafloor or in the water column. West coast trawlers use "doors" in front of and to each side of the net to spread the mouth of the net horizontally. The doors are pushed apart and down by hydrodynamic forces and by their own weight.



Figure 1-8: Trawl net being hauled in on the back/stern of a vessel.

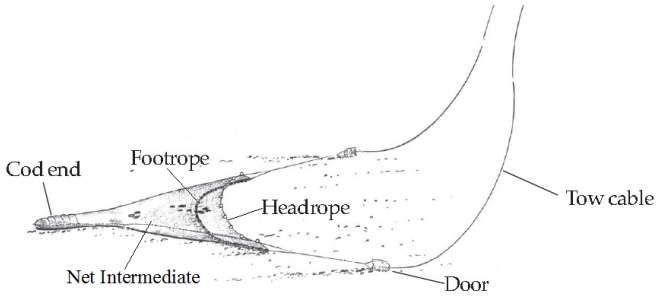


Figure 1-9: *Diagram of a trawl net as viewed from above.*

Aluminum or plastic floats laced to the headrope on the upper lip of the net and a weighted footrope, laced to the lower lip of the net, hold the net mouth open vertically. The length of the cable (**main wire**) dragging the net behind the vessel determines the towing depth. Trawl nets can be 100' or greater in width across the opening and over 150' long.

A footrope or groundrope is attached directly to the bottom, leading edge of the mouth of the net. The purpose of the footrope is to separate the target species from the seabed and raise the netting far enough above the seabed to prevent damage. The footrope may be weighted with chain or may be rope-wrapped wire or cable when fishing on a soft bottom. If the net is towed over rough bottoms (as for rockfish) steel bobbins, rubber disks or rubber rollers ('tires') are attached to the footrope. The bobbins are designed to roll and drag over the bottom. (See Figure 1-12).

Regulations governing harvest levels in the groundfish trawl fleet have a footrope component. There are two "sizes" of footropes used in the groundfish trawl fleet.

Large Footrope: Any footrope that includes one or more rollers that is greater than 8 inches in diameter.

Small Footrope: Any footrope where all rollers are less than or equal to 8 inches in diameter.



Figure 1-10: *Trawl net being hauled in on the side of a vessel.*

Types of Trawl Nets

Bottom Trawl: One net is towed with the footrope in contact with the seabed. Bottom trawlers include roller (also called bobbin) trawls and Danish/ Scottish seine gear. A bottom trawl is generally towed at a speed of two to four knots on or above the sea floor.

Selective Flatfish Trawl (Pineapple Trawl): This net is a type of bottom trawl. (See Figure 1-11). It was designed by WOC fishers to reduce the catch of rockfish and other overfished species. Fishers used the net in an experimental fishery for two years to prove their effectiveness. Based upon the findings, the PFMC mandated its use in certain areas. The characteristics of this net include:

- A headrope that is cut back and at least 30% longer than the footrope, which allows fish a greater area to escape.
- The expected rise, how high the headrope is above the bottom of the net, at the center is less than or equal to five feet.
- No floats are on the center half or third of the headrope. Floats are only allowed on the wings.
- A two seam, rather than four seam, net.
- A small footrope must be used with this net.

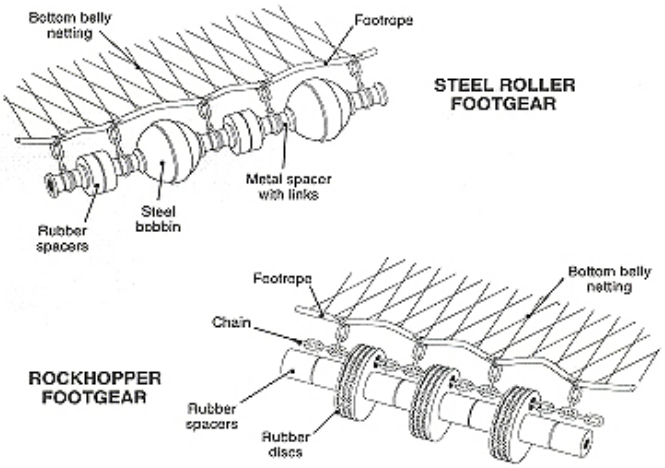
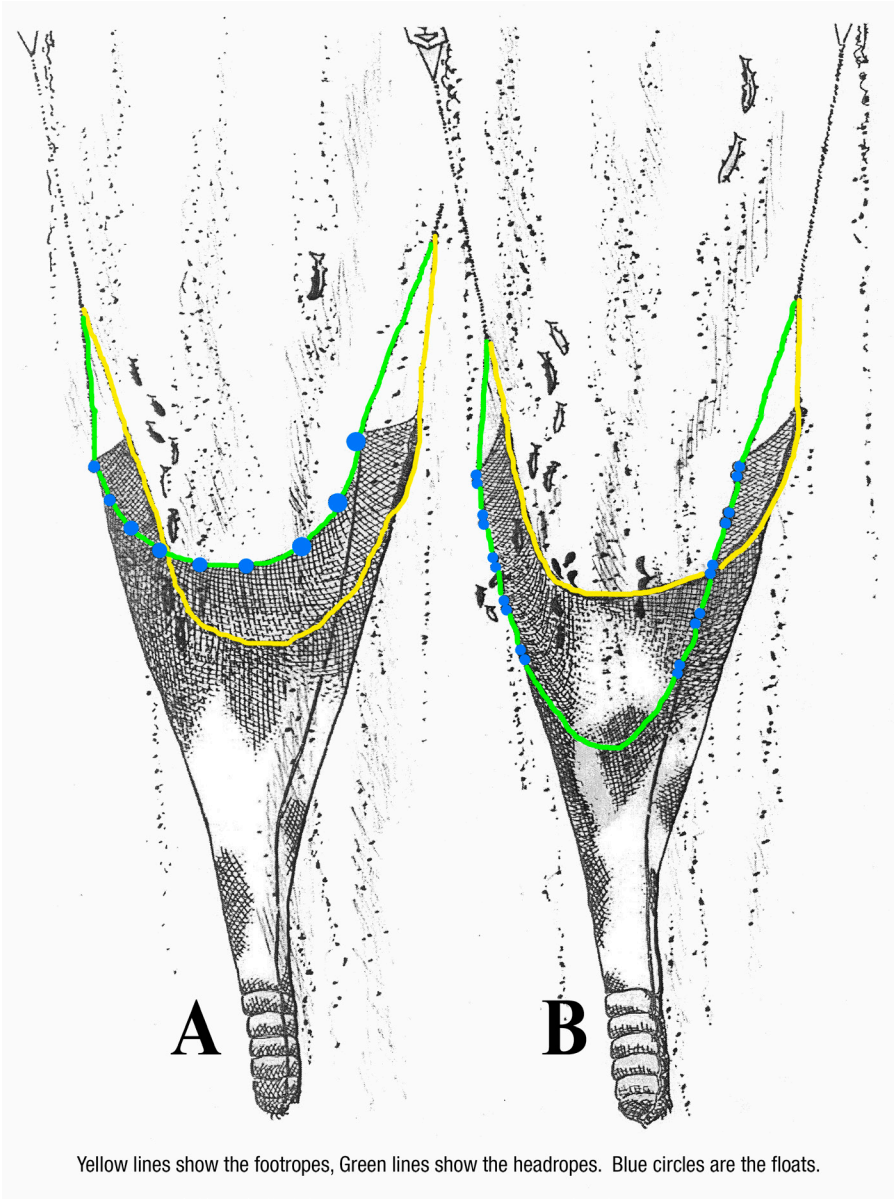


Figure 1-12: *Roller gear.*



Yellow lines show the footropes, Green lines show the headropes. Blue circles are the floats.

Figure 1-11: *(A) Trawl net compared to (B) OR Set-back Flatfish net.*

Paired Bottom Trawls (Double Rigged): Two nets are towed, one net off each side of the vessel from large **outriggers** lowered at 60° angles. The nets are folded on deck or hung from booms when not fishing. They have two sets of doors, one set for each net. Paired nets are often used for pink shrimp.

Double-rigged shrimper in operation

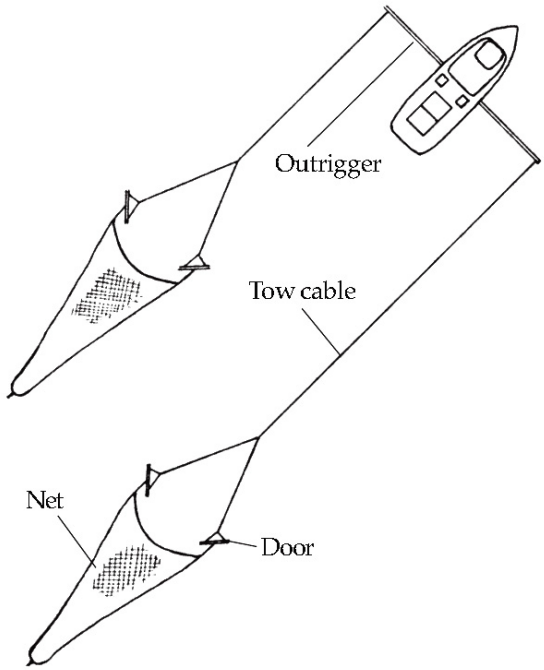


Figure 1-13: *Paired bottom trawls double-rigged.*

Midwater Trawl: Midwater trawls are generally towed above the ocean floor, although they may be used near the bottom. They are generally towed faster than bottom trawls to stay with the schooling fish they target. All midwater trawls must have an unprotected footrope without bobbins and rollers. Midwater trawl nets are used to catch Pacific Whiting (Hake), on both shoreside and mothership catcher vessels. They are also used to catch certain species of schooling rockfish (e.g., Widow, Yellowtail).

Fishing Strategy

Trawl gear is used to harvest:

- Deep Water Slope Fish - Sablefish, Dover Sole, Shortspine and Longspine Thornyheads
- Shelf and Slope Rockfish
- Midwater Rockfish (Widow, Yellowtail, and Chilipepper)
- Shelf and Slope Flatfish
- Nearshore Mix (NSM)
- Pacific cod
- Pacific hake
- California halibut
- Pink shrimp

Trawl gear varies depending on the species sought and the size and horsepower of the boats used.

Safety Concerns on Trawlers

The equipment used by trawlers can cause serious injury if you are not aware while on deck.

Trawl nets are heavy and in rough seas, tend to roll around the trawl alley or bin. Be careful to avoid putting any part of your body between the codend and the trawl alley/bin boards, as you can be crushed.

Be especially aware of the main wire and other cables being used to haul in a codend. If these snap, they fly in many directions and can cause major damage to the vessel and serious injury to the crew. Check for fraying on the wires during your first haul back. *Stay in the wheelhouse, with the hatch closed, while the crew is hauling in the codend.* If you are on deck during haul back, always wear your safety helmet.

Be aware that working on trawl vessels often requires a lot of lifting. Take care to use proper lifting techniques on these vessels. Filling baskets partially instead of all the way to the top is a good way to limit the amount of weight lifted at one time and can reduce the occurrence of back injuries. See Chapter 10, "Health and Safety," for more information on reducing the risk of back and wrist injuries

Trawler Operations

The flow chart below represents typical activity of a trawl vessel.

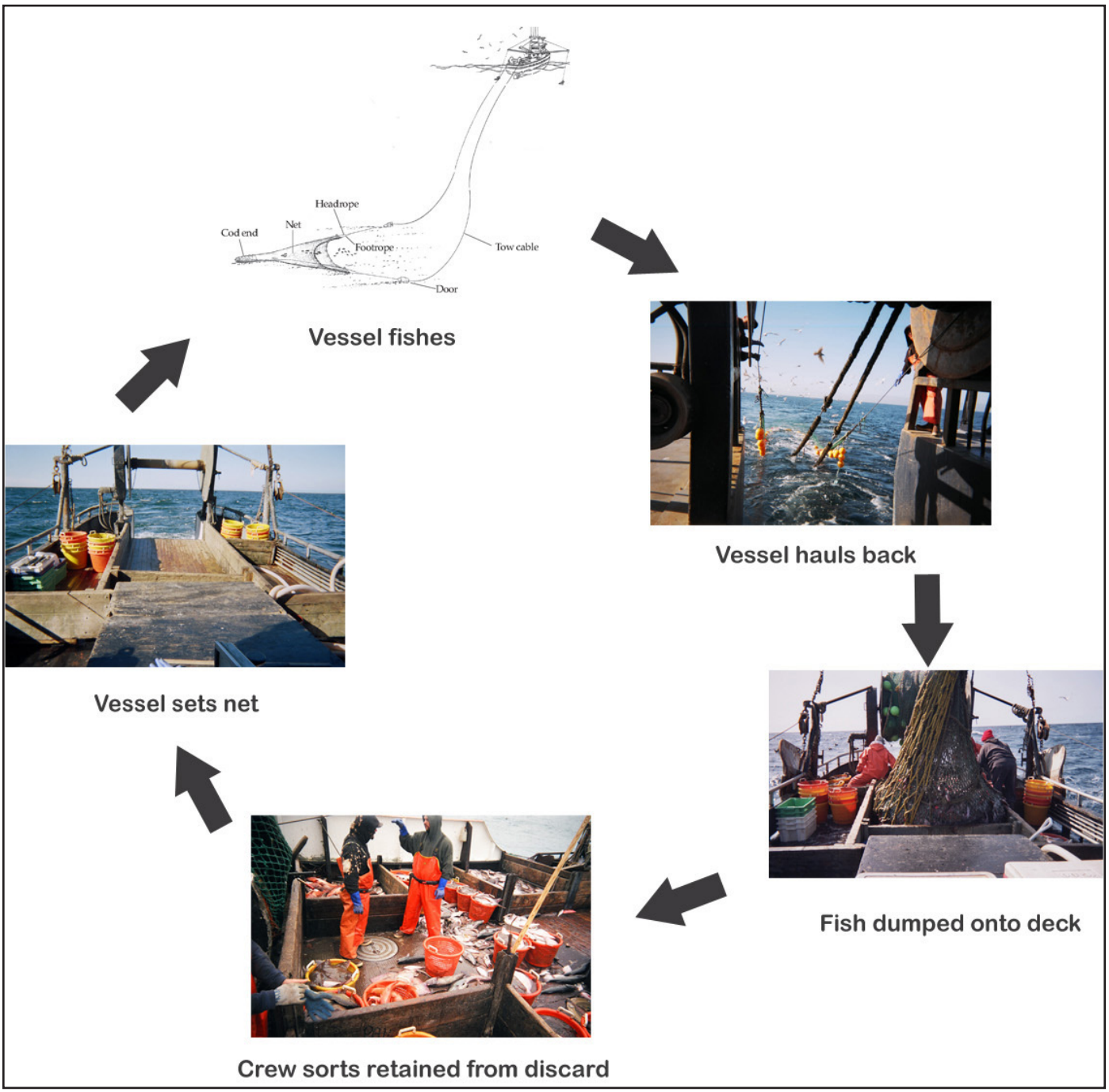


Figure 1-14: *Flow of typical activity on a trawl vessel.*

Fixed Gear Descriptions and Fishing Strategy

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)

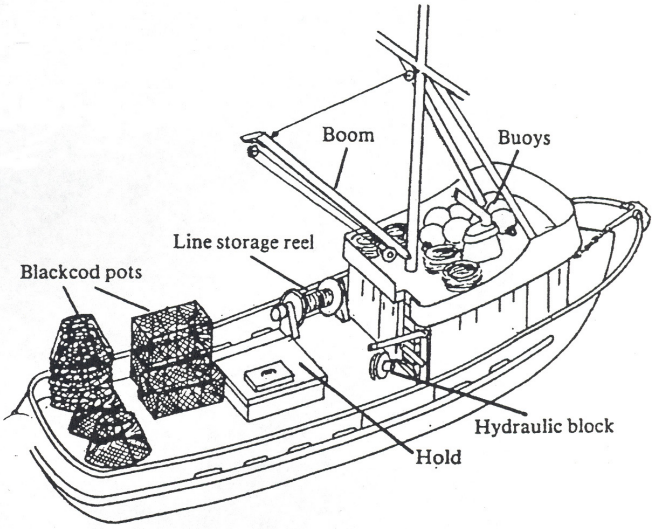


Figure 1-15: *Trap vessel diagram.*

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 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 6, "Fixed Gear Sampling") whereas smaller vessels often set traps individually (Chapter 7, "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 and/or radar reflector. Individual pots are marked with surface buoys.

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 1-16). 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.

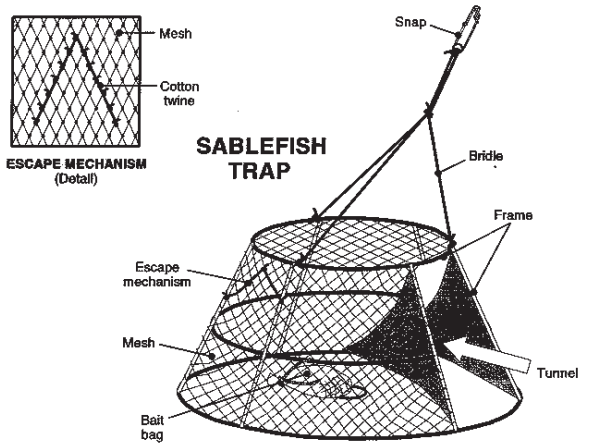


Figure 1-16: *Sablefish trap diagram.*

Gear Type 19 - Longline Gear (fixed hooks)

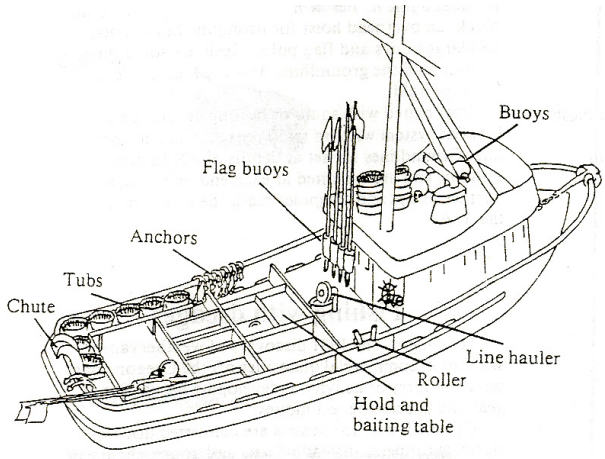


Figure 1-17: *Longline vessel diagram.*

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 (demersal longline) (See Figure 1-18)

Longline fishers usually further divide their gear into smaller segments in order to easily 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.

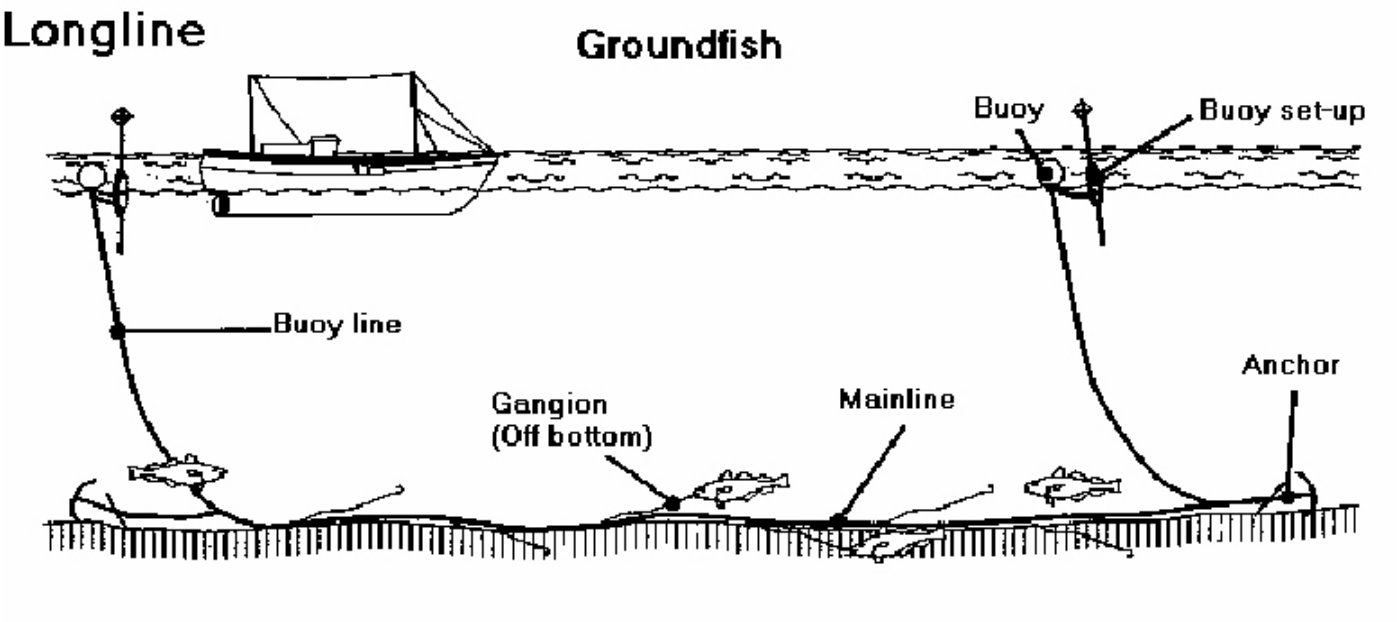


Figure 1-18: *Longline gear setup.*

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 (See Figure 1-17), 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 pull the buoy, anchor and groundline aboard. Sablefish, Pacific halibut, thornyheads, and other groundfish are often targeted with longline gear.

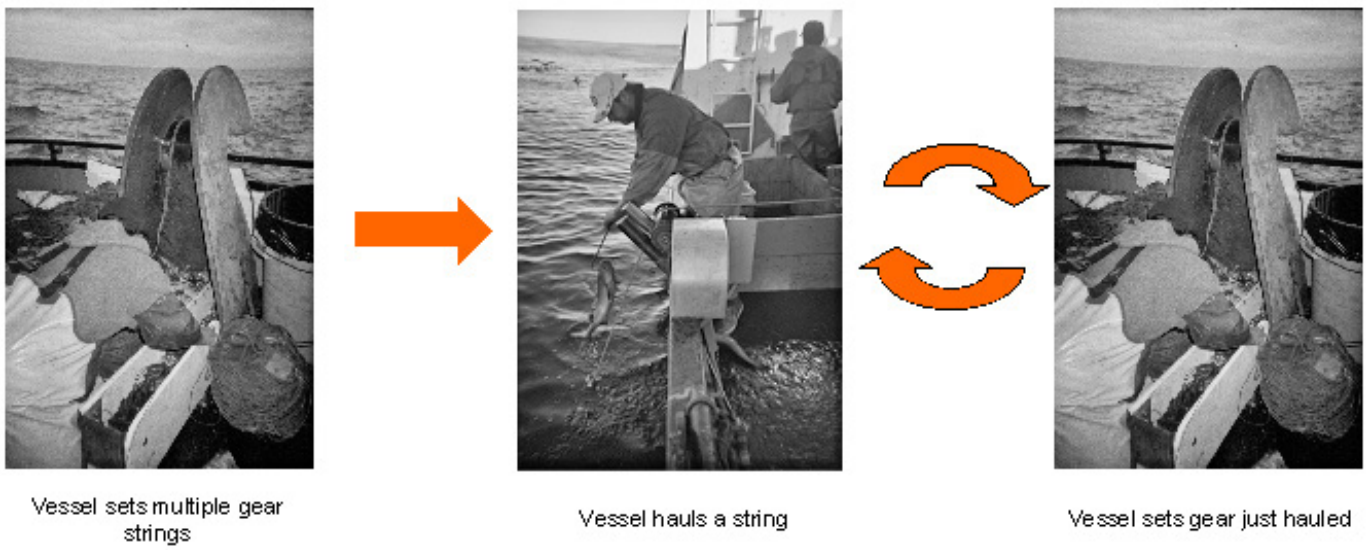


Figure 1-19: *Typical opperations on a fixed gear vessel.*

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

Snap, or tube, gear is a variation on longline gear (See Figure 1-20 and Figure 1-21). With snap gear, the gangions are "snapped" onto the groundline as it is being set. 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 1-20: Snap gear hooks prepped on a rod.



Figure 1-21: Snap gear hooks in a tub.

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. Never pass under or over a moving groundline. Always ask the rollerman to stop the line.

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.



Figure 1-22: Observer sampling area on a small longliner.

Small Boat Fixed Gear Descriptions and Fishing Strategy

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

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)**

Gear Type 7 - Vertical Hook and Line

Vertical hook and line (also known as vertical longline 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 25 to 300 hooks suspended in the water column to fish vertically. Baited hooks are tied to the mainline (See Figure 1-23).



Figure 1-23: *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. Many individual units can be set in a general area being pulled and reset multiple times making it hard to keep track of individual sets.

Gear Type 8 - Pole/Rod and Reel Gear

Rod-and-reel fishers use traditional fishing poles, usually with one or more hooks per pole (See Figure 1-25). 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.



Figure 1-24: *Rod-and-Reel Gear.*



Figure 1-25: *Rod-and-Reel Catch.*

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 "15 - troll gear". (Refer to description of troll gear.) Rod-and-reel gear is commonly used to target rockfish, sheephead, lingcod, greenling, cabezon and sanddabs.

Gear Type 9 - Other Hook and Line Gear Stick, Pipe, and Cable Gear

Stick gear, also called pipe gear, is usually constructed of a piece of rebar (metal stake) or a weighted PVC tube and line attached along the full length of the stick and connected to a buoy (See Figure 1-26). 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 vary from 3 to 15 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 ≤ 40 feet, but is occasionally fished at depths of 100 feet or more. Stick, pipe and cable gear are primarily used to target nearshore rockfish, lingcod, greenling and cabezon.



Figure 1-26: *Stick Gear.*

Handlines and Jigging

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 "8-Pole/Rod and Reel". If the vessel is under way, this would be considered "15-Troll Gear". (See descriptions below) If the fishing activity cannot be described by "rod-and-reel" or "troll gear", it should be recorded as "9-Other Hook and Line".

Gear Type 10 - Fish Pots/Traps

Traps used on smaller vessels are typically lightweight rectangular traps (See Figure 1-27), although other 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 1-27: *Sheephead trap.*

Gear Type 15 - All Troll Gear

Trolling involves towing multiple fishing lines behind a vessel while it is under way (See Figure 1-28). Lines are 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.

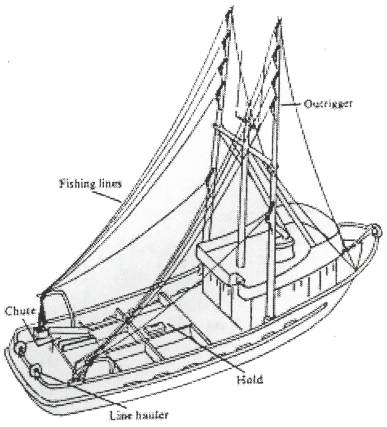


Figure 1-28: *Troll vessel, with outriggers in non-fishing possition.*

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 1-29).

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.

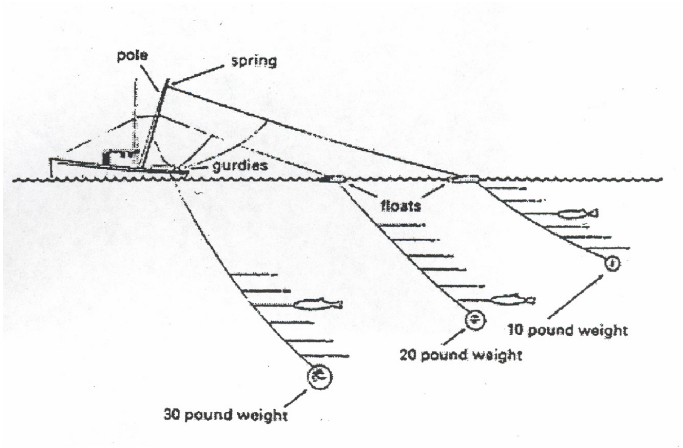


Figure 1-29: *Groundfish troll gear deployment diagram.*

Gear Type 19 - Longline Gear (fixed hooks)

Longline gear with fixed hooks on small fixed gear vessels is very similar to that on larger vessels (page 1-15). On smaller vessels, there may be fewer skates and shorter lines and smaller diameter groundline (lighter weight gear).

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

Longline gear with snap-on hooks used on smaller vessels is similar to that described earlier in this chapter (page 1-17).

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) and a Personal Locator Beacon (PLB) 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 rain gear 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.

Operations on Small Fixed Gear Vessels



Vessel sets all traps.



Vessel moves to another location to fish while traps soak.



Vessel fishes rod and reel gear.



Vessel finishes rod and reel fishing.



Vessel returns to haul traps.



Vessel hauls single trap.



Vessel resets single trap.

Figure 1-30: *Typical activity of a small fixed gear vessel.*

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.

Note: Observers must always bring the full compliment of safety gear issued to them, regardless of the size of the vessel.

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 a sampling location that will minimize interference with fishing operations. On most small boats, there is very little room. Observers commonly find that they can pack all of the sampling gear they will need into a single observer basket plus their scale. Often, there is no space for a flatbed scale, so hand scales are necessary. 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:

- Marel digital scale and/or hand scales
- Lightweight bucket with holes drilled in the bottom or an observer basket
- Portable GPS unit
- Length Frequency board
- 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.



Figure 1-32: *Recommended sampling gear for a small boat.*



Figure 1-31: *Example of personal gear for a small boat triip.*

Glossary

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

Crucifier: A pair of rollers or steel pegs which stand vertically with only enough room for the groundline to pass between. During gear retrieval, the groundline passes between the rollers and the hooks are pulled out of the fish.

Exclusive Economic Zone (EEZ): The 200-mile jurisdiction zone in which a nation has exclusive fishing rights.

Fisheries Management Plans (FMP's): Documents prepared under the supervision of the appropriate fishery management authority or council for the management of fish stocks judged to be in need of management. The plan must be formally approved. A management agreement plan includes data, analyses and management measures.

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

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

Gurdies: Powered spools or reels.

Jigging: A method of fishing where fishing line is mechanically manipulated. The movement of the line creates a bouncing of the lure within the water column or along the substrate, intended to attract fish.

Limited Access Privilege Program (LAPP): authorized limits of access privileges to harvest fish to be held, acquired, used by or issued under the system to persons who substantially participate in the fishery, including in a specific sector of such fishery, as specified by the Council.

Limited Entry: Longline, trap (or pot), or groundfish trawl gear used under the authority of a valid limited entry permit affixed with an endorsement for that gear. The shoreside IFQ Program (aka Catch Shares) is an example of a limited entry fishery.

Limited Entry Sablefish Endorsed: Fixed gear sector of the groundfish fishery that receives increased harvest privileges for sablefish.

Main wire: The two large cables used to connect the trawl net to the fishing vessel while fishing.

Northwest Fisheries Science Center: An organizational unit within the US Department of Commerce, National Oceanic and Atmospheric Administration, NOAA Fisheries.

Open Access: This sector of the groundfish fishery is comprised of fishers targeting groundfish without limited entry permits, and fishers who participate in non-groundfish fisheries that incidentally catch groundfish. Generally harvest guidelines and quotas for groundfish species are set by each state.

Optimum Yield: The harvest level for a species that achieves overall benefits including economic, social and biological considerations.

Outrigger: A stabilizing frame extending laterally beyond the main structure of the vessel and to which fishing gear is sometimes attached.

Overcapitalized: A level of catching power/effort that exceeds what is needed to catch available fishery resources.

Overfished: A level of fishing mortality that jeopardizes the capacity of a fishery to produce a continuing maximum sustainable yield.

PFMC: The PFMC is composed of twenty members, fifteen of whom are eligible to vote on matters brought before the Council.

Quota Pounds (QP): The quotas, expressed in round weight of fish, that are issued annually to each QS permit owner in the Shorebased IFQ (Catch Share) Program based on the amount of QS they own and the amount of fish allocated to the Shorebased IFQ Program.

Quota Shares (QS): The amount of fishing quota for an individual species/complex and area expressed as a percentage of the annual allocation of fish to the Shorebased IFQ Program.

Rebuilt: Population of species of concern that attains acceptable sustainability levels.

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.

Species Complex: A grouping of species that have similar life histories and habitats.

Stock Assessments: An analysis that reports on the status of a fish stock (abundance), as well as the possible outcomes of different management alternatives.

Trip Limits: A trip limit is a specified weight of fish that can be landed during either a two-month period or a day. Some groundfish trawlers are regulated by two-month trip limits. Some limited entry fixed gear and open access vessels have daily, weekly and monthly limits. Shoreside IFQ vessels, regardless of gear type have annual trip limits with the ability to carry some amount of any remaining quota over to the following year.

Vessel Account System (VAS): An online accounting system registered to a specific vessel and vessel owner in the IFQ fishery. It allows vessel owners to view current balances of the quota pounds (QP) transferred in and out of the account and caught by the vessel.

Vessel Monitoring System (VMS): A mobile transceiver unit that automatically determines the vessel's position and transmits it to a land-based service provider.



The West Coast Groundfish Observer Program

TABLE OF CONTENTS

Introduction . . . 2-2

WCGOP Management Structure . . . 2-2
- NOAA Fisheries . . . 2-2
- PSMFC . . . 2-2
- California Department of Fish and Game . . . 2-4
- Observer Providers . . . 2-4

Observer Qualifications . . . 2-4
- NOAA Fisheries Approval for Observers . . . 2-4
- Standards of Conduct . . . 2-4
- Conflict of Interest . . . 2-5
- Confidentiality . . . 2-5

WCGOP Non-Catch Share Sampling Plan . . . 2-5
- Vessel Selection . . . 2-5
- Non-Catch Share Fishery Coverage Priority List . . . 2-6
- Non-Catch Share Observer Placement . . . 2-6

WCGOP Observers . . . 2-6
- Training . . . 2-6
- Data Collection . . . 2-7
- Debriefing . . . 2-7
- Requirements for Return . . . 2-7

WCGOP Training Policy . . . 2-8

Statement of Nondisclosure . . . 2-10

Chapter 2

Introduction

The West Coast Groundfish Observer Program's goal is to collect discard information which is used to assess the total mortality of a variety of groundfish species. This chapter explains the components that have been put place to ensure the program achieves this goal.

WCGOP Management Structure

The WCGOP is a cooperative effort between NOAA Fisheries and Pacific States Marine Fisheries Commission (PSMFC).

NOAA Fisheries and PSMFC work together under this cooperative agreement to manage observer resources. Examples of shared responsibilities include program oversight, vessel selection, data quality assurance and program outreach.

NOAA Fisheries

NOAA Fisheries (also known as National Marine Fisheries Service, NMFS), an agency within the Department of Commerce, is dedicated to the stewardship of living marine resources through science-based conservation and management, and the promotion of healthy ecosystems. (See Figure 2-1)

As a steward, NOAA Fisheries conserves, protects, and manages living marine resources in a way that ensures their continuation as functioning components of marine ecosystems, affords economic opportunities, and enhances the quality of life for the American public.

To gauge the effect commercial fisheries have on ecosystems, NOAA Fisheries deploys observers to monitor protected species (marine mammals, sea turtles, seabirds) and/or fish and invertebrate bycatch.

NOAA Fisheries' responsibilities for the WCGOP include designing and implementing the sampling plan (logistical component to ensure random sampling of the fleet), designing and implementing data collection protocols, ensuring data quality, data storage and management, data analysis and release, and debiting discards from Catch Share vessel accounts. NOAA Fisheries staff includes a program manager, a field coordinator, data analysts, a program assistant, and debriefers.

Title	Name and Location
Program Manager	Jon McVeigh; Seattle, WA
Data Analyst	Jason Jannot; Seattle, WA
Data Analyst	Kayleigh Somers; Seattle, WA
Data Analyst	Kate Richerson; Seattle, WA
Data Manager	Neil Riley; Seattle, WA
Field Coordinator	John LaFargue; Eureka, CA
Lead Debriefer	Ryan Shama; Newport, OR
Debriefer/Training	Christa Colway; Newport, OR
Debriefer	Jason Eibner; Newport, OR
Debriefer	Toby Mitchell, Newport, OR
Debriefer	Phillip Bizzell; Hammond, OR
Debriefer	Tim Peretti; Eureka, CA
Admin Assistant	Rebecca Hoch; Seattle, WA

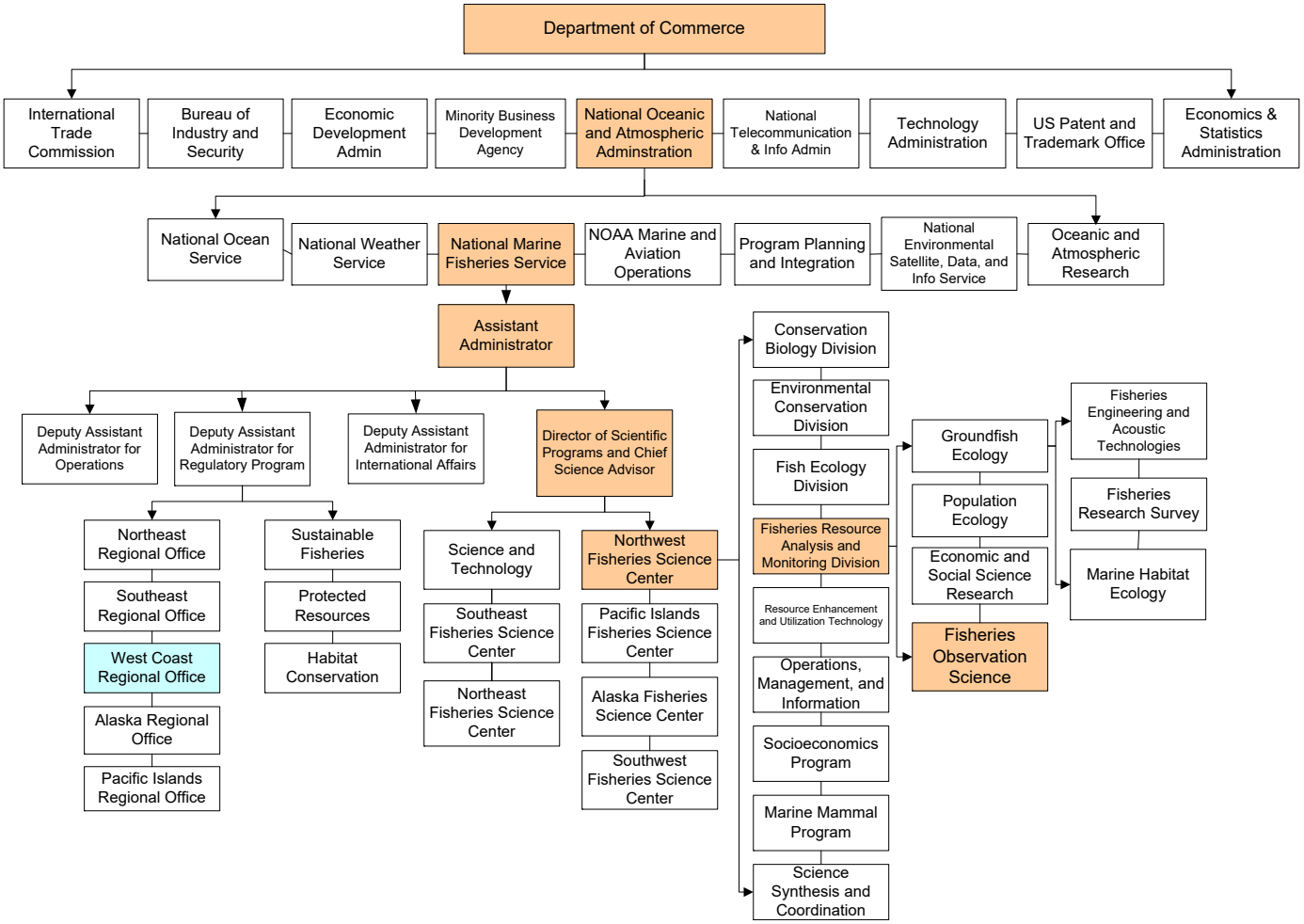
PSMFC

Authorized by Congress in 1947, the PSMFC is one of three interstate commissions dedicated to resolving fishery issues. Representing California, Oregon, Washington, Idaho, and Alaska, PSMFC does not have regulatory or management authority; rather it serves as a forum for discussion and works for coast wide consensus among state and federal authorities. The PSMFC addresses issues that fall outside state or regional management council jurisdiction.

The PSMFC's goal is to promote and support policies and actions directed at the conservation, development, and management of fishery resources of mutual concern to member states through a coordinated regional approach to research, monitoring, and utilization.

PSMFC's responsibilities for WCGOP include procuring services of contractors to hire unbiased observers, supplying observer sampling and safety gear, ensuring data quality, coordinating observer activities, debriefing, and training observers. PSMFC staff includes a program manager, gear technician, field coordinator, and debriefers.

Title	Name and Location
Program Manager	Jim Benante; Seattle, WA
Data Manager	Jim Fellows; Seattle, WA
Gear Technician	Eric Brasseur; Newport, OR
Field Coordinator	Scott Leach; Newport, OR
Debriefer	Taylor Howe; Hammond, OR
Debriefer	Kenneth Grimes; Hammond, OR
Debriefer	John Bieraugel; Crescent City, CA
Debriefer	Eli Coplen; Morro Bay, CA
Debriefer	Jason Vestre; Morro Bay, CA



Department of Commerce Organizational Chart

Figure 2-1: Department of Commerce Organizational Chart.

California Department of Fish and Game

A half-time state coordinator acts as a liaison between California Department of Fish and Wildlife and the WCGOP. He is responsible for coordinating with shore-side samplers, providing current information on vessel activities, facilitating meetings between observers and vessel crew, assisting the WCGOP in ensuring designated vessels have obtained a United States Coast Guard (USCG) vessel safety decal, and general program support.

Title	Name and Location
CA Coordinator	Mike Fukushima, Eureka, CA

Observer Providers

Observer providers recruit biologists year-round to work as domestic groundfish observers in Washington, California, and Oregon. By doing this, they help the government obtain the data necessary to achieve a sound management plan for the protection and benefit of future fisheries resources on the West Coast.

The current observer providers for the Catch Share program are Alaskan Observers, Inc. (AOI) and Saltwater Inc.

Observer Qualifications

With a functional management structure for the WCGOP in place, the next component is ensuring observers maintain a professional and unbiased standing with the fishing communities, scientific communities, and non-governmental organizations (NGOs). This professional standard is a necessity as it speaks to the integrity of observer-collected data.

NOAA Fisheries Approval for Observers

To become a NOAA Fisheries-approved observer for the WCGOP, a 15 day training must be successfully completed. In order to maintain approval, observers must:

- Demonstrate proficiency during each trip.
- Receive satisfactory performance assessments and evaluations.

In addition to the above, observers must maintain a professional image by adhering to the WCGOP Standards of Conduct, keeping data confidential, and avoiding conflicts of interest. For more information on maintaining WCGOP Observer status, (See the section, Maintaining WCGOP Observer Status on page 11-10)"

Standards of Conduct

WCGOP observers have an important image to maintain as professional scientists. Observers must avoid behaving in any manner that could adversely affect the public's confidence in the integrity of the observer program, the data provided, or other observers. Since observers reside in the same small communities as their vessel crews, maintaining a professional attitude both on and off the vessel is very important. Expected behavior includes, but is not limited to, the following:

1. Observers must maintain an unbiased and/or neutral approach to fisheries management issues while on the job and avoid declaring a pro-fishing or a pro-environmental stance.
2. Observers must diligently perform their assigned duties.
3. Observers must accurately record their sampling data, write complete reports, and report honestly any suspected violation of regulations relevant to the conservation of marine resources or their environment in a timely fashion.
4. Observers must not disclose collected data, observations made onboard a vessel, or observations made in a processing facility to any person except the owner of the observed permit, an authorized enforcement agent, or a WCGOP staff member.
5. Observers must not engage in any illegal actions or any other activities that would reflect negatively on their image as professional scientists, on other observers, or on the WCGOP as a whole.

Any behavior contrary to these standards, or the intent of these standards, is grounds for dismissal. Falsification of data is grounds for immediate dismissal and may be a basis for prosecution.

In addition to the above standards, which are noted in the Code of Federal Regulations, WCGOP Observers must not actively fish while observing a vessel, nor can they perform any work that might bias their data (e.g., making decisions that affect which fish are discarded v. retained). The job of an observer is to observe the fishery, not participate in it. There are multiple reasons for this. First, it biases the data. Observer programs report on Catch Per Unit Effort (CPUE). By essentially becoming an extra crew member, the observer's data is no longer representative of normal fishing operations for that vessel. Secondly, this behavior is unfair to unobserved vessels participating in the fishery and to other observers who may face increased pressure to break this rule, because "the last observer did it." Lastly, it is illegal to fish on a commercial vessel without a commercial

fishing license. For these reasons, the WCGOP makes it very clear to our observers that it is unacceptable to participate in fishing activities while observing on a vessel.

Conflict of Interest

Observers are required to maintain an unbiased role by limiting their financial interest in the fishery. Observers must abide by the following conflict of interest standards:

- Observers may not have a direct financial interest, other than the provision of observer services, in a West Coast fishery. This includes, but is not limited to-
  - Involvement in the catching or processing of products from the fishery either by vessels or shore-side facilities.
  - Involvement in the selling of supplies or services to these vessels or shore-side facilities.
  - Involvement in the purchasing of raw or processed products from these vessels or shore-side facilities.
- Observers may not solicit or accept, directly or indirectly, any gratuity, gift, favor, entertainment, loan, or anything of monetary value from anyone who conducts activities that are regulated by NOAA Fisheries, or who has interests that may be substantially affected by the performance or non-performance of the observers' official duties. (Note this standard restricts observers from accepting home-packed fish without purchase.)
- Observers may not serve as an observer on any vessel or fish processing facility owned or operated by a person who previously employed the observer.
- Observers may not solicit or accept employment as a crew member or an employee of a vessel or shore-side processor in a West Coast Groundfish fishery while under contract with an observer provider.

Confidentiality

Observer data is confidential as per the **MSA**. This means that data collected by observers can only be shared with:

- WCGOP Staff (all data, including logbook)
- Designated NMFS Enforcement Agents (all data, including logbook).
- Permit owners (all data, excluding logbook). Do not share observer logbook with permit owner, captain, and/or crew.

Before sharing any data, contact a coordinator or debriefer. The program must maintain a record of what is being released and staff can also provide the enforcement agent or permit owner the necessary background material to understand the data. Take note that the data can only be released to the *permit owner.* If the captain requests the data and he/she is not the permit owner, clearly state that the Program can only provide copies of the data to the permit owner. The captain will have to receive copies via the permit owner.

Magnuson-Stevens Fishery Conservation and Management Act (MSA): is the principal law governing marine fisheries in the United States.

WCGOP Non-Catch Share Sampling Plan

Vessel Selection

Besides quality observers, the WCGOP Non-Catch Share program also needs a viable sampling plan to achieve its goal. A sampling plan is the framework used to sample the fleet in a non-biased and random fashion. The sampling plan is executed through vessel selection. A basic understanding of the vessel selection process is necessary for observers, as it explains observer placement on vessels and priorities for Non-Catch Share observer coverage.

Last year, the WCGOP Non-Catch Share program provided observer coverage for over 15 fisheries. The methodology used for vessel selection is summarized below.

1. Permit lists are obtained from state (open access) or federal (limited entry) agencies.
2. Permits are placed in port groups based upon the previous year's landings. Port groups are one or more ports grouped together based upon fishing operations and proximity. The WCGOP has 13 port groups between Bellingham, WA, and San Diego, CA.
3. WCGOP determines the **selection cycle** length for each fishery.
4. Permits are given a random number and selected sequentially for a **coverage period**.
5. Selection letters are sent from Seattle to the permit owners approximately 45 days prior to coverage period.
6. When the coverage period begins, the vessels selected are required to carry an observer for all trips during the period unless given a waiver by a designated WCGOP official.

Selection Cycle: The amount of time required to select and cover all vessels in the selection frame.

Coverage Period: The amount of time a vessel is required to carry an observer. During the coverage period, all trips a vessel takes must have an observer or a WCGOP-issued waiver. Coverage periods are usually one, two, or seven months.

Determining Selection Cycle Length

As the fishery is managed with landing limits by species or species complex, it is only natural to assume that some limits will be reached prior to the attainment of all species/species complex limits. Once a limit is reached on a species, all individuals of that species caught thereafter will be discarded. Therefore, managers have long assumed the rate of discard increases as the vessel nears attainment of the limits. To capture a good image of the discard rate over time, observers are placed on vessels for the length of time the limits cover. For instance, species/species complex limits in the pink shrimp trawl fleet are for one-month periods. Therefore, observers cover shrimp trawlers for all trips during a one-month trip limit period. For the sablefish fishery, vessels catch their sablefish quota over a 7-month period. Observers cover these vessels for all trips during the 7-month period when sablefish are landed.

Non-Catch Share Fishery Coverage Priority List

As port groups often have multiple selected vessels that are fishing at the same time and only a limited number of observers, Non-Catch Share fisheries are prioritized for observer coverage in the following order:

- **Tier 1:** EM Exempted Fishing Permits, Limited Entry Sablefish Endorsed
- **Tier 2:** IPHC Directed Commercial Halibut, Zero Tier, CA Halibut, and all nearshore fisheries
- **Tier 3:** WA/OR/CA Shrimp, CA Cucumber trawl, CA Ridgeback Prawn

Non-Catch Share Observer Placement

There are two important facets to observer placement: seasonality and geography.

The number of observers deployed by the WCGOP changes throughout the year to coincide with fishing activity. Fishing activity is highest during the summer months and lowest during the winter. This is due to a variety of reasons, which include weather and vessel participation in other fisheries. The WCGOP, therefore, almost doubles its working observers during the summer months.

As permits are placed in port groups prior to selection, observers are also assigned to a port group. The port group an observer works in will usually include a large port and the surrounding smaller ports. Observers primarily cover vessels that originate out of their assigned home port group but travel to other port groups may be necessary.

WCGOP Observers

The final component to achieving the WCGOP's goal is ensuring data quality. Observers are trained to collect data according to WCGOP protocols and data is checked after collection for accuracy. There are three phases of the data quality process:

- Training
- Data Collection
- Debriefing

Training

A fifteen-day training course is required of all observers new to the WCGOP. The course consists of an overview of sampling procedures, species identification, safety training, conflict resolution training, training in the use of web and tablet based data-entry applications, small vessel etiquette, and general support information. Trainees must pass a series of tests and homework assignments to demonstrate their understanding of:

- Observer priorities and duties
- WCGOP methods of independent catch estimation
- Proper recording of data
- WCGOP methods of sampling and recording species composition data for both retained and discarded catch
- Fish identification and use of dichotomous keys
- Gender determination and measurement of fish
- Procedures for collection of age structures
- Data entry applications
- Correct use of subsampling and randomization techniques
- Safety and survival skills.

In order to receive NOAA Fisheries-approval, trainees must attend and participate in every class, pass a fish exam and final exam, complete all homework assignments, and make any corrections requested. On the first day of training, a training requirement document will be issued and must be signed as in indication that the trainees have read and understood the requirements to pass the class. In addition, all Observers must sign a statement of nondisclosure, indicating that they have read and understood the NOAA Administrative order 216-100 (NAO 216-100) on Protection of Confidential Fisheries Statistics (http://www.corporateservices.noaa.gov/ames/administrative_orders/chapter_216/216-100.html).

Trainees must perform several safety related skills and effectively participate in on-land, in-water, and onboard safety drills. Trainees must demonstrate the use of personal and vessel safety equipment. Additionally, trainees must be able to demonstrate that they have the attitude and ability required to perform a difficult job independently and to act professionally in stressful situations.

Data Collection

After successful completion of training, observers are deployed to their port groups and placed on selected vessels. During their contract observers have constant access to WCGOP program staff. There are field stations in Hammond, Oregon; Newport, Oregon; Crescent City, California; Eureka, California; and Morro Bay, California. New observers contact their debriefers after their first trip to discuss sampling and any issues which arose during the trip.

If any problems, questions, or comments arise during a deployment, observers should contact a coordinator or debriefer. The coordinator's and debriefer's main purpose is to provide help and support to observers. A positive observer/coordinator/debriefer relationship during deployment will provide an easy end-of-period debriefing and a quick resolution to problems encountered.

Debriefing

Data is debriefed to ensure that all data are collected according to program protocols. Debriefers meet in person with observers for debriefings, either in their home port or at the debriefer's office.

The purposes of debriefing are to:

- Clearly describe all data collection methods utilized.
- Receive feedback on sampling methodology.
- Inform WCGOP staff of any problems encountered.
- Make all necessary corrections to data.
- Receive a written performance assessment and evaluation.

See Chapter 11, "Observer Life" for a detailed explanation of the debriefing process.

Requirements for Return

If the observer performs satisfactorily with no major issues and wants to return to the WCGOP within 12 months of the date of their last debriefing, an annual briefing is required. If upon returning to the WCGOP it has been more than 12 months since the date of their last debriefing, a full training is required.

After every year of successful data collection as a WCGOP observer, attendance at an annual four-day briefing is required. At briefings, experienced observers will receive programmatic updates, refresh safety and survival skills training, review fish identification skills and take a species identification exam.

If the observer did NOT perform satisfactorily and wants to return to the WCGOP Catch Share or Non-Catch Share program, they must submit their first 3 non-whiting trips for review and attend an initial deployment debriefing, in order to receive a deployment endorsement. If performance is shown to be unsatisfactory, the deployment endorsement will not be issued and no further deployment will be permitted.

If a debriefer determines that an observer's performance is well below program standards they may require that observer to repeat a full training regardless of the date of return.

WCGOP Training Policy

WCGOP Training Requirements

New Trainees

All new observer trainees must attend a 15-day training provided by the West Coast Groundfish Observer Program (WCGOP), fully participate during classroom exercises, and achieve minimum performance standards as set by the WCGOP. The purpose of the training is for trainees to gain an understanding of how to collect fishery data which can be used to manage the groundfish stocks on the West Coast. Trainees will learn how to work efficiently under the strenuous conditions of commercial fishing vessels. In general, the training consists of an intensive overview of commercial fishing gear and strategies, sampling protocols, safety at sea, and identification of fish, invertebrates, birds, and mammals of the West Coast. Trainees must pass a series of tests with a minimum score of 80 percent. Additionally, several homework assignments must be completed accurately and on time. Through the exams and homework trainees will demonstrate their understanding of, and ability to apply the following concepts:

- Observer priorities and duties
- Methods of independent catch estimation
- Proper recording of catch data
- Methods of sampling and recording species composition data
- Fish identification and use of dichotomous keys
- Gender determination and measurements of fish and crab
- Procedures for collection of biological structures
- Safety and survival skills

Trainees must also meet the following classroom and safety requirements to pass the training.

Classroom Training Requirements include:

- Arrive for training on time and participate in all in-class lectures and assignments.
- Successfully complete all homework assignments and make any corrections requested by trainers.
- Pass a final exam with a minimum score of 80%.
- Pass a fish identification exam with a minimum overall score of 80%, and correctly identify:
    - 4 of 7 rockfish species
    - 2 of 4 flatfish species
    - 5 of 9 miscellaneous fish species
    - 1 of 3 invertebrate species

The Safety Training Requirements include at minimum:

- Arrive for training on time and participate in all in-class lectures and assignments.
- Demonstrate the proper way to test an EPIRB.
- Properly hook up a hydrostatic release.
- Properly don an immersion suit, dry within 60 seconds.
- Demonstrate proper jumping techniques for entering the water while wearing an immersion suit.
- Participate in drills, including Fire, Flooding, Man Overboard, and Abandon Ship.
- Participate in water exercises.

Figure 2-2: WCGOP Training Policy page 1

- Demonstrate proper flare firing.
- Additional activities and exercises.

Additionally, new trainees must be able to demonstrate to the instructor that they have the attitude and ability required to perform a difficult job, independently, and to act professionally in stressful situations.

Returning Observers/ Briefings

Observers who have completed a prior contract and whose certification is still valid will be required to fulfill, at a minimum, the following:

- Arrive for training on time and attend a WCGOP briefing in its entirety.
- Successfully complete all homework assignments and make any corrections requested by trainers.
- Pass a fish identification exam with the same requirements as detailed for New Trainees.
- Successfully complete all safety training requirements as detailed for New Trainees.

New Trainees and Returning Observers/Briefings

If for any reason the requirements are not met, the trainee may be re-tested in some areas of the training. Additional homework may be assigned if a trainer does not feel homework was completed adequately. One make-up exam may be given for the fish identification exam, provided that the first test resulted in a score of no lower than 64%. Make-up fish identification exams will be held starting at **noon** on the next BUSINESS day that staff is available.

New Trainees who fail the make-up fish identification exam will not pass training. Trainees are eligible to attend the next full training.

Returning Observers who fail the first fish identification exam will be required to complete new species identification forms for all species. Failing the make-up exam fails the briefing and the observer may no longer deploy. The species identification requirement may only be fulfilled by attending all fish lectures and fish labs during the next full observer training and by passing a fish identification test.

Safety requirements can be fulfilled at the discretion of the WCGOP safety training team on a case by case basis.

There will be no make-up for other exams. Speak to the lead trainer if reasonable accommodations are required for any portion of the training.

X Printed Name:_____ X Date: _____

X Signature: _____

Figure 2-3: WCGOP Training Policy page 2

Statement of Nondisclosure

2020 STATEMENT OF NONDISCLOSURE

I have read the NOAA Administrative order 216-100 (NAO 216-100) on Protection of Confidential Fisheries Statistics and I understand its contents. I understand that the Magnuson Stevens Act Reauthorization of 2006 provides that observer information is confidential and to the extent the NAO 216-100 is inconsistent with it, NAO 216-100 is inapplicable.

I will not disclose any data identified as confidential to any unauthorized person(s), except as directed by the Assistant Administrator for Fisheries. I am fully aware of the civil and criminal penalties for unauthorized disclosure, misuse, or other violation of the confidentiality of such data.

I understand that I may be subject to criminal and civil penalties under provisions of Titles 5 U.S.C. 552 and 18 U.S.C. 1905, which are the primary Federal statutes prohibiting unauthorized disclosure of confidential data. I may also be subject to civil penalties for improper disclosure of data collected under the Magnuson-Stevens Act or the Marine Mammal Protection Act.

Notification: This notification is to inform you that NOAA/NMFS monitors all usage of electronic mail, internet activities and data retrieval under the jurisdiction of the Federal Government. There are severe penalties for the misuse of these resources. Your Signature on this form acknowledges you have been notified and are aware of this

_____	_____	_____
Name (typed or printed)	Signature	Date
_____	_____	_____
Name of Witness (typed or printed)	Signature	Date

	Affiliation (check one):		Type of Data:
	NMFS	X	Source
	Other Federal		Subregional
	State		Regional
	Council Staff		Multiregional
	Council Member		Special (specify):
	Contractor		
	Grantee		
	Other (specify):		Other (specify):
X	WCGOP Observer		

Designated NMFS Official

___Jon T. McVeigh_____	_____	_____
Name (typed or printed)	Signature	Date

ver. June 2007- WCGOP

Figure 2-4: Confidentiality Agreement



Observer Basics

TABLE OF CONTENTS

Introduction . . . 3-2

General Data Collection . . . 3-2
- Data Types . . . 3-2

Duties and Priorities . . . 3-2
- Duties and Priorities on Trawl Vessels . . . 3-2
- Duties and Priorities on Fixed Gear Vessels . . . 3-3

Introduction to Random Sampling Theory . . . 3-3
- Advantages of Random Sampling . . . 3-3

Catch Sampling . . . 3-4
- Catch Categories . . . 3-5
- Weight Methods . . . 3-6
- Reason for Discard . . . 3-7

Data Collection and Documentation . . . 3-8

Data Forms . . . 3-8
- Completing and Organizing Forms . . . 3-9

Observer Logbooks . . . 3-10
- Observer Logbook Entries . . . 3-10
- The Logbook as Evidence . . . 3-10
- Logbook Sections Overview . . . 3-10

Additional Policies . . . 3-12
- Sampling Description Form . . . 3-12
- IFQ Priority Species Tracking Form Instructions . . . 3-19
- Species ID Requirements . . . 3-20
- Simple Random Method: . . . 3-22
- Systematic Random Method: . . . 3-22

Reason for Discard Study Guide . . . 3-24

Chapter 3

Introduction

Information on general data collection and documentation is presented in this chapter. This information applies to data collection and recording on all vessels and gear types observed by the WCGOP. For a more in-depth break down of sampling, weight methods and documentation refer to Chapters 4, 6, and 7 Chapter 11, "Observer Life" covers additional information about WCGOP observer policy.

General Data Collection

This section details the building blocks of sampling for the WCGOP.

Data Types

Fisheries managers and scientists ask observer programs to collect an assortment of data, as they are often the only independent participants in a fishery. There are five data types observers provide to managers and scientists:

1. **Fishing Effort Information:** This information is used by managers to understand where people fish, types of gear used, and target species.
2. **Catch Information:** This information includes how much was caught, what species made up the catch, and the percentage of each species retained and discarded.
3. **Species Composition:** Species composition data is used to estimate the relative abundance of each species in a haul. It includes the species-specific weights and counts.
   - Species composition information includes a reason for discard. Fisheries scientists are interested in the fundamental reason discarding occurs.
4. **Biological Data:** Biological data is used by stock assessors to gauge the age composition of the population, the length to age ratio, the potential spawning population, and the male to female ratio. It includes sex, lengths, weights, tissue, and otoliths for individual fish.
5. **Other:** This includes data not necessarily used by fisheries managers but important to ecosystem management. This data type includes information about protected resources, such as marine mammals, sea turtles, seabirds and other ESA-listed species.

Given direction by managers and scientists, the WCGOP sets priorities and designs protocols for data collection.

Duties and Priorities

Use these lists as a reminder of data to be collected and to help prioritize when all duties cannot be accomplished.

Duties and Priorities on Trawl Vessels

1. Record incidental takes and collect appropriate biological information from protected species, including; marine mammals, sea turtles, seabirds, green sturgeon, and salmon.
2. Record interactions of marine mammals, sea turtles, and seabirds with fishing gear.
3. Document sightings of ESA listed species.
4. Record fishing effort information, including - location, time, date, and depth for all hauls.
5. Estimate total catch weight (OTC), even for tows with 100% discard.
6. Catch Accounting (see guidelines below for Catch Share vs. non-Catch Share vessels)

   A. **Catch Accounting:** ***Catch Share Trawl Vessels***

      a. Estimate weights of IFQ species, in the following order:

         i. Mixed discarded catch categories containing IFQ species must be sampled for species composition.

         ii. Collect actual weights for retained and discarded priority rockfish species - Yelloweye and Cowcod.

         iii. Estimate weight of Pacific halibut by tallying 100% and taking actual lengths/viabilities on all or a randomly selected subsample.

         iv. Determine discarded weight of all other IFQ species.

         v. Make visual estimates of all retained rockfish species.

      b. Estimate discarded weight of non-IFQ species.

      c. Sample discarded non-IFQ species for species composition.

      d. Complete the IFQ Priority Species Tracking Form (non-hake fisheries only).

   B. **Catch Accounting:** ***Non-Catch Share Trawl Vessels***

      a. Estimate weight of discarded catch categories.

      b. Sample discarded catch categories to determine species composition.

      c. Record length and viability of Pacific halibut.

      d. Verify vessel estimated weight of retained catch.

         i. Make independent estimates of any retained catch not accounted for in logbook.

7. Document reasons for discard for each species and/or catch category.

Priorities 1 – 7 must be completed on ALL hauls

8. Record weight, length, sex, and take necessary dissections from tagged fish.
9. Take biological samples, including- length, sex, otoliths, tissue, etc. from discarded individuals
10. Complete species identification forms.
11. Maintain observer logbook.
12. Document sightings of non-ESA listed marine mammals and seabirds.
13. Compile forms and enter trip data/upload to database within three days of disembarking.

Duties and Priorities on Fixed Gear Vessels

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. Document sightings of ESA listed species.
4. Record fishing effort information, including location, time, date, and depth for all sets.
5. Conduct hook counts per segment, or count all hooks.
6. Verify total segments per set.
7. **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:**

- Longline Vessels - Collect 5 PHLB spread throughout the set for actual length and viabilities. Take visual length estimates for all others.
- Trap Vessels - Take actual lengths and viabilities for all PHLB.

C. **Obtain weights of fish:**

- Target and Non-Target species - Weigh all individuals, or obtain a minimum subsample weight of at least 20 individuals.

8. Complete an IFQ Priority Species Tracking Form for every haul (All Catch Share vessels and some Exempted Fishing Permit [EFP] vessels.).

Priorities 1- 8 must be completed on ALL hauls

9. Record weight, length, sex, and take necessary dissections from tagged fish.
10. Take biological samples, including length, sex, otoliths, tissue, etc. from discarded individuals.
11. Complete species identification forms.
12. Maintain observer logbook.
13. Document sightings of non-ESA listed marine mammals and seabirds.
14. Compile forms and enter trip data/upload to database within three days of disembarking.

The duties listed above are those typically performed while at-sea. However, the WCGOP may instruct observers to collect additional data

Introduction to Random Sampling Theory

Random sampling is used by observers to ensure unbiased data collection. Observers take **subsamples** from a population when it is not possible to count, weigh and/or measure every individual within the population. When random sampling is used to subsample, **every member of the population has an equal probability of occurring in the sample.** If every member of the population is equally likely to occur in the sample and sampling is repeated over time, then the collection of samples can be used to draw conclusions about the population.

Subsample: A portion of a population. It can be used to make inferences about the population as a whole if collected in a random fashion.

Advantages of Random Sampling

The use of random sampling eliminates subjectivity and ensures managers, fishers, and other end users have access to observer data that are not biased for or against the fleet.

When random sampling methods are used to collect data, NOAA Fisheries is justified in using statistical methods for estimating population parameters based upon those data.

Steps in Taking a Simple Random Sample:

1. **Define the population:** The population is the total set of items that we wish to draw inferences about. Populations observers take samples from include:

- All the individuals in a haul.

- All the individuals in a catch category (defined in next section).

2. **Define a sampling frame:** A sampling frame is a conceptual framework, which divides the population into independent, countable sampling units. For example, a spatial frame is based on a unit of space or unit of gear and could include:
   - **Space:** Checker bin, Trawl Alley, or Baskets.
   - **Gear:** Skate, Tub, Pole, Stick, or Pot.
3. **Define your sample units:** It must be possible to collect all individuals within a single unit. Be sure not to use sample units that are so large it may be impossible to collect all individuals. Example:
   - **Spatial:** A trawl alley is divided into six sections. Each of the six sections is a sample unit.
   - **Baskets:** A total of 20 baskets of discarded fish in a haul. Each basket is a sampling unit.
4. **Number all of the sample units in your sampling frame:** If your units are sections of deck or individual baskets, assign a number to each. Gear segments on fixed gear vessels can also be numbered consecutively.
5. **Pick random numbers to choose which units to sample:** Generate random numbers between 1 and your maximum sample unit number (inclusive) to determine which sample unit(s) to select. You will be given a random number table during training. There is also one in the WCGOP Field Manual, and another can be found in the Appendix. Dice, the second hand of a watch, and numbered pieces of paper are other options for generating random numbers.
6. **Select the sample units corresponding to the random numbers:** This is your sample.
   - **Spatial:** Collect all of the individuals from each randomly selected deck section or gear unit.
   - **Baskets:** Collect all randomly selected baskets of discard for your sample.

Random Systematic Sampling

Another way to take a random sample is to set up a random systematic frame. Random systematic sampling can only be used when you know, or have a reasonable estimate of, the **total** number of sample units. Systematic sampling involves taking a sample during every "n^{th}" defined sample unit. For a random systematic frame, randomize the selection of your first sample unit and then take every "n^{th}" unit thereafter. The steps for taking a random systematic sample are:

1. Define the population.
2. Define a sampling frame.
3. Define the sample units and determine the total number of sample units.
4. Number all of the sample units in the sampling frame.
5. Determine how many of the sample units you want in your sample.
6. Divide the total number of sample units by the number of units you want in your sample. This gives you your value for "n".
7. Randomly select a number between 1 and n. This will be the first sample unit in your sample.
8. Sample every nth unit thereafter.

Example

There are 100 baskets of fish that need to be sampled.

1. **Define population:** 100 baskets of fish.
2. **Define sampling frame:** Random Systematic, using baskets.
3. **Define sample units:** Individual baskets of fish.
4. **Number all sample units:** Baskets numbered 1 – 100.
5. **Determine how many sample units to sample:** Decide to sample 20 baskets.
6. **Calculate value of "n":** 100/20 = 5.
7. **Randomly select a number between 1 and "n":** Use random number table to select 2.
8. **Sample baskets:** 2, 7(2+5), 12(7+5), 17(12+5)..... 97(92+5).

Tip: If you are sampling more than half of the sample units, calculate "n" based on the number of sample units that will not be sampled. Randomly select a number between 1 and n and that will be the first sample unit you skip. Skip every nth unit thereafter.

Later chapters include in-depth discussions on applying random sampling protocols.

Catch Sampling

The WCGOP samples catch in two very different ways; total catch sampling and discard sampling. The method used is totally dependent on gear type. WCGOP observers are deployed in both net (trawl) fisheries and fixed-gear (hook and line or pot) fisheries. The gear types differ substantially in how the fish are brought on board the vessel, which is the driving force behind the different sampling strategies.

- **Net (trawl) vessels:** Trawlers bring all of their catch on board at the same time. The catch is dumped on the deck and the quantity of fish on deck can range from 100's of pounds to 1000's of pounds. Catch Share

observers sample retained priority species, but focus mainly on discarded catch in order to reduce the amount of fish to be sampled. The retained catch is primarily estimated by the skipper of the vessel.

- **Fixed Gear vessels:** Hook and line vessels bring their catch aboard one fish at a time. Pot vessels bring their catch aboard one pot at a time. Catch weight per pot varies from a single fish to 100 or more pounds. This results in a reasonable quantity of fish coming on board at one time, allowing observers to estimate total catch (retained and discarded) on fixed gear vessels.

Due to the sampling strategies of the WCGOP, documentation of catch is unique and can be confusing to new observers, as well as experienced observers from other programs. In order to allow for these different strategies, an additional level of groupings (above the species level in most cases) is required. The WCGOP calls these higher levels of groupings catch categories.

Catch Categories

Catch categories are species groupings that are based on either marketing categories or naturally occurring associative species complexes. A catch category may be confined to a single species or may include several species.

Catch (market) categories are a unit of categorization used on the West Coast by processors to aggregate species based on color and/or cohabitation. The result is landings which are documented by catch category, not necessarily species. The WCGOP also uses catch categories when sampling (See Figure 3-1). There are two reasons why catch categories are used:

- **Matching observer data to landings:** Since retained catch is recorded by catch category, the most efficient method of matching observer collected data to landings is by using catch categories.
- **Better estimates of priority species:** The WCGOP sampling protocol allows for more precise sampling of species of high concern. Observers can focus their effort on overfished species and/or prohibited species to get the best estimates possible, while using less precise methods for other species.

Observers use catch categories based on sorting/sampling methods and catch disposition. Use the following rules to determine whether or not species should be placed within the same catch category:

- Retained and discarded catch are always in separate catch categories.
- Individuals are grouped in the same catch category when they are sampled together. All individuals in the grouping must share the same weight method (weight methods are explained next).

There are slight differences between gear types in defining catch categories. Chapters 4, 6, and 7 discuss defining catch categories on specific gear types.

The following "Figure 3-1:" shows the flow of WCGOP sampling. Total catch is split into separate retained and discarded catch categories. Each of these catch categories has its own separate species composition.

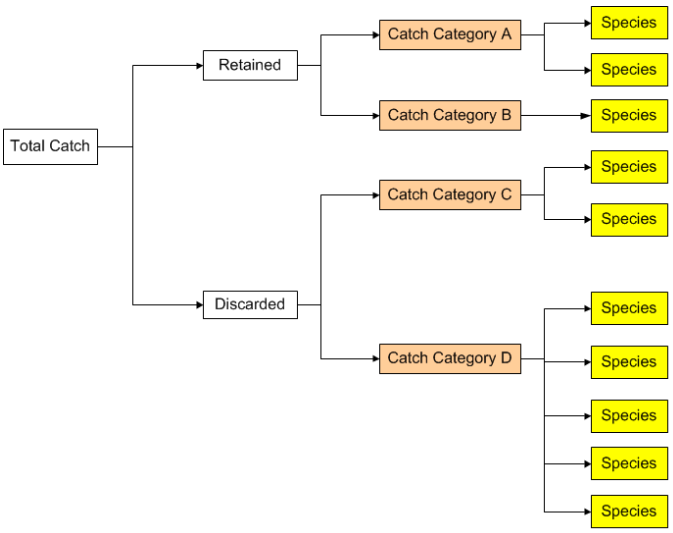


Figure 3-1: Flow of WCGOP Sampling.

Naming Catch Categories

A list of catch categories and the corresponding three or four letter PacFin codes can be found in the table "Catch Categories Code Lists and Target Strategies" on page A-11

There are two rules for naming catch categories:

1. If the catch category is sampled for species composition, the name of the catch category is irrelevant. Sampled catch categories are usually named ZMIS.
2. If the catch category is not sampled, the most descriptive name in the Catch Categories List should be used.

The following codes should be used when a catch category is not species composition sampled AND a more descriptive catch category code is not available:

- **INVT:** Invertebrate discard that is not species composition sampled.
- **Bottom Item Codes:** Miscellaneous bottom items, marine debris, and organisms, that are discarded and not species composition sampled (See the section, Marine Debris/Bottom Item Category Codes on page A-13).
- **NIFQ/IFQM:** These are the acceptable catch category codes for unsampled hauls on trawl vessels. Use in cases where making visual estimates of discard using more specific catch categories is not feasible.

- **UNST:** This is an acceptable catch category code for unsorted, discarded catch that contains both Retained and Discarded species (e.g. unsorted catch is washed overboard). Note that a portion of the catch must be landed and sorted to use this catch category.
- **FISH:** Single fish species that is discarded and not species composition sampled AND does not have a more descriptive catch category code (NON-CATCH SHARE ONLY).

Note: When documenting FISH, **always** include a comment. **Never** use FISH for a mixed catch category.

Weight Methods

Weight methods are used to explain how the weight of the total catch was determined and how the weight of a catch category was determined. Because the WCGOP covers a very diverse fleet, thirteen weight methods have been developed to obtain total catch and/or catch category weights.

Note: It is essential that weight methods be used, according to protocol, to ensure that WCGOP data is collected consistently.

3 - Basket Weight Determination: All of the individuals within a catch category are placed in observer baskets. Some, but not all, of the baskets are actually weighed (5 baskets out of 10 baskets, for example). The average weight of these baskets is applied to the total number of baskets filled. This method can be used for catch category weights.

5 - OTC – Retained: Subtracting retained estimates from observer total catch weight (OTC) gives the total discard weight. This method is used when a haul is not sampled due to injury or illness on net vessels. This method can be used for discarded catch category weight only.

6 - Other: Weight method 6 is most commonly used to document unsampled or incorrectly sampled hauls. When an OTC is not taken due to observer illness, safety, or other reason, weight method 6 - Other is recorded to trigger an OTC calculation from "like" hauls. This weight method should not be used intentionally, but is sometimes needed when the method used to determine the catch category weight cannot be accurately described with one of the other weight methods. This sometimes happens when weight methods are "mixed". In this case, the most important thing is to thoroughly document how sampling was done on the deck forms and in the observer logbook. This method can be used for total catch and catch category weights.

7 - Vessel Estimate: The vessel estimates how much is caught by catch category. This method is used for retained catch categories on trawl vessels (non-priority species only). Weight is usually copied directly from the vessel's logbook after a haul.

8 - Extrapolation: The total number of individuals of a species is multiplied by an average weight to estimate the catch category weight. This method can be used in situations where weighing all individuals of a species is impossible but it is possible to count them. A variation of this method can also be used to estimate OTC on fixed gear vessels.

9 - PHLB Length/Weight Conversion: The lengths of individual Pacific halibut are actually measured (or visually estimated on longline vessels). A length-to-weight conversion table is then used to arrive at a weight. This method can be used for Pacific halibut catch categories only.

11 - Retained + Discarded: If all of the catch is sampled on a hook or pot vessel, the sum of the catch category weights is used for OTC. This method can be used for OTC.

13 - Tally Sample: A total count for each species/species grouping and an actual or average species weight is used to determine catch category weight. This method can be used for catch categories on hook or pot vessels only.

14 - Visual Experience: Weight of the catch category is estimated by sight only. This method is used in instances where an individual is too large to weigh, when fish are discarded without being brought on board, and other similar circumstances. This method should always be used for OTC on net vessels. It can also be used for catch category weight.

15 - Visual Spatial: Weight of the catch category is estimated based on a spatial known. Catch weight is determined by visually dividing the alley or checker bin(s) into equal units, collecting catch from 1 or more of those units, and multiplying the sample weight by the total number of units. This method is commonly used for catch category weight on net vessels.

19 - PHLB Length/Weight Extrapolation: This weight method is similar to weight method - 9, in that the weights of Pacific halibut are derived from converted lengths. However, this weight method is used when the observer tallies all Pacific halibut in the catch category and takes a subsample for lengths. This method should only be used when PHLB numbers are too high to get actual lengths for all.

20 - Actual Weight - Whole Haul: When everything within a catch category is physically weighed and included inside the species composition. This method can be used for catch category weights.

21 - Actual Weight - Subsample: When everything within a catch category is physically weighed, but not all catch is species composition sampled. The subsample may include one or multiple baskets chosen randomly by a simple or systematic frame. This method can be used for catch category weights.

The weight methods used to sample a haul/set depend on the gear type of the vessel, how much is being caught, sorting methods used by the crew, and vessel layout. Later chapters deal specifically with using weight methods by gear type. However, understanding the use of catch categories and remembering the two rules for defining catch categories is essential to WCGOP sampling.

Reason for Discard

Fishers discard for a variety of reasons and this information is important to managers. Observers document the **crew's reason** for discarding, even if the crew is mistaken regarding a regulation or the marketability of the species in question. **The procedure for determining the reason for discard is to ask the captain or crew why they are not retaining each species or item.** If the reason is obvious, such as for starfish or garbage, it is not necessary to ask the crew. However, if there is more than one possible reason for discard, interview the vessel crew to determine why the catch is not being retained. Avoid making assumptions.

There are ten Reason for Discard codes to choose from:

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

11 - Incidental/Accidental: Crew or observer inadvertently discards fish that should have been retained.

Examples

- **Crew effort:** Fish missed during the sort.
- **Mistakes:** Crew/observer didn't know captain wanted to retain the fish.
- **Quantity:** The fish hold or tanks are full, so the remainder of catch is discarded (no apparent high-grading, there is simply no more room for catch).

12 - Drop-Off: This reason is used for hook and line gear only. Drop-offs are fish that would have been retained had they not fallen off the gear.

13 – Market: Discarding that is driven by consumer demand and vessel/processor profitability. This includes high-grading. This is the most common reason for discard.

High-grading: Discarding of marketable fish to maximize profit.

Examples

- **Too small:** Market pays less for fish under a certain size (a.k.a. High-grading).
- **Too big:** Market pays less for fish over a certain size.
- **Price:** Fisher doesn't want to use ice or space in the hold for fish that have less value than other target species (e.g. arrowtooth discarded that could be kept and sold).
- Fisher wants to keep plant/market happy; wants to deliver the best quality to customer to maintain good reputation – market will buy it, but prefers other species/sizes.
- **Damaged fish:** Squashed, maimed or damaged (fish carcass torn up by other events, not by predation).
- **Quantity/amount:** Market won't buy species in such a small quantity (although species may be retained later if a lot is caught).
- Fish left over from the haul (on the deck).
- **Time and effort to prepare the species for market too great (examples:** skate wings, dressed sharks).
- Partially sorted catch discarded because its value is not worth the effort or time to keep sorting.
- Market will not buy species if under or over a certain size (this might include weigh-backs).
- **Condition:** Market won't buy fish of a certain condition (e.g. deep Dover, diseased or mutant fish).
- **Freshness/time spent on ice:** Species won't be retained until near the end of the trip because quality quickly deteriorates.
- **Market will only buy a certain amount of fish at a time:** The plant says that they will buy 500 lbs of longnose/ big skates, but the vessel catches 800 lbs. (300 lbs are discarded).
- Market does not buy that species.
- Market is not buying that species at this time.
- Species has no market value when caught with a particular gear type or in that fishery (e.g. smashed urchins).
- Invertebrates with no known marketability.
- Miscellaneous objects/garbage/trash.
- Mud/Kelp/Wood/Rocks.
- Fisher dumped unsorted catch, either directly from codend or from deck because it is undesirable (i.e. catch is full of undesired species such as Pacific dog sharks, ratfish, small flats, or some mix of undesired species).

14 – Other: Used for discard reasons which do not fit into any of the other categories. Document the reason for discard thoroughly on the deck form, if used, and in the database.

15 – Predation: Used mainly on pot and hook vessels. Fish that would have been retained if not damaged by predation. This includes predation by marine mammals, sharks, hagfish, sand fleas, and any other animals.

Note: Always record the primary reason for discard.

Example: If a longline vessel is not retaining dogfish sharks for market reasons and a predated dogfish shark is brought up on the line, it would not be recorded with reason for discard as predation. The primary reason for discard is still market.

16 – Regulation: Discarding due to quotas, limits, and other restrictions mandated by state and/or federal agencies. This includes perceived quotas, limits, and other restrictions by the captain and crew.

Examples

- Prohibited Species - (P. Halibut, salmon, or Dungeness crab {regionally}).
- Species other than P. halibut, salmon or Dungeness crab, which are not allowed for retention, such as state prohibited species (e.g. giant {black} sea bass).
- Fishing is not presently open for that species.
- Fish cannot be retained or targeted by a particular gear type.
- Fisher lacks the necessary permit for retention of that species.
- Vessel/fisher has met quota for that species.
- Size Regulation - Fish cannot be retained if under or over a certain size (e.g. small lingcod).
- Marine Mammal, seabird, or sea turtle.
- ESA-listed species (green sturgeon).
- Fisher is unsure of regulations – it is not known if vessel is able to retain a species or not, so they discard it to play it safe.

17 – Safety: Discarding due to a concern about vessel and/or crew safety.

Examples

- Weather
- Vessel mechanical problems.
- Crew fatigue.
- Size of the catch or the catch composition makes it dangerous to bring catch on board or to complete sorting.

18 - Market (Dockside only): Previously retained fish discarded at the dock or on the way in from a trip due to market reasons.

19 - Utilized on Board: A special discard reason that captures fish consumed at sea or used as bait during a trip. It is important to ensure that these fish are not double counted if they have already been included in another sample. Also, if these fish cannot be attributed to a particular haul, they should be documented on a Trip Discard Form.

20 - Survival: Used for marketable individuals that are intentionally discarded in order to increase their chance of survival. Examples would include release of gravid or large females so that they reproduce or the release of marketable young individuals specifically so they survive. This discard reason is used relatively rarely and usually in nearshore fixed gear fisheries.

Data Collection and Documentation

Consistent data collection and documentation are essential for ensuring data quality. This section introduces the OPTECS software, along with the data forms and logbook used by observers. It also provides guidelines for proper data documentation.

After more than 4 years of development and testing the WCGOP transitioned to a paperless back deck data entry system in 2020. The OPTECS (Observer Program Technology Enhanced Collection System) software was developed to complement and direct observer sampling efforts. Direct data entry is expected on trawl vessels and deck form to tablet entry is expected for fixed gear trips. This will greatly reduce the amount of paperwork and data form corrections required, and all but eliminate calculation errors. Data forms are still covered here and in greater detail in other chapters. There is always the possibility of tablet failure and some forms must be filled out separately, as they are not yet available in OPTECS.

Data Forms

Twelve forms are currently used to record WCGOP observer data. Some of the forms listed below will be completed on each trip, others are used only for specific species or projects, or in specific fisheries. Each form functions to collect information in a standardized way.

1. **Trip Information Form:** This form is used to record fishing effort information. This includes latitude, longitude, depth, date, time, fish ticket numbers, landing date, target species and gear used. A trip form is completed when direct OPTECS entry is not possible.
2. **Trawl Deck Form:** Haul specific details, catch category and species composition information can be recorded on this form for trawl trips. Catch category and sample basket weights, species names and counts, discard reasons, and any biospecimens collected are documented on the front side. On the reverse (Haul Details) side, data fields include: OTC, target, scale calibrations, gear type, and vessel estimates. This form is used when tablet entry is not possible at sea.
3. **Fixed Gear Deck Form:** Tally sample information is recorded on this form, along with OTC weight method, gear type, gear performance, target strategy, total hooks/pots, lost hooks/pots, locations/times, and biospecimens. This form will be used for all fixed gear

trips until tablet entry is possible at sea. Complete instructions and examples for the deck forms can be found in the Trawl and Fixed Gear Sampling chapters.

4. **Marine Mammal, Seabird, and Sea Turtle Interaction and Sighting Form:** This form is used to document sightings of marine mammals, seabirds, and sea turtles, as well as interactions that occur between these species and fishing operations. Not available in OPTECS at this time.
5. **Sea Turtle Life History Form:** This form is used to document specific characteristics of Sea Turtles that have interacted with fishing operations. Not available in OPTECS at this time.
6. **Trip Discard Form:** This form is used to document any discarded fish that cannot be attributed to a specific haul. For example, a vessel may decide to discard fish that have already been placed into the hold. These fish can only be attributed to the trip as a whole, not to a specific haul. Not available in OPTECS at this time.
7. **Species Identification Forms:** There are four different Species Identification Forms:
   - Rockfish
   - Flatfish
   - Skate
   - Miscellaneous

These forms provide evidence of each observer's fish identification competency. Species IDs should be filled out with the fish in hand and are useful for keying out unidentified fish. A Species ID form is needed for all Priority and IFQ species plus a high percentage of non-IFQ species.

8. **Tagged Fish Form:** This form is used to record specific information from tagged fish. Not available in OPTECS at this time.
9. **Sampling Description Form:** This form is used to document how and why a weight method was used. Species composition sampling and randomization tools must also be explained if applicable. At minimum, observers should complete this form after using one of WCGOP's 13 weight methods for the first time. Not available in OPTECS at this time.
10. **IFQ Priority Species Tracking Form:** This form is used to document retained weights of priority rockfish species. It ensures that these fish would be accounted for, even if removed from the fish hold at some point prior to delivery. This is used on Catch Share (non-hake) and Electronic Monitoring vessels. Not available in OPTECS at this time (triplicate paper documentation only).
11. **BRD Characterization Form:** This form is used to document information about various bycatch reduction devices (BRD) that may be encountered in the trawl fisheries. Complete this form only if a BRD is being utilized during the trip. Not available in OPTECS at this time.
12. **Hook and Line Fleet Characterization Form (HLFC):** Captures more detailed information regarding seabird mitigation devices used by the longline fleet. Not available in OPTECS at this time.

See the section "Additional Policies" on page: 3-12 in this chapter for a more in-depth discussion of the Sampling Description and IFQ Priority Species Tracking forms, as well as Species Identification form requirements. Further instructions for all other data forms can be found in Chapters 4 through 9.

Completing and Organizing Forms

If the tablet is not functioning properly or if it's impossible to use a tablet, observers will fill out at least 3 different forms; i.e., Trip Information Form, Trawl/Fixed Gear Deck Form, Priority Species Tracking Form, and Hook & Line Fleet Characterization or Bycatch Reduction Device Form. **Data forms should be completed in pencil.** Only observer logbooks and sampling description forms should be completed in ink.

Tip: When filling out paperwork, remember the end of chapter examples and homework completed during training. Referring to the manual often, and throughout your contract, will save time by ensuring forms are filled out correctly and completely the first time. Be sure to review form instructions prior to completing a new form and when first deploying on an unfamiliar gear type.

Legibility

Observers must record their data in an organized and legible fashion. This decreases the number of calculation, transcription, and data entry errors. If a debriefer cannot interpret some piece of data, the observer is required to thoroughly explain the data during the debriefing interview. This will greatly increase debriefing time and, as it is often impossible to recall data that were collected two months prior, may result in lost data. To ensure legibility:

- Write carefully in clear, dark writing.
- Record the data in an organized manner.
- Document formulas that are used and label all calculations with units.

Recording Time

When recording time, use the 24-hour clock (0000-2359) and Pacific Time (PST/PDT). Note that no colons are used with the 24-hour clock and should not be recorded on any forms. **Always record time with four numerals.**

Page Numbering

It is important to use a standardized method of page numbering for the data forms for each trip. All observers must use the same page numbering method for their data forms. This allows debriefers to easily and quickly review data and aids data editors in detecting missing information.

- **Trip Information Form:** These forms are numbered sequentially within a trip.
- **Priority Species Tracking and Trip Discard Forms:** These forms are numbered sequentially within a trip.
- **Trawl and Fixed Gear Deck Forms:** These forms are numbered sequentially within a haul.
- **Marine Mammal/Seabird/Sea Turtle Sighting and Interaction Form, BRD/H&L Fleet Characterization form, and Tagged Fish Forms:** These forms are not numbered.

Example:

The observed fishing trip lasts one day, and there are two hauls that were sampled. On the way to the processor, the vessel discarded some fish from the hold. The page numbering would be.

Trip form	1 of 1	
Trip discard form	1 of 1	
	Haul 1	Haul 2
Trawl/Fixed Gear Deck Form	1 of 1	1 of 1
MMSBST form	Unnumbered, placed behind sampling forms	
BRD / HLFC forms		

Data Rounding Rules

Almost all calculations that historically were required to compile and enter data have been automated with the implementation of OPTECS, but there may be some scenarios where a manual calculation is needed. In these cases, you must remember to carry the numbers out full field until the final product is determined. Full field includes all the numbers on the calculator. Rounding within a calculation reduces its precision. Do not round any numbers within a calculation!

To round the final product:

- Look only at the first digit to the right of the number being rounded.
  - If X $\geq$ 5 round up.
  - If X <5 round down.

Example

1. Observer counts 49 fish but can only weigh 12 fish.
2. The weight of 12 fish = 54.7 lbs.
3. The calculated avg. weight = 54.7/12 = 4.558333333 lbs.
   - **Incorrect:** Weight of 49 fish if average weight is rounded to 2 decimal places: 49 fish * 4.56 lbs. = 223.44lbs.
   - **Correct:** Weight of 49 fish if average weight is kept full field: 49 fish * 4.558333333 lbs. = 223.3583333 lbs. This value would be rounded to 223.36 lbs.

If average weight were rounded, an incorrect value would be recorded on the data form for the weight of the 49 fish.

Observer Logbooks

The Observer Logbook is the field biology notebook used by observers while at sea. It is used to document sampling methodology, events that affect data collection, and any interference and/or inappropriate behavior. Be professional in logbook documentation. Do not use it as a personal journal by venting frustrations or making derogatory remarks. Observer logbooks are turned into the debriefer monthly, or when requested by the debriefer. The logbook should contain information on all trips (delivered) during the month.

Observer Logbook Entries

The logbook is a critically important piece of data because it contains detailed and supportive information about all other data. Have the logbook present when completing paperwork so notes regarding data collection and compliance issues can be documented.

The logbook must be kept private while on the vessel, but it is a public document and is turned over to NOAA Fisheries during debriefing. The contents of the logbook and the observer's name may be released if a Freedom of Information Act (FOIA) request is approved.

The Logbook as Evidence

Logbooks are archived and used as a reference to give more information about the data. They may also be used as evidence if regulatory infractions were noted. If corrections need to be made, draw a single line through the incorrect word(s) and continue with the correct wording.

Do not black out anything, use correction fluid, or tear out pages or parts of pages! Always use INK!

If any part of an original entry is completely obscured, it leaves the reader wondering what was originally documented. This may affect the validity of the logbook and data.

Logbook Sections Overview

Logbooks are mailed along with completed data forms at the end of each month. The observer logbook is divided by tabs into 8 sections, each of which should be completed before mailing. Below is a brief description of each section.

Title page: The observer's name and the date range (MM/DD/YY) for which the logbook was used should be clearly indicated here.

List of Vessels: This section is used to list each vessel embarked on and the trip dates associated with the vessel. It is very likely that more than one vessel will be observed during each period. List the vessel names and USCG registration number or the state registration number, as applicable. Write the first and last name of the captain that ran the vessel. If there was more than one skipper during a trip limit period, indicate this and include all names. Use the "Embark/Disembark date" lines to list the dates on which the vessel embarked and returned to port, for each trip, separately. It is only necessary to list each vessel once.

Calendar: A calendar is provided for observer use.

Vessel safety: Prior to boarding a vessel for the first time, observers are required to check the vessel for safety equipment required by U. S. Coast Guard regulations. The "Vessel Safety" section lists items that should be inspected before leaving on the initial trip and also before the first trip of the month on an assigned vessel. The "Vessel Safety Checklist" pages should be used to document that each item was checked, to make comments on each item, and to document the appropriate dates associated with some items.

A copy of the Vessel Safety Checklist must be sent to your provider (Catch Shares) or to your coordinator (NCS) prior to leaving on the first trip aboard a vessel.

Logbook pages should never be torn out, rather photocopies should be made. For more information regarding the vessel safety checklist, see Chapter 10, "Health and Safety Information" and Chapter 11, "Observer Life."

Tip: If you have a high-resolution camera phone, you should be able to text a photo of the safety checklist to the provider or coordinator.

Observer safety survey: Complete a Safety Survey for each vessel observed during a trip limit period. This survey provides important safety information for the WCGOP coordinators to track any issues or problems associated with a vessel. For more information regarding vessel safety see, Chapter 10, "Health and Safety Information."

Note: If any incidents are noted on the Observer Safety Survey, this **must** be reported to WCGOP staff as soon as possible!

Equipment test checklist: Observers are issued sampling and safety equipment by the WCGOP. All equipment must be maintained and inspected on a regular basis to ensure that it is in proper working condition. The "Observer Equipment Checklist" must be completed once a month. Document the actual date of the gear inspection and go through the list with the equipment in hand. It is important to notify the WCGOP Gear Technician if any of the items do not pass inspection. For more information regarding observer gear see, Chapter 12, "Gear."

Scale test record: Motion compensated scales are calibrated daily at sea, but every 90 days an overload test will need to be completed at the nearest field station. This date is recorded on the last line of the Marel Scale Inspection section. If hand scales are used, log calibrations every 5th observed day on the Hand Scale Test Record page. Contact the gear technician or a debriefer immediately with any scale related issues. For detailed instructions on how to perform scale tests, see Chapter 12, "Gear."

Vessel Diagrams and Trawl Net Identification Key: Vessel diagrams should be completed for each vessel observed. These diagrams detail the layout of the vessel and help debriefers better understand the observer's sampling conditions while onboard. It is especially important to thoroughly document any vessels and gear types that are not typically observed. Diagrams should be large, detailed, well labeled, and include a length estimate of the vessel and deck/trawl alley.

There is a trawl net identification key in the observer logbook on page 37. Use this dichotomous key to verify the net type used on the vessel. It is also very important to pay attention to which net a vessel is fishing if they carry more than one. Never assume you know what type of net is being fished. Verify and record each net used. Also, record the skipper's estimate of the maximum capacity (in pounds) of the codend and trawl alley.

Communication Log: The Communication Log can be used to aid in tracking communications with vessels, coordinators, other observers, providers, and any other program related staff. This log is not mandatory but may be helpful for reference. Vessel communications may be listed here, as well, but it is not required. Communications listed here may include:

- Calls to WCGOP staff regarding sampling problems.
- Calls to other observers regarding data or vessel coverage.
- Calls to NMFS enforcement.
- Calls to the Coast Guard.
- Calls to port biologists and port samplers.
- Calls to harbor masters.
- Calls to PSMFC state liaisons.

Photo Log: The Photo Log can be used to document photographs taken by observers with the Catch Monitor camera or WCGOP digital camera, if issued. Observers may take photos of protected species, fish/invertebrates for species identification, or work-related activities (portrait of selected vessel or vessel deck, sampling station, unusual sampling events etc.). Observers should document each photo taken in the photo log soon after the photo is taken. The cameras issued to observers are WCGOP property (not for personal use) and will have a barcode label which should be documented in the photo log along with the file's number or name.

Daily Notes Section: The Daily Notes section documents day-to-day events while an observer is at sea. The following information must be documented in the daily notes:

- Specific notes on safety incidents or concerns that occur while aboard vessels.
- Crew names and important conversations. Includes any interactions that were perceived as harassment or intimidation and pressure from crew to change sampling or ignore discards.
- Illnesses or injuries suffered.
- Circumstances surrounding any violation witnessed.
- Problems or challenges encountered while sampling, including unusual circumstances or anytime in which the observer was unable to sample.

Make an entry for each day, describing the day's events, even if it was considered an "ordinary day". Don't hesitate to write down any information that affects sampling or day-to-day life aboard a vessel. Often events that seem ordinary at the time, can later become significant. Logbooks may be referred to months, or even years, after the trips are completed. Many observers make notes on the deck form or tablet as the situation occurs, so they can later transfer the details to their Daily Notes.

Additional Policies

Sampling Description Form

Sampling Description forms are an important data quality verification tool for staff and must be completed and submitted shortly after using a weight method for the first time. After their initial trips, observers will likely use the same weight method many times, in the same fashion, on multiple vessels. Once a weight method description form is accepted, additional forms are not expected for the current sampling year, unless there is a major change in sampling. If sampling deviations are apparent from month to month, your debriefer will require an update to the existing description or completion of a new form. This is often the case when observers switch coverage to a different fishery or encounter an unfamiliar gear type. Even though a form may be tied to a specific trip they are used to describe a general sampling frame and any departure from this frame must be documented in the logbook daily notes. Sampling Description forms will have to be completed anew at the start of each calendar year.

Sampling Description Form Instructions

Documentation must be descriptive and where prompted clearly explain, preferably in a step by step process, how sampling was performed. Specific details on any randomization tools should be included. This will help verify that catch weight was correctly estimated and that species composition and biosampling duties were performed according to protocol.

- **Observer name:** First and last name.
- **Date:** Day the Weight Method was initially used.
- **Weight Method:** Record Weight Method code or full name.
- **Gear Type:** Record Gear Type code or full name.
- **Weight Method Description:** Use this section to document:
  - Whether this particular weight method was used to determine weight for OTC or a Catch Category.
  - When and why the method was chosen. Include any details on unusual circumstances or gear lost at sea.
  - Handling and diversity of the catch.
  - How catch weight was determined. Include any necessary formulas or calculations.
  - Details of the sampling frame, with a specific description of randomization techniques and tools used.
  - How and when hook counts were obtained for fixed gear weight methods.
- **Species Composition Sampling Description:** In this section document:
  - How the species composition was physically collected to weigh and sample.
  - If subsampling occurred and if so, how baskets or individual fish were randomly selected to include inside the species composition.
  - Describe how fish were selected to count and weigh for average fish # calculations (trawl vessels) and average weight calculations (fixed gear vessels).
  - Make a note if averages were not used or not applicable to this weight method.
- **Biosampling Description:** Use this section to document:
  - Record method to select biosampling list on trawlers.
    - If not all fish were biosampled, then describe method for randomly choosing individuals.

Record N/A for Species Composition and Biosampling Description sections if the weight method does not have associated sampling. Completion of these sections is not expected for OTC weight methods.

- **Additional Notes and Updates:**
  - Extra space is provided here to complete a previous section or make updates at the debriefer's request.

Sampling Description Form

Observer Name: _____ **Date:** _____

Weight Method: _____ **Gear Type:** _____

Weight Method Description

This weight method was used to determine:

- ☐ Total Catch Weight (OTC): *Complete front side only.*
- ☐ Catch Category Weight: *Complete front and back.*

Why was this weight method selected?

Describe the handling of the catch, include details like the overall weight and/or diversity. How did this affect your sampling?

Explain how this method was used to determine OTC or Catch Weight.
If a random sample frame was employed, describe the use of any randomization techniques or tools. Be sure to record any calculations or formulas used.

Describe how hook counts were obtained (fixed gear weight methods only).

Description forms must be recorded in blue or black ink. Turn page over for Species Composition and Biosampling descriptions

Figure 3-2: Blank Sampling Description Form font.

Species Composition Sampling Description

Describe how you sampled for Species Composition.
Provide details on subsampling or randomization techniques.
If no Species Composition was required for this Weight Method then record N/A.

If average Fish # (Trawl) or average Sample Weight (Fixed Gear) calculations were used, then state how you randomly selected individual fish to count and weigh.
Include tools used for random number generation and record any calculations.

Biosampling Description

Describe how biolist was randomly selected (*trawl only*).

How were fish randomly selected to biosample (if less than 100% were sampled)?
If no biosamples were required record N/A

Additional Notes and Updates:

Figure 3-3: Blank Sampling Description Form back.

Sampling Description Form

Observer Name: Your Name **Date:** 10/29/20--

Weight Method: 3 - BWD **Gear Type:** 2- Large footrope

Weight Method Description

This weight method was used to determine:
- ☐ Total Catch Weight (OTC): *Complete front side only.*
- ☑ Catch Category Weight: *Complete front and back.*

Why was this weight method selected?

The vessel brought on large catches of IFQ Arrowtooth, but did not retain any. BWD allowed me to accurately estimate ARTH discard weights above 500 lbs, while still leaving time to sample remaining discards.

Describe the handling of the catch, include details like the overall weight and/or diversity. How did this affect your sampling?

ARTH were the only species sampled with BWD. The crew and I basketed all discard quickly and either dumped the baskets overboard or set aside for sampling. The crew presorted most of the ARTH, which made sampling the rest of the discard easier because there wasn't very much left to weigh.

Explain how this method was used to determine OTC or Catch Weight.

If a random sample frame was employed, describe the use of any randomization techniques or tools. Be sure to record any calculations or formulas used.

I visually estimated the weight of all ARTH, and divided that by the weight of one basket, in order to determine a total basket # estimate. Based on that, I usually sampled every other or every 3rd basket in order to get the recommended sample size of 4+ baskets. The RNT was used to select the starting basket, and then I continued systematically until all ARTH were sorted. Each basket was tallied on the deck sheet and either dumped or set aside.

Catch weight was calculated using this formula:

Total Weight = weight of sampled baskets / # sampled x total basket tally.

Any partial basket was weighed and added at the end.

Describe how hook counts were obtained (fixed gear weight methods only).

N/A

Description forms must be recorded in blue or black ink. Turn page over for Species Composition and Biosampling descriptions

Figure 3-4: BWD example Sampling Description Form front.

Species Composition Sampling Description

Describe how you sampled for Species Composition.

Provide details on subsampling or randomization techniques.

If no Species Composition was required for this weight method then record N/A.

No further randomization or subsamping was required. All ARTH baskets that were selected for average weight were weighed and counted for the Species Composition.

If average Fish # (Trawl) or average Sample Weight (Fixed Gear) calculations were used, then state how you randomly selected individual fish to count and weigh.

Include tools used for random number generation and record any calculations.

I counted all ARTH in this trip. But typically if using an average fish # I'll estimate the # of baskets then use the RNT to select one or two (simple random frame). All fish in the selected subsample are counted and weighed.

Fish # = # counted / basket weight x total species weight

Biosampling Description

Describe how biolist was randomly selected (*trawl only*).

Selected biolist on the first haul by dividing the galley clock face into 3rds and glancing at the second hand.

How were fish randomly selected to biosample (if less than 100% were sampled)?

If no biosamples were required record N/A

I was only on list 2 for one haul with BWD and I used the RNT to select 1 of the 6 baskets, then basket dumped the selection down to a few fish.

Additional Notes and Updates:

Figure 3-5: BWD example Sampling Description Form back.

Sampling Description Form

Observer Name: Your Name **Date:** 10/29/20--

Weight Method: 11 - R+D **Gear Type:** 19 - Longline

Weight Method Description

This weight method was used to determine:
- ☑ Total Catch Weight (OTC): *Complete front side only.*
- ☐ Catch Category Weight: *Complete front and back.*

Why was this weight method selected?

I was able to tally sample 100% of the retained and discarded catch. There were no non-tally periods or lost gear.

Describe the handling of the catch, include details like the overall weight and/or diversity. How did this affect your sampling?

Catch was predominately sablefish, with rockfish and skates also retained. There was a small amount of discard that included PHLB and dogshark. Space was tight, but I was able to stack a few baskets behind me and weigh discard in between sets. This vessel did not process sablefish at sea and kept all retained in a large bin until the set was finished.

Explain how this method was used to determine OTC or Catch Weight.

If a random sample frame was employed, describe the use of any randomization techniques or tools. Be sure to record any calculations or formulas used.

All fish were tallied as they came up the line. All PHLB were actually measured and checked for viability. I took up to the first 20 for average weight for all other discarded species. The 20 Individuals to weigh for retained sablefish weights were collected from the bin as the fish were being put down. Generally I weighed every 2nd, 3rd or 4th sablefish based on the total tally. All other retained species were counted and weighed

Total OTC Weight = weight of R + D

Describe how hook counts were obtained (fixed gear weight methods only).

Actual hook counts were not possible on this vessel because the tubs were prebaited, so I asked the skipper for his estimates while the gear was being set. His estimate of 165 hooks seemed good, and I confirmed that each tub contained a similar amount of gear.

Description forms must be recorded in blue or black ink. Turn page over for Species Composition and Biosampling descriptions

Figure 3-6: OTC 11 example Sampling Description Form front.

Species Composition Sampling Description

Describe how you sampled for Species Composition.

Provide details on subsampling or randomization techniques.

If no Species Composition was required for this weight method then record N/A.

(Not completed for OTC weight method)

If average Fish # (Trawl) or average Sample Weight (Fixed Gear) calculations were used, then state how you randomly selected individual fish to count and weigh.

Include tools used for random number generation and record any calculations.

(Not completed for OTC weight method)

Biosampling Description

Describe how biolist was randomly selected (*trawl only*).

(Not completed for OTC weight method)

How were fish randomly selected to biosample (if less than 100% were sampled)?

If no biosamples were required record N/A

(Not completed for OTC weight method)

Additional Notes and Updates:

Figure 3-7: OTC 11 example Sampling Description Form back.

IFQ Priority Species Tracking Form Instructions

(Catch Share Fisheries only)

The IFQ Priority Species Tracking Form is required to ensure that fish are not removed from a vessel's hold between the time the vessel reaches the dock and the start of the offload.

This form is used to document the retention of cowcod rockfish and yelloweye rockfish on a haul specific basis. It should be placed in the wheelhouse at the beginning of each trip, updated on a haul-by-haul basis, in view of the vessel's captain. Inform the captain at the beginning of the trip that you need to document numbers and weights for the retained species above. If you are unable to sample a haul, ensure that the crew keeps the retained cowcod and yelloweye on deck until you're able to sample it. If, for some reason, you can't sample these species for a given a haul, follow the directions outlined in number 5 below.

1. Each haul, document the weight and count of each retained priority species. Please document zeros in both columns if no individuals of the species were retained.
2. Ensure that the captain of the vessel sees the documented catch each haul. If there is a discrepancy between your number and the captain's, please document in the "Notes" column. Also document any other problems.
3. If you did not sample a haul or you tally sampled less than 100% of a fixed gear set, and the crew did not keep the species on deck until you could count and weigh them, document the haul number in the "Haul" column and "NE" for "not estimated" in the "Weight" and "#" column.
4. If you were able to sample all species each haul, then sum the "Weights" and "Number" columns. Document "Total" in the row at the bottom of the page. If multiple pages are used, document "Total" on the last page.
5. If you were not able to sample all hauls and you have an "NE" documented in any column, then-

   A. If the vessel does not want to have you onboard until the offload, they must pull all the retained cowcod and yelloweye out of the hold once they're in port or on the way to port. In the "Total" row, document "Total*" and the total weight and count of each species. If the captain agrees with these values, you may disembark. If there are any disagreements, you must remain on board until the offload is complete.

   B. If the vessel is unwilling to do "a", then you must stay on the vessel until a catch monitor arrives to relieve you for the offload. If you will act as the catch monitor, you must stay with the vessel until the offload is complete.

   - WHITE copy of the form will be kept by the observer and submitted with trip data. For OPTECS trips, this form will be scanned and uploaded to the "Trip Scans" tab in the online database app.
   - YELLOW copy of the form will be left on the vessel for the catch monitor in a sealed envelope.
   - PINK copy of the form will be left on the vessel for the captain.

IFQ Priority Species Tracking Form Page ____ of ____

Observer Name: _____ Vessel Name: _____

Departure Date: _____ Return Date: _____ Vessel ID #: _____

Date Offload Began: _____ Fish Ticket #: _____ WCGOP Trip #: _____

Directions: Place this form in the wheelhouse and document the retained weight and number of each species listed for each haul. Document discrepancies between the vessel's weights and the observer's weights in the "Notes" section. Prior to disembarking, sum the weights and numbers by species and document this in the row labeled "Total", then sign and date the form.

Haul #(s)	Cowcod rockfish		Yelloweye rockfish		Notes (Discrepancies, issues, etc.)
	Weight	#	Weight	#	
Totals					

The observer will keep the WHITE copy. The YELLOW copy will be placed in a sealed envelope and left in the wheelhouse for the catch monitor. Vessels will receive the PINK copy of the form.

For more information, including what to do if the vessel and observer disagree on estimates, review the "IFQ Priority Species Tracking Form" outreach material.

Observer's Signature: _____ Date: _____

IFQ Priority Species Form v.2019 November 2019 OMB Control No. 0648-0593 expires 12-31-2021

Figure 3-8: IFQ Priority Species Tracking Form.

Species ID Requirements

Data quality hinges on observers' ability to correctly identify fish to species. WCGOP observers are trained in species identification during the initial training and are also required to take yearly fish identification tests during annual briefings. In order to quickly verify species identification competency, observers must complete a minimum of **five** forms **per trip**. Species ID forms are evaluated by a debriefer for both accuracy and completeness. Each species only requires one form, assuming it is approved by the debriefer and all yearly briefing fish tests are completed with a minimum score of 80%. If any observer fails to achieve 80% on a briefing fish test, their list of species ID forms accepted will be reset, and all species will require new forms. Please include species ID forms with your paperwork from the accompanying trip (with the trip and haul number clearly labeled on the form), and send these to your debriefer monthly with the rest of your data set.

Forms should be filled out in the following order of priority:

1. **Priority Rockfish Species, Protected Species, and Prohibited Species:**
   - Priority Rockfish Species = yelloweye, cowcod.
   - Protected and Prohibited Species = Green sturgeon, Salmon (all), Eulachon, Dungeness crab and Pacific halibut.
   - Completing a species ID form is mandatory upon first encountering any priority rockfish, protected, and prohibited species. If you have already filled out five forms on a trip, and encounter an overfished or protected/prohibited species that you do not have an approved form for, this MUST be done immediately. Many of these species are encountered rarely, so, for example, you may never see another yelloweye again.
   - Please fill out the form thoroughly, labeling identifying characteristics on the diagram of the fish and take photographs with the digital camera issued during training, or with a personal digital camera. Your ID of these fish may come under scrutiny due to the limited quotas, so the photos will be used for corroboration.
   - Complete a form for these species regardless of whether they are retained or discarded.
2. **IFQ species (non-priority rockfish):** A list of these can be found in your manual or biosampling decksheet.
   - Prioritize completion of IFQ species above non-IFQ. You will be required to verify identification of all IFQ species seen during your contract.
   - A photograph must accompany the identification forms of all IFQ species.
3. **Non-IFQ species and invertebrates:**
   - Once all priority rockfish, protected, and IFQ species have accepted forms, focus on NIFQ species. You're expected to maintain a minimum completion rate of 85% for these species.

Tip: If you are only required to take a NIFQ fish to the family level, a form must be filled out for the family (e.g. eelpouts unid.). If a more specific form, such as Twoline eelpout is completed, it will take the place of the general family form.

Your debriefer may help you track Species ID completion through the monthly data check sheet, but you can also access a list of species that have been checked off in the database evaluation module.

Note: Occasionally species codes need to be added to the database and manuals. If a species is not found while entering a trip, contact your debriefer. After verifying the identification, a new species code will be created.

Note: When filling out species ID forms, it is imperative that observers have the fish in-hand. Do not fill out the forms using only the fish books after the fish has been discarded. Be sure to complete all required fields, providing clear descriptions, when necessary. It is very important to include any distinguishing characteristics, especially for species that are similar.

Reciprocity of forms

Due to the increased level of scrutiny your species identification may be subjected to in an Individual Fishing Quota system, it is the policy of the WCGOP that only forms completed while observing in the Non-Catch Share or Catch Share Programs will be accepted. While other programs, such as the Catch Monitoring program, may accept WCGOP species identification forms, we do not accept identification forms from other programs.

Photo Policy

A photo is required for all IFQ species, protected species, and prohibited species. Remember, for these higher priority species, you must label the identification form diagrams with key characteristics ***and*** take pictures. Please double check that the pictures are well focused and take multiples. Additionally, if there are two similar species with small morphological differences, please take photos of those characteristics (e.g. when contrasting silvergray and bocaccio rockfish, please try to photograph the head spines since they differ, and a picture of the anal spines would be helpful as well). Your debriefer will be able to use these to determine if IDs were performed correctly. Photos are encouraged for all species observed, and with the exception of priority and protected/prohibited species, the photograph may ***replace*** your drawing/diagram on the back of the forms.

Digital photos should be submitted, along with your data. They can be transferred directly in-office or printed and stapled to the ID forms. Never email or text photos of protected species, unless instructed to do so by WCGOP staff. It's important to talk to your debriefer about his or her preference and which methods work best to keep digital photos labeled and organized.

UNIDENTIFIED FISH : If there is an individual fish or crab that cannot be identified, fill out a Species Identification Form with as much information as possible. A more identifiable specimen of the same species may come up later, so organize the unidentified fish descriptions with placeholder names such as "unidentified black rockfish #1," or "mystery fish #5" as appropriate. Use these same names on the Species Composition deck form, so that the data can be changed if the fish is identified later. Always take photographs of the specimen for ID purposes and bring the specimen back to NOAA Fisheries.

Remember: Never guess on the ID of a species!

Taking photos while deployed

WCGOP issued cameras are for official use only. Use only as directed by WCGOP staff. Photos may not be shared with the public, including on social media websites (e.g., Facebook, Instagram).

No personal camera photos are allowed. Photos and videos taken while deployed are considered observer data. All observer data must be kept confidential as defined by the Magnuson-Stevens Fishery Conservation and Management Act. Because of confidentiality issues related to taking personal photos while employed as a fishery observer, the WCGOP has implemented a no personal photo policy. This policy is in place to protect observers from potential penalties resulting from the disclosure of confidential information (e.g., crew, fishing locale, gear configurations, catch). Violation of is policy may result in suspension and/or decertification.

Random Sampling Exercise

There are a total of 64 baskets of fish that you need to sample. You decide there is not enough space or time on the deck of the boat to weigh and count all the fish in every basket (i.e. cannot sample 100%). You decide you can sample 10 of the baskets. This means you can weigh and count all the fish in just 10 baskets.

Simple Random Method:

1) Define the population:_____

2) Define the sample frame:_____

3) Define the sample units:_____

4) Number all sample units: first basket #_____ & last basket #_____

5) Pick sample units to sample: how many random numbers are needed?_____

Use a random numbers table to generate these numbers and write them here:_____

6) Color in the sample units on the 64 sample unit grid on the next page.

Systematic Random Method:

1) Define the population:_____

2) Define the sample frame:_____

3) Define the sample units:_____

4) Number all sample units: first basket #_____ & last basket #_____

5) Pick units to sample: For systematic method, use the following 5 steps:

i) Total Sample Units=_____

ii) Wanted Sample Units= _____

iii) n= ? (TSU/WSU) _____

iv) Unit to start sampling (start point) = _____use the random number table to get this value.

v) Basket numbers to sample are:_____

6) Color in the units sampled on the 64 sample unit grid on the next page.

Simple Random Sample							
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64

Systematic Random Sample							
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64

Reason for Discard Study Guide

1) How do you determine the reason for discard?_____

_____

_____

Reason for Discard Codes:

11 Incidental or Accidental

12 Drop-off

13 Market

14 Other

15 Predation

16 Regulation

17 Safety

18 Market (dockside)

19 Utilized on board

20 Survival

Fill in the discard reason for each of these examples:

1) ___ Rockfish are discarded because they are too small for the plant to process.

2) ___ A large sablefish falls off the hook before being landed.

3) ___ Captain is unsure if he can keep lingcod, so he decides to play it safe and discard them.

4) ___ After catching an octopus, the crew uses it for bait on the next set.

5) ___ The tanks are too full to hold more catch, so it's shoveled overboard.

6) ___ A seabird is discarded.

7) ___ A bag of shrimp is discarded because it's causing the vessel to list while in rough water.

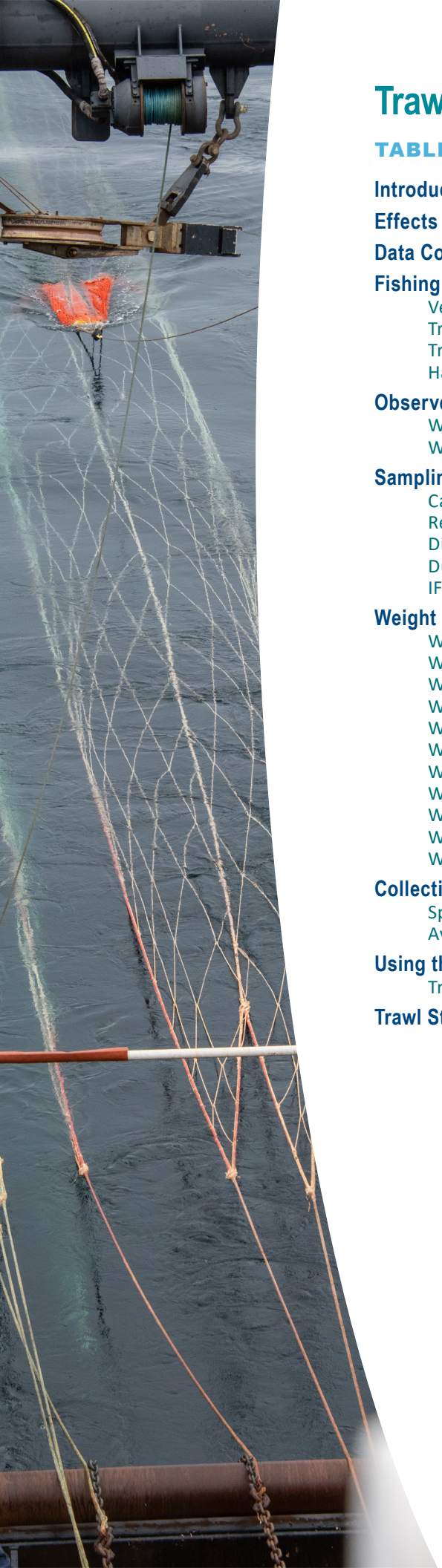
8) ___ A rockfish died in the hold and is discarded at the dock because the plant is only paying for live fish.

9) ___ Captain throws out a large, diseased sablefish.

10) ___ A large sablefish is discarded due to a wound caused by a lamprey.

11) ___ The infamous pirate Jack Sparrow stole the catch from the vessel.

12) ___ The crew toss over lingcod because they want them to grow to a larger size.



Trawl Sampling

TABLE OF CONTENTS

Introduction . . . 4-2
Effects of Fleet Diversity on Sampling . . . 4-2
Data Collection on Trawlers . . . 4-3
Fishing Effort Information . . . 4-3
- Vessel Logbooks . . . 4-3
- Trip Information Form Instructions . . . 4-4
- Trip Form: Haul Locations Instructions . . . 4-7
- Haul Details Instructions . . . 4-8

Observer Total Catch Estimates (OTC) . . . 4-9
- Weight Method 14: Visual Experience . . . 4-9
- Weight Method 6: Other . . . 4-9

Sampling Catch . . . 4-10
- Catch Categories . . . 4-10
- Retained Catch on Trawl Vessels . . . 4-10
- Discarded Catch on Trawl Vessels . . . 4-10
- Duties and Priorities on Trawl Vessels . . . 4-11
- IFQ Species Table . . . 4-12

Weight Methods for Estimating Catch Category Weights . . . 4-12
- Weight Method 3: Basket Weight Determinations (BWD) . . . 4-12
- Weight Method 5: OTC – Retained . . . 4-13
- Weight Method 6: Other . . . 4-14
- Weight Method 7: Vessel Estimate . . . 4-14
- Weight Method 8: Extrapolation . . . 4-14
- Weight Method 9: Pacific Halibut Length/Weight Conversion . . . 4-15
- Weight Method 14: Visual Experience . . . 4-16
- Weight Method 15: Visual Spatial . . . 4-16
- Weight Method 19: Pacific Halibut Length/Weight Extrapolation . . . 4-17
- Weight Method 20: Actual Weight - Whole Haul . . . 4-17
- Weight Method 21: Actual Weight - Subsample . . . 4-17

Collecting and Documenting Species Composition . . . 4-18
- Species Composition Sampling . . . 4-19
- Average Number Subsamples . . . 4-19

Using the Trawl Deck Form . . . 4-20
- Trawl Deck Form Instructions . . . 4-20

Trawl Study Guide . . . 4-24

Chapter 4

Introduction

The West Coast has a diverse assemblage of bottom and mid-water trawl vessels. These vessels range in size from a typical 40 ft. CA Halibut trawler to 130 ft. for vessels in the Hake Mothership Catcher-Vessel fleet. The majority of days spent at sea in both the Non-Catch Share and Catch Share program are on board trawlers. Target species vary depending on the fishery and depth and for Catch Share trawlers, may include Pacific hake, Dover sole, sablefish/thornyheads, Petrale sole, and midwater rockfish. In the Non-Catch Share fishery, targets include CA halibut and pink shrimp. Trawl catch is often very heterogeneous, containing multiple species of groundfish and invertebrates in each haul. A trawl trip can last from one to seven days, and the number of tows each day range between one and eight depending on the vessel. All West Coast trawlers, with the exception of mothership catcher-vessels, deliver to shore-based processors.

Effects of Fleet Diversity on Sampling

The following trawl fisheries are observed in the WCGOP:

Catch Share Program:

- Groundfish trawl (bottom/midwater)
- Shoreside hake
- Mothership catcher-vessel
- Trawl Gear Modification EFP (EM)

Non-Catch Share Program:

- CA halibut
- CA pink shrimp
- OR pink shrimp
- WA pink shrimp
- CA cucumber
- CA ridgeback prawn
- Electronic Monitoring EFP

Although vessel characteristics make the fleet very diverse, sampling protocols are consistent for all net vessels. There are, however, a number of vessel characteristics that influence catch sampling. The most important characteristics that influence sampling are:

1. **Vessel size:** The size and layout of a vessel is often a limiting factor when sampling. A vessel with a small deck may not have enough deck space to hold all the discard. Therefore, the vessel may sort the discard directly out a scupper, over the side or down the stern ramp. On small vessels, observers may not have a designated sample area or a sample area with much space.

Vessel size: Trawl vessels on the West Coast range from 40-90 feet.

2. **Duration of tow:** Tow duration can vary greatly. If a vessel is making long tows, over three hours, observers will have plenty of time to sort and weigh samples. Observers on vessels that haul every hour have a limited amount of time to complete sampling duties.

Duration: Trawl tows range from 10 minutes to 20 hours, depending on fishery and/or target species.

3. **Size of tow:** Vessel size and size of tow are related. Problems are created when a small vessel has a large tow because there is very little room for the work up of samples. It can also create a dangerous working environment.
4. **Composition of tows:** Most tows encountered will have a large diversity of fish species. This is not necessarily a problem for experienced observers that are able to identify species easily. However, the species composition of the tow will affect the sample size. If the vessel has a bag full of tiny thornyheads or flatfish, it may be necessary to reduce the sample size. In the Catch Share program, the proportion of IFQ to non-IFQ species will be an important factor in deciding how to sample.

Tow composition: Trawl tows can have as few as five species and as many as 45 species.

5. **Sorting technique of crew:** Each vessel will have a unique sorting method. Discuss with the crew prior to the first haul how they sort and the best way to collect samples. Communicating sampling needs to the crew is key to fulfilling sampling requirements. In the Catch Share program, the crew is responsible for sorting catch into IFQ groupings.

Crew sorting techniques on groundfish trawl vessels:

1. Crew sorts retained into bins or baskets while discards are left on deck to be tossed or shoveled overboard.
2. Crew sorts out scupper. Retained fish are taken out of the flow of fish while discards are flushed directly off the vessel.
3. Crew sorts discard into baskets or a bin. Retained is left on deck to be run into the hold.
4. Crew pre-sorts certain species.
5. Crew sorts from chute that discards directly overboard.

Remember all of these factors are interrelated. For example, small vessels may have large and/or diverse tows, even with short tow durations. The combination of these factors can limit sampling options, and should be considered prior to setting up a sampling frame.

Data Collection on Trawlers

Observers collect the following information on trawl vessels:

- Fishing Effort
- Total Catch Estimate
- Catch Category Weight
- Species Composition
- Biological Data
- * Marine Mammal, Seabird, Sea Turtle Sightings/ Interactions

This section of the manual is organized in the above order. This order is also the sequence you will normally use to collect data on trawl vessels. Biological Data collection is described in detail in Chapter 8, "Biological Sampling". *Collecting data on protected species interactions is WCGOP's highest priority and will be covered in Chapter 9, "Protected Resources."

Fishing Effort Information

Fishing Effort information includes where/when vessels fish, what gear they set, which species are targeted, and how much is caught. In general, fishing effort information is copied directly from the vessel logbook, and must be collected for all hauls.

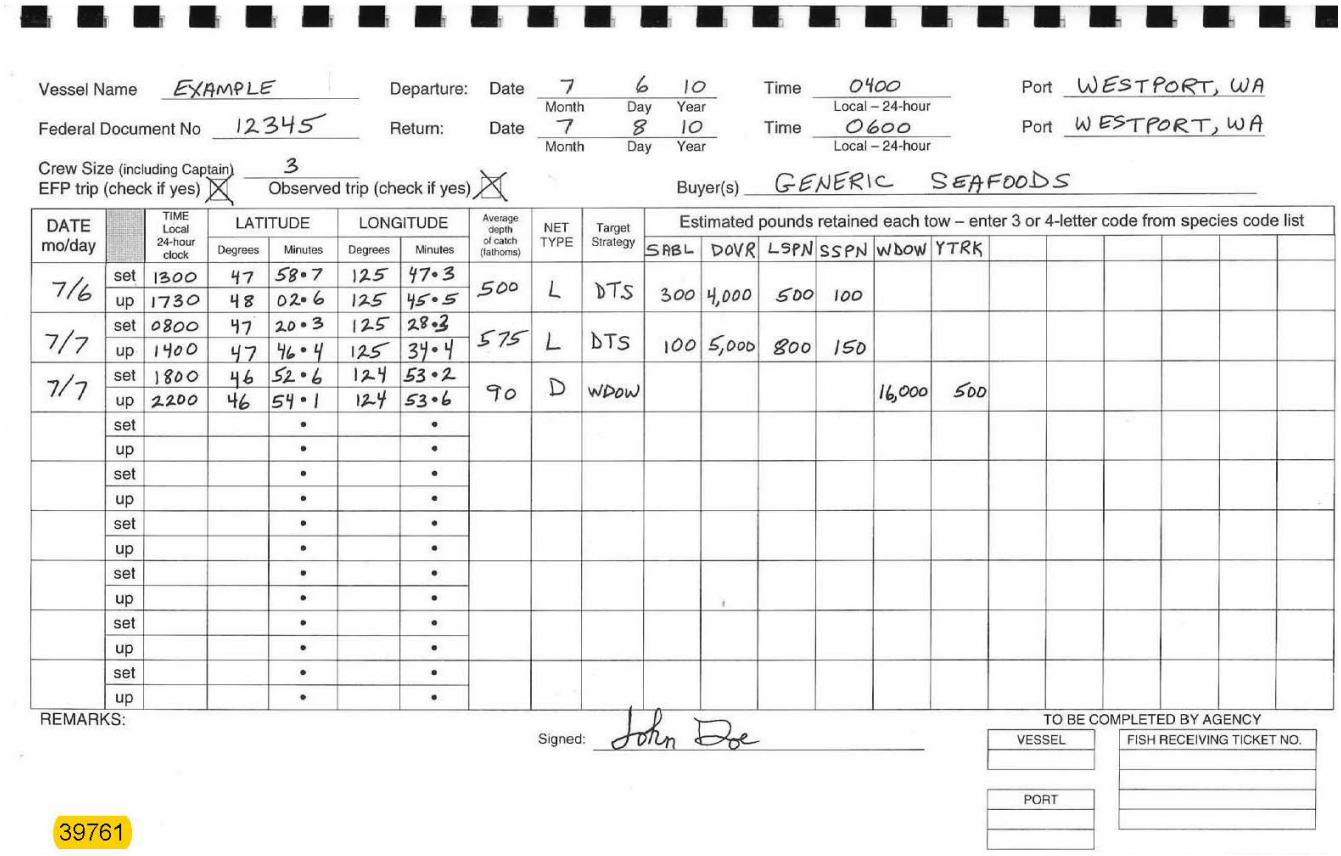
The specifics of capturing all necessary Fishing Effort information, is discussed in this section.

Vessel Logbooks

All trawl vessels (with the exception of Mothership Catcher Vessels (See Figure 4-1) are required to record fishing activities in a current WOC logbook. This includes set and up times, vessel coordinates, bottom depth, and target. Observers enter this information directly from of this book into the tablet or copy first to the Trip Form - Haul locations table.

Tip: It is important for observers to copy or complete entry of the fishing locations after each haul. Some vessels may not fill in their logbook until the steam in and/or record more or fewer hauls than actually occurred. If the vessel logbook is reviewed after each haul, the risk of erroneous data recording is reduced.

If a logbook is not available, captains often keep a personal journal of fishing effort information that you can use with their permission. If they do not, ask them to record the information on a piece of paper. Some observers may have a handheld GPS to use for coordinates also.



Vessel Name EXAMPLE Departure: Date 7 (Month) 6 (Day) 10 (Year) Time 0400 (Local – 24-hour) Port WESTPORT, WA

Federal Document No 12345 Return: Date 7 (Month) 8 (Day) 10 (Year) Time 0600 (Local – 24-hour) Port WESTPORT, WA

Crew Size (including Captain) 3 EFP trip (check if yes) ☒ Observed trip (check if yes) ☒ Buyer(s) GENERIC SEAFOODS

DATE mo/day		TIME Local 24-hour clock	LATITUDE Degrees	LATITUDE Minutes	LONGITUDE Degrees	LONGITUDE Minutes	Average depth of catch (fathoms)	NET TYPE	Target Strategy	Estimated pounds retained each tow – enter 3 or 4-letter code from species code list: SABL	DOVR	LSPN	SSPN	WDOW	YTRK
7/6	set	1300	47	58•7	125	47•3	500	L	DTS	300	4,000	500	100		
	up	1730	48	02•6	125	45•5									
7/7	set	0800	47	20•3	125	28•3	575	L	DTS	100	5,000	800	150		
	up	1400	47	46•4	125	34•4									
7/7	set	1800	46	52•6	124	53•2	90	D	WDOW					16,000	500
	up	2200	46	54•1	124	53•6									
	set			•		•									
	up			•		•									
	set			•		•									
	up			•		•									
	set			•		•									
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	set			•		•									
	up			•		•									
	set			•		•									
	up			•		•									

REMARKS: Signed: John Doe

TO BE COMPLETED BY AGENCY

VESSEL | FISH RECEIVING TICKET NO.

PORT

39761

Figure 4-1: The Washington-Oregon-California Trawl Logbook

Trip Information Form Instructions

A trip is generated each time a vessel leaves the dock with the intention of fishing, regardless of whether or not fishing activity occurs. It is also considered a trip if a vessel departs with the intention to wash gear, grapple for a net, or change ports and no fishing occurred. It is considered a trip if the vessel attempts to leave the harbor to fish but turns around for any reason such as hazardous conditions or mechanical failure.

All fish on a fish ticket must be recorded as one trip. If a vessel which has been fishing returns to the dock but does not deliver then continues to fish, it is considered a single trip.

Start a trip by entering the Trip Details information into the OPTECS app. This includes Vessel Name, Fishery, skipper, # of crew, Observer Logbook, Permit, Departure Date/Time and Port. Trip Details will be directly entered for trawl and fixed gear trips, but can first be recorded on a Trip Information form if using paper forms. All trips must have this level of data in order to record any of the other levels of data. The following instructions are based on the Trip Information form, which closely mirrors direct entry into the tablet application. (See Figure 4-2) and (See Figure 4-4).

- **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.

> **EFP:** Permits that allow fishing activities that would be prohibited. The permits are usually written by the states and must pass a vote by the PFMC. EFPs may be granted to test gear modification or electronic monitoring schemes. Most often vessels will have a detailed vessel monitoring plan, which the observer should be familiar with if covering an EFP trip.

- **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 of 5 through 5 of 5.
- **Trip Number:** This is an automatically generated number by the database. Complete this field once the trip has been started, or uploaded, in the online 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 this 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.
- **Vessel Name:** Record the full name of the vessel as it appears on the vessel. For example, record Capt. John, not Captain John.
- **Fishery:** Record the name of the fishery the vessel was selected for:
  - Catch Shares
  - Mothership Catcher-Vessel
  - Shoreside Hake
  - Trawl Gear Modification EFP (EM)
  - CA halibut
  - CA pink shrimp
  - CA cucumber trawl
  - CA ridgeback prawn
  - OR pink shrimp
  - WA pink shrimp
  - Electronic Monitoring EFP
- **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.
- **Observer Logbook #:** Record the number on the front page of the Observer Logbook used to document information about the trip.
- **Permit/ License Number(s):** Document the permit number being used. Catch Shares and Limited Entry 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: https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=112:23
- **Departure Date/Time:** Document the date and time the vessel untied from the dock where the observer boarded with the intention of beginning a trip. Date must be documented as MM/DD/ YYYY. Time must be documented using military time (e.g., 1400). If the vessel makes a temporary stop, such as topping off ice on the way to go fishing, the departure time will be when the vessel untied from the original dock where the observer boarded.
- **Departure Port:** Document the port you're leaving from. Should match data entry field.
- **No Fishing Activity:** Check this box if no fishing occurred during your trip. Not currently an OPTECS field. Data entry completed in WCGOP database.

- **Intended Gear Type:** If there was no fishing activity, record the primary gear type the captain intended to use. Leave blank if fishing occurred. Not currently an OPTECS field. Data entry completed in WCGOP database.

Note: The following Trip Information is entered on the OPTECS - End Trip screen.

- **Partial Trips (NCS only):** Check the box if the trip included more days than were observed. (Fish ticket includes unobserved catch). For Catch Share trips, leave this field blank.
- **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. For Catch Share trips, leave this field blank.
- **Fish Processed During Trip?:** Processing is defined as a fish that is headed and gutted or greater. Record whether or not processing of catch occurred before delivery. Document a Y for yes or N for no. If Y, record which species were processed and in which hauls this occurred in the trip notes.
- **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
Catch Shares	WOC Trawl Logbook
CA halibut	WOC Trawl Logbook
CA pink shrimp	CA Shrimp/ Prawn Trawl Logbook
CA cucumber trawl	CA Shrimp/ Prawn Trawl Logbook
CA ridgeback prawn	CA Shrimp/ Prawn Trawl Logbook
OR pink shrimp	OR Shrimp Trawl Logbook
WA pink shrimp	WDFW Shrimp Trawl Logbook

- **Vessel Logbook Page #:** 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! Logbook page numbers are located in the bottom left corner of the Washington-Oregon-California logbook. If multiple page numbers were used during a trip, enter only the first page number into the database field. Enter additional page numbers into the trip notes section of the database.

Vessel Logbook Name	Page Number Location
WOC Trawl Logbook	Bottom left corner. (See Figure 4-1)
CA Shrimp/Prawn Trawl Logbook	Top of page, to the right of header
OR Shrimp Trawl Logbook	Bottom right corner

- **Return Port:** Document the port the vessel returns to.
- **Return Date/Time:** Document the date and time the vessel tied to the dock where the observer could disembark. Date must be documented as MM/DD/ YYYY. Time must be documented using military time (e.g., 1400).
  - Generally, the returning dock will be at the fish plant or at the vessel's slip.
  - If the vessel makes a temporary stop, such as topping off ice before tying up at the fish plant for delivery, the return time for the vessel would be when the vessel tied to the dock at the fish plant. The exception is if the observer disembarked at the temporary stop. In that case, the end time would be when the vessel tied to the dock where the observer disembarked.
- **First Receiver (Catch Share Only):** Document the name of the person or plant that the vessel delivered to. If there is more than one receiver, document only the initial first receiver here. Additional receivers should be documented in the trip notes. Leave this field blank for Non-Catch Share trips.
- **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 six digits followed by E.
  - OR fish tickets are eight digits.
  - WA fish tickets begin with EA followed by six digits.
- **WOC:** The state agency code is: C - for California deliveries, O - for Oregon deliveries, or W - for Washington deliveries.
- **Date:** Document the date in MM/DD/YY that is recorded on the fish ticket.
- **Trip notes:** Document any important information about the trip that is not adequately conveyed by the other fields or comments at the haul level.

TRIP INFORMATION

Page ____ of ____

Trip # | | | | | | USCG # | | | | | | | | or State Reg # | | | | | | | | |

CS LE OA EFP

Observer Name _____

Vessel Name _____

Fishery _____

Skipper's Name _____

# of Crew _____ (including captain, not including observer)

Observer Logbook # _____

Permit/License #(s) _____

Departure Date/Time _____ _____

Departure Port _____

☐ No Fishing Activity Intended Gear Type (If no activity) ☐

☐ Partial Trip (NCS only) Total # of Fishing Days (KNOWN) ☐

Fish Processed During Trip? Y/N

Vessel Logbook Name _____

Vessel Logbook Page # _____

Return Port _____

Return Date/Time _____ _____

First Receiver (CS only) _____

Fish Ticket #	WOC	Date

Fish Ticket #	WOC	Date

Trip Notes:

Trip Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 4-2: Trip Information Form v2020 front

Trip Form: Haul Locations Instructions

Haul location (See Figure 4-4). Starred (*) fields indicate information that can be obtained from the Washington-Oregon-California Trawl Logbook.

- **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 in Pacific Standard Time (PST) when haul was set and retrieved in 24-hour notation (military time). A haul starts when the net has reached fishing depth and ends when the brake is released and haul back begins.
- **Start and end latitude*:** Document the latitude (in degrees, minutes, 1/100th of a minute) that the haul was set and retrieved.



Figure 4-3: GPS Showing Latitude and Longitude

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 not, ask the captain to change the view to 1/100th of a minute instead of seconds. (See Figure 4-3)

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

Lat/ Long: Always round to two decimal places (1/100th of a minute).

Loran: If the vessel is using Loran C, make every attempt to convert locations to GPS while on the vessel. If the degrees of latitude and longitude cannot be obtained while at sea, document the Loran coordinates and convert them to degrees after the trip. Contact your debriefer for the conversion formulas.

- **Depth of Catch:** Document the fishing depth in fathoms. The "Washington-Oregon-California Trawl Logbook" only requires the vessel to document the depth at which most of the fish were caught. If only one depth is documented, use it for both depth fields.

Fathoms: 1 fathom = 6 feet

- **Gear Type:** Enter a code for the gear type based on the configuration of the gear, rather than how it is being fished. Use the Trawl Net Identification Key in the Observer Logbook to determine groundfish trawl gear type.

1 - Groundfish Trawl, Footrope ≤ 8 inches (Small footrope, Not pineapple trawl)

2 - Groundfish Trawl, Footrope > 8 inches (Large footrope)

3 - Midwater Trawl

4 - Danish/Scottish Seine

5 - Trawl Other Gear

12 - Shrimp Trawl: Single Rigged (one net)

13 - Shrimp Trawl: Double Rigged (two nets)

14 - All Net Gear, except Trawl

17 - Selective Flatfish/Pineapple Net (small footrope)

Be very careful when documenting gear type on trawlers. Remember, regulations state that gear type 17-Selective Flatfish/Pineapple net must be used when fishing shoreward of the RCA (WA only).

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 6, "Fixed Gear Sampling" and/or Chapter 7, "Fixed Gear Sampling on Small Boats."

- **BRD Present?:** Document whether or not a bycatch reduction device was used for the haul (Y/N).
  If a BRD is present, it must be described in detail on the BRD Description form, see "Trawl Bycatch Reduction Device (BRD) Characterization Form Instructions" on page 5-8.

Note: All Pink Shrimp vessels are required to use "Shrimp Grates", a type of BRD, meant to exclude rockfish, hake, etc. LED lights are commonly used to mitigate eulachon catch. This is another form of BRD.

- **Target Strategy:** Enter the vessel's target strategy. 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. Only PacFin codes may be used. If the skipper documents something other than a PacFin code (ex. Reds), use the code that most closely represents the target strategy and add a note in the comments.

TRIP FORM - HAUL LOCATIONS

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD Present?	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
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 Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)		Start											
		End											
		Start											
		End											
		Start											
		End											
		Start											
		End											
		Start											
		End											
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		End											
		Start											
		End											
		Start											
		End											
		Start											
		End											
		Start											
		End											
		Start											
		End											

Figure 4-4: Trip Information Form v2020 back

Haul Details Instructions

Haul level fisheries effort information, including total catch estimates and target strategies, are required when starting a new haul. The Haul Details page is accessed from the Hauls screen by clicking "Add Haul" in the upper right corner. Once this is complete catch data entry will become active. When not using the tablet, this data should be recorded on Trawl Deck Form. The following instructions are based on the deck form's Haul Details section (See Figure 4-9), which closely mirrors direct entry into the tablet application.

- **Visual OTC (Observer Total Catch estimate):** Record the total catch estimate in pounds. Leave this field blank if the haul was unsampled or gear was lost. OTC estimates will be discussed in the next section

Haul: A haul is the amount of fish taken in a single pull of a net. If the net is fished and then pulled in and landed on the vessel, it is a haul, whether or not it is dumped prior to letting the net back out to fish again.

- **OTC Weight Method:** Record the number that represents the weight method used to obtain the observer total catch estimate. The weight methods that may be used for Trawl OTCs are:

  6 – Other

  14 - Visual Experience

Note: See Appendix for a complete list of WCGOP codes.

- **Biolist:** Randomly generated when first haul is started and runs sequentially afterward. Drives OPTECS biosampling protocol notifications based on the Trawl Biosampling Rotating List.
- **Target:** Enter the vessel's target strategy. 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. Only PacFin codes may be used. If the skipper documents something other than a PacFin code (ex. Reds), use the code that most closely represents the target strategy and add a note in the comments.

- **BRD Present?:** Document whether or not a bycatch reduction device was used for the haul (Y/N). If a BRD is present, it must be described in detail on the BRD Description form, see "Trawl Bycatch Reduction Device (BRD) Characterization Form Instructions" on page 5-8.
- **EFP?:** Enter Yes/No based on whether the vessel fished under an exempted fishing permit. Can apply only certain hauls under some EFP rules, so it must be entered at the haul level.
- **Beaufort Scale:** Use the Beaufort (sea condition) scale to note the sea conditions during setting of the gear. OPTECS gives a Beaufort description for each selected option. A more detailed description with representative photos can be found in the Appendix and the Field Manual.
- **Fit #:** Enter the Fit # displayed after calibrating the Marel scale for this haul. Only required once per day or when sea state changes.
- **Weight Cal:** Completed for all hauls. Place 5 kilo calibration weight on scale pan and record test weight. weights of 11.00 and 11.05 lbs are both fine. If another weight is displayed, then recalibrate scale. Scale not used option is available for scale malfunctions or "unsampled" tows.
- **Gear Type:** Enter a code for the gear type based on the configuration of the gear, rather than how it is being fished. Use the Trawl Net Identification Key in the Observer Logbook to determine groundfish trawl gear type.

  1 - Groundfish Trawl, Footrope < 8 inches (small footrope, not pineapple trawl)

  2 - Groundfish Trawl, Footrope > 8 inches (large footrope)

  3 - Midwater Trawl

  4 - Danish/Scottish Seine

  5 - Trawl Other Gear

  12 - Shrimp Trawl - Single Rigged (one net)

  13 - Shrimp Trawl - Double Rigged (two nets)

  14 - All Net Gear, except Trawl

  17 - Pineapple Trawl (small footrope)

Be careful when documenting gear type on trawlers. Remember, regulations state that gear type 17-Selective Flatfish/Pineapple net must be used when fishing in WA waters shoreward of the RCA.

- **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 - Net or codend lost, pot(s) lost, other gear lost

  7 – Other problem (Document other gear related problem in the comments section.)

  8 - Retrieved gear (Used when a lost codend is retrieved, usually through grappling.)

- **Haul Locations Table:** (Optional) Record start & end times, locations and depths for haul when direct tablet entry is not possible.

Observer Total Catch Estimates (OTC)

Total catch is defined as any organic or inorganic material confined within a trawl net, or attached to the trawl net, as the net is being landed. Importantly this includes any visually discernible catch lost during the retrieval process that can be reasonably attributed to the vessel. Total catch estimates are visually determined by an observer as the net is being landed or after the catch is dumped on deck.

Observer Total Catch (OTC) is an independent estimate of total catch (retained and discard), made by the observer. OTC must be estimated for all hauls. There are two options for obtaining OTC on trawlers:

- **Weight Method 14:** Visual Experience
- **Weight Method 6:** Other

Weight Method 14: Visual Experience

Visual estimates are the **preferred** option for total catch weight on trawlers. Prior to the first haul on the vessel, ask the skipper or crew how much their codend holds (by weight) and how much their trawl alley holds. Record the crew's estimates in the Observer Logbook, Vessel Diagrams section. Visually estimate the total weight of each haul. Initially, consider the crew's estimates of total catch, as well as the area of the trawl alley, and other resources when making your independent estimate for OTC. Record this weight estimate in the Haul Details Visual OTC field (See Figure 4-10).

Weight Method 6: Other

This weight method should only be used for unobserved hauls and when gear is lost. It should not be intentionally used in other circumstances because 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 trip comments.

Sampling Catch

Once the catch is dumped on deck, the crew will begin sorting retained individuals from discarded individuals and sorting fish into IFQ fish groupings (as stated in the regulations).

Due to the large quantity of fish, observers are provided with a list of priorities in order to help them manage their time on deck. Observers are expected to spend more time on higher priority species, such as discarded IFQ species and less time on non-IFQ species.

In the Catch Share program, observers are responsible for determining the total weight of all priority IFQ species (e.g., yelloweye, cowcod), both retained and discarded. Observers are also expected to estimate other retained rockfish catch weights, sample all Pacific halibut, and non-priority IFQ discards, as well as any protected or prohibited discard species (e.g., GSTG, seabirds). Non-IFQ discards are the lowest priority, but observers should make an effort to sample these species, as well, unless doing so interferes with sampling of higher priority species.

Catch Categories

Chapter 3, "Observer Basics" discusses catch categories briefly. This section provides a review and more specific information regarding catch categories on trawl vessels. As a review, there are two general rules that apply to catch categories:

- Retained and discarded individuals are always documented in separate catch categories.
- Individuals are grouped in the same catch category when they are sampled together. All individuals in the grouping must have the same weight method.

Retained Catch on Trawl Vessels

Generally observers will only sample retained catch if it contains rockfish species. All other retained catch is not independently estimated for weight by the observer. Fishers are required to record the weight of retained species by catch category in a vessel logbook. Observers copy these estimates for retained catch exactly, unless:

- The observer is aboard a Catch Share vessel and the vessel is retaining one or more priority IFQ species (e.g., yelloweye rockfish)
  - Observers must use Actual Weight - Whole Haul for all cowcod and yelloweye rockfish.
  - Visual estimates are required for all other retained rockfish species. No species composition is required for these species.
- The skipper may record retained rockfish as NSLP, SSLP, NSLF, or SSLF which are groupings of rockfish and not species specific. These groupings may contain priority and IFQ rockfish. These vessel estimates are not recorded when observers make visual estimates of all retained IFQ rockfish. However, if an observer estimate is not made for all IFQ rockfish species, and no priority rockfish were present in the tow, then the skipper's estimates of NSLP, SSLP, NSLF, or SSLF may be used.
- Vessel does not record one or more species of retained catch (often happens with species retained in small quantities).
- Vessel uses an invalid PacFin code or a code that is not the most descriptive possible. (Select most applicable name from Catch Category list, see the Appendix for a list of the Catch Categories).
- Vessel estimates of retained catch not representative of the weight and/or composition of the catch.

If a vessel is not estimating retained catch by catch category, the observer is responsible for obtaining estimates. This can be done by simply asking the skipper for an estimate or by obtaining an independent estimate using one of the weight methods discussed later in this chapter.

Discarded Catch on Trawl Vessels

The amount of fish discarded on trawlers is extremely variable, from close to 0% to 100% of the total catch. Observers sort the discard into one or multiple groupings (catch categories). Typically, discards are placed in a ZMIS catch category, which is then sampled for species composition, and a PHLB catch category. There are three factors that distinguish discarded catch categories from each other on trawl vessels:

Vessel/Observer sorting: If the entire discard is not weighed and the crew sorts species in different ways, then the species will fall into catch categories based on the way the crew sorted them. Observer sorting of discard may also lead to species falling into different catch categories. In the Catch Share program, more emphasis is placed on IFQ species, therefore, species should be sorted in such a way as to allow for the most accurate sampling to be done for IFQ species.

Weight method: The method used to obtain the weight estimate of the species or grouping of species can be used to determine the number of discarded catch categories. If portions of the catch have different weight methods, they MUST be in different catch categories.

Duties and Priorities on Trawl Vessels

Use this list as a reminder of data to be collected and to prioritize when all duties cannot be accomplished. Observer duties, in order of priority are:

TRAWL (General)

1. Record incidental takes and collect appropriate biological information from protected species, including marine mammals, sea turtles, seabirds, green sturgeon, and salmon.
2. Record interactions of marine mammals, sea turtles, and seabirds with fishing gear.
3. Document sightings of ESA listed species.
4. Record fishing effort information, including - location, time, date, and depth for all hauls/sets.
5. Estimate total catch weight (OTC), even for tows with 100% discard.
6. Catch accounting (see guidelines for Catch Share vs. Non-Catch Share vessels)
7. Document reasons for discard for each species and/or catch category.

Priorities 1 – 7 must be completed on ALL hauls

8. Record weight, length, sex, and take necessary dissections from tagged fish.
9. Complete species identification forms.
10. Take biological samples, including length, sex, otoliths, tissue, etc. from discarded individuals
11. Maintain observer logbook.
12. Document sightings of non-ESA listed marine mammals and seabirds.
13. Compile forms and enter/upload trip data within three days of disembarking.

Catch Accounting: Catch Share Trawl Vessels

6a. Estimate weights of IFQ species, in the following order:

- Mixed discarded catch categories containing IFQ species must be sampled for species composition.
- Collect actual weights for retained and discarded priority rockfish species - yelloweye and cowcod.
- Estimate weight of Pacific halibut by tallying 100% and taking actual lengths/viabilities on all or a randomly selected subsample.
- Determine discarded weight of all other IFQ species.
- Make visual estimates of all retained rockfish species.

6b. Estimate discarded weight of non-IFQ species.

6c. Sample discarded non-IFQ species for species composition.

6d. Complete the IFQ Priority Species Tracking Form (non-hake fisheries only).

Catch Share observers' effort on trawlers is focused on obtaining the most accurate estimates of IFQ retained and discarded catch AND Non-IFQ discarded catch as possible. Remember that through the use of catch categories, more precise methods of estimation can be used for those higher priority groups (prohibited species and priority IFQ species).

Catch Accounting: Non-Catch Share Trawl Vessels

6a. Estimate weight of discarded catch categories.

6b. Sample discarded catch categories for species composition.

6c. Record length and viability of Pacific halibut.

6d. Verify vessel estimated weight of retained catch.

- Make independent estimates of any retained catch not accounted for in logbook.



Figure 4-5: Green Sturgeon

IFQ Species Table

Priority Species	
Cowcod rockfish*	Yelloweye rockfish*
Rockfish	
Aurora rockfish	Pink rockfish
Bank rockfish	Pinkrose rockfish
Blackgill rockfish	Pygmy rockfish
Bocaccio rockfish	Redbanded rockfish
Bronzespotted rockfish	Redstripe rockfish
Canary rockfish	Rosethorn rockfish
Chameleon rockfish	Rosy rockfish
Chilipepper rockfish	Rougheye rockfish
Darkblotched rockfish	Sharpchin rockfish
Dusky rockfish	Shortraker rockfish
Dwarf-red rockfish	Shortspine thornyhead
Flag rockfish	Silvergray rockfish
Freckled rockfish	Speckled rockfish
Greenblotched rockfish	Splitnose rockfish
Greenspotted rockfish	Squarespot rockfish
Greenstriped rockfish	Starry rockfish
Halfbanded rockfish	Stripetail rockfish
Harlequin rockfish	Swordspine rockfish
Honeycomb rockfish	Tiger rockfish
Longspine thornyhead	Vermilion rockfish
Mexican rockfish	Widow rockfish
Pacific ocean perch	Yellowmouth rockfish
	Yellowtail rockfish
Flatfish	
Arrowtooth flounder	Pacific halibut
Butter sole	Pacific sanddab
Curlfin sole	Petrale sole
Dover sole	Rex sole
English sole	Rock sole
Flathead sole	Sand sole
	Starry flounder
Roundfish	
Lingcod	Pacific whiting
Pacific cod	Sablefish

***Priority species on the IFQ Priority Species Tracking Form**

Weight Methods for Estimating Catch Category Weights

There are eleven weight methods that can be used to determine catch category weights on trawlers:

- **3 Basket Weight Determination (BWD)**
- **5 OTC - Retained**
- **6 Other**
- **7 Vessel Estimate - Retained Only**
- **8 Extrapolation**
- **9 Pacific Halibut Length/Weight Conversion**
- **14 Visual Experience**
- **15 Visual Spatial**
- **19 Pacific Halibut Length/Weight Extrapolation**
- **20 Actual Weight - Whole Haul**
- **21 Actual Weight - Subsample**

Weight Method selection is prompted after adding a Catch category in OPTECS. Catch weight for method 6 and 14 are direct entry, all others are auto-calculated.

Weight Method 3: Basket Weight Determinations (BWD)

When Basket Weight Determination is commonly used:

- Total discard weighs less than 1500 lbs.
- A large quantity of a single species or a mix of similar species is discarded. Species this commonly applies to are Arrowtooth flounder and Pacific spiny dogfish shark. Groupings of species this commonly applies to are flatfish species and Splitnose/Aurora rockfish.

Step-by-Step Instructions

1. Visually estimate the number of baskets it will take to hold the entire catch category.

Example: Estimate it will take 28 baskets to hold entire catch category.

2. Devise a sampling plan to randomly select baskets to use to determine average basket weight. A minimum of four baskets must be weighed when using the BWD weight method, but observers are encouraged to weigh at least 6 – 10 baskets. Use a spatial, systematic, or temporal frame to select baskets (see next section).

Example: Decide to use seven baskets to determine average basket weight. Using a systematic random sampling frame, divide 28 (estimated number of baskets) by 7 = 4 (n). Randomly select a number between 1 and 4, 1 selected. Save the 1st, 5th (1 + 4(n) = 5), 9th (5 +4 (n) = 9), 13th, 17th, 21st, and 25th baskets of discard collected.

3. Place all species/items from catch category into baskets to obtain the total basket count. Each basket should be filled to the same level and contain a random sample of catch category composition.

Example: Filled 27 baskets of discard. One partial basket also collected.

Tip: In most cases when BWD is used, the last basket will be less full than all other baskets. Be sure to weigh this partial basket separately.

4. Weigh each randomly selected mixed basket. Direct enter basket weights or document all basket weights and total number of baskets weighed in the raw data. These baskets are normally set aside for species composition.

Example: Seven baskets of discard are collected and together weighed 551.20 lbs.

5. The average full basket weight is auto-calculated based on what is entered into the WM3 Weighed Baskets table.

Calculation

$$\text{Average basket weight (lbs)} = \frac{\sum \text{Basket weights}}{\text{number of baskets sampled}}$$

Example: 551.20 lbs/ 7 baskets = 78.74285714 lbs.

6. If a partial basket remains, enter it into the Weighed Baskets table and click partial basket to mark the weight with a "Y".

Example: Weight of partial basket = 35.85 lbs.

7. Enter a tally for the number of *unweighed* baskets. OPTECS totals the number of weighed and unweighed baskets and multiplies that total by the average weight.

Calculation

Catch category weight =
(number of full baskets x Average basket weight) + Weight of partial basket

Example: 78.74285714 lbs x 27 baskets + 35.85 lbs = 2161.907142 lbs

When using BWD all baskets must be either tallied or weighed, even the ones that are speciated.

Method to Randomly Select Baskets for Weights Systematic (preferred)

Other methods for selecting baskets are possible, but this is the preferred method.

1. **Define population:** All baskets of fish in the catch category.
2. **Define sample frame:** Spatial systematic, based on baskets of fish.
3. **Define sample units:** Single baskets of fish.
4. **Number all sample units:** This may require estimating how many baskets the catch category will fill; for example, estimate that catch category will fill 15 baskets - Number baskets 1 – 15.
5. **Decide how many of the sample units you will weigh:** Decide to weigh five baskets.
6. **Divide the total number of sample units by the number of units you want to weigh:** This gives you your value for "n". n = 15/5 = 3.
7. **Randomly select a number between 1 and n:** This will be the first sample unit in your sample. Use random number table to select a number between 1 and 3. – Randomly select 1.
8. **Weigh the selected basket and then every nth basket after that:** Weigh baskets 1, 4(1+3), 7(4+3), 10(7+3), and 13(10+3).

Weight Method 5: OTC – Retained

When OTC - Retained is commonly used:

- Observer is sick or injured and unable to sample, but at minimum can record an accurate OTC estimate. This is the least preferred method for estimating discard.
- When unable to sample, always attempt to take visual estimates of discard. In the Catch Share program visually estimated discards should at minimum, be broken into IFQ and NIFQ catch categories.

Step-by-Step Instructions

1. Visually estimate total catch weight (OTC).
2. Estimate weight of retained fish using one or more of the weight methods. Vessel estimates are the most commonly used weight method for retained catch.
3. Complete Catch Category Details fields in the tablet.

Calculation

Catch category Weight (lbs) = OTC — Retained species weights (lbs)

Tip: Be sure to document in the trip notes and observer logbook why the haul or catch category was not sampled.

Weight Method 6: Other

This weight method should only be used for unobserved (no OTC) hauls and lost gear. Otherwise, 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 trip notes.

Weight Method 7: Vessel Estimate

When Vessel Estimate, is commonly used:

- All estimates of retained catch categories on trawlers,that are NOT rockfish IFQ species.

Step-by-Step Instructions

1. Copy retained catch category estimates from the vessel's logbook.

OR

2. Ask skipper for retained catch category estimate.

Weight Method 8: Extrapolation

When Extrapolation is commonly used:

- Species that are presorted, such as Dungeness crab, lingcod, and sablefish.

Presort: Vessels will attempt to get some hardier, live fish back into the water quickly. After a codend has been dumped, the crew will sort through the catch, pull out individuals of these species and toss them overboard.

Step-by-Step Instructions

Tip: When weight method 8 is used, an actual count of individuals is REQUIRED!! The actual count must be direct entered on the Counts/Weights screen or recorded in the raw data if using the Trawl Deck Form.

1. Devise a sampling plan to randomly select individuals from the presorted fish for average weights. Use a systematic, spatial, or temporal frame. Specifics on implementing each type of sampling frame are described in the next section.

Example: Sablefish are being presorted on deck by 3 crew members. The observer determines they could count ALL the sablefish being thrown over by all 3 crew and that they could get a weight from the sablefish thrown over by just ONE crew member. Number the deckhands 1 - 3 and randomly select one of the numbers. In this example, all the sablefish from deckhand 3 will be collected and ALL the presorted sablefish will be tally counted.

2. Count the number of individuals, by species.

Example: 56 Sablefish presorted by all three crew members.

3. Determine the average weight of species. Randomly select a minimum of 20 individuals to weigh.

Example: Collected 21 Sablefish from just one deckhand (#3) which weighed 65.75 lbs. Average weight = 65.75 lbs/ 21 fish = 3.13095238 lbs/ fish.

Calculation

$$\text{Average weight} = \frac{\sum \text{Individuals weight(lbs)}}{\text{number of individuals weighed.}}$$

4. Catch category weight is determined after the sample basket(s) and count, plus additional tally is entered. OPTECS applies the average weight to the total number of individuals of that species.

Calculation

Catch category weight = Average weight x Total number of Individuals caught

Example: Catch category weight = 3.13095238 lbs/ fish x 56 total fish = 175.3333332 lbs.

Tip: If extrapolation is used for more than one species, place each species in its own catch category.

Tip: Pacific halibut are also presorted but do not use extrapolation in this case. See weight method 9 and 19 for sampling of Pacific halibut.

WCGOP Random Number Table

1	0	3	6	6	1	3	7	1	7	6	9	6	1	0	2	2	9	7	6
5	9	8	4	3	5	6	2	4	4	4	2	8	2	5	1	6	9	2	6
0	2	7	4	1	9	0	0	3	4	3	7	8	0	7	9	7	3	7	2
0	9	6	2	5	0	2	3	7	3	6	8	4	1	9	7	3	7	0	1
2	4	2	9	8	6	9	5	9	4	0	4	6	7	2	8	5	4	7	0
1	2	7	6	9	3	2	4	0	6	0	4	1	2	5	6	1	7	6	4
9	8	7	9	1	8	9	2	5	7	9	3	9	8	4	6	6	1	9	5
0	6	0	7	7	7	0	4	2	1	6	4	9	1	6	4	2	6	5	7
7	7	8	1	1	1	2	3	5	3	3	6	2	5	0	5	9	1	5	0
0	2	7	0	6	8	2	8	7	7	3	7	0	0	0	6	3	6	4	8
2	7	1	0	8	8	7	2	5	5	7	6	4	7	9	0	7	6	0	6
0	6	1	0	4	2	8	0	1	2	6	8	1	2	3	9	3	4	5	9
0	0	2	2	6	1	7	6	1	8	9	3	3	2	3	7	5	5	2	6
4	2	8	8	8	4	7	8	7	5	7	8	9	5	6	6	6	0	8	8
1	6	6	6	7	9	9	7	8	1	7	3	5	2	4	8	3	4	0	0
2	9	6	9	2	0	0	9	7	1	8	8	1	9	7	5	0	5	6	5
6	6	1	4	0	9	3	5	0	0	5	8	8	7	1	6	5	6	7	6
9	1	9	4	7	8	1	6	1	3	4	6	3	3	0	1	5	8	7	3
9	2	6	9	5	0	6	8	0	5	8	1	3	2	0	1	9	0	0	0
3	2	5	5	4	1	0	5	9	1	2	0	2	5	7	0	0	5	2	3
9	9	1	3	1	0	3	3	7	7	5	7	5	6	9	5	2	2	5	8
0	6	3	9	1	6	0	7	6	2	9	8	4	2	8	9	5	5	7	5
2	9	0	8	1	7	0	6	4	6	3	1	6	9	5	0	0	1	3	6
3	6	0	5	7	3	9	4	0	3	2	0	4	6	9	5	0	9	5	2
2	8	8	1	7	4	5	9	0	9	5	7	3	9	7	5	2	1	8	9
3	7	6	7	6	8	9	6	2	9	0	9	8	9	8	5	2	6	9	9
5	7	1	2	6	1	6	2	1	8	2	3	2	7	0	6	8	1	6	0
8	6	4	2	4	2	5	4	9	7	9	7	3	3	5	9	3	6	0	6
1	3	3	8	5	3	5	7	3	0	5	7	1	5	2	6	7	7	4	2
7	7	6	9	4	7	1	3	2	5	6	0	9	6	8	9	6	7	9	5
3	3	5	9	0	1	0	4	5	6	9	9	7	6	8	8	9	0	1	3
3	5	1	8	2	1	7	3	1	2	5	0	8	3	6	9	9	7	2	1
5	1	0	3	8	0	0	7	4	9	6	0	1	0	1	6	0	6	7	4
9	2	5	3	3	8	9	7	0	3	8	8	0	1	6	2	6	0	6	8
8	5	7	8	7	4	4	7	6	5	4	4	0	4	7	4	2	8	1	6
4	6	6	2	9	6	2	8	0	5	7	5	1	8	0	1	3	1	3	4

File: \fram\observer\Data Forms\Deck Sheets\WCGOP & CS Marel Scale Quick Reference & RNT.docx 2/28/2012

Figure 4-6: Random # table example

Methods for Randomly Selecting Individuals

- Systematic Random Selection
- Spatial Random Selection
- Temporal Random Selection

Systematic Selection (preferred method)

Select individuals based on when they leave deck.

1. Estimate number of fish of particular species caught.
2. Break the number of fish into sampling units (n) by dividing the number of fish needed for average weights by the number of fish likely to be on deck.
3. Choose which fish to take first by selecting a random number that is between 1 and the sample unit (n).
4. Then collect every nth individual after that.
5. Weigh all selected individuals and divide by the number of individuals weighed to determine average weight.

Example: It is estimated there are 60 sablefish are usually presorted. In order to get 20 individuals, divide 60/20=3. This means one of every third fish should be taken for average weights. Using the random number table (See Figure 4-6), a number between one and three is randomly selected. Three is chosen. This results in the observer collecting the 3rd, 6th (3+3), 9th, etc. individuals for average weights.

Spatial Selection

Select all individuals from a designated area on the deck.

1. Visually divide the deck into equal units.
2. Randomly select a unit to take individuals from.
3. Take all individuals in that unit.
4. Weigh all selected individuals and divide by the number of individuals weighed to determine average weight.

Temporal Selection

Select all individuals sorted or on deck during a unit of time. Estimate the time it will take to sort out species.

1. Randomly select a designated time during sort to take individuals or randomly select a time to begin taking individuals.
2. Take all individuals during randomly selected interval or take individuals until enough have been collected.
3. Weigh all selected individuals and divide by the number of individuals weighed to determine average weight.

Weight Method 9: Pacific Halibut Length/Weight Conversion

Pacific halibut are not actually weighed on trawl vessels. Rather, this method describes the technique where the measured length of the fish is used to estimate the weight based on a conversion table.

When PHLB length/weight conversion is used:

- Used only for Pacific halibut (PHLB), when numbers are low enough (~15 or less) to take actual lengths and viabilities for all individuals in the catch category.

Step-by-Step Instructions

1. Actually measure the length and assess the viability (i.e. Excellent, Poor, or Dead) of all Pacific halibut in the catch category. Lengths are taken to nearest whole centimeter.

Example: 2 PHLB @ 73 cm, 1 PHLB @ 90 cm, and 1 PHLB @ 122 cm.

2. The PHLB catch category weight will be displayed once all fork lengths and viabilities have been entered on the Biospecimens screen. The application uses a length to weight conversion table and sums the resulting weights to determine catch weight

Tip: Retained and discarded Pacific halibut must be in separate catch categories. Typically trawlers have no retained halibut.

Pacific halibut data will normally be direct entered, but if using the Trawl Deck Form, any Pacific halibut raw data should include the following information: 1) A label which identifies the lengths as being “actual” (as opposed to visual estimates). 2) Fork Lengths recorded in whole centimeters. 3) Trawl caught viability (Excellent = E, Poor = P, Dead = D).

PHLB: Actual Lengths	
73 cm	P
90 cm	E
73 cm	P
122 cm	D

Example raw data table

Weight Method 14: Visual Experience

When Visual Experience is commonly used:

- Species that are too large to weigh, such as marine mammals, large skates, and sharks.
- Visual estimates can be used for large amounts of mud, rocks and miscellaneous bottom items
- Hauls observer is unable to sample.
- Weight of discard when all catch is dumped at-sea.
- Estimates of total discard weight when two hauls are dumped on each other (not permitted in Catch Share program).
- Weight of mixed discarded catch category species when other weight methods cannot be used. Although this is the least preferred method for determining catch category weight, it may be the only estimate possible. If this method is used for a mixed grouping of discarded species, it's very important to get a species composition sample.
- Weight of a single discarded species that has a large quantity. Commonly, the species this applies to are Arrowtooth flounder and Pacific spiny dogfish shark.
- Retained IFQ rockfish species. Remember that priority rockfish must have an actual weight and count. Make visual estimates to species for all other IFQ rockfish. If this is not possible use the most specific catch category name you can, such as THDS.

The most common reason for a catch category not to be species composition sampled is when species weights are visually estimated.

Step-by-Step Instructions

1. Based upon previous experience, visually estimate the weight of the species or the catch category.
2. If the actual number of a species is known, document the actual count, otherwise leave the # of fish field blank.

Tip: It may be helpful to ask the crew members for estimates of retained rockfish or discarded species weights on new vessels or the first time a species is encountered. Do not rely on their estimates but use them to help gauge the independent estimate.

Weight Method 15: Visual Spatial

When Visual Spatial is commonly used:

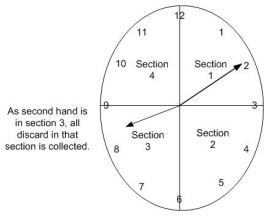
- Mixed discarded species when a large quantity of fish are discarded.
- Mixed discarded species on vessels with small decks, that bring up hauls back-to-back.
- When a catch category is at least 500 pounds and actual weight isn't possible due to time, space, or higher priorities. However, there may be circumstances where it's appropriate to apply this method to a smaller quantity of fish.
- There are no more than eight sections, however, there may be circumstances where more sections are appropriate.

Step-by-Step Instructions

1. Visually divide the trawl alley into areas or sections of equivalent size. The visual grid can contain 2 or more sections.
2. **Tip:** If time and space is restricted on deck and the observer determines a smaller sample size is required, increase the visual grid sections (e.g., 8 or 10 sections). If time and space on deck allows for a larger sample, use a visual grid with fewer sections (e.g. 2 to 4).
3. Number each section.

1 | 2
3 | 4

4. Randomly select one or more sections(s) from which all discard will be collected. A watch or the random number table can be used to select random numbers. Enter the total number of sections and sections sampled as a ratio on the weight method details screen, or document in the raw data if using the Trawl Deck Form.



5. Collect all the discard from the selected section(s).
6. Weigh all the discard collected. This discard is normally set aside for species composition.

Example: The observer divided the trawl alley into a total of 4 visual sections and randomly choose to sample all the discard in ONE section. All the discard in section 3 = 564.10 lbs.

7. OPTECS auto-calculates the catch category weight by multiplying the species sample weight total by sections sampled ratio.

Calculation

$$\text{Catch Category Wt} = \frac{\text{Weight of sample (lbs)} \times \text{Total \# of sections}}{\text{\# of section(s) discard collected from}}$$

Example: The total catch category weight is calculated as:

$$\frac{564.10 \text{ lbs} \times 4 \text{ total sections}}{1 \text{ section sampled}} = 2256.40 \text{ lbs}$$

Tip: When using weight method 15, keep in mind that more than ONE section of the visual grid can be sampled. An observer may determine that two or three sections of the visual grid could be sub-sampled. For example, the observer visually divides the discard in the trawl alley into eight sections and determines that all the discard in sections 1, 3, & 6 (randomly chosen) can be weighed. The total catch category weight would be calculated as: 664.12lbs x 8 total section = 1770.99lbs
3 sections sampled

Weight Method 19: Pacific Halibut Length/Weight Extrapolation

When PHLB length/weight conversion is used:

- Used only for Pacific halibut (PHLB), when numbers are too high to take actual lengths and viabilities for all individuals in the catch category.

In addition to collecting lengths, observers will be required to assess each sampled PHLB for viability, using the *Key to Injury Codes for Trawl Caught Pacific Halibut* *(See Appendix)*. Be sure to use the correct key as there is a separate one for each gear type.

Step-by-Step Instructions

1. Estimate the total PHLB in the haul, use number to devise a random systematic sampling frame in order to get lengths and viabilities for at least 10 individuals from throughout the haul.
   - For hauls containing 50 or more PHLB, use a random systematic sampling frame to collect 1/5 of the individuals for lengths and viabilities
2. Actually measure the length and assess the viability (Excellent, Poor, or Dead) for a minimum of 10 randomly selected Pacific halibut. Record lengths to the nearest whole centimeter.
3. Enter the actual length and viability values into the Biospecimens page. OPTECS will display the Total PHLB weight and the avg. PHLB weight.
4. Obtain an actual count (tally) of all remaining Pacific halibut found in the haul. Direct enter this number in the Tally Count field found on the Biospecimens screen. Note that OPTECS sums the tally and # of lengths for the total PHLB.

Calculation

Catch Category Wt = ∑ Auto-converted PHLB weights x Total PHLB Tally

If using Trawl Deck Forms your Pacific halibut raw data must clearly indicate fish with actual lengths and viabilities, plus the tally only total.

Weight Method 20: Actual Weight - Whole Haul

When Actual Weight - Whole Haul is used:

- Total discard is less than 1000 to 1500 lbs. and the vessel has enough deck space for all discard.
- The observer is able to use the entire catch category for a species composition sample.
- Priority species - Actual Weight - Whole Haul should be used for salmon species and priority rockfish species. Use for non-priority rockfish, IFQ species, and Non-IFQ whenever possible.

Step-by-Step Instructions

1. Sort all of the individuals in the catch category by species.
2. Weigh each species group.

Calculation

Catch Category Wt. (lbs) =∑ all species groups in catch category

Weight Method 21: Actual Weight - Subsample

When Actual Weight - Subsample is used:

- Total discard is less than 1000 to 1500 lbs.
- The observer is able to weigh all of the fish but doesn't have the time or space to use the entire catch category for a species composition sample.
- Priority species - There are IFQ species in the catch category (use Actual Weight - Whole Haul for salmon and priority rockfish). This is also used for Non-IFQ species when possible.
- Use this weight method code anytime you want to subsample an actually weighed catch category.

Step-by-Step Instructions

1. Use a systematic or simple random selection frame to choose baskets to include in (or exclude from) the species composition sample, see "Methods for Randomly Selecting A Species Composition Subsample" on page 4-19.
2. Complete a species composition sample from the randomly selected baskets.
3. Place all individuals not selected for species composition in unsorted observer baskets.
4. Actually weigh the unsorted baskets and record/enter as MIX - 99999.

Calculation

Catch Category Wt. (lbs) = ∑ Unsorted Basket Weights + ∑ Species Composition sample

Collecting and Documenting Species Composition

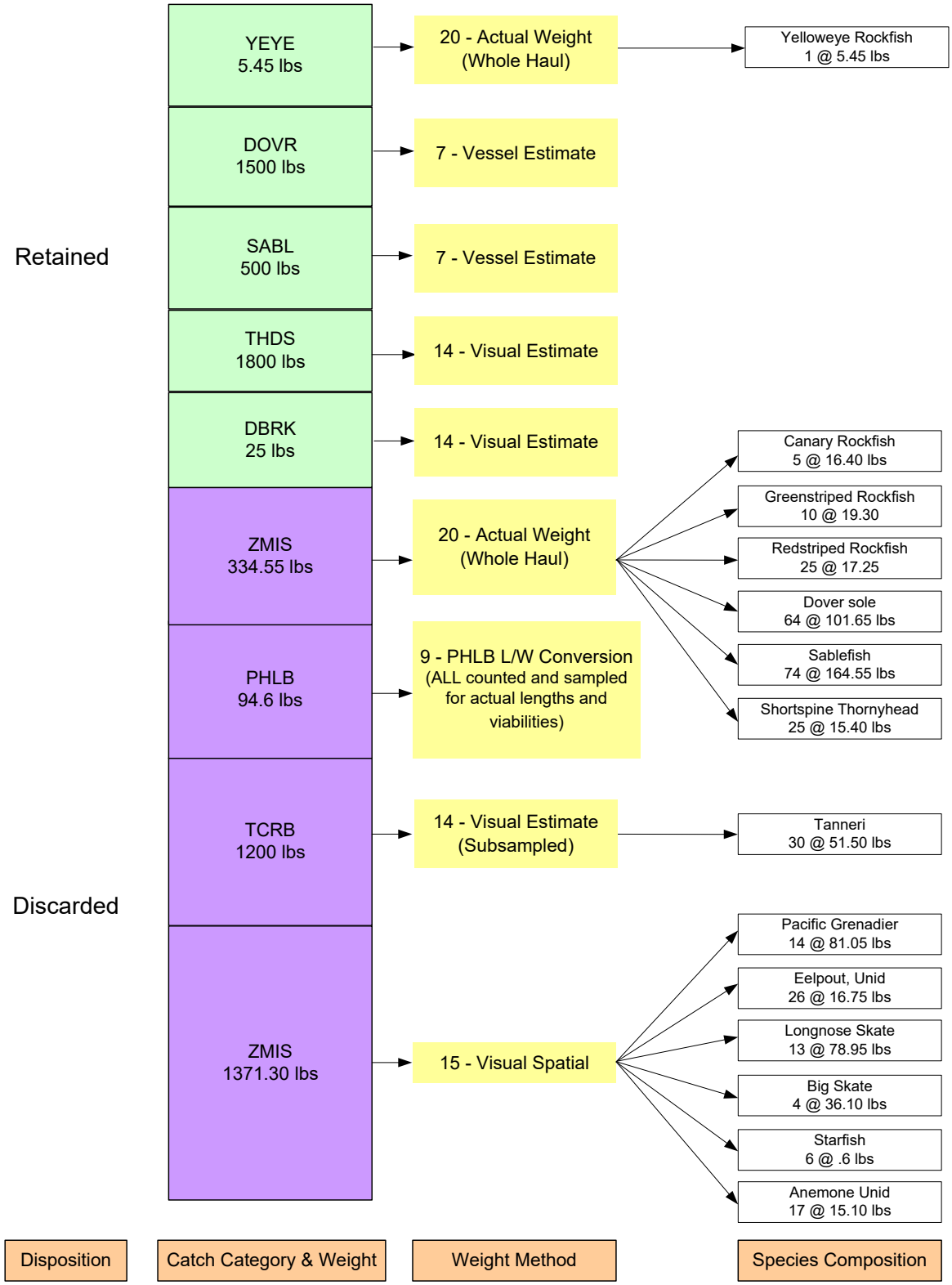


Figure 4-7: Catch to Species Composition

Species Composition Sampling

Once the catch has been placed into catch categories, a species composition sample can be taken from all, some, or only one of the catch categories (See Figure 4-7). Species composition samples can consist of every individual in the catch category or a subsample of the individuals in the catch category. Subsamples must be representative of the entire catch category. The most important thing to remember when sampling for species composition on trawlers is that every fish/item in the sample MUST be weighed.

Sample sizes for species composition will depend upon various factors, however observers should attempt to weigh a minimum of 500 pounds whenever possible. This standard has been applied to tows that are > 4 hours in length. In some fisheries (e.g., beach draggers), frequent hauls with short tow times, high diversity of catch, and/or discards containing many small individuals may limit the observer's ability to meet this goal. Sample sizes may also be affected by the size of the vessel, the configuration of the back deck and/or the sorting practices of the crew. Always consult your debriefer for guidance on the appropriate sample sizes for the vessels and fisheries you observe.

500 pounds is generally the minimum species composition sample size, however, there may be situations when smaller samples need to be taken.

Methods for Species Composition Sampling

1. Use all of the fish collected to obtain the catch category weight or take a subsample.
   - Use a random spatial or systematic frame to select your subsample(s), see details below. Remember all fish must have an equal chance of being selected in your sampling frame!
2. Sort all individual to species.
3. Weigh and count all individuals by species.

Methods for Randomly Selecting A Species Composition Subsample

- Systematic Random Selection
- Spatial Random Selection

Which method you use will depend on how the fish are sorted. If discard will all be basketed up before sorting for species composition, a systematic random selection can be performed.

1. Estimate the number of baskets it will take to weigh all the discard.
2. Divide your estimate of the total number of baskets by the number of baskets you want to use for your species composition sample to get unit (n).
3. Choose which basket to take first by selecting a random number that is between 1 and the sample unit (n).
4. Then collect every nth basket after that.
5. Sort the selected baskets by species for species composition.

Example: It is estimated there are 19 baskets of discard and the observer has time to sort 4 for species composition. In order to get baskets, divide 19/4=4.75 which rounds to 5. This means one of every five baskets should be taken for average species weights. Using the random number table, a number between one and five is randomly selected. Three is chosen. This results in the observer collecting the 3rd, 8th (3+5), 13th (8+5), and 18th (13+5) baskets for species composition. Continue to collect every nth basket if there are more baskets of fish than originally estimated.

If the discard is in the trawl alley or checker bin, a spatial random selection can be used.

1. Visually divide the fish into equally sized sections.
2. Number each section.
3. Randomly select one or more section(s) and collect all the discard from that section to use as a species composition sample. Use a watch or the random number table to select random numbers.

Average Number Subsamples

On trawl vessels, all species on the Species Composition Tab must have an actual weight. However, observers do not have to count every individual in the species composition sample. Average number calculations are used when a species composition sample contains more than one species and all individuals cannot be counted. Consider using average number calculations to estimate the number of individuals when:

- The catch category contains many individuals of the same species and counting all of them would greatly reduce the size of the species composition sample (e.g., flatfish species).

Step-by-Step Instructions

1. Randomly select a basket (or partial basket) of the species that were collected for the species composition sample.
2. Weigh and count all the individuals in the selected basket(s).
3. Simply weigh all other individuals of the species that appear in the species composition sample. These baskets will be entered as "No Count" into the application.
4. The species count and average fish weight is determined by OPTECS.

Calculation

$$\text{Total Fish \#} = \frac{\text{\# of individuals counted}}{\text{Wt. of individuals counted (lbs.)}} \times \text{Total Wt. of species in sample}$$

When doing average number calculations, count and weigh as many individuals as possible. At the very minimum, 20 individuals for each species should be weighed and counted. Using the RNT and basket dumps are the most common method for pairing down the sample size.

If species are very small, increase the number counted and weighed to 100. This occurs primarily in the shrimp fishery.

Example: An observer has collected 2 baskets of Slender sole, weighing a total of 89.5 lbs. Because individual Slender sole are so small, the observer decides to randomly select a portion of this sample to use for an average number estimate. After successive basket dumps, the observer now has an 8.65 lb subsample of Slender Sole. She counts out all of the individuals in this subsample and there are 52. Once the "count" and "no count" basket weights are entered, the application displays total + e-count of 538. After verifying the average weight of 0.17 lb seems reasonable she moves to the next species.

Using the Trawl Deck Form

Trawl catch and species composition data will routinely be entered directly into the back deck application and step by step instruction for navigating the software can be found in the supplemental OPTECS manual. In the instance of a tablet failure at sea, you'll need to switch to paper data collection. The Trawl Deck Form was designed as a backup sampling form to allow completion of trip data entry once you have access to a working tablet. You will still need to complete the Trip Information form, but otherwise all haul level fishing effort, catch category weight information, and species composition data can easily recorded on one, occasionally two, Trawl Deck Forms. Tablet data entry on the Haul Details and Catch/Species screens will generally match the Trawl Deck Form fields, but some catch weight method information and biospecimen entries will have to be completed from the raw data, so be as organized as possible!

The following are step by step instructions. see "Trawl Example: Catch Shares" on page 5-19 for completed deck forms.

Trawl Deck Form Instructions

- **Haul #:** Record the number of the haul.
- **Date:** Record the date as MMDDYY.
- **Trip Number:** This number is automatically generated by the production database. Complete this field once the trip has been uploaded to the database.
- **Page _ of _ :** Number forms sequentially within each haul, separate from Trip Forms.
- **Catch Code:** Record in capital letters, the catch category sampled, using a 3 to 5-letter PacFin code. All observer estimated catch categories should have a Catch Code recorded.
- **R or D:** Record the disposition of the species in the catch category (R - retained, D- discard). Only need to record field once per Catch Code.
- **Weight Method:** Document the weight method used to estimate the catch category weight.

  3 **Basket Weight Determination (BWD)**

  5 **OTC - Retained**

  6 **Other**

  8 **Extrapolation**

  9 **Pacific Halibut Length/Weight Conversion**

  14 **Visual Experience**

  15 **Visual Spatial**

  19 **PHLB Length/Weight Extrapolation**

  20 **Actual Weight - Whole Haul**

  21 **Actual Weight - Subsample**

Note: See Appendix for a complete list of weight methods.

- **Species Name:** Record the common name of each species in the sample. If the catch category was not species composition sampled, leave this field blank.

Tip: Catch category codes (e.g., DSRK, ARTH) can be used in the common name field for those species with species specific codes.

- **Discard Reason:** Record the skipper/crew's reason for discard for each species inside a discarded catch category (See the section, Reason for Discard on page 3-7) for more information on discard reason codes). Discard reason can be lined down for species within catch categories.

  11 **Incidental/Accidental**

  13 **Market**

  14 **Other**

  15 **Predation**

  16 **Regulation**

  17 **Safety**

  18 **Market (dockside only)**

  19 **Utilized on board**

  20 **Survival**

- **Weights & Counts:** Space is provided to record species composition basket weights and associated counts. These will be directly entered into the tablet app, so there is no need for manual calculations.

- Baskets with no fish # will be entered as "No Count". Represent this on the form with a dash or similar mark.

Tip: Use a count of 1 as default for uncountable items like mud, coral, and for invertebrate unidentified.

- Record up to 6 weight/counts per line. If additional lines are needed, arrow down the species name and continue to the next line.

- Visually estimated catch category weights and Pacific halibut counts are also recorded here, in line with their Catch Code, Weight Method, and discard reason.
  - Record visually estimated weights without decimals and only include a fish number when the actual count of individuals has been obtained (no estimated or extrapolated counts allowed on the Trawl Deck Form).
- **Biomethod:** Complete this field when a species is selected for biosampling. Indicates method used to select individual fish for sampling and serves as a visual cue to enter biospecimens.

  10 PHLB visual length estimate

  12 Random

  13 Opportunistic
- **Biospecimens / Comments:** List biospecimens from sampled fish. If more space is needed utilize the Notes and Additional Biospecimen Data space provided on the reverse side of the form. This space can also be used to document anything important about each category (e.g. species names for general categories like OSKT)
- **Haul Details:** Compete this section for all hauls when not using the tablet for direct entry. see “Haul Details Instructions” on page 4-8 for step by step instructions.
- **Vessel Retained Catch Weights:** List all vessel estimated (weight method - 7) retained catch categories and weights. Usually copied directly from the vessel logbook. Be careful not to duplicate any of your visually estimated catch weights already recorded on the reverse side.
- **Notes and Additional Biospecimen Data:** Document any important information about the haul that is not adequately conveyed by the other fields. Use this area to record:
  - Any raw data required by OPTECS to calculate catch weights (weight methods 3, 8, 15, 19).
  - Biological data that will not fit on the front, like Pacific halibut lengths and viabilities, or dissection barcodes.
  - Notes on haul detail fields, random sampling, or reminders for logbook daily notes.

TRAWL DECK FORM

Page ____ of ____

Haul # | | | Date | | | | | | | Trip # | | | | | |

Catch Code	R or D	Weight Method	Species Name	Discard Reason	Weights & Counts	Bio-Method	Biospecimens / Comments

Trawl Weight Methods
3 - BWD 5 - OTC – R 6 - Other 7 - Vessel est. 8 - Extrapolation 9 - PHLB L/W
14 - Visual Experience 15 - Visual Spatial 19 - PHLB L/W Extrapolation
20 - Actual Weight [Whole Haul] 21 - Actual Weight [Subsample]

Reasons for Discard
11 - Incidental/Accidental 12 - Drop off 13 - Market
14 - Other 15 - Predation 16 - Regulation 17 - Safety
18 - Market (Dockside) 19 - Utilized on board 20 - Survival

Bio-method
12 – Random Sample
13 – Opportunistic (non-random)
10 – PHLB Visual Length

Figure 4-8: Trawl Deck Form 2020 front

Haul Details

Visual OTC | OTC Weight Method | Biolist 1 2 3

Target | BRD Present? | EFP? | Beaufort

Fit # | Wt Cal | Gear Type | Gear Perf

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start							
Up							
Additional Locations							

OTC Weight Method: 14 - Visual Experience 6 - Other
Gear Type: 1 - Trawl Small Footrope 2 - Trawl Large Footrope 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 17 - OR Setback Flatfish Net
Gear Perf: 1 - No Problem 2 - Pot in Haul 3 - Net Hung 4 - Net Ripped 5 - Net or Other Gear Lost 7 - Other 8 - Retrieved Gear

Vessel Retained Catch Weights

Catch Code										
Catch Weight										

Notes and Additional Biospecimen Data

Must record all necessary data to complete additional Optecs entry when using Trawl Weight Methods:
3 BWD – Weights for all full and partial baskets, plus tally of unweighed baskets
8 Extrapolation – Total # of fish
15 Visual Spatial – Ratio
19 PHLB L/W Extrapolation – Total # of fish

Trawl Deck Form 2020 OMB Control No. 0648-0593 Expires 12-31-2021

Figure 4-9: Trawl Deck Form 2020 back

Trawl Study Guide

1) Which weight method is being described?

i) A large shark came up that was too heavy to weigh on a scale. It was about 5 feet long. I asked a crew member what he thought the weight was and he said 175 pounds. That seemed too heavy to me; I estimated it was 125 pounds. _____

ii) The trawl alley was filled with mixed flatfish. I split the deck into thirds and randomly selected one section to weigh, which I extrapolated out to account for the sections I didn't weigh. _____

iii) There were 11 Pacific halibut in the haul. I took the length and viability on all of them to get the catch weight.

_____

2) What is the formula for Basket Weight Determination? _____

3) What's the PacFin code for Darkblotched rockfish? _____

4) Which of these catch weights from figure 4 - 7 would be recorded on the Haul Details side of the **Trawl Deck Form?**

YEYE - 5.45 lbs DOVR - 1500 lbs THDS - 1800 lbs ZMIS - 334.55 lbs PHLB - 94.6 lbs

5) What are the priority rockfish species which must be weighed whether retained or discarded and are recorded on the IFQ Priority Species Tracking form? _____

6) Will P. Halibut ever be recorded inside of a species composition sample? Yes No

7) When do you complete a BRD form? _____

_____

8) Where do you record raw data for Biospecimens? _____

9) What is the difference between Actual Weight - Whole Haul and Actual Weight - Subsample? _____

_____

_____

10) What catch category weight method do you use for retained priority rockfish? _____



Trawl Complications

TABLE OF CONTENTS

Introduction . . . 5-2

Working Smarter, Not Harder . . . 5-2

Trawl Complications . . . 5-2
- Lost Gear . . . 5-2
- Unsampled Hauls Without OTC or Discard Estimates (aka Unobserved) . . . 5-3
- Unsampled Hauls With OTC Estimates . . . 5-3
- Unsampled Hauls With OTC and Visual Discard Estimates . . . 5-3
- Hauls Dumped at Sea . . . 5-4
- Hauls Partially Dumped, or Lost, at Sea . . . 5-4
- Vessels Using Sorting Belts - Catch Share . . . 5-4
- Mixed Hauls - Catch Share . . . 5-4

Sampling in the Pink Shrimp Fishery . . . 5-4
- Working Smarter on Pink Shrimp vessels . . . 5-4

Additional Policies and Forms in the Trawl Fisheries . . . 5-6
- Discard That Cannot Be Attributed to a Specific Haul . . . 5-6
- Trawl Bycatch Reduction Devices (BRD) . . . 5-8

Sampling on Shoreside Hake/ Midwater Rockfish and Mothership Catcher-Vessels . . . 5-13
- Overview of Pacific Hake Fisheries . . . 5-13
- Shoreside Hake and Midwater Rockfish: Duties and Information . . . 5-13
- Sampling priorities for vessels NOT SORTING CATCH . . . 5-15
- Sampling priorities for vessels SORTING CATCH at sea . . . 5-15
- Hake Mothership Catcher Vessels: Duties and Information . . . 5-15
- Mothership Catcher Vessel Observer Priorities . . . 5-17
- In-season accounting of discard data . . . 5-18
- Data Entry Timeliness . . . 5-18
- Electronic Monitoring . . . 5-18

Trawl Example: Catch Shares . . . 5-19

Trawl Example: Non-Catch Shares . . . 5-31

Chapter 5

Introduction

Both the Catch Share and Non-Catch Share programs cover a wide variety of trawl fisheries. Each fishery has its own unique challenges. Basic sampling strategies, as described in Chapter 4, "Trawl Sampling," can be applied to all trawl vessels. This section will cover a variety of data collection responsibilities that may be fishery-specific.

Working Smarter, Not Harder

When sampling on deck, think about ways to minimize the amount of effort, especially lifting, that needs to be accomplished. Here are some things to consider:

1. **Sample small individuals separately from larger individuals:** Small flatfish or thornyheads are hard to handle and time consuming to identify. One option for dealing with them is to split small species into their own catch category. By sampling larger specimens first, time is saved and deck space is freed up. Determine the catch category weight of the small individuals and take a one or two basket sub-sample for species composition.
   - **Thornyheads and Splitnose/Aurora:** When large quantities of thornyheads or small rockfish species are discarded or when the discarded individuals are small, it is very important to get the proportion of shortspine to longspine thornyheads or splitnose to aurora rockfish in the discard. Use one of the following methods when sampling discarded thornyheads, splitnose/aurora discard or any other discard of similar species that meet the above criteria:
   - If all discard is actually weighed and whole hauled, place thornyheads, splitnose/aurora in the ZMIS catch category with other discard. All individuals must be sorted to species and weighed. Count at least 100 of each species and use an average number calculation for Fish # field.
   - If all discard is not actually weighed and whole hauled, then either-
     - **a.** Identify all thornyheads/splitnose/aurora to species in the species composition sample; or
     - **b.** Place them in their own catch category, estimate total weight of thornyhead/splitnose/auroras in the haul, and take a single basket species composition.
       - **Thornyhead, unid should not be used inside the Species Composition!**
2. **When there is a large amount of discard of a single species:** estimate the weight of that species separately from other discarded species. For instance, some hauls have a large amount of Arrowtooth flounder or Pacific spiny dogfish shark discard. Observers can visually estimate (based on experience) the total weight of these species in the haul, take a single basket species composition sample, and then use a more accurate weight method for the weight of other discarded species.
3. **When there are large quantities of P. halibut, weight method 19 is the best option:** Tows with high numbers of P. halibut should be sampled using weight method 19- P. Halibut Length/Weight Extrapolation. Remember to obtain a count of ALL P. halibut while measuring lengths and assessing viability on a minimum of 10 OR 1/5 of the total, using a random systematic frame. In these situations, PHLB sampling would take precedent over lower priorities, such as NIFQ sampling or normal biosampling.
4. **Bottom line:** If you encounter an unusual haul or one with high discard, it's OK to get creative. Remember that there are multiple weight methods (not including OTC - Retained and Other) that can be used to determine catch category weights on trawlers. Using a combination of methods on a single haul often results in better estimates of discard and less work for you. Talk with your debriefer for ideas on sampling specific fisheries and/or vessels.

Trawl Complications

There may be times when one or more haul(s) cannot be sampled due to illness, injury, or weather conditions. When a haul cannot be sampled according to normal protocols, it is highly encouraged that visual estimates of catch be made. When unable to sample a haul, make an effort to collect OTC and estimates of both IFQ and Non-IFQ discards, separately. Fishing effort information and the vessel's estimates of retained MUST be recorded for these hauls.

- If a Catch Share observer is not able to sample at all, the vessel is required to return to port within 36 hours.

Lost Gear

Occasionally, a vessel will hang up and lose an entire net. If this happens, document the time and position of the vessel when it hung up or began to lose the net. Document the data in the following manner:

Trip Data

- Record location, gear, and other information as they would be for a sampled haul. Use the time and position of when the vessel hung up or started to lose the net as the end time and position for the haul.
- Observer Total Catch Estimate- Leave the OTC blank and document weight method 6 - Other.
- Gear Performance will be 5 - gear lost.

Catch Data

- There will not be any catch data for the haul.

Unsampled Hauls Without OTC or Discard Estimates (aka Unobserved)

There may be times when an observer is physically not able to see the haul and estimate OTC or discard. Whenever possible an estimate for OTC should be made, but if it isn't, please document the data in the following manner.

Trip Data

- Record location, gear, and other information as they would be recorded for a sampled haul.
- Observer Total Catch Estimate- Leave the OTC blank, and document weight method 6 - Other.
- Gear performance cannot be 5- lost gear. If gear was lost, follow the procedure in the "Lost Gear" section.
- The comments field must be completed with an explanation of why the haul was not sampled.

Catch Data

- Record vessel estimates of retained catch categories.

Unsampled Hauls With OTC Estimates

There may be times when an observer is physically not able to sample the haul or make discard estimates, but they can estimate OTC. In these instances, please document the data in the following manner.

Trip Data

- Record location, gear, and other information as they would be recorded for a sampled haul.
- Observer Total Catch Estimate- Record the visual estimate for OTC.
- Gear performance cannot be 5- lost gear. If gear was lost, follow the procedure in the "Lost Gear" section.
- The comments field must be completed with an explanation of why the haul was not sampled.

Catch Data

- Record vessel estimates of retained catch categories.
- Record discard using weight method 5 OTC - Retained in an unsampled ZMIS catch category.

Unsampled Hauls With OTC and Visual Discard Estimates

There may be instances when it's not safe, or possible due to a malfunctioning scale, to weigh samples. If it is safe to watch the sorting of the haul, observers should make visual estimates of the catch.

Note: Observers are required to notify the skipper of a scale malfunction that requires the use of visual estimates for catch accounting.

Note: Observers should still complete biosampling duties if their scale fails.

The preferred method is to record visual estimates to specific catch categories.

- Make visual estimates of retained priority and IFQ rockfish.
- Use the vessel's estimates of all other retained species.
- Make visual estimates of discards to species, or the closest species group.
  - If a species doesn't have a catch category code, use the next closest code and record the species in the comments (i.e., use "OCRB - crab, other" for box crab.).

If estimates of specific catch categories are not possible, make visual estimates to IFQ and Non-IFQ groups.

- Make visual estimates of retained priority and IFQ rockfish.
- Use the vessel's estimates of all other retained species.
- Group discarded IFQ species together and record them as IFQM.
  - Do not record any other IFQ catch categories. All IFQ species must be in one IFQM group, including PHLB.
- Group discarded Non-IFQ species together and record them as NIFQ.

Note: A haul containing an IFQM catch category for discards cannot contain any other discarded IFQ catch categories (e.g. ARTH, THDS). When using IFQM, it must represent all IFQ discards in the haul, including P. halibut.

The least preferred option is to make an estimate of all discard using code ZMIS.

- Avoid using an unsampled ZMIS estimate whenever possible!

Hauls Dumped at Sea

There may be times when an entire haul is dumped at sea for safety reasons, or because it is full of unwanted species like jellyfish. These hauls are not brought aboard and can't be sampled. Record the haul in the following manner.

- If observing in the hake fishery refer to instructions beginning on (page 5-13).

Trip Data

- Record location, gear, and other information as they would be recorded for a sampled haul.
- Observer Total Catch Estimate- At a minimum, make a visual estimate of total catch weight.

Catch Data

- Make visual catch category estimates for each species, or species group, observed.
- If estimates to species or species group are not possible, use IFQM and NIFQ.
- If none of the above is possible, estimate total catch weight using catch category code ZMIS.

Hauls Partially Dumped, or Lost, at Sea

There may be times when a haul is brought on board and sorting has begun but the rest is dumped. Catch can also be lost accidentally such as washed out of the trawl alley. Vessels using double-rigged shrimp gear may sort one bag and discard or lose the other. In all these circumstances, some catch has been landed and the observer has sampled it.

- Document retained catch as you normally would.
- Make a visual estimate of all the catch lost and record it as catch category code UNST.

Note: UNST can be used when unsorted catch containing retained and discarded species are lost and part of the haul is landed and sampled.

Vessels Using Sorting Belts - Catch Share

There are a few Catch Share vessels targeting nearshore mix, a typically high bycatch fishery, that use a sorting belt which makes it difficult for observers to sample. These vessels have an incline belt leading from the trawl alley to a sorting belt which extends overboard. Retained fish are pulled off the belt by the crew. The remaining discard is left on the belt and falls overboard. Some vessels use a sorting table instead of a belt and the discarded fish are pushed overboard. Observers need to work closely with the vessel crew in order to collect samples.

The following methods have been used by observers in this situation:

- Observers have successfully talked the skipper or crew into fashioning a place to set the observer basket at the end of the table to collect discard (or if running a belt, redirecting discard into an observer's checker bin). This makes sampling using weight methods Basket Weight Determination or Actual Weight fairly easy.

If the above isn't an option, alternative methods include:

- If the crew is presorting, collect and actually weigh all the presort discard in its own catch category.
- Once the belt is started, use weight method Visual Spatial for the remaining discard. Visualize the remaining discard as horizontal sections. Visually break the trawl alley into layers and randomly select one of the layers. When the height of the fish falls to the selected layer collect species composition baskets of the sorted catch from the table/belt.
- Another option is to use the Visual Spatial weight method to estimate discard prior to presorting and running the belt. Ask the crew to assist you with sorting the discarded catch from the retained for one randomly selected section. This can be difficult depending on the level of catch in the alley, but make the best effort possible to collect the discard top to bottom, within the section.
  - It's common for the crew to flood the trawl alley so the fish can flow onto the sorting belt. Ask the crew if they can delay using the deck hose until the sample is collected.

Mixed Hauls - Catch Share

Mixing of hauls is not permitted in the Catch Share program. The crew may not dump another tow on deck until all catch from the previous tow has been removed from the deck or stored in a location isolated from the new haul's catch. All sampling from the first haul must be completed before the crew can begin sorting the second haul.

Sampling in the Pink Shrimp Fishery

The WCGOP Non-Catch Share program covers many trips in the pink shrimp fishery in Washington, Oregon, and California. This fishery presents unique sampling challenges that will be addressed below.

Working Smarter on Pink Shrimp vessels

Pink shrimp tows generally contain less total discard (by weight) than those of other trawl fisheries. However, due to short tow times and high numbers of small individuals, it is often difficult

or impossible to whole haul for all species. When unable to whole haul, consider using the following sampling strategies.

- Many observers will use Actual Weight - Subsample, and randomly select one or more baskets for species composition sampling. Begin by estimating the amount of discard in the haul and the number of baskets it will fill. Next, randomly select one or more baskets for species composition. Weigh all baskets of discard and collect species composition/biological information from the randomly selected basket(s).

Species composition sample sizes are typically much smaller in the shrimp fishery. Observers are generally able to process between 20-40 pounds.

- Since any one species may be represented by hundreds or even thousands of individuals in a haul, use extrapolated values for the numbers of fish. Count and weigh as many individuals as possible of each species (with very small individuals it is recommended that you count and weigh at least 100) and then just weigh the rest and apply an average number calculation.
- When a tow contains a large amount of hake or rockfish, the crew will oftentimes "float" it. The hopper is filled with water, causing the hake and/or rockfish to float to the top, while most other species settle on the bottom. The "floaters" are then scooped off the top. These fish can be treated as a separate catch category since they are handled differently than other discard in the haul.

Note: When biospecimens are required from a species, and that species occurs in more than one catch category, you must collect biospecimens from individuals from all catch categories in which the species is found.

- Oftentimes, there will be large numbers of unidentifiable juvenile rockfish. If rockfish unid. is used in species composition data, do not take lengths for any rockfish species in the haul. Be sure to take pictures or bring back specimens of any unidentified rockfish species encountered.

Mixed Hauls - Non Catch Share

Occasionally, a vessel will dump a haul on top of a previous haul. There are two options for documentation and sampling when this occurs.

1. If you have taken a species composition sample from the first haul prior to the second haul being dumped on top (e.g., you completed collection of a randomly selected subsample of discarded catch).
   - Record the two hauls as separate hauls.
   - Record species composition from the first haul.
   - Estimate the total discard weight for the first haul.
   - Use a visual estimate for the OTC of the second haul.
   - If possible, visually estimate the weight of discard in the second haul. If not possible, use OTC - Retained for catch weight. Use discrete catch categories (e.g., SLNS, PWHT), or lump discards into IFQM and NIFQ. Unsampled ZMIS should only be used as a last resort.
   - Do not take a species composition sample from the second haul.
2. If you have not taken a species composition sample from the first haul prior to the dump, or you are using an Actual Weight method or BWD, and can continue species composition sampling without modifying the sampling frame, then:
   - Record the hauls as one haul, using the start time/location/etc. from the first haul and the end time/location/etc. from the second. Be sure to document in notes that they were recorded as two separate hauls in vessel logbook. You should also record the intermediate up and set haul locations. These can entered into OPTECS with the add Location button, or +Loc when in Logbook Mode.
   - Sum total catch estimates of first and second haul and record as OTC.
   - If the skipper records two separate hauls, combine the retained catch categories and weights from both hauls into one (sum catch weights if same catch category).
   - Estimate the total weight of discard from the combined hauls.
   - Take a random, non-biased, representative species composition sample from the combined hauls.

OR

   - Record the hauls as separate hauls.
   - Copy the vessel's estimate of retained catch categories for each haul.
   - Visually estimate discard weight for each haul. Use discrete catch categories (e.g., SLNS, PWHT), or lump discard into IFQM and NIFQ. Unsampled ZMIS should only be used as a last resort.
   - If unable to independently estimate, use OTC - Retained for discarded catch category estimates.
   - Do not take species composition samples from either haul.

Shrimp vessels will commonly mix multiple, consecutive tows, making it difficult to accurately account for catch, using either of the above methods. If you encounter this, a temporal systematic sampling frame may be the best option.

First, review "Temporal Selection" on page 4-15. Determine an average sort time for the vessel and break that time up into equal segments of time (e.g., 20-minute increments). Number each increment and select a starting point, collecting a sample

after every "n" minutes. It is advisable to collect multiple small samples, as opposed to trying to collect a full species composition sample all at once, because it increases the chances of at least one collection time falling within the actual sorting time. Once you start your stopwatch this sampling frame will carry you through the mixed hauls, regardless of how many there are. Once the mixing ends, combine all of the mixed hauls into a single haul, using the methods described in option 2 of this section.

Re-set Hauls: If the vessel pulls up a haul and resets without traveling a considerable distance between sets (i.e., 1-2 miles), it is acceptable to combine the hauls. This may occur due to a hang up, which requires the vessel to bring the net up to the surface and reset nearby. If this happens, record the set information from the first haul and the retrieval information from the second haul as the start and end information for the combined haul. The rest of the information should be recorded as additional locations in OPTECS and documented in the trip notes.

Additional Policies and Forms in the Trawl Fisheries

Discard That Cannot Be Attributed to a Specific Haul

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 5-1).

Trip Discard Form information is not entered into the database system. Rather, it is scanned and stored with other "Trip Scans" from the trip. Document the information from the Trip Discard Form in the Trip Comments on the Trip Page.

Trip Discard Form Instructions

- **Trip Number:** This number is automatically generated by the database. Complete this field once the trip has been uploaded to the database.
- **Date:** Document the month (MM) and day (DD) that the trip discard took place.
- **Time:** Document the time, in PST/PDT 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.
  - **3 Basket Weight Determination**
  - **6 Other**
  - **7 Vessel Estimate (retained only)**
  - **8 Extrapolation**
  - **9 PHLB L/W Conversion**
  - **14 Visual Experience**
  - **15 Visual Spatial**
  - **19 PHLB L/W Extrapolation**
  - **20 Actual Weight - Whole Haul**
  - **21 Actual Weight - Subsample**
- **Discard Reason:** Record the skipper/crew's reason for discard.
  - **11 Incidental/Accidental**
  - **12 Drop-off**
  - **13 Market**
  - **14 Other**
  - **15 Predation**
  - **16 Regulation**
  - **17 Safety**
  - **18 Market (dockside only)**
  - **19 Utilized on board**
  - **20 Survival**
- **Comments:** Document any additional information that is important.

Trip Discard Form

Page ____ of ____

Trip Number | | | | | |

Date		Time	Species	Weight	# of Fish	Weight Method	Discard Reason	Comments
Month	Day							

Trip Discard Form v.5 October 2011 OMB Control No. 0648-0593 expires 11-30-2015

This form should be used only if the discard CANNOT be attributed to a specific haul!

Figure 5-1: Trip Discard Form.

Trawl Bycatch Reduction Devices (BRD)

In order to assist fishery managers in characterizing and evaluating the effectiveness of the various types of bycatch reduction devices (BRD) currently being used and developed, WCGOP observers will collect information related to any and all BRD types encountered in the field. This will require dialogue between the observer and the skipper, as many BRD types can be used without any obvious signs. Please discuss this with the skipper prior to the first haul coming on board. If one or more BRD types are used, ask the skipper to inform you of any changes to the BRD configuration. The Trawl Bycatch Reduction Device Characterization form was created to capture each unique BRD configuration used during every trawl trip. If no BRDs are used, no form is required.

Trawl Bycatch Reduction Device (BRD) Characterization Form Instructions

Complete this form during each trawl trip in which one or more Bycatch Reduction Devices are used. One form is required for each unique BRD configuration encountered during any given trip. Check/Complete ALL available options that apply to the BRD configuration observed. Several options (e.g., Other) require comments to be added to the COMMENTS box on the form. Comments and/or diagrams must be included for anything that is not adequately described by the available options. If you are unsure about what was seen, provide notes/diagrams and discuss with your debriefer upon return to port.

- **Was the following BRD configuration used on ALL Hauls?:** Select Yes or No. If No, list all associated hauls.
- **BRD Type(s):** Check all that apply
  - **Lights:** Use of LED lights as a BRD (See Figure 5-2) is required in the Pink Shrimp fishery, where they show a great deal of effectiveness in reducing eulachon smelt bycatch.
    - **BRD Target(s):** Document the code(s) of the species and/or complex that the BRD was intended to exclude. If multiple targets, record all codes that apply. See the bottom of the comment box for alphabetical codes. If the codes provided do not sufficiently capture the intent of the skipper, select the closest option and provide a comment.
    - **Number of lights:** Record the number of lights attached to each net. If double-rigged (i.e., 2 nets), record the number of lights attached to the port side net and the starboard side net, separately. Two nets are commonly used in the Pink Shrimp fishery.
    - **Light color(s):** Select all colors used. Additionally, select "Other" if any unlisted colors are used and record each color in the Comments box.
    - **Light manufacturer:** Select all manufacturers used. Additionally, select "Other", if any unlisted light manufacturers are used and record each manufacturer in the Comments Box.
    - **Location:** Select all locations where lights were placed. Additionally, select "Other", if any unlisted locations were used and record each location in the Comments box.
    - **Note:** If any changes are made to the BRD configuration from one haul to another, separate forms are required. Add Note:

Lights used to illuminate an escapement route, as part of another type of BRD (e.g., Sorting Grate) are NOT recorded in the Lights section, as they are not the primary BRD type.



Figure 5-2: BRD lights.

- **Escapement Holes/Windows:** This type of BRD involves an opening, through which certain species can escape, while others pass through the net and into the codend. This is for midwater gear only and does not include vents or sorting grate/grid escapement holes. (See Figure 5-3 through Figure 5-5).
  - **BRD Target(s):** Document the code(s) of the species and/or complex that the BRD was intended to exclude. If multiple targets, record all codes that apply. See the bottom of the comment box for alphabetical codes.
  - **Location:** Select all locations where escapement holes/ windows were found. Additionally, select "Other", if any unlisted locations were used and record each location in the Comments box.
  - **Opening Illuminated?:** Were lights used on or near the opening. Record Yes or No. If yes, please provide comments on how lights were used.



Figure 5-3: Escapement holes while deployed

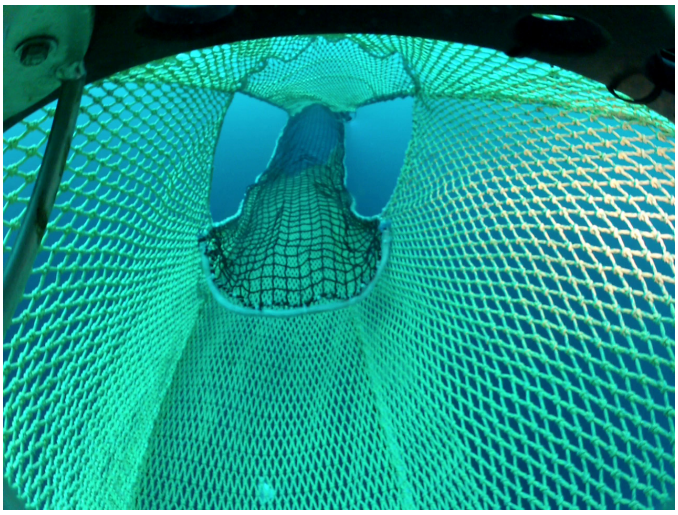


Figure 5-4: Escapement holes/ windows.

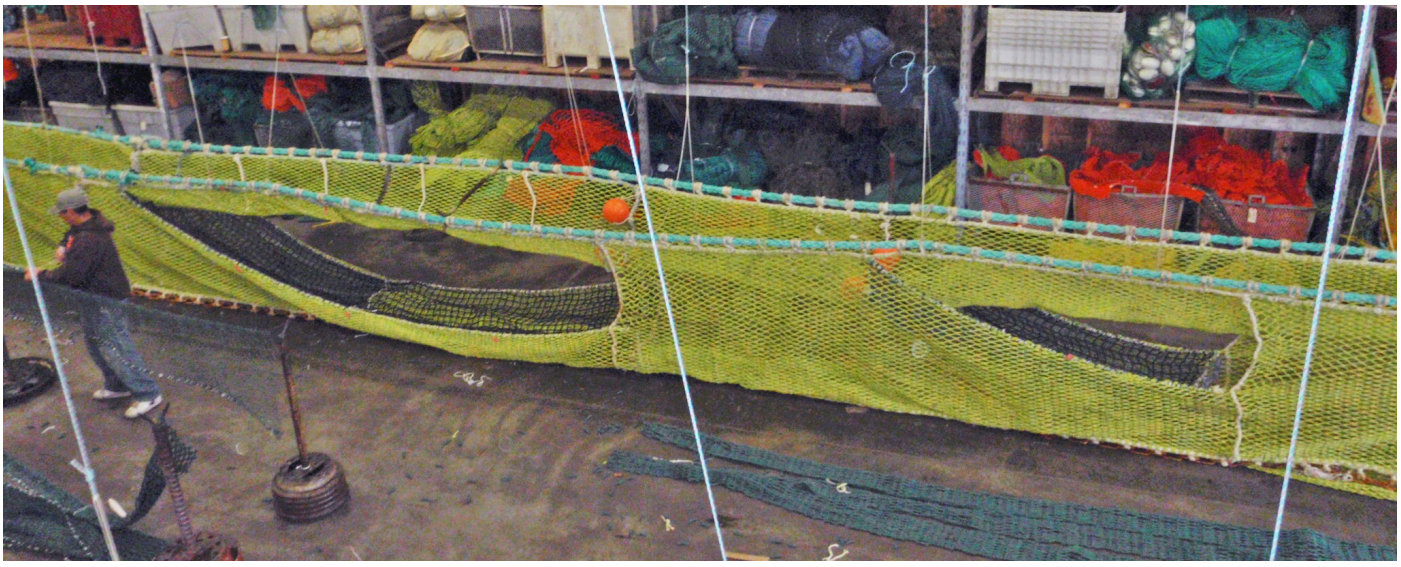


Figure 5-5: Escapement windows.

- **Sorting Grate/Grid:** There is a great deal of diversity in the design and application of sorting grates/grids. Grates are required in the Pink Shrimp fishery, where they help to reduce rockfish bycatch, but there is also much interest in designs intended to exclude salmon, Pacific halibut, and other species of interest in other trawl fisheries. Some, like Pink Shrimp grates, are rigid while others are flexible. (See Figure 5-7 and Figure 5-6).
  - **BRD Target(s):** Document the code(s) of the species and/or complex that the BRD was intended to exclude. If multiple targets, record all codes that apply. See the bottom of the comment box for alphabetical codes.
  - **Location:** Select all locations where sorting grids/ grates were placed. Additionally, select "Other", if any unlisted locations were used and record each location in the Comments box.
  - **Opening Illuminated?:** Were lights used on or near the opening of the grate's escapement hole? Record Yes or No. If yes, please provide comments on how lights were used.



Figure 5-6: Rigid sorting grate installed



Figure 5-7: Flexible sorting grid examples.

- **Modified Codend Mesh:** Most vessels have codends constructed of standard diamond-shaped mesh; however there are some variations designed to allow smaller fish to escape, even when the codend is stretched while fishing. (See Figure 5-8 through Figure 5-10).
  - **BRD Target(s):** Document the code(s) of the species and/or complex that the BRD was intended to exclude. If multiple targets, record all codes that apply. See the bottom of the comment box for alphabetical codes.
  - **Type:** Select the type(s) of mesh, other than standard diamond, that was used by the vessel. If something other than square or T90 mesh was used, provide a description of the mesh, along with a diagram.



Figure 5-9: T90 mesh net double twine



Figure 5-8: T90 mesh net- double twine

- **Other BRD Type(s):** Select if BRD type does not fit any of the options available. Provide detailed notes/ diagrams in the Comments box.
  - **BRD Target(s):** Select the species and/or complex that the BRD was intended to exclude. If multiple targets, record all codes that apply.
  - **Location:** Select all locations where BRD(s) were placed. Additionally, select "Other", if any unlisted locations were used and record each location in the Comments box.
  - **Comments:** Use this box to explain and/or diagram any information not captured on the form, pertaining to BRD use. Anytime "Other" is selected, comments are required. These comments will be used to clarify what was actually seen and will aid staff in updating future versions of this form. Please be detailed in your notes and diagrams.

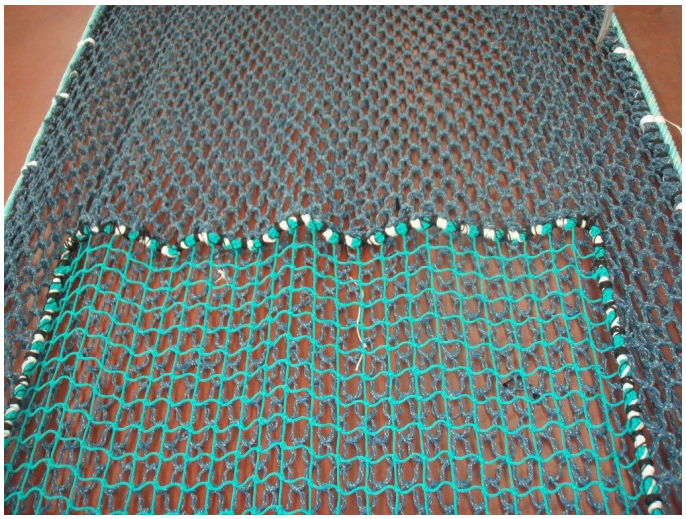


Figure 5-10: Square mesh panel

TRAWL BYCATCH REDUCTION DEVICE (BRD) CHARACTERIZATION FORM

Observer Name _____ Trip Number _____

Discuss trawl gear configuration with the skipper and confirm once the first haul comes on board. Complete form during any trawl trip, in which 1 or more Bycatch Reduction Devices are used. Additional form is required any time changes are made to the BRD that affect 1 or more fields.

Was the following BRD configuration used on ALL hauls? ☐ Yes ☐ No*

*If not used on all hauls, record the associated haul number(s): _____

BRD Type *(Check/Complete ALL that apply)*

☐ **Lights**

BRD Target(s) _____

Number of Lights: Single-rigged _____ Double-rigged: Port net _____ Starboard net _____

Light Color(s): ☐ Green ☐ Blue ☐ Purple ☐ Red ☐ Other *(Comment)*

Light Manufacturer: ☐ Lindgren-Pitman ☐ Wesmar ☐ Deep Drop ☐ Other *(Comment)*

Location: ☐ Headrope ☐ Footrope ☐ Net Intermediate ☐ Other *(Comment)*

☐ **Escapement Holes/Windows** *(Usually midwater gear. Does not include vents aka "Blow-out Panels" **OR** Sorting Grate/Grid escapements)*

BRD Target(s) _____

Location: ☐ Net Intermediate ☐ Other *(Comment)*

Opening Illuminated? ☐ Yes ☐ No

☐ **Sorting Grate/Grid** *(Includes pink shrimp grates)*

BRD Target(s) _____

Location: ☐ Net Intermediate ☐ Other *(Comment)*

Opening Illuminated? ☐ Yes ☐ No

☐ **Modified Codend Mesh** *(Other than standard diamond)*

BRD Target(s) _____

Type: ☐ Square Mesh ☐ Other *(Comment)*

☐ T90 (Diamond netting turned 90°)

☐ **Other BRD Type(s)** *(e.g., net camera(s)) (Comment)*

BRD Target(s) _____

Location: ☐ Headrope ☐ Footrope ☐ Net Intermediate ☐ Codend ☐ Trawl Doors ☐ Other *(Comment)*

COMMENTS: *Use this area to explain and/or diagram any information not captured on form, pertaining to BRD use.*

BRD Target Codes *(i.e., What are they trying not to catch?) (select all that apply)*

A: Salmon **B**: Eulachon **C**: PHLB **D**: Rockfish **E**: Flatfishes **F**: Other *(comment)* **G**: Hake **H**: All non-target spp.

BRD Form v 2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 5-11: Trawl BRD Characterization Form

Sampling on Shoreside Hake/ Midwater Rockfish and Mothership Catcher-Vessels

Overview of Pacific Hake Fisheries

The hake fishery has several sectors, including catcher processors, motherships along with their associated catcher vessels, and a shoreside fleet. The motherships and catcher processors have been carrying observers since the late 1970s; however, vessels that participate in the shoreside hake and mothership catcher-vessel fisheries began carrying Catch Share observers for the first time in 2011.

The hake fishery is conducted with midwater (pelagic) gear and is a high volume fishery with low bycatch levels. Typical hake tows are approximately 98% hake. Occasionally, high bycatch tows do happen and there are various species of concern, in particular, salmon. The vessels in the shoreside fishery sometimes use the same gear to target rockfish species.

When covering either the shoreside hake (SS) or the mothership catcher-vessel (MSCV) fisheries, observers must be on deck before the net breaks the surface of the water, until the last fish is put down in the hold (SS) OR until the transfer is complete and the codend is on board the mothership. Discuss your sampling plan with the skipper and crew prior to the first haul.

It may be necessary to use multiple vantage points to observe the haul, including monitoring for OTC and discard events. This section will describe preferred vantage points for observations. If you choose not to use any of the preferred vantage points or if you are prevented from using them by the skipper/crew, document the reason(s) in your observer logbook.

As with other vessels, safety is your first priority!!! As always, if you feel that something you have been asked to do is unsafe, don't do it! Every vessel is different and many of these suggestions may not be appropriate on some vessels or under certain conditions (e.g., rough weather). *Discuss any safety concerns associated with preferred vantage points with the skipper and your debriefer.*

Shoreside Hake and Midwater Rockfish: Duties and Information

The shoreside sector is characterized by 1-2 day trips, in which codends are brought on board and dumped straight into the hold. It is expected that observers will do minimal sampling at sea, as most hauls will be retained entirely and then sampled by catch monitors at the plants. However, these vessels may choose to discard full or partial codends without bringing them aboard or they may hand pick and discard fish that overflow while the bag is being dumped into the hold. If discards at sea do occur, the observer will need to sample the discards according to Catch Share sampling protocols, including biological sampling duties (see the Field Manual for more info). For this reason, always bring all of your issued sampling gear as you would on other trawl vessels.

All discards, no matter how small, must be accounted for and sampled. This includes minor operational discards. If a test tow, water tow, etc. occurs while you are on a vessel and it is not going to be delivered, the vessel is required to bring the catch on board so you can sample it according to normal Catch Share sampling protocols. You should remind the crew that you need access to the catch whenever this occurs. Visual estimates are not sufficient, unless the crew refuses to make the catch accessible to you (after your request). Regardless of the scenario, please take good notes, as you will likely be asked to describe the situation at a later date.

In the Shoreside fleet, all salmon must be retained, landed, and sampled at the plant. If you see any stray salmon on deck, please ensure that they get put down in the hold instead of being discarded. If you encounter any push-back, please explain that the salmon will be accounted for, regardless of where it is sampled. If they still insist on discarding salmon, sample according to normal Catch Share sampling protocols.

Regulations on discarding

(2) Whiting maximized retention vessels. Maximized retention vessels participating in the Pacific whiting IFQ fishery may discard minor operational amounts of catch at sea if the observer has accounted for the discard (i.e. a maximized retention fishery).

(3) Whiting vessels sorting at-sea. Vessels participating in the Pacific whiting IFQ fishery that sort their catch at sea (whiting vessels sorting at-sea) may discard IFQ species/species groups, provided such discards are accounted for and deducted from QP in the vessel account. Whiting vessels sorting at sea must discard Pacific halibut and such discard mortality must be accounted for and deducted from IBQ pounds in the vessel account. Whiting vessels sorting at-sea may discard non-IFQ species and non-groundfish species. The sorting of catch, weighing and discarding of any IFQ or IBQ species must be monitored by the observer.

Some shoreside hake vessels may choose to sort their catch at sea completely, as stated above in (3). In this case, the observer will sample according to general Catch Share sampling guidelines. Before embarking, the observer should ask the Captain if the vessel intends to discard at sea so that the observer can be ready to sample, if necessary. Regardless, observers must always bring all sampling and safety gear when covering SS and MSCV trips.

Data to be collected

1. Trip and haul data - Trip effort data will always be collected. Catch level data will be recorded for all hauls. Species composition and biological data may be collected if sorting occurs.
   - Gear type = 3 mid-water trawl
   - Fishery = Shoreside hake, when the vessel is targeting PWHT
   - Fishery = Catch Share, when the vessel is targeting midwater rockfish (e.g., WDOW or YTRK)
2. Marine mammal, sea turtle, and seabird interactions, takes, and sightings data.
3. Salmon- genetic tissue samples and snouts (to check for coded wire tags) should be collected from any salmon discarded at sea (See Field Manual for specific protocols).

Gear

- Safety gear
- All of the usual Catch Share gear

Estimating Catch

- **OTC**
  - Obtain an independent estimate for OTC.
  - Count the number of full codend segments or straps to aid in estimation of OTC.
    - Depending on fishery and vessel, codend segments usually contain 10,000-20,000 lbs. of catch.
  - Compare OTC keypunch with delivery weight.
  - Working to improve OTC estimates will help increase the accuracy of your discard estimates.
- **Discards on Deck**
  - Picture discards filling familiar containers (e.g., baskets, trawl alley, codend) to aid in weight estimation.
- **Discards in the Water**
  - Most difficult discards to estimate, especially at night.
  - Challenges:
    - Distance from vantage point to discards (binoculars may help)
    - Spread Out vs. Densely Packed
    - Hake vs. Wake - the silvery color of the hake may be difficult to distinguish from the white churn of the water off the stern.
  - For larger discard events, it may be helpful to compare the fullness of the net, after discarding occurs, with your original OTC estimate (i.e., OTC - Retained).
  - Only make estimates for what you can see. Don't assume that there is more catch below the surface.

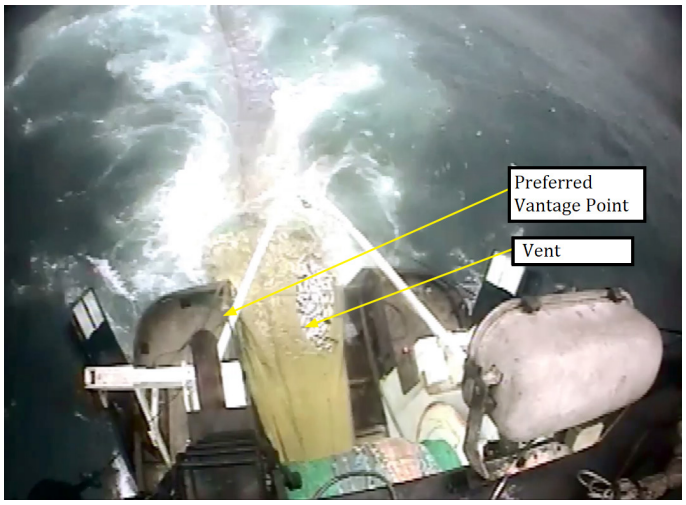


Figure 5-12: Preferred vantage point for stern ramps.

Dumping/discarding at sea

If the vessel is not sorting catch, the observer should use the first set of sampling priorities, listed below.

If individual fish are being hand-picked and discarded from the catch while it's being dumped/shoveled into the hold, the observer should sample these fish as per normal Catch Share sampling protocols (See Field Manual for details regarding biological data collection).

Where discards commonly occur

- **Vents** (prevent overfilling of net, beyond codend)
  - As codend approaches and breaks surface of water
  - While bringing codend up stern ramp
- **Scuppers/Stern Ramp**
  - Overflow from trawl alley
  - Fish remaining on deck after haul is put down in hold
    - Hosed or swept overboard
- **Crew sorting** (minimal)

Note: Fish stuck in the net and not removed, are called gillers. Gillers should be ignored, as they cannot be attributed to a specific haul.

Preferred Vantage Points

- **Upper Deck**
  - Discards from vents, as codend approaches and breaks surface of water
- **Stern** (after doors secured!)
  - Discards from vents that occur at stern ramp (See Figure 5-12)

- Safety First!!!
  - DO NOT use this vantage point, unless the skipper and crew know you are there and have approved its use.
  - Be mindful of secured trawl doors, as they may shift. (Watch your hands!)
  - Stay clear of all net reel controls.
  - DO NOT remain at the stern, once the crew begins attaching the winch hook to the codend. This line will be under tremendous tension, as the codend is pulled on board.
- **Back Deck**
  - Scuppers
  - Crew sorting
  - Fish remaining on deck after haul is put down in hold

Note: Observers must be on deck before the net breaks the surface of the water, until the last fish is put down in the hold (SS) OR until the transfer is complete and the codend is on board the mothership

Sampling priorities for vessels NOT SORTING CATCH

These vessels will dump catch from the codend directly into the hold.

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. Document sightings of ESA listed species.
4. Record fishing effort information, including location, time date, and depth for all hauls.
5. Estimate total catch weight (OTC), even for tows with 100% discard.
6. Estimate weight of all at-sea discards, including "minor operational discards".

- **For tows that are fully or partially discarded at-sea (prior to net being brought on board):**
  - If the catch appears to be >75% hake, record the visually estimated weight in a PWHT catch category.
  - If the catch is less than or equal to 75% hake, estimates of the discard amounts per species are recorded.
    - Record discarded catch, using the most discrete catch category names available.
    - All salmon should be recorded as salmon unidentified (SAMN).
    - Do not lump IFQ species together into IFQM.
    - Non-IFQ species discards may be grouped together as NIFQ, when necessary.

Example: 20,000 lbs. of fish were discarded at-sea, consisting of 10,000 lbs. of hake and 10,000 lbs. of widow rockfish. Catch data would show 10,000 lbs. in a PWHT catch category and 10,000 lbs. in a WDOW catch category.

7. Estimate **discarded** weight of any hand-sorted species using normal sampling protocols.
8. Record weight, length, sex, and take necessary dissections from tagged fish.
9. Complete species identification forms if there are hand-sorted species.
10. Maintain observer logbook.
11. Document sightings of non-ESA listed marine mammals and seabirds.
12. Compile data and enter trip within three days of disembarking.

Sampling priorities for vessels SORTING CATCH at sea

Follow the standard trawl priorities (See the section, Duties and Priorities on Trawl Vessels on page 4-11).

Hake Mothership Catcher Vessels: Duties and Information

Motherships usually have 2 to 5 associated catcher vessels on a rotating delivery schedule. These vessels are expected to stay out at sea for 2-3 weeks at a time and may end up in a different port than they departed from, depending on where fishing occurs. Mothership catcher vessels (MSCV) typically make 2-4 tows per day. Tows can last between 15 minutes and 6 hours, with haul backs lasting 30-45 minutes. When a tow is complete, the vessel will bring the net up to the stern and tie off the open end, preparing it for delivery to the mothership. When fishing is good, the vessel may end their tow, but not deliver it to the mothership immediately. In this case, they bring the doors up and slow down, taking the net out of fishing configuration. Then the vessel will jog, slowly, until the mothership is ready for the delivery. The nets used by MSCV vary greatly in capacity, from around 60,000 to 225,000 lbs. Many of the nets contain "vents" or "blow-out panels", which prevent the net from filling beyond the point where it can be tied off. This should be considered a point of discard. Visually estimate discards from the vents/blow-out panels and include them in your total estimate of discards.

The purpose of deploying observers on these catcher vessels is to record any catch that is not delivered to the mothership (i.e.

dumped or spilled at sea). Catcher vessels tie off and deliver their codends to the motherships where they are weighed and sampled by the observers on board the mothership. Observers aboard MSCV will simply record visual estimates of catch that is dumped or spilled at sea. There will not be any actual species composition sampling on the MSCV, as fish will not be brought on board. However, all MSCV observers should take their usual sampling gear with them. If a dead marine mammal, sea turtle, or seabird does end up on board, the observer will be expected to collect samples following normal Catch Share protocols (see Chapter 9, "Protected Resources").

Occasionally, mothership-catcher vessels will make "test tows" and discard the catch, instead of delivering it to the mothership. According to regulations, these tows must be sampled by an observer. Request that these tows be dumped on deck for sampling. If the vessel refuses, collect visual estimates and record the details of the event in your daily notes.

If your catcher-vessel comes in to refuel, consider this the end of your trip and begin a new one once they untie and go back out.

Regulations on discarding

(i) Retention requirements. Catcher vessels participating in the MS Coop Program may discard minor operational amounts of catch at sea if the observer has accounted for the discard (i.e. a maximized retention fishery).

Data to be collected

1. Trip and haul data.
   - Record which mothership the catcher vessel is delivering to in the Trip Notes. If deliveries are made to multiple motherships, clearly document the haul numbers delivered to each mothership.
   - Gear type = 3 mid-water trawl
   - Fishery = Mothership Catcher-Vessel
2. Marine mammal, sea turtle, and seabird interactions, takes, and sightings data.

Gear

- Safety gear
- All of the usual Catch Share gear

Estimating Catch

- **OTC**
  - Obtain an independent estimate for OTC.
  - Count the number of full codend segments or straps.
    - Depending on fishery and vessel, codend segments usually contain 10,000-20,000 lbs. of catch.
  - Compare OTC estimates with MS flow scale weights (ask skipper).
  - Working to improve OTC estimates will help increase the accuracy of your discard estimates.
- **Discards on Deck**
  - Picture discards filling familiar containers (e.g., baskets, trawl alley, codend)
  - What would it weigh?
- **Discards in the Water**
  - Most difficult discards estimate, especially at night
  - Challenges:
    - Distance from vantage point to discards (binoculars may help)
    - Spread Out vs. Densely Packed
    - Hake vs. Wake - the silvery color of the hake may be difficult to distinguish from the white churn of the water off the stern.
  - For larger discard events, it may be helpful to compare the fullness of the net, after discarding occurs, with your original OTC estimate (i.e., OTC-Retained).
  - Only make estimates for what you can see. Don't assume that there is more catch below the surface.

Where discards commonly occur

- **Vents** (prevent overfilling of net, beyond codend)
  - As codend approaches and breaks surface of water
- **Tie-off Point**
  - Point where codend is separated from the intermediate
  - Occurs at stern ramp
- **Back Deck**
  - Intermediate wound around forward net reel
    - Leaves a pile of fish under the forward net reel, which is usually pushed off the stern ramp, once the deck is clear (See Figure 5-13).
- **Transfer to Mothership**
  - Codend
    - Leakage from tie-off point
    - Ripped during transfer
  - Never assume that the MS observer recorded it!

Preferred Vantage Points

- **Upper Deck**
  - Discards from vents, as codend approaches and breaks surface of water
- **Stern** (after doors secured!)
  - Viewing discards that occur at tie-off point (See Figure 5-14)



Figure 5-13: Intermediate (Forward net reel)

There are safety concerns associated with multiple lines used during transfer of codend to the mothership, especially the "tether line"

- Safety First!!!
  - DO NOT use this vantage point, unless the skipper and crew know you are there and have approved its use
  - Be mindful of secured trawl doors, as they may shift (watch your hands!)
  - Be mindful of lines under tension (especially of the "tether line")
  - Stay clear of all net reel controls
  - Wait until transfer is complete, before checking for discards on deck

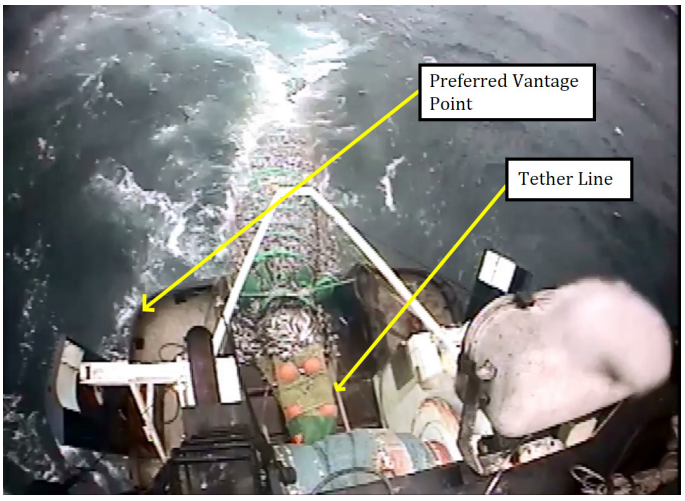


Figure 5-14: MSCV vantage point

Mothership Catcher Vessel Observer Priorities

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. Document sightings of ESA listed species.
4. Record fishing effort information, including location, time, date, and depth for all hauls.
5. Estimate total catch weight (OTC) for all tows, including those with 100% discard.
6. Record retained estimate from vessel logbook (no retained sampling is required).
   - If no vessel estimate is available, use Weight Method 14-Visual Experience to estimate retained weights.
7. Estimate weight of all at-sea discards, including "minor operational discards".
   - **For tows that are partially discarded at-sea, but still delivered to a mothership vessel:**
     - All discard should be placed in a single ZMIS catch category.
     - Simply record the total amount discarded. The mothership observer's species composition sample will be attributed to these discards.
   - **For tows that are NOT delivered to the mothership (fully discarded at-sea and not brought on board):**
     - Sample according to Shoreside Hake protocol. Make visual estimates of discard using the most descriptive Catch Category codes available.
     - Document the reason for the discard in Catch Notes.
     - Ensure the skipper accurately relays your discard estimate to the mothership observer.

Example: Due to a gear malfunction, an entire codend was discarded at-sea, estimated at 30,000 lbs. Documentation of catch data would show 30,000 lbs. in a PWHT catch category. Once notified, the MS observer will attribute this discard estimate to the appropriate haul.

- **For test tows that are dumped on deck:**
  - Sample according to Shoreside Hake Protocol.
    - Take a species composition sample with actual weights and counts of the entire haul, when possible. If the haul is too large to sample in its entirety please collect a random sample.
    - Collect salmon data!

- Call your debriefer and relay your species composition data. This will be added to the mothership observer's data. We can only do this if you actually WEIGHED your sample.
- Document all discard events in your daily notes.

8. Maintain observer logbook.
9. Document sightings of non-ESA listed marine mammals and seabirds.
10. Compile data and enter trip within three days of disembarking.

In-season accounting of discard data

The catcher vessel captain will transmit haul data to the mothership captain on a regular basis. In addition to haul information, your discard estimates will be transmitted and recorded in the mothership vessel logbook. Observers on the mothership will attribute your discard estimates to the appropriate hauls. Mothership data is used in-season, so it is essential that your discard estimates are accurate. If any of the discard estimates you give to the skipper change, inform the skipper of the change immediately so it can be relayed to the mothership observer in-season. Please record information about reasons for discards in the Catch Notes for each haul (e.g., “discard due to overfilled codend” or “rough weather caused fish to spill out of top of codend”).

Data Entry Timeliness

MSCV observer data is compared to mothership observer data during the mothership observer’s debriefing, which usually occurs within three days of disembarking. It is very important that the MSCV data is entered as soon as possible. This may not always be possible, as travel and other circumstances beyond the observer's control may prevent it. However, timely entry is important, and if it looks as though you will not meet the 3-day deadline, contact your debriefer as soon as possible!

Electronic Monitoring

Several Shoreside & Mothership Catcher-Vessels are currently outfitted with electronic monitoring (EM) systems. Always ask the crew if they are participating in an EM project. DO NOT use EM video monitors in the wheelhouse to make estimates of discards. Observer data is compared with EM data and closely scrutinized. With the expansion of the EM program and the increasing availability of cheap, high-quality video cameras, observers should always assume that their actions are being recorded. Be aware that the EFP states that vessels using an EM system must retain all salmon, even when carrying an observer. Observers on these vessels will sample salmon as retained (i.e., count and weigh only). Biological sampling duties will be done at the plant. However, should a vessel refuse to retain salmon, the observer will sample the salmon according to normal protocols

Trawl Example: Catch Shares

The following examples are shown on Trip Information Forms and Trawl Deck Forms for illustration purposes. For most trips, all data will be directly entered into software via a tablet. If the tablet should fail then a Trip Form and Deck Forms must be used to document data.

Macy Fields observed aboard the F/V Allegiance (USCG # 769243), a 63-foot trawler captained by Greg Sampson. Onboard were 2 additional crew members. Macy recorded sampling, safety, and other important information in her Observer logbook, number 6500. The vessel used a selective flatfish net (Pineapple Trawl) on all three hauls. No bycatch reduction device (BRD) was in use.

Upon return, the catch was documented on fish ticket 53956983, issued on 04/21/20--. The vessel completed the following WOC logbook page:

Vessel Name: Allegiance Federal **Date:** 04 18 -- (Month Day Year) **Time:** 1900 **Port:** Westport, OR

Document No. 769243

Crew Size (including Captain): 3 **Date:** 04 21 -- (Month Day Year) **Time:** 0500 **Port:** Westport, OR

Buyer(s): Ocean Gold Seafood

Date Mo/Day		Time Local 24-hour clock	LATITUDE		LONGITUDE		Avg Depth of Catch (fathoms)	NET TYPE	Target Strategy	Estimated pounds retained catch per tow – enter 4-letter code from code list provided								
			Degrees	Minutes	Degrees	Minutes				EGLS	PTRL	REX	NSLP	SKAT	YTRK	YEYE	LCOD	ARTH
04/19	Set	1820	46	52.61	125	01.32	80	B	NSM	25	300	10		120	120		200	
	Up	2040	46	46.23	124	59.01												
04/20	Set	0725	46	44.04	125	03.62	71	B	NSM	450	700	150	25	650		6	2000	
	Up	1035	46	44.17	125	03.64												
04/20	Set	1415	46	44.36	125	03.84	71	B	NSM	500	900	300		300			150	1400
	Up	1735	46	44.35	125	03.83												
	Set																	
	Up																	
	Set																	
	Up																	

Remarks:

64347

Signed: _____

To be completed by agency

Vessel	Fish Receiving Ticket No.
Port	

Figure 5-15: Completed logbook page

The vessel steamed out to the grounds and set the first haul. Macy assessed the sea and wind conditions and recorded a Beaufort value of 4 based on 4-foot seas and 15-knot winds. Macy checked the vessel logbook to be sure the captain was recording the fishing effort information and then waited for haul back. The vessel hauled back its first tow and Macy visually estimated the total catch to be 7000lbs. While the crew was resetting, Macy performed a scale calibration. She recorded a fit # of 14 and the test weight weighed 11.0 lbs. She had selected Biolist 1 previously by looking at the galley clock.

The crew began to presort small Lingcod first. Macy estimated there were about 30 total fish and decided to weigh half of them. She used the random number table to randomize the starting point for collecting every other fish. The sampled Lingcod came out to 17 LCOD @ 36.5 lbs and Macy tallied an additional 18 presorted Lingcod.

Next, the crew worked quickly to get the Pacific spiny dogfish off the vessel. Macy did a quick visual estimate, based on experience. She estimated that 4000 lbs of Pacific spiny dogfish were discarded and collected a single basket subsample for average weight and biosampling: 12 DSRK @ 74.2 lbs.

The remainder of the haul was sorted normally and mostly retained, leaving a manageable pile of bycatch in the trawl alley for Macy to Whole Haul.

She speciated all the discard and used average fish number for species with high numbers.

- **Lingcod:** 12 @ 27.6 lbs
- **Pacific sanddab:** 150 @ 66.2, NC @ 47.1 lbs
- **Big skate:** 10@ 62.1 lbs, 7 @ 43.5 lbs
- **Sandpaper skate:** 1 @ 1.5 lbs
- **Pacific hake:** 1 @ 0.8 lbs
- **Petrale sole:** 1 @ 1.0 lbs
- **Dungeness crab:** 7 @ 8.0 lbs
- **Arrowtooth flounder:** 15 @ 15.3 lbs, 73 @ 71.2 lbs
- **Ratfish:** 1 @ 1.1 lbs
- **Longnose skate:** 16 @ 68.3 lbs, NC @ 51.8 lbs, 15 @ 53.0 lbs, NC @ 29.8 lbs
- **Jellyfish:** 2 @ 1.3 lbs
- **Flathead sole:** 5 @ 4.5 lbs
- **Rex sole:** 3 @ 0.9 lbs
- **Starfish:** 6 @ 7.2 lbs

*During the sort Macy recorded biosamples from Trawl biolist selected species on the deck form. All individuals were randomly chosen from the species compositions.

Macy asked Greg why he was discarding each species. He told her that the Dungeness crab and Lingcod were discarded due to regulation. The rest were discarded due to market reasons. Finally, Macy checked the deck for any retained rockfish and copied down a visual estimate for 120 lbs of yellowtail rockfish. All remaining retained species weights transcribed later from the vessel logbook.

Before the vessel brought the second haul aboard Macy checked her scale, she recorded a test weight of 11.0 lbs, and she had noted Beaufort scale 5. This tow has a variety of species and Macy visually estimated total weight at 10000 lbs. When the vessel dumped the bag on deck, Macy noticed lots of Pacific halibut which she knew would be presorted. She visually estimated there were about 60 P. halibut in the tow and decided to sample every 5th fish for lengths and viabilities (starting with the randomly selected 4th fish).

The lengths and viabilities for the sampled P. halibut are as follows.

- 51 cm Excellent
- 61 cm Poor
- 76 cm Poor
- 79 cm Poor
- 109 cm Poor
- 123 cm Excellent
- 87 cm Dead
- 55 cm Dead
- 82 cm Excellent
- 47 cm Poor
- 93 cm Excellent
- 70 cm Dead
- There were an additional 47 tallied PHLB.

Macy wanted to whole haul all discarded high priority species and employ visual spatial for all remaining bycatch, due to the high volume of discard. So, she asked the crew to basket all Dungeness crab and discarded IFQ rockfish species separately. Then she divided the trawl alley into six equal parts and randomly selected one section. All discard was collected from the selected section and used for her species composition sample. When she sorted her baskets she found:

- **Big skate:** 21@ 42.2 lbs
- **Lingcod:** 2 @ 4.4 lbs
- **Urchins:** 52 @ 10.5 lbs, NC @ 4.7 lbs
- **Pacific spiny dogfish:** 16 @ 65.1 lbs, 17 @ 59.7 lbs, 10 @ 46.2 lbs, NC @ 74.6 lbs, NC @ 71.2 lbs, NC @ 70.9
- **Ratfish:** 12 @ 20.6 lbs
- **Rex sole:** 57 @ 28.9 lbs
- **Arrowtooth flounder:** 17 @ 44.2 lbs
- **English sole:** 25 @ 13.5 lbs
- **Pacific sanddab:** 81 @ 19.3 lbs

- **Dover sole:** 3 @ 1.4 lbs

Once the sort was finished, Macy collected all the discarded overfished rockfish and prohibited species set aside by the crew. There were a lot of Darkblotched so Macy performed a basket dump to select ~30 fish for average weight. After counting and weighing these species she found:

- **Dungeness crab:** 4 @ 4. 7lbs
- **Darkblotched rockfish:** NC @ 72.0 lbs, 34 @ 16.4 lbs
- **Canary rockfish:** 4 @ 6.1 lbs

*During the sort Macy recorded biosamples from Trawl biolist selected species on the deck form. All individuals were randomly chosen from the species compositions.

Before the crew started putting fish down Macy verified weights of all the retained rockfish. The crew set aside 2 Yelloweye rockfish that weighed 6.3 lbs. and there was a bin with ~30 lbs. of mixed retained North Slope rockfish. Macy estimated that it contained a 50/50 mix of Aurora and Redbanded rockfish.

Macy asked again about the reasons for discard. Greg told her the P. halibut, Dungeness, and Lingcod were all discarded due to regulation. Everything else was unmarketable. Retained were, again, checked and documented from the vessel logbook.

The vessel brought up the final haul of the trip. It was almost as big as the last one, so Macy visually estimated it at 9000 lbs. A crab pot and line were tangled in the net's head rope, Macy visually estimated its mass at 80 lbs. While the crew worked the pot free, Macy checked her scale calibration weight and recorded a reading of 11.0. She noticed that the sea conditions were the same as the prior haul at setting.

The catch that was dumped on deck was mixed with mud and contained what Macy guessed was at least ~500 lbs. of rock and clay. The crew washed the catch and began presorting. Macy asked them to let her know if they were throwing something over. She randomly collected Dungeness crabs for average weights and tallied the rest. Macy counted a total of 67 crabs, including the single basket of 17 DCRB @ 34.7 lbs she weighed for average weight.

She noticed some Darkblotched rockfish that the crew intended to discard, so she threw out a basket for them to fill. Near the end of the sort she collected these to count and weigh and recorded 29 DBRK @ 41.6 lbs.

For the remaining discard, she decided to employ a random visual spatial frame, as the crew was leaving the discard in the trawl alley. She took all discard from a randomly selected 1/4 of the trawl alley.

As sorting progressed, Macy noticed that there were several PHLB buried in the haul. She asked the crew to let her take actual lengths for all PHLB, before throwing them overboard. There turned out to be 8 PHLB, measuring 52cm (dead), 93cm (poor), 47cm (dead), 62cm (dead), 74cm (dead), 52 cm (poor), 100cm (dead), and 122cm (dead).

From her randomly selected sample section, Macy collected 9 discard baskets to sort and count for species composition. To save time Macy used an average number calculation for 2 species that were high in numbers. She counted every other basket for Spiny Dogfish and used a basket dump to select a subsample for urchins.

- **Sandpaper skates:** 3 @ 5.4 lbs
- **Sablefish:** 12 @ 31.8 lbs
- **Pacific spiny dogfish:** 15 @ 91.2 lbs, NC @ 75.6 lbs, 17 @ 81.2 lbs, NC @ 64.8 lbs
- **American shad:** 5 @ 8.4 lbs
- **English sole:** 9 @ 8.2 lbs
- **Pacific sanddab:** 40 @ 7.2 lbs, 34 @ 6.4 lbs
- **Longnose skates:** 6 @ 52.3 lbs
- **Urchin:** 25@ 3.3 lbs, NC @ 24.9 lbs
- **Arrowtooth flounder:** 20 @ 50.2 lbs, 16@ 42.6 lbs
- **Rex sole:** 32 @ 9.5 lbs
- **Seastar:** 4 @ 3.5 lbs
- **Lingcod:** 12 @ 38.5 lbs

*During the sort Macy recorded biosamples from Trawl biolist selected species on the deck form. All individuals were randomly chosen from the species compositions.

Macy asked the skipper one final time about reason for discard. He said the Longnose skates should all have been kept, but the crew must have been tired. The P. halibut and lingcod were regulatory discard, and everything else was the same as in previous hauls.

On the way in, Macy had time to record haul locations and double check her sampling form completion. After the offload at Ocean Gold Seafoods, she entered the trip in the WCGOP database, the trip was assigned trip #12112. Finally, she verified the permit # with her debriefer as GF0001.

*** Length and biospecimen data are shown on the deck forms.**

TRIP INFORMATION

Page 1 of 1

CS LE OA EFP

Trip # 1 2 1 1 2 USCG # 7 6 9 2 4 3 or State Reg #

Observer Name: Macy Fields

Vessel Name: Allegiance

Fishery: Catch Share

Skipper's Name: Greg Sampson

# of Crew: 3 (including captain, not including observer)

Observer Logbook #: 6500

Permit/License #(s): GF0001

Departure Date/Time: 04/18/20-- 1900

Departure Port: Westport, OR

☐ No Fishing Activity — Intended Gear Type (If no activity)

☐ Partial Trip (NCS only) — Total # of Fishing Days (KNOWN)

Fish Processed During Trip? N

Vessel Logbook Name: WOC Trawl

Vessel Logbook Page #: 64347

Return Port: Westport, OR

Return Date/Time: 04/21/20-- 0500

First Receiver (CS only): Ocean Gold Seafood

Fish Ticket #	WOC	Date
5 3 9 5 6 9 8 3	O	04/21/20--

Fish Ticket #	WOC	Date

Trip Notes:

This form is completed if the data is not directly entered into software.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 5-16: Trip Form

Figure 5-17: Trip Form Back

TRIP FORM - HAUL LOCATIONS

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD Present?	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
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 Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)	1	Start	04	19	1820	46	52.61	125	01.32	80	17	N	NSM
		End	04	19	2040	46	46.23	124	59.01	80			
	2	Start	04	20	0725	46	44.04	125	03.62	71	17	N	NSM
		End	04	20	1035	46	44.17	125	03.64	71			
	3	Start	04	20	1415	46	44.36	125	03.84	71	17	N	NSM
		End	04	20	1735	46	44.35	125	03.83	71			
		Start					.		.				
		End					.		.				
Haul position data may be recorded here or on the back of the Deck Form.		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				

TRAWL DECK FORM

Page 1 of 1

Haul # 0 1 Date 0 4 1 9 - - Trip # 1 2 1 1 2

Catch Code	R or D	Weight Method	Species Name	Discard Reason	Weights & Counts						Bio-Method	Biospecimens / Comments
LCOD	D	8	Lingcod	16	36.5	17					12	+18 tallied FL- 35, 36, 40, 24, 36cm
ZMIS	D	20	Lingcod	16	27.6	12					12	FL - 45, 32, 46, 38, 38cm
			PDAB	13	66.2	150	47.1	-				
			Big Skate	13	62.1	10	43.5	7				
			Sandpaper skate	13	1.5	1						
			Hake	13	.8	1					12	FL - 40cm
			Petrale	13	1.0	1					12	FL/S 37cm F
			DCRB	16	8.0	7						
			ARTH	13	15.3	15	71.2	73				
			Ratfish	13	1.1	1						
			LSKT	13	68.3 51.8	16 -	53.0 29.8	15 -				
			Jellyfish	13	1.3	2						
			Flathead Sole	13	4.5	5						
			Rex Sole	13	.9	3					12	FL - 19, 28, 15cm
			Starfish Unid	13	7.2	6						
YTRK	R	14			120							
DSRK	D	14		13	4000		74.2	12			12	S/FLcm 29M, 28M, 28M, 26F, 35F

Trawl Weight Methods
3 - BWD 5 - OTC – R 6 - Other 7 - Vessel est. 8 - Extrapolation 9 - PHLB L/W
14 - Visual Experience 15 - Visual Spatial 19 - PHLB L/W Extrapolation
20 - Actual Weight [Whole Haul] 21 - Actual Weight [Subsample]

Reasons for Discard
11 - Incidental/Accidental 12 - Drop off 13 - Market
14 - Other 15 - Predation 16 - Regulation 17 - Safety
18 - Market (Dockside) 19 - Utilized on board 20 - Survival

Bio-method
12 – Random Sample
13 – Opportunistic (non-random)
10 – PHLB Visual Length

Figure 5-18: Trawl Deck form NSM example

Haul Details

Visual OTC: 7000 | OTC Weight Method: 14 | Biolist: (1) 2 3

Target: NSM | BRD Present?: N | EFP?: N | Beaufort: 4

Fit #: 14 | Wt Cal: 11.00 | Gear Type: 17 | Gear Perf: 1

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start							
Up							
Additional Locations							

Location fields optional. Used when not completing a Trip Form

OTC Weight Method: 14 - Visual Experience 6 - Other

Gear Type: 1 - Trawl Small Footrope 2 - Trawl Large Footrope 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 17 - OR Setback Flatfish Net

Gear Perf: 1 - No Problem 2 - Pot in Haul 3 - Net Hung 4 - Net Ripped 5 - Net or Other Gear Lost 7 - Other 8 - Retrieved Gear

Vessel Retained Catch Weights

Catch Code	EGLS	PTRL	REX	OSKT	LCOD					
Catch Weight	25	300	10	120	200					

Notes and Additional Biospecimen Data

Must record all necessary data to complete additional Optecs entry when using Trawl Weight Methods:
3 BWD – Weights for all full and partial baskets, plus tally of unweighed baskets
8 Extrapolation – Total # of fish
15 Visual Spatial – Ratio
19 PHLB L/W Extrapolation – Total # of fish

Lingcod tally ⧅⧅⧅𝍸

(18) + 17 subsample = 35 total fish

Trawl Deck Form 2020 OMB Control No. 0648-0593 Expires 12-31-2021

Figure 5-19: Trawl Deck form Haul Details NSM example.

TRAWL DECK FORM

Page 1 of 1

Haul # 0 2 Date 0 4 2 0 - - Trip # 1 2 1 1 2

Catch Code	R or D	Weight Method	Species Name	Discard Reason	Weights & Counts						Bio-Method	Biospecimens / Comments
ZMIS	D	15	Big skate	13	42.2	21					12	S/TL cm - 51F, 82M, 46F, 48F, 38M
			Lingcod	16	4.4	2						
			Urchins	13	10.5	52	4.7	-				
			DSRK	13	65.1 71.2	16 -	59.7 46.2	17 10	74.6 70.9	- -		
			Ratfish	13	20.6	12						
			Rex	13	28.9	57						
			ARTH	13	44.2	17					12	FL - 30, 49, 28 cm
			English Sole	13	13.5	25						
			PDAB	13	19.3	81					12	FL - 27, 28, 24 cm
			Dover Sole	13	1.4	3					12	FL - 30, 21, 25 cm
ZMIS	D	20	DCRB	16	4.7	4						
			DBRK	13	16.4	34	72.0	-				
			Canary	13	6.1	4					12	S/FL cm - 15U, 25M, 30F, 31F
YEYE	R	20	Yelloweye RF		6.3	2						
ARRA	R	14			15							
RBDB	R	14			15							
PHLB	D	19		16		59						

Trawl Weight Methods
3 - BWD 5 - OTC – R 6 - Other 7 - Vessel est. 8 - Extrapolation 9 - PHLB L/W
14 - Visual Experience 15 - Visual Spatial 19 - PHLB L/W Extrapolation
20 - Actual Weight [Whole Haul] 21 - Actual Weight [Subsample]

Reasons for Discard
11 - Incidental/Accidental 12 - Drop off 13 - Market
14 - Other 15 - Predation 16 - Regulation 17 - Safety
18 - Market (Dockside) 19 - Utilized on board 20 - Survival

Bio-method
12 – Random Sample
13 – Opportunistic (non-random)
10 – PHLB Visual Length

Figure 5-20: Trawl Deck form NSM example.

Haul Details

Visual OTC: 10000 | OTC Weight Method: 14 | Biolist: 1 (2) 3

Target: NSM | BRD Present?: N | EFP?: N | Beaufort: 5

Fit #: | Wt Cal: 11.0 | Gear Type: 17 | Gear Perf: 1

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start							
Up							
Additional Locations			Location fields optional. Used when not completing a Trip Form				

OTC Weight Method: 14 - Visual Experience 6 - Other
Gear Type: 1 - Trawl Small Footrope 2 - Trawl Large Footrope 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 17 - OR Setback Flatfish Net
Gear Perf: 1 - No Problem 2 - Pot in Haul 3 - Net Hung 4 - Net Ripped 5 - Net or Other Gear Lost 7 - Other 8 - Retrieved Gear

Vessel Retained Catch Weights

Catch Code	EGLS	PTRL	REX	OSKT	LCOD					
Catch Weight	450	700	150	650	2000					

Notes and Additional Biospecimen Data

Must record all necessary data to complete additional Optecs entry when using Trawl Weight Methods:
3 BWD – Weights for all full and partial baskets, plus tally of unweighed baskets
8 Extrapolation – Total # of fish
15 Visual Spatial – Ratio
19 PHLB L/W Extrapolation – Total # of fish

PHLB WM 19 Tallied 47 + 12 length/viability = 59 total fish

FL cm Viability
51 E
61 P
76 P
79 P
109 P
123 E
87 D
55 D
82 E
47 P
93 E
70 D

☒☒☒☒
☒☒☒☒
☒ L

ZMIS 15 sampled 1/6 trawl alley

Trawl Deck Form 2020 OMB Control No. 0648-0593 Expires 12-31-2021

Figure 5-21: Trawl Deck form Haul Details NSM example.

TRAWL DECK FORM

Page 1 of 1

Haul # 0 3 Date 0 4 2 0 - - Trip # 1 2 1 1 2

Catch Code	R or D	Weight Method	Species Name	Discard Reason	Weights & Counts						Bio-Method	Biospecimens / Comments
GRPTC	D	14	crab pot	13	80	1						
NTRMR	D	14	mud/rocks	13	500	-						
DCRB	D	8	DCRB	16	34.7	17					12	+ Tallied 50 Bios on back
DBRK	D	20	Darkblotched	13	41.6	29						
ZMIS	D	15	Sandpaper skate	13	5.4	3						
			Sablefish	13	31.8	12					12	FL cm - 32, 32, 41, 28, 50
			DSRK	13	91.2 81.2	15 17	64.8	-	75.6	-		
			American Shad	13	8.4	5						
			English sole	13	8.2	9					12	FL cm - 37, 42, 19, 18, 34
			PDAB	13	7.2	40	6.4	34				
			LSKT	11	52.3	6					12	TL/S - 55F, 41M, 60F
			Urchin	13	3.3	25	24.9	-				
			ARTH	13	50.2	20	42.6	16				
			Rex	13	9.5	32						
			Starfish	13	3.5	4						
			LCOD	16	38.5	12						
PHLB	D	9		16		8					12	Bios on back

Trawl Weight Methods
3 - BWD 5 - OTC – R 6 - Other 7 - Vessel est. 8 - Extrapolation 9 - PHLB L/W
14 - Visual Experience 15 - Visual Spatial 19 - PHLB L/W Extrapolation
20 - Actual Weight [Whole Haul] 21 - Actual Weight [Subsample]

Reasons for Discard
11 - Incidental/Accidental 12 - Drop off 13 - Market
14 - Other 15 - Predation 16 - Regulation 17 - Safety
18 - Market (Dockside) 19 - Utilized on board 20 - Survival

Bio-method
12 – Random Sample
13 – Opportunistic (non-random)
10 – PHLB Visual Length

Figure 5-22: Trawl Deck form NSM example

Haul Details

Visual OTC	9000	OTC Weight Method	14	Biolist	1 2 (3)		
Target	NSM	BRD Present?	N	EFP?	N	Beaufort	5
Fit #	--	Wt Cal	11.0	Gear Type	17	Gear Perf	2

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start							
Up							
Additional Locations			Location fields optional. Used when not completing a Trip Form				

OTC Weight Method: 14 - Visual Experience 6 - Other
Gear Type: 1 - Trawl Small Footrope 2 - Trawl Large Footrope 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 17 - OR Setback Flatfish Net
Gear Perf: 1 - No Problem 2 - Pot in Haul 3 - Net Hung 4 - Net Ripped 5 - Net or Other Gear Lost 7 - Other 8 - Retrieved Gear

Vessel Retained Catch Weights

Catch Code	EGLS	PTRL	REX	OSKT	LCOD	ARTH				
Catch Weight	500	900	300	300	150	1400				

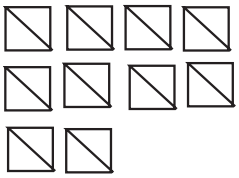
Notes and Additional Biospecimen Data

Must record all necessary data to complete additional Optecs entry when using Trawl Weight Methods:
3 BWD – Weights for all full and partial baskets, plus tally of unweighed baskets
8 Extrapolation – Total # of fish
15 Visual Spatial – Ratio
19 PHLB L/W Extrapolation – Total # of fish

DCRB

CW cm	S	Eggs
14.4	F	N
9.8	M	
9.7	M	
12.2	F	N
11.0	M	

Tallied 50 + 17 weighed = 67 total



PHLB

FL (cm)	Viability
52	D
93	P
47	D
62	D
74	D
52	P
100	D
122	D

ZMIS WM 15 sampled 1/4 of trawl alley

Trawl Deck Form 2020 OMB Control No. 0648-0593 Expires 12-31-2021

Figure 5-23: Trawl Deck form Haul Details NSM example.

IFQ Priority Species Tracking Form

Page 1 of 1

Observer Name: Macy Fields | Vessel Name: Allegiance

Departure Date: 04/18/20-- | Return Date: 04/21/20-- | Vessel ID #: 769243

Date Offload Began: 04/21/20-- | Fish Ticket #: 53956983 | WCGOP Trip #: 12112

Directions: Place this form in the wheelhouse and document the retained weight and number of each species listed for each haul. Document discrepancies between the vessel's weights and the observer's weights in the "Notes" section. Prior to disembarking, sum the weights and numbers by species and document this in the row labeled "Total", then sign and date the form.

Haul #(s)	Cowcod rockfish		Yelloweye rockfish		Notes (Discrepancies, issues, etc.)
	Weight	#	Weight	#	
1	0	0	0	0	
2	0	0	6.3	2	
3	0	0	0	0	
Totals	0	0	6.3	2	

The observer will keep the WHITE copy. The YELLOW copy will be placed in a sealed envelope and left in the wheelhouse for the catch monitor. Vessels will receive the PINK copy of the form.

For more information, including what to do if the vessel and observer disagree on estimates, review the "IFQ Priority Species Tracking Form" outreach material.

Observer's Signature: *Macy fields* Date: *04/21/20--*

IFQ Priority Species Form v.2019 November 2019 OMB Control No. 0648-0593 expires 12-31-2021

Figure 5-24: Trawl IFQ Priority Species Tracking Form.

Trawl Example: Non-Catch Shares

Observer Marlin Upton embarks at 4:30 AM on May 24, on the Archer (USCG # 600881) out of Coos Bay OR, the permit # is 51263. Prior to the trip, Marlin did a thorough vessel safety walk through and documented it in his logbook # 5555. This vessel is targeting pink shrimp using double-rigged trawls in the open access fishery, and they are using a bycatch reduction device (BRD). The captain is Joey Lawrence and his deckhand is Pete.

When the nets are deployed, Marlin assesses the sea and wind conditions, and records a Beaufort value of 4 based on 4-foot seas and 15 knot winds. Marlin remembers to randomly select a starting biosample list using an RNT and gets list 3. The vessel hauled up the first tow and Marlin made a visual estimate of 4000 lbs. His fit number was 20 with a calibration weight of 11.0 lbs. Due to the small amount of discard, he decided to actually weigh all discard. However, the individuals were very small and numerous so he decided to take a single basket subsample for species composition. He visually estimated that there would be approximately 6 baskets of discard, and he used the RNT to select basket #3 to sort as his species composition sample. The remaining mixed baskets weighed:

Basket #	Weight
1	46.4 lbs.
2	51.3
3	species comp basket
4	53.1
5	42.0
6	46.1
7	24.9

This single basket subsample contained:

Species	Weight	Number	Discard Reason
Eulachon smelt	7.5 lbs 12.3	100 NC	Regulation
Arrowtooth flounder	1.8	11	Market
Dover sole	0.8	2	Market
Slender sole	1.6	64	Market
Hagfish	0.3	1	Market
Eelpout, unid.	0.8	15	Market
Darkblotched rockfish	1.0	38	Market
Shortbelly rockfish	0.1	1	Market
Poacher	0.1	5	Market
Non-Humboldt squid	0.1	1	Market
Rex sole	0.2	1	Market
P. hake	0.1	1	Market
Shrimp	0.9 4.1	100 NC	Incidental

*During the sort Macy recorded biosamples from Trawl biolist selected species on the deck form. All individuals were randomly chosen from the species compositions.

The skipper estimates that they retained 3600 lbs of shrimp that haul.

The second haul comes aboard. Marlin visually estimates the total catch weight to be 2500 lbs. At the set, he assessed the sea conditions to be very similar to the last set, and rates Beaufort scale at 4 again. His scale test reads 11.0lbs. The vessel discards in two separate ways. First, they pull off all the floating fish from the top of the hopper. There's a lot of discarded fish, so he decides to use a basket weight determination. Marlin fills up a total of 14 baskets with discard and a small partial basket. He weighed 5 of the full baskets and they weigh 58.8 lbs, 62.10 lbs, 63.20 lbs, 59.00 lbs, and 56.40 lbs. The partial basket weighs 12.8 lbs. Marlin randomly selects one of the baskets of discard and uses the basket dump method to collect a sample for species composition sampling. It contains:

Species	Weight	Number	Discard Reason
Pacific hake	13.6	362	Market
Shrimp, unid	0.4	47	Incidental
Pacific herring	0.1	1	Market

The crew then begins to run the fish out of the hopper onto the sorting belt. Marlin weighs it all, asking the crewman to push the discard into his baskets placed at the end of the sorting belt. He weighs each basket and then dumps them over. These baskets weigh 60.9 lbs, 57.10 lbs, 66.4 lbs, 59.50 lbs, 62.2 lbs, 49.3 lbs, and 13.5 lbs.

Marlin again randomly selects one of the baskets to get a small species composition sample:

Species	Weight	Number	Discard Reason
Pacific hake	2.9 8.8	100 NC	Market
Shrimp, Unid	1.5	184	Incidental
Pacific herring	0.6	9	Market
Slender sole	0.3	3	Market
Eulachon	0.1	1	Regulation

*During the sort Macy recorded biosamples from Trawl biolist selected species on the deck form. All individuals were randomly chosen from the species compositions.

The skipper estimates that they retained 1100 lbs of shrimp on the second haul.

On the steam in Marlin updates his daily notes in his observer logbook. He also reviewed the captain's logbook to see that he correctly copied the lat and long information after each haul. The vessel gets into port at 12 pm, just as the captain said. The next day Marlin called the captain for the fish ticket number. He informs Marlin that he delivered on the 26th and that the fish ticket number is 3345667. Marlin uploads his data and the database gives him trip number 5680.

*** Length and biospecimen data are shown on the deck forms.**

Vessel Name: Archer **Date:** 05 (Month) 24 (Day) -- (Year) **Time:** 0430 **Port:** Coos Bay

Federal Document No. 600881 **Date:** 05 (Month) 25 (Day) -- (Year) **Time:** 1200 **Port:** Coos Bay

Crew Size (including Captain): 2 **Buyer(s):** Pacific Choice

Date Mo/Day		Time Local 24-hour clock	LATITUDE Degrees	LATITUDE Minutes	LONGITUDE Degrees	LONGITUDE Minutes	Avg Depth of Catch (fathoms)	NET TYPE	Target Strategy	Estimated pounds retained catch per tow – enter 4-letter code from code list provided: SRMP	STRY	OFLT	SKAT					
05/24	Set	0709	43	28.80	124	33.15	80 / 85		SRMP	3600								
	Up	0820	43	29.10	124	33.13												
05/25	Set	0912	43	32.30	124	31.10	90/94		SRMP	1100								
	Up	1048	43	34.90	124	32.95												
	Set																	
	Up																	
	Set																	
	Up																	
	Set																	
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	Set																	
	Up																	
	Set																	
	Up																	
	Set																	
	Up																	
	Set																	
	Up																	

Remarks:

85499 ****NOTE: this logbook page is not an actual shrimp logbook vessel page, just an example.**

Signed: _____

To be completed by agency

Vessel	Fish Receiving Ticket No.
Port	

Figure 5-25: Pink Shrimp completed logbook page.

TRIP INFORMATION

Page 1 of 1

Trip # 5680 USCG # 600881 or State Reg #

Observer Name: Marlin Upton

Vessel Name: Archer

Fishery: OR Pink Shrimp

Skipper's Name: Joey Lawrence

# of Crew: 2 (including captain, not including observer)

Observer Logbook #: 5555

Permit/License #(s): 51263

Departure Date/Time: 05/24/20-- 0430

Departure Port: Coos Bay, OR

☐ No Fishing Activity — Intended Gear Type (If no activity)

☐ Partial Trip (NCS only) — Total # of Fishing Days (KNOWN)

Fish Processed During Trip? N

Vessel Logbook Name: OR Shrimp Trawl

Vessel Logbook Page #: 85499

Return Port: Coos Bay, OR

Return Date/Time: 05/25/20-- 1200

First Receiver (CS only)

CS LE OA EFP

Fish Ticket #	WOC	Date
33456677	O	05/26/20--

Fish Ticket #	WOC	Date

Trip Notes:

This form is completed if the data is not directly entered into software.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 5-26: Trip Form front

Figure 5-27: Trip Form Back

TRIP FORM - HAUL LOCATIONS

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD Present?	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
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 Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)	1	Start	05	24	0709	43	28.80	124	33.15	80	13	Y	SRMP
		End	05	24	0820	43	29.10	124	33.13	85			
	2	Start	05	25	0912	43	32.30	124	31.10	90	13	Y	SRMP
		End	05	25	1048	43	34.90	124	32.95	94			
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
Haul position data may be recorded here or on the back of the Deck Form.		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				

TRAWL DECK FORM

Page 1 of 1

Haul # | | 1 | Date | 0 | 5 | 2 | 4 | - | - | Trip # | 5 | 6 | 8 | 0 | |

Catch Code	R or D	Weight Method	Species Name	Discard Reason	Weights & Counts						Bio-Method	Biospecimens / Comments
ZMIS	D	21	MIX		46.4 51.3		53.1 42.0		46.1 24.9			
			Eulachon	16	7.5	100	12.3	-			12	FL cm - 18, 20, 26, 25, ws 33cm barcode #555300
			Arrowtooth	13	1.8	11						
			Dover Sole	13	.8	2						
			Slender Sole	13	1.6	64						
			Hagfish	13	.3	1						
			Eelpout	13	.8	15						
			Darkblotched Rockfish	13	1.0	38						
			Shortbelly Rockfish	13	.1	1					12	FL cm - 10
			Poacher	13	.1	5						
			Non-Humboldt squid	13	.1	1						
			Rex Sole	13	.2	1						
			P. hake	13	.1	1						
			Shrimp	11	.9	100	4.1	-				

Trawl Weight Methods
3 - BWD 5 - OTC – R 6 - Other 7 - Vessel est. 8 - Extrapolation 9 - PHLB L/W
14 - Visual Experience 15 - Visual Spatial 19 - PHLB L/W Extrapolation
20 - Actual Weight [Whole Haul] 21 - Actual Weight [Subsample]

Reasons for Discard
11 - Incidental/Accidental 12 - Drop off 13 - Market
14 - Other 15 - Predation 16 - Regulation 17 - Safety
18 - Market (Dockside) 19 - Utilized on board 20 - Survival

Bio-method
12 – Random Sample
13 – Opportunistic (non-random)
10 – PHLB Visual Length

Figure 5-28: Trawl Deck Form v2020 front

Haul Details

Visual OTC: 4000 | OTC Weight Method: 14 | Biolist: 1 2 (3)

Target: SRMP | BRD Present?: Y | EFP?: N | Beaufort: 4

Fit #: 20 | Wt Cal: 11.0 | Gear Type: 13 | Gear Perf: 1

			Latitude		Longitude		Average Depth (fm)
	Date	Time	Degrees	Minutes	Degrees	Minutes	
Start							
Up							
Additional Locations							

OTC Weight Method: 14 - Visual Experience 6 - Other
Gear Type: 1 - Trawl Small Footrope 2 - Trawl Large Footrope 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 17 - OR Setback Flatfish Net
Gear Perf: 1 - No Problem 2 - Pot in Haul 3 - Net Hung 4 - Net Ripped 5 - Net or Other Gear Lost 7 - Other 8 - Retrieved Gear

Vessel Retained Catch Weights

Catch Code	SRMP									
Catch Weight	3600									

Notes and Additional Biospecimen Data

Must record all necessary data to complete additional Optecs entry when using Trawl Weight Methods:
3 BWD – Weights for all full and partial baskets, plus tally of unweighed baskets
8 Extrapolation – Total # of fish
15 Visual Spatial – Ratio
19 PHLB L/W Extrapolation – Total # of fish

Trawl Deck Form 2020 OMB Control No. 0648-0593 Expires 12-31-2021

Figure 5-29: Trawl Deck Form v2020 Haul Details

TRAWL DECK FORM

Page 1 of 1

Haul # 2 Date 0525-- Trip # 5680

Catch Code	R or D	Weight Method	Species Name	Discard Reason	Weights & Counts						Bio-Method	Biospecimens / Comments
ZMIS	D	3	P. Hake	13	13.6	362					12	FL cm - 12, 10, 14, 14, 14
			Shrimp	11	.4	47						
			P. herring	13	.1	1						
ZMIS	D	21	MIX		60.9 57.1		66.4 59.5		62.2 49.3			
					13.5							
			P. hake	13	2.9	100	8.8	-				FL cm - 18, 15, 16, 12, 9
			Shrimp	11	1.5	184						
			P. Herring	13	.6	9						
			Slender sole	13	.3	3						
			Eulachon	16	.1	1						

Trawl Weight Methods
3 - BWD 5 - OTC – R 6 - Other 7 - Vessel est. 8 - Extrapolation 9 - PHLB L/W
14 - Visual Experience 15 - Visual Spatial 19 - PHLB L/W Extrapolation
20 - Actual Weight [Whole Haul] 21 - Actual Weight [Subsample]

Reasons for Discard
11 - Incidental/Accidental 12 - Drop off 13 - Market
14 - Other 15 - Predation 16 - Regulation 17 - Safety
18 - Market (Dockside) 19 - Utilized on board 20 - Survival

Bio-method
12 – Random Sample
13 – Opportunistic (non-random)
10 – PHLB Visual Length

Figure 5-30: Trawl Deck Form v2020 front

Haul Details

Visual OTC: 2500 | OTC Weight Method: 14 | Biolist: (1) 2 3

Target: SRMP | BRD Present?: Y | EFP?: N | Beaufort: 4

Fit #: | Wt Cal: 11.0 | Gear Type: 13 | Gear Perf: 1

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start							
Up							
Additional Locations							

OTC Weight Method: 14 - Visual Experience 6 - Other

Gear Type: 1 - Trawl Small Footrope 2 - Trawl Large Footrope 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 17 - OR Setback Flatfish Net

Gear Perf: 1 - No Problem 2 - Pot in Haul 3 - Net Hung 4 - Net Ripped 5 - Net or Other Gear Lost 7 - Other 8 - Retrieved Gear

Vessel Retained Catch Weights

Catch Code	SRMP									
Catch Weight	1100									

Notes and Additional Biospecimen Data

Must record all necessary data to complete additional Optecs entry when using Trawl Weight Methods:
3 BWD – Weights for all full and partial baskets, plus tally of unweighed baskets
8 Extrapolation – Total # of fish
15 Visual Spatial – Ratio
19 PHLB L/W Extrapolation – Total # of fish

BWD baskets

Unweighed Tally ☒☒☐ (14)

58.8 (lbs)
62.1
63.2 - S.C. sample basket dump x 2
59.0
56.4
12.8 partial

Trawl Deck Form 2020 OMB Control No. 0648-0593 Expires 12-31-2021

Figure 5-31: Trawl Deck Form v2020 Haul Details

Trawl Chapter 5 Study Guide

1) There are about 500 pounds of discarded thornyheads, along with an additional 1,200 lbs of other mixed IFQ discards. Which catch weight method would you use for the thornyheads? _____

2) Can thornyhead unidentified be used in a species composition? _____

3) On a shrimp vessel, how many fish should you use for an average number when they are small? _____

4) On a mothership catcher vessel, half of the fish were lost out a hole in the net at the surface. How would you record this discarded catch? _____

5) On a shoreside hake vessel, half of the fish were lost out a hole in the net at the surface. How would you record this discarded catch? _____

6) If a species on your biosample list occurs in two catch categories, do you need to take lengths from both?_____

_____

_____

7) How do you record the OTC and positions for a lost codend?_____

_____

_____

8) What is the preferred method for recording catch if your scale breaks? _____

_____

9) What would you do if a crew member started to discard fish before you could sample them? _____

_____

_____

10) Can you use IFQM and SABL discard catch categories together? _____

11) When is UNST used? _____



Fixed Gear Sampling

TABLE OF CONTENTS

Introduction . . . 6-2

Diversity of Fleet and Effects on Sampling . . . 6-2

Duties and Priorities on Fixed Gear Vessels . . . 6-2

Data Collection on Fixed Gear Vessels . . . 6-3
- On the Steam Out . . . 6-3
- Defining a Set . . . 6-3
- Determining Amount of Gear in a Set . . . 6-3
- Number of skates in a set . . . 6-4

Sampling Fixed Gear . . . 6-5
- Determining the Amount of Gear to Sample . . . 6-5
- Step-by-Step Instructions for Systematic Spatial Sampling . . . 6-5
- Step-by-Step Instructions for Random Spatial Sampling . . . 6-6
- General Instructions for Tally Sampling . . . 6-6
- Tips for Documenting Tally Samples . . . 6-6
- Collecting Weights . . . 6-7
- Random Sampling for Collecting Average Weights . . . 6-10
- Weight Methods for Estimating Catch Category Weights . . . 6-10

Using the Fixed Gear Deck Form . . . 6-11
- Fixed Gear Deck Form Instructions . . . 6-12
- Back of the Fixed Gear Deck Form . . . 6-13

Determining OTC on Fixed Gear Vessels . . . 6-14
- Weight Method 6: Other . . . 6-14
- Weight Method 8: Extrapolation . . . 6-14
- Weight Method 11: Retained + Discarded . . . 6-14

Recording Fishing Effort Information and Total Catch Estimates . . . 6-15
- Trip Data Instructions . . . 6-15
- Trip Information Form - Haul Locations . . . 6-17

Fixed Gear Complications . . . 6-18
- Unsampled Sets . . . 6-18
- Lost Sets . . . 6-18
- Predated Pacific Halibut in Pot Gear . . . 6-19
- Trip Discard . . . 6-19
- Hook and Line Fleet Characterization (HLFC) Form . . . 6-20

Examples: Longline . . . 6-23

Examples: Pot . . . 6-27

Fixed Gear Study Guide . . . 6-31

Chapter 6

Introduction

Fixed Gear fisheries are covered in both the Catch Share and Non-Catch Share programs. In the Non-Catch Share program, approximately thirty percent of observed days are spent on fixed gear vessels. Vessels in the Catch Share program are allowed to switch from trawl gear to fixed gear to target certain species, such as sablefish. Although observers in the Catch Share program will primarily be sampling on vessels with trawl gear, it is also important to know the sampling priorities and procedures on fixed gear.

Fixed gear 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 6, "Fixed Gear Sampling," and Chapter 7, "Fixed Gear Sampling on Small Boats." Observer sampling aboard all fixed gear vessels follows a consistent protocol. However, characteristics including vessel size, gear type, 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 6, "Fixed Gear Sampling," versus Chapter 7, "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
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: 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: 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)

Duties and Priorities on Fixed Gear Vessels

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. Document sightings of ESA listed species.
4. Record fishing effort information, including location, time, date, and depth for all sets.
5. Conduct hook counts per segment, or count all hooks.
6. Verify total segments per set.
7. 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.

   - **Longline Vessels:** Collect 5 PHLB spread throughout the set for actual length and viabilities. Take visual length estimates for all others.
   - **Trap Vessels:** Take actual lengths and viabilities for all PHLB.

   C. Obtain weights of fish. Weigh all individuals or obtain a minimum subsample weight of at least 20 individuals.
8. Complete an IFQ Priority Species Tracking Form for every haul. (All Catch Share vessels and some Exempted Fishing Permit [EFP] vessels.)

   Priorities 1- 8 must be completed on ALL hauls
9. Record weight, length, sex, and take necessary dissections from tagged fish.
10. Take biological samples, including length, sex, otoliths, tissue, etc. from discarded individuals.
11. Complete species identification forms.
12. Maintain observer logbook.
13. Document sightings of non-ESA listed marine mammals and seabirds.
14. Compile forms and enter trip data/upload to database within three days of disembarking.

The duties listed are those typically performed while at-sea. However, the WCGOP may instruct observers to collect additional data.

Data Collection on Fixed Gear Vessels

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 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 8, "Biological Sampling" and Chapter 9, "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 sets - hauls, sets - hauls, sets - hauls or sets - sets - sets, hauls - hauls - hauls.

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.

Set: Another word for haul.

Skate or Tub: 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.

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 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 each 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 (setting of gear). Counting snaps as they go out is usually very easy and may be the only option if the vessel baits hooks beforehand, or is making multiple sets.
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.

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:

1. Average number of hooks per skate.
2. 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.

Count the number of hooks on each skate for at least 1/5 of the gear being used each trip.

Calculation

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

This can be straightforward if a vessel baits on the way to the fishing grounds, but often skates are baited before the trip making counts difficult to do while gear is coiled in the tubs. Here are a few options to deal with this situation, in order of preference:

1. If the vessel sets slowly hook counts can be taken while the gear is being set.
2. Some vessels hang all the hooks on the side of the tub upon gear retrieval giving you another opportunity to count hooks. If the vessel re-baits gear during the trip this is an excellent time to take counts but can be a time consuming option.
3. If less than 100% of the gear is sampled hook counts can be taken from a non-tally period.
4. Finally, for low diversity sets it is possible to take hook counts during a tally period with a little bit of practice.

If none of these methods are possible, using vessel estimates may be the only option to get 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 leaving the observer no option to count hooks during non-tally periods. 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, making hook counts during a tally period impossible.
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, taking away your opportunity to count hooks while the gear is being baited.
4. Vessel sets gear too fast, making gear difficult to count while setting. Large weights can also complicate this option due to how fast the hooks are set when a heavy weight is deployed.
5. Vessel does not hang hooks on the side of the tubs after gear is retrieved.

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. This is very important when a skipper is using different sized tubs. If a skipper is getting his tubs baited for him typically he is paying by the baited hook and the tubs are relatively uniform in size. In this case the skipper may inform you that all his tubs are 200 hooks.

   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 skipper's estimates are used, the reason MUST be thoroughly documented in the Observer Logbook daily notes section. Notes should also indicate the perceived accuracy of hook counts provided.

Remember: Document your hook counts in the raw data on one of your Fixed Gear Deck Forms. Document in your logbook when hook counts were conducted and how. This is useful information for your debriefer when they are reviewing your data.

Number of skates in a set

Count the number of skates in each set:

1. The preferred time to do this is during deployment of gear.
2. If for some reason you were unable to determine number of skates set during gear deployment, counts can be made during gear retrieval.
   - If you suspect gear was lost due to a broken off set, you will need to rely on the skippers skate count for this haul.

If you cannot get an accurate count of the total number of skates set, ask the captain for an estimate.

The total number of hooks in a set will be calculated by the OPTECS software during the data entry process. If a manual calculation is required the formula is as follows.

Calculation

$$\text{Total Hook Count} = \text{Total \# of Skates} \times \text{Average \# Hooks per Skate}$$

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).

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.

- **Vessels that use snap gear or gear that is NOT divided into skates:** 100% of the hooks in a set must be tallied sampled.
- **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.

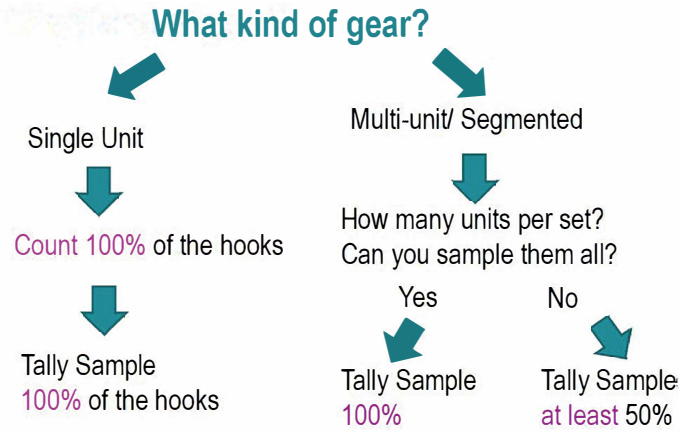


Figure 6-1: Fixed Gear sampling flowchart

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 nth 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).

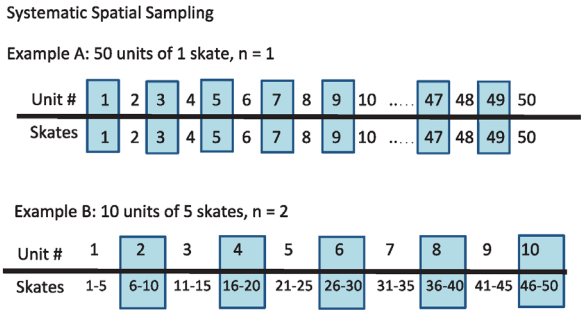


Figure 6-2: Systematic Spatial Sampling.

Step-by-Step Instructions for Random Spatial Sampling

1. Determine the number of skates in the set.
   - **Examples A and B:** 100 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:** 4 units (25 skates = 1 unit)
   - **Example B:** 10 units (10 skates = 1 unit)
3. Number all sample units.
   - **Example A:** Number units 1 - 4.
   - **Example B:** Number units 1 - 10.
4. 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
5. 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).

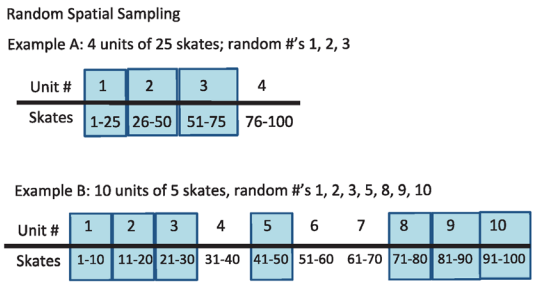


Figure 6-3: Random Spatial Sampling.

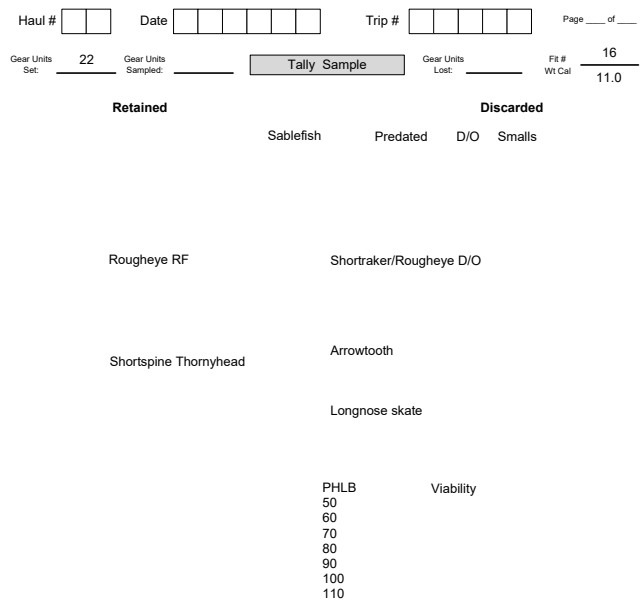
General Instructions for Tally Sampling

1. 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.
2. Collect the equipment needed to tally sample.
   - A clipboard and pencil, three to six hand counters, and a Deck Form. The tally sample raw data is documented on the back of the Deck Form. The next section will discuss how to document tally samples.
3. 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.
   - During each tally sampling period, count each species that comes up on the line or in the pot by disposition (retained versus discarded).

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

Tips for Documenting Tally Samples

- 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.
- The back of the Fixed Gear Deck 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.
- **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 6-4).
- **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 for market reasons or regulations. These discarded fish, which would have been retained if larger, should be documented in the raw data as such. Create a space on the back of the Deck Form to document "smalls" of the retained target species (See Figure 6-4).



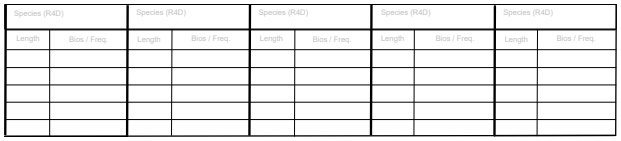


Figure 6-4: Set up before tally sample on Fixed Gear Deck Form

- **Pacific halibut:** Observers onboard longline vessels will collect some P. halibut for an actual length and viability sample, the rest will have a visual length estimate in 10 centimeter increments. Be prepared by creating an area on the deck form to document PHLB visual lengths and clearly indicate it's a visual estimate (See Figure 6-4).
- 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 it's an actual length. Observers on pot vessels will take actual lengths for all P. halibut.

Tip: See examples of how to document tally sampling in the raw data on Trip Examples at the end of the chapter.

- **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". If these fish are retained, then they can be separated by species later when the crew is putting the fish in the hold. Using combined species codes for these types of fish may however be necessary for drop offs.
- 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 6-5). 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.

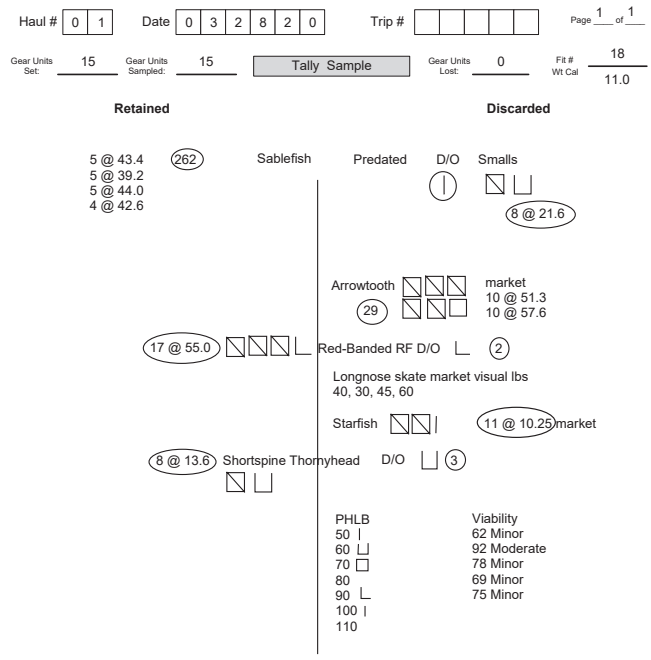




Figure 6-5: An example of tally data on a Fixed Gear Deck From.

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 organism. 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:

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 Pacific halibut).

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

1. 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 20 individuals. 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 have at least a subsample for average weight.
- **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 from whole specimens

Instructions for collecting average weight samples using a random sampling frame can be found on (page 6-10).

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

Like sets are:

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

3. 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.

Tip: Use visual estimates only when weights from "like" sets are not available.

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 are collected for weights on the set or on previous sets, then visually estimate it's weight while tally sampling.

4. Pacific Halibut Length/Weight Conversion

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 the section, Pacific Halibut Length/Weight Table on page A-21). The software will calculate the total catch weight of P. halibut based on the length data.

On longline vessels a minimum of five P. Halibut will be collected during your tally period throughout the set for an actual length and viability. The rest of the P. Halibut will have visual length estimates.

Use a systematic method to spread halibut collection for viabilities throughout your tally period. We recommend using an interval of 2 until you can estimate how many P. halibut may be caught. Randomly chose a number between 1 and 2 as a starting point and collect that and every other fish until you have obtained five for actual length and viability. Make visual length estimates for all P. halibut that are not collected throughout your tally period. Once you are familiar with the catch rate for the area you can adapt your sample frame accordingly. Record your actual length and viability data separately from your visual length estimates.

Prior to the start of the haul, designate a space on the back of the Deck Form to create a Pacific halibut visual length estimate table (See Figure 6-4). Using 10 cm increments, estimate the length of each fish to the closest whole centimeter. For example, a fish with an estimated length of 60 cm falls within the range of 55 - 64 cm.

Length Estimate (cm)	Actual Length range of PHLB (cm)
10	10 - 14
20	15 - 24
30	25 - 34
40	35 - 44
50	45 - 54
60	55 - 64
70	65 - 74
80	75 - 84
90	85 - 94
100	95 - 104
110	105 - 114
120	115 - 124
130	125 - 134
140	135 - 144
150	145 - 154
160	155 - 164
170	165 - 174
180	175 - 184
190	185 - 194
200	195 - 204
210	205 - 214
220	215 - 224
230	225-234
240	235 - 244
250	245 - 250

The following suggestions will help with estimating the length of Pacific halibut on longline vessels (See Figure 6-6):

- 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.

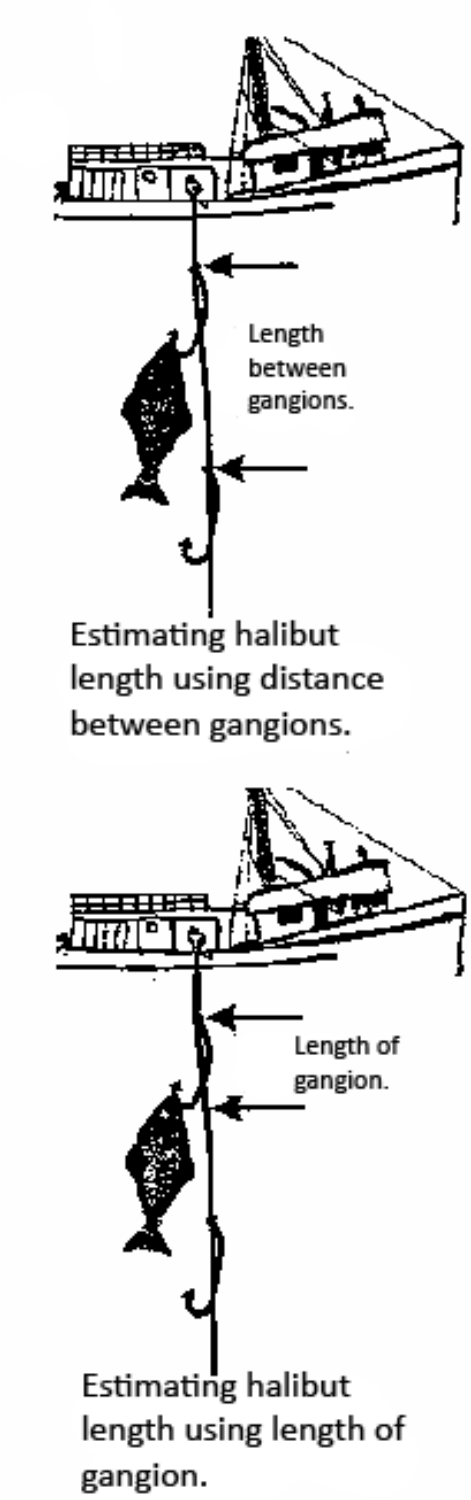


Figure 6-6: Methods to determine PHLB visual length.

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.

Examples 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 using the random number table.
3. The observer uses the remaining 7 pots to collect and weigh individuals for average weight determinations.

OR

1. The Red Dragon sets a 10 skate set.
2. Bycatch has been low so the observer decides to sample all skates and sets up a sampling frame for collecting 20 retained Sablefish to weigh.
3. The observer uses the random number table to select 4 of 10 skates and weighs the first 5 Sablefish from each skate

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 20) 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 60 sablefish will be caught in skate 2.
4. The observer wants to collect 20 sablefish to use for an average weight determination.
5. The observer determines the frequency to collect sablefish by dividing 60 by20 to get a collection frequency of 3.
6. The observer randomly chooses a number between 1 and 3 from a random number table and gets the number 2. Starting at the beginning of skate 2, the observer collects the 2nd fish and then every 3rd sablefish after (5, 8, 11, etc.) until the end of skate 2 is reached.
7. The observer weighs all the sablefish collected in skate 2.

Weight Methods for Estimating Catch Category Weights

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 with the same weight method. Since the primary fixed gear weight method is tally sample, typically it is only when a visual estimate or P. halibut length/ weight conversion is used that a species is not grouped with a tally sampled retained or discarded catch category.

On fixed gear vessels, catch category grouping depends upon the method used to obtain the weight of the species. There are four weight methods that can be used to determine catch category weights on fixed gear vessels:

9 Pacific Halibut Length/Weight Conversion

13 Tally Sample

14 Visual Experience

19 **Pacific Halibut Length/Weight Extrapolation**

The weights obtained by these methods are recorded on the Deck Form. All 4 of these fixed gear weight methods require that all individuals are counted.

Note: In trawl fisheries, all species composition weights must be actual, while the counts may be extrapolated. In fixed gear fisheries, all species composition counts must be actual, while the weights may be extrapolated.

Weight Method 9: Pacific Halibut Length/ Weight Conversion

Pacific halibut are not actually weighed. Rather, this method describes the technique where the measured length of the fish is used to estimate the weight based on a conversion table. Actual or visually estimated lengths may be used.

- Pacific halibut whose weight is determined using the length-to-weight table should be placed in its own catch category, by disposition. This weight method is used when lengths are visually estimated OR actually measured and the weights are calculated by the software 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.

Weight Method 13: Tally Sample

This weight method is used for species that are counted AND an actual or extrapolated weight has been obtained. 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 Fixed Gear Deck 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 ZMIS.

Tip: There is no need to separately document species that have been actually weighed from those whose weights were extrapolated.

Calculation

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

Weight Method 14: Visual Experience

Visual Experience is used for species that have a count but only a visually estimated weight. It is commonly used for species that are too large to weigh, such as marine mammals, large skates, and sharks. Species whose weight was determined by a visual estimate should be placed in their own catch categories. On the Deck 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. OSKT, Skates)

Weight Method 19: Pacific Halibut Length/ Weight Extrapolation

PHLB length/weight conversion is not commonly used in fixed gear fisheries but has been applied in the Directed Commercial Halibut Fishery for retained P. halibut when individual length estimates for all fish are not possible. Use this method aboard pot vessels for Pacific halibut (PHLB) when numbers are too high to take actual lengths and viabilities for all individuals in the catch category.

- This weight method is used when the total number of halibut is tallied and a subsample is collected for actual lengths and viabilities. Refer to chapter 4 for instructions. The weights are calculated by the software 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.

Using the Fixed Gear Deck Form

The Fixed Gear Deck Form (See Figure 6-7) is used to document all fixed gear sampling including tally sample data, biospecimens, and other catch information on one, occasionally two, deck forms. Tally sampling data will routinely be documented on paper since the current software in not yet configured to tally directly on the tablet. The front of the Fixed Gear Deck Form is designed to capture all species, counts, weights, and biospecimens data. The reverse side can be used to document the Set Details, or set level fishing effort information and locations. This set level information is generally collected at a much slower pace and can usually be directly entered into the tablet, so completion of these fields is only required when direct tablet entry is not feasible. The Set Details fields will directly match the tablet entry screen, but all catch, species composition, and biospecimen data will need to be entered later from the raw data tally sample page, so be as organized as possible!

The following are step by step instructions. See the Fixed Gear Examples section later in the chapter for completed deck forms.

Fixed Gear Deck Form Instructions

The Fixed Gear Deck Form (See Figure 6-7) is used to document species, counts, sample weights, and other catch information. A Deck Form should be completed for all sampled hauls.

- **Haul #:** Record the number of the haul.
- **Date:** Record the date as MM/DD/YY.
- **Trip #:** This number is automatically generated by the database. Complete this field once the trip has been uploaded to the database.
- **Page _ of _:** Number forms sequentially within each haul.
- **Gear Units Set:** Record the number of segments set for gear type 19 or the number of individual hooks or pots for other gear types.
- **Gear Units Sampled:** Record the number of segments sampled for gear type 19 or the number of individual hooks or pots sampled for other gear types.

Tip: Do not include lost gear in gear units sampled since it was not retrieved and you were unable to sample it.

- **Gear Units Lost:** Record the number of gear segments or pots that were lost. Do not record individually lost hooks.
- **Fit Number/Calibration Weight:** Record the Fit number after your marine calibration, leave it blank if you did not calibrate for that haul. Always record the displayed weight of your 5KG test weight for every haul.
- **Retained and Discarded Tally Sample Area:** This is where fixed gear raw data is recorded. The following information should be recorded here.
  - **Retained or Discarded:** Record the species under the appropriate disposition column, use the middle when a species may be both.
  - **Species Name:** Record the common name of each species in the sample. The common name on the Deck Form must match the common name in the software.
  - **Species Weight:** Record the weight obtained from the scale or your visual weight estimate. If using an average from a "like set" record the associated haul number.
  - **Fish #:** The total number of fish must be documented for weight methods 13 - Tally Sample and 14 - Visual Experience. Record the number from the thumb counter or sum the tally marks and circle the total number.
  - **Discard Reason:** Record the skipper/crew's discard reason for discarded catch categories.

    11 **Incidental/Accidental**

    12 **Drop-off**

    13 **Market**

    14 **Other**

    15 **Predation**

    16 **Regulation**

    17 **Safety**

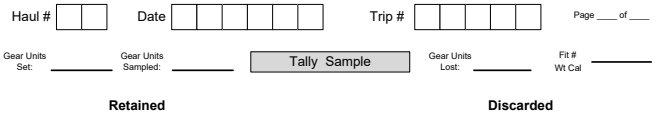
    18 **Market (dockside only)**

    19 **Utilized on board**

    20 **Survival**

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).

- **Biospecimen Table:** This table may be used to keep biospecimen data organized. Record the species name followed by R if retained or record the reason for discard code.



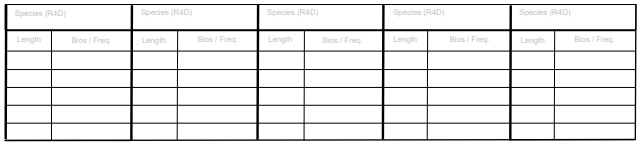


Figure 6-7: Front of the Fixed Gear Deck Form

Back of the Fixed Gear Deck Form

The back of the Deck Form (See Figure 6-8) is used when haul data is not directly entered into a tablet.

- **OTC WM:** 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 OTCs are:

  6 Other

  8 Extrapolation

  11 Retained + Discard

- **Target Strategy:** Enter the vessel's target strategy. (See the section, Catch Categories Code Lists and Target Strategies on page A-11). 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.

- **Seabird Avoidance?:** (Gear types 7, 9, 19, & 20 only): In order to prevent bait from being stolen and birds from dying, some vessels are required to use a seabird avoidance device while setting their gear. There are a variety of methods which could be used. Document all methods used on the Hook and Line Fleet Characterization Form (See Figure 6-13).

  - **No:** Use this code when no seabird avoidance gear is used.
  - **Yes:** Use this code when one or more methods of seabird avoidance gear is used.

- **EFP?:** Exempted/Experimental Fishing Permit. 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.

  - **No:** Use this code when the vessel is not fishing under an EFP.
  - **Yes:** Use this code when the vessel is fishing under an EFP.

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

  1 No problem

  5 Trawl net or codend lost, pot(s) lost, other gear lost

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

  7 Other problem. Document other gear-related problem(s) in the comments section.

  8 Retrieved gear previously lost

Tip: Used when gear which was lost during a previous trip is recovered. This performance code flags the set and helps to eliminate double counting of catch.

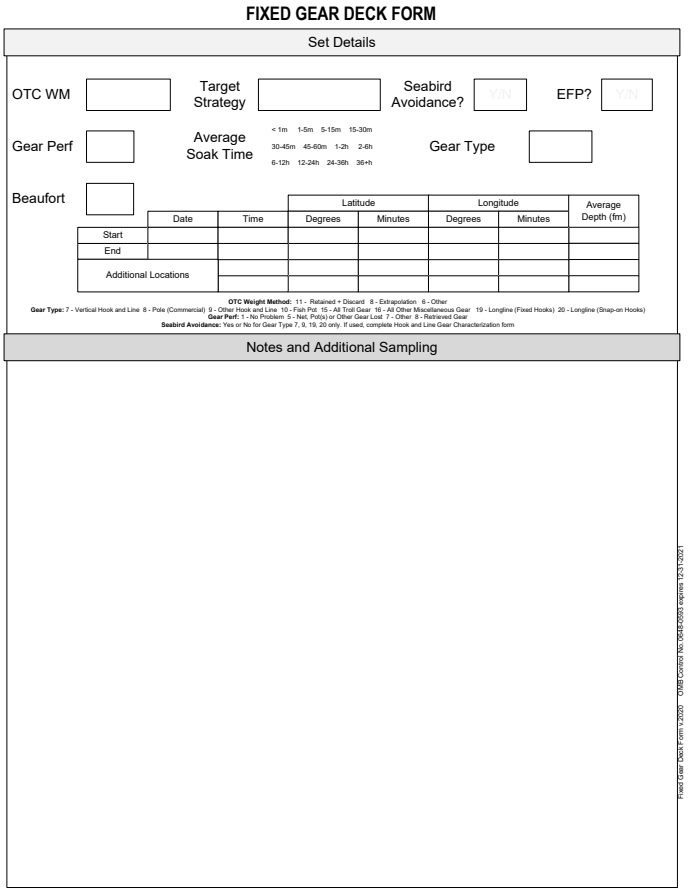


Figure 6-8: The back side of the Fixed Gear Deck Form.

- **Average Soak Time:** Optional field. Only required if the 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 sometimes (if pots are attached to a groundline); Not used for gear types 19 and 20 (defined buoy to buoy).

  - < 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

- **Gear Type:** 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)

- **Beaufort:** Use the Beaufort (sea condition) scale to note the sea conditions during setting of the gear. For reference, a Beaufort table is provided on the back of the Trip Form. A more detailed description with representative photos can be found in the Appendix and the Field Manual.
- **Haul Locations Table:** Optional fields. This table is helpful when the observer must obtain locations on their own. Haul locations must be completed either here or on the back of the Trip Form see (page 6-17).
- **Additional locations:** Optional fields. Additional locations can be obtained to provide a better description of the fishing area on vessels using gear that is not defined by buoy to buoy.
- **Notes and Additional Sampling:** 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 and hook counts.

Determining OTC on Fixed Gear Vessels

Observer total catch (OTC) is defined as the total sum, or extrapolated weight, of all organic and inorganic material caught by the gear. All organic and inorganic material which breaks the surface of the water and can be reasonably attributed to the vessel is counted and identified by the observer to species, species group, or type, for all - or a subsample - of the set. Weight estimates, taken using multiple weight methods allowed under WCGOP protocol, are applied to everything counted. These weights are summed, or extrapolated to unsampled segments, to calculate the Observer Total Catch.

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

- **Weight Method 6:** Other
- **Weight Method 8:** Extrapolation
- **Weight Method 11:** Retained + Discard

Weight Method 6: Other

There are two situations where weight method 6 - Other is used on fixed gear vessels. For these hauls, the OTC will be left blank on the data form and in OPTECS. For more information, refer to Fixed Gear Complications at the end of this chapter (page 6-18).

- 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

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

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.

Tip: Do not extrapolate for lost hooks in the nearshore rod/reel fisheries. Extrapolation for lost gear generally applies to LL and Pot vessels only. However, if you encounter a situation in which you believe that extrapolation for lost gear would be appropriate in a non-LL/Pot fishery, please discuss with your debriefer.

Weight Method 11: Retained + Discarded

This method is used when 100% of the gear is tally sampled. The total amount of gear set will equal the total amount of gear sampled.

Calculation $OTC = \Sigma \text{All Catch Categories}$

Recording Fishing Effort Information and Total Catch Estimates

A trip is generated each time a vessel leaves the dock with the intention of fishing, regardless of whether or not fishing activity occurs. It is also considered a trip if a vessel departs with the intention to wash gear, grapple for lost gear, or change ports and no fishing occurred. It is considered a trip if the vessel attempts to leave the harbor to fish but turns around for any reason such as hazardous conditions or mechanical failure.

All fish on a fish ticket must be recorded as one trip. If a vessel which has been fishing returns to the dock but does not deliver then continues to fish, it is considered a single trip.

Fishing effort information must be recorded for every set a vessel makes while the observer is on board. The fishing effort information is entered directly into OPTECS or on a Trip Form to be entered later. The trip information is used to document fishing effort information data, including locations, depth, target, haul duration, and total catch estimates. All trips must have this level of data in order for other levels of data to be useful to analysts.

Trip Data Instructions

Trip data will be completed for all observed trips. If the data is not entered directly into OPTECS then a Trip Form must be completed. (See Figure 6-9)

- **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.

> **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

- **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 of 5 through 5 of 5.
- **Trip Number:** This is an automatically generated number by the database. Complete this field once the trip has been uploaded to the online 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.
- **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.
- **Vessel Name:** Record the full name of the vessel as it appears on the vessel. For example, record Capt John, not Captain John.
- **Fishery:** Record the name of the fishery the vessel was selected for:
  - Catch Share

  Non-Catch Share Fisheries
  - Limited Entry Sablefish
  - Limited Entry Zero Tier
  - CA Nearshore
  - OR Blue/Black Rockfish Nearshore
  - OR Blue/Black Rockfish
  - WC Open Access Fixed Gear
  - IPHC Directed Commercial Halibut
  - EM EFP and Gear Mod EFP
- **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 yourself.

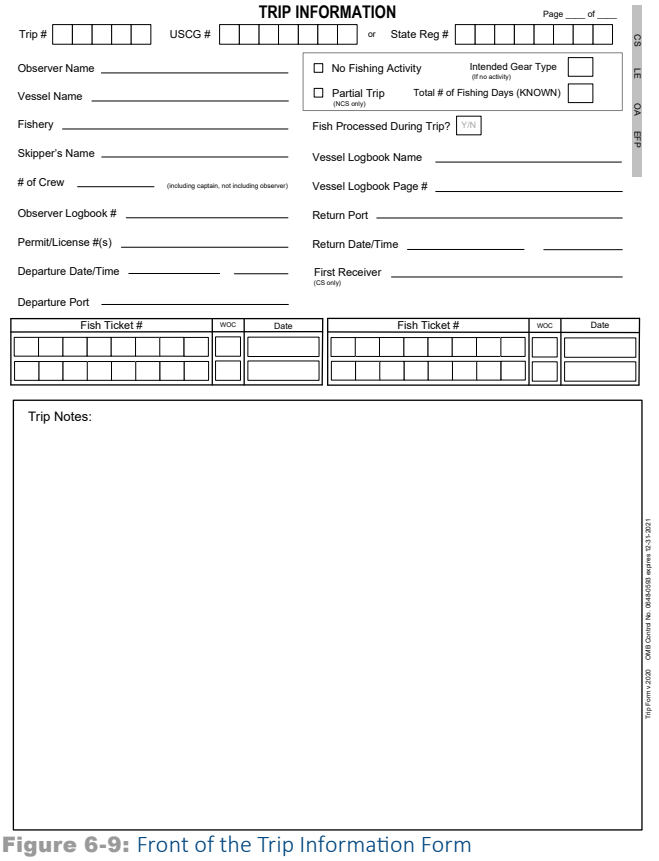


Figure 6-9: Front of the Trip Information Form

- **Observer Logbook Number:** Record the number on the front page of the Observer Logbook used to document information about the trip.
- **Permit/ License #:** Document, the permit number being used. Catch Share 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.westcoast.fisheries.noaa.gov/fisheries/management/groundfish_permits/groundfish_fisheries_permits.html
- **Departure Date/Time:** Document the date and time the vessel untied from the dock where the observer boarded with the intention of beginning a trip. Date must be documented as MM/DD/ YYYY. Time must be documented using military time (e.g., 1400).
  - If the vessel makes a temporary stop, such as topping off ice on the way to go fishing, the departure time will be when the vessel untied from the original dock where the observer boarded.
- **Departure Port:** Document the port the vessel departs from.
- **No Fishing Activity:** Check this box if no fishing occurred during your trip.
- **Intended Gear Type:** If there was no fishing activity, record the primary gear type the captain intended to use. Leave blank if fishing occurred.
- **Partial Trip:** Check the box if the trip included more days than were observed. (Fish ticket includes unobserved catch.) For Catch Share trips, leave this field blank.
- **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. For Catch Share trips, leave this field blank.
- **Fish processed during trip?:** Processing is defined as a fish that is headed and gutted or greater. Record whether or not processing of catch occurred before delivery. Document a Y for yes or N for no. If Y, record in the trip notes which species were processed and in which hauls this occurred.
- **Vessel Logbook Name:** Fixed gear vessels are not required to keep vessel logbooks. If the skipper is keeping a logbook, record the name exactly how it appears on the front page of the logbook: If the logbook name is not available in the database contact your debriefer.

Fishery	Vessel Logbook Name
Limited Entry Sablefish	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name.
Limited Entry Zero Tier	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name.
Catch Share Fixed Gear	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name, OR Fixed Gear is commonly used (Oregon vessels only)
CA Nearshore	No logbook required, however, if vessel is recording information in a logbook, document the logbook's name.
OR Black/Blue Rockfish and OR Black/Blue Rockfish Nearshore	OR Nearshore
WC OA Fixed Gear	OR Fixed Gear (Oregon vessels only) Daily Trap Fishing
IPHC Directed Commercial Halibut	IPHC Halibut Logbook
EM EFP and Gear Mod EFP	Electronic Monitoring Fixed Gear Logbook

- **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! Logbook page numbers are located in the bottom left corner of the Washington-Oregon-California logbook. If multiple page numbers were used during a trip, enter only the first page number into the database field. Enter additional page numbers into the trip notes section of the database. Leave this field blank if the skipper is not using a logbook.
- **First Receiver (Catch Share Only):** Document the name of the person or plant that the vessel delivered to. If there is more than one receiver, document only the initial first receiver here. Additional receivers should be documented in the trip notes. Leave this field blank for Non-Catch Share trips.
- **Return Port:** Document the port the vessel returns to.
- **Return Date/Time:** Document the date and time the vessel tied to the dock where the observer could disembark. Date must be documented as MM/DD/ YYYY. Time must be documented using military time (e.g., 1400).
  - Generally, the returning dock will be at the fish plant or at the vessel's slip.
  - If the vessel makes a temporary stop, such as topping off ice before tying up at the fish plant for delivery, the

return time for the vessel would be when the vessel tied to the dock at the fish plant. The exception is if the observer disembarked at the temporary stop. In that case, the end time would be when the vessel tied to the dock where the observer disembarked.

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

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).

- **WOC:** The state agency code is: W - for Washington deliveries, O - for Oregon deliveries, C - for California deliveries
- **Date:** Document the date in MM/DD/YY that is recorded on the fish ticket.

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.

- **Trip Notes:** Document any information pertinent to understanding the trip. For Catch Share trips, document additional First Receivers.

Trip Information Form - Haul Locations

- **Haul/Set Number:** Number hauls consecutively, starting with 1 for each trip.

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

- **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.



Figure 6-10: GPS Showing Latitude & Longitude.

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 6-10)

- **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)

- **Trawl BRD Present?:** Leave this field blank for fixed gear vessels.
- **Target strategy:** Enter the vessel's target strategy. (See the section, Catch Categories Code Lists and Target Strategies on page A-11). 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

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD Present?	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
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 Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)		Start											
		End											
		Start											
		End											
		Start											
		End											
		Start											
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		End											
		Start											
		End											
		Start											
		End											

Figure 6-11: Back of the Trip Information Form

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.

Note: Observers are required to notify the skipper of a scale malfunction that requires the use of visual estimates for catch accounting.

Unsampled Sets

For sets that are retrieved but not sampled:

- Use OTC weight method 6 - Other.
- Document total hooks/pots set.
- It should be noted in the haul comments that the set was not sampled, and why.
- 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:

- Keep in mind that hauls are numbered in the order they are retrieved, so lost sets will be your last set for the trip. Record the fishing effort information the same as with any other set, except use the Landing date and time as the haul end time. Use the set latitude, longitude, and depth as the retrieval latitude, longitude, and depth as these fields may not be blank.
- Use OTC weight method 6 - Other.
- Document gear performance code 5 - Gear lost.
- Document Total Hooks/ Pots Set.
- Document # Hooks/ Pots lost. This should equal Total Hooks/ Pots Set.
- Document what happened thoroughly in the logbook.

Lost Sets, found

When lost fixed gear is found the debriefer needs to be notified, so that any required changes to previous trips can be made ASAP. Record the gear performance for found gear on the trip form (8 - Retrieved gear previously lost). Sample the retrieved set for species composition as you normally would. Ask the captain for the set position, date/time, and depth.

Partially Lost Sets

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:

- Use weight method 8- Extrapolation.

Tip: OTC does not have to be extrapolated if only individual hooks were lost

- Document gear performance code 5 - Gear lost.
- Document Total Hooks/ Pots Set.

- Document amount of gear lost in # Hooks/ Pots Lost.
- # of Hooks/Pots sampled by catch category should not include the lost hooks or pots.
- Document what happened thoroughly in the logbook.

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.

- Measure the fish if the vertebra is intact and note the condition of the carcass on your Deck Form. Record the length with a viability of Dead.
- If the vertebra is not intact, do not attempt to measure the parts. Note the situation on your Deck Form and make a visual estimate of what the length may have been. If multiple predated, unmeasurable P. halibut are encountered, tally them on your Deck Form.
  - Contact your debriefer for instructions on how to record these fish.
- Document what happened thoroughly in the logbook.

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 6-12).

The Trip Discard Form is not entered into the software. Document the information from the Trip Discard Form in the Trip Notes.

- **Trip Number:** This number is automatically generated by the database. Complete this field once the trip has been started in the database.
- **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.

  6 Other

  7 Vessel estimate

  8 Extrapolation

  9 PHLB length/weight conversion

  13 Tally Sample

  14 Visual experience

  19 PHLB length/ weight extrapolation

  20 Actual Weight - Whole Haul

  21 Actual Weight - Subsample

- **Discard Reason:** Record the skipper/crew's primary reason for discard.

  11 Incidental/accidental

  13 Market

  14 Other

  15 Predation

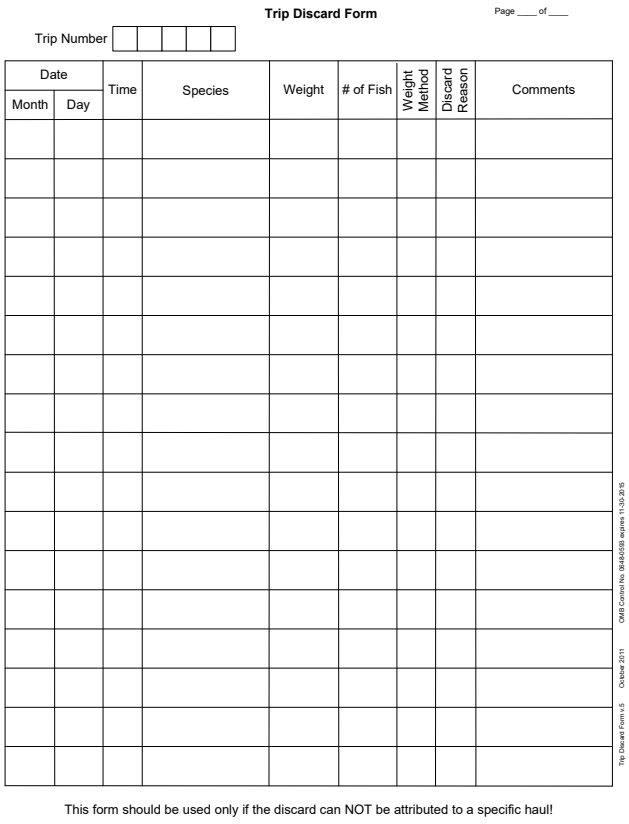
  16 Regulation

  17 Safety

  18 Market (dockside only)

  19 Utilized on board

  20 Survival



Trip Discard Form

Page ___ of ___

Trip Number

Date		Time	Species	Weight	# of Fish	Weight Method	Discard Reason	Comments
Month	Day							

This form should be used only if the discard can NOT be attributed to a specific haul!

Trip Discard Form v.5 October 2011 OMB Control No. 0648-0593 expires 11-30-2015

Figure 6-12: Trip Discard Form

Hook and Line Fleet Characterization (HLFC) Form

As a result of the new regulations, requiring the use of streamer lines when setting gear on longline vessels >55 feet, the West Coast Regional Office has asked the WCGOP to collect data that may be used to characterize and evaluate the effectiveness of seabird avoidance gear/measures used by longline vessels. Complete a HLFC form for every trip aboard a longline vessel, using segmented (skates) or snap gear (gear types 19 or 20). Record the hauls associated with the methods and gear described on the form. If methods change, complete an additional form(s) that describes the methods used for each of the haul(s).

- **Trip Number:** Automatically generated number by the database. Complete this field once the trip has been started in the database.
- **How is the product delivered?:** Select all ways catch was handled on board.
  - **Whole:** Catch was kept whole, either intact or bled, but the head was not removed.
  - **Head and Gutted:** The head and guts were removed from the fish.
  - **Other (Comment):** Some other type of processing occurred. Provide detailed comments.
- **Do the following characteristics apply to ALL hauls?:** Select Yes or No.
  - If no, document all of the associated hauls and complete additional form(s) for hauls not included. It is not necessary to complete a new form when there are minor differences between the number of floats/weights, hooks/skate, speed of vessel, etc. However, any time that a new or different seabird avoidance gear/measure configuration is used, a new form must be completed. When in doubt, take notes and discuss with debriefer.
- **The vessel sets gear at an average speed of ____ knots:** Record the average speed the vessel travels while setting gear. Record to the nearest whole number.
- **The vessel deployed an average number of _____ hooks per skate:** Record the average number of hooks per segment (i.e., skate). This field is for segmented gear only. Leave blank if snap gear. Record to the nearest whole number.
- **Are floats used:** Select Yes or No.
  - If Yes, record the average number of floats per skate for segmented gear, or the average number of floats used on a set if snap gear. Record to the nearest whole number.
- **Are weights used:** Select Yes or No.
  - If Yes, record the weight in pounds and the average number of weights per skate for segmented gear, or the average number of weights used on a set if snap gear. Record to the nearest 100th of a pound. If in ounces, convert to pounds. The observer laptop's calculator has a conversion function.

Note: that this refers to weights and floats added to the skates. Do not include the anchor weights/buoys added to each end of the mainline.

- **Does the vessel use seabird avoidance gear/measures while setting:** Select Yes or No.
  - **If Yes, select ALL avoidance types used:**
    - **One Buoy Line (aka Bird Bag):** A Buoy Line consists of a length of line (no streamers attached) and one or more float devices at the terminal end.
    - **Two Buoy Lines (aka Bird Bag):** More than one Buoy Line was used.
    - **One Streamer Line:** Streamer/tory lines consist of a length of line with streamers (small pieces of plastic tubing or line) attached along a portion of the length of the line, no more than 5 meters apart. One or more floats/buoys are attached at the terminal end to provide drag.
    - **Two Streamer Lines:** Double/paired streamer lines consist of two streamer lines, one deployed on each side of the main groundline.
    - **Integrated Weight Line:** The groundline has weight integrated into it for the purpose of helping it sink faster during deployment.
    - **Added Line Weight:** The crew adds weights to the groundline for the purpose of helping it sink faster during deployment. These weights are in addition to any weight normally added to keep the groundline at the desired fishing depth.
    - **Strategic Offal Disposal:** Offal was disposed of in a manner intended to keep seabirds away from the line during gear setting or retrieval. For example, the crew delays heading and gutting until the set and/or haul are finished.
    - **Other (Comment):** Describe what method was used to reduce seabird bycatch in the comments sections.

Note: A form must be completed for each unique configuration of seabird avoidance gear/methods used, during the trip.

- **If streamer line(s) used, what is the average aerial extent:** Selected the appropriate length of the aerial extent. The aerial extent is the length of streamer line, suspended in the air, from the stern of the vessel to the point where the streamer line touches the water. DO NOT include any streamer line forward

of the point where it crosses the plane of the stern, nor any of the streamer line that rests on the water surface near the drag buoy(s). Streamers are generally spaced at 5 meters (regulations require 5 meters or less), so they can be used as a reference. Count the number of streamers between the water line and the stern of the vessel to help gauge the aerial extent. Regulations provide the observer with access to streamer lines for confirming streamer spacing, if necessary.

  - **Fixed hooks:** less than 40 meters, or more than 40 meters
  - **Snap-gear:** less than 20 meters, or more than 20 meters

- **If snap gear, what is the average horizontal distance of the streamer line to the point where the gear enters the water:** By regulation, only one streamer line is required on snap-gear vessels. This line must be deployed within 2 meters, horizontally, from the point at which the groundline enters the water. This is meant to ensure that the streamer line is within an effective distance from the gear.
  - Select the appropriate box- Less than or equal to 2 meters, or more than 2 meters
- **Comments:** Record additional information not captured above such as seabird avoidance methods not listed. Several options require comments for further clarification.

HOOK AND LINE FLEET CHARACTERIZATION (HLFC) FORM

Observer Name _____ Trip Number _____

Required for ALL trips, in which longline gear is used (Gear Types 19 and 20).
Additional form required any time changes are made that affect one or more fields.

How is the product delivered? **(Check all that apply)**

☐ Whole ☐ Head and Gutted ☐ Other (Comment)

Do the following characteristics apply to ALL hauls? ☐ Yes ☐ No*

*If No, record the associated haul number(s): _____

The vessel sets gear at an average speed of _____ knots

The vessel deployed an average number of _____ hooks per skate (Leave blank if snap gear)

Are floats used? (not including anchor buoys) ☐ Yes ☐ No

If yes, indicate: What is the average number of floats per skate? _____

Are weights used? (not including anchor weights) ☐ Yes ☐ No

If yes, indicate: mass per weight _____ lbs. & average number of weights per skate _____

Does the vessel use seabird avoidance gear/measures while setting? ☐ Yes ☐ No

If yes, select ALL avoidance types used:

☐ One Buoy Line (aka Bird Bag) ☐ One Streamer Line ☐ Integrated Weight Line ☐ Strategic Offal Disposal

☐ Two Buoy Lines (aka Bird Bags) ☐ Two Streamer Lines ☐ Added Line Weight (To sink gear faster) ☐ Other (Comment)

If streamer line(s) used, what is the average aerial extent (See Fig. 1)?

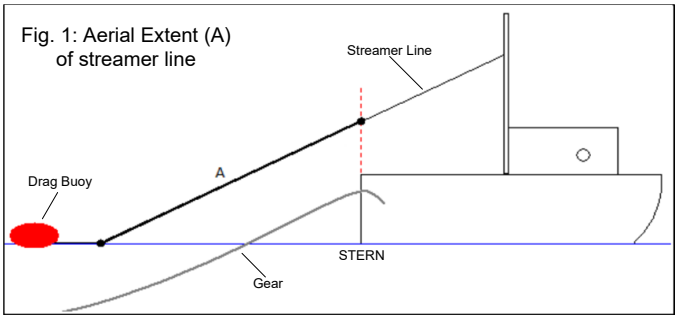
Fixed hooks: ☐ < 40 m ☐ ≥ 40 m

Snap-gear: ☐ < 20 m ☐ ≥ 20 m

If snap gear, what is the average horizontal distance of the streamer line to the point where the gear enters the water?

☐ ≤ 2 m ☐ > 2 m

Fig. 1: Aerial Extent (A) of streamer line



NOTE: Individual streamers are generally spaced at 5 m increments. When in doubt, measure spacing to verify. Regulations require spacing of ≤ 5 m.

Comments:

HLFC Form v.2020 OMB Control No. 0648-0593 expires 12/31/2021

Figure 6-13: Hook and Line Fleet Characterization Form

Examples: Longline

TRIP INFORMATION

Page 1 of 1

Trip # 1 2 3 4 5 USCG # 7 6 5 4 3 2 1 or State Reg #

CS LE OA EFP

Observer Name Your Name

Vessel Name Smooth Sailing

Fishery Catch Shares

Skipper's Name John Smith

# of Crew 4 (including captain, not including observer)

Observer Logbook # 9875

Permit/License #(s) GF5555

Departure Date/Time 01/14/2020 1450

Departure Port Newport, OR

☐ No Fishing Activity Intended Gear Type (If no activity)

☐ Partial Trip (NCS only) Total # of Fishing Days (KNOWN)

Fish Processed During Trip? N

Vessel Logbook Name

Vessel Logbook Page #

Return Port Newport, OR

Return Date/Time 01/16/2020 2300

First Receiver (CS only) Newport Inc (Blank if NCS)

Fish Ticket #	WOC	Date
1 2 3 4 5 6 7	O	1/17/2020

Fish Ticket #	WOC	Date

Trip Notes:

This form is only filled out if data is not entered directly into a tablet.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 6-14: Completed longline Trip Form front side example

TRIP FORM - HAUL LOCATIONS

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD Present?	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
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 Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)	1	Start	01	14	1700	42	22.58	124	10.08	245	19		SABL
		End	01	15	1000	42	22.12	124	10.10	245			
	2	Start	01	14	2000	42	34.12	124	22.90	300	19		SABL
		End	01	15	1600	42	33.88	124	22.74	320			
	3	Start	01	15	1500	42	23.14	124	00.45	280	19		SABL
		End	01	16	1100	42	23.42	124	01.28	275			
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
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		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				

Haul position data may be recorded here or on the back of the Deck Form

Figure 6-15: Completed longline Trip Form back side example

Haul # 0 1 | Date 0 1 1 5 2 0 | Trip # 1 2 3 4 5 | Page 1 of 1

Gear Units Set: 20 | Gear Units Sampled: 15 | Tally Sample | Gear Units Lost: 0 | Fit # Wt Cal 17 / 11.0

Retained | **Discarded**

10 @ 48.8
10 @ 49.5
(213) Sablefish

Predated ☐ (3)

Drop Off ☒ (5)

Smalls ☒☒☒☐ (18)
5 @ 13.7
5 @ 12.6
8 @ 21.6

5 @ 17.3
4@ 12.5
☒☐ (9) Shortspine Thornyhead D/O 0

Pacific Spiny Dogfish (market) ☒☒☒☒ (31) ☒☒|
10 @ 19.6
10 @ 23.5

Starfish ☐ (4 @ 1.5)

☒☒☒☒ ☒☒☒L (37) Rougheye
5 @ 22.5
5 @ 30.4
5 @ 37.1
5 @ 27.5

Shortraker/Rougheye D/O ☐ (4)

Giant grenadier D/O Visual estimate (1 @ 12)

PHLB
60 |
70 ⌊
80
90 L
100

FL / Viability
1 @ 72cm MI
1@ 88cm MI
1@95cm MO
1@77cm MI
1@74cm D

Tip - 5 PHLB must be landed throughout the tally period and assessed for viability

Species (R4D) Sable (13)		Species (R4D) P. Spiny Dogshark (13)		Species (R4D) Roughey (R)		Species (R4D)		Species (R4D)	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.
23	1	63	M	42	4.8				
24	1	47	F	tissue	100333666				
20	1	84	F						
18	1	61	M						
26	1	60	F						

Figure 6-16: Front of the Longline Fixed Gear Deck Form example

FIXED GEAR DECK FORM

Set Details

OTC WM: 8 | Target Strategy: SABL | Seabird Avoidance?: Y | EFP?: N

Gear Perf: 1 | Average Soak Time: < 1m 1-5m 5-15m 15-30m 30-45m 45-60m 1-2h 2-6h 6-12h 12-24h 24-36h 36+h | Gear Type: 19

Beaufort: 2

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start	01/14/20	1700	42	22.58	124	10.08	245
End	01/15/20	1000	42	22.12	124	10.10	245
Additional Locations							

OTC Weight Method: 11 - Retained + Discard 8 - Extrapolation 6 - Other
Gear Type: 7 - Vertical Hook and Line 8 - Pole (Commercial) 9 - Other Hook and Line 10 - Fish Pot 15 - All Troll Gear 16 - All Other Miscellaneous Gear 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)
Gear Perf: 1 - No Problem 5 - Net, Pot(s) or Other Gear Lost 7 - Other 8 - Retrieved Gear
Seabird Avoidance: Yes or No for Gear Type 7, 9, 19, 20 only. If used, complete Hook and Line Gear Characterization form

Notes and Additional Sampling

Hook counts conducted prior to departure:
140, 156, 149, 138, 161, 150, 157, 148

Complete this side of the form if haul data is not entered directly into the tablet.

Fields in yellow may be filled out here or on the back of the trip form.

Fixed Gear Deck Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 6-17: Back of the Longline Fixed Gear Deck Form example

Examples: Pot

TRIP INFORMATION

Page 1 of 1

Trip # 2 2 2 1 5 USCG # 1 1 1 2 3 4 5 or State Reg #

CS LE OA EFP

Observer Name: Your Name

Vessel Name: Starship

Fishery: Catch Shares

Skipper's Name: Jim Finneas

# of Crew: 4 (including captain, not including observer)

Observer Logbook #: 9871

Permit/License #(s): GF1234

Departure Date/Time: 03/01/2020 0220

Departure Port: Newport, OR

☐ No Fishing Activity — Intended Gear Type (If no activity)

☐ Partial Trip (NCS only) — Total # of Fishing Days (KNOWN)

Fish Processed During Trip? N

Vessel Logbook Name:

Vessel Logbook Page #:

Return Port: Newport, OR

Return Date/Time: 03/01/2020 2310

First Receiver (CS only): Newport Fish (Blank if NCS)

Fish Ticket #	WOC	Date
2 3 4 5 6 7 8	O	03/02/2020

Fish Ticket #	WOC	Date

Trip Notes:

This form is only filled out if data is not entered directly into a tablet.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v 2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 6-18: Pot Trip Form front side example

TRIP FORM - HAUL LOCATIONS

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD Present?	Target Strategy
			Month	Day		Degrees	Minutes	Degrees	Minutes				
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 Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)	1	Start	02	28	1800	42	25.89	124	48.60	300	10		SABL
		End	03	01	1230	42	26.02	124	48.22	280			
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				
		Start					.		.				
		End					.		.				

Haul position data may be recorded here or on the back of the Deck Form

Figure 6-19: Pot Trip Form back side example

Haul # 0 1 Date 0 3 0 1 2 0 Trip # 2 2 2 1 5 Page 1 of 1

Gear Units Set: 20 Gear Units Sampled: 18 Tally Sample Gear Units Lost: 2 Fit # Wt Cal 12 / 11.0

Retained **Discarded**

10 @ 48.7
10 @ 47.0
(195)

Sablefish

Predated
(8)

Dover (market) 5 @ 9.6

Shortspine 3 @ 10.7

Decorator crab (market) 2 @ 0.1

Anemone (market) 7 @ 0.7

Redbanded RF 1 @ 1.6

P. Halibut
62cm Dead (sandfleas)
45cm Excellent
52cm Excellent
47cm Poor

Species (R4D)		Species (R4D)		Species (R4D)		Species (R4D)		Species (R4D)	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.

Figure 6-20: Example of Pot Deck Form front

FIXED GEAR DECK FORM

Set Details

OTC WM: 8 | Target Strategy: SABL | Seabird Avoidance? Y/N | EFP? N

Gear Perf: 5 | Average Soak Time: < 1m 1-5m 5-15m 15-30m 30-45m 45-60m 1-2h 2-6h 6-12h 12-24h 24-36h 36+h | Gear Type: 10

Beaufort: 3

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start	02/28/20	1800	42	25.89	124	48.60	300
End	03/01/20	1230	42	26.02	124	48.22	280
Additional Locations							

OTC Weight Method: 11 - Retained + Discard 8 - Extrapolation 6 - Other
Gear Type: 7 - Vertical Hook and Line 8 - Pole (Commercial) 9 - Other Hook and Line 10 - Fish Pot 15 - All Troll Gear 16 - All Other Miscellaneous Gear 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)
Gear Perf: 1 - No Problem 5 - Net, Pot(s) or Other Gear Lost 7 - Other 8 - Retrieved Gear
Seabird Avoidance: Yes or No for Gear Type 7, 9, 19, 20 only. If used, complete Hook and Line Gear Characterization form

Notes and Additional Sampling

Complete this side of the form if haul data is not entered directly into the tablet.

Fields in yellow may be filled out here or on the back of the trip form.

Fixed Gear Deck Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 6-21: Example of Pot Deck Form back side

Fixed Gear Study Guide

1) What kind of weights are recorded in the Species Composition for fixed gear vessels?

   Actual **Average** **Estimated**

2) How do you define a set? _____

3) How much of the gear do you need to count for average hook counts?_____

4) A haul has both Pacific halibut visual lengths and actual lengths with viabilities. What is the Weight Method? _____

   _____

5) On segmented longline vessels, what two pieces of information are needed to obtain the total number of hooks in the set?

   »

   »

6) What is the OTC weight method you used if you sampled 15 of 20 pots in a set? _____

7) What is the OTC weight method on snap gear vessels?_____

8) What is the minimum number of individuals you must weigh for average weight?_____

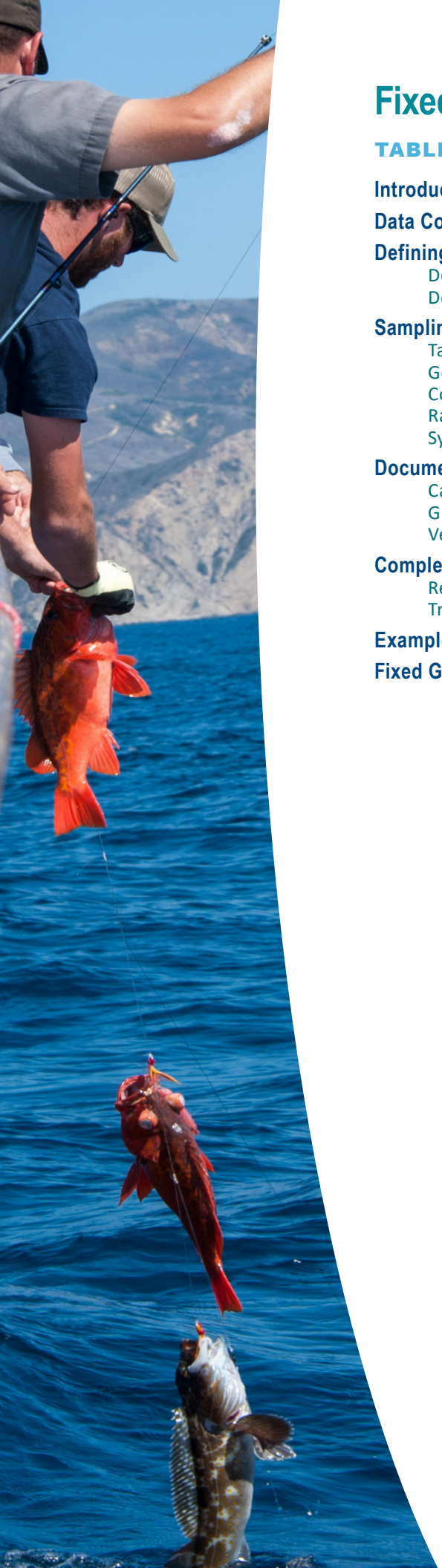
9) How do you determine the order of hauls on the haul form? _____

10) If you planned to sample the entire set of pots, but three pots are lost, what is your OTC method? _____

    _____

11) Some species must be identified in hand and will be tallied as a mixed group, if they are discarded. What are these groups? _____

12) When do you complete a Hook and Line Fleet Characterization Form? _____



Fixed Gear Sampling on Small Boats

TABLE OF CONTENTS

Introduction . . . 7-2

Data Collection on Small Fixed Gear Boats . . . 7-2

Defining a Set . . . 7-2
- Documenting Fishing Effort Information . . . 7-3
- Determining Amount of Gear in a Set . . . 7-3

Sampling Small Fixed Gear Vessels . . . 7-5
- Tally Periods . . . 7-5
- General Instructions for Tally Sampling . . . 7-5
- Collecting Weights . . . 7-6
- Random Sampling for Collecting Average Weights . . . 7-7
- Systematically Sampling Individuals Through Entire Set . . . 7-7

Documenting Tally Samples . . . 7-7
- Catch Categories on Fixed Gear Vessels . . . 7-7
- Grouping, Assigning Weight Methods, and Naming Catch Categories on Fixed Gear Vessels . . . 7-8

Completing the Fixed Gear Deck Form . . . 7-8
- Release Methods (Nearshore Species Only) . . . 7-8
- Trip Discard . . . 7-9

Examples . . . 7-9

Fixed Gear Chapter 7 Study Guide . . . 7-18

Chapter 7

Introduction

Some fixed gear fisheries 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 6, "Fixed Gear Sampling. This chapter will address specific challenges and data collection techniques for smaller fixed gear vessels. For what gear to bring on small vessels, (See the section, Gear for Small Boats on page 1-22).

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 Nearshore (open access)
- WC Open Access Fixed Gear (open access)
- EFP Trips (e.g., Emley Platt)

*The non-sablefish endorsed fleet commonly use conventional longline gear or strings of pots to fish.

The data flow on small fixed gear vessels is generally the same as for large fixed gear vessels. (See Chapter 6, "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

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 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 one 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 discretion of the observer. If unsure how to record the data, discuss the situation with your Debriefer.
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 three 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

Fixed gear vessels are not required to keep vessel logbooks. There are two options for getting fishing effort information which consists of 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 waypoints that you can reference later. Write down the positions or waypoints on the back of your Deck Form at the same time that time and depths are noted.

Recording Depth

To determine fishing depths either:

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 most 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.

1 fathom = 6 feet

Recording Time

If the vessel does not have a logbook observers can record the times from their watch or the vessel's clock. There are times when gear is set on the previous trip. Observers can ask the captain for the set times or ask the observer from the previous trip for this information.

At a 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 waypoints 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 must document at least two positions (start and end) if there was only one haul in a day. Additional location, time, and depth information can be taken any time during the 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 locations must be recorded on the Deck Form – Haul Locations and entered into the tablet software. For an example, see the Trip Form on.

A grouping of gear can be considered one set if the following are the same: Date, Gear type, Geographic area, Depth, Species assemblages.

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 or traps per gear segment.
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 pots will be equal to the number of hooks or pots 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. Hook counts should be done at least once per trip.

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 to determine the average number of hooks per gear segment.

Calculation

Average # Hooks per Gear Segment =

$$\frac{\Sigma \text{Hooks Counted}}{\text{\# of Gear Segments Counted}}$$

Calculation

Total Hooks=

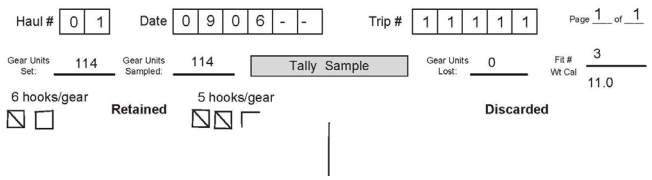
(Total Gear Segments) x (Average Hooks per Gear Segment)

Gear segment: A single tub, pole, cable or other unit of gear.

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:

- Create columns on your raw data sheet with each possible hook count (per gear segment, see example below).
- 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 and sum the results.



Counting hooks on rod-and-reel vessels

In rare circumstances, obtaining actual hook counts may be impossible for reasons such as a malfunctioning tally counter or absentmindedness.

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

1. Determine an appropriate length of time for the hook count sampling periods.
2. Randomly select time units when gear retrievals will be counted.
3. Count the number of gear retrievals that occur during the selected sample periods.
4. 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.
5. Determine the total amount of time that fishing occurred for the set.
6. 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.

Calculation

Total Hooks =

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

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.

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.

Actual number of hooks per gear segment are often collected for stick, rod-and-reel and similar gear types.

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 Deck 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, 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 6, "Fixed Gear Sampling" for more information on determining the amount of gear in a set on longline vessels.)

Sampling Small Fixed Gear Vessels

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.

Tally Periods

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 6, "Fixed Gear Sampling."

General Instructions for Tally Sampling

1. Determine the amount of gear to tally sample.
   - In general, sets on small boat fixed gear are 100% tally sampled.
2. **Collect the equipment needed to tally sample:**
   - A clipboard, one to six hand counters, and the Deck Form are needed to tally sample. The tally sample raw data is documented on the back of the Fixed Gear Deck Form. The next section will discuss how to document tally samples.
3. Find a location on deck to tally sample.
   - Most likely, only a small location will be available for a tally/sample station on small fixed gear vessels. A tally/sample station should be very near to where the fish comes aboard. From the tally station, observers must be able to clearly identify fish as they come aboard and identify drop-offs and individuals preyed upon. Organize the gear in your tally/sample station by placing the observer scale and length frequency board close at hand.
4. Count each species that comes up on the line or in the pot by disposition (retained versus discarded). For species in large quantities, use the hand counters. For other species, make hash marks next to their common name.
   - **Species similar in appearance:** Some species, such as Shortraker and Rougheye rockfish, are similar in appearance and cannot be distinguished unless they are in hand. For these species, tally as a mixed group such as Rougheye/Shortraker or Shortspine/Longspine.

Tip: These vessels always attempt to get discard over quickly. Be sure all the gear is organized in such a way that the fish can be quickly weighed, measured for length, and returned to the sea.

Tips for Documenting Tally Samples

- The back of the Deck Form is divided into two sections, Retained and Discarded. Write down species names that are likely to be caught on each side of the form.

Tip: See examples of how to prepare your forms for tally sampling (See Figure 7-1).

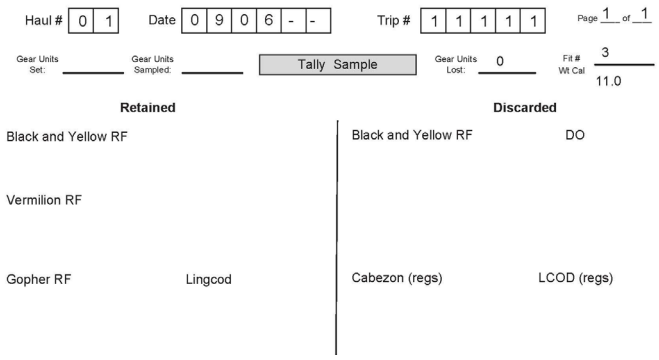


Figure 7-1: Setting up deck form for tallying

- **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.

- **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 Deck Form to document "smalls" of the retained target species.
- **Pacific halibut:** Generally, Pacific halibut are not caught on small boat fixed gear vessels, at least not in any quantity. Therefore, it may not be necessary to designate an area on the form for PHLB.
- **Gear Units:** Since the vessel will most likely be pulling multiple units of gear during the set, be prepared to document the gear units as they are brought aboard on your form

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 fish species. There are five methods for determining weights on fixed gear vessels. They are listed below in the 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 Pacific halibut)

1. Weights from individuals within the same set

Since 100% of hooks/pots are tallied, individuals for average weights will be collected while tally sampling.

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

- 20 individuals from the target species
- 20 individuals from non-target species

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

2. Weights from "Like" Sets

There may be one or more species for which it was impossible to collect individuals to use for average weights. This usually happens if only a few individuals of a given species that are caught. If this occurs, use average weights of the same species from a similar set when available.

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

Like sets are: 1. Close in proximity. 2. Similar in depth range. 3. Similar in soak time. 4. Targeting the same species

3. Visually Estimated Weights of Large Organisms and Discarded Catch

When an organism is too large to weigh, a visual estimate is made. 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.

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 are collected for weights on the set or on previous sets, then visually estimate it's weight while tally sampling.

Visual Estimates for Retained Species

If possible, observers should actually weigh retained species or obtain a subsample of retained individuals to determine average weights. However, on some vessels, it may not be possible to weigh retained fish. Because fishers participating in the live fish market are extremely concerned about the condition of their fish, they may not allow the observer to handle live retained catch. Also, physical constraints aboard the vessel may make it impossible to obtain a random sample of unsorted retained catch.

If it is not possible to collect and weigh a sample of retained fish for average weights, visual estimates can be obtained 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 (described above) to visually estimate the weight of every nth 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.

Note: 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.

4. Pacific Halibut

Pacific halibut are not commonly encountered on most small fixed gear vessels. For specific instructions regarding Pacific halibut, see Chapter 6, "Fixed Gear Sampling."

Random Sampling for Collecting 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 the systematically selected gear units throughout set.

Systematically Sampling Individuals Through Entire Set

1. Estimate the total number of individuals that will be caught on the set. Ask the skipper if unsure.

Example: 100 kelp greenling

2. Determine the number of individuals that will be collected.

Example: 20

3. Determine the sampling frequency (n) by dividing the estimated number that will be caught by the number of fish that will be collected.

Example: 100 (estimated #)/20 (# wanted) = 5 (n). The sampling frequency is every 5th fish.

4. Randomly select the start point between 1 and n using the random number table or watch.

Example: Use random number table to select a number between 1 and 5 (n). 2 is randomly selected.

5. Collect and weigh randomly selected start fish and every nth fish throughout the set.

Example: Collect the 2nd, 7th (2 + 5(n)), 12, 17.....97th.

Systematic Sampling of Gear Segments Throughout Entire Set

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

1. Define the population.

Example: An estimated 300 cabezon will be caught in a set of traps

2. Sampling frame by gear.

Example: A string of trap gear.

3. Determine the sample unit. Sample unit = individual traps (collect all cabezon in each selected trap), total number of traps or sample units.

Example: Sample units are 150 traps in a string of gear.

4. Number all units

Example: 1 - 150 traps.

5. Determine how many Sampling Units are in the sample.

Example: Assume 300 cabezon are caught in 150 traps and assume there will be 2 CBZN per trap and a total of 20 CBZN are needed for average weights. (total traps to sample = 20 average weight CBZN / 2 CBZN per trap, ANSWER = 10 traps) 10 traps or sample units to get desired number of fish for average weights. So, 10 pots (sample units) will need to sampled.

6. Divide total traps or units by the number of Sampling Units desired in sample = n.

Example: n=150 units/10 Sampling units = 15, so n is every 15th pot.

7. Randomly select a random number between 1 and n using the random number table or watch.

Example: Use random number table to select a number between 1 and 15 (n). 9 is randomly selected.

8. Collect and weigh the fish in the randomly selected gear segment and every nth gear segment throughout the set.

Example: Collect fish from the 9th, 24th (9 + 15(n)), 39th.....

Documenting Tally Samples

The tally sample is normally documented on the back of the Deck Form, along with the weights of individuals of each species weighed.

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 grouping must have the same weight method.

Fish weight extrapolation: Determine the total weight of a species when less than 100% are weighed during a set. The average weight per fish is determined and the value is then multiplied by the total number of fish in the tally sample.

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 (actual weight, visual estimate, fish ticket, etc.).

1. All species whose weight was determined by an actual weight from the same set or from "like" sets, should be grouped in the same catch category by disposition (retained and discarded). On the Fixed Gear Deck 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.
2. Species whose weight was determined by a visual estimate should be placed in their own catch categories. On the Deck 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., OSKT, Skates).
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 Fixed Gear Deck Form will be **WM-9 P. Halibut Length/Weight Conversion or 19 - P. Halibut Length/ Weight Extrapolation.** These weight methods are used when lengths are visually estimated OR actually measured and the weights are calculated in 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 Fixed Gear Deck Form using biosample method 10 -P. Halibut visual length estimate.

Based upon these rules, complete the Fixed Gear Deck Form, as much as possible. See Chapter 6, "Fixed Gear Sampling" for instructions.

Completing the Fixed Gear Deck Form

The only additional data that may be recorded for some small boats is Release Methods , which are discussed below. For an example of how to document release method codes on the Fixed Gear Deck Form refer to "Examples" (See Figure 7-6 and Figure 7-9). For all other form instructions, see "Using the Fixed Gear Deck Form" on page 6-11.

Release Methods (Nearshore Species Only)

Fishers in the nearshore fisheries , some EFP's and some Open Access fisheries in California may use special techniques to increase the chance of survival of discarded rockfish species. Document, on a species level, the most common method used to release nearshore rockfish species. Document the "normal" release method of the vessel. Be sure to document what the vessel normally does without observer presence! The release method should never be left null for rockfish species in near-shore fisheries.

Note: Do not use Release Method for Predated, Drop-off and/or Incidentally discarded rockfish. These should be marked as NC.

- **(TO) Thrown directly over:** Rockfish species is generally thrown directly back to sea, without venting or other release method.
- **(MV) Mostly Vented:** Rockfish species is normally vented by the crew prior to release back to sea.
- **(DC) Mostly Released at depth by cage:** Rockfish species is placed in a cage and released at depth.
- **(DW) Mostly Released at depth by weighted line:** Rockfish species is placed on a weighted line and released at depth.
- **(DO) Mostly Released at depth by other method:** Rockfish species is released at depth by a different method. Describe method in observer logbook.
- **(OM) Other Method of Release:** Rockfish species is carefully released using a different method. Describe method in observer logbook.
- **(NC) Not Collected:** Release method was not collected. Typically used for drop-offs, predated rockfish, incidental/accidental catch, and catch utilized by crew.

Trip Discard

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. Use Discard Reason 18 - Market (Dockside only) for fish discarded as discussed above.

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. Refer to Chapter 6 for instructions on completing the Trip Discard form.

Examples

In the following examples, be aware that biological sampling duties are not addressed in the text. Biological sampling duties are described in Chapter 8 "Biological Sampling" and Chapter 9 "Protected Resources."

TRIP INFORMATION Page 1 of 1

Trip # 5444 USCG # or State Reg # CF5555FV

Observer Name Your Name

Vessel Name TazMan

Fishery CA Nearshore

Skipper's Name Dutch Colway

# of Crew 1 (including captain, not including observer)

Observer Logbook # 7892

Permit/License #(s) LI555, DN5074

Departure Date/Time 07/09/20-- 0545

Departure Port Half Moon Bay, CA

☐ No Fishing Activity Intended Gear Type (If no activity)

☐ Partial Trip (NCS only) Total # of Fishing Days (KNOWN)

Fish Processed During Trip? N

Vessel Logbook Name

Vessel Logbook Page #

Return Port Half Moon Bay, CA

Return Date/Time 07/09/20-- 1210

First Receiver (CS only)

CS LE OR EFP

Fish Ticket #	WOC	Date
555555E	C	07/09/20--

Fish Ticket #	WOC	Date

Trip Notes:

This form is completed if the data is not directly entered into software.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v. 2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 7-2: Trip Form for the Tazman in the CA Nearshore Fishery.

Haul # 1 Date 0709-- Trip # 5444 Page 1 of 1

Gear Units Set: 25 Gear Units Sampled: 25 Tally Sample Gear Units Lost: ____ Fit # Wt Cal Hand Scales

Retained

Live Retained Fish, all

Visual estimates (lbs)

LCOD 16 fish
10.0 -
8.0 - 1
14.0
7.0 - 1
6.5 - 1
7.25
9.6

Olive RF
1.0 - 1

Blur 4 fish
2.0
1.0 - 1

VRML 8 fish
4.0 - 1
3.0
1.0
2.0 - 1

CNRY 4 fish
2.5 - 1
3.0
1.0 - 1

Copper RF
3.0 - 1

8 hooks per dingle bar

Discarded

LCOD lbs regulation
3.75 - 1 4 Fish
2.50
4.25 - 1

Coho (visual estimate)
4.0 - 1

Species (R4D) LCOD (R)		Species (R4D)		Species (R4D)		Species (R4D)		Species (R4D)	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.
53									
46	1								
55	1								

Figure 7-3: Deck Form Front for the Tazman in the CA Nearshore Fishery.

FIXED GEAR DECK FORM

Set Details

OTC WM: 11 | Target Strategy: NSHR | Seabird Avoidance?: N | EFP?: N

Gear Perf: 1 | Average Soak Time: < 1m, 1-5m, (5-15m), 15-30m, 30-45m, 45-60m, 1-2h, 2-6h, 6-12h, 12-24h, 24-36h, 36+h | Gear Type: 9

Beaufort: 1

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start	07/09	0635	37	22.36	122	35.42	19
End	07/09	0945	37	20.30	122	32.56	19
Additional Locations							

OTC Weight Method: 11 - Retained + Discard 8 - Extrapolation 6 - Other
Gear Type: 7 - Vertical Hook and Line 8 - Pole (Commercial) 9 - Other Hook and Line 10 - Fish Pot 15 - All Troll Gear 16 - All Other Miscellaneous Gear 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)
Gear Perf: 1 - No Problem 5 - Net, Pot(s) or Other Gear Lost 7 - Other 8 - Retrieved Gear
Seabird Avoidance: Yes or No for Gear Type 7, 9, 19, 20 only. If used, complete Hook and Line Gear Characterization form

Notes and Additional Sampling

Complete this side of the form if haul data is not direct entry.

Highlighted fields may be filled out here or on the back of the trip form.

Fixed Gear Deck Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 7-4: Deck Form Back for the Tazman in the CA Nearshore Fishery.

TRIP INFORMATION

Page 1 of 1

Trip # 1 1 1 1 1 USCG # or State Reg # O R 1 3 3 R H

CS LE OA EFP

Observer Name First, Last

Vessel Name Network

Fishery OR Blue/Black Rockfish

Skipper's Name Joe Boyd

# of Crew 1 (including captain, not including observer)

Observer Logbook # 1122

Permit/License #(s) 58001

Departure Date/Time 09/06/2019 0715

Departure Port Garibaldi

☐ No Fishing Activity — Intended Gear Type (If no activity)

☐ Partial Trip (NCS only) — Total # of Fishing Days (KNOWN)

Fish Processed During Trip? N

Vessel Logbook Name

Vessel Logbook Page #

Return Port Garibaldi

Return Date/Time 09/06/2019 1400

First Receiver (CS only)

Fish Ticket #	WOC	Date
5 0 0 1 4 1 1	O	09/06/2019

Fish Ticket #	WOC	Date

Trip Notes:

This form is completed if the data is not directly entered into software.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 7-5: Trip Information Form Front for the Network in the OR Blue/Black Rockfish Fishery.

Haul # 0 1 Date 0 9 0 6 1 9 Trip # 1 1 1 1 1 Page 1 of 1

Gear Units Set: 40 Gear Units Sampled: 40 **Tally Sample** Gear Units Lost: 0 Fit # Wt Cal N/A

Handscale Used

8 hooks per gear unit

Retained

Black RF
1.50 lbs ⌐
1.75 lbs ☒
2.00 lbs ☒ ☐
2.25 lbs ☐
2.50 lbs ⌐
2.75 lbs |

Blue/deacon
1.25 lbs |
1.50 lbs ☒ |
1.75 lbs ☐
2.00 lbs |

additional Tally = 61

Yellowtail RF
1.5 lbs @ 1
1.75 lbs @ 1

Lingcod
6.5 lbs @ 1
9.75 lbs @ 1

Discarded

Black RF (small) TO
0.50 lbs @ 1
0.50 lbs @ 1
0.75 lbs @ 1

Blue/deacon (small) TO
0.75 lbs @ 1
0.75 lbs @ 1

Lingcod (regulation)
3.25 lbs @ 1
3.00 lbs @ 1
4.00 lbs @ 1
3.75 lbs @ 1

Tire (visual estimate)
20 lbs

Species (R4D) BLCK (small)		Species (R4D) Blue/Deacon (small)		Species (R4D) LCOD (regulation)		Species (R4D) Blue/Deacon (R)		Species (R4D)	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.
26	1	27	1	51	1	33	100398641	1.50	
27	1	24	1	39	1	37	100398462	2.00	
30	1			44	1				
				46	1				

Figure 7-6: Deck Form Front for the Network in the OR Blue/Black Rockfish Fishery.

FIXED GEAR DECK FORM

Set Details

OTC WM: 11 | Target Strategy: BLCK | Seabird Avoidance? Y/N | EFP? N Y/N

Gear Perf: 1 | Average Soak Time: < 1m 1-5m 5-15m 15-30m 30-45m 45-60m 1-2h 2-6h 6-12h 12-24h 24-36h 36+h | Gear Type: 8

Beaufort: 1

			Latitude		Longitude		Average Depth (fm)
	Date	Time	Degrees	Minutes	Degrees	Minutes	
Start	9/6/19	0803	45	20.35	124	01.45	21
End	9/6/19	1300	45	20.13	124	00.67	19
Additional Locations		1100	45	20.95	124	1.24	20

OTC Weight Method: 11 - Retained + Discard 8 - Extrapolation 6 - Other
Gear Type: 7 - Vertical Hook and Line 8 - Pole (Commercial) 9 - Other Hook and Line 10 - Fish Pot 15 - All Troll Gear 16 - All Other Miscellaneous Gear 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)
Gear Perf: 1 - No Problem 5 - Net, Pot(s) or Other Gear Lost 7 - Other 8 - Retrieved Gear
Seabird Avoidance: Yes or No for Gear Type 7, 9, 19, 20 only. If used, complete Hook and Line Gear Characterization form

Notes and Additional Sampling

Complete this side of the form if haul data is not direct entry.

Highlighted fields may be filled out here or on the back of the trip form.

Fixed Gear Deck Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 7-7: Deck Form Back for the Network in the OR Blue/Black Rockfish Fishery.

TRIP INFORMATION

Page 1 of 1

Trip # # # # # # USCG # or State Reg # # # # # # # # #

CS LE OA EFP

Observer Name: Your Name

Vessel Name: Gopher

Fishery: Open Access

Skipper's Name: Larry Steen

# of Crew: 1 (including captain, not including observer)

Observer Logbook #: 8886

Permit/License #(s): L54321

Departure Date/Time: 07/04/20-- 0830

Departure Port: Brookings, OR

☐ No Fishing Activity — Intended Gear Type (If no activity):

☐ Partial Trip (NCS only) — Total # of Fishing Days (KNOWN):

Fish Processed During Trip? N

Vessel Logbook Name:

Vessel Logbook Page #:

Return Port: Brookings, OR

Return Date/Time: 07/04/20-- 1230

First Receiver (CS only):

Fish Ticket #	WOC	Date
X5654344	0	07/04/20--

Fish Ticket #	WOC	Date

Trip Notes:

This form is completed if the data is not directly entered into software.

Highlighted fields change between programs (NCS and CS) and fisheries.

Trip Form v.2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 7-8: Trip Form Form for the Gopher in the Open Access Fishery.

Haul # 1 | Date 0704-- | Trip # #### | Page 1 of 1

Gear Units Set: 39 | Gear Units Sampled: 39 | Tally Sample | Gear Units Lost: - | Fit # Wt Cal 6 / 11.0

Retained

Cabezon
5.0, 2.5, 3.0, 3.5
2.8, 2.8, 2.0 lbs

Kelp Greenling
1.8, 1.0 lbs

Black and Yellow RF
1.3 lbs

Grass RF
3.0, 3.3, 2.3, 2.3
3.8, 1.9 lbs

Kelp RF
1.0 lbs

10 sticks with 3 hooks each pulled multiple times and combined into one set.

Discarded

Cabezon (regs) lbs
1.8, 2.0, 4.0 1.3

Black and Yellow (regs) vented
.8 lbs - 29 cm
.8 lbs - 30 cm

Grass RF (regs) vented
1.0 lbs - 31 cm
2.6 lbs - 35 cm

Swell Shark (market) 4.5 lbs

Blue RF (market) lbs vented
2.7, .9, 2.0, 3.3

Lincod (regs)
12.0 lbs - 60 cm
9.0 lbs - 50 cm

Gopher (regs) venterd
0.5 lbs - 20 cm
21. lbs - 42 cm

Sunstars 1.0, 0.5, 0.4

Species (R4D)		Species (R4D)		Species (R4D)		Cabezon (regs)		Blue RF (market)	
Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.	Length	Bios / Freq.
						28	1	42	1
						30	1	21	1
						34	1	40	1
						28	1	51	1

Figure 7-9: Deck Form Front for the Gopher in the Open Access Fishery.

FIXED GEAR DECK FORM

Set Details

OTC WM: 11 | Target Strategy: CBZN | Seabird Avoidance?: N | EFP?: N

Gear Perf: 1 | Average Soak Time: < 1m 1-5m 5-15m (15-30m) 30-45m 45-60m 1-2h 2-6h 6-12h 12-24h 24-36h 36+h | Gear Type: 9

Beaufort: 2

	Date	Time	Latitude Degrees	Latitude Minutes	Longitude Degrees	Longitude Minutes	Average Depth (fm)
Start	07/04/20--	0935	36	14.47	125	44.11	10
End	07/04/20--	1250	↓	14.49	↓	44.14	10
Additional Locations		1030	↓	14.45	↓	44.12	12
		1130	↓	14.46	↓	44.13	11

OTC Weight Method: 11 - Retained + Discard 8 - Extrapolation 6 - Other
Gear Type: 7 - Vertical Hook and Line 8 - Pole (Commercial) 9 - Other Hook and Line 10 - Fish Pot 15 - All Troll Gear 16 - All Other Miscellaneous Gear 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)
Gear Perf: 1 - No Problem 5 - Net, Pot(s) or Other Gear Lost 7 - Other 8 - Retrieved Gear
Seabird Avoidance: Yes or No for Gear Type 7, 9, 19, 20 only. If used, complete Hook and Line Gear Characterization form

Notes and Additional Sampling

Complete this side of the form if haul data is not direct entry.

Highlighted fields may be filled out here or on the back of the trip form.

Fixed Gear Deck Form v. 2020 OMB Control No. 0648-0593 expires 12-31-2021

Figure 7-10: Deck Form Back for the Gopher in the Open Access Fishery.

Fixed Gear Chapter 7 Study Guide

1) What criteria determines how you define a set? _____

_____

_____

_____

2) The captain doesn't want you to touch his retained black rockfish because they are being delivered alive. How would you get a sample weight?_____

_____

3) Uh oh, one of the black rockfish died on the way to port and the captain discarded it.

4) How do you record it if there is only 1 haul? _____

_____

_____

i) How do you record it if there are 2 hauls? _____

_____

5) Release methods are recorded for what family of fish?_____

_____

6) How can you determine the amount of hooks set on a rod-and-reel boat?_____

_____

7) Are you allowed to fish for the vessel on a rod-and-reel boat?_____

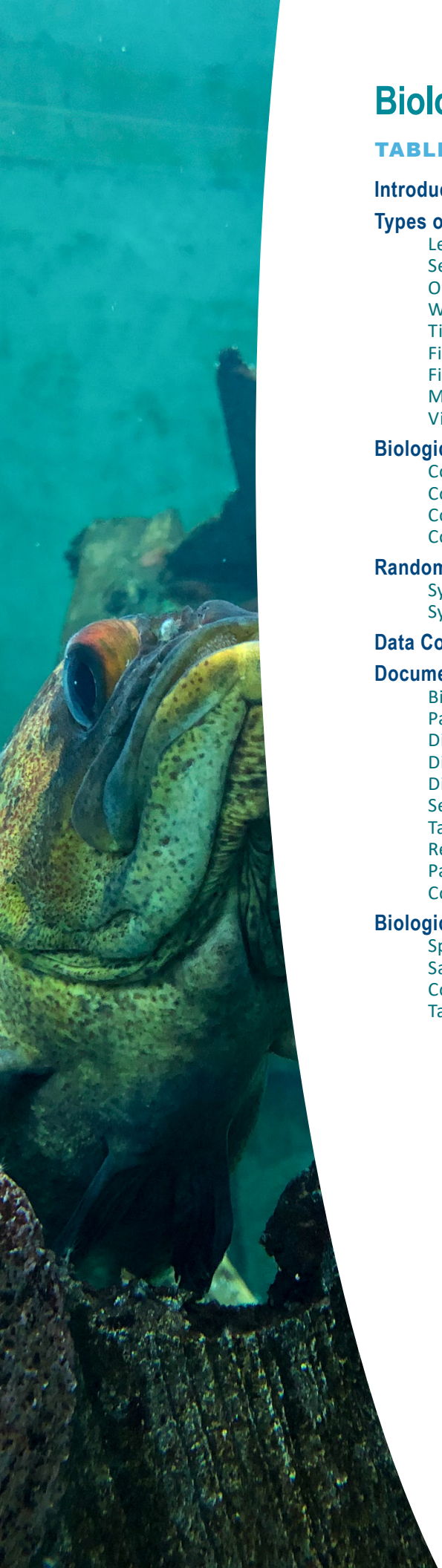
_____

8) List three challenges sampling on a small boat: _____

_____

_____

_____



Biological Sampling

TABLE OF CONTENTS

Introduction to Biological Sampling . . . 8-2

Types of Biological Data Collected . . . 8-2
- Length . . . 8-2
- Sex . . . 8-2
- Otoliths . . . 8-2
- Weight . . . 8-2
- Tissue . . . 8-2
- Fin Clips . . . 8-2
- Fin Rays . . . 8-2
- Maturity . . . 8-2
- Viability . . . 8-2

Biological Sampling Procedures . . . 8-3
- Collecting Lengths . . . 8-3
- Collecting Sex Data . . . 8-5
- Collecting Otoliths . . . 8-10
- Collecting Tissue Samples . . . 8-11

Random Sampling . . . 8-12
- Systematic Example 1 . . . 8-13
- Systematic Example 2 . . . 8-13

Data Collection Priorities . . . 8-13

Documenting Biological Samples . . . 8-14
- Biosample Methods for Documentation . . . 8-14
- Pacific Halibut . . . 8-14
- Discarded Priority Species in the Trawl Fisheries . . . 8-16
- Discarded Priority Species in the Non-Nearshore Fixed Gear Fisheries . . . 8-17
- Discarded Priority Species in the Nearshore Fixed Gear Fisheries . . . 8-18
- Select Retained Rockfish Sampling . . . 8-18
- Tagged Fish (Non-salmonids) . . . 8-19
- Retained Sablefish that are processed at sea (Head and Gut Vessels) . . . 8-19
- Pacific Lamprey . . . 8-21
- Coral . . . 8-21

Biological Data Collection Forms . . . 8-22
- Specimen Collection Label Instructions . . . 8-23
- Sample Envelope Instructions . . . 8-23
- Commercial Sablefish Specimen Data form . . . 8-24
- Tagged Fish Form Instructions . . . 8-26

Chapter 8

Introduction to Biological Sampling

Observer programs play a crucial role in collecting important fishery-dependent biological information used by fisheries biologists and stock assessment analysts. In the WCGOP, observers collect length, sex, otolith, weight, viability, tissue, fin clip, and maturity samples to aid in this effort.

This biological information is collected for several species which are divided into two groups in the manual:

1. **Species of interest:** Pacific Halibut, tagged fish (non-salmonid), priority species, corals, California Halibut and Pacific Lamprey.
2. **Protected resource species:** green sturgeon, marine mammals, salmon, seabirds, eulachon, and sea turtles.

Types of Biological Data Collected

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

Length

Observers collect lengths from dead marine mammals, sea turtles, rockfish, flatfish, Sablefish, Lingcod, Pacific spiny dogfish sharks, Dungeness crabs, and selected skates. Lengths from discarded fish are used in assessment models to determine selectivity of the gear and age population of the discard.

The WCGOP uses the following standard methods for collecting length data.

- Fork Length
- Total Length
- Carapace Width
- Carapace Length
- Curvilinear Length
- Tail Length
- Standard length

Sex

Observers collect sex information from marine mammals, select rockfish, petrale sole, Pacific spiny dogfish sharks, select skates, Dungeness crab, Kelp greenling, Sablefish and California sheephead. Sex information can be used to determine the male to female ratio of the discard.

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

Otoliths

Otoliths are calcium carbonate structures found in many fish species. Otoliths grow in size with the fish and display their growth in annual rings, or annuli. The number of annuli are counted by scientists to determine the age of the fish. In the WCGOP, otoliths are collected from the following species: Cowcod, Yelloweye, Rougheye, and all discarded tagged fish.

Weight

Individual weight should be recorded for any fish from which otoliths are collected. Weight, length, and sex data will be paired with age readings and used by analysts to determine size/age distribution.

Tissue

Tissue samples are collected from dead marine mammals and all coral species. Genetic information from the tissue of marine mammals is used for species verification purposes. Genetic information from the tissue of corals is used by habitat scientists to determine the distribution of various coral species.

Fin Clips

Fin clips are tissue samples collected from the pectoral fin of selected rockfish species and green sturgeon for correct species identification and genetic studies.

Fin Rays

Are tissue samples used to age fish when otoliths are not a reliable method.

Maturity

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

Viability

Pacific halibut viability assessments (injury data) are used to assess the mortality rate of Pacific halibut due to commercial fishing. The injury data collected by observers are analyzed by staff from the International Pacific Halibut Commission (IPHC) and used to estimate yearly mortality rates.

Viability is also assigned to discarded California Halibut as part of a 2017 study to determine mortality in the CA Halibut fishery.

Biological Sampling Procedures

Collecting Lengths

Before beginning to collect species for length measurements, set up your working area. Create a "table" or find an area large enough to lay the organism on the stainless steel length strip. Use the WCGOP provided stainless steel measuring board to collect all fish lengths and any marine mammals small enough to do so.

Measuring boards marked at centimeter increments are used for length measurements. The first line etched on the board is 4.5 cm. and the next line is 5.5 cm. Any fish that falls in between would be recorded as 5 cm.

Measuring Fish with a Length Board

WCGOP uses two methods for measuring fish.

1. **Fork Length:** the distance from the tip of the snout or lower jaw (whichever extends furthest) to the end of the middle rays of the caudal fin.
   - Used by the WCGOP for all flatfish, roundfish, and green sturgeon.
   - **Note:** If the tail is rounded, fork length is the same as total length.

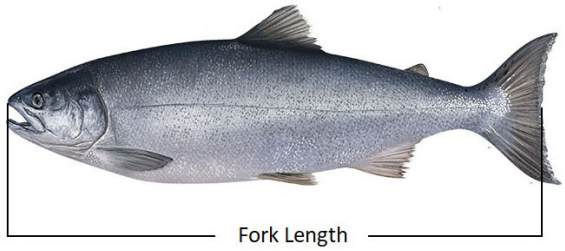


Figure 8-1: How to measure roundfish fork length.

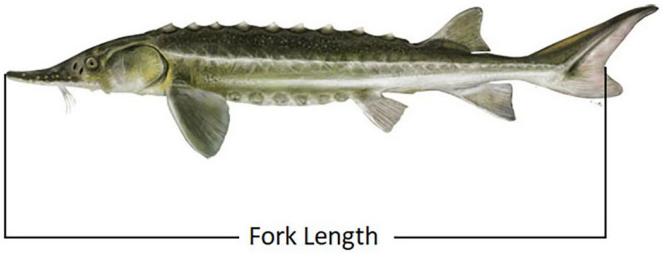


Figure 8-2: Green Sturgeon fork length measurement.

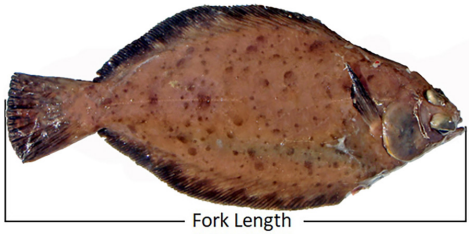


Figure 8-3: Flatfish fork length (same as total when fin is rounded).

2. **Total Length:** the distance from the tip of the snout to the most posterior part of the tail.
   - Used by the WCGOP for all skates and sharks.

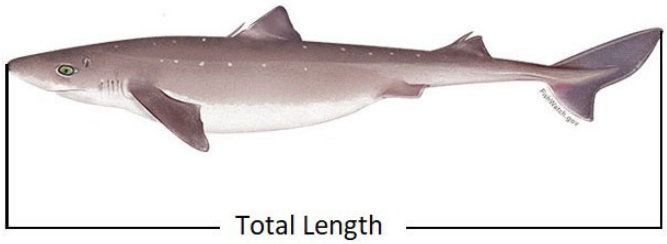


Figure 8-4: How to measure total length.

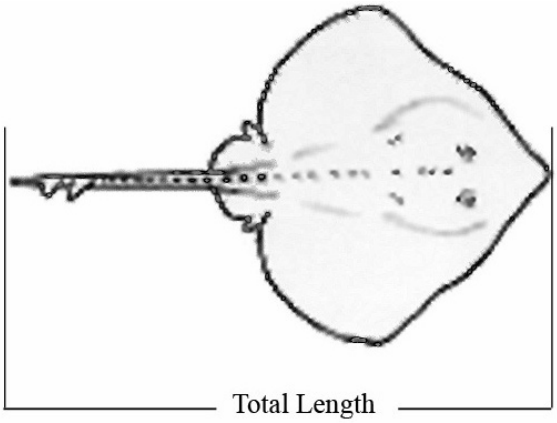


Figure 8-5: How to length skates.

PROCEDURE

Disregard specimens that have had their snouts or tails shortened due to damage.

1. Lay the fish flat on the measuring board parallel to the center line.
2. Pull the fish forward until its snout touches the vertical surface. This ensures that the fish is fully extended. Make sure the jaws are closed.
3. Spread out the caudal rays to find the middle rays and longest rays or straighten the tail.
4. **For all flatfish, roundfish, and green sturgeon:** measure **fork length**, from the snout tip or lower jaw (whichever extends furthest) to the end of the middle rays of the caudal fin. (See Figure 8-1)

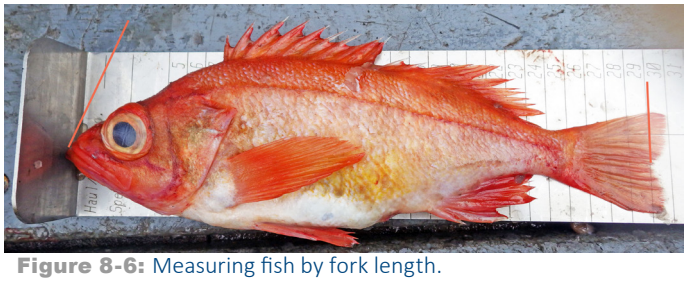


Figure 8-6: Measuring fish by fork length.

5. **For all skates and sharks:** measure **total length**, from the snout tip to the most posterior part of the tail (See Figure 8-4 and Figure 8-5).
6. Look or make a pencil mark on the measuring board in the space where the fork length or tail tip falls. If the length falls on a line on the board, try re-measuring the fish. If the length still falls directly on the line, use the lower centimeter measurement.
7. After recording the data, clean the length board to remove the pencil marks (if any were made) and ready it for the next haul's lengths.

Measuring Fish Too Large for a Length Board

If a fish is too long to measure with the stainless steel length board, you must use the flexible tape measure you are issued.

Follow the same steps as above to position the fish. Remember to always measure under the fish to get a straight line measurement.

Since the tape measure may move too much when under the fish, It may be easier to place the fish against a bin board and then mark the deck where the fork length or total length (as applicable) falls. Use your knife or pencil to mark the spot and measure from the bin boards to the mark. Round down for.5 or lower and round up for.6 and above.

Measuring Crabs with Calipers

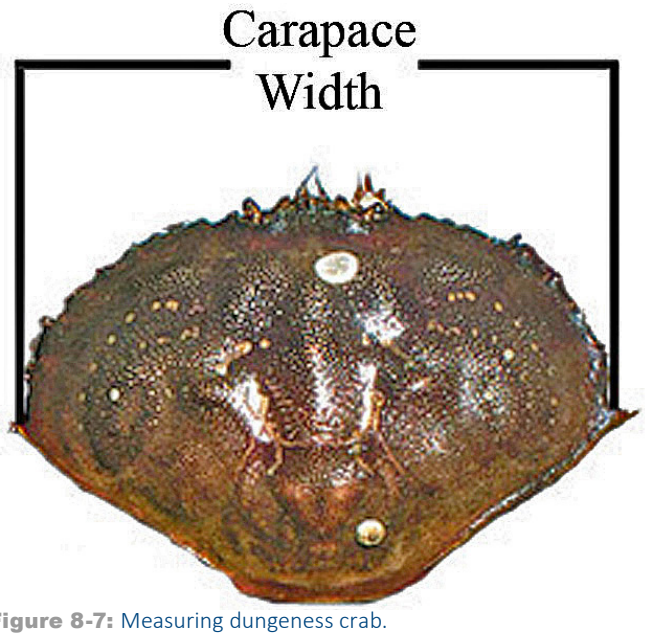


Figure 8-7: Measuring dungeness crab.

1. All crab must be measured using the calipers provided by WCGOP. If you do not have calipers, do not measure crabs, as all other measurement techniques are invalid.
2. Dungeness Crab are measured across the carapace. Measure the width across the back, at the widest part of the carapace, but exclude any spines at the carapace edge.
3. Lay the crab on a flat surface and hold the body down with one hand while you work the calipers with the other hand. Spread the calipers across the carapace of the crab and close the arms until the very tips of the calipers are touching the designated spots inside and forward of the outermost spines. (See Figure 8-7)
4. Crab are measured and recorded to **the nearest tenth of a centimeter.**

Tip: Always convert crab width measurements from mm to cm and keep the tenths place (i.e., 146 mm = 14.6 cm).

Measuring Marine Mammals with a Tape Measure

Take the standard length (preferred) or curvilinear length of the marine mammal if unable to take standard length.

- **Standard length:** With the animal belly up, measure the straight line distance from the tip of the snout or rostrum to the tip of the tail notch. This is most easily accomplished by placing the mammal against a bin board, straightening it out, and then marking the deck where the tail notch falls. Use your knife or pencil to mark the spot and measure from the bin boards to the mark. If shorter than 136 cm, place the animal on a length board.
- **Curvilinear length:** Measure the shortest surface distance from the tip of the snout or rostrum to the tip of the tail notch along the back, belly, or side. Use only if rigor has set in or the animal is too large or deteriorated to maneuver.

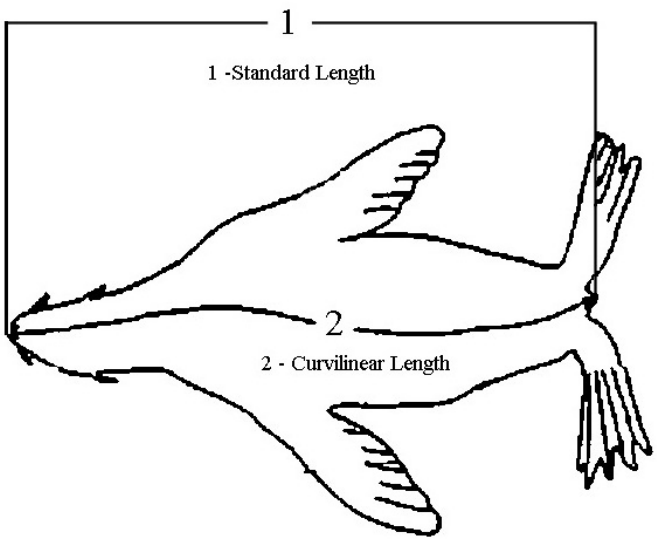


Figure 8-8: Pinniped measurements (NPGOP).

Measuring Sea Turtles with a Tape Measure

1. **Carapace length:** Measure the distance between the center edge of the nuchal scute and the posterior edge of the carapace, following the curvature of the dorsal center line.
   - If there is a notch between the two posterior marginal scutes, measure the distance to the rear most point of the scutes.
   - For Leatherbacks, juvenile olive ridleys and juvenile loggerheads, measure to one side of the median keel, not on top of it.
2. **Carapace width:** measure the maximum distance between the lateral edges of the carapace. Measure over the curvature of the shell.

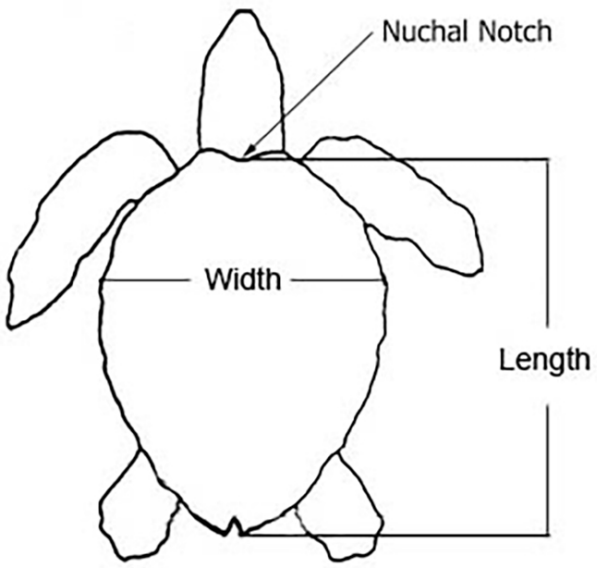


Figure 8-9: Sea turtle lengths.

3. **Tail length:** Measure the distance between the posterior most point of the plastron and the tip of the tail. The tape measure should follow the curve of the tail.



Figure 8-10: Measuring sea turtle tail length.

Collecting Sex Data

Preparing to Sex Fish

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

Sexing Internally

Do not sex fish in the following situations:

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

Tip: Sexing only the dead individuals of a species while only taking lengths from live individuals is a biased sample. This should not be done.

Note: If the sex cannot be determined, record "U - Undetermined". "U" signifies that the observer attempted, but was unable to determine the sex of the fish. This is very common with juvenile rockfish in the pink shrimp fisheries. Leave the sex column blank on the form or press N/A in the software to signify sexing the fish was not attempted.

SEXING SALMON AND SABLEFISH

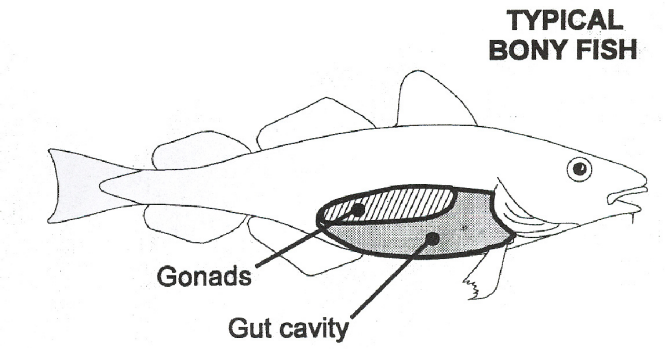


Figure 8-11: Typical Roundfish Gonad Placement

1. Gonads are typically found along the backbone, toward the rear of the visceral cavity (See Figure 8-11).

2. Insert blade into anus and cut toward head.
3. Remove viscera to expose paired tubular gonads along the spine. The gonads will become fused into one toward the anterior of the cavity, so examine gonads at their posterior end.
4. Probe the gonad lobes apart.
5. Sablefish

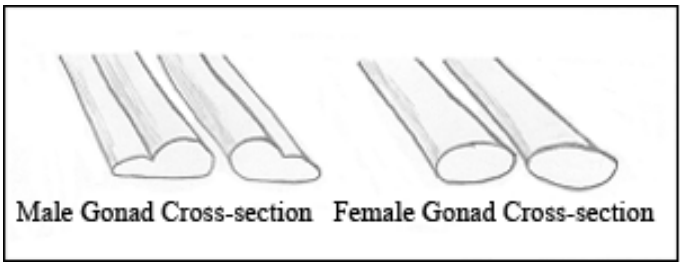


Figure 8-12: Sablefish Gonad Appearance

- **Females:** appear as two tubes that are oval in cross-section (See Figure 8-12 and Figure 8-13).



Figure 8-13: Female Sablefish gonad placement and appearance.

- **Males:** also appear as two tubes, but on closer inspection you'll typically find the tubes are bifurcated, giving an appearance of four lobes (See Figure 8-12 and Figure 8-14).

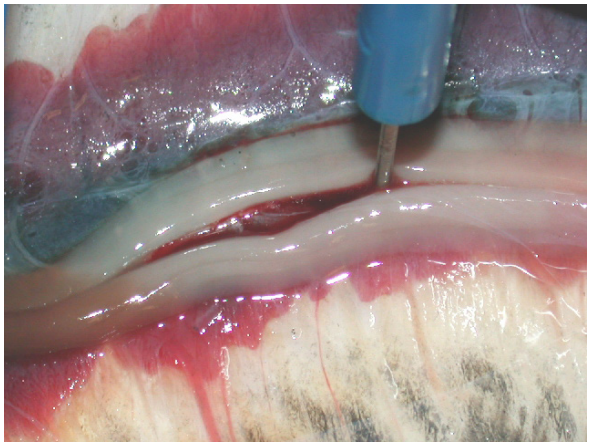


Figure 8-14: Male Sablefish gonad placement and appearance.

6. Salmon
   - **Females:** orange, granular sacs extending back along the spine (eggs are always discernible in salmonids).

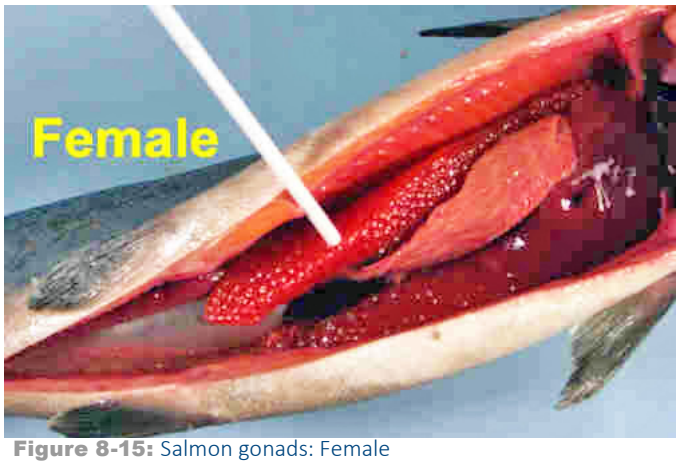


Figure 8-15: Salmon gonads: Female

- **Males:** creamy ribbons along the spine.



Figure 8-16: Salmon gonads: Male.

SEXING ROCKFISH

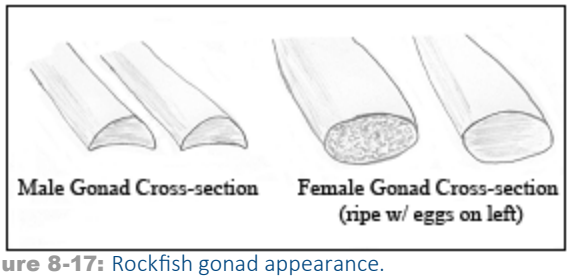


Figure 8-17: Rockfish gonad appearance.

1. Gonads are found along the backbone, towards the anus.
2. Insert blade into anus and cut toward head. Alternately, you may cut open the side of the abdomen, at the top of the visceral cavity.

3. Remove viscera to expose gonads.

- **Females:** gonads will appear as white, pink, yellow or orange elongated tubes. As they mature, they become oval-shaped and will have a granular appearance. (See Figure 8-18).



Figure 8-18: Female rockfish gonad placement and appearance.

- **Males:** gonads will be cream to pink in color. When mature, they are triangular shape in cross-section; immature testes are still somewhat triangular and will have defined edges at the bottom (See Figure 8-19).

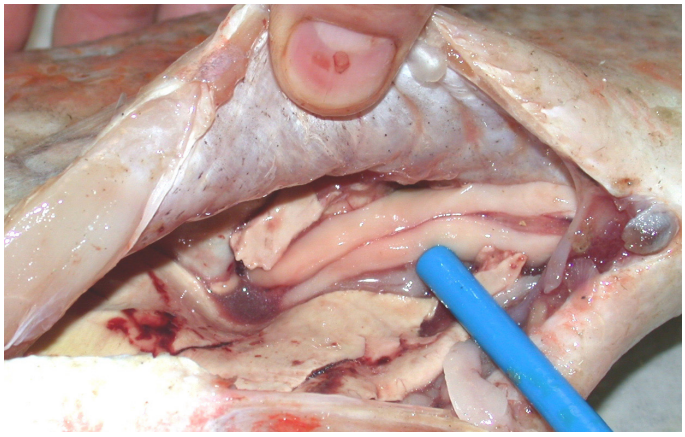


Figure 8-19: Male rockfish gonad placement and appearance.

SEXING FLATFISH

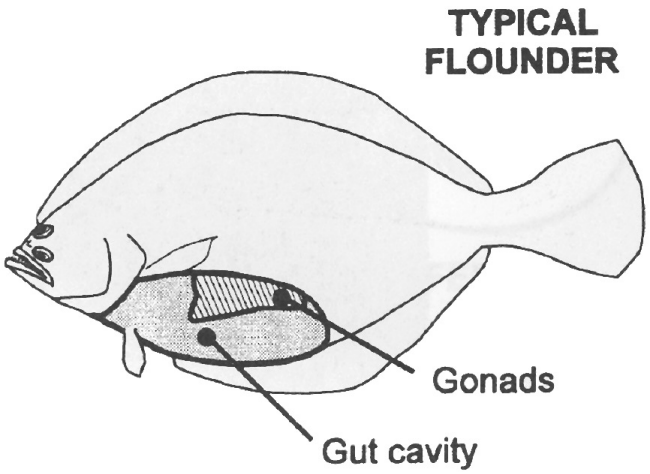


Figure 8-20: Typical flatfish gonad placement.

1. Flatfish gonads are found in small pockets posterior of the visceral cavity (See Figure 8-20).
2. Insert blade into anus and cut back, toward the tail.
3. Female gonads will be creamy pink to orange or salmon colored. They appear as elongated triangles or flattened funnels and are somewhat firm (See Figure 8-21).
4. Male gonads are creamy white in color. They are equilaterally triangular and tend to be somewhat mushy. They do not elongate toward the tail like ovaries (See Figure 8-21)

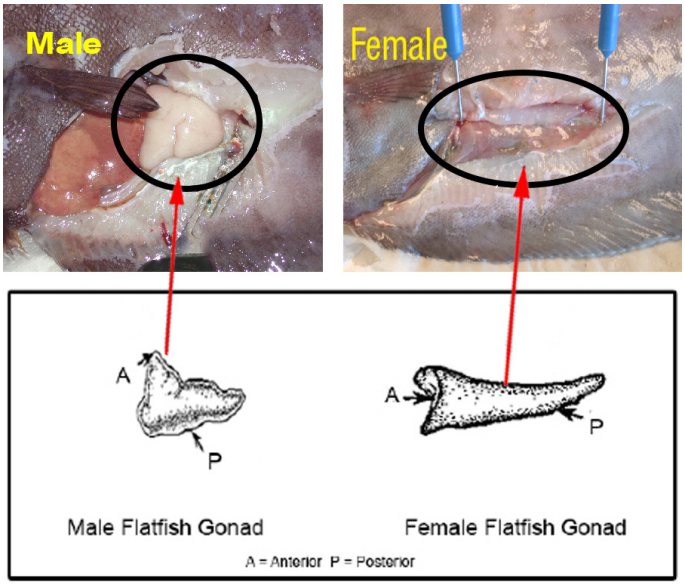


Figure 8-21: Typical flatfish gonad appeance and placement.

Sexing Externally - Sexually Dimorphic Species

The methods for sexing the following species will be discussed: CA Sheephead, Kelp Greenling, sharks, skates, Dungeness Crab, pinnipeds and cetaceans.

SEXING CALIFORNIA SHEEPHEAD

1. Never cut into fish. Sexual determination is by visual inspection only.
2. California Sheephead are protogynous hermaphrodites (born female and become males as they age). They display sexually dimorphic coloration that changes as they age/change sex.
   There are four distinct life stages: juvenile, female, transitional, and male.
3. Juveniles are a bright orange-red or red with black spots on the fins and caudal peduncle. They frequently will have a white stripe along their sides from head to caudal fin (See Figure 8-22).
4. Females are a faded rose to brownish red with a white chin (See Figure 8-22).
5. Transitional fish are a dusky rose to deeper reddish-orange in color with darkening of the anterior and posterior thirds of the body. These areas may appear light brownish or grayish in color. The chin remains white (See Figure 8-22).
6. Male fish are dark brown or black anteriorly and posteriorly. The central third is a deep orange-red to red. The chin is white (See Figure 8-22).

SEXING KELP GREENLING

1. Never cut into fish. Sexual determination is by visual inspection only.
2. Females are gray or brownish with reddish brown to yellow or orange freckling. Fins are typically yellowish (See Figure 8-22).
3. Males are gray or brownish with blue spots surrounded by reddish spots. Fins are typically brownish (See Figure 8-22).

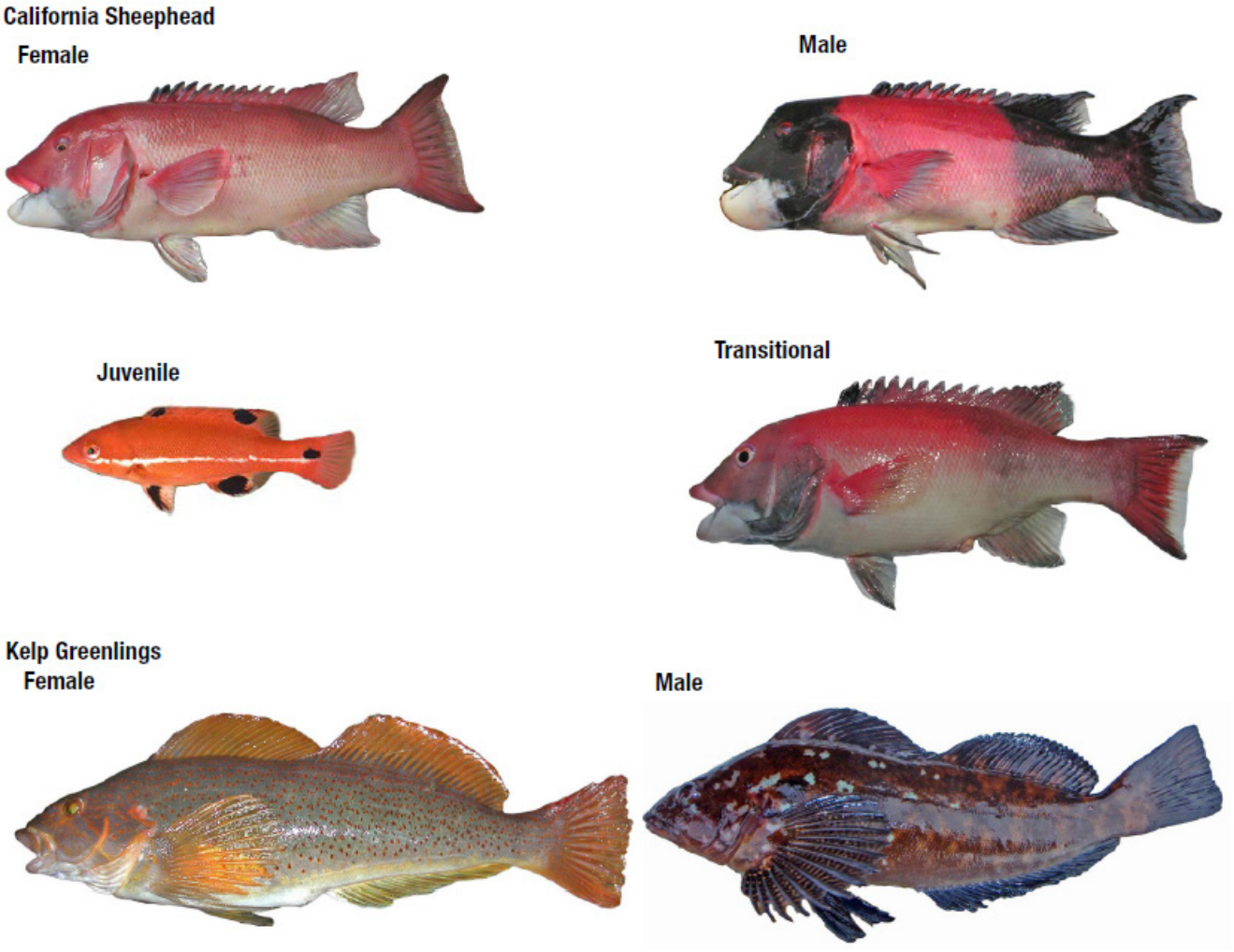


Figure 8-22: Sex these fish by how they look.

SEXING DUNGENESS CRAB AND CHECKING FOR EGG PRESENCE

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

- Female Dungeness crab have an abdominal flap that completely covers the carapace bottom. It will be broad, rounded and will extend to the leg insertions on mature females. If you lift the flap slightly, you can determine if the females are carrying eggs (See Figure 8-23).
- Male Dungeness crabs have a triangular or U-shaped abdominal flap that does not cover the bottom of the carapace (See Figure 8-23). When immature, the abdominal flap is shaped like a narrow finger. When crabs are mature, the abdominal flap is more V- shaped.

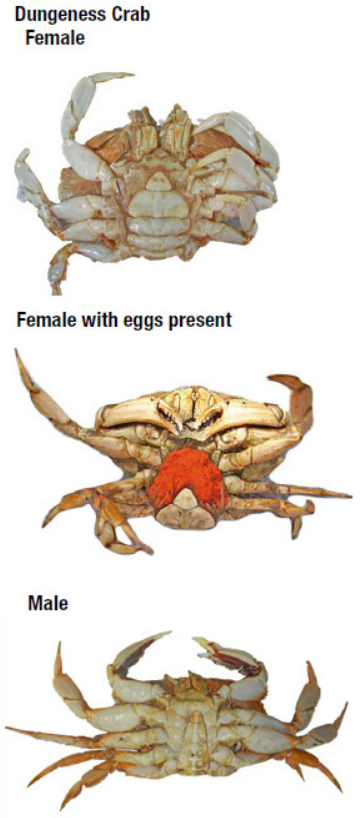


Figure 8-23: Sexingdungenesscrabs

SEXING MARINE MAMMALS

In both pinnipeds and cetaceans, the distance between the anus and the genitals is greater in males. Otherwise, the sexes appear similar. Take photos of genitals to submit with data.

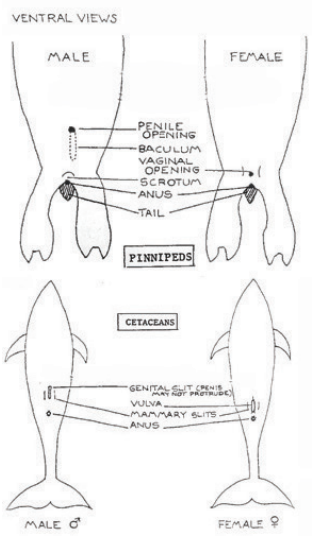


Figure 8-24: Sexing marine mammals (NPGOP).

SEXING SHARKS AND RAYS

Male sharks and rays are distinguished from females by the presence of claspers attached to the pelvic fins. In immature males they will be small but still present (See Figure 8-25).

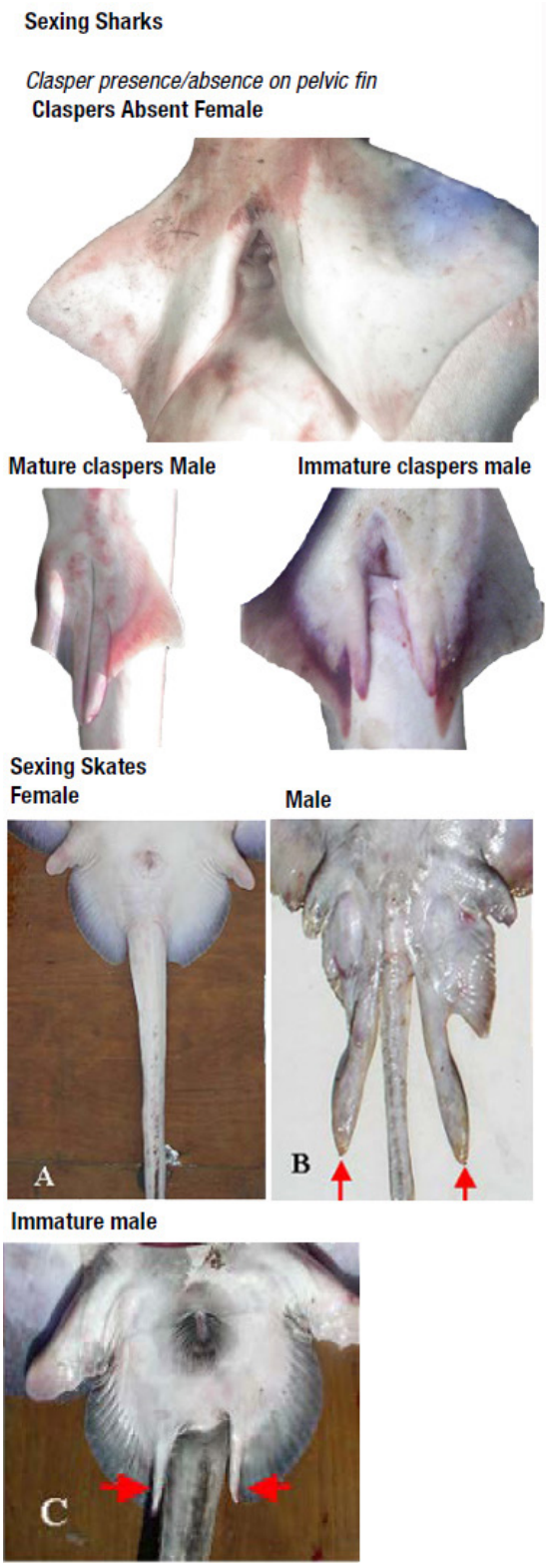


Figure 8-25: Sexing sharks and skates.

Collecting Otoliths

Tip: When collecting otoliths, remember to collect length, weight, and sex. All protocols that request otoliths will always request this additional data.

Otolith Location

Otoliths are located in two pockets, below the brain, just posterior of the eyes. Typically they are in line with the pre-opercular line, just below the upper margin of the eye and to either side of the brain stem (See Figure 8-26).

Broken Otoliths

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

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

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

Otolith Removal

There are two methods commonly used to locate and collect otoliths: a vertical cut through the head above the pre-operculum or a horizontal cut through the head just above the eyes.

The easiest method to use for most fish is to make a vertical cut down through the top of the head to the otolith pocket. This pocket is located at the two points on either side of the fish's head at which an imaginarily extended lateral line would meet the pre-opercular bone.

1. Make cut on the dorsal edge at the preopercle down until resistance lessens noticeably.
2. Break open incision and remove otolith from pockets just under brain.
3. Alternately, you can cut back from just above the eye to meet with the downward cut, to remove a wedge (See Figure 8-26).
4. Be gentle when cutting into fish and when removing otoliths. Otoliths are fragile. If you break an otolith, ensure you collect both pieces.
5. Always wipe off all tissue and dry otoliths. Dirty otoliths become stained and unreadable. Wet otoliths lose their calcium and are no longer usable. Wet or damp otoliths are required to be air dried by the observer before submitting to the debriefer.

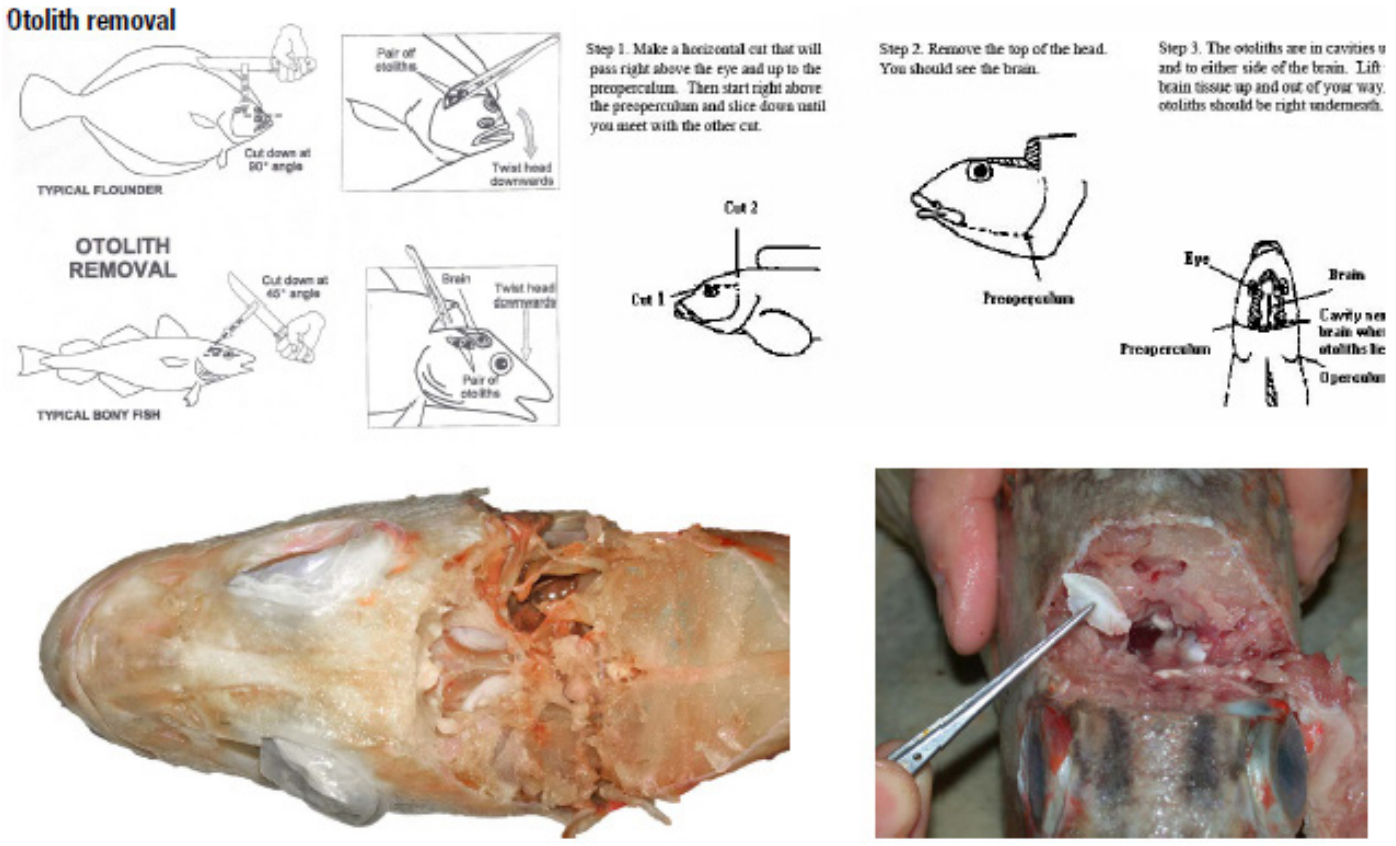


Figure 8-26: How to remove otoliths.

Collecting Otoliths from Sablefish

Sablefish have very tiny otoliths. Employ a horizontal cut when working with this species (See Figure 8-27).

Collect sablefish otoliths using the following procedure:

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



Figure 8-27: Sablefish otolith removal via horizontal cut.

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



Figure 8-28: Sablefish otolith removed.

Tip: If deploying on a Fixed Gear Sable trip delivering to WA or OR, be sure to review the Retained Sablefish Sampling protocol and be prepared with enough vials and barcodes to cover the additional biosampling!

Collecting Tissue Samples

Tissue samples are used by various groups to determine the species and map the distribution of similar overlapping species that are difficult to speciate by physical characteristics alone. Tissue collection is often specific to projects and may vary year by year. Currently WCGOP is collecting tissue samples for salmonids, green sturgeon, corals and pinnipeds. Each specimen type will have a specific protocol on what to take, where to take it from, and how to store it.

Fin Clips

Fin clip samples are used by the NWFSC genetics lab to map the distribution of similar overlapping species that are difficult to speciate by physical characteristics alone. These species of interest are Canary/Sunset rockfish, Rougheye/Blackspotted rockfish, and Blue/Deacon rockfish. WCGOP observers are responsible for collecting a small clip from the pectoral fin of these species, when encountered. Samples are taken from both discarded and retained Canary and Rougheye rockfish in the Trawl and Non-nearshore fixed gear fisheries and only retained dead Blue rockfish in the Nearshore fixed gear fisheries. Genetic tissue samples are also collected from protected species, as discussed later in this chapter.

1. Rinse off any blood or slime that may be present on the pectoral fin.
2. Using clean scissors and tweezers, clip a small (about 1 cm^2 or size of a pinky nail) piece of the pectoral fin. (Larger pieces take longer to dry and will rot.)

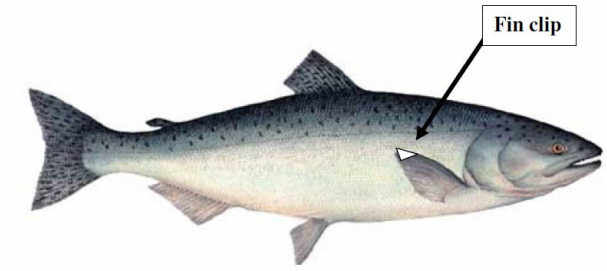
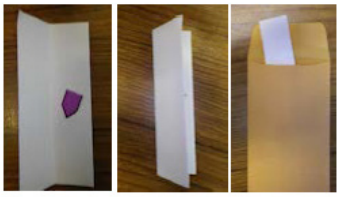


Figure 8-29: Fin clip location.

3. Place fin clip on the middle fold of blotter paper.
4. Fold blotter paper in half to completely protect the sample.
5. Dry sample and place in an **unsealed** sample envelope. **Keep envelopes clean and dry!**



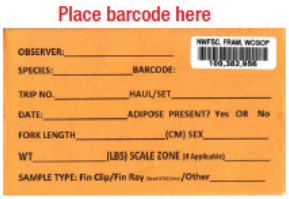


Figure 8-30: How to store a fin clip. Seal when dry.

Fin Rays

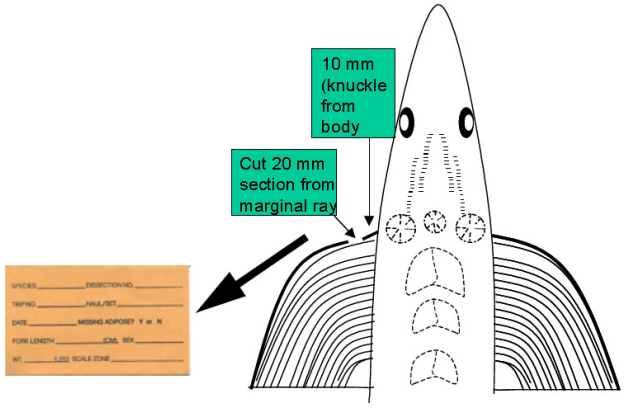


Figure 8-31: Fin ray sample of green sturgeon.

Fin Rays are used to age Green Sturgeon and other fish that otoliths are either unable to be obtained for or will not work well.

1. Identify the knuckle where the pectoral ray joins the body.
2. Starting after the knuckle, about 10 mm from the body, using clean scissors, cut the marginal fin ray.
3. Make a second cut to remove approximately 20 mm of the marginal fin ray.
4. Place the sample in a sample envelope and allow to dry completely prior to sealing.

Coral Tissue

1. Collect one small tissue sample from a representative specimen of each live or recently dead coral species encountered using forceps. The determination of a species being alive or recently dead is made by the presence of soft tissue that does not appear to have deteriorated. If polyps are present at all, consider the coral recently dead, and collect a sample.
2. Each tissue sample should be 4-5 cm long. Try to ensure that each sample piece includes polyps.
3. Place each sample in a previously barcoded vial.

Note: Affix the barcode stickers vertically on your vials. If wrapped horizontally, laser scanners can have difficulty reading the barcode.

4. Thoroughly clean forceps between each sample to avoid tissue build up. Care should be taken not to contaminate samples.
5. Freeze specimens as soon as possible. Use the vessel freezer if possible, and keep frozen until they are handed over to your debriefer or shipped to Newport. If you are stationed in a remote port, you may need to mail the coral samples directly to Newport for processing after the data are debriefed. Ensure they are shipped frozen with ice packs in an insulated package or cooler.

Salmon Snouts

- Cut one centimeter behind the eye, down to the end of the maxilla or the crook of the mouth.
- Remove snout and place in a plastic bag.
- Immediately freeze snout (preferred) or immerse in salt. If salting, periodically drain off fluid.
- Place a barcoded specimen collection label in the bag with the snout.



Figure 8-32: Cut salmon snout off and place in bag.

Random Sampling

In most cases, individuals used for biological sampling will need to be collected randomly. This is necessary because most biological information collected will be used to make assumptions about the population as a whole. (See the section, Introduction to Random Sampling Theory on page 3-3) for more information on Random Sampling).

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

There are two ways that a random sample can be taken from a population.

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

Tip: Be sure to consider all members of the population when collecting a random subsample. A species can exist in more than one catch category within a haul. If this is the case, a random subsample of individuals must be taken from each catch category in which the species exists. This often occurs in the pink shrimp fishery when discard is both "floated" and "belt sorted." This is also true when a single species occurs more than once within the same catch category, but with different discard reasons.

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

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

Systematic Example 1

1. The crew on a trawler is sorting out a scupper and the observer is whole hauling the discard.
2. The observer estimates that 100 Pacific Ocean Perch (POP) will be discarded. There are no other priority species present.
3. The observer refers to the Biolist Deck Sheet and verifies the need to take sex/lengths from 5 of the discarded POP.
4. The observer decides to do a systematic subsample of the POP.
5. The observer divides the estimated number of POP in the haul by the number needed to sample (100 /5 = 20). This tells them they need to collect 1 fish out of every 20.
6. The observer randomly selects a number between 1 and 20. They select 5. This will be the first POP collected.
7. The observer collects the fifth POP the crew sorts and every 20th POP thereafter (5th, 25th, 45th, 65th, 85th) for biological sampling.
8. The observer records the POP sex/lengths in the appropriate field on the deck form or direct entry In the tablet software with a biosample method of 12 - Random.

Systematic Example 2

1. The observer on a trawl vessel notices that there are many lively Pacific halibut present in the trawl alley directly after the codend is dumped. The observer visually estimates about 40 large halibut.
2. The crew wants to immediately toss these P. halibut overboard so that they have a better chance for survival.
3. The observer needs to sample 1/5 or a minimum of 10 P. halibut for viability, so he decides if he sampled every third fish, each individual would have an equal opportunity to be selected. He uses the random number table to pick a number between 1 and 3. He selects 2.
4. The observer asks the crew to cooperate by showing him each P. halibut before it is tossed overboard. He uses the Key to Injury Codes For Trawl Caught Pacific Halibut to assess viability for the 2nd fish and every third fish after that (2nd, 5th, 8th, etc.). He quickly takes actual lengths for all fish selected for viability assessment and tallies the remaining as they are discarded. Since the observer whole hauled all other discard in the haul, he knows there were no other P. halibut in the haul.
5. The Weight Method is recorded as 19 - PHLB tally sample with a Biosample Method of 12 - Random.

Data Collection Priorities

Biological information is taken from:

- Pacific halibut
- Discarded Priority Species
- Select Retained rockfish
- Tagged Fish (non-salmonid)
- Retained Sablefish that are processed at sea
- Pacific Lamprey
- Coral
- **Protected species:**
  - Salmonids
  - Eulachon
  - Green sturgeon
  - Seabirds
  - Marine mammal
  - Sea turtles

Tip: Biological sampling is an important part of observer duties. If necessary, a smaller species composition may be taken to allow sufficient time for biological sampling.

Note: When observers are unable to sample due to a scale malfunction, they are still expected to follow biological sampling protocols.

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

- **Sample type(s):** This section lists the types of samples that are collected from the group.
- **Random or Opportunistic:** This section details when biosampling is performed in either a random or opportunistic manner.
- **Biosampling protocol:** This section details the logistics of collecting biosamples.

Documentation: the forms used to document biological information. For Instructions on completing forms, (See the section, Biological Data Collection Forms on page 8-22).

Documenting Biological Samples

Biosample Methods for Documentation

There are three sample methods that can be used to collect biological samples

Biosample Method 10 - PHLB visual length estimate

- Individuals are PHLB with visually estimated lengths.
- The software will calculate the total weight of PHLB based on the visually estimated lengths.

This method is ONLY used for PHLB with a visual length estimate.

Biosample Method 12 – Random

- Biological sample was taken from a randomly selected individual.
- Taking biological samples of all individuals, a census, is a random sample.

Tip: Use this method for Pacific halibut when actual lengths/viabilities have been taken for randomly selected individuals from the haul/set

Biosample Method 13 – Opportunistic

- Biological sample was NOT taken from a randomly selected individual.
- Use this method for tagged fish that have been collected opportunistically during a haul/set.

Pacific Halibut



Figure 8-33: Pacific Halibut.

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

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

Sample types to collect from Pacific halibut

1. Length
2. Viability

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

Pacific halibut viabilities will be from **outside** of a species composition sample. Observers only collect lengths and viabilities from PHLB, so the individuals are not entered on the Species tab. Never weigh P. halibut. Enter the lengths/viabilities on the Biospecimen tab. The software will calculate the length/weight conversion.

Visual length estimates will be **outside** of a species composition as well, but will always be recorded on the biosample tab as biosample method 10 - PHLB visual length estimate.

Biosampling Pacific halibut

TRAWL & FIXED GEAR (POT)

Overall Biological Sampling Goal: Using fish from Pacific halibut that have undergone NORMAL handling by the crew, collect actual lengths and viabilities from all Pacific halibut. If it's not feasible to biosample 100% of the P. halibut, then Weight Method 19 - PHLB L/W Extrapolation may be used. In this case, a randomized subsample (minimum 10 or 1/5 of the total count) should be collected for actual lengths and viabilities.

1. Collect all or a random subsample of Pacific halibut.
   - If more than 10 are present in the haul, devise a

random systematic sampling frame in order to get lengths and viabilities for at least 10 individuals from throughout the haul.

- For hauls containing 50 or more PHLB, use a random systematic sampling frame to collect 1/5 of the individuals for lengths and viabilities.

2. Measure the fork length of the Pacific halibut. An actual length is required when assessing P. halibut viability.
3. Closely examine the Pacific halibut on both sides for injuries.
   - Use the appropriate Pacific halibut injury key (Trawl, Pot, or Hook and Line) to assign a viability code to the fish. Injury keys are provided on plastic sheets, but also available in the appendices.
4. If subsampling using Weight Method 19, record the total count of P. halibut in the haul.

FIXED GEAR (LONGLINE)

Overall Biological Sampling Goal: Actual or visually estimated length estimates are made for all Pacific halibut. A random sample of **five** DISCARDED Pacific halibut must be collected in each set.

On fixed gear trips, P. halibut are rarely landed on the vessel. To work around this, P. halibut catch weights are generally estimated by making visual length estimates of each individual fish (to the nearest 10 centimeters) prior to being knocked off the line. However, viability data is needed by fishery managers, so observers on board longline vessels, must request that five randomly collected P. halibut per set be brought on board. These fish will be sampled for ACTUAL length and viability. For these individuals, the observer will disregard any injury caused in the process of bringing the fish onboard.

1. Randomly collect **five DISCARDED** Pacific halibut each set.
   - Use a random systematic frame to spread out the collection. If you don't have an estimate for how many P. halibut will be in the set, it's recommended using n=2, but the frame can be modified based on prevalence in proximate sets.
   - Beginning at your randomly selected starting point, select every nth fish until 5 have been sampled each set.
2. Measure the fork length of the Pacific halibut. An actual length is required when assessing P. halibut viability.
3. Closely examine the Pacific halibut on both sides for injuries.
   - Use the appropriate Pacific halibut injury key to assign a viability code to the fish.

After entering the actual lengths and viabilities on the Biospecimen Tab (usually under biosample method 12), the database will auto-calculate the total weight based on the lengths. Visual length estimates taken on fixed gear vessels are recorded on the biospecimen tab using biosample method 10 - PHLB visual length estimate. Note that the actually measured P. halibut and the subsequent visually estimated ones should be in the same Catch Category.

Documenting Pacific Halibut Information:

- **Tablet Software, OPTECS :** All biological sampling data should be recorded in the biospecimens tab under the species sampled.
- **Fixed Gear Deck Form:** Recorded as raw data for entry into a tablet.
- **Trawl Deck Form:** Recorded as raw data for entry into a tablet when a tablet has failed during a trip.

Discarded Priority Species in the Trawl Fisheries

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

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

Sample types to collect from priority species:

- **Measurements:** FL = Fork Length, TL = Total Length, CW = Carapace Width
- **Weight:** WT = Weight
- **Sex:** S = Sex,
- **Otoliths:** O = Otolith
- **Maturity:** E = Egg presence/absence
- **Fin clip:** FC = Fin Clip
- **Specimen Samples:** WS = Whole Specimen

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

Random or Opportunistic

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

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

Biosampling Priority Species on Trawlers:

There are 44 species that are sampled in the trawl fishery. The sampling protocol is designed to ensure that enough individuals are sampled for stock assessment purposes. The highest priority species should be sampled first whenever discarded. The top 2 species require all to be sampled or, at minimum, 5 dissections with an additional 25 lengths and sex. Frequently caught species are split into three groups: biosampling lists 1, 2, and 3. An additional list includes other less frequently caught, lower priority species.

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

Overall Biological Sampling Goal: Using fish from DISCARDED species composition samples only, collect biological samples from as many species as possible..

1. **For each haul, fully sample a minimum of 5 individuals and record up to an additional 25 FL,S of the following DISCARDED Priority Rockfish:**
   - **Cowcod rockfish:** 5-FL,O,WT,S/25-FL,S
   - **Yelloweye rockfish:** 5-FL,O,WT,S/ 25-FL, S
2. **For each haul, collect samples from 5 individuals for each of the following DISCARDED General List species:**
   - Bank rockfish FL
   - Blackgill rockfish FL
   - Bocaccio rockfish FL
   - Bronzespotted rockfish FL
   - Canary rockfish FL, S
   - Chilipepper rockfish FL
   - Greenspotted rockfish FL
   - Pacific cod FL
   - Pacific Ocean Perch FL,S
   - Redbanded rockfish FL
   - Redstripe rockfish FL
   - Rock sole FL
   - Rougheye rockfish FL,O,WT,S,FC
   - Sand sole FL
   - Sharpchin rockfish FL
   - Shortraker rockfish FL
   - Silvergray rockfish FL
   - Starry flounder FL
   - Stripetail rockfish FL
   - Widow rockfish FL
   - Yellowtail rockfish FL
3. For each trip, randomly select which of the three biosampling lists to use on the first haul if not using a tablet. OPTECS randomly selects a list when the first haul is added. **Document the list being used on the top of the Deck Form.**
   - **If not using OPTECS:** Use the Random Number Table to select a number between 1 and 3. Use the randomly selected list on the first haul.
   - Use the next list for the second haul. For instance, if OPTECs or you randomly selected to start with biosampling list 2, use biosampling list 3 on haul 2. If biosampling list 3 was selected to start with, use biosampling list 1 for haul 2.

4. Collect the appropriate sample types from up to 5 individuals of each species, starting with the first species and working down the list.

BIOSAMPLING LIST 1
1. Greenstriped rockfish **FL**
2. Shortspine thornyhead **FL**
3. Petrale sole **FL**,**S**
4. Rex sole **FL**
5. Lingcod **FL**
6. Pacific hake **FL**
7. Pacific spiny dogfish **TL, S**
BIOSAMPLING LIST 2
1. Aurora rockfish **FL**
2. Darkblotched rockfish **FL**,**S**
3. Splitnose rockfish **FL**
4. Arrowtooth Flounder **FL**
5. Dover sole **FL**
6. Pacific sanddab **FL**
7. Big skate **TL, S**
BIOSAMPLING LIST 3
1. Longspine thornyhead **FL**
2. English sole **FL**
3. Flathead sole **FL**
4. Eulachon smelt **FL**, **WS (x1)**
5. Sablefish **FL**
6. Dungeness crab **CW, S**, **E**
7. Longnose skate **TL, S**

1. **For each trip that includes Pacific Lamprey and/ or California Halibut sample on all hauls:**
   - **P. Lamprey:** 5 TL and up to 30 whole specimens per trip (keep frozen).
   - **Ca Halibut:** 5 FL and determine viability (Alive or Dead).

Documenting Priority Species:

- **Tablet or Deck Form:** Ensure the randomly selected trawl biosample list is clearly documented on the deck form and that the biosamples are clearly documented in the raw data.
- **Sample Envelope:** Used to store and record fin clip and associated information. (See Figure 8-38)

Q: What if there is only one individual of a species on the biosampling list in species composition sample?
A: Take the appropriate samples from that individual.

Discarded Priority Species in the Non-Nearshore Fixed Gear Fisheries

Sample types to collect from priority species:

1. Length
2. Weight
3. Sex
4. Otoliths
5. Fin clip

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

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

Sample first 5 & take up to 15 additional FL, S (No preyed upon fish)		
Cowcod RF **FL, O, S, WT**	Yelloweye RF **FL, O, S, WT**	
First 5 Discarded (No preyed upon fish)		
Canary RF **FL, S**	Rougheye RF **FL,O,WT,S,FC**	Sablefish **FL**
Darkblotched RF **FL, S**	Lingcod **FL**	Pacific spiny dog-fish **TL, S**
Shortspine thornyhead **FL**	Longspine thornyhead **FL**	POP **FL, S**
All other rockfish species **FL**		

Figure 8-34: Non-Nearshore Fixed Gear Priority Species

Random from Species Comp

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

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

Biosampling Priority Species in the Non-Nearshore Fixed Gear Fisheries

Overall Biological Sampling Goal: Using fish in **DISCARDED** species composition samples, collect biological samples as follows:

1. **Take biosamples from all, or the first 5 with an additional 25 FL,S if time allows, for these priority species:**
   - Cowcod rockfish FL,O,S,WT
   - Yelloweye rockfish FL,O,S,WT
2. Take lengths from 5 randomly selected, **DISCARDED Sablefish**[FL].
3. Collect up to 5 individuals from each species on the following list that is in a **DISCARDED** species composition sample.
   - If there is only one individual of a species in the DISCARDED species composition sample, take samples from that individual.
   - Collect the appropriate sample types from individuals. Sample types needed are listed next to each species.

Documenting Priority Species:

- **Tablet or Deck Form:** Ensure the biosamples are clearly documented the deck form and entered in the tablet.
- **Sample Envelope:** Used to store and record fin clip and associated information. (See Figure 8-38)

Discarded Priority Species in the Nearshore Fixed Gear Fisheries

Sample types to collect from priority species:

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

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

Random or Opportunistic

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

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

Biosampling Priority Species in Nearshore Fixed Gear Fisheries

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

1. **Take biological samples from ALL DISCARDED individuals of the following species:**
2. Collect the appropriate sample types from individuals. Sample types needed are listed next to each species in the table below.
   - FL = Fork Length
   - S = Sex**

First 5 or ALL Discarded (No preyed upon fish)	All Discarded (No preyed upon fish)	
Lingcod **FL**	Cabezon **FL**	Rock greenling **FL**
Blue/ Deacon rockfish **FL**	California Scorpionfish **FL**	White croaker **FL**
Black Rockfish **FL**	Canary RF **FL**	Kelp greenling **FL, S**
CA sheephead **FL, S**	All other rockfish species **FL**	

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

Documenting Priority Species:

- **Tablet or Deck Form:** Ensure the biosamples are clearly documented the deck form and entered in the tablet.
- **Sample Envelope:** Used to store and record fin clip and associated information. (See Figure 8-38)

Select Retained Rockfish Sampling

Because of the difficulty in differentiating certain rockfish populations, namely Rougheye/Blackspotted, Canary/Sunset, and Blue/Deacon rockfish, observers collect fin clips from randomly selected retained individual from every set/haul. Since these are marketable fish, it is important to follow the fin clip sampling protocol carefully, so that the value of these fish is not affected. DO NOT take otoliths from retained rockfish.

Sample types to collect from retained rockfish

1. Length
2. Weight
3. Fin clip

Random or Opportunistic

Retained rockfish must be collected randomly so they will be representative of the population.

Biosampling Retained Rockfish

1. **For each haul/set when present, randomly select from the retained population:**
   - Rougheye rockfish x1
   - Canary rockfish x1
   - Blue rockfish x2 (dead catch only).
2. **Collect the following information from each individual:**
   - Weight
   - Fork Length
   - Collect a small (1 cm2) tissue sample from the pectoral fin of the rockfish.

DO NOT sex or take otoliths!

Documenting Retained Rockfish Information

- **Tablet or Deck Form:** Ensure the biosamples are clearly documented the deck form and entered in the tablet.
- **Sample Envelope:** Used to store and record fin clip and associated information. (See Figure 8-38)

Tagged Fish (Non-salmonids)

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

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



Figure 8-35: Example of a spaghetti tag on a sablefish.

Sample types collected from non-salmonid tagged fish:

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

Recognizing Tagged Fish

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

Random or Opportunistic

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

Biosampling Tagged Fish

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

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

Documenting Tagged Fish

- **Tablet or Deck Form:** Record the tag number and the barcode numbers for the vials containing the otoliths, as well as length, weight, and sex.
- **Tagged Fish Form:** Used to record information regarding the tagged individual. (See Figure 8-41)

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

Always collect otoliths from discarded tagged fish and attach the barcoded vial to the Tagged Fish Form.

Retained Sablefish that are processed at sea (Head and Gut Vessels)

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 important biological data for stock assessment, observers are instructed to sample

five, randomly selected, retained sablefish per haul on head and gut vessels. Sex, length, weight, and otoliths are 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.

Sample types to collect from Head and Gut Retained Sablefish

1. Length
2. Weight
3. Otoliths

Random or Opportunistic

Retained sablefish must be collected randomly so they will be representative of the population.

Biosampling Retained Sablefish

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. (For example you Collect 1 retained sablefish from each of the 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 and 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 cleaning the otoliths of all slime and tissue, place the otoliths in a barcode-labeled vial. Write the six digit barcode number on the Commercial Sablefish Specimen Data form.
7. Repeat steps 3-6 with each of the other randomly selected individuals.

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 remember which head belongs to which fish.

Documenting Retained Sablefish Information:

- **Commercial Sablefish Specimen Data form:** Used to document information associated with otoliths collected from retained sablefish for the states. This form will not be entered into the WCGOP database. (See Figure 8-39)

Pacific Lamprey

Very little is known about the ecology of Pacific lamprey in marine water - where they go, what species they prey on, or how long their ocean phase lasts. Lamprey caught by commercial fisheries can begin to fill this information void. For example, the size and location of lamprey caught by fisheries provides a comparison of the geographic distribution of lamprey during their first months of marine life (those less than 30 cm) to older individuals (>30cm) to see if they differ. Statoliths (similar to otoliths) will be used to determine their age and likely river of origin by matching statolith microchemistry to known geology of major river basins. Food habitats will be explored, both by quantifying how much material is in their stomachs, and trying to determine what fishes they have been parasitizing using eDNA. Because of the large number of Pacific lamprey caught by commercial fisheries, it provides a gold mine of information about their marine ecology and will greatly increase our knowledge about this ancient species.

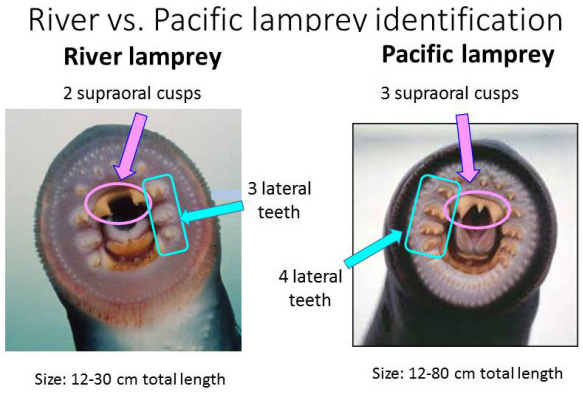


Figure 8-36: Lamprey identification.

Sample types to collect from Pacific lamprey

1. Length
2. Whole specimen

Random or Opportunistic

Pacific lamprey collected for length samples will be collected randomly.

Pacific lamprey collected as whole specimens do not need to be collected randomly.

Pacific Lamprey Identification

There are two species of lamprey that are likely to be caught in the fisheries of the west coast: Pacific lamprey and River lamprey. Identification of lampreys depends largely on the number, structure, and position of teeth found in adult lamprey.

Pacific lamprey will have 3 supraoral cusps and 4 lateral teeth, while River lamprey have 2 supraoral cusps and 3 lateral teeth.

Biosampling Pacific Lamprey

Collect 5 randomly selected Pacific lamprey from all tows/sets to measure fork lengths.

Collect 30 whole specimens per trip. Specimens must be entered as 7 - whole specimen, bagged by haul with a barcode and a collection label included. There may be several barcodes and labels if the samples were taken from different hauls.

Documenting Pacific Lamprey Information:

Specimen Collection Label: Used to document associated information for whole specimen collection. (See Figure 8-37)

Coral

Corals are part of a group referred to as structure forming mega-faunal invertebrates. This group also includes sponges (Phylum Porifera) and Hydrocorals (Hydrozoa). Coral groups found along the West Coast include, but are not limited to: black corals (Antipatheria), coral anemones (Corallimorphiria), sea anemones (Actiniaria), gorgonian corals (Gorgonacea), sea pens, whips and fans (Pennatulacea), soft corals (Alcyonacea), and stony corals (Scleractinia). Collection of specimens will aid in positively identifying where various coral species are encountered.

Sample types to collect from coral

- Tissue sample

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

*Structure Forming Mega-Faunal Invertebrates on the West Coast**

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

Random or Opportunistic

Coral samples should be taken from all live or recently dead coral species, therefore, they are randomly collected.

Coral will generally be from inside of a species composition sample, unless a visual estimate was used for weight.

Biosampling Coral

1. Collect a representative specimen for each live or recently dead coral species in the haul.

Use the WCGOP Invertebrate ID manual to separate megafaunal invertebrates into one of the following groups: Spongy Gorgonians (Scleraxonia), Horny Gorgonians (Holaxonia), Sea Fans/ Bamboo Coral (Calcaxonia), Sea Whips/ Sea Pens, Sea Pansies (Pennatulacea), Soft Corals (Alcyonaceans), Black Corals (Antipatheria), Stone Corals (Scleractinia), and Hydrocorals (Filifera).

- If unable to identify the specimen, record it as unidentified, at the most discrete level possible (e.g., – coral, unidentified; Gorgonian, unidentified).

- Weigh the whole coral specimen for the species composition weight.

2. Collect **one** small tissue sample from a representative specimen for each coral species in the haul, including sea pens and sea whips.
3. Record data in the tablet software.

Documenting Coral Information:

- **Tablet software or deck form:** Dissection type 11 - Tissue.

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

Biological Data Collection Forms

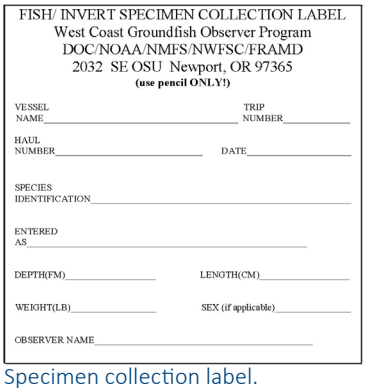
There are three dedicated data collection forms for documenting biospecimen information from non-protected resources.

Additionally, information must be documented in the tablet software or on the appropriate deck form for the fishery.

- **Sample Envelope:** to document and store fin clip and fin ray samples.
- **Specimen Collection Label:** Use this label when;
  - Salmon snouts have been collected
  - Whole fish/invertebrates/specimens have been collected.
- **Commercial Sablefish Form:** Use to directly document biological information collected from retained sablefish processed at sea.
- **Tagged Fish Form:** Use this form to record data for non-salmonid tagged fish. This form is intended for use by the tagging agency and is not entered into the WCGOP database. Therefore, selected information from tagged fish should also be recorded on the Biospecimen Form (e.g., Species, Length, Weight, Dissection Type, and Tag ID).
- **Tablet Software, OPTECS :** All non-protected biological sampling data should be recorded in the biospecimens tab under the species sampled.
- **Fixed Gear Deck Form:** Recorded as raw data for entry into a tablet.
- **Trawl Deck Form:** Recorded as raw data for entry into a tablet when a tablet has failed during a trip.
-

Specimen Collection Label Instructions

Complete the Specimen Collection Label when salmon snouts have been collected or when a whole fish or invertebrate has been collected. Use a pencil to complete this form. (See Figure 8-37).



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

VESSEL NAME_____ TRIP NUMBER_____

HAUL NUMBER_____ DATE_____

SPECIES IDENTIFICATION_____

ENTERED AS_____

DEPTH(FM)_____ LENGTH(CM)_____

WEIGHT(LB)_____ SEX (if applicable)_____

OBSERVER NAME_____

Figure 8-37: Specimen collection label.

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

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

Tip: Always place a barcode sticker on the collection label itself or it may be lost!

Sample Envelope Instructions

Sample envelopes should be used for:

- Salmonid tissue
- Green sturgeon fin clips and fin rays
- Rockfish tissue samples (fin clips)

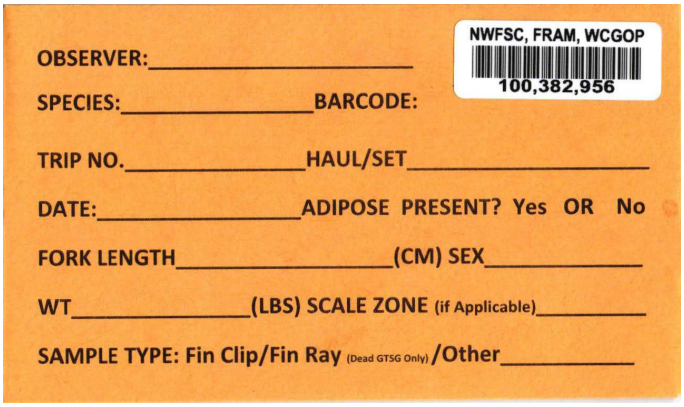


Figure 8-38: Sample envelope with barcode sticker.

- **Species:** Record the common name of the species that the tissue or fin ray came from.
- **Barcode:** Attach a barcode label in this field.
- **Trip No.:** This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Haul/Set:** Record the number of the haul that the sample came from.
- **Date:** Record the date as MM/DD/YY.
- **Adipose Present?:** Documented for salmon only. (See the section, Salmonid Data Collection Priorities on page 9-3) Circle "Y" if present or "N" if not present.
- **Fork Length:** Record the length of the fish, in centimeters.
- **Sex:** Leave this field blank except for salmonids.
- **Weight:** Record the weight of the fish, in pounds.
- **Scale Zone:** Leave this field blank.
- **Sample Type:** Circle Fin clip, Fin Ray or write in Other.

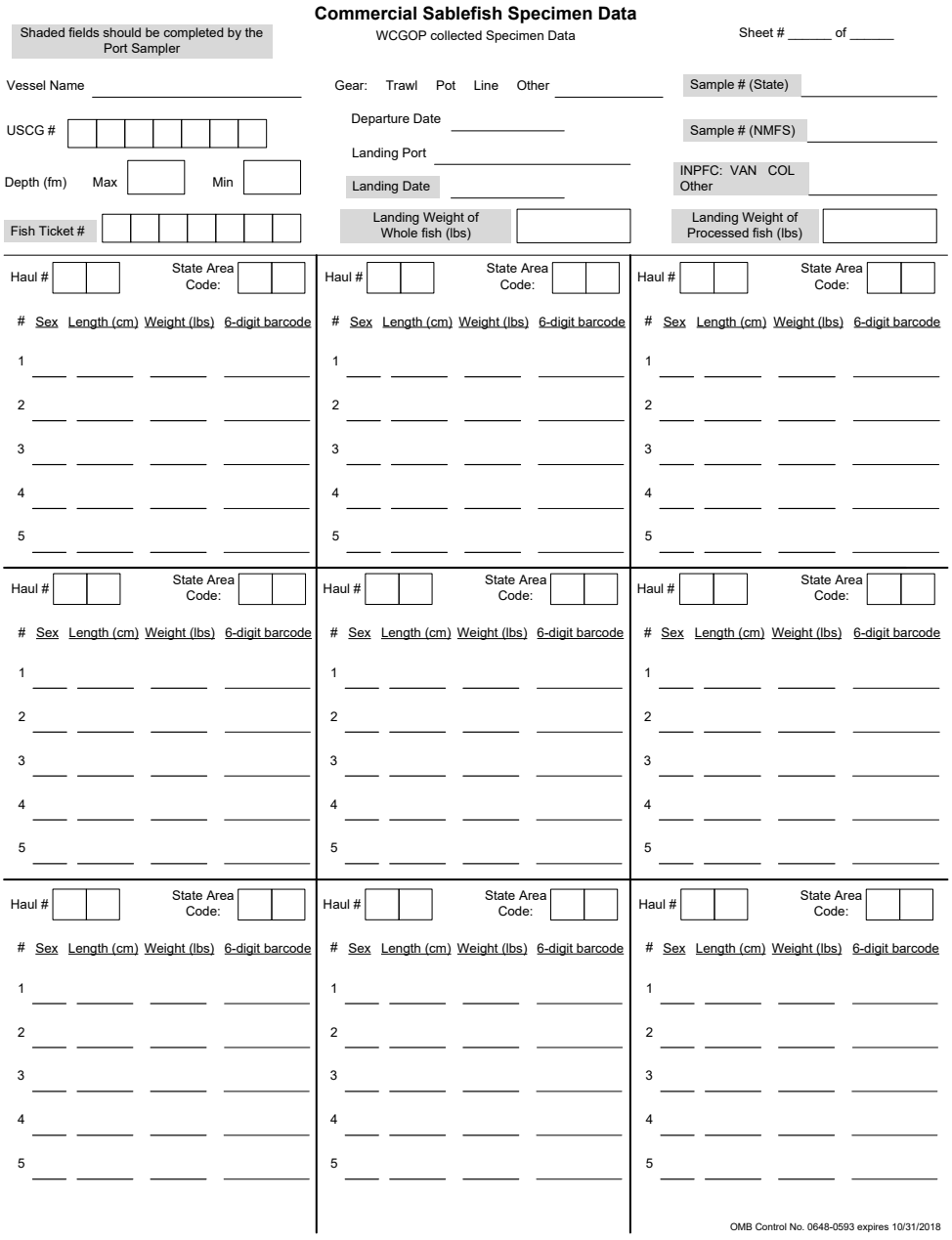
Commercial Sablefish Specimen Data form

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.
- **Gear:** Circle the type of gear used. If other, please include a description.
- **Sample # (State):** Leave blank (port sampler will complete).
- **USCG #:** Document the six or seven digit USCG number
- **Departure Date:** Document the departure date. Be sure this matches the departure data documented on the Trip Form
- **Sample # (NMFS):** Leave blank (port sampler will complete).
- **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 Port:** Document port where offload occurred.
- **Landing Date:** Leave blank (port sampler will complete).
- **INPFC Area:** Leave blank (port sampler will complete).
- **Fish Ticket #:** Leave blank (port sampler will complete).
- **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 Figure 8-40).
- **Sex:** Document the sex of the individual.
- **Length:** Document the length, in centimeters, of the individual.
- **Weight:** Document the weight, in pounds, of the individual.
- **6-Digit Barcode #:** Document the last 6 digits of the barcode number.



Commercial Sablefish Specimen Data

WCGOP collected Specimen Data

Shaded fields should be completed by the Port Sampler

Sheet # _____ of _____

Vessel Name _____ Gear: Trawl Pot Line Other _____ Sample # (State) _____

USCG # _____ Departure Date _____ Sample # (NMFS) _____

Depth (fm) Max _____ Min _____ Landing Port _____ INPFC: VAN COL Other _____

Fish Ticket # _____ Landing Date _____ Landing Weight of Whole fish (lbs) _____ Landing Weight of Processed fish (lbs) _____

Haul # _____ State Area Code: _____

#	Sex	Length (cm)	Weight (lbs)	6-digit barcode
1				
2				
3				
4				
5				

OMB Control No. 0648-0593 expires 10/31/2018

Figure 8-39: Retained Sablefish collection form.

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.

Donna Downs
Port Sampler Supervisor
48 Devonshire Rd
Montesano, WA 98563
360-249-1294
Donna.Downs@dfw.wa.gov

Nathan Layman
Bellingham Sampler
2620 N.Harbor Loop Drive ste 20
Bellingham WA 98225
360-303-2795
Nathan.Layman@dfw.wa.gov

Jamie Fuller
Westport/Ilwaco Sampler
48 Devonshire Montesano, WA 98563
360-580-0875
Jamie.Fuller@dfw.wa.gov

Tim Zepplin
Neah Bay Sampler
411 Tillicum Ln.
Forks, WA 98331
360-580-6286
Tim.Zepplin@dfw.wa.gov

For OR trips: Give the retained SABL data forms and otoliths to your debriefer for delivery to Cameron Sharpe or local ODFW port sampler.

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

1. Organize otolith vials by set # and bag each set separately in small ziplock bags.
2. Label ziplock bag with set # using a Sharpie or by adding a piece of paper with set # inside the bag.
3. Place all otoliths from one trip together in a large 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, 02/29/2020, 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.

Oregon State Area Codes

Use one of the following 2-digit state area codes to indicate location of catch (Oregon deliveries only)

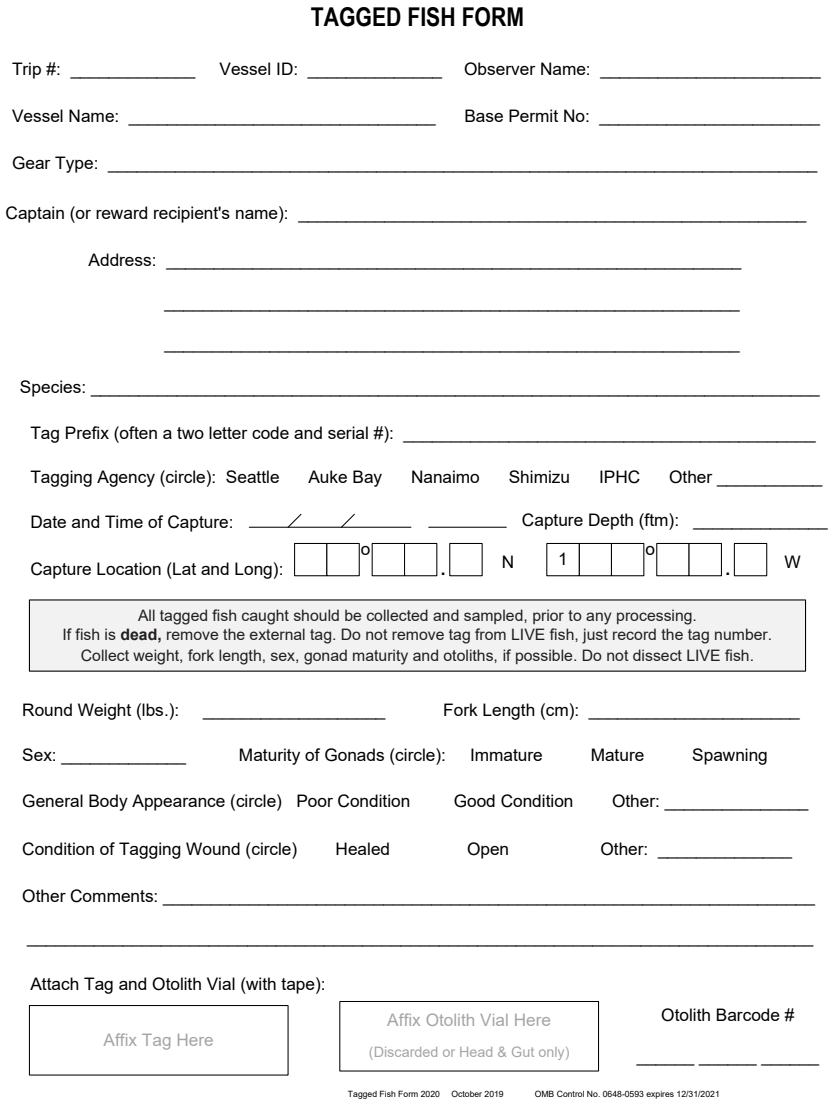
State Area Code	Shoreline (S) Latitude		Shoreline (N) Latitude
36	Estevan Point	49° 23' 05"	49° 00'
	Longitude	126° 32' 40"	126° 47'
	1) Line from Estevan Pt. bearing 220° true. 2) Line from 49° 00' x 126° 47' W along the 49th parallel.		
34	Cape Flattery	48° 29' 34"	Estevan Point 49° 23' 05" Longitude 126° 32' 40"
	1) Inside the triangle that is drawn at 220° True N.		
33	Cape Elizabeth	47° 20'	Cape Flattery 48° 29' 34"
	1) Midpoint of Bonilla-Tatoosh line 2) Outside the triangle that is drawn at 200° from 48° 29' 34" N x 124° 43' 27" W.		
32	Cape Elizabeth	47° 20'	Cape Flattery 48° 29' 34"
	1) Midpoint of Bonilla-Tatoosh line 2) Inside the triangle that is drawn at 200° from 48° 29' 34" N x 124° 43' 27" W.		
30	Willapa Bay	46° 40'	Cape Elizabeth 47° 20'
29	Columbia River	46° 15'	Willapa Bay 46° 40'
28	Cape Falcon	45° 46'	Columbia River 46° 15'
27	Cape Lookout	45° 20' 15"	Cape Falcon 45° 46'
25	Cascade Head	45° 04'	Cape Lookout 45° 20' 15"
24	Cape Perpetua	44° 18'	Cascade Head 45° 04'
22	Cape Arago	43° 20'	Cape Perpetua 44° 18'
21	Cape Blanco	42° 50'	Cape Arago 43° 20'
20	Rogue River	42° 25'	Cape Blanco 42° 50'
19	OR-CA border	42° 00'	Rogue River 42° 25'
18	Cape Mendocino	40° 30'	OR-CA border 42° 00'
12	Monterey	35° 40'	Cape Mendocino 40° 30'
	Conception-south		

Figure 8-40: Oregon State Area Codes for Commercial Sablefish Specimen Data form.

Tagged Fish Form Instructions

Only complete the Tagged Fish Form when information is collected from a tagged fish. Attach the tag and otoliths with tape directly to the form, if collected. These forms are turned in to your debriefer.

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



TAGGED FISH FORM

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

Vessel Name: _____ Base Permit No: _____

Gear Type: _____

Captain (or reward recipient's name): _____

Address: _____

_____

_____

Species: _____

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

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

Date and Time of Capture: __/__/__ _____ Capture Depth (ftm): _____

Capture Location (Lat and Long): ☐☐° ☐☐.☐ N 1☐☐° ☐☐.☐ W

All tagged fish caught should be collected and sampled, prior to any processing.
If fish is **dead,** remove the external tag. Do not remove tag from LIVE fish, just record the tag number.
Collect weight, fork length, sex, gonad maturity and otoliths, if possible. Do not dissect LIVE fish.

Round Weight (lbs.): _____ Fork Length (cm): _____

Sex: _____ Maturity of Gonads (circle): Immature Mature Spawning

General Body Appearance (circle) Poor Condition Good Condition Other: _____

Condition of Tagging Wound (circle) Healed Open Other: _____

Other Comments: _____

_____

Attach Tag and Otolith Vial (with tape):

Affix Tag Here

Affix Otolith Vial Here
(Discarded or Head & Gut only)

Otolith Barcode #
_____ _____ _____

Tagged Fish Form 2020 October 2019 OMB Control No. 0648-0593 expires 12/31/2021

Figure 8-41: Tagged Fish Form.



Protected Resources

TABLE OF CONTENTS

Introduction to Protected Resources 9-2
- Marine Mammal Protection Act 9-2
- Endangered Species Act 9-2
- Migratory Bird Treaty Act 9-2

Observers and Protected Resources 9-3
- Types of Biological Data Collected from Protected Resources 9-3

Protected Resource Species Sampling 9-3
- Salmonids 9-3
- Green Sturgeon 9-4
- Eulachon 9-5
- Marine Mammals, Seabirds and Sea Turtles 9-6
- Marine Mammals 9-6
- Seabirds 9-9
- Sea Turtles 9-11

Documenting Samples 9-14
- Biosampling Methods for Protected Species 9-14
- Biological and Protected Species Data Collection Forms 9-14
- Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions 9-14
- Sea Turtle Life History Form Instructions 9-18

Chapter 9

Introduction to Protected Resources

Protected resources are species that are regulated under the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), or the Endangered Species Act (ESA).

WCGOP collects biological information from several species. These species are divided into two groups in the manual:

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

Marine Mammal Protection Act

The MMPA was passed in 1972 and was most recently reauthorized in 2006. In passing the MMPA, Congress found that certain species and populations of marine mammals are, or may be, in danger of extinction or depletion as a result of human activities. The Act states:

- Such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population level.
- Measures should be taken immediately to replenish any species or population stock which has diminished below its optimum sustainable level.
- There is inadequate knowledge of the ecology and population dynamics of marine mammals and of the factors which bear upon their ability to reproduce themselves successfully.
- Marine mammals have proven themselves to be resources of great international significance, aesthetic, recreational, and economic value.

The MMPA established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters, by U.S. citizens on the high seas, and on the importation of marine mammals and marine mammal products into the United States. It is also illegal to intentionally feed any marine mammal in the wild, as it is considered a form of harassment.

Endangered Species Act

The purpose of the ESA (1973) is to protect and recover imperiled species and the ecosystems upon which they depend. Currently, there are over 1300 species in the United States listed under the ESA. To see a list of endangered species by state visit: https://www.fws.gov/endangered/species/index.html.

A species is listed under one of two categories, endangered or threatened, depending upon its status and the degree of threat it faces. An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future. A species is listed when it is determined to be endangered or threatened due to any of the following factors:

- The present or threatened destruction, modification, or curtailment of a species habitat or range.
- Over utilizing for commercial, recreational, scientific, or educational purposes.
- Disease or predation.
- The inadequacy of existing regulatory mechanisms.
- Other natural or man-made factors affecting the species' survival.

Once a species is listed under the ESA, all protective measures authorized by the ESA apply to the species and its habitat. Such measures include protection from adverse effects of Federal activities and restrictions on taking, transporting, or selling a species.

Numerous stocks are designated as threatened or endangered under the ESA. Specific stocks, termed **Evolutionary Significant Units** (ESU's) that are designated include (does not include ESA-listed Steelhead stocks):

Evolutionary Significant Units (ESU's): A group that is considered distinct for purposes of conservation under the ESA. This term can apply to any species, subspecies, geographic race or population. To qualify as an ESU, a population must 1) be substantially reproductively isolated from other con-specific populations, and 2) represent an important component in the evolutionary legacy of the biological species. (Waples, 1991)

NOAA Fisheries has jurisdiction over 80 endangered and 85 threatened marine West Coast species listed under the ESA.

Migratory Bird Treaty Act

The MBTA of 1918 implemented the 1916 convention between the United States and Great Britain for the protection of birds migrating between the US and Canada. Similar conventions between the US and Mexico (1936), Japan (1972), and the USSR (1976) further expanded the scope of international protection of migratory birds. The MBTA made it illegal to "take" migratory birds, their eggs, feathers, or nests. There are over 1,000 bird species protected under the MBTA.

Migratory Bird: Any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle.

Observers and Protected Resources

Observer sampling of protected resources is the highest priority in the WCGOP. Although incidents involving protected resources rarely occur, it is important to remember to take all appropriate samples and acquire all appropriate information when they are encountered. Observers sample and/or document protected resources when the following occur:

- A protected resource is caught with the fishing gear, regardless of whether the individual lived or died.
- A marine mammal, seabird, or sea turtle interacted with the fishing vessel but did not get caught in the gear.
- An ESA listed marine mammal, seabird or sea turtle was sighted.

Types of Biological Data Collected from Protected Resources

There are five types of biological information collected from protected resources.

- **Length:** Lengths are collected from all protected species, besides seabirds.
- **Sex:** Sex is collected from all protected species, besides seabirds.
- **Snouts:** Snouts are collected from all salmonids because they contain coded wire tags (CWT's). The CWT information gathered by observers is used by endangered species scientists to determine the mortality of protected salmon stocks associated with the fishery, as well as population and migration patterns.
- **Fin rays:** Fin rays, which are used to age the individual, are collected from dead green sturgeon only.
- **Tissue/ Fin clips:** Tissue or fin clip samples are collected from all salmonids (including steelhead), green sturgeon, pinnipeds, and cetaceans. The samples are used for genetic information, including tracking and identifying distinct populations.

Protected Resource Species Sampling

Salmonids

Introduction

There are eight species of salmonids encountered in the eastern Pacific Ocean: King (Chinook), Silver (Coho), Sockeye (Red), Chum (Dog), Pink (Humpback), Atlantic salmon, Steelhead (sea-run Rainbows), and Cutthroat trout.

Specific **stocks** that are designated endangered or threatened ESU's include:

ENDANGERED ESU'S

- Upper Columbia River spring-run Chinook
- Sacramento River winter-run Chinook
- Central California coast Coho
- Snake River Sockeye

THREATENED ESU'S

- California coastal Chinook
- Central Valley spring-run Chinook
- Lower Columbia River Chinook
- Puget Sound Chinook
- Snake River fall-run Chinook
- Snake River spring/summer-run Chinook
- Upper Willamette River Chinook
- Columbia River Chum
- Hood Canal summer-run Chum
- Lower Columbia River Coho
- Southern Oregon and Northern California coasts Coho
- Ozette Lake Sockeye

Salmonid Identification

Salmonids are often difficult to identify to species due to the condition they are in when brought aboard. Use the following salmonid characteristics and the **Species Identification manual** to identify to species:

- **Color at base of mouth:** black or white.
- **Spotting on tail:** spotting vs. no spotting, both lobes vs. one lobe.
- **Spotting on back:** spotting vs. no spotting.
- **Scale size:** small vs. large, shape.

Salmonid Data Collection Priorities

Tip: All salmonids caught with trawl gear have incurred enough scale loss and other trauma to be considered dead, even if they are flopping around

CATCH SAMPLING

When salmonids (salmon and steelhead) are caught in a haul/set:

1. Inform skipper and crew members that all salmonids will be counted and weighed. Additionally, all salmonids will have biological samples taken, if possible, and 25 at a minimum if all are not possible. Let them know that their help in the collection of these fish would be appreciated.
2. Identify to species.

3. Document the weight and number of all salmonids, by species.

BIOLOGICAL SAMPLING

For each individual salmon:

1. Measure the fork length
2. Determine the sex
3. Document adipose presence/absence
4. Collect a small fin clip from the pectoral fin
5. Collect the snout

Note: All biological data must be collected from all salmonids in the haul if possible.

RECORDING SALMONID INFORMATION

1. Document directly in the tablet software or on the Trawl/ Fixed Gear Deck Form, as appropriate.
2. When fin clips are collected, record information on sample envelope according to protocol found in Sample Envelope Instructions on page 8-23
3. Affix a barcode sticker to the upper right of the envelope.
4. When salmonid snouts are collected, complete all fields on a specimen collection label, affix a barcode to the back and place in the bag with the sample. You will have to add the trip number after the trip has been submitted since it cannot be known while on the vessel.

Green Sturgeon

Introduction

Green sturgeon are an anadromous fish found in coastal waters along the entire eastern Pacific Ocean coastline of the United States. Green sturgeon spawn in three rivers along the west coast: the Klamath River, the Sacramento River, and the Rogue River. After they enter the ocean, they appear to make a northern migration and concentrate in coastal estuaries, particularly the Columbia River estuary and coastal Washington estuaries.

Anadromous: Ascending rivers from the sea, at certain seasons, for breeding.

There are two **Distinct Population Segments** (DPSs) of green sturgeon along the west coast. The two DPSs are identified by their spawning site with the northern/southern DPSs being divided at the Eel River in Northern California. In 2006, the southern DPS of green sturgeon was listed as threatened under the ESA.

Distinct Population Segment (DPS): The smallest division of a taxonomic species permitted to be protected under the ESA

Green Sturgeon Identification

Only two species of sturgeon are found on the west coast, the green sturgeon and the white sturgeon (See Figure 9-1 and Figure 9-2). Use the following physical characteristics and the **Species Identification manual** to identify green sturgeon:

- **Scutes:** Number is less than or greater than 37 on side
- **Barbel location:** Mid-way between the mouth and snout tip versus close to snout tip.
- **Anus location:** Directly between the pelvic fin insertion versus posterior to pelvic fin insertion.



Figure 9-1: White Sturgeon.



Figure 9-2: Green sturgeon.

Green Sturgeon Data Collection Priorities

CATCH SAMPLING OF GREEN STURGEON

When a green sturgeon is caught on a haul/set:

1. Inform skipper and crew members that all green sturgeon will be sampled, if possible, and their help in the collection of these fish would be appreciated.

   Tip: Green sturgeon are very hardy fish. In most circumstances, they will be returned to sea alive. Therefore, be quick and take care when sampling.

2. Weigh or visually estimate the weight of all green sturgeon in the haul. Often they will be too awkward to handle, too large to fit in an observer basket, and/or too heavy to weigh on the platform scale. Green sturgeon are managed by number, so it is essential to always associate an actual number of fish with all weight estimates. Record weight, count, and biological data in the tablet or on the deck forms using discard reason 16 - regulation.

Tip: If the sturgeon identification is unclear, catch category code USTG for unidentified sturgeon should be used.

BIOLOGICAL SAMPLING OF GREEN STURGEON

When Green Sturgeon numbers are high, a minimum of 4 randomly selected individuals may be subsampled for biological sampling.

1. Using the measuring board or a tape measure, record the **fork length** of all green sturgeon.
2. Take a photo of your first sampled green sturgeon lying on the length board, using the tablet provided by the WCGOP. Name the digital photo by the barcode number used for your tissue sample (see next step). Upload digital photos to the database along with your tablet backup file and/or form scans. Document any existing tags on the Biospecimen tab of the software.
3. Take a fin clip from all green sturgeon using clean instruments.
4. If **obviously dead,** sex the fish.
   - Use a scalpel or razor blade to make an incision at the fish's belly anterior from the pelvic fins and offset from the ventral midline.
   - **If male, gonads appear:**
     - **Immature:** typically uniform in texture, consisting of smooth, yellowish, fatty tissue surrounding a strip of white testicular tissue which extends lengthwise through the gonad.
     - **Ripe:** comprised mostly of large, white-lobed testicular tissue.
   - **If female, ovaries appear:**
     - **Immature:** small, folded, white to yellowish color with no visible oocytes.
     - **Mature:** grainy with "salt & pepper"-like or dark coloration due to the presence of small oocytes. Ovarian grooves, present adjacent to the body wall. Ripe females have large, dark oocytes.
5. If **obviously dead,** collect a fin ray sample as well as the fin clip.

Note: For all DEAD green sturgeon, a fin ray is taken as well as a fin clip.

RECORDING GREEN STURGEON INFORMATION

1. Document directly in the tablet software or on the Trawl/ Fixed Gear Deck Forms as appropriate.
2. Complete all information on sample envelope when fin clips and fin rays are collected. Affix a barcode sticker on the envelope.

Note: If green sturgeon are caught in high numbers, a subsample may be taken for biological sampling. A minimum of 4 randomly selected individuals is required. If subsampling, record an actual count and a weight estimate from all GSTG outside of your subsample and release them overboard. Then complete biosampling for subsampled individuals, starting with any in poor condition and finishing with any that are dead.

Eulachon

Introduction

Eulachon are a small, anadromous fish from the eastern Pacific Ocean, ranging from northern California to southwest Alaska and into the southeastern Bering Sea. They are typically found in nearshore ocean waters up to 1000 feet in depth, except for the brief spawning runs into their natal (birth) streams. In April 2011 the southern distinct population segment of Pacific Eulachon spawning from the Skeena River in B.C. south to the Mad River in N. California was listed as threatened under the ESA. Currently Eulachon marine life history is poorly understood, as are the effects of trawl fisheries on the population. To further the study of Eulachon, biospecimens will be collected in all fisheries in which they are encountered.

Eulachon Identification

Refer to the smelt key in the **Species Identification Manual** for information on identifying Eulachon.

Eulachon Data Collection Priorities

BIOLOGICAL SAMPLING EULACHON

1. Eulachon are on biolist 3. When this list is selected, randomly collect 5 Eulachon from the sample population and take fork lengths.
2. From the selected fish, randomly collect one whole fish to retain as a specimen.
   - The specimens must be weighed then bagged and barcoded individually and must be kept frozen to prevent decomposition so stomach content analysis can occur.

RECORDING EULACHON BIOLOGICAL INFORMATION.

1. Document directly in the tablet software or on the Trawl/ Fixed Gear Deck Forms as appropriate. Barcodes will be entered as whole specimen.
2. Complete all fields on a specimen collection label, affix a barcode to the back and place in the bag with the whole fish sample. You will have to add the trip number after the trip has been submitted since it cannot be known while on the vessel.

Samples should be kept frozen at all times until turned in to a debriefer. Place them in a vessel freezer and remember to retrieve them prior to disembarking.

Marine Mammals, Seabirds and Sea Turtles

Data collection priorities and interactions for these three groups are all treated very similarly and recorded on the same form. The following is a summary of requirements shared for all groups followed by more specific details for each group.

Marine Mammal/Seabird/Turtle Data Collection Priorities

The priorities for the sampling of protected species are:

1. Document information on all interactions, including incidental takes, between the protected species and fishing operations.
   - Short-tailed Albatross, CA Least Tern, and Marbled Murrelet takes are a top priority. Immediately sample and retain the carcass, contact a debriefer or Ryan Shama ASAP, and take many photos.
2. Document sightings of all ESA-listed marine mammals, endangered or threatened seabirds, banded birds, and sea turtles.

Tip: Seabirds may be banded with coded metal or plastic leg bands, nasal markers, or radio tags.

3. Document sightings of non-ESA listed seabirds and marine mammals.

Tip: As non-ESA sightings are the lowest observer priority, sighting information should only be collected if it does not interfere with other observer data collection priorities.

50 CFR 229.7 of the Federal Code of Regulations, gives observers the authority to take and possess pinniped and cetacean tissues. *Do not collect bones, skulls, or any other parts as specimens as they are not needed and will be discarded*. Sea otters are under the jurisdiction of the US Fish and Wildlife Service and possessing any specimen material from them is a federal offense.

Marine Mammals

Introduction

The Pacific Ocean is home to vast numbers of marine mammals. Interactions between fishing operations and cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions) are unavoidable. Observers provide reliable estimates of marine mammal interactions with fishing fleets, including data on incidental takes.

All marine mammals are regulated under the Marine Mammal Protection Act. However, some marine mammals are also regulated under the Endangered Species Act.

Endangered Species

- Blue Whale
- Fin Whale
- Humpback Whale
- Killer Whale (Southern Residents)
- North Pacific Right Whale
- Sea Otters (USFWS jurisdiction)
- Sei Whale
- Sperm Whale
- Gray Whale, Western N. Pacific population
- Steller Sea Lion, western population

Threatened Species

- Guadalupe Fur Seal

Marine Mammal Identification

When identifying marine mammals pay close attention to both the physical characteristics of the animal and its behavior.

PHYSICAL CHARACTERISTICS OF CETACEANS

- **Body shape:** Robust or slender, small or large?
- **Head shape:** Long or short, definite beak present, bulbous forehead?
- **Dorsal fin shape:** Small or large, curvature, location

on body?

- **Coloration:** Spots, stripes, patches or mottling?
- **Scars and scratch marks:** Pieces missing from fins, scratches or dents on body?
- **Orca saddle patches:** Note exact size and shape of patch. Take a photo if possible. Researchers can identify individual Orcas by their saddle patch.
- **Shape and direction of blow:** Bushy or tall blow, single or double blow; blow straight up or angled forward?

PHYSICAL CHARACTERISTICS OF PINNIPEDS

- **Body shape:** Robust or slender, small or large?
- **Head shape:** Long or short snout, ears present?
- **Coloration:** spots, stripes, patches or mottling?
- **Scars and scratch marks:** pieces missing from flippers, scratches on body?

MARINE MAMMAL BEHAVIORS

Animal behavior is useful in assisting with accurate species identification. Descriptions of several standard cetacean and pinniped behaviors are listed below. Watch for these behaviors when identifying marine mammals.

LARGE CETACEANS

- **Blow visible from a distance:** Blow can be seen from more than 500 meters away. Usually only seen in certain large cetaceans.
- **Breaching:** The whale accelerates forward underwater and then jumps free of the water, sometimes fully clearing the water's surface, and then lands on the surface of the water, creating a large splash. Used for Orca-sized cetaceans or larger.
- **Flipper slapping:** Whale floats or swims at the surface, turns on its side and slaps one pectoral fin against the water, either once or several times in quick succession.
- **Group feeding:** Seen primarily in humpback whales, when they coordinate feeding by lunging out of the water with their mouths open, engulfing fish and water.
- **Lob-tailing:** Whale raises its tail flukes up out of the water and slaps them down against the surface with great force. This may occur once or be repeated many times.
- **Spy hopping:** Whale is vertical in the water and raises its head out of the water, usually with its eyes showing.
- **Tail raised on dive:** When diving, the whale's entire tail lifts completely above the water before going underwater.
- **Side and stern wake riding:** Whale is riding in the wake created amidships along the side of the vessel, or the wake created by the stern.

SMALL CETACEANS

- **Bow riding:** Animals swim beside the bow or in the bow wave of a moving ship.
- **Leaping entirely out of the water:** Animal jumps fully clear of the surface of the water (as opposed to merely breaking the surface of the water), not for forward locomotion but for other reasons.
- **Porpoising:** Animal raises its body to be nearly or fully out of the water while traveling forward at a fast rate of speed, usually in a fluid, arching motion.
- **Rooster tailing:** Animal surfaces at high speed creating a spray of water in front and over the top of the animal which looks like a rooster's tail. Usually seen only in Dall's porpoise.
- **Slow rolling:** Animal comes to the surface to breathe, with the blowhole and dorsal area usually showing, and then rolls back underwater.

PINNIPEDS

- **Jug handle:** Seal or sea lion floats on its side with one front flipper and one rear flipper above the water, creating what looks like a handle.
- **Porpoising:** Pinniped is swimming fast, jumping at least partially out of the water in fluid, arching motions. This swimming pattern resembles that of dolphins or porpoises seen at a distance.
- **Rafting:** A group of pinnipeds resting at the surface together.
- **Spooked from haul out:** Pinnipeds which had been resting on a beach, rocks or ice dove into the water due to your vessel's interaction with them.
- **Vocalizing:** Pinniped making directed noises at you or at another pinniped.

Marine Mammal Collection Priorities

(See the section, Marine Mammal/Seabird/Turtle Data Collection Priorities on page 9-6)

Marine Mammal Data Collection: Interactions

Observers must record all interactions between marine mammals and fishing operations. See the section: Interaction Codes (Species of Interest) on page 9-15 for descriptions of relevant interactions with fishing operations.

Catch Sampling: Interactions

- Marine mammals, typically seals and sea lions, have the potential to be caught by fishing gear and released alive. This interaction must be documented.

- 1. Observe from a safe distance, allowing vessel crew to handle the animal as it may be unpredictable.
- 2. Identify to species and take photos from a safe distance to submit with the data.
- 3. Visually estimate the weight of the individual.

Tip: If a deterrence device, such as a firearm, acoustic device, seal bomb, pole gaff, or yelling, was used, circle "Deterrence Used" in the Fishing Interactions column.

Biological Sampling: Incidental Takes

Always wear gloves when handling a marine mammal. Biological information is only taken from dead marine mammals.

1. Take at least 5 pictures of animal from different angles and close-ups of head and genitals for id and sex verification. Verify the photos are good- retake if necessary.
2. Put on a pair of rubber deck gloves to prevent the transfer of disease.
3. Lay the animal on its back with its head and vertebral column in as straight a line as possible.
4. Take the standard length (preferred) or curvilinear length of the marine mammal see "Measuring Marine Mammals with a Tape Measure" on page 8-4.
5. Sex the marine mammal. In pinnipeds and cetaceans, the distance between the anus and the genitals is greater in males. Otherwise, the sexes appear similar. Take photos of genitals to submit with data (See Figure 8-24 on page 8-9)
6. If marine mammal is tagged, retrieve the tag and any research instrumentation/attachments affixed to the animal.
7. Collect a tissue sample from all dead pinnipeds and cetaceans.
   - Cetacean samples should be collected from the back of the animal, just posterior to the dorsal fin, when possible. If the sample cannot be from this location, it can be collected anywhere on the animal.
   - Pinniped tissue samples should be taken from a non-fur covered part of the body such as the lips or flippers.
   - Lightly scrape the sample area clean with a knife to remove fish slime and to reduce potential contamination of the sample. Clean the knife and cut out a plug of tissue approximately 1 cm by 1 cm.
   - **Store tissue sample using one of these options:**
     - **Preferred method:** Place the tissue sample in an otolith vial and freeze it. Keep it frozen at all times!
     - Place the tissue sample in an otolith vial filled with saturated salt solution or table salt and store at room temperature.

Recording Marine Mammal Interactions and Takes

1. Document directly in the tablet software or the Trawl Deck Form if your tablet has failed, or on the deck form for fixed gear. Record visually estimated weight using the appropriate catch category code or ZMRM if unidentified. In the Comments, document the species name if the species specific code was not used. Reason for discard 16 - Regulation should be selected.
2. Record length, actual weight, sex, tag number (if applicable) and barcode number(s) of dissection(s) on the **Biosampling Tab.**
   - **Random/Opportunistic:** As 100% of all incidentally caught marine mammals should be sampled, it should be a random collection.
3. Complete a Specimen Collection Label if pinniped or cetacean tissue samples are collected.
4. Complete a Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form. (See Figure 9-6)

Reporting entangled, stranded, or ship struck Marine Mammals.

1. Call 877-SOS-WHAL (767-9425) to provide a resource for reporting a marine mammal entanglement and to initiate a response.
   - **Relevant information to relay includes:** general location and direction of travel, species, size, and nature of distress.
2. **Note the entangling gear's characteristics and compare to the fixed gear guide (https://archive.fisheries.noaa.gov/wcr/publications/protected_species/marine_mammals/fixed_gear_guide_final_12.14.11.pdf) to help determine from which fishery the gear came.**

Marine Mammal Data Collection: Sightings

Depending on the status of the species, sightings can be a very high or a very low priority. All sightings of ESA-listed marine mammals must be documented. When time allows, observers should document sightings of non-ESA-listed marine mammals. Sighting information is stored in the Platform of Opportunity database by NMML to determine locations where marine mammals have been seen.

Catch Sampling: Sightings

No catch sampling is required with marine mammal sightings.

Biological Sampling: Sighting

No biological sampling is required for marine mammal sightings.

Recording Marine Mammal Sightings

Sightings are recorded on the **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form** (See Figure 9-6). If marine mammal was tagged, document tag number on form.

Record Drop-off Characteristics

Observers will record the following information on the appropriate form(s) or software.

- **Tag number:** Tablet or deck form
- **Date:** (MMSBT interaction and sighting form)
- **Hour:** (MMSBT interaction and sighting form)
- **Species:** If known (MMSBT interaction and sighting form)
- **GPS fix:** (MMSBT interaction and sighting form). If the discard location differs significantly from the retrieval location, document the discard location in the software comments and MMSBT Notes.
- **Additional notes or comments:** (MMSBT interaction and sighting form). Describe the condition of the carcass, in detail, including any signs of scavenging.
- Photograph each tagged individual and attach to MMSBT form.

Seabirds

Introduction

Seabird mortalities associated with commercial fisheries are estimated at 300,000 to one million per year worldwide. Most commercial fisheries do not monitor seabird bycatch, making it difficult to accurately estimate mortality rates or to predict the long-term effects of fishing on seabird populations. The NMFS is collaborating with the U.S. Fish and Wildlife Service (USF&WS) to gather data on fishery-related mortality of seabirds in the West Coast groundfish fisheries.

Most seabirds are regulated under the Migratory Bird Treaty Act. In addition, three species found on the West Coast are listed under the Endangered Species Act.

- Endangered Species
  - Short-tailed Albatross
  - CA Least Tern
- Threatened Species
  - Marbled Murrelet

If one of these ESA listed species is killed by gear and brought on board, regulations require that the observer retain the carcass and keep it frozen or on ice, until it can be handed over to the US Fish and Wildlife Service (USFWS). If this occurs, contact observer program staff, as soon as possible to arrange for transfer to USFWS. Any tags/bands on the animal should be left in place.

If a Short-tailed Albatross is brought on board injured, regulations require that the observer care for the bird, until USFWS takes possession. If this occurs during a trip, contact observer program staff, as soon as possible to arrange for transfer to USFWS. (See the section, Seabird Handling Safety on page 9-10) for handling/care protocols. Follow directions carefully, as your safety is the highest priority!

Seabird Identification

When identifying seabirds, pay close attention to both the physical characteristics of the animal and to its behavior.

SEABIRD PHYSICAL CHARACTERISTICS

- **Size:** Large or small and robust or slender.
- **Color pattern:** Color pattern of head, wings, and body.
- **Bill and feet:** Color, size, shape (tubenose or not tubenose).

SEABIRD BEHAVIORS

- **"Flying" underwater:** Animal dives under surface and swims/flies while still submerged.
- **Plunges from air:** Animal dives underwater from the air to catch its food.
- **Perched on land:** Animal perches on pilings, reefs, docks, etc. with wings spread to dry.
- **Harassing other birds:** Animal harasses other birds in an effort to steal their food.
- **Soaring/Gliding:** Animal soars/glides when flying, with few wing beats.
- **Bird storms:** Flocks of birds hitting ship.

Seabird Data Collection Priorities

(See the section, Marine Mammal/Seabird/Turtle Data Collection Priorities on page 9-6)

Seabird Data Collection: Interactions

Observers must record all interactions between ESA listed seabirds and fishing operations. (See the section, Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions on page 9-14) for descriptions of relevant interactions with fishing operations.

Catch Sampling: Interactions and Takes

1. Identify to species.
2. Actually weigh or visually estimate the weight of the seabird.
   - If actually weighed, record in appropriate catch category on the Catch Tab and on the Species Tab. Reason for discard must be 16 - Regulation.
   - If weight visually estimated, record using the appropriate catch category code or XBRD, if

unidentified. In the Comments, document the species name if the species specific code was not used. Reason for discard must be 16 - Regulation.

3. Photograph all seabird takes and submit the pictures with data.
4. Takes of Short-Tailed Albatross, Marbled Murrelet, and CA Least Tern require observers to retain the carcass, contact a debriefer or Ryan Shama ASAP, and document with lots of photos.

Biological Sampling: Interactions and Takes

Collect biological information from **dead** seabirds only! If the seabird has a tag or band, photograph the tag and remove or document the tag number(s) and/or band color(s). *Be sure to note the material the band is made of, which leg the band was on (or if two bands were on the same leg), and the order of the colored bands (e.g., white band on top, blue band on bottom).*

Recording Seabird Interactions and Takes

1. Record actual or visual weight on the **Catch tab** and, if actual weight, on the **Species tab**. Reason for discard 16 - Regulation should be documented.
2. Record tag/band on Biospecimen tab and enter any alphanumeric codes under dissection type Existing tag (8- Tag/Band).
3. Complete a **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form**. (See Figure 9-6).

Seabird Data Collection: Sightings

Observers must document **all** sightings of endangered/ threatened seabirds. When time allows, sightings can be documented on other seabird species.

Catch Sampling: Sightings

No catch sampling is required with seabird sightings.

Biological Sampling: Sighting

No biological sampling is required for seabird sightings.

Recording Seabird: Sightings

- Sightings are recorded on the Marine Mammal/Seabird/ Sea Turtle Interaction and Sighting Form. (See Figure 9-6). If seabird was tagged or banded, document tag number or band colors.

Protocols for Handling Injured or Sick Seabirds

Safety First! Be very careful when handling live birds. Heavy rubber protective gloves are advised. All birds have sharp beaks and strong jaws that can cause serious injury.

If you encounter an injured or sick Short-tailed Albatross, follow the protocols outlined below and contact your debriefer or other observer program staff, as soon as possible.

Please note that rehabilitating seabirds should only be done for Short-tailed Albatrosses.

SEABIRD HANDLING SAFETY

Do not attempt to recover a sick or injured seabird when it is not safe. Seabirds may become aggressive if they feel threatened. Seabirds carry diseases that are transmissible to humans. Avoid contact with bodily fluids. Always wear gloves when handling seabirds and keep the seabird at or below your waist, protecting your face. Wear safety glasses if they are available. Clean and treat all cuts and scratches you may receive. Wash your hands thoroughly after handling seabirds.

SICK, INJURED OR DEAD SHORT-TAILED ALBATROSS

1. If a dead, injured, or sick short-tailed albatross individual is located, call USFWS 503-231-6179 for handling and disposition instructions. If an observer is on board, they shall be responsible for the disposition of dead, injured, or sick birds. Otherwise, the boat captain shall be responsible.
2. Care should be taken in handling sick or injured specimens to ensure adequate treatment and handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured short-tailed albatross or preservation of biological materials from a dead animal, the boat captain or observer has the responsibility to carry out instructions provided by USFWS to ensure that the specimen is not unnecessarily disturbed.
3. Live birds must be retained in a safe location. Release overboard shall occur if the bird looks normal and exhibits all of the following traits.
   - the bird is capable of holding its head erect and the bird responds to noise and motion stimuli
   - the bird breathes without noise; the bird can flap both wings and it can retract the wings to a normal folded position on the back
   - the bird is capable of elevating itself to stand on both feet with its toes pointed in the proper direction (forward)
   - the bird is dry.
4. Injured or sick albatrosses are to be retained in a safe location.
5. Dead short-tailed albatross must be frozen immediately, with identification tags attached directly to the carcass, and a duplicate identification tag attached to the bag or container holding the carcass. Ideally, the specimen should be frozen at -40 degrees Fahrenheit.

Identification tags must include all of the following information.

- species, date of mortality, name of vessel, location (latitude and longitude) of mortality, observer or captain's name (or both), and any band numbers and colors if the specimen has any leg bands. Leg bands must remain attached to the bird.

6. If the bird is retained alive or dead, it must be surrendered as soon as possible as directed by the USFWS. Include this information, as well.

- Short-tailed Albatross carcasses must be retained. The carcass should be frozen in a collection bag, if possible. If freezing is not possible, bag the carcass and ask the crew to store on ice, in the hold, or in a cooler. Keep the carcass as cold as possible until it is handed over to WCGOP staff or a representative from USFWS.

Retain Short-tailed Albatross birds that do not meet all of these criteria!

REHABILITATING SHORT-TAILED ALBATROSS AND OTHER SPECIES OF INTEREST

Take the following steps to rehabilitate the seabird:

1. Wear gloves, eye protection, and rain gear.
2. Capture the bird without jeopardizing the safety of yourself or the crew and place it in box or container. The bird should not have enough room to injure itself further.
3. Do not restrict a live bird from opening its bill with tape or a rubber band, etc.
4. Ensure adequate ventilation of the container.
5. Never put a bird in an overly warm place (e.g., engine room) or use external heat sources to dry a wet bird (e.g., hair dryer, space heater, etc.).
6. Treat a wet bird by gently blotting excess water from the bird with paper towels.
7. Keep bird inside the container in a quiet, dry place and minimize handling.
8. Contact your debriefer or other observer program staff immediately. Record all details of interaction on MMSBT form and in your logbook. There will be a post-incident interview, so you must provide a detailed account of the incident and the care given, including anything ingested by the bird.
9. Place a container of cool, fresh water with the bird, if the possibility of spilling is minimal.
10. Place absorbent material in the bottom of the container to minimize contact with feces. Replace the material when soiled.
11. Food may be offered if the bird is alert. Try offering a hard-boiled egg or small pieces of fish liver.

Release the bird, only when advised to do so by observer program staff or a USFWS representative.

TRANSPORTING SICK OR INJURED SHORT-TAILED ALBATROSS

Sick or injured short-tailed albatrosses may need to be transported. You will get specific care and transport instructions when you contact observer program staff.

Sea Turtles

Introduction

Five species of sea turtles inhabit the waters off the West Coast of the United States, all of which are designated as endangered or threatened under the ESA.

- Endangered Species
  - Hawksbill Sea Turtle
  - Leatherback Sea Turtle
- Threatened Species
  - Green Sea Turtle
  - Loggerhead Sea Turtle
  - Olive Ridley Sea Turtle

Sea Turtle Identification

Sea turtles can be identified to species using physical characteristics. Behavioral characteristics can be used to confirm the identification. Use the following characteristics and the Species Identification manual to identify sea turtles to species. (See Figure 9-5)

SEA TURTLE PHYSICAL CHARACTERISTICS

- **Hard-Shell vs. Soft-Shell:** Presence of a bony or non-bony shell.
- **Number of costal scutes:** Costal scutes are found on the shell of the sea turtle.

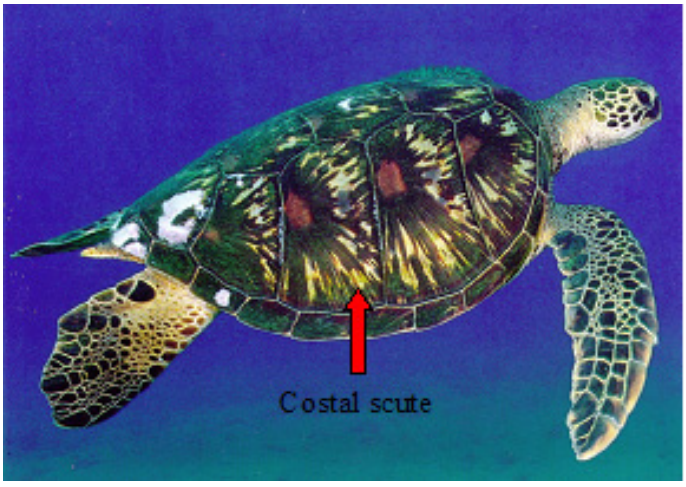


Figure 9-3: Sea turtle costal scutes

- **Number of Pairs of Prefrontal Scales:** Prefrontal scales are found on the head of the sea turtle.
- **Color:** Red, gray, green, etc.

SEA TURTLE BEHAVIORS

- **Swimming:** Turtle moving slowly along relatively level at or just below surface of the water.
- **Diving:** Turtle seen at or near surface which suddenly submerges or is seen disappearing into the deep.
- **Basking/Floating:** Turtle seen floating at the surface, usually only their back seen but sometimes both flippers may be raised - may be followed by diving once boat is detected.
- **Foraging:** Turtle seen with food in mouth or diving in area of high abundance of jellies or pelagic invertebrates.
- **Breathing:** Turtle seen at surface, head out of water with mouth slightly open (no food) - usually followed by floating and another breath or swimming or diving.

Sea Turtle Collection Priorities

(See the section, Marine Mammal/Seabird/Turtle Data Collection Priorities on page 9-6)

Sea Turtle Data Collection: Interactions

Observers must record all interactions between sea turtles and fishing operations. (See the section, Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions on page 9-14) for descriptions of relevant interactions with fishing operations.

Catch Sampling: Interactions and Takes

1. Identify to species.
2. Actually weigh or visually estimate the weight of the sea turtle.
   - If actually weighed, record in appropriate catch category on the Catch Tab and on the Species Tab. Reason for discard must be 16 - Regulation.
   - If weight visually estimated, record on the Catch Tab only, using the catch category code ZMIS. In the Comments, document the species name. Reason for discard must be 16 - Regulation.

Biological Sampling: Interactions and Takes

1. Measure carapace length.
2. Measure carapace width.
3. Measure tail length. If the stretched tail does not extend beyond the plastron the length is “0000”.
4. Determine condition of turtle.
   - **Previously Dead:** The turtle was already dead when it was sighted or captured.
   - **Released Unharmed:** The turtle was returned to the sea alive and uninjured.
   - **Released Injured:** The turtle was injured as a result of fishing operations or by vessel personnel. “Injured” is an animal removed from the gear with obvious physical injury or with gear attached.
   - **Killed Accidentally:** The turtle died due to injuries incurred during fishing operations or was returned to the sea while comatose.
   - **Escaped:** The turtle left the gear or deck unaided after the capture or entanglement, with no apparent injuries.
   - **Treated as Catch:** The turtle was not previously dead and was sacrificed for market, table, or other use.
   - **Other/Unknown:** The final fate of the turtle involved in the haul/set is unknown or whose condition after leaving the gear or deck was unobserved.
5. **If sea turtle has a tag:**
   - If turtle is alive, document tag number(s).
   - If turtle is dead, remove the tag.
6. Take one photograph of the head and several additional photos of different angles of the whole turtle showing the costal and vertebral scutes.

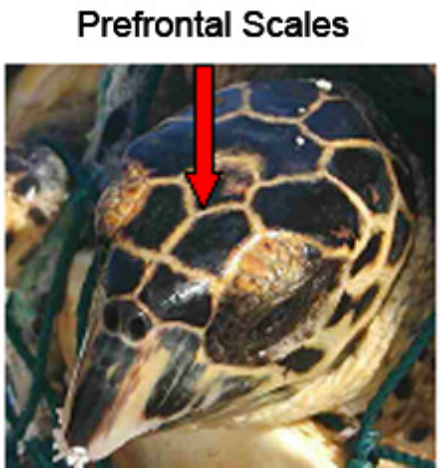


Figure 9-4: Sea turtle prefrontal scales.

Recording Sea Turtle Interactions and Takes

1. Record actual or visually weight on **Catch tab** and, if actual weight, on **Species tab**. Reason for discard 16 - Regulation should be documented.
2. Complete a **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form**. (See Figure 9-6 on page 9-16) and a Sea Turtle Life History Form (See Figure 9-8 on page 9-19).

Tip: If a deterrence device, such as a seal bomb, pole gaff, firearm, acoustic device, or other device was used, circle "Deterrence Used" in the Fishing Interactions column.

Sea Turtle Data Collection: Sightings

Observers must document *all* sightings of sea turtles.

Catch Sampling: Sightings

No catch sampling is required with sea turtle sightings.

Biological Sampling: Sighting

No biological sampling is required for sea turtle sightings.

Recording Sea Turtle Sightings

Sightings are recorded on the **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form**.

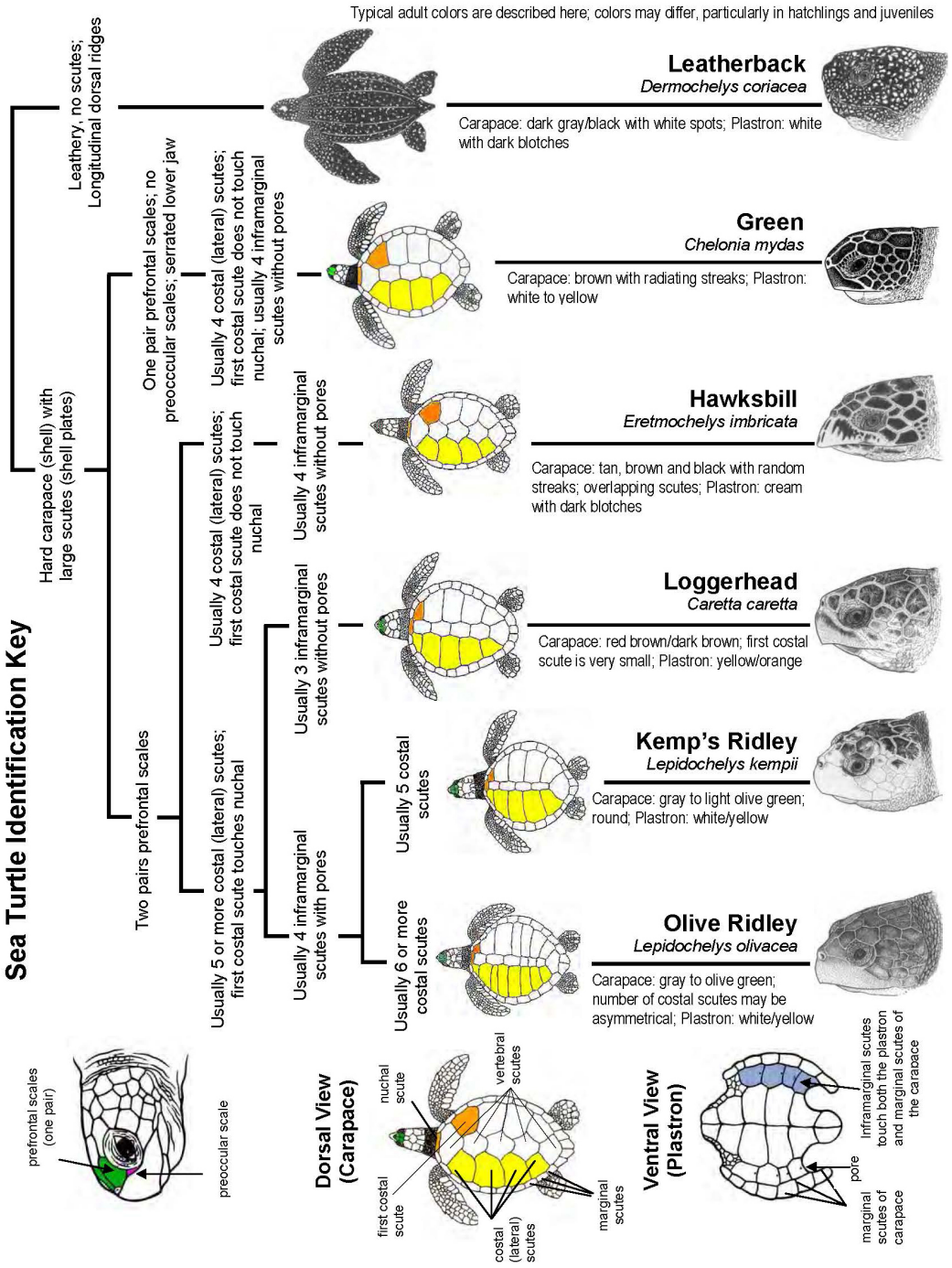


Figure 9-5: Sea turtle identification key.

Documenting Samples

The primary factors used to differentiate biosampling methods are:

- Whether the individuals used for biological sampling were randomly selected or not.
- Whether the individual used for biological sampling is a PHLB with a visually estimated length.

Biosampling Methods for Protected Species

Biosample Method 12 – Random

- Biological sample was taken from a randomly selected individual.
- Taking biological samples of all individuals, a census, is a random sample.

Biosample Method 13 – Opportunistic

- Biological sample was NOT taken from a randomly selected individual.
- Use this method for tagged fish that have been collected opportunistically during a haul/set.

Biological and Protected Species Data Collection Forms

There are 4 data collection forms for documenting biospecimen information from protected species.

Additionally, catch information must be documented in the tablet software or on the appropriate deck form for the fishery.

- **Specimen Collection Label:** Use this label when;
  - Cetacean/ Pinniped tissue or Salmon snouts have been collected.
  - Whole fish/invertebrates/specimens have been collected.
- **Sample Envelope:** to document and store fin clip and fin ray samples.
- **Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form:** Used to record marine mammal, seabird, and sea turtle interaction and sighting information.
- **Sea Turtle Life History Form:** Used anytime a sea turtle is brought on-board a fishing vessel.
- **Tablet Software, OPTECS :** Biological sampling data should be recorded in the biospecimens tab under the species sampled.
- **Fixed Gear Deck Form:** Recorded as raw data for entry into a tablet.
- **Trawl Deck Form:** Recorded as raw data for entry into a tablet when a tablet has failed during a trip

Marine Mammal/Seabird/Sea Turtle Interaction and Sighting Form Instructions

Complete the Interaction and Sighting Form for **all marine mammal, seabird, and sea turtle** interactions, takes, and sightings. Fill out the form as thoroughly as possible (See Figure 9-6) The more information you provide, the more useful the data is to National Marine Mammal Laboratory (NMML) in determining species ranges and documenting interactions. ALL of the information recorded on this form must apply to All individuals/hauls. Otherwise, separate forms are required. For example: 6 stellar sea lions are sighted in H1, 2, and 3. If the observer saw 6 in each of the 3 hauls, a single form may be used. However, if 1 was sighted in H1; 2 in H2; and 3 in H3, then three separate forms are required. The same goes for seabird takes on longline vessels.

- **Trip number:** This is an automatically generated number by the database. Complete this field once the trip has been started in the online database.
- **USCG number:** Record the USCG vessel number. This six or seven digit USCG number is usually posted on the side of the vessel or request this number from the vessel skipper or a coordinator. **If the vessel does not have a USCG number, leave field blank.**
- **Date/Time:** Record the date as MM/DD/YY. Record the time that the animal was first seen in military time HH:MM. If it is a take, document the haul end time.
- **Sighting conditions:** Record a check mark in the box that best describes the overall sighting conditions (excellent, good, fair, poor).
- **Latitude:** Record the latitude (in degrees, minutes, 1/10th of a minute) where the animal was first seen. If it is a take, document the haul end position.
- **Beaufort:** Record the Beaufort sea conditions value. A description of each Beaufort value is listed on the back of the form.
- **Longitude:** Record the longitude (in degrees, minutes, 1/100th of a minute) where the animal was first seen. If it is a take, document the haul end position.
- **Species:** Record the common name of the species. Do not enter the species code!!
- **Were all individuals inside the tally sample?:** Applies only to Seabird takes. Check the appropriate box (yes/no).
- **Confidence:** Record a check mark in the box that best describes your confidence (sure, likely, unsure) in your species identification.

- **Body length estimate:** Record a check mark in the box that best describes the length of the individual(s) observed.
- **Haul number:** Document the haul number(s) the interaction or sighting occurred.
  - Sighting applies to all hauls or multiple hauls.
- **Closest approach:** Note the distance in meters of the closest approach of the animal to the vessel. The minimum distance accepted is 1. Document 1 whenever you are documenting a take.
- **Number sighted (best):** Record the best estimate of the total number of individuals observed.
- **Number sighted (minimum):** Record the best estimate of the minimum number of individuals observed.
- **Number sighted (maximum):** Record the best estimate of the maximum number of individuals observed.

Tip: The Number sighted/closest approach selected interaction code(s) must apply to all individuals listed on the form.

- **Notes and identifying characteristics:** Record physical and behavioral information about the animal(s). This section is the most important section of the form and should be completed as fully as possible. The following information must be documented in the Notes box for the form to be accepted:
  - Physical characteristics used to identify the animal.
  - Behavioral characteristics used to identify the animal. These characteristics can be checked off on the MM/SB/ST Interaction and Sighting Form, but they must also be listed in the Notes box for entry into the database.
  - Description of sighting or interaction. This should be very detailed!
  - Do not include personally identifiable information in the notes section, including any information about vessel/skipper/crew names, locations, or dates.
  - **Sketches:** A sketch of the animal seen can be placed in the Notes box also. The identifying characteristics must also be written in text for entry into the database.
  - Submit all photos with the MMSBT form.
- **Table for Banded Birds:** Whenever a banded bird is recorded, document the details about the band(s) in the table. This includes: leg on which the band was located (L/R), band material (metal, plastic, etc.), color(s) of band(s), identification numbers on the band(s).
- **Interaction Codes (Species of Interest):** Check all the interaction codes that apply to every individual on the form. The upper box contains codes for use for species of interest only.
  - **Sighting Only:** No interaction with vessel, gear, or catch.
  - **Feeding on Catch (not yet landed on the vessel):** Feeding on fish prior to the fish being brought on-board vessel.
  - **Feeding on Discarded Catch:** Feeding on discarded catch.
  - **Feeding on Offal:** Feeding on the discarded products of fish processing (e.g., fish guts).
  - **Feeding on Bait:** Note whether the bait was attached to gear or floating free.
  - **Boarded Vessel:** Boarded the fishing vessel on its own volition and then escapes.
- **Interaction Codes (ALL species):** Check all the interaction codes that apply to every individual on the form. The lower box contains codes used for all species (including species of interest).
  - **Previously Dead:** Caught in gear but already dead before coming in contact with fishing gear.
  - **Deterrence Used:** A deterrent device, other than "Seabird Avoidance" gear (Trip Form) used. Select type from list (seal bomb, firearm, gaff, yelling, acoustic device, or other). If not listed, record as "Other" and provide details in "Notes" section.
  - **Vessel Strike:** Individual is struck by some part of the vessel, including propeller, mast, rigging, etc.
  - **Entangled in Gear:** Entrapped or entangled in fishing gear, but escapes or is released alive.
    - **Not Trailing Gear:** No gear attached to animal(s) when returned to sea.
    - **Trailing Gear:** Pieces of gear, including parts of net or line, attached to animal(s) when returned to sea.
  - **Lethal Removal:** Killed by vessel personnel to prevent serious damage to or loss of gear, catch, or human life.
  - **Killed by Gear:** Killed by the fishing gear.
  - **Other:** Involved in an interaction not included in list of interaction codes. Provide details in "Notes" section
- **Interaction Outcomes:** Check one interaction outcome that applies to the individuals on the form.
  - **Alive - No visible signs of injury:** Alive and showing no visible signs of injury, as a result of the interaction.
  - **Alive - Visible signs of injury:** Alive, but showing signs of injury which may be a result of the interaction.
  - **Dead/Unresponsive Carcass:** Individual(s) dead or unresponsive.
  - **Not Applicable:** Used for "Sighting Only" and "Previously Dead".
  - **Unknown:** Unsure of outcome. Provide details in "Notes" section.

MARINE MAMMAL/SEABIRD/SEA TURTLE INTERACTION AND SIGHTING FORM

Trip Number ☐☐☐☐☐☐ **USCG #** ☐☐☐☐☐☐☐

Species _____ **Haul #** (if applicable) ☐☐ ☐ All Hauls ☐ Multiple Hauls (List additional hauls in "Notes")
Common Name

Latitude ☐☐ o ☐☐ . ☐☐ N **Longitude** 1☐☐ o ☐☐ . ☐☐ W

Date/Time ___/___/___ _____ **Beaufort Scale** (See back of form) ☐☐

▲ *When using form for multiple individuals from multiple hauls, complete above information for the first individual(s) encountered* ▲
▼ *ALL information below must apply to ALL individuals/hauls. Separate form(s) required for distinct sightings/interactions and banded individuals* ▼

Were all Individuals Inside the Tally Sample? (Required for seabird takes only) ☐ Yes (Random Sample) ☐ No (Opportunistic)

Identification Confidence ☐ Sure ☐ Likely ☐ Unsure

Body Length ☐ <3 m (<10') ☐ 3-8 m (10-25') ☐ 8-16 m (25-50') ☐ 16-26 m (50-80') ☐ >26 m (>80')

Sighting Condition ☐ Excellent ☐ Good ☐ Fair ☐ Poor

Closest Approach ☐☐☐☐ meters **Number Sighted (Best)** ☐☐☐☐ **Number (Min)** ☐☐☐☐ **Number (Max)** ☐☐☐☐

Notes & Identifying Characteristics

Marine Mammals: Describe Body Features, Markings, Coloration, and associated Organisms.
Seabirds: Describe Plumage Coloration, Size (Body and Beak), Bill and Foot Color.
General: Never include personally/business identifiable information (e.g., vessel name, crew name). Special characters (e.g., #, *, +) are not allowed.

Complete table for Banded Birds. If possible, retrieve USFWS bands
ID# entered in database w/ other details

Bird Bands	Leg (R/L)	Material	Color(s)	ID #

Interaction Codes

Species of Interest*
- ☐ Sighting Only
- ☐ Feeding on Catch (not yet landed on vessel)
- ☐ Feeding on Discarded Catch
- ☐ Feeding on Offal
- Feeding on Bait
  - ☐ Attached to Hook
  - ☐ Floating Free
- ☐ Boarded Vessel (own volition; not captured)

ALL Species
- ☐ Previously Dead
- Deterrence Used (not incl. "Seabird Avoidance Gear")
  - ☐ Seal Bomb
  - ☐ Firearm
  - ☐ Gaff
  - ☐ Yelling
  - ☐ Acoustic device
  - ☐ Other (describe in "Notes" section)
- ☐ Vessel Strike
- ☐ Entangled in Gear - Not Trailing Gear (non-lethal)
- ☐ Entangled in Gear - Trailing Gear (non-lethal)
- ☐ Lethal Removal
- ☐ Killed by Gear
- ☐ Other (describe in "Notes" section)

Interaction Outcome

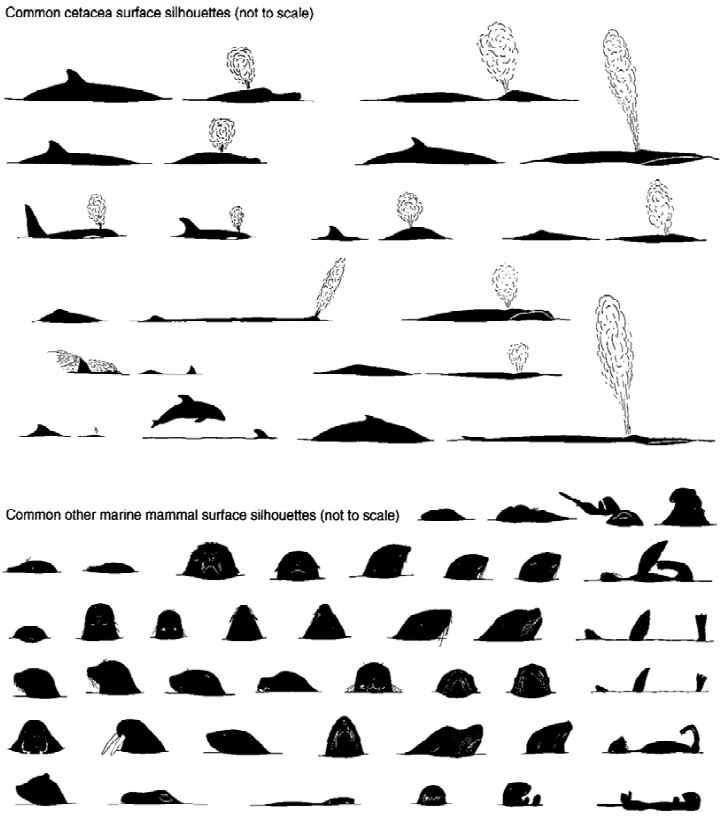
- ☐ Alive - No visible signs of injury
- ☐ Alive - Visible signs of injury
- ☐ Dead/Unresponsive Carcass
- ☐ Not Applicable *("Sighting only" or "Previously Dead")*
- ☐ Unknown

(Behaviors listed on back)

Figure 9-6: MM/SB/ST iteraction and sighting form, front.

- **Behaviors (back of form):** Check all behaviors observed.
  - Large Cetacean Behaviors
    - Blow visible for a distance
    - Breaching
    - Flipper slapping
    - Group feeding
    - Lob-tailing
    - Spy-hopping
    - Tail raised at dive
    - Side wake riding
    - Stern wake riding
  - Small Cetacean Behaviors
    - Bow riding
    - Leaping entirely out of water
    - Porpoising
    - Rooster-tailing
    - Slow Rolling
  - Pinniped Behaviors
    - Jug handling
    - Porpoising
    - Rafting
    - Spooked from haulout
    - Vocalizing
  - Sea Turtle Behaviors
    - Swimming
    - Diving
    - Floating
    - Foraging
    - Breathing
- **MM silhouettes (back of form):** Circle the silhouette of the marine mammal that looks the most like the marine mammal observed.
- **Photos/Video (back of form):** Check the box indicating whether photos or videos were taken of the observed animal(s).

Species of Interest: Marine mammals: All spp, except CA sea lions, All Sea turtles: All spp. Seabirds: ESA-listed spp. (i.e., Short-tailed Albatross, Marbled Murrelet, CA Least Tern), Pink-footed Shearwater, rare species, and any species outside of normal range.



OMB Control No. 0648-0593 expires 12-31-2021

WCGOP MM/SB/ST Form 2020

Silhouettes of most genera of marine mammals known to occur in and around North America. Subtleties exist between closely related genera. Care should be taken in identifying species. Assessing one's level of confidence with copious notes and observations is more valuable than a brief misidentification.

Behaviors

Large Cetaceans	Small Cetaceans	Pinnipeds	Sea Turtles
□ Blow visible for a distance	□ Bow riding	□ Jug handle	□ Swimming
□ Breaching	□ Leaping entirely out of water	□ Porpoising	□ Diving
□ Flipper Slapping	□ Porpoising	□ Rafting	□ Floating/ Basking
□ Group Feeding	□ Rooster-tailing	□ Spooked from haulout	□ Foraging
□ Lob-tailing	□ Slow rolling	□ Vocalizing	□ Breathing
□ Spy-hopping			
□ Tail raised on dive			
□ Side wake riding			
□ Stern wake riding			

Photos/Videos

□ **Photo(s) taken** □ **Video(s) taken**

Media files/folders should be named as follows:

- Barcoded Specimen taken: BC + Barcode# *(Ex: BC100334767)*
- Tagged by Observer: TAG + Tag# *(Ex: TAG887)*
- All Others: Sector + Trip# + Haul# *(if applicable)* *(Ex: CS65667H5, EFP45167H1)*

NEVER email photos of protected species!

*Species of Interest:

Marine Mammals: ALL spp., except for CA sea lions

Sea Turtles: ALL spp.

Seabirds: ESA-listed spp. *(Short-tailed Albatross, Marbled Murrelet, CA Least Tern)*, Pink-footed Shearwater, and any other rare species or species outside of normal range.

Beaufort	Sea Condition	Wave Height (in)	Wind (knots)	
0	glassy, calm	0	<1	calm
1	light ripples	1/4	1 - 3	light air
2	small wavelets	1/2	4 - 6	light breeze
3	scattered whitecaps	2	7 - 10	gentle wind
4	small waves, frequent whitecaps	4	11 - 16	moderate wind
5	moderate waves, many whitecaps	6	17 - 21	fresh wind
6	all whitecaps, some spray	10	22 - 27	strong wind
7	breaking waves, spindrift	14	28 - 33	near gale
8	medium waves, foamy streaks	18	34 - 40	gale
9	high waves, dense foamy streaks	22	41 - 47	strong gale
10	storm	time to go home		

Figure 9-7: MM/SB/ST iteraction and sighting form, back

Sea Turtle Life History Form Instructions

The "Gill Net Sea Turtle Life History Form" has been borrowed from the NMFS South West Region Drift Gillnet Observer Program and should be completed for all sea turtles encountered (See Figure 9-8 and Figure 9-9)

- **Trip number:** This is an automatically generated number by the database. Complete this field once the trip has been started in the database.
- **Specimen:** Leave this field blank.
- **Date:** Record as YY – MM – DD.
- **Set #:** Record the haul or set number.
- **Latitude:** Record the haul/set retrieval latitude as degrees (two digits) and minutes (two digits).
- **Longitude:** Record the haul/set retrieval longitude as degrees (three digits) and minutes (two digits).
- **Species:** Record the two-letter species code for the turtle.

  LV Olive Ridley

  ET Hawkbills

  CM Green/black

  CC Loggerhead

  DC Leatherback

  UT Unidentified
- **Left Costal Scutes:** Record the scute count.
- **Right Costal Scutes:** Record the scute count.
- **Vertebral Scutes:** Record the scute count.
- **Inframarginal Scutes:** Record the scute count.
- **Overlapping Scutes:** Record a 1 for yes, 2 for no, or 3 for unknown.
- **Inframarginal Pore:** Record a 1 for yes, 2 for no, or 3 for unknown.
- **1 Pair of Prefrontal Scales:** Record a 1 for yes, 2 for no, or 3 for unknown.
- **Lacks Bony Shell:** Record a 1 for yes, 2 for no, or 3 for unknown.
- **Dorsal Coloration:** Record a 1 for orange/red, 2 for grayish, or 3 for other/unknown.
- Dimensions
  - **Carapace length:** Record the length to the nearest tenth of a centimeter.
  - **Carapace width:** Record the length to the nearest tenth of a centimeter.
  - **Tail length:** Starting at the plastron's edge, record the length to the nearest tenth of a centimeter.
- Condition of turtle
  - Enter the number of the description that best represents the condition of the turtle.

    1 Previously dead

    2 Released unharmed

    3 Released injured

    4 Killed accidentally

    5 Escaped from net

    6 Treated as catch

    7 Other/unknown
- **Describe Any Injuries:** Provide notes on any injuries or on the general condition of the turtle. If notes are made, record a 1 for yes. Otherwise, record a 2 for no.
- **Photos Taken:** Record a 1 for yes or 2 for no. Record the file names of the digital photos in the comments section.
- **Samples Collected:** Record "2 – No". At this time we are not collecting ANY samples from turtles.
- Position in net
  - **Horizontal:** Leave this field blank.
  - **Vertical:** Leave this field blank.
- **Tags Present When Captured:** If a tag is present, record a 1 for yes and the additional information below. If a tag is not present, record 2 for no.
  - **Tag number:** Record the tag number(s).
  - **Tag type:** Record a 1 for plastic or 2 for metal.
  - **Tag(s) removed:** Record a 1 for yes or 2 for no.
  - **Address:** Print the return address on the tag(s).
- **Tags Applied By Observer:** Leave this section blank.

NOAA

GILL NET SEA TURTLE LIFE HISTORY FORM

U.S. DEPT. OF COMMERCE

TRIP ___-___-___ SPECIMEN ___T___ YR MO DAY SET #

LATITUDE ___N___ LONGITUDE ___W___

SPECIES:

OLIVE RIDLEY [LV] GREEN / BLACK [CM] LEATHERBACK [DC]
HAWKSBILL [ET] LOGGERHEAD [CC] UNIDENTIFIED [UT] ☐☐

IDENTIFICATION:

NUMBER OF: LEFT COSTAL SCUTES ___
RIGHT COSTAL SCUTES ___
VERTEBRAL SCUTES ___
INFRAMARGINAL SCUTES ___

OVERLAPPING SCUTES? YES [1] NO [2] UNK [3] ☐
INFRAMARGINAL PORES? YES [1] NO [2] UNK [3] ☐
1 PAIR PREFRONTAL SCALES? YES [1] NO [2] UNK [3] ☐
LACKS BONY SHELL YES [1] NO [2] UNK [3] ☐
DORSAL COLORATION: ORANGE / RED [1] GRAYISH [2] UNK / OTHER [3] ☐

DIMENSIONS (cm):

CARAPACE LENGTH (curved) ___.___
CARAPACE WIDTH (curved) ___.___
TAIL LENGTH ___.___

CONDITION OF TURTLE:

PREVIOUSLY DEAD [1]
RELEASED UNHARMED [2]
RELEASED INJURED [3]
KILLED ACCIDENTALLY [4] ☐
ESCAPED FROM NET [5]
TREATED AS CATCH [6]
OTHER / UNKNOWN [7]

DESCRIBE ANY INJURIES RESULTING FROM INCIDENTAL CAPTURE OR "OTHER" CONDITION:

☐ YES NO [1] [2] _____

POSITION IN NET:

☐ HORIZONTAL

[1] FOUND IN FIRST THIRD OF NET
[2] FOUND IN MIDDLE THIRD OF NET
[3] FOUND IN FINAL THIRD OF NET
[4] POSITION UNKNOWN

☐ VERTICAL

[1] FOUND IN UPPER THIRD OF NET
[2] FOUND IN MIDDLE THIRD OF NET
[3] FOUND IN LOWER THIRD OF NET
[4] POSITION UNKNOWN

TAGS:

1. TAGS PRESENT WHEN CAPTURED: YES NO UNK [1] [2] [3] ☐ PLASTIC [1] METAL [2] ☐
TAG # _____ TAG # _____ TAG(s) REMOVED? YES NO [1] [2] ☐

ADDRESS: _____

2. TAGS APPLIED BY OBSERVER: YES NO [1] [2] ☐ PLASTIC [1] METAL [2] ☐
TAG # _____ TAG # _____

_____
_____
_____
_____
_____

☐ PHOTOS TAKEN? ☐ SAMPLES COLLECTED? YES [1] NO [2] (describe on back)

NOTES: Use back of form for notes on any abnormalities, diseases, epibiota, signs of shark attack, and the diagnostic characteristics observed when identifying specimens not brought aboard.

Figure 9-8: Gill Net Sea Turtle Life History Form, Front

ADDITIONAL COMMENTS:

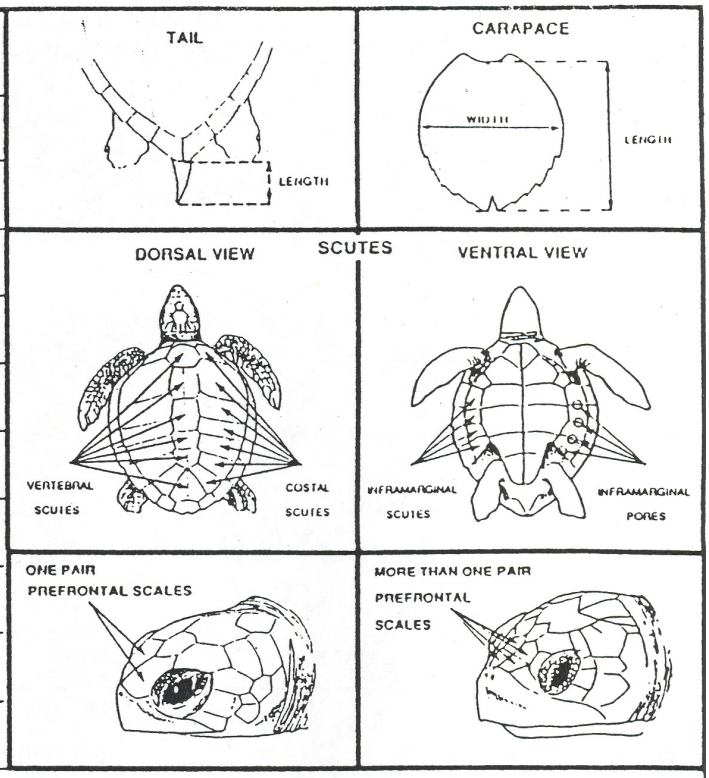
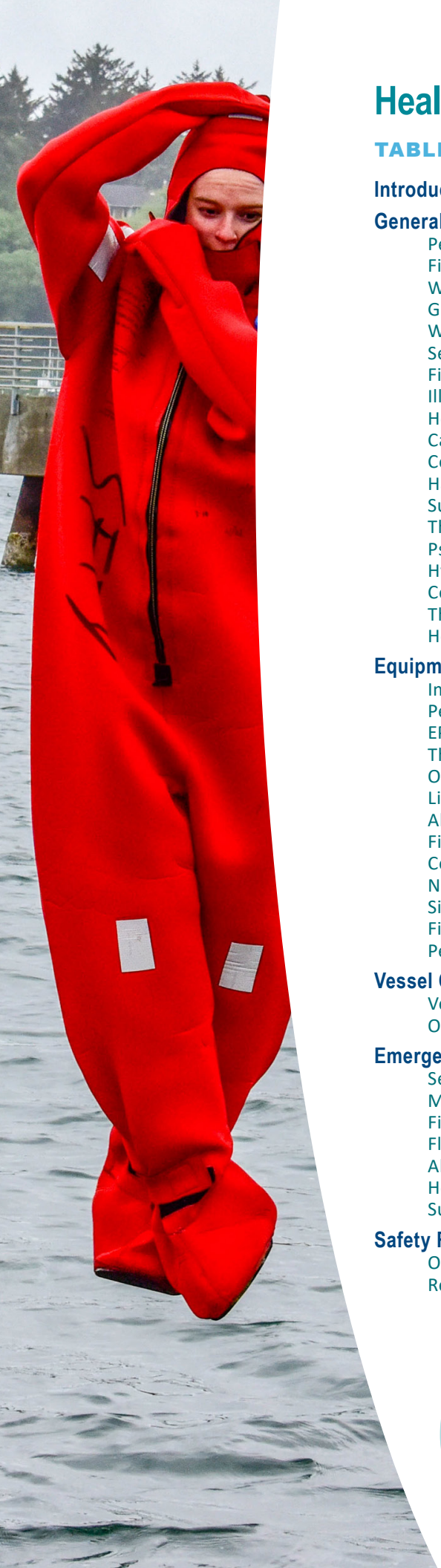


Figure 9-9: Gill Net Sea Turtle Life History Form, back.



Health and Safety Information

TABLE OF CONTENTS

Introduction . . . 10-2

General Health and Safety . . . 10-2
- Personal Health and Safety Aboard Vessels . . . 10-2
- First Aid and CPR . . . 10-2
- Weather . . . 10-2
- General Safety Precautions on Board . . . 10-2
- Working on Decks . . . 10-3
- Seasickness . . . 10-3
- Fish and Mammal Poisoning . . . 10-4
- Illness and Accidents . . . 10-5
- Heavy and Repetitive Lifting . . . 10-5
- Carpal Tunnel Syndrome . . . 10-7
- Coast Guard Boarding . . . 10-7
- Harassment . . . 10-7
- Survival at Sea . . . 10-8
- The 7 Steps to Survival . . . 10-8
- Psychology of Survival . . . 10-9
- Hypothermia . . . 10-9
- Cold-Water Near Drowning . . . 10-10
- The STAY Rules . . . 10-10
- Heat Escape Lessening Position (H.E.L.P.) and HUDDLE positions . . . 10-10

Equipment . . . 10-11
- Immersion Suit . . . 10-11
- Personal Flotation Devices (PFD) . . . 10-11
- EPIRBs and PLBs . . . 10-11
- Throw Ring . . . 10-12
- Observer Safety Equipment Checklist . . . 10-12
- Liferafts . . . 10-14
- Abandon Ship Kit/Ditch Kit . . . 10-15
- First Aid Kit . . . 10-15
- Communication Equipment . . . 10-15
- Navigation Equipment . . . 10-15
- Signals . . . 10-16
- Fire Extinguishers . . . 10-16
- Personal Survival Kits . . . 10-16

Vessel Orientation and Safety Checklist . . . 10-17
- Vessel Safety Orientation Checklist . . . 10-17
- Observer Safety Survey . . . 10-24

Emergencies on Board . . . 10-25
- Sending a May Day . . . 10-25
- Man Overboard . . . 10-25
- Fire . . . 10-26
- Flooding . . . 10-26
- Abandon Ship . . . 10-26
- Helicopter Evacuations . . . 10-27
- Summary . . . 10-27

Safety Regulations . . . 10-27
- Observer Health and Safety Regulations . . . 10-27
- Relevant Federal Requirements . . . 10-28

Chapter 10

Introduction

Commercial fishing is a hazardous occupation. Slippery decks, heavy gear, and an inhospitable environment are inherent dangers on fishing vessels. Observer safety is the number one priority of the WCGOP. Any decisions made by observers regarding safety will always be supported by the program. The safety and survival information presented in this manual and the observer safety training is only an introduction to these topics. There are many pamphlets, books, and videos that provide more detailed information about sea safety and survival. A good book to read about vessel safety is the University of Alaska's Marine Advisory Bulletin Beating the Odds on the North Pacific, which should be provided during observer training. Observers are also encouraged to use the experience of their fellow observers and staff as a resource for safety issues. The knowledge and experience of a vessel's captain and crew can vary, but working with them to resolve any safety issues aboard their vessel will likely be necessary. No matter how cautious the crew is, **it is always your responsibility to keep yourself safe** and to know how to react appropriately in an emergency.

General Health and Safety

Personal Health and Safety Aboard Vessels

Fishing vessels have many potentially dangerous areas. Be aware of your surroundings at all times and keep your eyes and ears tuned to what is going on. Long and/or late hours, the environment, the food, and the work may be quite different from what your body is accustomed. Two critically important factors in maintaining health in this new environment are drinking plenty of water and eating enough food.

First Aid and CPR

All WCGOP observers are required to have current American Red Cross first-aid and adult CPR certificates. Review first-aid and CPR procedures regularly and always bring the first-aid kit issued to you with you to sea. Realize that you may be the most knowledgeable person in first-aid and CPR on the vessel.

Weather

Before every trip, observers should check the NOAA weather forecast and buoy reports. Forecasts are predictions and may change, while buoy reports are the actual conditions at the buoy. Forecasts can be checked via VHF radio, weather radio, or online. If you are unsure about what weather is safe for a particular vessel, consult with local observers, leads, and/or your coordinator. You can access NOAA forecasts and buoy reports from:

http://www.wrh.noaa.gov/

General Safety Precautions on Board

- Apparel with loose strings or tabs and jewelry such as rings should be avoided as these can become caught in equipment or moving belts. Long hair should be tied back.
- Observers should use a dolly to transport gear from their vehicle to the vessel.
- Don't run aboard ships, particularly up stairwells. Always hold handrails in stairwells and on ladders. Try to keep one hand free to hang on to the vessel. Remember "one hand for you and one for the vessel." Slipping, tripping and falling are some of the most common causes of injury.
- When climbing on or off a vessel, you should not be encumbered with heavy backpacks or baggage. Balance is important and both hands must be free while boarding or leaving a vessel. Use a daypack and wear comfortable footwear such as Xtra-Tuffs or athletic shoes that give sure footing. Time your actions with the movement of the boat; i.e., start the climb up a ladder from the top of the up-and-down cycle to avoid being pinched against the ladder by a moving boat. All baggage should be secured with lines and transferred via rope lines or cargo nets. Observer baskets and luggage have been lost overboard because they were thrown without lines attached. Embarking and disembarking are times where injuries are likely to occur, so be extra careful. Ask for assistance from the crew when loading and unloading your observer gear.
- Fatigue and sleep deprivation suffered by the crew and by the observer are threats to everyone's safety. Be conscious of your own physical state as well as that of others on the vessel-whether the person on watch or the person in control of the gear. Fatigued individuals are more likely to make mistakes. Monotonous work, such as longline tally sampling, is challenging to do accurately and safely when tired. Follow the example of the crew and "catch up" on sleep when there are breaks in fishing.
- Bring things from home that will comfort you and can occupy your time during slow periods. Books, magazines, games, favorite articles of clothing, and pleasant smelling soaps are all examples of things you could bring along. These will help you deal mentally with the sometimes psychologically straining effect of life at sea on a fishing vessel.
- Vegetarians (due to meat-and-potatoes menus) and diabetics (due to odd eating schedules) need to be especially concerned about getting a proper diet. You should bring your own food, dietary supplements, vitamins, and extra medications.
- There is absolutely no place for drugs or alcohol aboard fishing vessels. Stay sober at all times. Also be aware of

side-effects of any prescription medications you may be taking, including sea-sickness medications. Those that cause drowsiness or fatigue may not be suitable for life at sea. Talk to you doctor and program staff if you have questions.

- Before you leave the dock review all the safety procedures with the captain and crew; be sure everyone knows their responsibilities in emergencies.
- Keep in mind your position on the vessel in relation to all of your exit/escape routes. Visualize how you would evacuate and retrieve your safety gear from wherever you may be on the vessel. Visualize your evacuation routes with the vessel in different orientations, i.e., on its side, upside down or in the dark.
- When you are not feeling well, use extra caution and adjust your sampling to minimize your time on deck.
- Inform the captain, your employer, and the program of any injuries or illnesses that occur at sea. Document these in your logbook.
- Wash your hands frequently with hot soapy water and/or sanitizer to reduce your chance of illness and infections.
- Treat all cuts, burns and other wounds seriously and apply appropriate first aid to avoid infections.
- Be aware of confined spaces, such as sleeping quarters, that contain chemicals. Fumes can build up in confined spaces and make people ill or even kill them.

Working on Decks

- Always wear your issued PLB on deck and keep it within reach when inside the cabin.
- Always wear an approved personal flotation device (PFD) and proper boots whenever you are on deck, embarking, or disembarking a vessel. Never board or get off a vessel without someone else present and aware of your actions. Mistakes made during this seemingly simple task have lead to injury, and even death.
  - Failure to comply with PLB and PFD expectations not only puts your life at risk, but is also grounds for termination.
- Wear appropriate gear when on deck sampling (rain gear, coat, gloves, hat, etc.) Try to stay as warm and dry as possible. Fleece will insulate you better and keep you drier in a wet climate than cotton will. Avoid hooded cotton sweaters (hoodies).
- Do not stay outside on the deck during rough seas. One observer was swept forward over a trawler's winches by waves sweeping up the stern ramp. When outside, remain in full view of a second party at all times. Never go on deck without notifying the crew.
- Watch out for slick spots where the deck is wet, oily, or frozen. Avoid tripping hazards such as hoses, or the raised metal edges often found around hatches to prevent water entry. Be aware of low overheads in vessel stairwells and watertight doors.
- Always check for open hatches on fishing vessels. Observers have been hurt falling into open hatches on deck and in the house.
- Beware of trawl cables under strain, they have given way and have maimed and killed fishermen. Whenever a cable is subjected to tension, stand out of the way of backlash. Ask the skipper where they want you to stand when hauling or setting gear. On trawlers, whenever possible, sample in an area where you don't have to duck under the mainwires to dump discard.
- Explain to the crew how you plan to sample the haul. Ask for advice on a safe place to stand and sample. When nets are being hoisted off the deck, stand clear. Heavy nets have fallen near observers when the suspending cables parted.
- Watch for moving pots and face the direction of the pot launcher while working. Stay away from the buoy line when the crew is launching pots. Crewmen have been caught in a loop, or the "bite," of the line and pulled overboard.
- Avoid stepping over all line, and especially in the bite, on all vessels and all gear types.
- Lift correctly! When lifting, get as close as possible to the object, keep your back straight and lift your legs. On a moving vessel, this is critical because unexpected movements can cause back strain. Don't be afraid to ask for assistance when moving large heavy items. (See the section, Proper Lifting Techniques on page 10-5).
- Wear eye protection on longliners whenever near the moving hooks.
- Protect your hands from injury by wearing gloves while sampling.
- Use a gaff to collect fish to protect your hands and keep your body further away from the line.

Seasickness

One of the least pleasant aspects of going to sea is the possibility of seasickness. An individual's susceptibility to seasickness is highly variable. Observers that have experienced motion sickness in cars, planes, or amusement park rides, may experience seasickness during the trip. Most people feel some level of discomfort when they first go to sea. Seasickness is a result of a conflict in the inner ear (where the human balance mechanism resides) and the eyes, caused by the erratic motion of the ship through the water. Inside the cabin of a rocking boat, for example, the inner ear detects changes in linear and angular acceleration as the body bobs with the boat. But since the cabin moves with the

passenger, the eyes register a relatively stable scene. Agitated by this perceptual incongruity, the brain responds with stress-related hormones that can lead to nausea and vomiting, similar to a poison reaction. This effect can be magnified by strong smells (like diesel fumes , cigarette smoke,or rotten fish, which are part of daily life at sea). Seasickness usually occurs in the first 1-24 hours at sea. For most people, seasickness dissipates when the body becomes acclimated to the ship's motion (getting one's "sea-legs"). In rare cases, an individual may stay ill beyond the first couple of days at sea. If this occurs dehydration may lead to shock and become life-threatening.

If you know you will be seasick or are unsure if you will be, you can take seasickness medication before going to sea. There are several over-the-counter or prescription medications available to minimize seasickness.

- **Dramamine:** (generic name is dimenhydrinate) is a useful antihistamine and is available over-the-counter. It can cause drowsiness.
- **Bonine:** (generic name is meclizine) is an effective antihistamine and is available over-the-counter. It can cause drowsiness.
- **Coast Guard Cocktail:** is a two part prescription-only drug that contains promethazine. It is a seasick-preventing antihistamine coupled with ephedrine, which prevents drowsiness.
- **Transderm Scop:** is another prescription-only motion sickness drug. It is a dime-sized adhesive patch that is worn behind the ear and delivers a continuous dose of scopolamine. Each patch lasts for 72 hours. The main side effects of the patch are dry mouth and occasionally blurry vision, but there is less drowsiness than other medications.
- **Acupressure wristbands and eating crystallized ginger:** are other remedies used with varying success.

To be effective seasick medications must be taken before the symptoms begin. When using a new medication, it is recommended that you try it on land first, so you know if it will cause unwanted side-effects. Most medications take several hours to be absorbed into the body. If you are vomiting and cannot keep anything in your stomach, taking medication at sea will not be an option. Even if you doubt that you will get seasick, you might want to take the medication before you board as a precaution if you notice rough weather is in the forecast. If you do get seasick, take comfort in the fact that recovery is only a matter of time. All that is usually required for a complete recovery is some patience. Here are a few tips and considerations regarding seasickness:

- Continue eating items like crackers; dry toast, dry cereal, etc. (Avoid anything greasy, sweet, or hard to digest). Keeping something in your stomach suppresses nausea, or, when vomiting, eliminates painful "dry heaves."
- Keep drinking fluids. Seasickness and related medications cause dehydration and headaches. Try to drink juices low in acidity, clear soups, or water, and stay away from milk or coffee.
- Focus on the horizon to eliminate the visual conflict in your brain.
- The vessel's motion is generally less pronounced the further astern you go. Try to stay as far back from the bow as possible.
- Keep working. Most people find that being busy on deck keeps their minds off their temporary discomfort. Also, the fresh air out on deck is often enough to speed recovery.
- Carry a plastic bag. This simple trick allows some peace of mind and eliminates some of the panic of getting sick. When vomiting over the side, be aware of which way the wind and waves are coming. Going to the leeward side will ensure that an unpleasant experience doesn't become any more so.
- Vomiting often relieves the symptoms of seasickness. Due to safety hazard, do not lean over the rail to vomit if conditions are rough. Vomit on the back deck and use the deck hose to wash it off.
- Above all, don't be embarrassed or discouraged. When observers are seasick, chances are others on board are seasick too! No one is immune to seasickness.

Fish and Mammal Poisoning

Bacteria from fish may lead to infection in cuts, scrapes, or punctures. To prevent "fish poisoning," wash your hands thoroughly after sampling in a solution of hot, soapy water. Change gloves often to keep them dry and discard any torn gloves. Treat **all** minor cuts, especially those on your hands, with an antiseptic such as Betadine to avoid infection from fish slime.

Be cautious whenever wading through fish on deck. Fish spines, especially on rockfish, can penetrate rubber boots and cause painful wounds to the feet. Spines often carry bacteria and can lead to fish poisoning.

If a wound gets red or swollen, soak it for a half hour in very hot, soapy water, at least three times a day. Dry and bandage the wound. Antibiotics are commonly prescribed for fish poisoning. The vessel will probably have some on board should they be needed. Never leave an infection untreated--the threat to your health can become much more far-reaching than simply a pair of inoperative hands.

Take extra precautions against infection when collecting specimens from marine mammals. Mammals have similar biological systems to people, and the organisms that infect them can infect people, as well. "Seal finger" is a fungal infection of the hands that can easily be contracted by a scratch or bite from a marine mammal.

Illness and Accidents

Observers must contact a coordinator and their employer any time an injury occurs or any time illness or injury prevents sampling!

If you become ill on board, such as coming down with a severe cold or flu or seasickness that inhibits work, you must inform your coordinator and your employer of the situation. If the illness gets worse or continues to affect your work for more than three days, your assignment may need to be changed. If you are hurt on board, let the skipper know and contact your employer and your coordinator. If the accident is serious, the captain will contact the USCG who will respond as necessary.

Heavy and Repetitive Lifting

The duties of WCGOP observers are physically demanding. The position requires not only heavy lifting but also repetitive motions. Even in calm weather, the observer will be subject to the rocking and rolling of the vessel, but these conditions are often compounded by slippery decks resulting in even more unstable and unpredictable footing. Because of these compounding factors, observers should always be thinking about avoiding injury and utilizing proper lifting techniques. Most observers at some time in their career will experience back pain or injury, but with the use of proper techniques and awareness, many injuries can be avoided.

Proper planning may be the most effective means of reducing the potential for back injury. Before sampling on a vessel, an observer should visualize the flow of fish and have a plan in place to avoid injury. Things to ask yourself before lifting baskets:

- How heavy is the basket? Can it be filled halfway twice?
- What can be done to minimize the number of lifts required or the amount of weight lifted? Can a basket be filled while it is on the scale?
- Where does the basket need to be moved to? Can it be slid across a rail or dragged across the deck instead of carried?
- What route does the basket have to follow? If it must be lifted can twisting be avoided?

Proper Lifting Techniques

Even with proper planning and utilizing proper lifting techniques to avoid excessive lifting, observers will frequently need to lift and move baskets that are heavy. Using proper lifting techniques can help to avoid injuries. When lifting:

- Size up the load before lifting, think about technique.
- Squat, don't bend (use your legs as much as possible).
- Stick chest out and back straight (Similar to proper sitting position).
- Keep feet apart at shoulder width.
- If possible stagger feet (similar to a lunge lift, but less exaggerated).
- Keep weight close to the body.
- Raise up with head first and chest out.
- If turning, turn with feet not body.
- Do not jerk or twist.
- Put the weight down the same way it was lifted (bend knees and not the waist).
- Wear shoes with non-slip soles.

Recommended Stretches and Exercises

Observers can do exercises to strengthen their core muscles with the goal of preventing back injuries. There are instructions for four exercises that observers can incorporate into their daily routine. West Coast observers, in particular, have jobs that make lifting-related injuries more likely than they might be otherwise. Observers often have several weeks of relative inactivity followed by periods during which observers go out at sea and work on deck sampling for about 2 to 5 days at sea, with periods of inactivity followed by hours of heavy lifting. Most back injuries have occurred when they are sampling on deck. Core strengthening exercises offer a meaningful way for the contractor to address risks posed by the combination of both 1) light-duty onshore periods that alternate with physically intense at-sea periods and 2) the cycles of rest and sampling that make up longer trips at sea.

While onshore between trips, observers can do all four of the recommended exercises in fifteen minutes per day. While at sea, observers can use one or more of these exercises to activate the core muscles before beginning sampling (abdominal crunches, for instance, could be done in your bunk or on the galley floor).

Core Strengthening Exercises

Core-strength exercises strengthen your core muscles, including your abdominal muscles, back muscles and the muscles around the pelvis. Strong core muscles make it easier to do many physical activities.

You can do core-strength exercises on a carpeted floor or mat. Breathe freely and deeply during each core-strength exercise. Focus on tightening your transversus abdominis, the deepest abdominal muscle and the one you feel contracting when you cough.

Repeat each of these core-strength exercises about five times. As your core strength improves, build up to 10 to 15 repetitions. If you have back problems, osteoporosis or other health concerns, talk to your doctor before doing these core-strength exercises.

ABDOMINAL CRUNCH

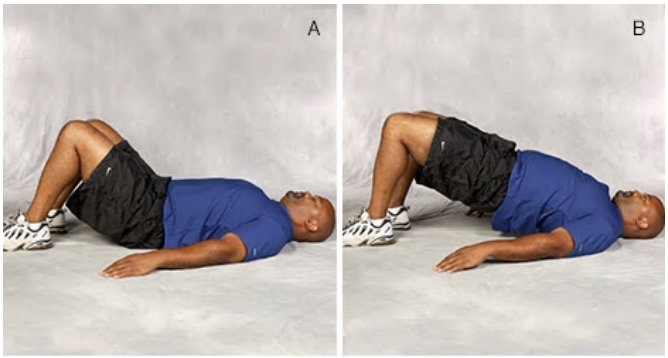


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Abdominal crunches are a classic core-strength exercise:

- Lie on your back and place your feet on a wall so that your knees and hips are bent at 90-degree angles. Tighten your abdominal muscles.
- Raise your head and shoulders off the floor. To avoid straining your neck, cross your arms on your chest rather than locking them behind your head. Hold for three deep breaths.
- Return to the start position and repeat.

BRIDGE



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To improve core strength of several muscles in combination, try a bridge:

- Lie on your back with your knees bent (A). Keep your back in a neutral position, not arched and not pressed into the floor. Avoid tilting your hips. Tighten your abdominal muscles.
- Raise your hips off the floor until your hips are aligned with your knees and shoulders (B). Hold for three deep breaths.
- Return to the start position and repeat.

SEGMENTAL ROTATION



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Segmental rotation is another way to boost core strength:

- Lie on your back with your knees bent and your back in a neutral position. Tighten your abdominal muscles.
- Keeping your shoulders on the floor, let your knees fall slowly to the left (A). Go only as far as is comfortable. You should feel a stretch, but not pain. Hold for three deep breaths.
- Return to the start position. Repeat the exercise to the right (B).

MODIFIED PLANK



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This core-strength exercise is called the modified plank:

- Lie on your stomach. Raise yourself up so that you're resting on your forearms and your knees. Align your head and neck with your back, and place your shoulders directly above your elbows. Tighten your abdominal muscles.
- Create resistance by pressing your elbows and your knees toward one another. Neither should move from their positions on the floor. Hold for three deep breaths.
- Return to the start position and repeat.

Carpal Tunnel Syndrome

Heavy lifting is not the only concern with observers and back injuries. Carpal Tunnel Syndrome (CTS) is another injury that has occurred with WCGOP observers. CTS occurs when the median nerve, which runs from the forearm into the hand, becomes pressed or squeezed at the wrist.

Causes of Carpal Tunnel Syndrome

Doing the same hand movements over and over can lead to carpal tunnel syndrome. It is most common in people whose jobs require pinching or gripping with the wrist held bent. People at risk include people who use computers, carpenters, grocery checkers, assembly-line workers, meat packers, violinists, and mechanics. Hobbies such as gardening, needlework, golfing and canoeing can sometimes bring on the symptoms.

Carpal tunnel syndrome is linked to other things too. It may be caused by an injury to the wrist, such as a fracture. Or a disease such as diabetes, rheumatoid arthritis or thyroid disease may cause it.

Symptoms of Carpal Tunnel Syndrome

- Numbness or tingling in your hand and fingers, especially the thumb, index, and middle fingers.
- Pain in your wrist, palm or forearm.
- More numbness or pain at night than during the day. The pain may be so bad that it wakes you up. You may shake or rub your hand to get relief.
- More pain when you use your hand or wrist more.
- Trouble gripping objects.
- Weakness in your thumb.

Early detection allows for early treatment which can prevent serious cases. WCGOP observers should report any signs or symptoms of CTS to their employer immediately. Simple steps such as taking frequent breaks and lightly stretching your wrist and hands can be useful in preventing CTS.

Coast Guard Boarding

If the Coast Guard boards your vessel, introduce yourself and let them know that you are a fisheries observer. Do not participate in any discussions between the Coast Guard and the crew.

Cooperate with the boarding party and honestly answer any questions. Coast Guard officers receive very little fish ID training and may ask assistance in identifying species of fish and invertebrates. Make sure your logbook and paperwork are in order in case they are requested for review. **Do not give away your original forms or your logbook**, refer them to the WCGOP for copies of the data. However, the USCG may request to see the data forms.

Try to find a private location if someone in the boarding party wishes to question you. If you are questioned, answer all questions completely and honestly. You are a source of objective information for the boarding party. You should cooperate fully and not hamper their investigation.

Have the boarding party call your coordinator if they have any questions that you are unable to answer or if any issues arise.

Harassment

It is of the utmost importance to the WCGOP that observers are provided a safe and hostility-free work environment. Observers can be subject to negative attention, comments, or actions as vessels often see them as unwelcome government agents or even "fish cops". It is the responsibility of the contractor (as the employer) and the vessel's personnel (by regulation) to ensure observers are not verbally, physically, or sexually harassed.

Harassment of observers by vessel personnel is strictly prohibited in 50 CFR 679.7 9(g). "It is illegal to (1) Forcibly assault, resist, oppose, impede, intimidate, or interfere with an observer." see "Regulations Protecting Observers" on page 13-4.

Identifying Harassment

Harassment can take many forms such as:

- Repeatedly waking an observer during sleep periods.
- Providing substandard accommodations and food.
- Criticizing an observer's sampling techniques or reporting practices.
- Excessive/Inappropriate teasing or ribbing.
- Interfering with an observer's sampling.
- Intentionally throwing discarded species over that are requested by the observer.
- Tampering with an observer's gear.
- Intimidating an observer.
- Barring an observer from areas they need access to do their job.

In all cases, harassment is defined as when the observer feels threatened or feels that their work or living environment is being compromised.

Sexual Harassment

Sexual harassment is any unwelcome behavior of a sexual nature. Privacy is greatly reduced onboard a vessel, and interactions can become intense very quickly.

Sexual harassment may include sexist remarks or behavior, or sexual advances which result in a tense and unproductive work environment. Examples of sexual harassment include:

- Suggestive sounds or gestures.
- Sexual remarks about one's clothing, body or sexual orientation.

- Leering or ogling.
- Persistent sexual comments and jokes.
- Constant brushing against or touching a person's body.

Sexual harassment is unwanted attention in a nonreciprocal relationship (relationships with vessel and plant personnel are prohibited under observer standards of conduct). In most normal interpersonal relationships, an individual can exercise free choice in deciding to develop a relationship based on mutual caring and respect. These elements are absent in sexual harassment. If you feel sexually harassed remember that it is not your fault! Take the appropriate steps to address the situation, contact help, and document thoroughly.

What to Do if Observers Experience Harassment

Observers who experience harassment in any form should confront it directly and document it completely. By reporting harassment, you protect future observers as well as yourself. Please report any cases of harassment to the observer Program and NOAA Fisheries Enforcement as soon as possible. The agency is unable to help with problems if they are unaware of them.

Tip: Observers should not feel embarrassed to report harassment or worry that they did something to provoke the unwanted behavior. Remember, unreported harassment not only affects your ability to do your job but it will set a precedent for the treatment of future observers on that vessel

Follow these steps when you experience harassment:

1. The FIRST time an observer feels uncomfortable or feels that a crew member has crossed a line, tell the offender to STOP. In this conversation, the harasser should be told that his/her comments, actions or advances are unwanted and that they should stop

   Tip: Remember that you are the judge of whether another person's actions negatively affect you.

2. Don't fight fire with fire. Observers should behave professionally at all times. Make sure that verbal and non-verbal body language exhibit a clear message to the harasser to stop.
3. Document all harassment incidents in the logbook from the very beginning. Record the details of the event assuming that the harassment could escalate. It is easier to do it initially than to come back and reconstruct it weeks later. In the logbook, describe the situation, including who, what, where, when, why and how. Refer to the daily notes instruction page in your logbook for more documentation details. Also, record this in the safety survey and reference the logbook page number(s). Be as detailed as possible. Include direct quotes, accurate times and dates, any witnesses present, circumstances surrounding the event and any other important details. Detail all attempts made to end the harassment and the responses that were received.
4. If the initial harassment is egregious or if the problem continues after clearly asking the harasser to stop, report it to the skipper. Tell the skipper the full story, explain that it is affecting your work, and request that he take steps to end the problem. Most skippers do not want trouble on the boat. If the skipper is informed that trouble is brewing, he should take appropriate action. Document any further incidents and the skipper's actions.
5. If the harassment is not taken care of by the skipper, if the issue is with the skipper, or if there are other problems with the skipper, report the offense to a coordinator and your contractor at the first opportunity, use your cell phone at sea if necessary. If there is no resolution, the coordinator will make arrangements for you to leave the vessel.
6. In an emergency situation contact help immediately, don't wait until you get to shore! Using your cell phone, vessel VHF or single-sideband radio or your EPIRB/ PLB in an extreme emergency, contact your coordinator, contractor, USCG, police or other help ASAP.

Survival at Sea

The 7 Steps to Survival

The USCG assembled the Seven Steps to Survival from personal experiences of those who survived emergency situations. Committing the seven steps to survival to memory should be one of the goals of every observer learning how to survive at sea. Every time the situation changes-boarding a raft, reaching land, etc., the seven steps begin again.

1. **Recognition:** You must quickly recognize the seriousness of the situation and that your life is in danger. Hesitation or denial may cost your life.
2. **Inventory:** Stop and assess the situation. Decide what you have that will help you survive and what are the hindrances. Inventory personnel, equipment, weather, your skills, injuries, and your mental condition. Doing so will help you to make good decisions that will help you survive.
3. **Shelter:** Your biggest enemy is the cold. Shelter can be clothing, an immersion suit, a raft, or an overturned vessel-anything that protects you against the loss of body heat. Water can take heat away from your body much quicker than air, so shelter also helps you keep as dry as possible. High heat loss areas, including the head and neck, need to be protected most. The added buoyancy of a PFD helps to keep your head and neck out of water, therefore conserving heat. In a shore survival

situation, the seven steps to survival start over again and shelter is your first priority after you inventory the situation. It takes hours to construct an adequate shelter on shore, and you must do so as soon as possible.

4. **Signals:** Anything that attracts attention and conveys a message is a signal. Radios, EPIRBs, and flares are signals carried by vessels. Immersion suits have lights attached. You may have a signal mirror in your personal survival kit. If abandoning ship, anything that can be tossed overboard may help an aircraft spot your position. *Anything that makes you bigger, brighter, or different from your surroundings is a signal,* so an attempt to gather items which float from a sinking ship should be made. In a shore survival situation, three of anything (fires, buoys, immersions suits on the beach) is an internationally recognized distress signal.
5. **Water:** It is recommended that humans drink two liters of water per day to stay healthy. You can live without water for only a few days and will suffer dehydration from the onset of any abandon ship emergency. Life rafts have limited rations of water, so it is advised to gather as much as possible before abandoning ship if time permits. Have a strategy for gathering extra water in an emergency. *Never drink seawater or urine.*
6. **Food:** A person can go without food much longer than without water. Never eat food without water-your body requires water to digest food. Life rafts are supplied with limited food rations. In a shore survival situation, many types of edibles can be found near shore. Almost any animals or green plants in the inter-tidal zone are edible, but avoid mussels and clams-they may cause paralytic shellfish poisoning.
7. **Play:** Studies have shown that mental attitude makes a positive difference in a survival situation. Play is anything that keeps you occupied and prevents your mind from dwelling on the difficulties you are facing. Play could be reading, telling jokes or stories, completing a task, improving your shelter-anything that keeps your mind active and focused.

Psychology of Survival

Often the reason some people survive emergencies and others don't is simply the "will to live" or the "will to survive". Maintaining a positive attitude in an emergency situation and trying to regain a sense of control over your situation is very important for survival.

Some common themes that run through the stories of survivors:

- Accept your situation, but don't give in to it.
- Act like a survivor, not like a victim.
- Don't give up.
- Be positive.
- Have a plan.
- Pray.
- Play.
- Keep a positive attitude, and find the will to live!

Hypothermia

Harsh, cold, wet conditions as well as the chance of going overboard make hypothermia a real threat on fishing vessels. Hypothermia by immersion in water can occur in temperatures less then 91° F, and many deaths at sea due to drowning are actually caused by hypothermia.

Hypothermia, by definition, is a cooling of the core temperature of the body. It is caused when the body's heat production can't keep up with the body's heat loss. The five main heat loss areas are; the head, neck, armpits, chest/ sides, and the groin. These areas are essential to keeping warm and insulated while working on deck. Ways to prevent heat loss are by retaining body heat with proper clothing and insulation; regulating body heat by eating healthy and drinking warm drinks, and by avoiding getting wet. You should also be aware if you are overheating and adjust your layers as necessary.

Hypothermia can happen on land, a slower often harder to recognize form, or by immersion in water which is a rapid onset, dangerous condition which requires rescue from the water. Both types of hypothermia happen in stages:

1. Shivering.
2. Violent shivering, loss of coordination.
3. Unconsciousness.
4. Death.

It is important to recognize hypothermia to treat it as soon as possible. Drop in temperature, feeling cold, depressed vital signs, slurred speech, staggering, reduced mental ability/ impaired judgment and lack of response to stimuli are all signs of hypothermia. Victims with these signs should be considered hypothermic and treated accordingly.

Treating hypothermia patients is basically the same for all types, with a few differences depending on whether it is mild or severe and if a pulse and breathing are present.

For mild hypothermia

If a victim is mildly hypothermic (only feels cold, with no other symptoms), some exercise, food and drinks in small quantities if the victim can swallow, and a warm shower, may be appropriate. Remove wet clothing and replace with dry, warm insulating layers.

For severe hypothermia

If the victim shows any signs of severe hypothermia (violent shivering, loss of coordination, or unconsciousness):

Treat gently

- Don't force joints, or rub skin.

Increase Shelter

- Remove wet clothing.
- Increase insulation.
- Protect from elements.

Gently rewarm core

- Padded/insulated heat packs.
- **NO** exercise.
- **NO** food or drinks.
- **NO** showers.

Monitor and transport to a care facility

Severe hypothermia without a pulse and no breathing

Treat severe hypothermia without a pulse and no breathing as described above in severe hypothermia and begin CPR. When in doubt of the level of hypothermia, assume the worst and treat appropriately.

Cold-Water Near Drowning

Drowning victims who appear dead may be saved! Cold-water near drowning is a phenomenon that has been observed in cold waters (under 70° F) where victims have been revived using CPR after being immersed in cold water for up to one hour. Victims appear to be dead but have been revived. In a cold water drowning event, first rescue the victim from the water, then start CPR and prevent further heat loss and transport to a care facility. Keep in mind that although a victim looks dead, s/he may be revived by this technique.

The STAY Rules

If an emergency forces you into the water with or without your immersion suit and no raft, practice the STAY rules:

1. STAY afloat.
   - Wear a PFD, or immersion suit.
2. STAY dry.
   - Immersion suits are the best protection in the water.
   - Get out of the water as soon as possible.
3. STAY still.
   - Staying still decreases heat loss by 30% over swimming or treading water.
4. STAY warm.
   - Protect high heat loss areas; head, neck, armpits, chest/sides, and groin.
   - If prolonged water exposure is unavoidable, assume HELP or HUDDLE positions.
5. STAY with the boat.
   - Staying with an overturned vessel will shelter you and make you a bigger signal.
6. STAY together.
   - Makes a bigger signal and promotes moral support.
7. STAY sober.
   - Drugs and alcohol have no place in an emergency situation.

Heat Escape Lessening Position (H.E.L.P.) and HUDDLE positions

When immersed in the water in an immersion suit or PFD it is important to assume positions that will help you stay still and conserve heat. The use of these tactics can double survival time over that of swimming or treading water. These positions cannot be assumed without flotation. These positions help conserve heat by protecting your main heat loss areas; head, neck, armpits, sides and groin. To assume the H.E.L.P. position, float slightly on your back and hold the inner sides of your arms tight against the sides of your chest to protect your armpits. Bend your knees and pull up your legs toward your groin as far as you can without tipping over. To assume the HUDDLE position form large or small groups and form tight huddles to share body heat. Individuals without flotation or who are really cold can be put in the middle where it is warmest. Groups can also lay on their backs, head to toe, and holding on to each other leg's to form the RAFT position. Placing an injured person or someone without flotation on top keeps them warmer and out of the water. The HUDDLE and RAFT formations make you bigger, brighter, and different. The best way to stay warm and dry is to stay out of the water in the first place.



Figure 10-1: Observers surronding person not in suit.

Equipment

Immersion Suit

An immersion suit is required for everyone aboard a vessel that operates in cold water. You will be issued an immersion suit with your gear. It is your responsibility to check and maintain your suit. If it gets wet, air-dry it out of direct sunlight. If you notice any rips, tears, punctures, or other damage, notify the gear technician. Check your immersion suit monthly and record the date of inspection in your logbook. Store your immersion suit in an easily accessible location out of harm's way. One of the best locations is just inside the galley door. That way you can reach it easily while working on deck and when exiting the wheel house.

The procedure for donning an immersion suit is as follows:

1. Sit on the deck and work your legs into the suit. Remove your boots, if necessary. Placing plastic bags over your boots or feet may help your legs slide easier. If you choose to use plastic bags, be aware of them and make sure they do not get stuck in the zipper. People have died when a bag got caught in the zipper and their suit filled with water. If you can, leave your boots on or take them with you in your suit.
2. Once your legs are all the way in, get up on your knees. Place your weak arm in first, and then pull the hood over your head with your strong arm. If you have long hair, make sure that it is safely tucked in the hood. If you are wearing a hooded sweatshirt be careful not to mix the hoods up.
3. Holding the zipper below the slide with one hand, lean back to straighten the zipper and pull the lanyard with the other hand. Secure the face flap. Many times toggles or whistles attached to the zipper get caught during donning. **Do not** inflate the air bladder until in the water.



Figure 10-2: Observers boarding a life raft.

4. Jumping in the water is the last resort. Ease yourself into the water if possible. If jumping is necessary, face the bow or stern and place your vessel side arm over the side and top of your head for protection and with the other hand cover your mouth and nose and get a couple of fingers inside the hood to allow air to escape from the suit upon entering the water. Step off the vessel, don't jump, and cross your feet upon entering the water to protect from floating debris.

Personal Flotation Devices (PFD)

You will be issued either self-inflating work vest or a type III work vest as your PFD. Make sure that the PFD you are issued fits properly. It is program policy to wear your PFD at all times while on deck and when embarking and disembarking a vessel. Check your PFD monthly for damage and conduct a manual inflation test once a month and record the date of inspection in your logbook. Never wear a PFD inside a vessel unless instructed by the USCG. It may impede your ability to escape if the vessel sinks.

EPIRBs and PLBs

All vessels operating outside of three miles should have at least one 406 MHz EPIRB (Emergency Position Indicating Radio Beacon.) Depending on the vessel size the EPIRB may be mounted in a float-free bracket that will be automatically deployed or in the case of smaller vessels may need to be manually deployed in the event of a sinking. The signal is received by satellite and will identify the registered owner. It is essential to know where the EPIRB is mounted and how to activate it manually. In the event of an abandon ship emergency, it is the most important item to take with you. Someone will be assigned that duty on the station bill. Be sure to locate the EPIRB(s) on the vessel and read the directions on how to activate them.

In addition, observers are issued a personal Personal Locator Beacon (PLB) that must be manually activated. You should wear your PLB at all times when on deck. There have been several cases where the Coast Guard has received signals from observers EPIRBs that have accidentally gotten wet. If your EPIRB gets wet, wipe it off immediately. If you accidentally activate your PLB, call your coordinator and the Coast Guard.

Using EPIRBs

- In an Emergency, turn it on and leave it on.
- Protect it from loss.
- Keep it with you when you leave the vessel.
- Keep antennae vertical, out of the water.
- Do not allow antennae to touch any solid object; this prevents grounding.

Throw Ring

All the commercial fishing vessels you will observe are required to have at least one ring buoy or "Lifesling," unless they are less than 26' in length. Smaller vessels may substitute a type IV throwable cushion. These devices are used to mark and or assist in the recovery of a man overboard. Make sure you know where they are stowed.

Observer Safety Equipment Checklist

The Observer Safety Equipment Checklist is located in the Observer Logbook and is where observers document their monthly inspections of their safety gear. Go through the checklist every month at a minimum (before every trip is recommended) with your gear in hand and check off each item on the list that passes inspection. Include in the comments expiration dates, any servicing you perform, or comments. **If an item does not pass inspection, bring it to the attention of the gear technician or other WCGOP staff immediately.** They will get you a replacement ASAP. It is important to do timely inspections so that if replacement safety gear is needed it can be issued before your next trip. Again, it is very important to inspect your safety gear regularly as faulty gear may be of no help should you need it. Inspections are also a great time to practice using your safety gear, such as donning your immersion suit. It is the observer's responsibility to carefully inspect their safety gear and ultimately to ensure their own safety.

Equipment Test Checklist

Observers should maintain program-issued safety equipment on a monthly basis to ensure it's working properly. If any item does not pass the examination, notify the gear coordinator or your debriefer immediately so it may be replaced. Check your equipment a minimum of once per month. Check off only those items that pass.

Inspection date #1: _____ Inspection date #2: _____

406 EPIRBs	**1**	**2**	**Comments**
No physical damage? (cracking corrosion, etc.)	☐	☐	
Tested EPIRB?	☐	☐	
Battery expiration date?	☐	☐	Exp. date:
Registration expiration date?	☐	☐	Exp. date:
No antennae damage? (cracks, washer at base)	☐	☐	

Beacon ID: _____

PLB			
No physical damage? (cracking, corrosion, etc.)	☐	☐	
Tested PLB?	☐	☐	
Battery expiration date?	☐	☐	Exp. date:
Registration expiration date?	☐	☐	Exp. date:
No antennae damage? (bent, poor rotation, etc.)	☐	☐	

Beacon ID: _____

Immersion Suit			
No rips/tears/holes in Neoprene?	☐	☐	
Seam thread and inner seal glue intact?	☐	☐	
No grease/oil stains/ mildew?	☐	☐	
Zipper seams in good condition?	☐	☐	
Zipper waxed? (if necessary)	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	
Whistle securely attached?	☐	☐	
Whistle tested?	☐	☐	

31

Figure 10-3: Page 1 of Observer Safety Equipment Checklist from logbook

Inflatable PFD	1	2	Comments
No rips/tears/holes?	☐	☐	
Seams in good condition?	☐	☐	
Straps and clips in good condition?	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	
CO2 indicator green?	☐	☐	
Hydrostatic release date current?	☐	☐	Exp. date:
Complete manual inflation test?	☐	☐	Test date:

Workvest PFD

No mildew?	☐	☐	
No foam shrinkage?	☐	☐	
No foam water-logging?	☐	☐	
No rips/tears/holes?	☐	☐	
Seams in good condition?	☐	☐	
Straps and clips in good condition?	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	

Marel Scale Inspection

Check all parts of scale for cleanliness. All parts should be free of mud and scales. If dirt is dried on, soak scale in tub for 20 min and scrub with a brush or sponge. (Use on a sponge on face plate) Rinse with a garden hose or shower.

Scale serial number: _____

Clean and rinsed inside and out?	☐	☐	
Cables: no holes, appear secure?	☐	☐	
No debris under load cells?	☐	☐	
Weight pan straight?	☐	☐	
Battery tube threads cleaned and lubed?	☐	☐	
Buttons function correctly?	☐	☐	
Rust removed?	☐	☐	
Display lights all working?	☐	☐	
No condensation in face plate?	☐	☐	
Current 90 day overload test?	☐	☐	Test date:

Figure 10-4: Page 2 of Observer Safety Equipment Checklist from logbook

Liferafts

Most vessels operating outside of three miles are required to have a liferaft. Liferafts are required by law to be mounted in a float-free arrangement or have a hydrostatic release designed to deploy the raft automatically. In the event of an emergency it is always better to manually launch and inflate the raft if there is time. Life rafts need to be serviced annually (except a brand new life raft which is good for two years from the manufacturing date). All liferafts need to have the repack /expiration date displayed on the canister. Never go on a vessel that is required to have a liferaft if it needs to be repacked, is not mounted correctly or has an expired hydrostatic release. Know where the liferafts are stored, how to remove them from the cradle, where to launch them, and how to inflate them.

Hydrostatic releases

Most life rafts and EPIRBs will be mounted with a hydrostatic release designed to automatically deploy the unit when submerged to several meters. Always check the expiration dates to assure that they are current and that the release is hooked up correctly

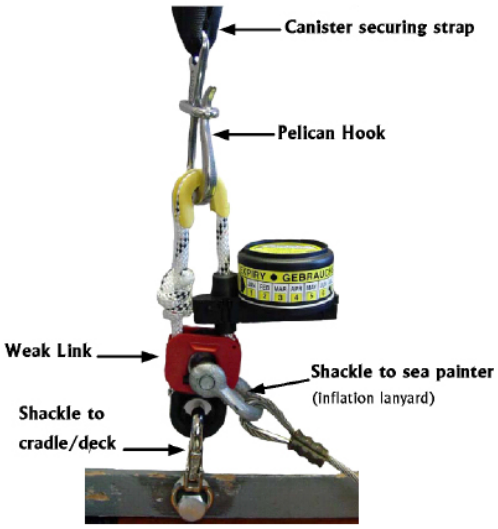


Figure 10-5: Parts of a hydrostatic release.

Launching a liferaft

1. Release hydrostatic release if present.
   - To release the hydrostatic release; unhook the pelican hook.
2. Secure painter only if someone can stand by with a knife to cut it if the vessel starts to sink quickly. Otherwise, rely on the weak link built into the hydrostatic release.
3. Carry, do not roll, canister to lee side (windward if the vessel is on fire).
   - Choose a convenient launch point typically near the bow or stern and away from obstructions.
4. Make sure water is clear of people and debris.
5. Toss canister into water with painter secured.
6. Pull painter all the way out.
   - Up to 250'.
7. Give painter a hard tug.
8. Canister should split apart, and raft should inflate.
   - Hissing sound is OK, over-inflation valves are working.
   - May inflate upside down.
9. Pull raft back to vessel and re-tie the painter line.

Boarding liferafts

1. If possible, enter liferaft dry.
2. Don't jump on the canopy - if possible, aim for the door. You could injure yourself on the SOLAS kit, CO_2 tank or other people.
3. Beware of sharp objects.
4. **Boarding from water:**
   - **Without SOLAS entry ramp:**
     - Use buoyancy of immersion suit/PFD to spring up into the doorway.
     - Legs together – "seal kick."
     - Grab top tube, then straps inside to pull self in.
     - People inside should help others aboard by grabbing below their arms and sitting back. Always pull people in facing the raft to avoid injuring their backs.
   - **With SOLAS entry ramp:**
     - Board ramp.
     - Enter liferaft.

Righting liferaft

1. Find side with CO_2 cylinder.
2. Position raft to use wind and waves to your advantage.
3. Grab righting strap, handles or line, in open hand.
4. Pull over raft.
   - You may need to mount the raft, kneel on cylinder and lean back.
5. Land in water on back.
6. If raft lands on you, create air pocket by raising hand, pushing the raft floor up.
7. Use righting strap to find perimeter of raft.

SOLAS Kits

Many life rafts will contain a SOLAS (Safety Of Life At Sea) kit. These kits are packed inside the life raft and contain things such as food, water, 1st Aid kits, flares, etc. The life raft will be labeled with the type of SOLAS kit included. This should be noted on your Safety Checklist.

STANDARD EQUIPMENT

Insulated canopy	Painter
CO2 cylinder	Sea anchor
Towing bridles	Righting strap
Lifelines	Heaving lines
Paddles	Automatic locator light
Automatic interior light	Inflating and bilge pump
Leak stoppers	Repair kit
Knife	Survival manual
Pressure relief valves	Rainwater catchments
Rainwater storage bags	Water stabilizing pockets

SOLAS B (LIMITED SERVICE PACK)

All of the above	Flashlight
2 flashlight bulbs	Spare flashlight batteries
Sponge	Bailer
Jackknife	Parachute distress flare
Hand-held flares	Smoke flare (optional)

SOLAS A (OCEAN SERVICE PACK)

All of the above and these:

Signal mirror	First aid kit
1.5 quarts water/person	1lb rations/person
Additional bailer	Additional sponge
Additional parachute flares	4-6 handheld flares
Signal whistle	Anti-seasickness pills
Fishing kit (optional)	Graduated drinking vessel

Abandon Ship Kit/Ditch Kit

Many vessels will have an abandon ship kit. These kits may contain extra flares, food, water, First aid materials, radios, etc. Always find out where this is stored in case it is needed in the event of an abandon ship.

First Aid Kit

Vessels will have some type of First aid kit onboard, but do not rely on the vessels kit for your own personal first aid. The program will issue each observer a basic First aid kit. Observers are encouraged to add to it and should include any personal medication that is needed. It is the observer's responsibility to keep everything current in the kit. If anything is used during a trip, make sure to replace it prior to the next trip.

Communication Equipment

Most vessels will have at least one VHF (Very High Frequency) radio with ranges up to 25 miles. Many will have SSB (Single-Sideband) radios with reliable ranges of 50-150 miles. Some may have CB's (Citizen Band) with reliable ranges up to 5 miles. Every time you board a vessel, learn where the radios are, which ones work, and how to use them.

In some areas, your personal cell phone will work at sea. This can be an important resource for sampling questions and especially during an emergency. Your phone may be the only piece of communication equipment not burning in the wheelhouse!

In addition to radios, many boats will have cell phones that are more powerful than your personal cell phone. Some will have Satellite phones. You should ask about where these are located and how to use them in case of an emergency. You can always use these to call for help; however, the radios should be your first choice.

Emergency Channels: Many radios will have a red button that will automatically go to the emergency frequency.

- VHF Channel 16
- SSB 4125 MHz
- CB Channel 9

Many modern radios will have a "Distress" button that can be pushed to send out a distress call with the vessel location if there is no time to send a proper MAYDAY. For more information on radio communications, including use of VHF-FM, and HF-SSB radios see "Radio Procedure" on page A-25.

Navigation Equipment

Most of the fishermen will be using GPS (Global Positioning System) to get their latitude and longitude. Some still rely on Loran positions, but most will get these from a GPS. If the skipper is still using Loran ask if s/he can provide you with GPS fishing locations instead. If the GPS is hooked up to a plotter, be sure you know which position is the vessel and which is the curser.

Signals

Elements of effective signals

- Must attract attention.
- Bigger
- Brighter
- Different
- Must convey message that you need help.

There are two types of signals;

- **Passive:** A signal that functions on its own.
  - EPIRB, bright colors, wreckage.
- **Active:** A signal that only functions with your help.
  - Flares, whistles, mirrors, radio, phone.

General rules for signal use

- Stay alert! Maintain watches.
- Have active signals always ready.
- Protect signals from loss.
- Signals in groups of three are an internationally recognized message of distress.

Flares Types

- **Meteors:** Visibility is best at night and have a fast burn time.
- **Parachute Flares:** Have a 60 second burn time, up to 1000 feet height, and visibility is best at night.
- **Hand-held flares:** Has a longer burn time and visibility is best at night.
- **Smoke:** Visibility is best in daytime and works best in light wind.
- **Dye marker:** Visibility best in daytime and works best in calm seas.

GENERAL RULES FOR FLARE USE

- **Hand-held:** Be aware of hot, dripping slag that could burn you, your immersion suit and/or the life raft.
- **Meteors:** Hold 60-80 degrees above the horizon.
- **All Flares:** Treat like a firearm, use gloves if possible, turn face away prior to firing. Do not fire directly at aircraft, vessels, or people. Know how to use before handling – read instructions! Keep wind to your back.

OTHER FACTORS

- If you have more than three flares fire one off immediately regardless of any potential rescue in sight. (preferably parachute or meteor) Conserve the rest.
- Primary use is when potential rescuers are in sight.

Other Signals

- **Whistles:** Three to five times louder than the human voice.
- **Strobe and lights:** Keep batteries up to date and check bulb monthly.
- **Chemical light sticks:** Check expiration dates.
- **Reflective tape:** Check that it is not peeling off of PFDs and immersion suits.
- **Mirrors:** Visible in excess of 50 miles.
- **Fires:** Build three fires with lots of smoke (use damp leaves, seaweed, etc.).

Fire Extinguishers

Most commercial fishing vessels are required to carry fire extinguishers. Only vessels less than 26' with outboard motors and construction that will not permit the entrapment of explosive or flammable gasses or vapors are not required to carry fire extinguishers. You should check where fire extinguishers are located and that they are in working order. You should always know where the closest extinguisher is. You may need to respond to a fire or provide backup to the crew. Some vessels may have fixed extinguishing systems located in the engine room. Get out of closed spaces and shut off any air supplies before these systems are triggered.

Personal Survival Kits

A personal survival kit takes up very little space and greatly enhances the ability to survive. Think of the seven steps to survival and choose items that may help in an emergency situation onboard a vessel. Your kit should contain at least one item from each of the four elements essential for a personal survival kit.



Figure 10-6: SOS on beach written with rocks.

1. **Signals:** mirror, whistle, flares, strobes, streamers, etc.
2. **Shelter aides:** space blankets, dental floss, knife, etc.
3. **Fire:** fire starter, lighter, waterproof matches, tinder, etc.
4. **Personal medications:** Seasickness medications, antacids, insulin, etc.

Build your kit small enough so that it can be worn on your body while on deck or in the house. You should have your personal survival kit on you at ALL times.

A larger more comprehensive kit should be built and kept in with your immersion suit. This larger kit can contain food, water, radio and other helpful items in an emergency situation. This larger kit kept with your immersion suit is not a replacement for a personal survival kit worn on your body at all times. Items such as a knife, dental floss (a strong multi-purpose line), plastic garbage bags, matches, signal mirrors, a compass, hard candy, or bouillon cubes are small items that fit in a zip-lock bag and could save your life.

Vessel Orientation and Safety Checklist

WCGOP observers are required to check every vessel they board for safety equipment required by U.S. Coast Guard regulations and general safety concerns. Prior to leaving on the first trip on any vessel, all observers must do the following two things:

- Complete a Vessel Safety Orientation Checklist. (See Figure 10-11).
  - These checklists must be done for each logbook and turned in monthly.
- Mail, fax or e-mail, a copy of the completed Vessel Safety Orientation Checklist to their checklist to their WCGOP Coordinator (Non Catch Shares) or Provider (Catch Shares).

Prior to your first trip ask for a vessel orientation. If the captain refuses to give you one, document it in the logbook and in the comment section of the Vessel Safety Orientation Checklist. Check for a Station Bill and any emergency instruction. If a Documented vessel doesn't have a Station Bill, offer to give them one and help them fill it out.

During your orientation, familiarize yourself with all the safety equipment, possible sampling areas, gear storage areas, how all doors or hatches operate, and egress routes. Always think about how to get out of enclosed areas, especially the bunk room, upside down, in the dark and underwater.

Pay special attention to listing, bilge pumps running at the dock, excess water in closed spaces, and weight stored high above deck. These issues could severely impact the stability of the vessel at sea. Discuss any concerns with the captain, your provider, and feel free to contact your coordinator with questions.

During the orientation, pay close attention to overall vessel condition. Look for rust holes though the hull or deck, broken windows, missing hatches, broken bin boards etc. Also note cluttered work areas, poorly stowed gear, spilled lubricants, fuel, and hydraulic fluid. Record all concerns about overall vessel condition on your Vessel Safety and Orientation Checklist. Discuss these concerns with your provider and your coordinator prior to making a trip.

After the initial trip, periodically verify that the vessel safety gear remains on the vessel and is in working order. If at any point the vessel does not meet U.S. Coast Guard safety regulations, the vessel is considered unsafe to carry an observer and you may not board. If this should occur, contact your provider and a coordinator immediately.

Vessel Safety Orientation Checklist

The Vessel Safety Orientation Checklist is designed to facilitate the initial safety check. Always verify all the items on the checklist before embarking on a vessel for the first time. Write thorough comments on any items that are unavailable, unsafe or look inadequate. Always advise your provider and a coordinator immediately of any unsafe situation and NEVER leave on a vessel that you do not feel is safe.

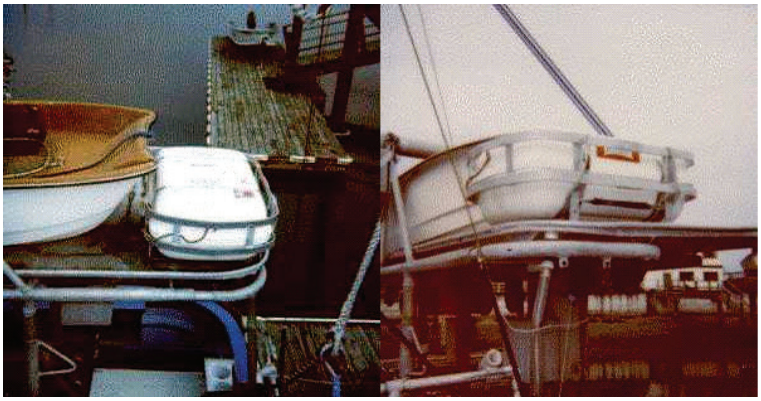
Vessel Safety

Prior to boarding a vessel for the first time, you are required to check the vessel for safety equipment required by U.S. Coast Guard regulations. Check the major safety items identified below. Please be aware that certain items on the safety checklist may not be required for vessels of certain sizes or operating in certain geographic areas. For further information, refer to the US Coast Guard publication "Federal Requirements for Commercial Fishing Industry Vessels" or contact your coordinator.

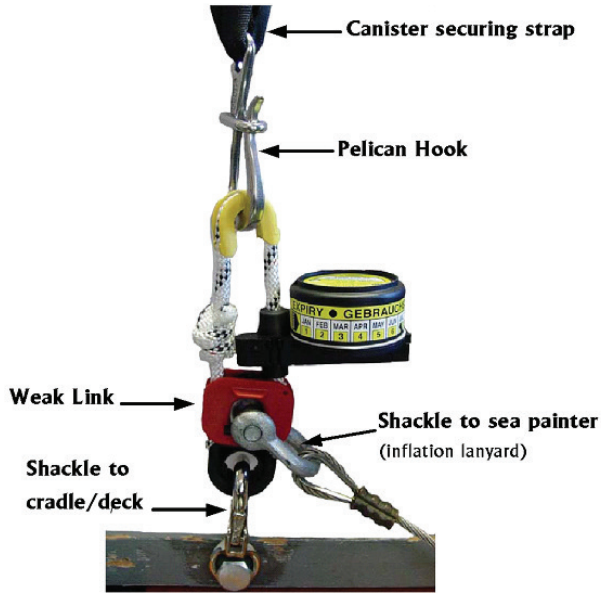
Write thorough comments on any items that are unavailable, expired, unsafe, or you feel are not adequate.

Advise your NMFS coordinator of any unsafe situations. Do not leave on a vessel that you do not feel is safe. Items listed below may not necessarily deem a vessel safe. Hydrostatic releases are good for two years from installation date. Equipment expires midnight of the last day of the month listed. Ex. A hydrostatic release marked 11/2018 expires midnight Nov 30, 2018. Do not leave on a vessel if any piece of equipment will expire during the trip. Each trip, verify that the safety gear remains on the vessel and is in working order.

Float-free arrangement: Life raft in the alternate float-free arrangement



Hydrostatic release set-up: The hydrostatic release must be current, hooked up properly and the expiration date marked



9

Figure 10-7: Safety checklist instructions page 1.

WCGOP Vessel Safety Checklist Instructions

Depending upon the vessel length, the area of operation and number of crew, the safety equipment required under USCG regulations will vary. For details, be sure to refer to the "Federal Requirements for Commercial Fishing Industry Vessels" pamphlet. After referring to the pamphlet, if you still have questions contact your lead observer or coordinator.

Commercial Fishing Vessel Safety Examination Decal

- Record the Vessel Name and USCG/State Registration number. These are available in the WCGOP Database and should be confirmed during the vessel safety check.
- Look for a current USCG Commercial Fishing Vessel Safety Examination decal. ***These decals are valid for two years from the last day of the month issued. Currently there are two versions of the decal in circulation, those with an expiration date and those with an issue date.*** This date is indicated with the hole punched. Mark on the checklist the exact marks from the decal including documented/undocumented, location, year and month. Also record the decal number.
- Confirm that the vessel only plans to operate in the area marked on the decal.
- Is the Decal Valid? Circle Yes or No.

Life Rafts

- Circle either Inflatable, Buoyant apparatus, None, or N/A. If N/A draw a line though the rest of this section.
- Total Capacity: Fill in the box with the number of people the liferaft can accommodate.
- Total number of people on-board: Fill in the box with total number of people on-board the vessel, including yourself. Be sure to confirm how many vessel personnel will be on the trip including last minute friends/family members.
- Life raft/s able to float free? Circle Yes or No. In an emergency situation, would the raft float free of the rigging and equipment? The cradle of a float free raft needs to be bolted or attached to the vessel. The raft should not be attached to the cradle, but the painter line needs to be attached to the vessel with a weak link in between the painter line and the attachment.
- Service due sticker expiration date: Record the repack date. The expiration date is the last day of the month displayed.
- Hydrostatic release/weak link expiration date: Record the expiration date of the hydrostatic release/weak link. The weak link expiration date is for float free life-rafts only. The hydrostatic release is good for 2 years from installation date.
- Life raft Equipment? Circle either SOLAS A, SOLAS B, Coastal, PA, PB, or Ocean Service.
- Write notes to the left in the margin if it's labeled as Ocean Service (SOLAS A equivalent) or Limited Service (SOLAS B equivalent).

Immersion Suits/PFDs

- Immersion Suits on-board? Circle Yes, No, or N/A. Not including the observers.
- Is there one for each person on-board? Circle Yes or No. Observers should have their own immersion suit issued by WCGOP.
- Location(s): Document where the immersion suits are stowed.
- Is there a PFD for each person on-board? Circle Yes or No. Observers should have their own PFD issued by WCGOP.
- Location(s): Document where the PFDs are stowed.

Fire Extinguishers

- Present: Circle Yes or No. Document the total number.
- Extinguishers in serviceable condition? Circle Yes or No. Extinguishers with gauges need to have gauges registering in the green to be considered serviceable. Extinguishers without gauges, such as CO2 extinguishers, should be considered serviceable if they appear to be in good shape and good working order. No dents, severe rust, broken valves, or cracked hoses should be present.
- Location(s): Record the locations of all fire extinguishers. Use note section on the back of the safety checklist if necessary. Make sure you remember their location and how to remove them from their bracket in case of an emergency.

Figure 10-8: Safety checklist instructions page 2.

Flares

- Location(s): Record where flares are stowed on-board.
- Handheld: Record the number and expiration dates of handheld flares on-board.
- Parachute: Record the number and expiration dates of parachute flares on-board.
- Smoke: Record the number and expiration dates of smoke flares on-board.
- Meteor: Record the number and expiration dates of meteor flares on-board.
- Flares expire on the last day of the month listed as the expiration date.
- Remember that expired flares cannot be stored in the same container as unexpired flares.

Type IV Throwable PFDs

- Type: circle: ring, cushion, or lifesling.
- Easily Accessible? Circle Yes or No.
- How many are on the vessel? Record number of throwable PFDs.
- Location(s): Record location(s) of throwable PFDs. Be sure to note their locations and how to access them from your sampling area in a man overboard situation.
- Document any other signaling devices on board.

EPIRB

- Visually inspect EPIRBs. Leave all handling and testing to the crew. If an EPIRB is accidentally activated, notify the USCG on VHF Channel 16 immediately. Be prepared to give them the vessel's name, and approximate location.
- Present: Circle Yes, No or N/A. If N/A draw a line though the rest of this section.
- Located in a float free location? Circle Yes, No, or N/A. Only Type I EPIRBs need to be mounted in a float free location. Type II EPIRBs only need to be accessible. Observer EPIRBs do not qualify as a vessel's EPIRB.
- Registered to the vessel? Circle Yes or No. The vessel name on the sticker must match the vessel it is on. If No, contact your coordinator.
- Signal tested? Circle Yes or No. Have the captain/crew test if possible or ask to see the log of the monthly tests.
- Alphanumeric code on sticker matches code on EPIRB? Circle Yes or No. If No, contact your coordinator.
- Battery expiration date(s): Record the battery expiration dates. The battery expires on the last day of the month displayed.
- Hydrostatic releases date: Record the hydrostatic release date. The hydrostatic releases are good for two years from the installation date.
- NOAA registration sticker expiration date: Record the expiration date, month/day/year. If the EPIRB registration sticker has expired an observer can not depart on that vessel until the EPIRB registration form has been filled out either on-line, or a hard copy has been faxed or mailed to the SARSAT Office. See instructions in manual for details on how to assist vessel owner in registering an EPIRB.

Additional Safety Checks

- First Aid Materials present? Circle Yes or No. Record location stowed.
- Who on-board, other than yourself, is currently certified for CPR/First Aid? Record name and position.
- Number of working radios: Record the number and type (CB, VHF, SSB) of working radios. Be aware of which radios actually work and which ones don't. Look for an "emergency button" which automatically takes you to the emergency channel for that type of radio.
- Ask captain if Digital Selective Calling enable radio is presnet and if it is interfaced with the vessel's GPS.
- Watertight doors/hatches work properly? Circle Yes, No, N/A. If no, include comments in notes. Watertight doors and hatches should open, close, and seal.
- Did you see the bilge pumps? Circle Yes, No, or N/A. If No, include comments in notes.
- Hatches/passageways unobstructed? Circle Yes or No. If No, include comments in notes. Hatches and passageways should be free of clutter or gear that could shift and obstruct passage openings.
- Did you hear the general/high water alarm? Circle Yes or No. If No, include comments in notes.
- Is there adequate means of escape? Does the vessel have adequate means of escape from your quarters? Circle Yes or No. If No, include comments in notes.
- Is there an anchor present? Circle Yes or No. Does it have chain attached to it? If No, include comments in notes.

Figure 10-9: Safety checklist instructions page 3.

- Is there a station Bill posted? Circle Yes or No.
- Was a wheel watch arranged? Circle Yes or No. If No, include comments in notes. ***Observers are not allowed to leave on a vessel if a proper wheel watch is not maintained.***
- Charts and compass present? Circle Yes, No, or N/A. If No, include comments in notes. Charts can be electronic or paper.
- Were you given Emergency directions? Circle Yes or No and record what they were. Did the skipper ensure that you were given, a safety orientation? If not, ask the skipper to do so.

Notes Section

Additional comments/concerns: Additional comments about items not mentioned above should be documented in the notes section, including, but not limited to, the quality of the bin boards, excess water in the bilge or lazarette, the amount of gear/clutter on deck, lack of anchor chain, unsafe bunk situations or any other safety issues warranting documentation.

12

Figure 10-10: Safety checklist instructions page 4.

Vessel Safety Checklist

All highlighted equipment and safety topics must be checked off before you leave port.
Do not deploy if any are not verified or current.



Vessel name: _____

USCG/State registration#: _____

Life Rafts

☐ Inflatables ☐ Buoyant apparatus ☐ None ☐ N/A
Total capacity: _____Total # people on board: _____
Life raft able to float free? ☐ Yes ☐ No
Service sticker expiration date*: _____
Hydrostatic release expiration **: _____
Life raft equipment? ☐ SOLAS A ☐ SOLAS B ☐ Coastal
☐ PA ☐ PB ☐ Ocean Service

Decal Verification

Complete the above sticker as it appears on the vessel. Be sure the following fields are checked:

☐ Documented ☐ Expiration month
☐ Locations ☐ Expiration year

Is the decal valid? ☐ Yes ☐ No

Immersion Suits

On board? ☐ Yes ☐ No ☐ N/A
One for each person? ☐ Yes ☐ No
Location: _____

PFD for each person? ☐ Yes ☐ No
Location: _____

Flares

Required (unless inside 3 miles); 6 handheld, 3 Parachute, 3 Smoke

Location(s): _____
Handheld: how many: _____ Exp. date*: _____
Parachute: how many: _____ Exp. date*: _____
Smoke: how many: _____ Exp. date*: _____
Meteor: how many: _____ Exp. date*: _____

Fire Extinguishers

Present? ☐ Yes ☐ No How many? _____
Serviceable? ☐ Yes ☐ No

Location: _____

Type IV Throwable

☐ Ring ☐ Cushion ☐ Lifesling
Easily accessible? ☐ Yes ☐ No
Number: _____ Location(s): _____
Other signaling devices: _____

EPIRBS

Present? ☐ Yes ☐ No ☐ N/A In float-free location? ☐ Yes ☐ No Registered to this vessel? ☐ Yes ☐ No Signal tested? ☐ Yes ☐ No
Decal's alphanumeric code matches EPIRB code? ☐ Yes ☐ No Location(s): _____
Battery exp. date*: _____ Hydrostatic release exp. date*: _____
NOAA registration sticker: _____ Exp. date: _____

Additional Checks

First aid materials present? ☐ Yes ☐ No Location: _____
Who besides you is CPR Certified? (Name & position): _____
Working radios: how many?_____Type: _____

Digital selective calling (DSC) enabled radio present?	☐ Yes	☐ No	DSC registered and radio interfaced with GPS?	☐ Yes	☐ No
Watertight doors/hatches working properly?	☐ Yes	☐ No	Is there an anchor present?	☐ Yes	☐ No
Did you see the bilge pumps?	☐ Yes	☐ No	Is there a Station Bill posted?	☐ Yes	☐ No
Hatches/passageways unobstructed?	☐ Yes	☐ No	Was a wheel watch arranged?	☐ Yes	☐ No
Did you hear the general/high water alarms?	☐ Yes	☐ No	Charts and compass present?	☐ Yes	☐ No
Is there adequate means of escape?	☐ Yes	☐ No	Were you given emergency directions?	☐ Yes	☐ No

What were the emergency instructions? _____

Observer signature: _____ Print:_____

Date: _____ ** Expires the last day of the month displayed. ** Hydrostatic releases are valid for two years from installation date.*

OMB Control No. 0648-0593 exp. 10/31/2018 13

Figure 10-11: Observer Logbook safety checklist.

Completed Vessel Safety Checklist

After completing the checklist, sign the form, print your name and date it. Email, text or fax a copy of the checklist and all associated notes to your provider (CS) or coordinator (NCS). If you have any safety questions or concerns, please contact the following coordinators:

John LaFargue, CA Coordinator
427 F Street #217
Eureka CA 95501

Office: 707.443.3228
Cell: 530.604.7386

Email: John.LaFargue@noaa.gov

Scott Leach, WA/OR Coordinator
Hatfield Marine Science Center
2032 SE OSU Dr
Newport OR 97365

Fax: 541.867.0505
Office: 541.351.8250
Cell: 541.366.8080

Email: Scott.Leach@noaa.gov

Notes

14

Figure 10-12: Vessel Safety Checklist back.

Observer Safety Survey

In addition to the vessel safety checklist, observers must fill out an Observer Safety Survey in the logbook for each vessel during a trip period. It is important to be as thorough as you can since these will be used to collect data on fleet safety. Be professional in your comments. This information may be provided to the USCG and Enforcement.

Observer Safety Survey

Observer name: _____ Date: _____ Fishery: _____

Vessel: _____ USCG/State#: _____ Home port: _____

Please complete the following checklist for each vessel observed in the trip limit period. Please be specific in the descriptions. The debriefer will review this checklist during the debriefing interview and will inform the coordinator of any areas of concern.

Were you able to locate all required safety equipment? ☐ Yes ☐ No If no, please explain: _____

_____

Were you given a safety orientation? ☐ Yes ☐ No If yes, by who? _____

Were you ever left on board alone? ☐ Yes ☐ No If yes, why and for how long? _____

Were any emergency drills conducted? ☐ Yes ☐ No If yes, which ones? _____

Were alcohol and/or drugs used by vessel personnel to a degree that you felt your safety was compromised? ☐ Yes ☐ No

Please provide observations including incident date(s): _____

_____

Did you observe any of the following?

No problems or accidents occurred	☐	Fire	☐
Boarding refusal by an observer	☐	Fuel leak	☐
Vessel refusal of an observer	☐	Parting cables	☐
Person overboard	☐	Hung up doors	☐
Collision or grounding	☐	Lack of proper wheel watch	☐
Vessel flooding	☐	Vessel incursion into a closed area	☐
Loss of steering control	☐	Observer sampling interference	☐
Loss of electrical or engine power	☐	Situation involving a potential conflict of interest	☐
Vessel personnel injury or loss of life	☐	MARPOL violation(s)	☐
Observer injury or illness	☐	Other regulatory violation (explain below)	☐

Please further explain any checked boxes, providing date(s) on which the incident occurred.

_____

_____

Were there any conditions aboard this vessel that have not been previously noted and that may have affected your safety and well being? ☐ Yes ☐ No If yes, please explain: _____

_____

Did you experience harassment, intimidation or bribery on or off the vessel? ☐ Yes ☐ No

If yes, please explain: _____

_____

OMB Control No. 0648-0593 exp. 10/31/2018

25

Figure 10-13: Observer Safety Survey from the logbook.

Emergencies on Board

Sending a May Day

There are three types of emergency broadcasts:

1. **Securite:** Lowest urgency, brings attention to weather, navigation hazards.
2. **Pan Pan:** Calling station has an urgent message to transmit.
3. **Mayday:** Highest urgency, immediate life/limb threatening danger.

A mayday call is for a life-threatening emergency. The emergency frequencies are Channel 16 on VHF radios and 4125.0 MHZ on single-sideband radios (SSB). VHF radios are for short range and SSB radios are for long-range communications (See Appendix for more information on radios). Vessels are required to monitor the emergency frequencies at all times. Most radios have a red button that changes to the emergency frequency immediately. Near the radios, there should be a placard posted that describes MAYDAY calls. Be familiar with what constitutes a proper MAYDAY call:

1. MAYDAY MAYDAY MAYDAY (said three times).
2. **Location:** Latitude and Longitude or a geographic references that is part of the location.
3. Vessel name (said three times).
4. Nature of emergency.
5. How many persons on board.
6. Vessel description-Length, color type, etc.
7. What radio frequency is being used.
8. Listen for a response. If none, repeat the message until it is acknowledged or you are forced to abandon ship.

Unanswered MAYDAY

Sometimes you may hear a MAYDAY, but not hear a response from the Coast Guard. If this happens:

1. You must answer and log details.
2. Advise vessel what assistance you can give.
   - Contact Coast Guard to ensure that they have received the call.

MAYDAY relay

- Acquire information Name of vessel in distress.
- Location.
- Nature of problem.
- Number of persons onboard.
- Description of vessel.
- Name, address, and phone number of vessel owner.

Transmit MAYDAY relay

1. MAYDAY RELAY, MAYDAY RELAY, MAYDAY RELAY.
2. Your vessel's name.
3. Name of vessel in distress.
4. Location of vessel in distress.
5. Nature of problem with vessel in distress.
6. Degree of assistance needed (i.e., immediate).
7. Listen for acknowledgment.
8. Transmit additional information.

Man Overboard

The first thing to remember is to take steps to minimize chances of falling overboard by avoiding unsafe deck behavior or working on deck when it is not safe.

In the event you or a crew member falls overboard, follow these steps:

If you are the one overboard:

1. Attract attention, yell, whistle, etc.
2. Assume the H.E.L.P. position.
3. Keep clothes and boots on. They will increase insulation and will not pull you down.
4. Grab any floating objects that will make you more buoyant and more visible.
5. Stay as still as you can.

If you are aboard a vessel and someone goes overboard:

1. Mark position with anything that floats and mark waypoint on GPS if possible. (Many vessels have a M.O.B. button especially for these situations)
2. Sound alarm.
3. Post lookout. Eyes and pointing hand never leave victim.
4. Maneuver vessel to return to victim.
5. Rescue swimmer dons immersion suit with rescue line attached. Prepare to launch rescue craft if needed.
6. Recover victim. Bring aboard (horizontally if it takes no more time) over the side or up the stern ramp of the vessel.
7. Treat victim. Look for signs of hypothermia and/or cold water near drowning as well as any other injuries.
8. Contact Coast Guard and vessels in area if victim is not found immediately, or medical advice/attention is needed.

Fire

It is wise to know where fire extinguishers and exits are located in every area of the vessel-especially those areas in which you spend time. Fire extinguishers have only short bursts of fire retardants, so back-up extinguishers should be located and brought to the fire as soon as the fire is discovered. To effectively use a fire extinguisher, fire continuously in a low, sweeping motion. Keep your body low to avoid smoke inhalation and heat. Do not attempt to fight a fire alone, (except a small fire e.g., a wastebasket fire).

1. Sound alarm, notify wheelhouse and signal alarm.
2. De-energize electrical system to area.
3. Close doors to stop the spread of fire and smoke.
4. Fight fire.
   - Smother, cut off air supply.
   - Cool.
   - Interrupt chain reaction.
   - Jettison.
5. Account for personnel.
6. Establish boundary perimeter.
   - Visualize area as a box.
   - Know what is on all six sides of the box!
7. Prepare to abandon ship, in case it should be necessary.
8. Ensure everyone knows how to use fire extinguishers.
   - Proper type for fire.
   - Locations.
   - Ensure extinguishers can be found in the dark.

Flooding

When a vessel is taking on water, usually the crew has time to try and solve the problem. Malfunctioning pumps or leaks in through-hull fittings are not uncommon, and can usually be fixed with equipment on board. If the flooding condition worsens, the Coast Guard can drop pumps to a vessel via aircraft. Observers have limited roles in these types of vessel emergencies but should be prepared to assist if needed.

Procedures:

1. Sound alarm.
2. Close all watertight hatches, doors and air vents.
3. Plug holes.
4. Use pumps and buckets of water.
5. Check lines, through-hull fittings and hull for leakage.
6. Maintain stability of vessel.
7. Prepare in case of abandon ship.

Remember: PLUG! CLOSE! PUMP!

Abandon Ship

The worst possible emergency requires a person to give up their shelter-the vessel. Never abandon the ship unless it is certain that being on board the vessel is more dangerous than being in the water. Lives have been lost because ships have been abandoned too soon during fires or flooding. Knowing the nearest exits, mustering areas, life raft locations, immersion suit locations, EPIRB locations, and the emergency equipment available become critical factors in helping you survive an abandon ship emergency.

General Abandon Ship Procedures are as follows:

1. Sound general alarm.
2. Send Mayday.
3. Don immersion suits/PFDs. Put on extra warm clothing first if possible.
4. Prepare to launch life raft. Attach sea painter to vessel.
5. Assemble signal devices to take into life raft. These include EPIRBs, flares, smoke signals, flashlights, handheld radios, etc.
6. Get First aid kit, water, food, and abandon ship (survival) kit.
7. Muster at embarkation station.
8. When sinking is imminent or remaining on board is inappropriate launch and board life raft.
9. Keep sea painter attached to vessel. Be prepared to cut sea painter immediately if there is risk to life raft or vessel sinks.
10. Activate EPIRB, PLB, and commence 7 Steps to Survival.

Helicopter Evacuations

In an emergency situation at sea it may become necessary to be evacuated by helicopter from a vessel, life raft or the water. Be prepared to follow helicopter crew's instructions. If you think a helicopter evacuation is necessary:

1. First, make contact with the US Coast Guard on the radio or by signaling if you are in a life raft or in the water after an event. Provide the same critical information you would as in a MAYDAY, vessel name, description, nature of problem etc.
2. Clear the area
   - Lower flopper poles, secure loose debris, etc.
3. Position the vessel
   - Keep going forward with the bow 35 to 45 degrees to right of wind line.
4. Prepare those to be evacuated.
   - Eye/ear protection, warm clothing, PFD, medical records.
   - Position on deck just before arrival.
5. Hoisting from a vessel
   - Retrieve trail line.
   - Guide litter/basket with trail line. Allow trail line to contact deck before touching to release static charge.
   - Never tie off trail line!
   - Load one person at a time in basket. Keep hands and feet inside.
   - Use trail line to help guide.
6. **Hoisting from life raft or water:**
   - If directed to, swim away from life-raft.
   - Use USCG hoisting strap; they will not use hoisting straps on immersion suits.

Summary

You can learn a lot about sea safety and survival from vessel personnel, staff, and experienced observers who have many years of sea experience among them. However, the ultimate responsibility is upon you to survive. It is easy to think "this will never happen to me" and "the skipper will know what to do" but those thoughts may cost you your life. Take the time to learn as much as you can, and consider what your actions will be in emergency situations. Visualize yourself and your actions in emergency scenarios on deck, in your bunk, or anywhere you spend time. Having thought about an emergency will make your actions more automatic, and the time spent doing so may save your life. Practice using your safety gear and inspect it regularly. Your life is worth far more than any data you could collect in the fishery.

Observers should always feel encouraged to communicate with WCGOP staff and their provider regarding any safety issues.

Safety Regulations

Observer Health and Safety Regulations

Please be aware that regulations do change from time to time and the CFRs should be consulted for the most up to date information regarding observer health and safety regulations. Visit: https://www.ecfr.gov/cgi-bin/text-idx?SID=7d07fc2d84dba370c4f19c664b33d0c0&mc=true&tpl=/ecfrbrowse/Title50/50cfr660_main_02.tpl The Commercial Fishing Vessel Safety Act of 1988 mandates certain safety equipment, instructions, and drills aboard vessels that operate beyond the boundary line (a federally designated line between points of land) or carry more than 16 individuals. Not all vessels that need observers fall under these regulations. In mid-1998, NOAA Fisheries adopted regulations to ensure the adequacy and safety of fishing vessels carrying observers. Under 50 CFR Part 600, owners and operators of fishing vessels that carry observers are required to comply with U. S. Coast Guard safety regulations see "Partial Summary Of Federal Regulations" on page 13-7. A vessel is considered inadequate or unsafe if it does not comply with the regulations regarding observer accommodations or if it has not passed a USCG safety examination or inspection. If observers feel uncomfortable boarding a vessel because it is unsafe or inadequate to carry out their required duties, contact a NOAA Fisheries coordinator, the observer provider and other WCGOP staff immediately. A vessel that would normally carry an observer, but is deemed unsafe, is prohibited from fishing without an observer or a waiver.

When boarding a vessel, regulations mandate that observers receive a safety orientation. This may be as simple as a crew member showing the observer around but may include watching videos, donning immersion suits, or conducting drills.

Relevant Federal Requirements

Commercial Fishing Vessel Safety Decal

SAFETY INSPECTION REQUIREMENTS 50 CFR 679.50, 33 CPR CHAPTER I, 46 CFR CHAPTER I, 46 CFR 28.710, 46 CFR U.S.C. 3311

- Must have a valid Commercial Fishing Vessel Safety Decal issued within the past 2 years that certifies compliance with regulations found in 33 CFR Chapter I and 46 CFR Chapter I.
- Must have a valid certificate of compliance issued pursuant to 46 CFR 28.710.
- Must have a valid certificate of inspection pursuant to 46 U.S.C.3311.

Navigational Requirements

COMPASS 46 CFR 28.230

- Each vessel must be equipped with an operable magnetic steering compass with a compass deviation table at the operating station.

ELECTRONIC POSITION FIXING DEVICES 46 CFR 28.260

- Vessels 79 feet or more in length must be equipped with an electronic positioning fixing device such as SAT NAV, GPS, LORAN, OMEGA, or RDF that is capable of providing accurate fixes for the area of operation.

Navigation and Anchor

Lights

- Must be used from sunset to sunrise and when there is limited visibility.
- Navigation Information 46 CFR 28.225.
- Current corrected charts of the appropriate areas and scale for safe navigation.
- Current corrected copy (or applicable extract) of the U.S. Coast Pilot, USCG Light List, National Ocean Service Tide Tables and National Ocean Service Current Tables.

ANCHOR AND RADAR REFLECTORS 46 CFR 28.235

- Vessels operating with more than 16 individuals on board or vessels operating outside boundary water.
- Each vessel must be equipped with appropriate anchor(s) and chain(s), cable, or rope.
- Nonmetallic hull vessels must be equipped with a radar reflector unless it is a vessel rigged with gear that can provide a radar signature at six miles.

RADAR AND DEPTH SOUNDING DEVICES 46 CFR 28.400

Vessels with 16 or more individuals, or vessels operating outside boundary water, that have had their keel laid or major conversion on or after September 15, 1991:

- Each vessel must be fitted with a general marine radar system for surface navigation with a radar screen mounted at the operating station.
- Each vessel must be fitted with a suitable echo depth-sounding device.

Communications Requirements

COMMUNICATIONS EQUIPMENT 46 CFR 28.245,46 CFR 28.375,33 CFR 26.03,47 CFR 80

- Each vessel must be equipped with VHF radiotelephone communication equipment operating within 156-162 MHz band.
- A radio transceiver installed on board before Sept. 15, 1991, operating on 4-20 MHz band may continue to be used to meet the requirements for vessels operating more than 100 miles from the coastline in Alaskan waters.
- All communications equipment must be operable from the vessel's operating station and must comply with FCC requirements including a Ship Radio Station License.
- ·An emergency source of power, that is independent of the main power supply, outside of the main machinery space, and capable of providing power to communications equipment for at least 3 continuous hours.

Emergency Requirements

PERSONAL FLOTATION DEVICES (PFD) 46 CFR 28.105, 46 CFR 28.110, 46 CFR 28.135, 46 CFR 28.140

- CG approved immersion suit with 31 square inches of retro reflective tape on the front and back of each side.
- Must have CG approved PFD light.
- Must be marked with the name of the vessel, owner of device, or the individual to whom it is assigned.

RING BUOY 46 CFR 28.115 & 46 CFR 28.135

- Vessels less than 65 feet must have 1 orange Ring Life Buoy at least 24 inch in size, with 60 feet of line, and marked with name of vessel.
- Vessels greater than 65 feet must have 3 orange Ring Life Buoys at least 24 inch size with 90 feet of line. Marked with the name of the vessel.

SURVIVAL CRAFT 46 CFR TABLES 28.120 (A)

- Between shore & 12 miles off coastline - inflatable buoyant apparatus.

- Between 12-20 miles off coastline - inflatable life raft.
- Between 20-50 miles off coastline - inflatable life raft with SOLAS B pack.
- Beyond 50 miles off coastline - inflatable life raft with SOLAS A pack.

STOWAGE OF SURVIVAL CRAFT 46 CFR 28.125

- Each inflatable life raft that is required to be equipped with a SOLAS A or B equipment pack automatically inflates if the vessel sinks.
- Each inflatable life raft must be kept readily accessible for launching or be stowed so they will float free if the vessel sinks.
- Each hydrostatic release unit in a overboard arrangement must have a CG approved number starting with 160.062.

MEANS OF ESCAPE 46 CFR 28.390

Vessels with 16 or more individuals, or vessels operating outside boundary water, that have had their keel laid or major conversion on or after September 15, 1991:

- Each space used by an individual on a regular basis or which is generally accessible to an individual must have at least two widely separated means of escape. At least one of the means of escape must be independent of watertight doors. Means of escape include normal exits and emergency exits, passageways, stairways, ladders, deck scuttles and windows.

VISUAL DISTRESS SIGNALS 46 CFR 28.145

- Vessels operating more than 3 miles from shoreline are required to carry 3 parachute flares, 6 hand flares, and 3 smoke signals.
- Vessels operating within 3 miles of the coastline are required to carry night and day visual distress signals. Night signals can be one electric distress light or 3 CG approved flares. Day signals can be either one distress flag or 3 CG approved smoke signals.

EPIRB 46 CFR 28.150 & 46 CFR 25.26

- Vessels operating beyond coastal waters are required to have an FCC type accepted category 1, float-free, automatically activated, 406 MHz EPIRB.
- Each EPIRB must be marked with vessel name and type II retro reflective material (46 CFR 28.135).

GENERAL ALARM 46 CFR 28.240

- A general alarm system suitable for notifying individuals on board is required with a contact marker at the operating station. The general alarm must be capable of notifying individuals in any accommodation or workspace. Under certain circumstances (defined at CFR 28.240) a public address system that is audible in all workspaces meets may meet regulatory requirements.
- In noisy workspaces a flashing red light is required.
- The general alarm system must be tested prior to getting underway and at least once each week while underway.

EMERGENCY INSTRUCTIONS 46 CFR 28.265

- **As applicable, emergency instructions are required for:** survival craft embarkation stations and personnel assignments; fire, emergency, and abandon ship signals; immersion suit location and donning information; procedures for making distress calls; list of each individual's emergency and specially established procedures. Specific details and posting requirements are found at 46 CFR 28.265.

HIGH WATER ALARMS 46 CFR 28.250

- Alarms are to be both visual and audible and installed at the operating station.
- **Alarms are to indicate high water in each of the following normally unmanned areas:** a space with a through-hull fitting below the deepest load water line, a machinery space bilge, bilge well, shaft alley bilge, or other space subject to flooding from sea water piping within the space, a space with a non-watertight closure such as a space with a non-water tight hatch on the main deck.

BILGE SYSTEMS 46 CFR 28.255

- All vessels must be equipped with a bilge pump capable of draining any watertight compartment, other than tanks and small buoyancy compartments, under all service conditions.
- If portable bilge is used to meet this requirement, a suitable suction hose and discharge hose must be provided that will reach the bilges of all watertight compartments it must serve and ensure overboard discharge. The portable pump must be capable of dewatering each space at a rate of at least 2 inches of water depth per minute.

FIRST AID EQUIPMENT AND TRAINING, 46 CFR 28.210

- Each vessel must have on board a first aid manual and medicine chest of a suitable size in a readily accessible location.
- Vessel with more than 2 individuals must have at least 1 individual approved in first aid and at least 1 individual approved in CPR or 1 individual approved in both.
- Vessels with more than 16 individuals on board must have at least 2 individuals approved in first aid and at least 2 individuals approved in CPR. Individuals approved in both may be counted against both requirements.
- Vessels with more than 49 individuals on board must have at least 4 individuals approved in first aid and at

least 4 individuals approved in CPR. Individuals approved in both may be counted against both requirements.

FIRE CONTROL REQUIREMENTS FIRE EXTINGUISHERS 46 CFR 28.155 & 46 CFR 28.160 & 46 CFR 25.30

- **Vessels over 65' are required to have approved USCG approved fire extinguishers in each of the following locations:** Pilot house, service spaces, galleys, paint lockers, accessible baggage and storage rooms, workshops and similar spaces, engine room, auxiliary engine room, auxiliary spaces, and generator spaces. NOTE: Specifics on the type of extinguishers, number per location, and legal description of spaces where extinguishers are required can be found at 46 CFR 28.155 & 46 CFR 28.160 & 46 CFR 25.30.

Miscellaneous Requirements

GUARDS FOR EXPOSED HAZARDS 46 CFR 28.215

- Suitable hand covers, guards, or railings must be installed in way of machinery that can cause injury to personnel, such as gearing, chain or belt drives, and rotating shafting. This is not meant to restrict necessary access to the fishing equipment such as winches, drums, or goodies.
- Internal combustion engine exhaust pipes within reach of personnel must be insulated or otherwise guarded to prevent burns.

WATERTIGHT AND WEATHER TIGHT INTEGRITY 46 CFR 28.560

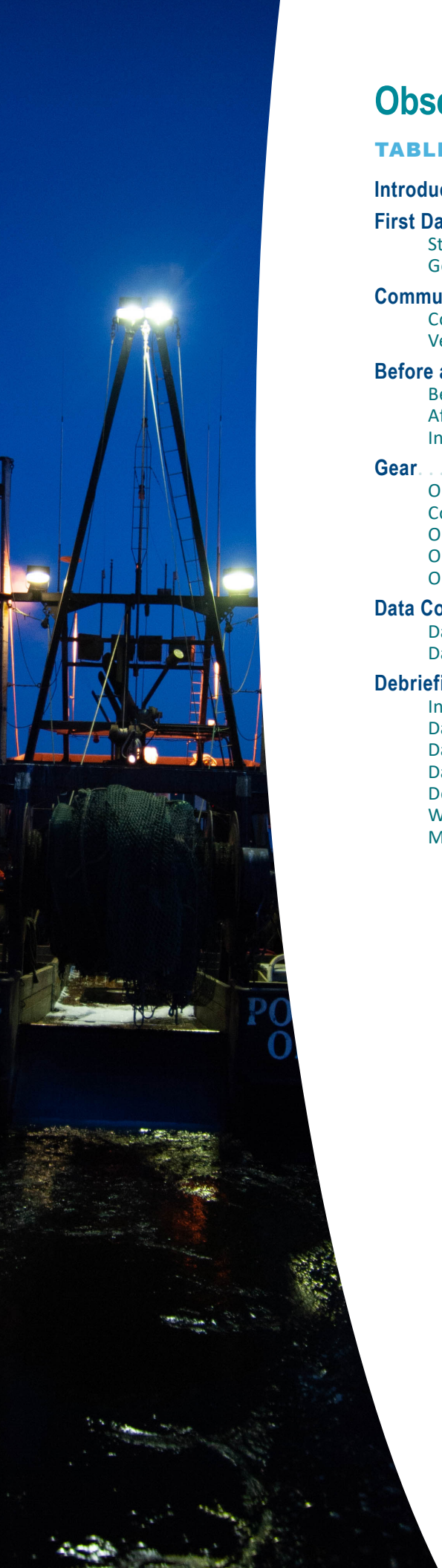
- Each opening in a deck or a bulkhead that is exposed to weather must be fitted with a weather tight or watertight closure device.

POLLUTION PREVENTION 33 CFR 151, 33 CFR 155

- Vessels are required to post oil pollution and garbage placards, and to have a written solid waste management plan that describes procedures for collecting, processing, storing, and discharging garbage, and designated person in charge of carrying out the plan. Restrictions on dumping can be found at 33 CFR 151, 33 CFR 155.

SEXUAL ABUSE ACT OF 1986 46 CFR U.S.C. 10104

- It is the responsibility of the master to report to the USCG any complaints of sexual offenses including aggravated sexual abuse, sexual abuse, sexual abuse of a minor or ward, and sexual contact per 46 CFR U.S.C. 10104.



Observer Life

TABLE OF CONTENTS

Introduction . . . 11-2

First Days . . . 11-2
- Start Dates and Contacts . . . 11-2
- Getting to Know the Port . . . 11-2

Communication and Contacting Vessels . . . 11-2
- Contacting Vessels . . . 11-2
- Vessel Safety Checks . . . 11-3

Before and After a Trip . . . 11-3
- Before Every Trip . . . 11-3
- After Every Trip . . . 11-3
- Initial Contact and the First Trips . . . 11-4

Gear . . . 11-4
- Observer Personal Gear . . . 11-4
- Considerations for Fishing Trips . . . 11-4
- Observer Safety and Sampling Gear . . . 11-5
- Observer Safety Gear . . . 11-5
- Observer Sampling Gear . . . 11-5

Data Collection and Data Entry . . . 11-6
- Data Collection . . . 11-6
- Data Entry . . . 11-6

Debriefing . . . 11-6
- Initial Data Review by observer . . . 11-6
- Data Submission to the Debriefer . . . 11-7
- Data Review by Debriefer . . . 11-8
- Data Corrections by Observer . . . 11-8
- Debriefing Interview, Expectations and Scheduling . . . 11-8
- Written Performance Evaluation . . . 11-9
- Maintaining WCGOP Observer Status . . . 11-10

Chapter 11

Introduction

This chapter provides information about the day-to-day routine of West Coast Groundfish observers and describes expectations for observer performance. The chapter includes:

- Guidelines for communicating with vessels.
- Checklists of tasks that must be completed before and after each trip.
- Descriptions, recommendations, and care of personal, sampling and safety gear.
- Explanation of the data debriefing and observer evaluation processes.
- Requirements for maintaining a position as a WCGOP observer.

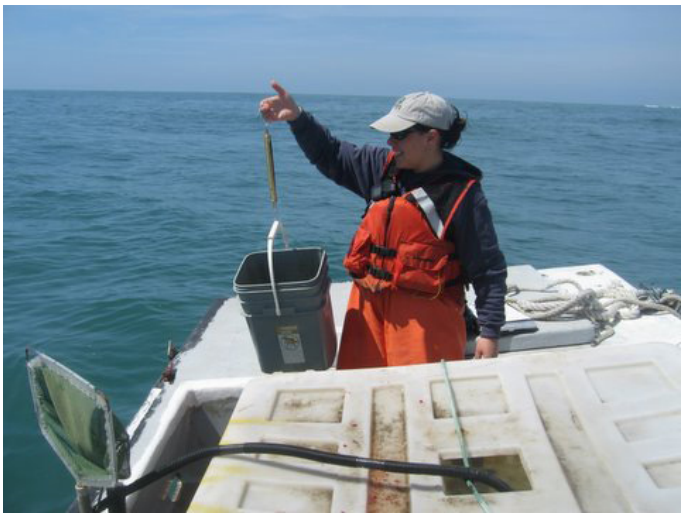


Figure 11-1: An observer using hand scales to weight bycatch.

First Days

Start Dates and Contacts

After successfully completing training, observers will travel to their assigned ports (determined by their respective contractor).

It is the observer's responsibility to provide their contractor and the WCGOP with updated contact information and to keep an up-to-date mailing address (PO Boxes are not acceptable), email address and phone number(s) in the WCGOP database.

Tip: Contact information for program staff can be found in the WCGOP database, the WCGOP field manual, the observer logbook, and observer training manual Appendix.

Getting to Know the Port

When observers arrive in a new port, they should take some time to orient themselves to the area. They should contact other WCGOP observers in the area for helpful advice about the port and area. A port orientation tour should include vessels, docks, local processing plants, local US Coast Guard, and an introduction to other port observers and local state biologists (port samplers and port biologists). It should also include an overview of local responsibilities, including any expectations for providing information or aid to the local state biologists.

Other WCGOP observers in the assigned port group are excellent sources of information for locating housing, places to eat, local entertainment, and other personal needs. Many have been in the area for multiple years and are very knowledgeable about the port.

Communication and Contacting Vessels

Contacting Vessels

Observers will be assigned vessels by their respective contractor (Catch Share vessels) or WCGOP coordinator (Non-Catch Share and Electronic Monitoring vessels). Observers are supplied with vessel names, vessel owner/operator names and phone numbers. Vessel contacts are also available in the database.

Tip: To find a vessel's contact information, look up the vessel name in the database, then check the communication log for the vessel. The name of the person(s) contacted can be found in the Communication Log. Under the Vessel Contacts tab, search for the contact by last name.

If an observer needs to contact a vessel for some reason here are some guidelines for contacting vessel owner/operator by phone:

1. When calling a vessel owner or captain, do so in a friendly and professional manner.
2. State your name and association with the WCGOP.
3. Make it a habit to begin with a professional introduction to whoever answers the phone.

Example: Hi, my name is Joe Smith. I am a West Coast Groundfish Catch Share observer in the Astoria port group. Could I please speak with (vessel owner/captain's name)?

4. If the vessel owner/operator is not available, leave a message with your name and number and request that they return your call.
5. Once contact has been made with the vessel owner/operator, establish the reason for the call and log this vessel communication in the database.

Vessel Safety Checks

Observers are required to complete a Vessel Safety Checklist prior to the first trip each month aboard any vessel regardless of when/if they have observed aboard that vessel in the past or if another observer has already completed one. A Vessel Safety Checklist should be completed as early as possible BEFORE the first trip. (See the section, Vessel Orientation and Safety Checklist on page 10-17). This gives vessels time to correct any deficiencies that may exist. **If possible, do not wait to do the safety orientation until the day before, or the day of, the planned departure for the first fishing trip!** It can be very problematic to discover that a vessel lacks necessary safety features, such as adequate life raft capacity to accommodate the observer and crew, at the time the vessel is planning to depart.

The Vessel Safety Checklist must be completed and texted, faxed, or e-mailed to the observer's contractor (Catch Share vessel) or WCGOP coordinator (Non-Catch Share or Electronic Monitoring Vessel) prior to embarking on the first trip. If this is not possible, call the appropriate office and leave a verbal confirmation that the vessel has passed inspection. In this case, a copy of the Safety Checklist must be sent as soon as possible after disembarkation.

Do safety orientations with another observer, if possible. Two observers working together are likely to do a more thorough inspection than one. Also, it will not be necessary to take additional time from the captain or crew to complete a second inspection should both observers be assigned to the vessel during the same month.

Note: Observer providers coordinate observer coverage on Catch Share (CS) vessels. WCGOP coordinators coordinate observer coverage on Non-Catch Share (NCS) and Electronic Monitoring (EM) vessels.

Before and After a Trip

Before Every Trip

1. Contact vessel owner/captain and arrange to meet at the vessel.
2. Complete Vessel Safety Checklist prior to the first trip on the vessel.
3. Mail, fax, email or text message a copy of the Vessel Safety Checklist to the appropriate office *prior* to departing on the first trip. If you are unable to send a copy of the Vessel Safety Checklist prior to departing, call in to confirm the vessel has passed inspection and to discuss any safety concerns or issues. Submit a copy of the Vessel Safety Checklist at the earliest opportunity upon disembarkation.
4. Review sampling procedures for the fishery to be observed. Call your debriefer if you have any questions.
5. Ensure that all personal, sampling, and safety gear is in order and scales have been lubricated and tested. *Make sure to bring extra pencils and plenty of forms. Inspect, charge and test the OPTECS tablet*
6. Observers should be on the vessel with gear stowed and ready to depart at least *30 minutes prior* to vessel departure time. Depending on port location, this may mean arriving at the docks an hour or more before the trip's scheduled departure time. Often there will be an unforeseen delay, but it is vital that the observer does not cause it!

After Every Trip

1. Clean, organize and pack gear before landing. Ensure that no observer gear, such as a survival suit or PLB, remains on the vessel. There is no guarantee that the next trip will be aboard the same vessel! Remember to grab any biospecimens that may have been stored in the freezer or hold. This is a common issue for observers in a hurry to disembark. Take a breath and make sure that you have everything you need, before leaving the vessel, as it can be very difficult to get a hold of the crew once a trip is over.

On the way in is a good time to check work email and communicate to coordinate future trips.

2. Make sure that all necessary data from the vessel logbook has been gathered (if applicable).
3. Ask the vessel when they anticipate making their next fishing trip.
4. Obtain the fish ticket number at the delivery or as soon as possible. Always check to see if there are multiple fish tickets for each trip. Document First Receiver name for Catch Share and Electronic Monitoring vessels.
5. ***Catch Share and Electronic Monitoring vessels only*:** Leave the vessel's copy (YELLOW) of the IFQ Priority Species Tracking form with the skipper. Leave the Catch Monitor copy (PINK) in a sealed envelope.
6. Finish paperwork and upload the trip to the online observer database within *three days* of the disembarkation date. In most cases observers will be able to enter data at sea using the current tablet software, so data can by uploaded once a network connection can be established.
7. Run a Trip Error Report (TER) and address all errors. Contact debriefer for assistance, as needed.
8. Scan and upload any paperwork for data not directly entered and data backup files using the Trip Scans tab in

the Online Observer Database. As with data entry, this must be completed within three days of disembarking.

9. Make sure that any sampling interference, harassment, etc. has been be reported ASAP. Don't wait for your debriefer to read about it in your logbook. When in doubt about the seriousness of an incident, let us know and we'll provide guidance.

Note: When covering a Catch Share or Electronic Monitoring vessel, a **Priority Species Tracking Form** is required and the name of the **First Receiver** must be documented on the Trip Form.

Initial Contact and the First Trips

Observers must contact their debriefer before their first trip. The debriefer will review the vessel the observer is assigned to, provide sampling advice, and discuss common errors to avoid.

Observers are required to turn in the data from their first three trips immediately after each trip is completed. The debriefer will review each trip as it is turned in, and discuss any errors the observer has made.

After the first three trips are completed, the data will be reviewed and evaluated. If the data is acceptable, the observer will receive a deployment endorsement, allowing them to continue observing in the WCGOP program. If an observer is not performing to WCGOP standards, they will not receive a deployment endorsement and will no longer be allowed to deploy. This requirement may be waived for returning observers in good standing, at their debriefer's discretion.

Observers should also contact their debriefer:

- If there are any questions about data or sampling protocols
- If observer is sampling on a new gear type
- If observer is sampling in a new fishery

Note: Debriefers serve an important support role for observers. Please do contact your debriefer with any issues you encounter. They can help you to improve the quality of your data and manage your time better on deck. Communication is key in this job!

Gear

Observer Personal Gear

Dressing to work on the deck of a vessel off the West Coast can be challenging. Usually, the conditions are cold (45°F or colder), wet and windy, but in the summer there are days when the outside temperature can reach into the 70's or above. A suggested list of clothes and belongings observers may want to bring to sea is provided below. This list is not exhaustive and personal needs must be considered. If you have questions on what to bring to sea, ask the advice of the WCGOP staff or an active observer. Focus on bringing clothing items that can be worn in layers. Layered clothing provides protection from the elements and helps prevent overheating if the weather gets warm. Synthetic or wool materials are recommended because they have a higher ability than cotton to retain body heat when wet. Inexpensive clothes are also recommended since the smell of fish and diesel are difficult to remove from fabric. Some observers find appropriate, inexpensive work clothes at Army-Navy Surplus or used-clothing stores.

Here are some suggestions for personal gear needed at-sea:

- Toiletries (towel, soap, toothbrush, toothpaste, deodorant, travel size shampoo, wet wipes)
- **Personal items:** medications, including those for seasickness, extra contact lenses or glasses
- Extra food and food for special dietary needs
- Water (some vessels do not have potable water)
- 2-3 pairs of socks and extra clean clothes
- Clothes that can be layered for warm weather (thermal, sweatshirt, fleece)
- **Sun protection:** Hat/cap, sunglasses, sun block, and chapstick
- Small first-aid kit
- Small pocketknife
- Flashlight and extra batteries
- Sleeping bag/blanket
- Travel pillow
- Bag for dirty clothes
- **Entertainment:** Reading material, knitting, radio/music player, movies, etc.

Tip: Remember, sea bags (small duffel bags are ideal) should be packed so items are easily accessible.

Considerations for Fishing Trips

- Exposure to wet conditions, even when it's not raining
- Exposure to direct sunlight for long durations
- Exposure to a wide range of temperatures and quick weather changes
- Possible exposure to strong wind and sea conditions
- LIMITED amount of space aboard the vessel
- Observer may or may not have a bunk
- Vessels may not have a head (bathroom) or a shower
- **Dietary restrictions:** discuss with the captain and/or the cook before departing

Tip: It is unlikely a vessel will cater to the needs of special diets such as vegan/vegetarian. If you have special dietary needs, be prepared by bringing food on each trip.

Observer Safety and Sampling Gear

The WCGOP will supply sampling and safety equipment for observers. Observers should check sampling gear to see that it is in good working order when issued. It is the responsibility of each observer to maintain their gear and return it in the best condition possible. Observers may be charged for misuse or neglect of sampling/safety gear. Observers rely on their equipment to perform their sampling duties, so making gear cleaning and upkeep a daily routine is recommended.

Observer Safety Gear

Safety gear is the most important equipment issued to observers. All safety gear is inspected to ensure it is in working order at the time of issue. Safety gear requires routine maintenance and inspection. Observers must test their safety gear once a month and document a record of it in the observer logbook. The WCGOP provides the following safety gear:

- Immersion Suit
- Personal Locator Beacon (PLB)
- Personal Flotation Device (PFD)
- Strobes for Survival Suit and PFD
- Whistle
- First Aid Kit
- In addition, observers may check out gear to help prevent injuries such as safety glasses, hard hats, back braces, and earplugs.

Safety equipment is provided to help survive an emergency at-sea and to reduce reliance on the vessel's safety equipment. While at-sea, the immersion suit should be:

- Kept in a safe place that is dry.
- Easily accessible at all times (consider storing in galley or near outside hatch).
- Kept separately from the crew's.
- In addition, keep the WCGOP-issued PLB in the immersion suit. Smaller PLB's should be kept on your person or in a more easily accessible location.

Proper maintenance of all safety gear is a priority for WCGOP observers. More information regarding safety gear is located in Chapter 10, "Health and Safety Information", and Chapter 12, "Gear."

Observer Sampling Gear

The majority of sampling gear will be issued at training. For a comprehensive gear list and maintenance requirements see Chapter 12, "Gear." Below are some common sense guidelines, to ensure that assigned gear will remain serviceable throughout the contract.

1. Keep gear in a secure place aboard the vessel. Avoid leaving gear on the vessel's deck. If there is no alternative to leaving it out on deck, be sure that everything is well secured and protected from the weather. Ask the crew to show you how to lash the gear down properly.
2. Keep forms, books, pencils, pens, and unused equipment in a dry, safe place, such as the forepeak, stateroom, or a secure lazarette.
3. Keep all gear as clean as possible. Use deck hoses to rinse slime, scales, and blood off the baskets, deck sheets, length boards, clipboards, scalpel, and knife after each use. Rinse gear with fresh water after each trip.
4. Keep metal parts clean and well oiled.
5. Do not put scales, scalpels, knives, thumb counters, measuring tapes, or other metal objects in plastic bags, or boxes when they are wet or they will rust.
6. Follow protocols for maintaining motion compensated scales and have scale tested every 90 days. See details in Chapter 12, "Gear."
7. Clean, inspect, charge and test the OPTECS tablet
8. If something does happen to the issued gear, document what happened in the observer logbook. Observers will not be charged for gear damage or loss due to uncontrollable, documented circumstances.
9. Keep sampling gear consolidated. This will minimize the chance of forgetting something when disembarking and will be appreciated by the vessel crew during the trip.
10. When traveling by air, WCGOP computers of any type must remain with you in your carry on luggage/bag.

Note: Vehicles are NOT considered to be secure locations, especially if items are in plain view. When at home or on travel, store all trip data and gear should inside a locked garage, hotel room, etc. Should a theft occur, contact the proper authorities immediately and notify the program, as soon as possible.

If replacement gear is required, contact the WCGOP gear technician. If the gear is vital to safety or sampling your contractor must also be informed.

Data Collection and Data Entry

Data Collection

Data is collected every month and then reviewed by WCGOP debriefing staff. Observers may be assigned to one or multiple vessels and may employ many sampling methods. Be familiar with the sampling protocols for the gear type to be observed before embarking on a trip. This will ensure that the correct equipment and forms are brought and hopefully ease some anxiety. The observer training manual, field manual, debriefing staff, and more experienced observers are excellent resources for learning about new gear types and fisheries.

Data Entry

Collection of fishing effort and catch data while at sea is crucial, but timely entry of that data into the database is also important. Observers are required to complete entry of each trip's data into the database within *three days* of disembarkation and before deploying on another trip. This aids in ensuring that the program is attaining its data quality and reporting goals. It is more likely sampling details and data will be forgotten by the observer if entered weeks after a trip is observed. Entering data immediately after a trip (before the next trip is taken, if possible) increases the chances of the data accurately reflecting what was collected and documented during the trip. Upload OPTECS file from the thumb drive and check for TER's in ObsProd.

Note: On Catch Share vessels, timely data entry provides fishers with the most accurate, up-to-date information about their quotas.

Debriefing

Data collected by West Coast Groundfish observers is vital to the successful management of many fisheries off Washington, Oregon, and California. To ensure that data are consistently collected according to program guidelines, observers are required to promptly follow all the steps in the data quality process.

The debriefing process consists of six steps:

1. Initial data review and edits by observer.
2. Data submission to debriefer.
3. Data reviewed by debriefer and returned to observer for corrections (if needed). Data corrections will be documented on the WCGOP data correction sheet (DCS) and provided to the observer with their reviewed data. Also provided in this document will be performance feedback and Areas for Improvement for the observer. It is very important to read and follow the instructions on the DCS to maintain observer certification.
4. Data corrections promptly completed by observer on the paper forms and in the database and sent back to the debriefer. This process should be completed and all corrections submitted within 15 days unless otherwise stated by the debriefer.
5. Debriefing interview between debriefer and observer, if needed. The need for an interview will be determined by the debriefer, and the observer and provider will be notified. At a minimum, an observer can expect an interview after their first three trips, midway through each contract, and at the end of each contract. Performance concerns may also lead to additional debriefing interviews at the discretion of WCGOP staff.
6. Written Performance Assessment and Evaluation by debriefer. A full written evaluation will be given at each debriefing interview. In addition to this, performance feedback will be given monthly to the observer through the DCS.

Initial Data Review by observer

Prior to submitting data to a debriefer, all calculations and forms must be double-checked for accuracy and legibility. All data must be entered into the WCGOP database, and a trip error report (TER) must be run for every trip. The TER will flag problems in the data as either Showstoppers (S), errors (E) or warnings (W). Showstoppers and errors indicate potentially serious problems with data collection, documentation, and/or



Figure 11-2: Observer Andrew Stowe holding a rockfish.

entry. Showstoppers are more serious and will prevent Catch Share data from being used to update vessel quotas. Warnings indicate data that is atypical or falls outside of expected ranges. Any showstoppers and/or errors detected need to be corrected immediately. Warnings must be double-checked for accuracy before submitting data to a debriefer. If unable to resolve one or more trip errors, contact your debriefer for support. **DO NOT** simply leave trip errors unaddressed.

Data Submission to the Debriefer

Data collected by observers are sent to their debriefers on a monthly basis. All materials from the prior month will be expected in the office no later than the *5th day of the following month* (See the table: Data Schedule Example on page 11-7). Materials to be submitted include all Trip Data forms, Logbooks, Species ID Forms, Sampling Methods Description Forms. and appropriate Biospecimens. These items can be handed to a debriefer in person or sent via UPS. UPS mailing labels will be provided at training and/or by a debriefer.

Remember that all materials should be received by the debriefer on the 5th, not postmarked by then. Keeping up with paperwork and computer entry is a must. If materials are due during the dates of a scheduled trip, you must submit everything prior to leaving port (usually waived for returning observers in good standing). The same is true when taking time off (e.g., leave). All dates are subject to change. When necessary, your debriefer or other staff will contact you with updated due dates. Instances where this might occur include:

- New observers will be required to submit data after their first three trips to allow for an early evaluation of sampling procedures. This is required to receive a Deployment Endorsement.
- Observers leaving the program will be required to submit data after every trip in the weeks prior to the conclusion of their contract, allowing debriefers enough time to review data.
- Other instances may occur at the discretion of the debriefer. All Trip Data, Species ID forms, Sampling Verification forms, logbook, Non-perishable specimens

Trip Data

If data is collected on forms, group data forms by trip, with pages arranged in the following order:

1. Copy of the IFQ priority species form (Catch Share and Electronic Monitoring vessels only).
2. Trip Form(s).
3. Deck Form(s) in haul/set order.
4. Trip Discard Form(s).
5. Marine Mammal/Seabird/Sea Turtle Interaction and Sighting; Tagged Fish; and other misc. forms.

Note: In general, a trip is generated each time a vessel leaves the dock with the intention of fishing, regardless of whether or not fishing activity occurs.

Species IDs

- Submit the required five IFQ species identification forms per trip, either with the corresponding trip or placed inside the logbook cover, as per debriefer request.
- The debriefer will verify that the correct # of forms have been fully completed and that all priority IFQ rockfish/ protected/ prohibited species encountered have ID forms submitted with photographs. (See the section, Species ID Requirements on page 3-20)

Logbooks

- Logbooks must be submitted with trip data each month.

Fin Clips/ Fin Rays

- Attach sample envelopes to the associated trip data with paper clips.

Otolith Vials

- Otoliths must be clean and dry prior to submitting them to your debriefer.
- Bundle and clearly label (with trip # and haul #) all otolith vials for trips being sent. Otoliths should be grouped by trip and, if more then 10 specimens have been collected for a single trip, by haul.

Salmonid snouts

Salmonid snouts must be kept frozen and shipped to your debriefer's office with the rest of your data, unless otherwise specified by the debriefer. If you are going to ship the snouts,

Data Schedule Example

Month Data Collected	Date Data Due to Debriefer	Data Included	Data Returned to Observer for Corrections (w/AFI)	Corrected data due back to Debriefer	Data Finalized and in Seattle
January	February 5th	All Trip Data, Species ID forms, Sampling Verification forms, logbook, Non-perishable specimens	March 5th	March 20th	April 5th

they must be frozen or salted prior to shipping! To prepare snouts for shipping:

- Make sure a completed biosample tag, with the barcode sticker attached, is in the bag with each snout.
- Immediately freeze snout after collection. If freezing is not an option, immerse the snout in salt.
- Double or triple bag snout. DO NOT place fin clips in bags with snouts. Fin clips should be submitted separately.
- UPS snouts overnight to your debriefer's office. Before you ship a snout, call your debriefer to ensure they will be in the office to receive the snout package. Snouts should never arrive at the office on a weekend or holiday.

Coral tissue samples

Coral tissue samples should be submitted to your debriefer with your data each month. If this is not possible, ship the samples according to the shipping instructions listed above. DO NOT salt coral samples. Keep them frozen and within the collection vials, until delivered.

Data Review by Debriefer

When trip data is received by a debriefer, they double check sampling strategies, data documentation, all calculations, and verify that barcode numbers on the paper forms match those on the otolith vials and sample envelopes submitted. Regardless of which method is used by the debriefer, all data forms with errors are flagged. When trip scans are used to check data, errors are marked electronically. All corrections that need to be made to the data are documented on a Data Check Sheet (DCS) and provided to the observer. All Areas for Improvement the observer needs to address are provided in the DCS. The trips containing errors and a list detailing what needs to be corrected are returned to the observer.

Debriefers also review the observer logbooks and species ID forms. The logbook allows debriefers to become familiar with the vessels covered during the period and informs them of any safety and/or sampling issues prior to the interview. (See the table: Data Schedule Example on page 11-7) shows the data schedule for submitting and correcting data.

Note: Communication is key! If you plan on taking time off or you expect a trip to interfere with data entry and/or submission, discuss the issue with your debriefer, so that a solution can be found.

Data Corrections by Observer

Observer data with errors will need to be corrected by the observer. Debriefers will provide error explanations documented on an a spreadsheet. Data corrections must be made promptly, and *data corrections must be made to the database and any paper forms if applicable!* Once corrections are completed on the forms and in the database, another Trip Error Report is necessary to catch any missed or new entry errors. Trip data is then sent back to the debriefer. Unless otherwise specified, corrected materials should be submitted to the debriefer within 15 days of initial receipt (See the table: Data Schedule Example on page 11-7)

Note: DO NOT remove the flags used to mark errors, as your debriefer will use them when checking your corrections.

Debriefing Interview, Expectations and Scheduling

All new observers who have recently finished training are required to submit their first three trips for review. The debriefer will check that all required materials were received and review sampling and data form completion for these trips, then contact the observer to schedule an Initial Deployment Debriefing. The interview is a vital initial part of the observer's job. This early interview is the observer's chance to demonstrate understanding of the methods learned in training and proficiency at applying them in the field. It is also an opportunity to sit down face to face with a debriefer and discuss how data was collected and hash out any problems that were encountered. In some ways, this meeting is considered an extension of training and should provide insight into how to sample more effectively.

After successful completion of the interview, an observer receives their Deployment Endorsement. If an observer is performing well, the next interview will be scheduled at the mid-point of their contract (i.e., Mid-cruise Debriefing). In addition, all observers will be required to debrief at the end of their contract or before a leave of absence (e.g., extended time off to work in another observer program, etc.). Other scheduled debriefings and interviews will be scheduled at the discretion of the observer's debriefer based on their monthly performance. If a debriefer has concerns about a particular observer's data or performance they can contact the observer to schedule additional debriefings. If an observer is continually not meeting program standards, they will be required to attend an interview each month until their performance is improved sufficiently, as determined by the observer program. Depending on the observer's port location, travel may be required.

To set up an interview, a debriefer will communicate directly with the observer and/or their provider. As the interview date nears, debriefers will try to set up an exact time or approximate time for the interview, since sea days may interfere with meeting plans. Since observers may be called out to sea unexpectedly, it is important to keep in close contact with your debriefer, so they are aware of anything that might interfere with a scheduled meeting.

During the interview, a debriefer will review all data, logbooks, species ID forms and all trips with the observer. If there are species ID forms that are not complete or questionable, the debriefer will hand them back to be completed again.

At the end of the interview with the debriefer, the observer's trip data should be error free. The interview is a great time for the observer to give their debriefer feedback about the program and experiences that were had. The WCGOP has been built, in part, by the feedback staff receives from its observers.

Written Performance Evaluation

Observers receive a written performance evaluation following each debriefing interview. The number of debriefing interviews may vary, depending on performance, logistics, etc. However, all new observers will be debriefed after their first 3 trips (Initial Deployment Debriefing), midway through their contract (Mid-cruise Debriefing), prior to an extended leave of absence >30 days, and at the end of each contract (Year-end or Exit Debriefing). The Initial Deployment Debriefing may be waived for returning observers in good standing.

Performance evaluations will be posted in the database and a hard copy will be provided to the observer during the interview. The evaluation is primarily designed to provide constructive feedback to observers to help clarify program needs and requirements of them. Each evaluation consists of three sections, the Assessment, the Areas for Improvement, and the Summary.

Assessment

The Assessment is broken down into several categories. Each category covers different aspects of the job and has different criteria that are considered. The categories in the Assessment are:

1. **Sampling Procedures:** Proper use of weight methods. Sampling verification forms completed. Number of unsampled hauls.
2. **Biological Sampling:** Appropriate lengths and biospecimens collected. Pacific halibut biosampled according to protocol.
3. **Sample Size:** All species sampled according to protocol. Overall species composition size. Collection of basket weights and fish counts.
4. **Data Forms:** Data organization and legibility. Completion of fields. Transcription errors.
5. **Database Entry:** Completed within a 3-day period for all trips with no/minimal errors. Clean Trip Error Report. Observer Logbook: All sections complete. Safety equipment checked. Observer Safety Survey completed. Vessel diagrams are adequate. Daily notes present.
6. **Species Identification:** Species identification forms (SpID) for all encountered priority rockfish/ protected/ prohibited species were submitted. Correct # of forms vs. # of trips. Accurate and thorough form completion.
7. **Communication/ Attitude/ Reliability:** Timely data submission. Overall attitude toward at sea sampling and shoreside duties. Open lines of communication. Prompt responses to e-mail and phone calls.

Note: Communication is key! Observers are expected to check their email daily, when on land, and respond when appropriate. When in doubt, send staff a response to let us know that the email was received and understood. This is basic professionalism and will be greatly appreciated.

8. **Requirements for Return (Exit/EOC only):** Completed at the end of a contract. Describes what is required for the observer to maintain certification and Deployment Endorsement. Poor performance may necessitate additional training requirements and can result in a recommendation for dismissal.

Areas for Improvement

After a debriefer has finished reviewing monthly data, an Areas for Improvement tracking list is provided to the observer, along with their data check sheet. When problems or issues are first identified an **Improvement** is noted and what the observer needs to do to address the issue is explained in writing. If the same problem is seen again with the next month's data submission, the Improvement escalates to a **Task**. Tasks are duties the observer **must** complete before the next months data submission. Examples of Tasks include re-reading a specific chapter of the manual to improve understanding of sampling protocols or a stringent guideline requiring the completion of a duty neglected in previous periods (e.g., turning in Species ID forms after each trip). One Task may not warrant bringing in an observer for an interview, but a few of them will. This will be at the discretion of the debriefer and the observer program. If the problem continues, the Task will escalate to a **Requirement,** and the observer's provider will be notified of the continuing problem.

Requirements are duties the observer must complete or disciplinary action will be taken. In addition to unfulfilled Tasks, issues that severely affect an observer's ability to adequately perform their job may be listed as Requirements after their first occurrence. Examples of such items include an observer refusing to follow proper sampling protocols or significant issues with safety, communication and/or attitude. Observers with Requirements on their Areas for Improvement feedback will need to come in for an interview monthly until the problems are resolved. A meeting of the observer, debriefer and the observer provider may be requested. If corrections are not made after an issue becomes a Requirement, it will be requested that the observer repeat training or be decertified.

All observers will have Improvements and many will receive Tasks at various times throughout their deployment. Requirements are rare and reflect very poorly on an observer's performance.

Summary

The summary provides an overview of the Assessment and Areas for Improvement sections, as well as the overall performance of the observer in meeting the standards of the program. The final summary of the contract will include any briefing or

training requirements for the observer to complete in order to maintain their certification.

Receiving and Signing Off on Evaluations

Observers will receive a draft evaluation from their debriefer each debriefing interview. During the interview, observers may offer clarifications that could potentially lead to modifications of the draft evaluation. A final evaluation will be made available on the database after the interview is completed. Only the observer, their provider, and WCGOP staff may access evaluations in the database. They cannot be viewed by other observers.

Observers are required to read and sign off on all evaluations in the WCGOP database. An evaluation may be edited until the observer signs off on it. If an observer feels that their evaluation does not fairly represent their performance, they may contact their debriefer directly or, if they are uncomfortable doing so, they may contact the Lead Debriefer, the Program Manager or their observer provider. By signing an evaluation, the observer verifies that they have reviewed the final evaluation, regardless of whether or not they agree with its contents. The observer's contractor has access to and will monitor the status of the end-of-contract evaluations, contacting observers who have signed off to facilitate gear check-in and finalize any end-of-contract details.

Maintaining WCGOP Observer Status

Observers continuing with the program must:

1. Adhere to WCGOP Standards of Conduct, Data Confidentiality, and Conflict of Interest requirements. (See Chapter 2, "Introduction to the West Coast Groundfish Observer Program").
2. Demonstrate proficiency during each trip.
3. Receive satisfactory performance evaluations.
4. Maintain current First Aid and CPR certifications.
5. Pass a yearly fish test.
6. Complete a yearly WCGOP-approved safety training course.
7. Complete an annual briefing or training and attend any other briefings or trainings as instructed by the observer program to maintain their certification and deployment endorsements.



Gear

TABLE OF CONTENTS

Gear Overview 12-3
- Observer Gear Assignments 12-3
- Transporting and Securing Gear 12-5
- Storing gear on deck 12-6
- Maintain Your Gear 12-6
- Gear No-Goes: 12-7

Sampling Gear 12-7
- Books, Manuals and ID Guides 12-7
- Primary Data Collection Tools 12-8
- Rain Gear 12-9
- Cameras 12-9
- NCS Only Gear 12-10

Safety Gear 12-11
- EPIRB/PLB's 12-12
- PLB's 12-15
- Immersion Suits 12-18
- Inflatable PFD's 12-22
- Work Vest Style PFD 12-24

Marel M-1100 Marine Scale 12-26
- About the Scale 12-26
- Power 12-26
- Indicators and Controls 12-26
- Basic Operation 12-27
- Marine Calibration: 12-28
- Dealing with Errors 12-30
- Care and Maintenance 12-31
- Testing 12-31
- Collect information to report a problem 12-32
- Scale Return Instructions 12-32

Computers 12-33
- Inventory 12-33
- Computer Access 12-33
- First Use and changing a password that expired 12-33
- Transporting and Storage 12-36
- Care and Maintenance 12-36
- Administrator Access 12-36
- Trip Scanning 12-37

PSMFC E-mail Account 12-38
- How to Access PSMFC e-mail on the internet 12-38
- Password Policy Rules 12-38
- Changing your password using web mail 12-38
- The "I Can't Get Into My PSMFC E-mail" Essentials 12-38
- Collect information to report a problem 12-39

Gear Pick Up: I'm An Observer Now! 12-39
- Gear Checkout 12-39
- Getting Replacement Consumables 12-40

Reporting a Problem 12-40
- You should contact the gear technician if: 12-40
- Technical and Gear Contacts 12-41
- Non-Catch Share Coordinators 12-41
- WCGOP Stolen Gear Protocol 12-41

Chapter 12

Gear

Gear Check-In Procedure 12-43
- When you have: 12-43
- Before you leave your port: 12-43
- When you arrive in Newport 12-43
- Missing gear 12-44

Shipping gear 12-44
- Before shipping gear 12-44
- CS Gear check (optional) 12-44
- Preparing the shipment 12-44
- Recommended packing method 12-45
- Shipping 12-45
- Post shipping 12-46
- Resolving gear issues 12-46
- Payment 12-46



Chapter 12

Gear Overview

The WCGOP will provide you with the equipment you need to help safeguard your life and perform your job safely and efficiently. The following chapter includes a general overview of all gear, basic use and care instructions for many important pieces of equipment, common problems observers encounter during their contract and some information on additional gear you may wish to obtain. Review this chapter carefully and use it as a reference to help deal with any concerns during your contract.



Figure 12-2: WCGOP Full Gear Set

Once your gear is checked out, you will be responsible for the proper care and use of approximately $16,000 worth of scientific and safety equipment. Basic wear and tear and even the occasional accident is expected. Should gear be lost, damaged, or stolen due to negligence, you may be required to pay to replace it. (See Figure 12-3) for a complete list of gear and replacement costs. You will not be charged for equipment damaged or lost due to documented circumstances that were out of your control.

Observer Gear Assignments

Gear is assigned at various points during training, starting with the first day of class. A gear checkout sheet with staff and observer check fields is used to track what you receive and need. (See Figure 12-1).

During training you will have a chance to try on various immersion suits and get an idea for any additional gear you may need based on your port assignment. Your debriefer/coordinator can give you some suggestions as well. During the gear lecture you will be introduced to all the equipment that will be provided to you and begin the official process for gear assignment. You have until the end of training to figure out if you would like to request any optional equipment, but if you think you would like something please indicate that as soon as you can by filling out the Qty. column under the Check Out heading during classes you are going over gear.

Carefully go over everything in class, the gear you are looking at will most likely be yours. A gear sheet will be provided for you to review and record whenever you are assigned gear. Some items will only be assigned once you complete training.

Items in Red text are issued to NCS only — **WCGOP all Gear Sheet** — **End of contract/Gear check in**

Name (print): | Provider: | Date Checked In:

Cell Phone: | Port Assignment: | Date Checked Out: | Checked in By:

Check out Staff	Obs.	Qty	Item	Check in Qty	Obs.	Staff
		1	Laptop PSMFC #_____			
		1	Laptop Pelican Case			
		1	Laptop Power supply.			
		1	Canon Scanner #GD30			
		1	Scanner USB Cable			
		1	Mini USB Mouse			
		1	USB 10 Key			
		1	M. scale Faceplate Serial #_____			
		1	Marel Scale Test form turned in			
		1	Pelican case with foam			
		1	5 kg weight			
		12	D batteries			
		1	PLB Beacon #: 2DCE			
			Battery Exp.:_____Reg. Exp.:_____			
		1	Immersion Suit Serial # :_____			
		1	Hemilight Strobe Exp.:			
		1	Whistle secured to Immersion suit			
		1	Rescue Streamer secured to suit			
			WCGOP Classic Gear			
			EPIRB Beacon #: ADCE_____			
			Bat Exp.:_____Reg. Exp.:_____			
			GPS: S/N_____			
			VHF: S/N_____			
		1	Camera PSMFC#_____			
		1	Camera charger and cable			
		1	SD card			
		1	case-hard or soft			
		1	2 lb. Calibration Weight			
		1	5 lb. Calibration Weight			
		1	Handheld Scale 10lb.			
		1	Handheld Scale, 25lb.			
		1	50lb.Handheld Scale			
			Optional Gear			
			Back Support Belt			
			Hard Hat			
			Knee pads			
			Safety Glasses			
			PFD non-inflatable Size_____			
			Emergency strobe			
			Whistle secured			
			Rescue Streamer			

Check out Staff	Obs.	Qty	Item	Check in Qty	Obs.	Staff
		1	Sampling Basket & Lid			
		1	PFD-Infl. Hydro Ex:_____			
		1	Rescue Streamer			
		1	Whistle			
		1	Emergency Strobe-C			
		1	Clipboard, Clear			
		1	crab calipers			
		1	First Aid Kit			
		1	Stainless S. Length Board			
		1	Rope, polyester 25ft.			
		1	fish pick			
		1	Spray Lubricant			
			Baskets Take 3-10			
		1	Gear dolly			
		1	5 Gallon Bucket & Lid			
		1	Waterproof gear box			
		1	Marine Mammal Tagger			
		~8	Marine Mammal Tags			
		2	Pair Nitrile glove			
		1	Scale O-ring Grease			
		1	Sponge (or 2 small)			
		2-4	Tally Counter			
		1	Knife and sheath			
		2	Forceps,4 1/2"			
		1	Scissors			
		1	LED Headlamp & 3 AAA bat			
		1	Bees Wax/ Zipper Wax			
		3-6	Ear plugs, pairs			
		2-4	Large rubber bands			
		10-25	Scale Envelopes			
		1	Tape Measure 3m-flexi			
		1	PLB belt pouch			
		1	Belt			
		1	Pack Specimen Bags S/M/L			
		20	Barcodes and plastic vials			
		1	Getac Tablet #			
		1	Tablet power supply			
		2	Spare batteries,1 attached			
		1 ea.	Thumb dr, screw Dr, Squeegee			
		1	Computer bag			
		2	Digitizer pen			
		1	Stainless tablet stand			

Check out Staff	Obs.	Qty	Item	Check in Qty	Obs.	Staff
			Office Supply Kit (Day 1)			
√		1	A Field Guide to Western Birds			
√		1	Beating the Odds			
√		1	Guide to Marine Mammals			
√		1	Coastal Mar. Fishes of CA			
√		1	Pacific Coast Fishes, Eschmeyer			
√		1	Species ID Manual#_____			
√		1	Field Manual			
√		1	Manual in Binder			
√		1	Logbook			
			Additional Logbook(s) 3-6			
√		1	Clipboard, Storage			
√		1	Deck Sheet PHLB viab (Tan)			
√		1	Deck Sheet- Biosampling			
√		1	Deck sheet Marel Scale (Orange)			
√		1	Calculator (10 Key)			
√		1	Mech. pencil lead			
√		2	Mechanical Pencils			
√		4	#2 Pencils			
√		1	Pen			
√		1	Paper clips (bunch)			
√		1	Sharpie			
√		1	Postit note pack			
√		1	Postit flags			
√		1	Eraser			
√		1	Pencil Sharpener			
			Forms (approx. Qty)			
		1	Accordion File folder			
		1	All Paper Forms wrapped in 1 pack			
		1	Species Composition PK 100			
		1	Catch Form PK of 100			
		20	Flatfish Species ID			
		10	Skate ID			
		25	Misc. Species ID			
		20	Rockfish Species ID			
		2	Sp collection Label Sheet(24 cut)			
		6	UPS shipping labels			
		3	Retained sablefish forms			
		10	IFQ tracking			

Signature:

Figure 12-1: Gear Check out form.

Product Name	Unit Price	Issued Qtv.	NCS	CS	Tot. Value
16 GB SDHD Card	$8.99	1	☑	☐	$8.99
Bag-20X6XReusable shopping bag 10 pk	$1.87	1	☑	☑	$1.87
Bag-Sample Bag -12x12 6mil	$0.37	10	☑	☑	$3.69
Bag-Sample Bag- 18*24	$1.44	2	☑	☑	$2.88
Bag-Sample Bag-3x5mini grip 4 mil	$0.13	10	☑	☑	$1.32
Bag-Sample Bag-6x8 mini grip 6 mil	$0.17	10	☑	☑	$1.72
Barcodes and plastic vials	$0.50	20	☑	☑	$10.00
Batteries AA Lithium 36 pk	$1.55	2	☑	☑	$3.09
Batteries AAA-144 pk	$0.66	3	☑	☑	$1.97
Batteries Camera Lithium	$5.74	1	☑	☐	$5.74
Batteries D	$1.04	12	☑	☑	$12.53
Beacon AQUALINK VIEW 406 W/ GPS	$413.92	1	☑	☑	$413.92
Bees Wax/ Zipper Wax	$2.77	1	☑	☑	$2.77
Belt, Elastic	$6.71	1	☑	☑	$6.71
Binder clip small	$0.18	12	☑	☑	$2.19
Binder, 1.5 inch red plastic	$10.34	1	☑	☑	$10.34
Book-A Field Guide to Western Birds	$13.27	1	☑	☑	$13.27
Book-Beating the Odds	$9.00	1	☑	☑	$9.00
Book-Field Manual-WCGOP	$20.18	1	☑	☑	$20.18
Book-Guide to MaR Mam. & Turtles US PAC.	$22.40	1	☑	☑	$22.40
Book-Guide to the Cstl. Mar. Fishes of CA	$8.40	1	☑	☑	$8.40
Book-Logbook	$20.00	7	☑	☑	$140.00
Book-Manual	$70.00	1	☑	☑	$70.00
Book-Pacific Coast Fishes	$13.60	1	☑	☑	$13.60
Book-WCGOP Species ID Manual full	$85.28	1	☑	☑	$85.28
Bucket- lid 5 Gallon gamma screw on	$7.00	1	☑	☑	$7.00
Bucket-5 Gallon	$4.71	1	☑	☑	$4.71
Calculator (10 Key)	$11.93	1	☑	☑	$11.93
Calibration Weight 2 lb. Cast iron	$45.00	1	☑	☐	$45.00
Calibration Weight 5 kg weight SS	$215.00	1	☑	☑	$215.00
Calibration Weight 5 lb. Cast iron	$50.00	1	☑	☐	$50.00
Chromatography paper	$0.80	1	☑	☑	$0.80
Clear Water proof Box	$30.66	1	☑	☑	$30.66
Clipboard, Storage-Workmate	$17.70	1	☑	☑	$17.70
Clipboard,Clear	$3.11	2	☑	☑	$6.22
crab calipers	$9.99	1	☑	☑	$9.99
Digital Camera WG-5 Waterproof Camera	$269.33	1	☑	☐	$269.33
Ear plugs, pairs	$0.12	3	☑	☑	$0.35
Emergency Strobe DAN W3 PFD Light	$16.68	1	☑	☑	$16.68
Emergency strobe Firefly	$58.18	1	☑	☑	$58.18
Emergency Strobe-C and Clip	$18.33	1	☑	☑	$18.33
Envelopes-business	$0.26	10	☑	☑	$2.57
Envelopes-Coin-printed for fin clips	$0.11	10	☑	☑	$1.12
Eraser	$0.35	1	☑	☑	$0.35
File folder, expanding 13 tab	$13.50	1	☑	☑	$13.50
First Aid Kit	$23.07	1	☑	☑	$23.07
fish pick-long-wooden	$4.58	1	☑	☑	$4.58
Forceps,4 1/2''	$0.85	2	☑	☑	$1.69
Form-Combined Catch Trawl Online Form	$0.26	100	☑	☑	$26.47
Form-Flatfish Species ID	$0.19	20	☑	☑	$3.87
Form-Misc. Species ID	$0.25	25	☑	☑	$6.34
Form-Rockfish Species ID	$0.24	20	☑	☑	$4.82
Form-Skate ID	$0.19	15	☑	☑	$2.90
Form-Species Composition Online Form	$0.26	100	☑	☑	$26.23
Getac-T-800 Digitizer pen	$41.77	2	☑	☑	$83.54
Getac-T-800 hand strap	$42.55	1	☑	☑	$42.55
Getac-T-800 Snapbak battery	$150.83	2	☑	☑	$301.66
Getac-T-800G2 Tablet	$2,001.78	1	☑	☑	$2,001.78
GPS-Garmen Etrek 10 GPS	$91.55	1	☑	☐	$91.55
Hand Truck	$91.76	1	☑	☑	$91.76
Handheld Scale 10lb.	$78.29	1	☑	☐	$78.29
Handheld Scale 25lb.	$75.45	1	☑	☐	$75.45
Handheld Scale 50lb.	$80.86	1	☑	☐	$80.86
Hard Hat	$15.00	1	☑	☑	$15.00
Immersion Suit Test: Leak Test	$23.42	1	☑	☑	$23.42
Immersion Suit with lift strap-SU	$265.63	1	☑	☑	$265.63
ITQ Deck reference sheet	$1.05	1	☑	☑	$1.05
Jars, plastic- storage for grease	$0.32	1	☑	☑	$0.32
Knee pads	$10.90	1	☑	☑	$10.90
Knife-Dexter knife with sheath	$8.93	1	☑	☑	$8.93
Laptop-Dell Latitude E7240 I7	$1,778.06	1	☑	☑	$1,778.06
LED Headlamp	$16.79	1	☑	☑	$16.79
Logmein Pro2	$514.22	1	☑	☑	$514.22
Lowepro camera case portland 30	$15.99	1	☑	☐	$15.99
Marel Deck Reference sheet	$2.92	1	☑	☑	$2.92
Marel M-1100 Portable Scale	$5,992.50	1	☑	☑	$5,992.50
Mini USB Mouse	$10.37	1	☑	☑	$10.37
Netbook Bag-Trgus	$24.99	1	☑	☑	$24.99
Nitrile Gloves Large	$0.25	4	☑	☑	$0.99
Numberpad-USB	$12.76	1	☑	☑	$12.76
Pack paper forms	$12.00	1	☑	☑	$12.00
Paper clips 10 pk	$0.04	20	☑	☑	$0.86
Pelican Case for Computer	$79.43	1	☑	☑	$79.43
Pelican case with foam Black	$440.00	1	☑	☑	$440.00
Pen	$0.09	2	☑	☑	$0.18
pencil lead refill, Mech.	$0.23	1	☑	☑	$0.23
Pencil Sharpener, metal	$0.24	1	☑	☑	$0.24
Pencil, Mechanical .7 mm Staples	$0.27	2	☑	☑	$0.54
Pencils, #2 wood	$0.15	4	☑	☑	$0.61
PFD - mustang Inflatable	$245.10	1	☑	☑	$245.10
PFD belt pouch	$30.00	1	☑	☑	$30.00
PFD non-inflatable Stearns Large	$73.32	1	☑	☑	$73.32
PHLB Deck Reference sheet	$2.92	1	☑	☑	$2.92
Post it Notes 3X3	$7.65	1	☑	☑	$7.65
Post it tape flags	$3.86	1	☑	☑	$3.86
Power adapter, Laptop	$47.65	1	☑	☑	$47.65
Rescue Streamer	$30.55	2	☑	☑	$61.11
Rope, polyester 3 strand 3/8-600feet	$0.08	25	☑	☑	$1.97
rubber bands, Jumbo	$0.13	2	☑	☑	$0.26
Safety Glasses Smoke	$4.50	1	☑	☑	$4.50
Saftey lanyard w/lobster clip	$1.83	3	☑	☑	$5.49
Sampling Basket Lid yellow	$6.46	1	☑	☑	$6.46
Sampling Basket yellow	$9.00	10	☑	☑	$90.00
Satellitze 2406 EPIRB NH	$400.00	1	☑	☐	$400.00
Scale O-ring Grease	$0.62	1	☑	☑	$0.62
Scanner-MobileCanon P-208	$129.99	1	☑	☑	$129.99
Scissors	$4.69	1	☑	☑	$4.69
Screwdriver-Phillips #0	$3.72	1	☑	☑	$3.72
Sharpie/Marker	$0.63	1	☑	☑	$0.63
Spcm collection Sheet	$0.32	2	☑	☑	$0.64
Sponge	$0.57	2	☑	☑	$1.15
Squeegee tablet	$4.01	1	☑	☑	$4.01
Stainless S. Length Board	$310.00	1	☑	☑	$310.00
symantec license for Endpoint Antivirus	$702.98	1	☑	☑	$702.98
symantec license for PGP Encryption	$16.00	1	☑	☑	$16.00
Tablet Stand S. Steel-Collapsible	$385.00	1	☑	☑	$385.00
Tags-Tyvek G140513 Blank orange	$0.22	10	☑	☑	$2.21
Tally Counter	$3.04	4	☑	☑	$12.16
Tape Measure soft flexi 10m	$2.56	1	☑	☑	$2.56
Thumb Drive-32gig	$13.76	1	☑	☑	$13.76
VHF Marine Radio ICOM	$152.46	1	☑	☐	$152.46
WD-40 spray	$4.89	1	☑	☑	$4.89
Whistle Loose	$2.40	1	☑	☑	$2.40
Whistle secured on PFD non-inflatable	$2.50	1	☑	☑	$2.50
Whistle secured to Immersion suit	$2.50	1	☑	☑	$2.50
		125			$16,562.74

Figure 12-3: Gear Costs as of 2019

Transporting and Securing Gear

Most gear is lost or damaged while being transported or stored on deck. Observers may be the target of theft when their gear is left visible in a vehicle. To mitigate this follow a few basic rules.

Traveling to and from a vessel:

When transporting your gear be aware that your vehicle makes a tempting target for theft, especially near ports and hotels as the yellow baskets and immersion suits make you easily identifiable as an observer. Items have been stolen in the past while loading/unloading in front of a home and the docks. Be sure to take all sensitive items out of your vehicle while traveling, including:

Laptop and case	**PLB/EPIRB**
All Data	**Cameras**
Scale	**Immersion Suit**
Personal backpack	**Tablet and case**

A vehicle is not considered a secure location for gear or data. Leaving anything that looks tempting to a thief inside and in view may result in a break-in. What to do in the event of a theft will be discussed later in this chapter: (See the section, WCGOP Stolen Gear Protocol on page 12-41).

Transferring gear between vehicle and vessel:

When hauling gear from car to boat use the most secure method possible. If the marina has carts with sides available these are the best option. They are usually designed to take the bumps often encountered on the docks. Be sure you can handle what you put in the cart. More trips are preferable to diving to recover your gear. Be sure to lock your vehicle between trips. When using the cart provided by WCGOP put the heaviest items on the bottom. Secure loose items to prevent them from falling out when passed to the vessel. If necessary tie the items to the cart as in the example (See Figure 12-4).

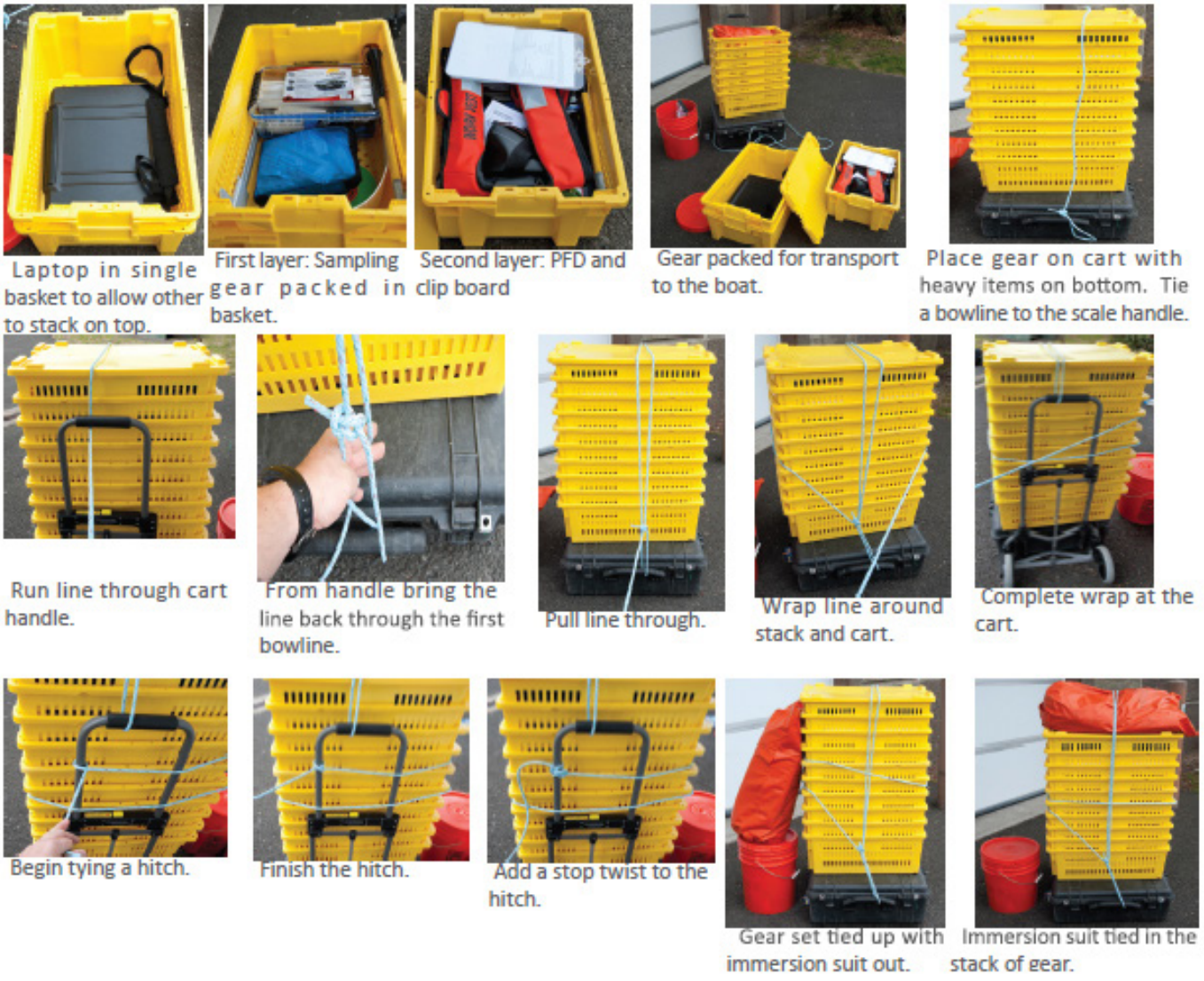


Figure 12-4: How to tie your gear to a cart.

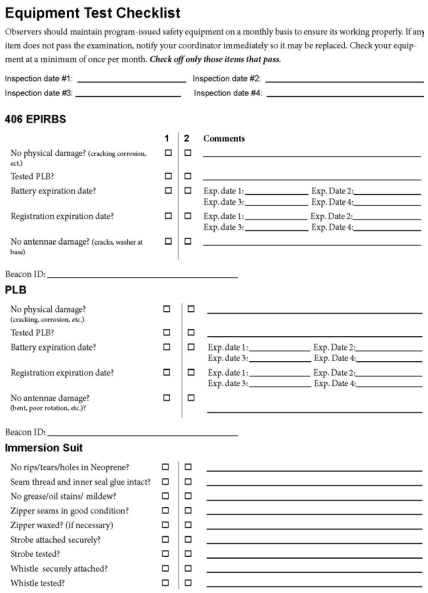
When passing gear to the vessel try to find someone to help. If no one is available, toss what gear you can safely toss. Balance items on the rail and step into the vessel and lift them the rest of the way on. If the deck is higher or lower than the dock you may need to crane your gear on or tie and lift/lower it. When using a crane ask the vessel crew to operate the controls. You should stabilize the gear with a guide line to help keep it from swinging and direct the landing. Be sure that you balance the load properly to avoid tipping gear. Another option is to use an empty fish tote/crane tote to transfer the gear via the crane, a good option if boarding at the fish plant. Ask the vessel crew how they would load the gear if conditions are difficult in any way.

When transferring over water, secure a line to your scale to assist with recovery should it fall in. Be sure the line is long enough to reach the water line and either secured to something or held in a way that will not pull you in. Gear dropped from any height can easily pull you off balance.

Storing gear on deck

Best practice for gear that must be left on deck is to always assume there will be bad weather. Even on a calm day, the actions of the vessel can cause water to wash over the deck. Find a place to put your gear, packed in baskets, buckets, and cases, that does not have a scupper or open rail nearby if possible. Pack the gear as tight as you can. If your baskets can slide around in a bin, then a wave or sharp turn can knock it over and spill the contents. Gear that slides can easily end up overboard.

Always put away all your gear after each haul unless you will remain on deck to watch it. If you are going to sleep you should secure it first. Store the scale and the weight in the case at all times when not in use. Find a place to tie your gear down that is out of the way of the crew. If they have to move your gear it most likely will not be secured properly.



Equipment Test Checklist

Observers should maintain program-issued safety equipment on a monthly basis to ensure its working properly. If any item does not pass the examination, notify your coordinator immediately so it may be replaced. Check your equipment at a minimum of once per month. ***Check off only those items that pass.***

Inspection date #1: _____ Inspection date #2: _____
Inspection date #3: _____ Inspection date #4: _____

406 EPIRBS

	1	2	Comments
No physical damage? (cracking corrosion, ect)	☐	☐	
Tested PLB?	☐	☐	
Battery expiration date?	☐	☐	Exp. date 1:_____ Exp. Date 2:_____ Exp. date 3:_____ Exp. Date 4:_____
Registration expiration date?	☐	☐	Exp. date 1:_____ Exp. Date 2:_____ Exp. date 3:_____ Exp. Date 4:_____
No antennae damage? (cracks, washer at base)	☐	☐	

Beacon ID: _____

PLB

No physical damage? (cracking, corrosion, etc.)	☐	☐	
Tested PLB?	☐	☐	
Battery expiration date?	☐	☐	Exp. date 1:_____ Exp. Date 2:_____ Exp. date 3:_____ Exp. Date 4:_____
Registration expiration date?	☐	☐	Exp. date 1:_____ Exp. Date 2:_____ Exp. date 3:_____ Exp. Date 4:_____
No antennae damage? (bent, poor rotation, etc.)?	☐	☐	

Beacon ID: _____

Immersion Suit

No rips/tears/holes in Neoprene?	☐	☐	
Seam thread and inner seal glue intact?	☐	☐	
No grease/oil stains/ mildew?	☐	☐	
Zipper seams in good condition?	☐	☐	
Zipper waxed? (if necessary)	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	
Whistle securely attached?	☐	☐	
Whistle tested?	☐	☐	

Figure 12-5: Equipment Test Checklist-Logbook Page 33.

Always bring your PFD inside or keep it hung up high under the shelter. There is usually a rain gear storage area for just that purpose. Even on the way in at the end of a trip you should keep items you want to be dry inside or hanging under the weather shelter. There has been more than one instance of water covering the deck as the vessel goes over a sand bar, through a bay or marina entrance. Storing your rain gear and PFD in a basket with holes and leaving it on deck is a sure way to end up with soaking wet rain gear and an inflated life vest.

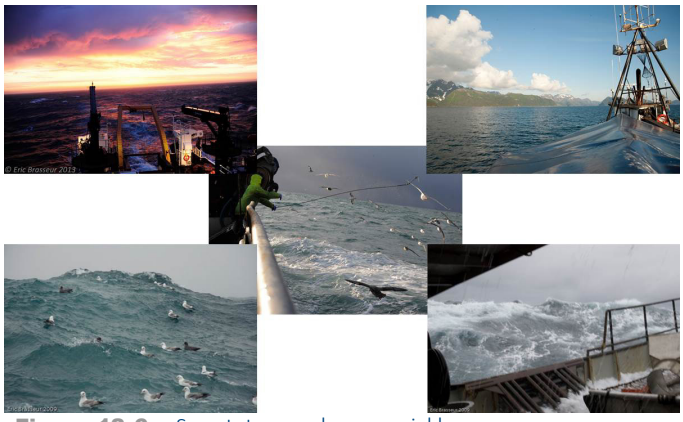


Figure 12-6: Sea state can change quickly.

Maintain Your Gear

Observer equipment is used in a very harsh environment and often subject to a great deal of abuse. Salt water, dirt, fish slime, scales, moisture, transport, regular use, cold and heat will all have a deleterious effect on your sampling and safety equipment. To function properly, many items will need regular maintenance. You are responsible for keeping all of your gear clean and in good working order and safe while in the work environment. The WCGOP expects you to perform regular maintenance of the safety and sampling equipment on a



Inflatable PFD

	1	2	Comments
No rips/tears/holes?	☐	☐	
Seams in good condition?	☐	☐	
Straps and clips in good condition?	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	
CO2 indicator green?	☐	☐	
CO2 cylinder seal intact?	☐	☐	
Complete manual inflation test?	☐	☐	Test. date 1:_____ Test. Date 2:_____

Workvest PFD

No mildew?	☐	☐	
No foam shrinkage?	☐	☐	
No foam water-logging?	☐	☐	
No rips/tears/holes?	☐	☐	
Seams in good condition?	☐	☐	
Straps and clips in good condition?	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	

Marel Scale Inspection

Check all parts of scale for cleanliness. All parts should be free of mud and scales. If dirt is dried on, soak scale in tub for 20 min and scrub with a brush or sponge. (Use on a sponge on face plate) Rinse with a garden hose or shower.

Scale serial number:

Clean and rinsed inside and out?	☐	☐	
Cables: no holes, appear secure?	☐	☐	
No debris under load cells?	☐	☐	
Weight pan straight?	☐	☐	
Battery tube threads cleaned and lubed?	☐	☐	
Buttons function correctly?	☐	☐	
Rust removed?	☐	☐	
Display lights all working?	☐	☐	
No condensation in face plate?	☐	☐	

Figure 12-7: Equipment Test Checklist-Logbook Page 34

monthly basis and record the details in your log book with the Observer Safety Equipment Checklist. Inspections are also a great time to practice using your safety gear, such as donning your immersion suit. It is your responsibility to carefully inspect the safety gear and ultimately to ensure your own safety. Use the following sections of this chapter to learn how to properly inspect each item.

The Observer Safety Equipment Checklist is located in the Observer Logbook on page 31. Go through the checklist every month at a minimum (before every trip is recommended) with your gear in hand and check off each item on the list that passes inspection. Include in the comments expiration dates, any servicing you perform and general comments. If an item does not pass inspection bring it to the attention of your coordinator and the WCGOP gear technician immediately (See the section, Reporting a Problem on page 12-40). They will get you a replacement or assist you in repairing the item as quickly as possible. It is important to do timely inspections so that if replacement safety gear is needed it can be issued before your next trip. You should not board a vessel with malfunctioning equipment.

Gear No-Goes:

Safety in the WCGOP is our number one priority. We have outfitted you with a set of safety gear that is required to be carried with you at all times when on vessels. If there are problems with any of the following gear, do not board a vessel:

- PFD (At least one fully configured pfd is required.)
- Immersion suit.
- Satellite Beacon (Must have a PLB and/or EPIRB with no issues.)
- Scale (Must have passed weight tests and function properly.) While not a safety item, no trips should be taken without your scale. This is the single most important piece of sampling gear you carry, and without it you cannot complete your full duties.

Failure to comply with this policy may result in immediate dismissal from the program. Contact the gear tech, your provider and debriefer as soon as possible to resolve problems.

Sampling Gear

Books, Manuals and ID Guides

The books, manuals and ID guides you have received are valuable reference tools and require special care to be used effectively in a marine environment. Paper books should be left inside or protected from wet conditions at all times. You have been given special waterproof ID guides to assist you in identifying species on deck. When you need to confirm or narrow down your IDs with a paper book, please do so only after removing gloves and moving to a location that ensures the book will not get wet or dirty. The paper books are not intended to be used as keys on deck. Once a book gets wet it becomes very difficult to use. See the following list for reference.

Waterproof guides should be cleaned regularly. Simply wipe each page with a damp sponge and allow to dry. In extreme cases, fill a sink with a mild bleach and soap solution and swish the book around, refill the sink to rinse, then dry thoroughly with a towel followed by setting the book fanned open on the short edge so the pages can dry. Occasionally flip the pages and continue to leave out until dry.

Books By Type:

- **Pacific Coast Fishes:** Eschmeyer (Paper)
- **Coastal Marine Fishes of California:** Miller & Lea (Paper)
- **Marine Mammals and Turtles of the U.S. Pacific:** Wynne (Water proof plastic)
- **A Field Guide to Western Birds:** Peterson (Paper)
- WCGOP Species ID Manual (Water proof plastic)
- WCGOP Manual (Paper)
- Field Manual (Write in the rain)
- Observer Logbooks (Paper)

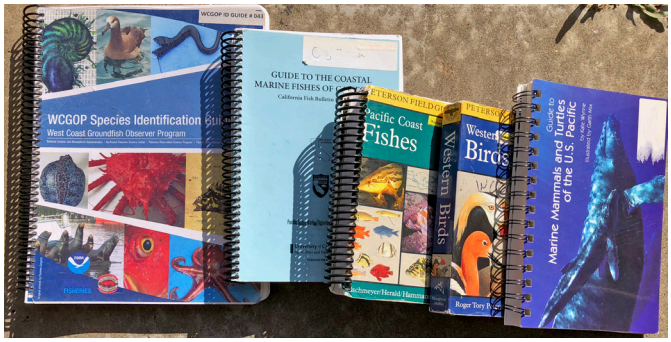


Figure 12-8: Species ID Guides.

Please do not write in books or ID guides unless directed to do so. During the species ID lectures you may be asked to make specific changes (errata) to the manuals in specific locations and with exact wording. Please write as clearly as possible using only the writing tool directed to use. If you need to add personal notes please use the post it notes provided.

Primary Data Collection Tools

- Motion compensation scale
- Length frequency board, stainless steel
- 3 Meter Fabric Tape measure
- Tally counters (lubricate by spraying through knob)
- Baskets
- 5-gallon bucket
- Fish pick
- Knife/scissors
- Crab caliper (lubricate and slide often)
- Forceps
- Waterproof storage box
- Specimen bags, otolith vials, envelopes
- Forms, clipboard, pencils, paper clips, etc
- Rope, gear dolly
- Laptop computer and carrying case

Above is a list of the basic sampling gear. Later in the chapter you will find detailed information on the scale and laptop. Specific care and use of each item will be covered in training. Your tools will need occasional lubrication and constant cleaning. Some tools will only be used occasionally so check them periodically to ensure proper function.

Keep all equipment as clean as possible. Use deck hoses to rinse slime, scales, and blood off your baskets, deck sheets, length boards, clipboards, and knife after each haul. Many vessels have high pressure hoses which are excellent for cleaning equipment.

Be sure to clean and rinse all metal tools with fresh water at the end of your trip. Rust and corrosion will quickly inhibit gear that is not well maintained. If you store your tools in a basket you will need to rinse them after every trip regardless of use. Use the bucket or waterproof box to keep rarely used items dry and available when needed.

Trifold Stainless steel length board Use and Care instructions:

The stainless steel, tri-folding, laser etched measuring should measure fish up to 136 CM. The surface allows for marking in pencil, which can be washed/rubbed off easily once the data has been recorded. Proper measuring procedures will be taught in bio lab.



Figure 12-10: Stainless Steel Length Board

TIPS FOR USE:

- Pull out, measure fish according to the procedures taught in bio lab.
- If taking individual weights, place the board on the scale, tare the scale and measure the fish on the board while taking the weight.
- Place on short edge of basket when measuring many small fish for ease of discarding.

CARE:

- Wipe with sponge or cloth to clean. Abrasive materials will cause the laser etching to fade.
- Use a deck hose to clean after use, high water pressure is fine.
- Store the board away in a secure location after use.



Figure 12-9: WCGOP Observer Gear set.

Rain Gear

The WCGOP does not provide rain gear. You will need to acquire it on your own. Heavy duty PVC rain gear is recommended but be sure to explore all options to suit your individual needs and preferences. Check with your provider for potential discounts.



Figure 12-12: Standard rain gear: vinyl bid and hooded coat.

At a minimum you will need:

- **Rain gear:** bib overalls and jacket with hood (1 set).
- **Boots:** Xtra-tuff brand highly recommended (1 pair).
- **Boot insoles:** wool or felt insoles (2 pairs).
- **Gloves:** heavy rubber gloves- strong enough for work, but flexible enough to write (6-8 pairs).

Some other options are:

- Lighter weight pull over rain coat.
- Neoprene cuffs to keep water out.
- Inner pockets on rain pants for knee pads.

Cameras

Personal Cameras may not be used at any time and personal photos are not allowed. CS observers will be issued a camera by the Catch Monitoring (CM) program and NCS observers may be issued a camera by the WCGOP. All observers will be issued a tablet, in which case the tablet will take the place of a camera. Any photos are for official use only and may not be shared with the public, including on social media (e.g., Facebook, LinkedIn).

Photos and videos are considered data. All CM and observer data must be kept confidential as defined by the Magnuson-Stevens Fishery Conservation and Management Act. Because of confidentiality issues related to taking personal photos while employed as a fishery observer, the WCGOP has implemented a no personal photo policy. This policy is in place to protect observers from potential penalties resulting from the disclosure of confidential information (e.g., crew, fishing locale, gear configurations, catch). Violation of this policy may result in suspension and/or decertification.

Observers are required to take and submit images of certain species with your species ID forms to assist in confirming proper identification. Cameras are for species identification and sighting documentation only. Images of the vessel, crew or fishing activities should never be taken unless you have been specifically directed to do so (these are always noted in the log book). Having a camera on a vessel is always a controversial prospect. The crew may feel that you are trying to "catch them" at something and be very wary of your taking pictures. Follow instructions carefully and communicate clearly with the vessel if confronted.

Waterproof camera

- Watermarking capabilities turned on if available.
- Print images out, bring in on thumb drive, upload to debriefer shared Google drive folder or e-mail/send to debriefer for printing. (Ask your debriefer what they prefer.)
- Attach printed image to Species ID Form.
- Always include date and time stamp on image.

Basic Rules

- All species images should be cataloged on the species ID forms. Just write the file name(s) on the top of the form.
- Special project images that have been requested must be logged (logbook page 46).
- All logs and images must be turned in for special projects.
- Only images of fish or species sightings to be taken unless otherwise specified.
- Misuse of images is grounds for decertification.
- A photo slip/specimen label should appear by each fish



Figure 12-11: Various jacket options to consider.

in the image which will identify the trip, haul, date and species as ID'd. If necessary for image, take one picture of form followed by the fish images.

- Fillable PDF ID forms are provided for use on the tablets. Pictures should be directly inserted into the pdf using adobe acrobat following the instructions on the forms. Those forms should be uploaded with the scantrip function to the database for the trip they were collected.

Taking pictures

When photographing specimens, maintain a proper distance to allow the subject to fill the frame. Try to hold the camera at an angle to prevent glare or flash reflections. Review each image and retake as needed. Wait to take pictures until the end of your sampling if possible. This will allow you to take time to take a good photo. Clear a spot and work slowly.

Document your pictures while you are taking them. Write up a specimen collection label or ID form and include it in the image next to the fish. The form should have the species name, trip number (or vessel name if not known yet), haul number, and date filled out prior to photographing the specimen. It is helpful to place the fish on a length strip for scale.

Take multiple pictures of each fish from different angles: top, side, front, and bottom (just roll the fish). Try to spread out fins and show identifying characteristics. Close ups are helpful for small characteristics.

Document each photo soon after taking the picture. Go through digital images and write the corresponding numbers/file names directly on the form. The form should match the one in your picture.

Camera Maintenance

- Keep the camera charged.
- Keep camera and charger separately when on vessels
- Be sure all hatches are sealed and rinse all waterproof cameras in fresh water after each use on deck. Dry with cloth/paper towel.
- Clean the lens with a soft cloth.
- Check batteries for corrosion occasionally.
- If storage case is a waterproof box, always clean and dry the camera completely before storing. Salt from the camera will corrode cables in the dry box.

Wash soft cases as needed. Take everything out of the case and put it in the washing machine.

NCS Only Gear

A few items are available for NCS observers that will be serving on smaller vessel that do not have room for some of the sampling equipment required and/or do not have the safety equipment larger vessels do. Your coordinator will know what you might need based on the port you are assigned and the vessels you may cover. The gear technician will try to make sure everyone gets the gear they need, but be sure to discuss suggestions with debriefers during your training or briefing.

- **Water activated EPIRB:** Small craft used in several of the smaller fisheries do not carry a hydrostatically released beacon. To bolster your safety your coordinator will suggest you check out a EPIRB in addition to a PLB.
- **Hand Held GPS:** Assigned to observers covering vessels that either still use loran positioning or do not have a GPS plotter at all or one that is easily viewed by the observer during fishing activity. A tablet with GPS turned on may be used if issued.
- **Hand Held VHF Radio:** If you need a GPS you probably need a radio as well. VHF's are only useful to observers that will be within 3 miles of shore due to the short range of a VHF radio.
- **Hand Held scales:** For small vessels where the electronic scale cannot be taken. Scales are available in the following sizes :
  - 10 lb.
  - 25 lb.
  - 50 lb.

Hand Held Scales

Brass scales are issued to Non-Catch Share observers that will be deployed on small vessels. These vessels often have very little room for the observer and sampling gear.



Figure 12-13: Brass scales: 10lb., 25lb., and 50lb.

USE

Weighing is done by hanging the fish from the hook and reading the weight to the nearest .25 lbs. Only record weights in 1/4 lb. increments.



Figure 12-14: Handheld scales are read in.25 lb. increments only.

It is advisable to use a small bucket with drainage holes to weigh fish. Very large fish or sharks can be weighed directly on the scale hook. In either case, it is necessary to zero or tare the scale. Adjust the scale to read zero, with whatever you are using, by turning the knob at the top of the scale, just below the handle. Be sure to always zero the scale based on how you weigh. If you are using a container that weighs more than half a pound you will probably not be able to tare the scale. Write the weight of the bucket/container directly on it and subtract the weight of the container prior to recording the weight of the fish. Record this in your daily notes or comments.

TESTING

Regular testing is required as hand scales can corrode quickly and will eventually rust out completely once exposed to salt water. Test hand scales every fifth observed day when used or once a month when stored. Tests are recorded in the logbook on page 33. Consult the chart and use the appropriate weight standard to verify your scales are weighing correctly.

METHOD:

- Zero the scale with nothing on it.
- Place the first standard on the hook and record the value.
- Remove the standard and ensure the scale returns to zero without adjusting it.
- Place the second standard on the scale.
- Remove the standard and ensure the scale returns to zero without adjusting it.



Figure 12-15: Adjustment knob to zero the scale.

- **Accepted values are within 5% of the standard weight:**.1 for the 2 lb. and.25 for the 5 lb.

Record weight to two decimal places. Please indicate units as X.XX. Scales that are outside of accepted variance are not suitable for use, please contact the gear technician for a replacement scale and recycle the old one.

CLEANING

Rinse the scales after every trip by dipping them in a bucket or sink filled with fresh water. Shake off and allow to dry completely by hanging. Spray the inside of the scale with your issued water resistant silicon lubricant or similar once dry. Pull on the weighing hook to expand the scale and ensure the spring is well lubricated. A lot of rust flaking off the spring is a sign that it is nearing the end of it's WCGOP life.

STORAGE

Ensure scales are washed and dry and well lubricated before storing. Spray a towel or paper towels with the same lubricant used on the scale. Wrap the scales in the towels and place in a ziplock bag. Scales stored in this manner will last much longer than those left out in the salt air.

COLLECT INFORMATION TO REPORT A PROBLEM

When your scale fails a weight test or cannot be zeroed, it is time to replace it. Replacements may be picked up at any field office or shipped to you. Contact your debriefer and the gear technician via e-mail to report a malfunctioning scale and indicate how you would like to receive a new one. If shipping is desired, be sure to include your physical address in the e-mail.

Safety Gear

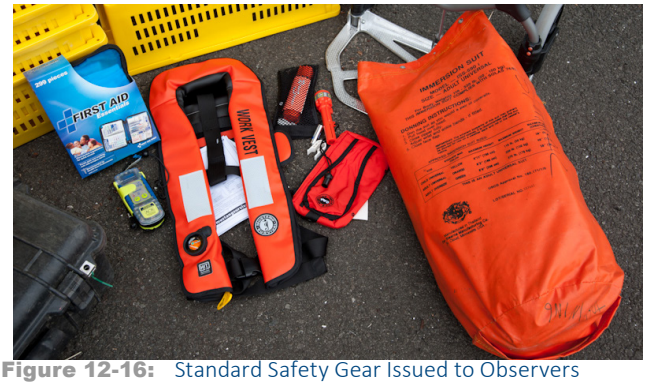


Figure 12-16: Standard Safety Gear Issued to Observers

Detailed instruction on the use and maintenance of safety gear will be provided in training and later in this chapter. Please pay close attention and follow all procedures. WCGOP can provide you all the essentials, but when it comes down to it, it's all up to you.

In addition to automatically assigned gear, we have a selection of optional safety gear available should you desire it. Your safety is primary so please check out items that will help you. A basic first aid kit is included in your gear. You will be responsible for keeping it stocked and is yours to keep once opened.

You will be provided with an inflatable PFD, which many observers find more comfortable and easier to keep clean than the optional work vests. Additionally, they are more likely to float you face up should you end up in the water unconscious. If you desire a non-inflatable PFD you may check one out as well. Whichever you use, you are required to wear it at all times while on deck.

The safety gear listed below is required and must be brought on every trip, be fully inspected, and maintained to WCGOP safety standards at all times.

1. Required Gear
   - Immersion suit
   - Personal Flotation Device (PFD) Inflatable assigned
   - Strobes
   - Whistles
   - EPIRB/PLB
2. Optional Gear
   - Hard hat
   - Back brace
   - Kneepads
   - Non inflatable PFD
   - Safety Glasses
   - Ear Plugs
   - First Aid Kit

EPIRB/PLB's

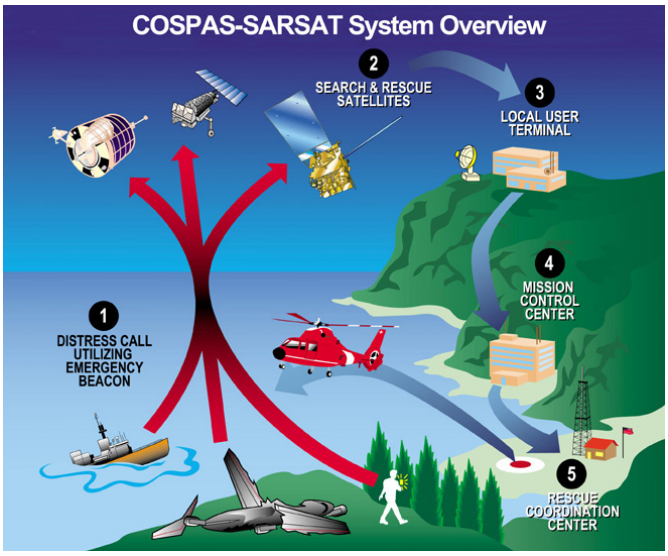


Figure 12-17: EmergencyBeconCommunicationSystemOverview

Distress beacons are your lifeline to rescue in the event of a life threatening emergency at sea. WCGOP will provide you with either a water activated EPIRB or a manually activated PLB. Be sure you are very familiar with the use and maintenance of the unit assigned to you by reviewing the appropriate section in this chapter. It's a valuable tool that you may never use but could save your life if you ever need it.

How it works

Distress radio beacons transmit signals during distress situations.

1. Instruments on board satellites in geostationary and low-altitude Earth orbits detect the signals transmitted by distress radio beacons.
2. Ground receiving stations, referred to as Local Users Terminals (LUTs), receive and process the satellite downlink signal to generate distress alerts.
3. Mission Control Centers (MCCs) receive alerts produced by LUTs and forward them to Rescue Coordination Centers (RCCs), Search and Rescue Points Of Contacts (SPOCs) or other MCCs.
4. **The points of contact for your beacon are:**
   - **The owner of all WCGOP beacons:** Eric Brasseur
   - Your WCGOP Coordinator.
   - Your providers primary contact.
   - You at the mobile number you gave to your employer and WCGOP.

EPIRB Care and Inspection

The satellite2 406 EPIRB is a buoyant water and manually activated emergency locater beacon that will be assigned to NCS observers working on small vessels unlikely to have a self deploying beacon. While on a vessel keep your EPIRB in a location that makes the most sense to you. Always realize the most important aspect is that it be available to you and work properly when you need it. Carefully inspect your EPIRB often. Store and transport it appropriately. Contact your coordinator and the WCGOP gear technician with any problems immediately.

406 EPIRBS

	1	2	Comments
No physical damage? (cracking corrosion, ect.)	☐	☐	_____
Tested PLB?	☐	☐	_____
Battery expiration date?	☐	☐	Exp. date 1: _____ Exp. Date 2: _____ Exp. date 3: _____ Exp. Date 4: _____
Registration expiration date?	☐	☐	Exp. date 1: _____ Exp. Date 2: _____ Exp. date 3: _____ Exp. Date 4: _____
No antennae damage? (cracks, washer at base)	☐	☐	_____

Beacon ID: _____

Figure 12-18: EPIRB Checklist

Activation

Never activate your beacon unless in an emergency situation! The beacon can be activated by placing the beacon in water OR by lifting the thumb switch to a vertical position, sliding it toward the antenna and pushing down to the opposite side of the beacon. Activating the beacon in this manner breaks off the Activation Indicator Plastic Pin and allows the switch to properly seat, showing the "▎" symbol (ON).

Inspection

The WCGOP suggest you visually inspect your EPIRB before and after every trip. This will ensure you have it and that it did not incur any damage or accidental activation while on the vessel or during transport. A physical inspection and communication test must be performed and documented in your logbook every month.

Physically inspect the body of the EPIRB for cracks. (See Figure 12-22) for an example.

1. Check for missing screws. If screws are missing the internal workings may be compromised.
2. Check the spool of line for tangles.
3. Verify the beacon number. There are two locations for the beacon number. They must match!
   - The white sticker with the serial number usually on the clear part of the beacon. This is the Unit Identification Number (UIN) assigned by the manufacturer.
   - The NOAA sticker on the Yellow part of the beacon. This number indicates which beacon is registered.
4. Check the Registration Expiration date (located on the NOAA Sticker).
5. Check the Battery Expiration date (usually on the thin side of the yellow body).

6. Check the rubber seal on the antenna base (See Figure 12-19) for cracking. Apply silicon grease if needed.
7. Check the antenna for cracks, corrosion, reflective tape, and that it is screwed securely to the base after inspection.
8. If the unit fails inspection at any point, contact your coordinator and the WCGOP gear technician immediately.

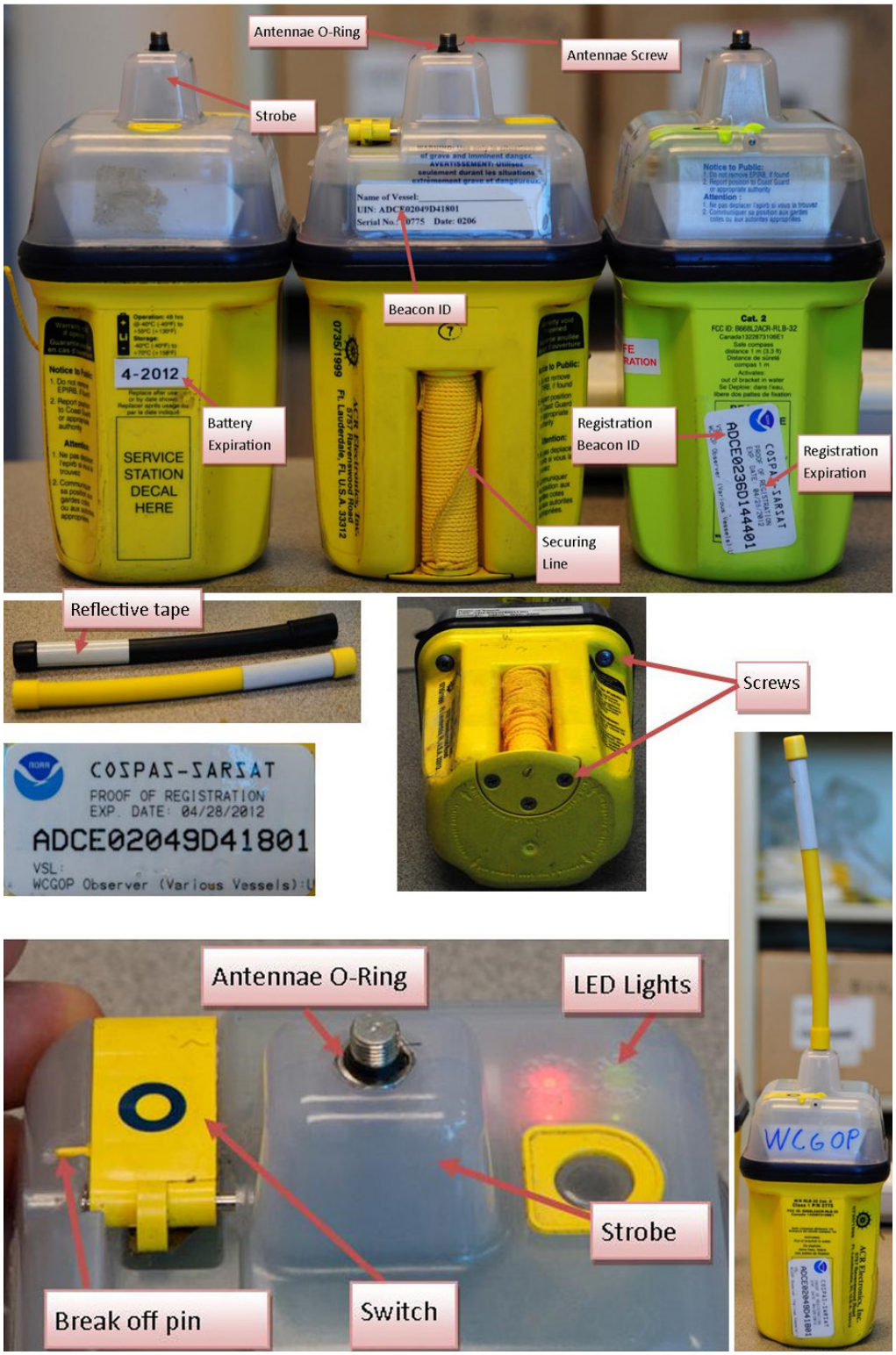


Figure 12-19: EPIRB 406 Parts and Information Locations

Testing

Please read all instructions before performing any of the tests.

TEST	SUCCESS	FAIL
Initial Test Start	Green, Red LED	
Check Data Integrity	Beep, Green, Red LED	Test stopped
Check 406 MHz Synthesizer	Beep, Green, Red LED	Test stopped
Check RF Power/Battery	Beep, Green, Red LED	Test stopped
Successful Test	Green LED, Strobe	

*NOTE: The "beeps" are a very high-pitched tone that many people may not be able to hear.

Figure 12-20: 406 EPIRB Test sequence

Passing Test

1. Lift the yellow tab on top of the EPIRB HALF WAY up. The tab cannot be flipped all the way over due to design. Do not force the tab. See Activation.
2. Release the tab to its original position The O side should be up.
3. A red xmit LED and green test LED light will flash and beep once simultaneously.
4. The red and green lights will blink three times with three accompanying beeps. The third is slightly late.
5. The green will stay lit one second on the third beep
6. Finally the strobe will flash while the green light remains lit.

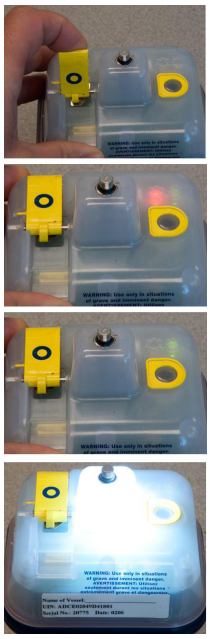


Figure 12-21: EPIRB testing light sequence.

Failed Test

1. The test stops at any point other than step six.
2. The green light and strobe do not fire.
3. Call your coordinator and the WCGOP gear technician immediately.

Accidental Activation

1. First deactivate by drying or returning the switch to the off position
2. **Reporting of False Alarms:** Should there be, for any reason, an inadvertent activation or false alarm, it must be reported to the nearest search and rescue authorities. The information that should be reported includes the EPIRB 15-digit Unique Identifier Number (UIN), date, time, duration and cause of activation, as well as location of beacon at the time of activation. To Report False Alarms in the United States Contact any of the following:
   - **Pacific Ocean Area / USCG Area Command Center Tel:** (510) 437-3700
   - **Atlantic Ocean/Gulf of Mexico USCG Atlantic Area Command Center Tel:** (757) 398-6390
   - **USCG HQ Command Center Tel:** (800) 323-7233
3. Immediately contact your coordinator.

Storage

Keep your EPIRB in a secure location when not in use. Many observers store the 406 with their immersion suit. This can lead to damage as suits are often tossed around when boarding and disembarking a vessel. If you store it with your immersion suit, ensure it is well padded and will not fall out of the bag if it unbuttons. Transport your suit as you would your own laptop. The beacon can be accidentally activated if stored in a wet environment. If your suit gets wet in its bag or you have worn it in the water, remove the EPIRB to ensure it does not activate.



Figure 12-22: This unit was cracked while being kept in an immersion suit. The suit was tossed on deck from the dock resulting in the damage. This may be considered negligence on your part and the beacon will quickly malfunction in salt water.

PLB's

Personal Locater Beacons (PLB) are manually activated emergency locaters. In an emergency situation you must trigger the PLB yourself. Keep your PLB readily accessible. You will be given a PLB pouch that attaches to a belt so you can keep your PLB with you at all times. Wear the PLB at all times while on deck and keep it accessible while you are inside. You can use the belt to hang it in/near your bunk. Be sure you can locate and grab it in the dark.

If you are in a situation requiring the donning of an immersion suit, remember to retrieve your PLB and bring it with you. Put it in the suit with you if necessary. The PLB needs a clear line of site. Once activated it must be kept in the correct orientation based on the PLB model to function properly.

Care



Figure 12-23: Keep your PLB in the pouch on a belt with cable attached and with you on deck and in your bunk.

Keep your PLB clean and dry. Since you will be keeping it in the PLB pouch most of the time and wearing it on deck, it is highly likely the pouch will get wet and dirty. If you leave the PLB in the pouch all the time the salt water will eventually work into the screen causing rust and shorts in the buttons. Rinse the PLB in fresh water after each trip and let it dry outside of the pouch. Wash the PLB pouch often to avoid salt build up in the fabric and snaps. Perform regular inspections based on the PLB type to ensure the PLB will work properly if needed.

Aqualink™ 406 GPS PLB-350C

Activation



1. Unfasten the antenna from the case.
2. Move it into the upright position.
3. Depress the ON/OFF button for one full second.

You will hear a "beep" and your beacon is now activated. While transmitting your distress signal, the red LED will flash once every two seconds, alerting you that your beacon is active. An additional "beep" will sound every time your beacon transmits data to the satellites (roughly every 50 seconds).

If your unit is activated, the GPS receiver will start up, search to find your LAT/LONG and incorporate it into your 406 MHz signal. As soon as the GPS receiver acquires valid positioning data, the red LED will stop blinking and the green LED will begin flashing once every two seconds.

The same GPS data will be sent with each 406 MHz signal for the next twenty minutes. At that time the internal GPS will start up again, search to find your LAT/LONG and incorporate it into your next 406 MHz signal. If for any reason the internal GPS cannot update your LAT/LONG, your last position will be used for the next four hours. At that time the green LED will stop blinking and the red LED will flash once every two seconds until new GPS data is obtained.



Figure 12-24: Activated PLB attached to immersion suit.

Antenna position

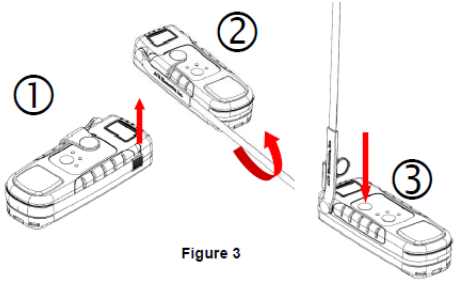


Figure 3

For maximum performance you must deploy the beacon antenna into the proper position as shown in Figure 3. If at all possible, be sure the antenna is positioned facing the sky and avoid submerging in water. This device is intended to operate on or above the ground or while attached to your person above the water line.



Figure 12-25: PLB 350-C parts and information locations.

Inspection

PLB

No physical damage? (cracking, corrosion, etc.)	☐	☐	_____
Tested PLB?	☐	☐	_____
Battery expiration date?	☐	☐	Exp. date 1:_____ Exp. Date 2:_____ Exp. date 3:_____ Exp. Date 4:_____
Registration expiration date?	☐	☐	Exp. date 1:_____ Exp. Date 2:_____ Exp. date 3:_____ Exp. Date 4:_____
No antennae damage? (bent, poor rotation, etc.)?	☐	☐	_____

Beacon ID: _____

Figure 12-26: PLB Checklist

Visually inspect your PLB before and after every trip. This will ensure you have it and that it did not incur any damage or accidental activation while on the vessel or during transport. A physical inspection and communication test must be performed and documented in your logbook, page 31, every month.

1. Physically inspect the body of the PLB for cracks.
2. Check for missing screws. If screws are missing the internal workings may be compromised.
3. Inspect the gasket that surrounds the body. It should feel soft and be unbroken.

4. Verify the beacon number. There are two locations for the beacon number. They must match!
   - The white sticker with the serial number is usually on the bottom of the back. This is the UIN or Unit Identification Number assigned by the manufacturer.
   - The NOAA sticker is usually on the upper part of the back of the beacon. This number indicates which beacon is registered.
5. Registration Expiration date (located on the NOAA Sticker).
6. Battery Expiration date (on back near the bottom)
7. Check the antenna rotation joint to be sure the antennae moves freely and clicks in the appropriate spots.
8. Check the antenna for permanent bends, corrosion, cracked plastic and the plastic tip that locks it down. If the paint is flaking off that is OK according to the manufacturer.
9. If the unit fails inspection at any point, contact your coordinator and the WCGOP gear technician immediately.

10. Testing

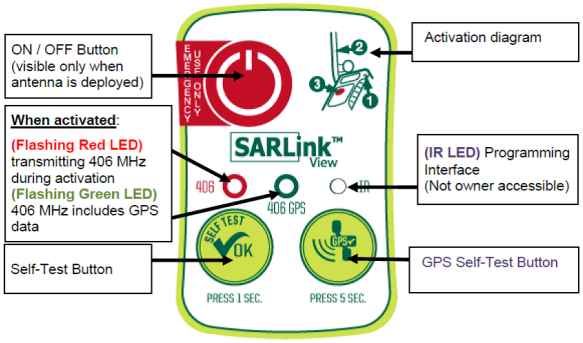


Figure 12-27: Keypad functions for plb 350s.

PASSING TEST

Self-Test Sequences	Self-Test Guide (Green LED Red LED)
Green LED with beep, 4 additional "beeps", Green LED, strobe flash	Successful Self-test
Green LED, Less than 4 "beeps", Red LED	Failed Self-test: Return unit to ACR for service
Red LED with beep, 4 additional "beeps", Green LED, strobe flash	Successful Self-test: Less than 24 hours of transmission life is left in the batteries.
Red LED with or without beep, Less than 4 additional "beeps", Red LED, strobe flash (PLB-350B only)	Failed Self-test: Return unit to ACR for service. Less than 24 hours of transmission life is left in the batteries.

Figure 12-28: PLB 350C Test Sequence

1. A Self-test is initiated by holding the Self-test button for at least one second and less than five seconds.
2. Your beacon will sound an initial "beep" and flash the green LED to signify the test has begun.
3. Four more beeps will follow.
4. The green LED will flash a second time to indicate that the self-test was successful.

FAILED TEST

1. If a red LED flashes at the completion of the Self-test, your beacon has failed. Repeat the Self-test.
2. If your PLB flashes an initial Red LED at the beginning of the test, this indicates that your electronic battery witness seal life has been broken and you have used more than 1 hour of battery life.
3. Call your coordinator and the WCGOP gear technician immediately.

ACCIDENTAL ACTIVATION

1. First deactivate by pressing the ON/OFF button for one second.
2. **Reporting of False Alarms:** Should there be, for any reason, an inadvertent activation or false alarm, it must be reported to the nearest search and rescue authorities. The information that should be reported includes the EPIRB 15-digit Unique Identifier Number (UIN), date, time, duration and cause of activation, as well as location of beacon at the time of activation. To Report False Alarms in the United States Contact any of the following:
   - **Atlantic Ocean/Gulf of Mexico USCG Atlantic Area Command Center Tel:** (757) 398-6390
   - **Pacific Ocean Area/USCG Area Command Center Tel:** (510) 437-3700
   - **USCG HQ Command Center Tel:** (800) 323-7233
3. Additionally, immediately contact your coordinator.

Storage

Keep your PLB in a secure location when not in use. You are responsible for the unit and will be required to pay the full replacement cost should negligence on your part result in the loss, damage, or theft of the PLB. If you store it with your immersion suit, ensure it is well padded and will not fall out of the bag if it unbuttons.

Immersion Suits

Select a suit that fits



A good fit is essential to the function of an immersion suit. You should have room to fit in a suit fully clothed as you would be on deck, with a secure seal around your face. If a suit does not seal around your face it will fill with water easily. Choose a suit that fits your frame best while providing a good seal. Try several suits on if more than one size/brand is indicated to find what works best for you. Imperial suits tend to run a little larger than Stearns and Kent suits are just slightly tighter. (See Figure 12-29) to help determine the size suit you will need.



Figure 12-30: Immersion suit bag color and size.

Timing

The WCGOP requires that you inspect your immersion suit on a monthly basis and record it in the equipment test checklist section of your logbook. WCGOP immersion suits are professionally inspected once every 18 months beginning one year after the suit is first assigned to an observer, regardless of use. The suit you receive should be in excellent condition at the time it is assigned to you. Moving your suit from vessel to vessel, storing it, tossing it and using it for drills or in an emergency may cause wear or damage. Your safety relies on your attention to detail. Immediately report any problems to your debriefer or coordinator so that a replacement may be issued.

Chart Code	Brand/Size	Height Range	Weight Range
A	Imperial Intermediate	59"-70"	110 to 180 lbs.
B	Stearns Small	58" to 68"	110 to 250 lbs.
G	Kent Intermediate	61" to 70"	110 lbs. to 250 lbs.
C	Imperial Adult	64"-75"	110 - 330 lbs.
H	Kent Universal	71" to 75"	110 lbs. to 305 lbs.
D	Stearns Universal	59" to 75"	110 to 330 lbs
E	Imperial Jumbo	Over 75"	Over 220
F	Stearns Oversized	over 75"	220 to 375 lbs.
I	Kent Oversize	75" to 82"	250 lbs. to 350 lbs.

Figure 12-31: Immersion suit size chart key.

Height in inches	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	Height in Feet
58	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B													4'10"
59	ABD	ABD	ABD	ABD	ABD	ABD	ABD	ABD	BD	BD	BD	BD	BD	BD	BD	D	D	D	D	D	D	D	D					4'11"
60	ABD	ABD	ABD	ABD	ABD	ABD	ABD	ABD	BD	BD	BD	BD	BD	BD	BD	D	D	D	D	D	D	D	D					5'0"
61	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	BDG	BDG	BDG	BDG	BDG	BDG	BDG	D	D	D	D	D	D	D	D					5'1"
62	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	BDG	BDG	BDG	BDG	BDG	BDG	BDG	D	D	D	D	D	D	D	D					5'2"
63	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	ABDG	BDG	BDG	BDG	BDG	BDG	BDG	BDG	D	D	D	D	D	D	D	D					5'3"
64	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	CD	CD	CD	CD	CD	CD	CD	CD					5'4"
65	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	CD	CD	CD	CD	CD	CD	CD	CD					5'5"
66	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	CD	CD	CD	CD	CD	CD	CD	CD					5'6"
67	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	CD	CD	CD	CD	CD	CD	CD	CD					5'7"
68	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	ABCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	BCDG	CD	CD	CD	CD	CD	CD	CD	CD					5'8"
69	ACDG	ACDG	ACDG	ACDG	ACDG	ACDG	ACDG	ACDG	CDG	CDG	CDG	CDG	CDG	CDG	CDG	CD	CD	CD	CD	CD	CD	CD	CD					5'9"
70	ACDG	ACDG	ACDG	ACDG	ACDG	ACDG	ACDG	ACDG	CDG	CDG	CDG	CDG	CDG	CDG	CDG	CD	CD	CD	CD	CD	CD	CD	CD					5'10"
71	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CD	CD	CD					5'11"
72	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CD	CD	CD					6'0"
73	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CD	CD	CD					6'1"
74	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CD	CD	CD					6'2"
75	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDH	CDHI	CDHI	CDHI	CDHI	CDHI	CDHI	CDI	CDI	CDI	I	I			6'3"
76												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'4"
77												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'5"
78												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'6"
79												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'7"
80												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'8"
81												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'9"
82												EF	EF	EF	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EFI	EF	EF	6'10"

Figure 12-29: Immersion suit size chart.

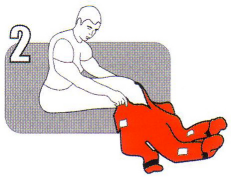
Donning Instructions

Your life may depend on your ability to quickly don your immersion suit in an emergency. It makes sense to have practiced beforehand. Monthly practice should reduce your donning time from minutes to seconds



Remove suit from bag

1. Remove suit from storage bag. Grasp handle on bottom of bag, give a quick tug up. Bag should release snaps and allow suit to slide out.



Pull on as you would a pair of coveralls

2. You should practice donning the suit, feet first, while lying or sitting on the deck. Vessel movement or list will often prevent donning the suit in a standing position.



Insert arm into suit and adjust hood over head

3. Place your weaker arm into the sleeve of the immersion suit. Then using your free hand, reach up and place the immersion suit hood over your head. Then place your strong arm into the sleeve of the immersion suit.

4. Holding the zipper below the slider with one hand, fully close the zipper by firmly pulling straight up on the lanyard with the other hand. Secure the flap over the face/mouth.



Insert other arm and close zipper and face flap. Adjust wrist and ankle bands to fit.

5. Enter water feet first while protecting your airways with your hands.



Enter water feet first covering your airways.

Warnings

- Do not inflate the air bladder until you are in the water to prevent damage or injury.
- There is a risk of entrapment in submerged vessel compartments due to suit buoyancy. Don your suit outside/on deck if possible.
- Jumping into the water is a last resort. Ease/lower yourself into the water if possible.

Inspection

Immersion Suit

No rips/tears/holes in Neoprene?	☐	☐	_____
Seam thread and inner seal glue intact?	☐	☐	_____
No grease/oil stains/ mildew?	☐	☐	_____
Zipper seams in good condition?	☐	☐	_____
Zipper waxed? (if necessary)	☐	☐	_____
Strobe attached securely?	☐	☐	_____
Strobe tested?	☐	☐	_____
Whistle securely attached?	☐	☐	_____
Whistle tested?	☐	☐	_____

Careful inspection will ensure the suit functions properly should you ever need it. Never board a vessel with a suit that shows signs of damage.

1. The storage bag
   - Check the closures on the storage bag as well as its general condition.
   - Wax closure snaps on bag for ease of opening.
   - Ensure Donning Instructions are legible.
   - Be sure bag, size and manufacturer of suit labeling are correct.
   - Buttons often rip out of Stearns bags. If too many buttons are damaged to close the bag securely, request a new bag from the gear technician.
2. Lay suit on a flat clean surface. Visually check the suit's reflective tape, fabric and seams, inside and out, for damages.
   - Examine fabric for tears, rips, punctures, abrasions, grease, oil stains, mildew and burns.
   - Examine seams for ripped stitching on the outside and cracked glue seals on the inside.
   - Examine reflective tape. Is it yellowed, peeling, cracked or missing? There should be 16 square inches of reflective tape on the front and the back of every immersion suit.
   - Smell the suit. It should not smell like mold/mildew, gasoline or diesel fuel. If it does wash it as directed below.
   - Make a note of any defects found and their location on the suit. Follow cleaning instructions (See the section, Cleaning on page 12-20) if cleaning is needed.
3. The zipper used in an immersion suit is designed to provide a water tight seal. It is important that regular maintenance practices be performed.
   - Visually check zipper for wear, damage, corrosion (green color) and cleanliness. Debris and foreign matter can be removed by using a soft bristle brush and fresh water. Corrosion can be removed with baking soda and water. If zipper shows signs of wear or damage remove the immersion suit from service.

- Check zipper by sliding up and down with a steady straight pull to check for ease of operation. Watertight zippers take a good deal of pull to operate but if the zipper is non-functional or extremely difficult to close while wearing the suit, remove the immersion suit from service.
- Regular lubrication of the inner and outer zipper is essential. You will be issued a block or pencil of zipper wax for this purpose. This is the only lubricant to be used. Use of grease or non-approved lubricants can harm the zipper or suit. Lightly rub the wax along the zipper inside and out, and then work the zipper up and down to spread the wax evenly. Remove excess wax from the suit.

4. Check head support/buoyancy ring for obvious damage and ensure that it is properly attached. Check inflation hose for kinks, deterioration or leaks. See that the lock screw is in open position. Be sure the valve moves in and out freely. Head support/buoyancy ring should be inflated and tested for leaks using one of the following two methods.
   - Orally inflate the bladder until firm then immerse in water looking for air bubbles. If bubbles are present, remove immersion suit from service.

   OR
   - Orally inflate until firm, let stand for 24 hours and check for firmness. If leaks are detected, remove immersion suit from service. A replacement air bladder can be ordered for a Imperial or Kent suit instead of replacing the suit.
   - Once testing is complete, deflate the pillow/air bladder by pushing in on the mouth piece. Ensure the locking ring is screwed away from the mouth piece of the inflator so you can blow air into the bladder.
5. Check whistle for audio function and ease of accessibility. The securing line should be long enough to reach your mouth easily when the suit is zipped up. The whistle may be attached to the zipper pull with heavy string as long as it will not interfere with the zippers operation.
6. Be sure an approved distress marker light with an unexpired battery is firmly attached to the suit. Test it if it is a manual strobe. Replace batteries or strobe if required. Be careful to position the manual strobe so that it will not turn on when the suit is rolled up.
7. Be sure the rescue streamer is secured by the deployment hook and capable of being easily deployed with gloves on.
8. Make sure suit is dry inside and out before storing.



Wax the zipper regularly.



Glued seams in good condition



Press down on valve.



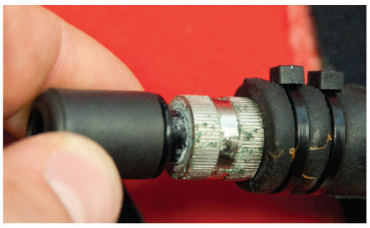
Strobe and streamer properly attached to suit.



Ensure valve pops back out.



Zipper left slightly closed for storage.



A corroded valve, clean with baking soda and a toothbrush

Figure 12-32: Inspecting an immersion suit.

Cleaning

Washing: In no case should the suit be dry-cleaned or exposed to any chemical solvents or cleaners. The suit should be hand washed with mild detergent and rinsed thoroughly with plenty of fresh water. Stains can be cleaned by gently rubbing with a soft bristle brush. If odors are present, soak the suit in a mild soap or shampoo safe for neoprene. Dive shops usually sell neoprene shampoo. It is very rare that you will need to clean your suit. If you have worn the suit in water at any time it should be rinsed thoroughly.

Drying: Hang suit inside out on large wooden or plastic hanger in a cool (65-75 degrees Fahrenheit), dry and well-ventilated area. Do not expose to sunlight or direct heat. Following the drying of the interior of the suit, it should be reversed to completely dry the outside. When the suit has thoroughly dried, it can be returned to the bag by following steps 1 to 4 for Storage Instructions.

Storage

1. Lay suit out on flat, clean surface with arms out. Make sure zipper is almost fully open, leaving an inch or 2 to allow the zipper to be pulled down should it stick, initially. Make sure the lock screw on the inflatable tube is in the open position.
2. Using a folding roll, roll suit, feet first while keeping the footpad flat, start the fold at the ankle, up to the chin area making sure not to crease the head support/ buoyancy ring or inflatable tubes. Tuck face flap into neck area to prevent Velcro® from attaching to suit while in storage.
3. Fold arms over rolled up legs and across chest.
4. Tuck hood into the roll and place in storage bag. Secure the bag closures. Be sure suit is stored in clean, dry area and is immediately accessible in case of emergency. Do not compress the suit in storage as it may result in loss of buoyancy and thermal protection.
5. Store the suit in a secure location in your home when not in use. Heat from long term storage in a vehicle can damage the suit and leaving it in view in your vehicle increase the odds the suit could be stolen.



Figure 12-33: How to properly fold an immersion suit.

Inflatable PFD's

Donning Instructions

Inflatable PFD's are one size fits all. It is important that the Inflatable PFD is properly adjusted to fit the person wearing it. An incorrect fit or improper fastening of attachments could impede its effectiveness. The belt should fit below your rib cage adjusted to a tight personal fit. Check your Inflatable PFD and ensure all of the checkpoints listed below are true before use. Put the Inflatable PFD on just like a jacket and fasten the front buckle. Adjust the waist belt using the side buckle on the belt and ensure the belt's loose end is in the belt loop.



Figure 12-34: Infalable PFD parts and accessory placement.

Warning: Do not wear Inflatable PFDs under clothing as the inflation could be restricted or you could be injured.

Checkpoints before donning

- All belts and straps are already threaded correctly and only need to be adjusted for fit.
- Hydrostatic release status indicator is green.
- All zippers, Velcro and waist buckle are securely fastened.
- Inflatable PFD is not twisted.
- Ensure the inflation pull-tab is hanging on the outside.
- No rips, tears, excessive abrasion or holes; all seams are securely sewn; and the cover, straps and hardware are still strong.

Inspection

Inflatable PFD

	1	2	Comments
No rips/tears/holes?	☐	☐	
Seams in good condition?	☐	☐	
Straps and clips in good condition?	☐	☐	
Strobe attached securely?	☐	☐	
Strobe tested?	☐	☐	
CO2 indicator green?	☐	☐	
CO2 cylinder seal intact?	☐	☐	
Complete manual inflation test?	☐	☐	Test. date 1:_____ Test. Date 2:_____

The WCGOP suggest you visually inspect your inflatable PFD before and after every trip. This will ensure that it did not incur any damage while in use on the vessel or during transport. A physical inspection and inflation test must be performed and documented in your logbook, page 31, every month.

6. Examine the exterior for holes, abrasions, stains, and rips.
7. Examine the seams. They should be tight and in good condition.
8. Examine the straps and clips and their attachment points.
9. Open the PFD by pulling it apart. For zipper secured PFDs, grasp the flaps and pull apart. The zippers are designed to give.
10. Examine the zippers or Velcro. Zippers can become corroded and Velcro can be excessively dirty. Clean as required.
11. Examine the single point status indicator through the window panel. Ensure the indicator is green. If the indicator is red, the mechanism has been fired or is incorrectly fitted. Do not attempt to repair if triggered.

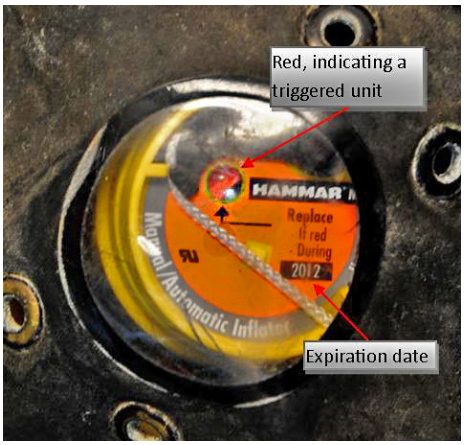


Figure 12-35: Triggered inflator.

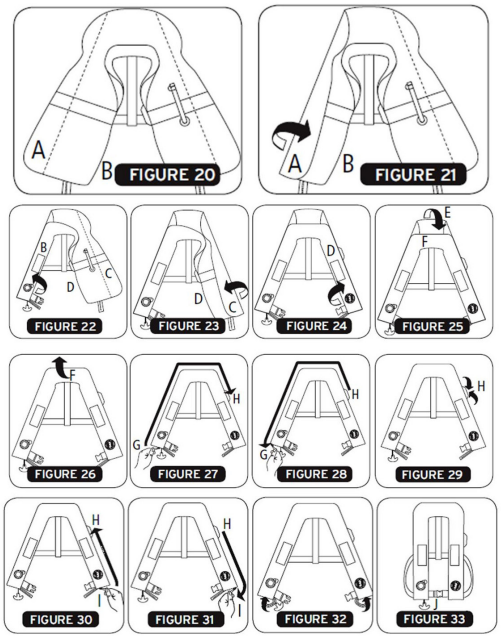
12. Ensure the current date is not past the date on the inflator.
13. Examine the manual inflation tube. Ensure the oral-inflation dust cap is on the tube and secured.

14. Check the strobe attachment and test the strobe. Replace batteries if necessary.
15. Check whistle attachment and test whistle.
16. Verify the presence of the CO2 cylinder and feel for damage. The cylinder is not usually accessible on newer models.

Testing

1. Test should be performed indoors.
2. Remove the dust cap from the oral inflator and manually inflate the PFD.
3. Let the PFD sit for 24 hours.
4. If the PFD has deflated in 24 hours, request a replacement.

Repacking



1. If there are no signs of deflation, use your finger, or reverse the dust cap and depress the valve in the oral inflator, while gently squeezing the Inflatable PFD until all air or gas has been expelled. To avoid damage, do not wring or twist the Inflatable PFD.
2. Put the inflation tube dust cap back in its stowed position on the oral inflation tube.
3. Lay out the Inflatable PFD flat on a clean surface (Figure 20).
4. Fold side (A) inward along the full length of the dotted line (Figure 21). Fold cover (B) over; covering side (A) (Figure 22).
5. Repeat step 17 with side (C) (Figure 23), cover (D) (Figure 24).
6. Ensure the inflator body is still located within its protective cap cover and that the single point status indicator is visible through the inflator cap cover's window.
7. Fold over the top side (E) (Figure 25) and cover (F) (Figure 26).
8. **If PFD uses zippers:** Reset the long zipper by pulling the slider (G) around the top to the Velcro™ tab (H).
9. Close by pulling the slider (G) in the opposite direction to the end of the zipper (Figure 28). Ensure that the Inflatable cell does not get caught by the zipper when closing.
10. Fasten the Velcro™ tab (H) (Figure 29) to keep zipper closed.
11. Reset the short 2-step zipper by pulling the slider (I) to the Velcro™ tab (H).
12. Close by pulling slider (I) in the opposite direction to the end of the zipper (Figure 31). Ensure that the inflatable cell does not get caught by the zipper when closing.
13. Use a finger to push the zipper ends into the openings at the bottom of the packed Inflatable PFD (Figure 32).
14. Ensure the pull-tab (J) is on the outside of the folded Inflatable PFD. Figure 33 depicts a correctly folded Inflatable PFD.

Cleaning

- To avoid inflation, do not submerge the Inflatable PFD or directly spray the inflator. Clean only while the PFD is closed as you would normally wear it.
- Hand wash or sponge down the Inflatable PFD with warm, soapy water.
- If your PFD is made of nylon, clean slimy spots with a soft scrub brush or sponge and dish soap.
- If it is made of water proof PVC clean with a wet cloth or sponge and dish soap.
- Rinse the PFD with clean water, using a clean rinse cloth. Do not submerge or pour water on it.
- Do not get inflator wet.
- Hang the Inflatable PFD to dry on a plastic coat hanger.
- Do not dry clean.
- Do not use chlorine bleach.
- Do not iron or dry with direct heat.

Storage

Always store your Inflatable PFD in a warm, dry place out of direct sunlight. Keep your equipment in a secure location. You may be responsible for the replacement cost should it be lost or stolen.

Work Vest Style PFD



Figure 12-36: Strobe whistle and streamer, properly attached to a non-inflatable pfd.

Work vest PFD's will only be assigned if you request it. Most people find them to be hotter and less comfortable than the inflatable type, however they do have the advantage of pockets and permanent floatation. Remember that you must be conscious when in the water while wearing this style PFD to ensure you do not drown.

WARNING: A work vest PFD may not float you face up if you are knocked unconscious.

Use

You must select the appropriate size at gear check out. Take into account any additional clothing you will wear while on deck. Ensure the straps will buckle and your movement is not restricted. Each pfd must be fitted with a whistle, streamer and manually activated strobe. If the strobe is water activated it must have the water contacts sealed for use. A water activated strobe will go off while you are wearing the jacket on deck and quickly become useless.

Inspection

Workvest PFD

No mildew?	☐	☐ _____
No foam shrinkage?	☐	☐ _____
No foam water-logging?	☐	☐ _____
No rips/tears/holes?	☐	☐ _____
Seams in good condition?	☐	☐ _____
Straps and clips in good condition?	☐	☐ _____
Strobe attached securely?	☐	☐ _____
Strobe tested?	☐	☐ _____

The WCGOP suggest you visually inspect your PFD before every trip. This will ensure that it did not incur any damage while in use on the vessel or during transport. A physical inspection must be performed and documented in your logbook, page 31, every month.

1. Check for rips, tears, holes in fabric. These may be present and not cause the PFD to fail unless the floatation or fit is compromised.
2. Mold or mildew? Clean it.
3. Check the foam for water logging by squeezing it. If water comes out easily the PFD fails. The type of foam used should not retain water.
4. Ensure the foam is full and intact. Foam shrinkage may indicate heat damage and reduce floatation. This can happen if your PFD was left in a very hot place or hung on the wall next to the engine room.
5. Check the seams.
6. Check the straps and their attachment points.
7. Check the strobe attachment and test it.



Figure 12-37: Strobe attached at the shoulder so it will be seen while in the water. You must manually activate the strobe!

8. Check the whistle attachment and test it. Be sure it reaches your mouth and can be stored in the pocket to prevent it from catching on things and getting dirty



Figure 12-38: Whistle attached so it can be stowed in the pocket.

9. Check the streamer attachment and assure the deployment hook is connected.



Figure 12-39: Streamer attached so that it is accessible and easily deployed.

Cleaning

Use soap and water and a soft scrub brush to clean your PFD. PFD may be submersed or sprayed with a hose. If mold or mildew is present use a diluted bleach solution and rinse thoroughly. You may occasionally wash it in a front loading washing machine on gentle. Be sure to remove the strobe, streamer and whistle prior to machine washing. Hang on a plastic hanger and dry before storing.

Storage

Keep your PFD in a cool dry place. Long term exposure to heat may cause foam to degrade or shrink.

Marel M-1100 Marine Scale

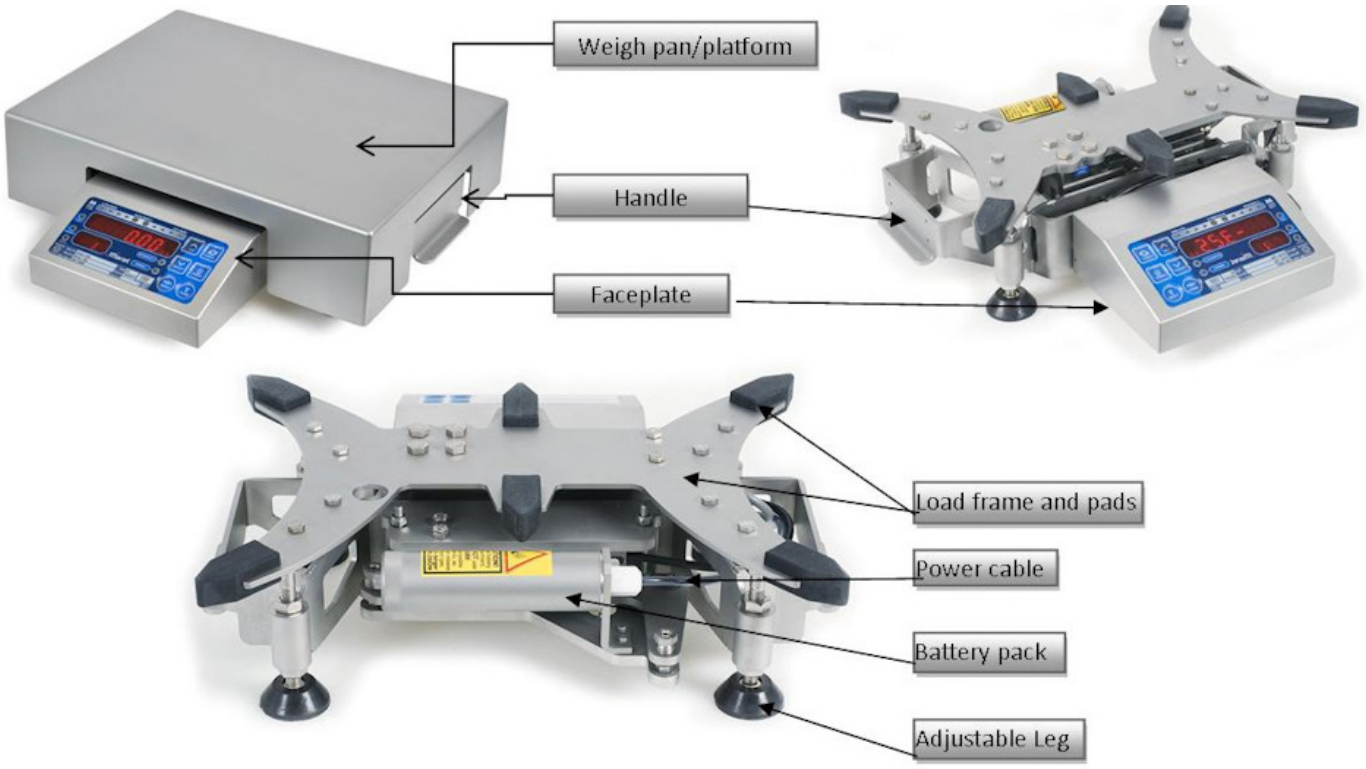


Figure 12-40: M-1100 Scale part descriptions.

About the Scale

The M-1100 is an easy to operate, general-purpose, motion compensated marine scale, designed especially for use on board fishing vessels. The stainless steel enclosure is water-resistant (IP67) and easy to clean. The scale has been specifically programed for scientific use, with a 150 lb. capacity, reading in 0.05 lb. increments.

Power

The M-1100 scale is used with size D alkaline batteries which provides operating power for approximately 85 hours of continuous usage (10 days if used eight hours a day). When the battery power gets low, a blinking warning, BAT, appears on the Config Display. The scale is still functional, until the power reaches its lowest operational point, which is when the scale will shut down.

Indicators and Controls



1. Top cover
2. Rating plate
3. Max2/Power-down indicator
4. Packing indicator
5. Grading indicator
6. Net indicator
7. Under indicator
8. Weight Display
9. Config Display
10. Accept indicator
11. Zero indicator
12. Steady indicator
13. Over indicator
14. Unit of weight indicator
15. UP arrow
16. MENU key
17. DOWN arrow
18. PRINT key
19. ZERO key
20. TARE key

Figure 12-41: M-1100 Faceplate functions.

Weight display: The Weight Display shows the weight on the platform. If tare is in use, the net weight is shown. To the right on the display a lighted indicator shows the current unit of weight.



Figure 2 The Weight Display

Zero and steady indicators: Below the Weight Display there are two indicators, Zero and Steady.



Figure 3 Indicators.

- The Zero indicator (green) lights up when the scale is at the zero point.
- The Steady indicator (green) lights up when the load indication is steady.

Config display: The Config Display is located below the Weight Display. This display shows which packing memory or grading memory is currently in use. Use the UP and DOWN arrow keys to select a memory. The Config Display is also used to display:



Figure 4 Config Display

- Configuration commands when the scale is in Setup Mode.
- **The blinking message:** "CAL" marine calibration required.

Weight target: The Weight Target indicator is located above the Weight Display. This indicator consists of three parts, the Under, Accept, and Over indicators. There are no limits in the WCGOP CS settings so these lights will not be used.

Net indicator: The Net indicator lights up whenever tare is in use.



Grading indicator: The Grading indicator lights up to show that the scale is in grading mode.



Figure 7 Grading indicator.

Packing indicator: The Packing indicator lights up to show that the scale is in packing mode.



Figure 8 Packing indicator.

Max2 indicator: The Max2 indicator lights up on battery operated scales to show that the scale is in power down mode.



Figure 9 Max2 indicator.

Arrow keys: The arrow keys are used to select packing or grading memories. They are also used to enter numerical values and to select menu items when the scale is in Setup Mode.

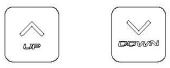


Figure 10 UP Arrow, DOWN Arrow.

Menu key: The MENU key is used to enter the menu where you set the packing weights and the grade limits. In Setup Mode the MENU key is used to return from submitting commands.



Figure 11 MENU key.

Print key: The PRINT key is used for recording and printing weight results. It is also used for entering commands and for confirming new settings.



Figure 12 PRINT key.

Tare key: The TARE key is used to set the tare. When you press this key with a weight on the platform, that weight is used as a tare, and the Weight Display will show a zero. The NET indicator lights up. The TARE key is also used to remove tare. Note: The TARE key cannot be used when Preset Tare is in operation.



Figure 13 TARE key.

Zero key: The ZERO key is used to take a new operational zero point, provided the operating zero stays within ±2% of max weight from the initial zero point. The operating zero is the reference point for all weighing, and therefore a correct operating zero is necessary to ensure accurate weighing results.



Figure 14 ZERO key

Basic Operation

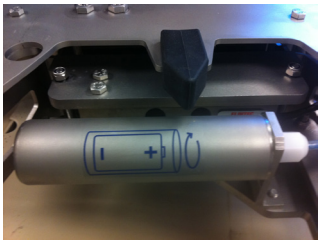
Applying Power to the Scale

To start the scale, simply attach the battery holder and press the up button within two seconds. If the battery pack is already installed, simply press any button followed by the up button within two seconds.

After power has been applied, the scale will run through a start up sequence, which can be viewed in the display. The scale then sets the initial zero (the message appears on the Config Display), returns to Operating Mode, and is ready for use. Note: You can manually power down the scale by pressing the MENU key and the DOWN arrow simultaneously.

Replacing the batteries

1. If on vessel first remove your gloves and find a protected location. You must have clean dry batteries for the scale to operate properly.
2. Lift off the weigh platform.
3. Find the tube with the yellow warning label.
4. Twist to unscrew tube.
5. Shake out batteries.
6. Insert new batteries positive end towards open end of tube.


Figure 12-42: Thebatterytube.

Salt water is conductive. Store batteries in a dry location or they may be dead when you need them.

7. If needed, apply silicon grease to O-ring.
8. Hand-tighten battery pack.
9. Replace weigh pan.
10. Check scale performance.
11. For long periods of storage, remove the batteries from the pack.
12. Keep the battery pack, empty or full, connected to the scale at all times.
13. Store spare D-cell batteries in a dry ziplock bag.

Operation

The M-1100 scale is very easy to use. The scale has been programmed for use to calibrate in kilograms and weigh in pounds. Once power has been applied to the scale and the start up sequence is complete it is ready for simple weighing. Before use in a WCGOP capacity a marine calibration should be completed.

Calibrating the M-1100 marine scale's motion compensation feature ensures accurate and stable weighing results.

The scale must be calibrated at initial start-up. After that the message flashes in the Config Display at a fixed time interval (four to six hours), indicating that you should check the scale for stability and correct reading. The scale must also be calibrated:

- When the scale is unstable without the weighing platform being touched.
- When the displayed weight is inaccurate, even when the scale has a correct zero.
- When the scale is unable to assume the initial zero point, even with an empty platform.

Marine Calibration:

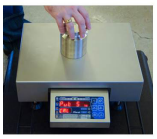






To ensure your scale is functioning properly it is a good practice to calibrate when you first get on a boat, before you leave the dock. This and an additional calibration when you first get under way will give you ample time to address any problems and give the scale a good reference point for calibrations at sea. **At minimum, calibrate the scale before the first haul of each day and check that the calibration weight value is stable and within accepted values every subsequent haul.**

To Calibrate the Marel M-1100







1. Make sure the platform is clear and free of obstructions and the scale level as possible.
2. Turn on scale by pressing any button followed by the up button.
3. When the weight display shows 0.00 lb. the scale is ready.
   - If the scale will not come to a ready state, check that the weigh pan is seated correctly.
   - If the scale read-out gets stuck on a non-weigh screen, the batteries probably need to be replaced.
4. Press the Zero and Menu Keys simultaneously.
5. **Wait for the readout to display:** "Put 5 kg".
6. Place the 5 kg weight on the scale.
7. Press print.
8. When "FIT_XXkg" is displayed calibration is complete (xx is a numerical value 00-99) Note "FIT_XXkg" is a land calibration and "FIT XXkg" is a motion compensated calibration. The difference is the underscore.
   - A value in the range of 00 to 25 is desirable in calm conditions and a value <=99 is desirable in rougher conditions.
   - Rough seas may be difficult to calibrate in. Check that nothing is interfering with the scale top by removing and replacing the top and clearing under the scale. Try to block the wind from the scale. This can be done with a tote or your rain coat.
   - Any fit value is valid for sampling.
9. Record the fit in the appropriate field in OPTECS or on the deck form.
10. Remove the weight from the platform
11. When the weight display shows 0.00 place the weight on the scale again to verify the standard weighs 11.00 lbs. or 11.05 lbs. Record the weight on the deck form under the fit value. Repeat calibration if the value is not exact.
12. Remove and properly store the calibration weight.
13. The scale is now ready for use.

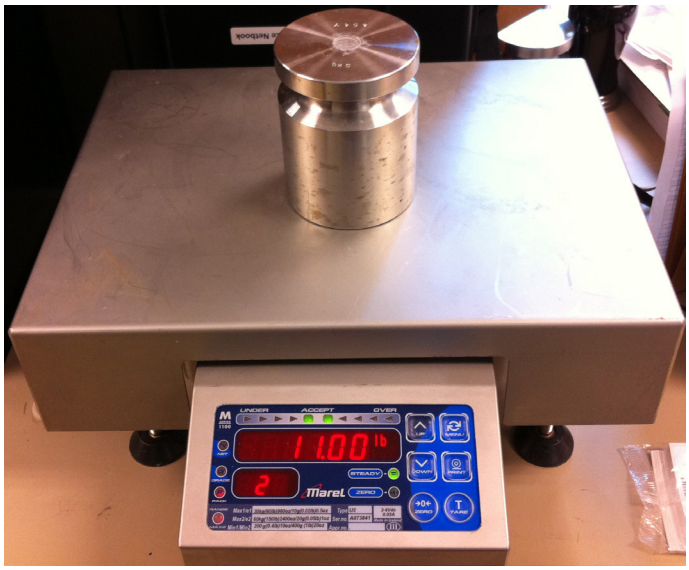


Figure 12-43: The calibration weight should weigh 11.00 or 11.05 lbs.

Field Use

Always transport the scale in its pelican case. Carry the scale by both handles when out of the case, or one handle with the pan against your leg if you need to support yourself on deck. Be careful of the weigh pan as it can fall off. Avoid dropping the sample basket on the scale or placing the basket on the scale in a harsh manner. Always carry 6 spare batteries in a dry location. Store batteries in a ziplock bag in the scale case or in an alternate protected location.







Your scale must be calibrated before each and every haul and the fit number recorded.

1. Determine a good location to work that will allow the scale to be set up without being walked on or washed overboard. Tie it down if necessary using the holes in the handles.
2. Be sure there are no foreign objects that can interfere with the platforms movements.
3. The pelican case can be used as a scale platform or a seat. Just be sure it will not slide around.
4. Store the calibration weight safely (in the case is best). It's small and will roll when tipped.
5. Try to keep the scale out of direct wind (close to the deck or in a sheltered area) if possible.
6. Place the scale on the deck as best as possible, assuring the scale will not wobble.
7. **Calibrate the scale before the first haul of each day and check that the calibration weight value is stable and within accepted values every subsequent haul.** The fit value must be recorded in OPTECS or on your Deck Form.
8. If weather conditions change during your sample collection and your scale has difficulty achieving a steady weight, you may need to recalibrate the scale.
9. To tare the scale simply place basket on scale and press the tare key while the scale reads stable. The weight value should be zero once the tare is accepted.
10. To clear a tare, clear the weigh pan and press the tare key or the zero key.
11. To weigh place item on scale and read the value in the weight display while the green stable indicator is lit.
12. Remember to clear the tare when not using a basket, and to set it when using one. When done, clean the scale as described later in this chapter.
13. Store the scale securely. Turn the scale off after you put it in the case to avoid accidentally turning back on. The motion of the vessel can prevent a scale from turning off if it has only been put to sleep in the case.

Saving Battery Power

Battery operated M-1100 scales are equipped with a power saving feature that puts the scale in "power down mode" and makes the batteries last up to one year. The power down mode feature works in two ways:

- **Light sleep:** when the scale has been inactive for five minutes it goes into power save mode for the next 25 minutes. The display shuts down, the decimal point scrolls slowly, and the Max2 indicator in the bottom left corner of the M-1100 Indicator blinks while the scale is in this mode.
- **Deep sleep:** after 25 minutes in power save mode, the scales goes into deep sleep. The display shuts down and the Max2 indicator blinks.

The difference between the two sleep modes is that while in power save mode (light sleep) the scale returns directly to where it left off in weighing mode, but to return from a deep sleep the scale must go through regular start-up.

The power save feature helps preserve the batteries, but you should nevertheless remove the batteries if the scale is not to be used for an extended period of time (more than a couple of months).

To bring the scale back from power down mode:

- **Light sleep:** Press any key on the keyboard or lightly touch the platform.
- **Deep sleep:** Press any key on the keyboard followed by the up key within 2 seconds.



Figure 12-44: Scale placed in corner to reduce wind.



Figure 12-45: Scale against forward bin board.



Figure 12-46: Scale placed on a 3 corner meeting point.

Dealing with Errors

You will encounter various errors while using the M-1100 due to the nature of the environment. Most common errors are caused by instability and/or wind and are easily resolved by pressing the menu key to escape. After pressing the key wait a moment for the error to clear. When clear the scale will display 0.00 lb in the main display. Once the error is clear, calibrate the scale.

At sea it may take a little time to escape an error or it may repeat several times until a valid calibration is achieved. Relax and keep trying. Take the scale inside to calibrate if wind issues cannot be overcome. It might be hard to get a good calibration in rough seas, but you will have less trouble once you do.

If you are unable to escape an error with the menu key, try removing the batteries and replacing them. Allow the scale to start up without the weigh pan. Once on, calibrate without the weigh pan as well. If that is successful replace the weigh pan and recalibrate. If your scale sustained damage from a slide across the deck, resulting in an impact, or by being dropped while in the case, the reference weight located inside the scale may be displaced enough to cause an inescapable error. Call the gear tech and you may be able to fix it with phone supported assistance. Do not attempt to take a scale apart without authorization from staff. You may be liable for damage to the scale in that case.

Problem	Cause	Solution
Scale won't turn on	Weak batteries	Replace or insert batteries.
Screen is stuck during start up	Weak batteries	Replace batteries.
Keys no longer function	Bad Keypad	Call for a replacement
Keys misassigned (menu is print)	Bad Keypad	Call for a replacement
Weights off randomly and wildly even after several calibrations	Bad AD converter	Call for a replacement
Very difficult to calibrate, fails detailed weight test	Reference weight misaligned	Call for help with repair.
Random numbers in weight screen. Parts of numbers missing	Water in face plate.	Temporarily repair with phone support. Eventually replace.
Screen says U2-3-70	Start up	Nothing, just wait for it to start
Weigh pan looks crooked	Scale got dropped	If weights are fine use until you can come into an office to have it straightened.
Batteries never last	Scale might be coming on while in case	Turn scale off after putting it in the case. If continues to come on, take batteries out between trips. Bats last about 85 hours.
Fails detailed weight test repeatedly, but just barely	Load cell is stiff	Load with ~160 lbs. and let sit for 20 min. If you weigh less than 200lbs. Step on scale carefully and rock back and forth slightly.
Cannot calibrate at sea	Last calibration on land and it's probably windy and rough	Move inside to calibrate. Try calibrating when first leaving next trip.
My batteries are dead all the time	Discharging due to salt water or mixing up used batteries	Store batteries properly. Write dates on them when you put them in scale.
No power with fresh batteries	Loose power connection	Check spring in battery tube. Call for help with repair.
Fog in screen	Water in face plate.	Call for replacement.
Don't have any fresh batteries	You forgot them	Ask crew, check flashlights
Scale randomly turns off	Loose power connection, corrosion on battery contact, bad batteries, accidently hitting menu down, bad key pad	If battery case wiggles on post, tighted 2 bolts so it wont wiggle. Clean battery contact points with dry green scrubbie, replace batteries, Take head apart and look for loose cables, verify key make no sound
Scale wont turn on but battery light is on (Solid not blinking)	Something has locked up the keypad or the startup sequence.	New problem, so far removing the keypad and replacing it has worked once.
Code in main screed	Accidently brushing Zero and Tare	Be sure to only press one button.

Error code:	Description:	Action:
E-01	AD converter failure	Restart the scale, or else contact your Marel agent.
E-03	ADC over range	Reduce the weight on the platform
E-04	ADC under range	Increase the weight on the platform
E-05	Unstable weight (initial zero)	Stabilize the scale
E-06	Weight outside range (initial zero)	Make sure the platform is empty
E-08	Operation in progress (initial zero)	Wait until completed
E-11	Invalid initial zero	Remove or reduce the weight on the platform
E-13	Program failure (checksum)	Contact your Marel agent
E-14	ADC not responding	Contact your Marel agent
E-15	W&M setup checksum failure	Contact your Marel agent
E-23	24 V power voltage too high	Provide correct voltage
E-25	Low voltage to load cells	Check load cell
E-50	Parameter protection test failed	Restart the scale, or else contact your Marel agent.
E-81	Invalid static marine calibration. Fit value too high	Repeat calibration
E-82	Invalid static calibration. Calibration weight not detected	Repeat calibration
E-84	Marine static calibration not allowed	Scale requires motion
E-91	Invalid marine calibration. Fit value too high	Repeat calibration
E-92	Invalid marine calibration. Calibration weight not detected	Repeat calibration
E-93	Invalid initial zero	Make sure the platform is empty

Figure 12-47: Scale error/solution chart

Some errors indicate a problem with the electronics and may not be overcome. Reference the error chart , (See Figure 12-47) which is also provided as a waterproof field guide and contact the gear technician if encountered. Write down any error codes you encounter to assist in debugging.

When errors cannot be resolved and you are unable to take weights you must make visual estimates for the remainder of the sample and notify the captain of the equipment failure issue. Contact your debriefer by any means possible. The vessel must return to port within 36 hours if you are unable to sample. Other possible actions will be defined by your debriefer based upon current policy.

Remember to test your scale prior to deploying on each vessel. Replacing a scale is far simpler while you are still in port. A vessel should not leave if your scale is not functioning.



Figure 12-48: Error E-08: Operation in progress.

Problems at sea?

Call Eric Brasseur 757-897-9651.
Email ericb@psmfc.org

If communication is spotty send a text and voicemail.

Figure 12-50: Contact the gear technician while at sea if you need assistance.



Figure 12-49: Error E-11: Invalid initial zero.

Care and Maintenance

Maintenance should be performed upon return after every trip to keep the scale in the best possible condition. Always carry your scale in either the pelican case, or by the two handles.

On vessel

- When boarding or disembarking a vessel always transfer the scale in a securely closed pelican case. When transferring over water, tie a line to the case, long enough to retrieve it if dropped This is also useful when boarding a vessel lower or higher than the dock. You can make a lowering system by tying one end of the line to the dock or rail, passing it through the scale handle and slowly lowering the scale using the handle like a pulley, or tie it directly to the handle and lift/lower it hand over hand.
- Rinse the scale with a low pressure fresh water hose between uses to remove the bulk of slime and scales between hauls. If a fresh water hose is not available use a deck hose. Direct deck hose stream to the weigh pan top only, avoiding the keypad
- If available, rinse with freshwater at the end of each day by pouring a bucket of water over scale or using a freshwater hose. Remove the weigh pan and rinse inside as well.
- Secure scale and calibration weight if you will not be on deck for a period of time and at all times during rough weather. Best practice is to put the scale and weight in the pelican case at the end of each haul.
- Always remove scale from line of traffic and keep away from scuppers. In bad weather place in pelican case and TAKE THE SCALE INSIDE or TIE IT DOWN.

After your trip

Marel Scale Inspection

Check all parts of scale for cleanliness. All parts should be free of mud and scales. If dirt is dried on, soak scale in tub for 20 min and scrub with a brush or sponge. (Use on a sponge on face plate) Rinse with a garden hose or shower.

Scale serial number:

Clean and rinsed inside and out?	☐	☐	_____
Cables: no holes, appear secure?	☐	☐	_____
No debris under load cells?	☐	☐	_____
Weight pan straight?	☐	☐	_____
Battery tube threads cleaned and lubed?	☐	☐	_____
Buttons function correctly?	☐	☐	_____
Rust removed?	☐	☐	_____
Display lights all working?	☐	☐	_____
No condensation in face plate?	☐	☐	_____

- Wash scale with fresh water and dish soap. Use a sponge or cloth on the screen and buttons. A green scouring pad can be used on the metal parts to remove any brown spots if necessary. A sponge is preferred.
- Remove the weight pan to clean and rinse. Rinse scale inside and out.
- Let scale dry.
- Inspect the cables for any damage.
- Clean the pelican case as needed and allow it to dry. The foam can be washed with a hose, sponge, and bleach. Remove everything from case except the foam. Fill with water and ¼ cup of bleach. Allow to soak for 20 minutes. Empty and rinse thoroughly with fresh water. Allow to air dry open for 24 hours or more.
- Store scale in Pelican case but leave the case open if possible so moisture can escape.
- If you notice any condensation in the scale screens or damage to cables please contact the gear technician as soon as possible.

Testing

Your scale should be calibrated and tested for accuracy each day before sampling begins. Additionally a detailed weight test must be performed at check out, every 90 days and check in at one of the field offices using only the certified weights WCGOP provides.

Annual Detailed Weight test



Figure 12-51: The scale test cart in Newport, OR

Test must be performed at the closest field station at gear check out, check in and every 90 days. Testing forms are located at the testing sites. (See Figure 12-52)

1. Turn on scale by pressing any button.
2. Clear the platform.
3. Calibrate scale; see “To Calibrate the Marel M-1100” on page 12-28
4. Record the fit value.
5. This test is done as an accumulating weight test up to capacity, overload and back to zero. Leave and remove each weight as indicated.
   - Record zero value (must be zero)0.00
   - Place 5 lb standard on scale. Verify and record value. Total 5.00 lb.

- Place 20 lb standard on scale. Verify and record value. Total 25.00 lb.
- Place 50 lb standard on scale. Verify and record value. Total 75.00 lb.
- Place 50 lb standard on scale. Verify and record value. Total 125.00 lb.
- Press on the scale until the weight field blanks (overload the scale)
- Release pressure on scale and record the value. Total 125.00 lb.
- Remove 50 lb standard from scale. Verify and record value. Total 75.00 lb.
- Remove 50 lb standard from scale. Verify and record value. Total 25.00 lb.
- Remove 20 lb standard from scale. Verify and record value. Total 5.00 lb.
- Remove 5 lb standard from scale. Verify and record value. Total 0.00 lb.
- If weight values are off of known by more than the allowed variance for each weigh, repeat the test after placing all the weights on the scale and letting it sit for ~20 minutes.

WCGOPCS

Marel Scale Min/Max/Overload Test

Marel M-1100 PL3260: 60 KG Single Resolution

Scale Serial # Blue Faceplate: Left Handle:

Date:

Observer:

Checkout 90 Day Check in Service Test

Test #			1	2	3	4	5
Action			Calibrate	Recalibrate	Check Ref Weight, recal	Call Eric, then test	If it's not fixed stop after test
Standard	Expected Value (Lbs.)	Allowed variance	Actual Value	Actual Value	Actual Value	Actual Value	Actual Value
Calibrate (5kg)	Calibrate (5kg)	Calibrate (5kg)	Calibrate (5kg)	Calibrate (5kg)	Calibrate (5kg)	Calibrate (5kg)	Calibrate (5kg)
Fit	0-4	0-70					
Empty Platform	0.00	none	.	.	.	.	.
5lb	5	+\-.05lbs	.	.	.	.	.
5lb+20lb	25.00	+\-.05lbs	.	.	.	.	.
5lb+20lb+50lb	75	+\-.15lbs	.	.	.	.	.
5lb+20lb+50lb+50lb	125.00	+\-.20lbs	.	.	.	.	.
5lb+20lb+50lb+50lb + press on scale until screen blanks	lines	scale should overload					
5lb+20lb+50lb+50lb	125.00	+\-.20lbs	.	.	.	.	.
5lb+20lb+50lb	75	+\-.15lbs	.	.	.	.	.
5lb+20lb	25.00	+\-.10lbs	.	.	.	.	.
5lb	5	+\-.05lbs	.	.	.	.	.
Empty Platform	0.00	none	.	.	.	.	.

Notes if repairs were made	

If weight values are off of known by more the amount indicated in the chart, repeat the test after placing all the weights on the scale and letting it sit for ~20 minutes while on. If this does not correct the problem in one test please ask staff to inspect the scale. Widely off values indicates a severe problem.

Turn in completed forms on the same day as testing, either to your debriefer if testing in person or via fax or email.

Fax form to Eric Brasseur: 541-867-0505 Scan and email to ericb@psmfc.org

Signature:

Figure 12-52: Scale annual testing form

- If scale continues to fail contact the gear technician immediately for assistance.
- Turn in scale test form to gear technician via fax or e-mail after test.

A scale must pass before being issued and upon return.

Collect information to report a problem

Problems should be reported to your coordinator and the WCGOP gear technician so they can advise you how to proceed or reassign your vessels if required, and get your replacement to you as quickly as possible. You can only go to sea with a properly functioning scale. (See the section, Reporting a Problem on page 12-40) for contact information and full procedures.

- Make a note of the serial number and the specific problem with your scale. Write the problem in marker on the scale platform.
- Contact the required personnel.
- Send a detailed e-mail to ebrasseur@psmfc.org.

If you have been asked to return the scale, attach a note directly to it indicating the problem.

Scale Return Instructions

When you receive a replacement scale it will include a packet to use to return your old scale. Included

- 1 red zip tie
- 2 heavy duty zip ties
- 1 return ups label

Instructions

1. Remove the calibration weight from your old scale and keep it with the new scale, unless the new scale came with a weight. Be sure you have a weight!
2. Place the red zip tie on the handle of the case and scale you are returning.
3. Clean the returning scale and case if you have not already done so.
4. Stick the return address label on the old scale case
5. Use the two heavy duty zip ties to seal the case.
6. Take the scale to a UPS Station and drop it off.
7. Send and e-mail to ebrasseur@psmfc.org to confirm the shipment was sent.

Computers

All observers will be assigned an encrypted laptop and tablet to enter the government data they collect. That data must be protected at all times. Please carefully read the information that follows and maintain best practices in the maintenance and use of your computer. Always turn your computer off when not in use, while traveling or in situations where others might try to use it while you are away from it.

Inventory

- 1 pelican case
- 1 shoulder carrying strap
- 1 Dell Ultrabook E7240
- 1 Dell Power cord
- 1 number key pad
- 1 USB mini mouse
- 1 Canon P-208 scanner
- 1 Scanner USB cord



Figure 12-53: Computer in case.

The scanner is to be left at home. This will help protect it from damage and give your data sheets time to dry before scanning. Be sure to remove it from the case and leave it in a secure location if you are at a home port. When traveling be sure to bring the scanner with you so you can complete all duties in a timely manner. It should fit nicely in your laptop case. Pack it carefully to avoid pinching cables.

Computer Access

You will have two user accounts on the laptop. The first one, called "NOAA Observer," will be used for all of your work related tasks such as entering data, e-mail communications, log entries, and catch monitoring duties. The second is "NOAA Observer Admin" and is used to install updates that cannot be installed in the normal user account. You should not need to actually log into this account very often. Special instructions on installing updates will be given later in the chapter.

User Accounts

Account: NOAA Observer

Password: Y3llow3y3!

Account: NOAA Observer Admin

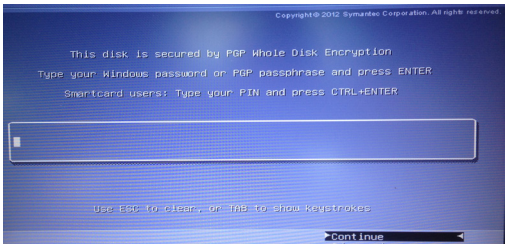
Password: L!ngc0d603

Account: PSMFC Administrator

First Use and changing a password that expired

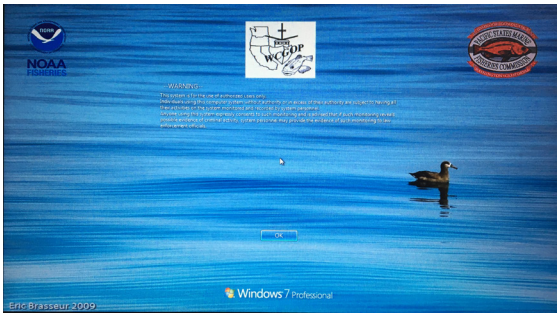
Before you begin using the laptop to enter data, you need to protect it for field use by changing the account passwords. Given that the passwords are published in this manual, which is available online, your computer is only safe when you replace the default passwords. To facilitate this, when you first login you will be required to change the password. Additionally, passwords must be changed every 90 days and the last 24 passwords cannot be reused.

Turn on the computer and enter the password for the NOAA Observer account at the encryption logon screen: "Y3llow3y3!".

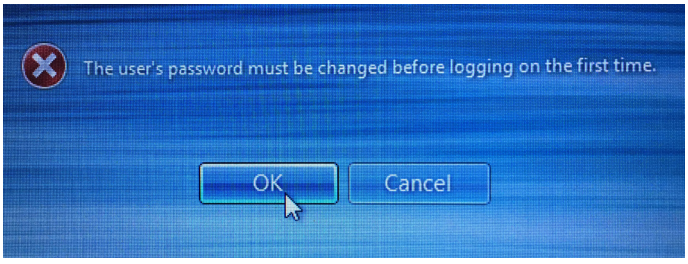


A Warning will load, stating:

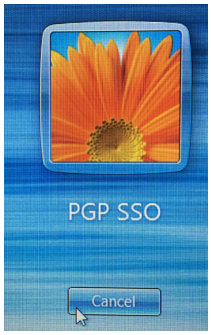
"This system is for the use of authorized users only. Individuals using this computer system without authority or in excess of their authority are subject to having all their activities on the system monitored and recorded by system personnel. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials."



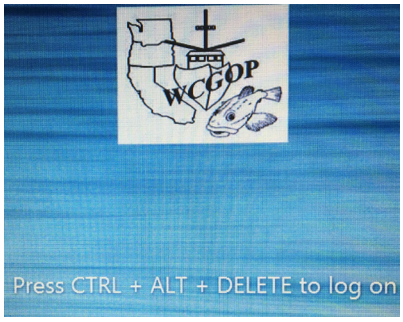
The first time you logon you will be notified that your password must be changed. Click OK



A windows screen may appear with the account name SSO. Hit cancel.



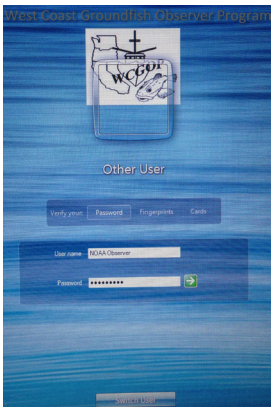
The next screen requires you to press CTRL+ALT_DEL.



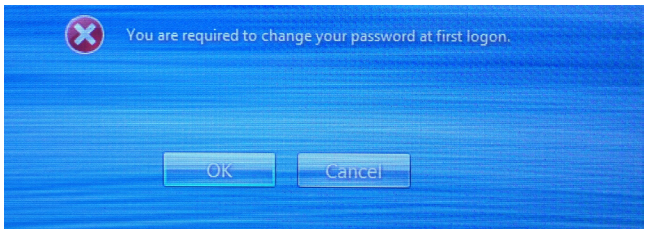
A windows other user logon screen will appear. Select other user.



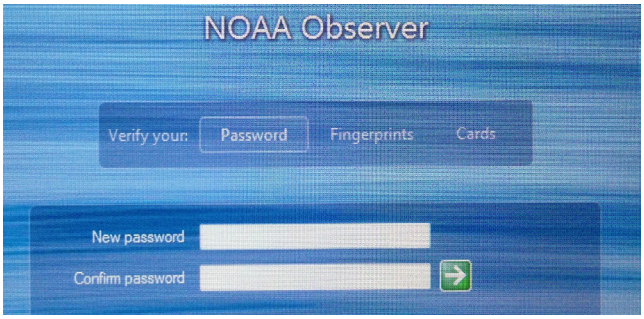
Enter User name: NOAA Observer and Password Y3llow3y3!



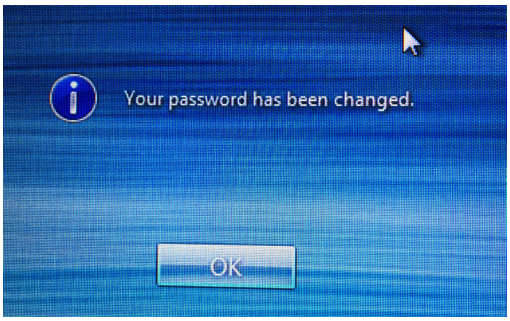
A prompt to change your password will follow. Click OK.



You will be told what password to use for training during the laptop class. Enter that password in the new and confirm password fields when requested. Hit the green arrow.



You will receive a notice that the password has been changed. Click OK and you will be logged in.



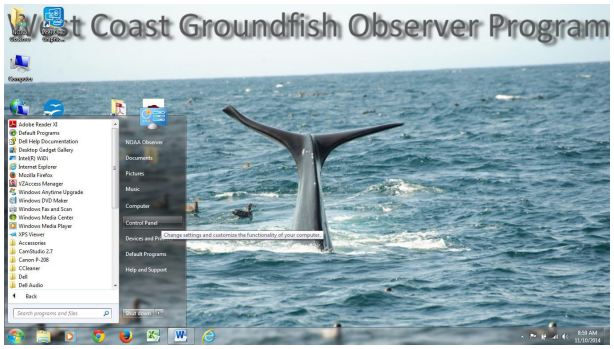
After training you will need to create your own password. Create a password that complies with the following:

- Does not contain the user's account name or parts of the user's full name that exceed two consecutive characters.
- Be at least six characters in length.
- **Contain characters from three of the following four categories:**
- English uppercase characters (A through Z).
- English lowercase characters (a through z).
- Base 10 digits (0 through 9).
- Non-alphabetic characters (for example, !, $, #, %).

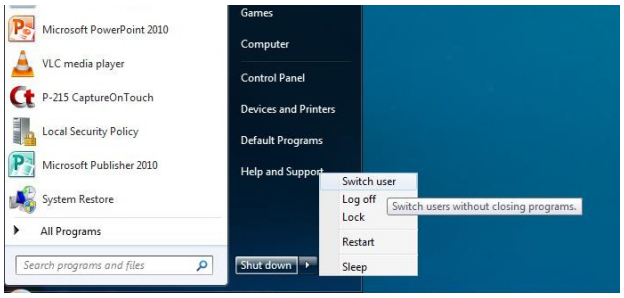
You will need to use a different password for each account due to the encryption software. Please note that a computer is only encrypted when you turn it off completely. Once you log on

the encryption is released. Simply logging out does not protect your data. Remember to turn off the computer when not in use.

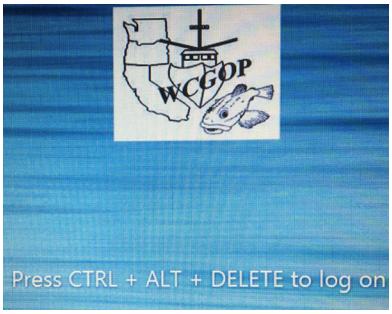
One method to change the password for the NOAA Observer admin account the first time is to switch users or log off the NOAA Observer account. Hover over the windows icon in the bottom left of the screen.



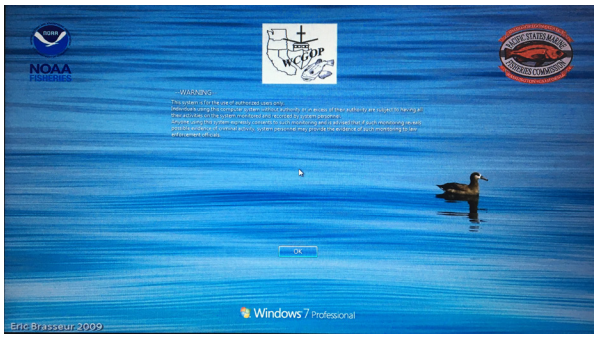
Hover over or click the small arrow next to Shut Down and select switch user.



The next screen requires you to press CTRL+ALT_DEL.



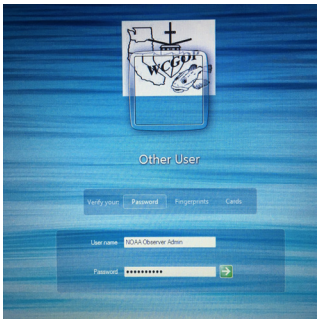
Acknowledge the warning:



When the user logon screen appears select “other user”.



Enter NOAA Observer Admin as the user with the password: L!ngc0d603



You will be asked to change the password again. Follow the same procedure as before. If this is done in training you will be given a password to use at that time, otherwise create your own.

Once the password has been changed, log out of the NOAA Observer Admin account and log into the NOAA Observer account. Aside from changing the password, the admin account should only be used to deal with security issues (software/time).

Best practice when changing a password is to log out and log back in to help the encryption software sync properly. Occasionally it may not remember your new password when first logging in, simply enter your old at the encryption screen and the new on the user screen that follows.

Changing your password while logged in.

You will be prompted to change your password every 90 days. If you would like to change your password in advance follow the directions below.

The procedure is:

- CTRL+ALT+DEL.
- Choose your account.
- Enter current password.
- Enter new password twice.
- Click Right Arrow.

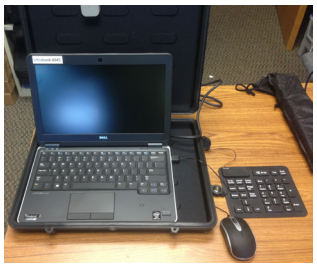
General network info

You should always use a secure Wi-Fi connection. These can be managed through the windows wireless network. If you are connected to a free public Wi-Fi account, always assume it is insecure. Double click an item to connect or disconnect from it or by highlighting the connection and clicking the connect/disconnect text. To access a secure Wi-Fi account you must know the password. If you have a home wireless network be sure to secure it with a strong password.

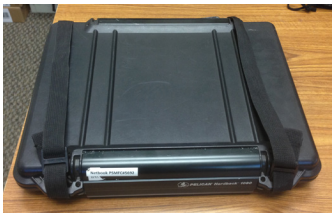
Transporting and Storage

Your computer is a valuable piece of equipment that contains sensitive information and should be treated as such. To protect the computer and the data it contains, please use the following procedures:

- When not in use, turn the computer off. The computer is only encrypted while off.
- Use the power supply whenever possible to conserve the battery and keep the unit charged for times when you may not have access to power.
- Carry the computer in the case. This will protect it from water and drop damage.



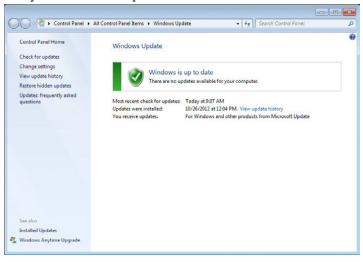
- Use the computer set up in the case while on a vessel or situations in which you may need to move quickly. This will allow you to shut it and go.
- While on the vessel, put the computer back in the case when not in use. The vessel may move in unpredictable ways and your computer tossed around. Close the case to help protect the computer from damage and moisture. Turn it off.



- Do not leave the computer in your car. Laptops are common targets of theft. Keep it out of view in the trunk if absolutely necessary. You may be held liable for the replacement cost if loss or theft is due to negligence.
- Do not let anyone else use your computer.

Care and Maintenance

The computer you are using is configured to automatically apply windows and antivirus updates. For these to take effect, you must be connected to the internet long enough for the updates to be installed. You must regularly log on and allow updates to run. They will run in the background while you check your e-mail or do data entry. Follow the prompts to restart the system when requested.



- Use the "NOAA Observer" account to access the web and check your e-mail and any other WCGOP tasks that require a computer.
- Occasionally run Symantec antivirus and click "live update".



- Do not download or install programs on your computer. The only allowed software is already installed.
- Use a thumb drive, external drive or web drive to store personal files.
- Do not visit porn sites or other potential virus distributing sites.

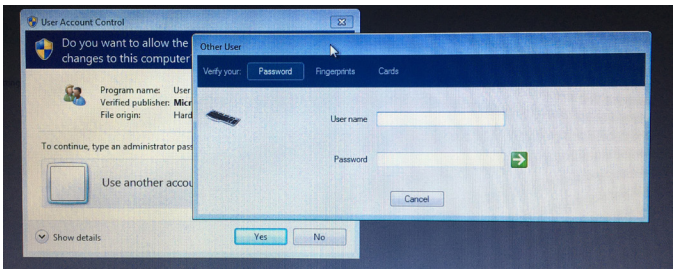
Administrator Access

The PSMFC administrator account is for staff use only. Special software called LogMeIn has been installed on your computer and should never be turned off. The software will allow WCGOP to make changes to your computer, assist with problems, or install software remotely as needed. Contact the gear technician for assistance if you are unable to resolve installation issues using the NOAA Observer Admin account.

The NOAA Observer Admin account is there specifically so that you can apply updates when required. It should not be used for any other purposes. Remember, employment in the WCGOP program is conditional upon following proper procedures, accounts should only be used as indicated.

To install updates, log in as you normally would and double click the installation file. You will automatically be prompted to enter an admin password that will allow the installation.

Be sure to use NOAA Observer Admin and enter your current admin password. Hit the green arrow or press return and the software will install.

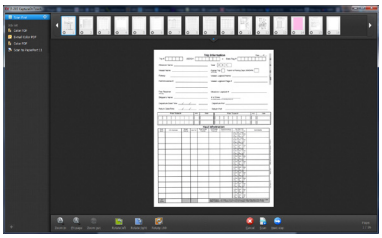


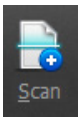
Trip Scanning

The scanner software has already been installed and configured for your use, so scanning should be very simple. To use, simply plug in the scanner to your laptop and launch the P-208 Captureontouch software if it is not already running. (Start/all programs/Canon P-208/ P-208 Captureontouch)

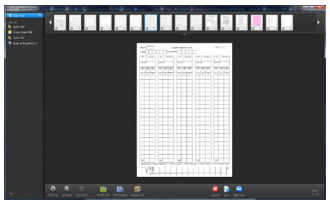
You must use an encrypted, government-owned computer to scan all observer data.

- Be sure you have room in front and behind the scanner for your document.
- Place the documents in the scanner face down with the first page on the bottom.
- You can put a full trip on the scanner at one time if it is less than 20 pages.
- You can scan in batches if needed. Use the scan button in the software after loading the next batch of pages to add additional pages to the file.
- Only 1 trip per file.
- Press the Silver button on the scanner.
- The scanner will pull from the bottom and each page will appear as it's scanned.
- Watch to ensure the pages flow smoothly.
- If scanning in batches, load the next stack of paper and press the scan + button to add them to the file.

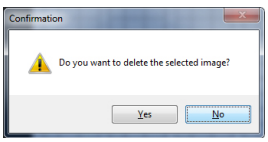


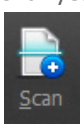


- Once the scan is complete, review each thumbnail to ensure the pages are clear and correct.



- If any pages are improperly scanned, simply click the small X on the left hand bottom corner of the thumbnail.
- You will be prompted to confirm the deletion. Click yes.

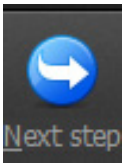




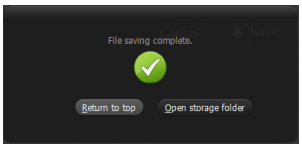
- To rescan the page, place the page in the document feeder and click the Scan +button.
- The rescanned pages will now be at the end of the document.
- Grab the thumbnails one at a time and move them to the correct page location.



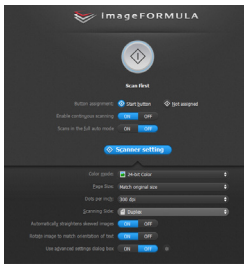
- Once you have verified all pages are correct, present and in the right order, click Next step.



- **Change the file name to reflect the trip number:** Name the file using the trip number followed by "First" to designate this as the initial draft (e.g., 23543_First).
- Click save.
- To view your file, click Open storage folder.



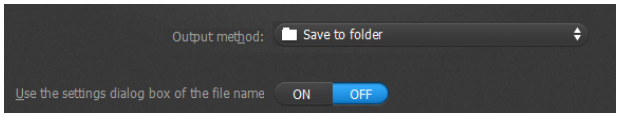
- Select your newly scanned trip and review it for readability. Your debriefer will make corrections directly on the PDF file. If needed, rescan the document at higher resolution to improve readability.



- Use 400 or 600 dpi. Files at a higher resolution will be much larger so upload times will be longer.
- Follow the directions on uploading your trip in the database chapter.

Trouble shooting:

1. CaptureOnTouch does not find the scanner.
   - Exit CaptureOnTouch and reopen it.
   - Make sure the autostart switch on the back of the scanner is set to OFF.
   - Unplug the usb and plug into a different port.
2. You can't type in the file name section.
   - Make sure Use the settings dialog box of the file name is set to OFF.



PSMFC E-mail Account

All WCGOP observers will be assigned a PSMFC e-mail account to communicate with WCGOP. This e-mail should be checked for messages daily if possible. Your default user name is your (First initial and LastName)@psmfc.org (JDoe@psmfc.org). The default password is Welcome1. Please change the password after you complete training.

How to Access PSMFC e-mail on the internet

1. **Go to https:**//webmail.psmfc.org
2. Enter your PSMFC e-mail address for the user name (i.e. jdoe@psmfc.org).
3. Enter your PSMFC password (if this is your first login use Welcome1 for a password).
4. After you have entered your User Name and Password, click "Log On".
5. Upon initial login you will be prompted to choose the appropriate time zone for your area.
6. Make changes if needed and then click "OK".
7. You have successfully logged into the PSMFC web mail.

Password Policy Rules

Password length: Password must be at least 8 characters in length.

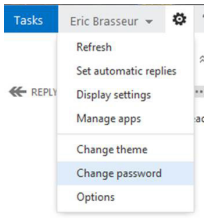
Password complexity

- CM Portal requirements are 8-20 characters with at least one upper case, one lower case and one number
- **PSMFC E-mail requirements:** password must contain characters from three of the following four categories:

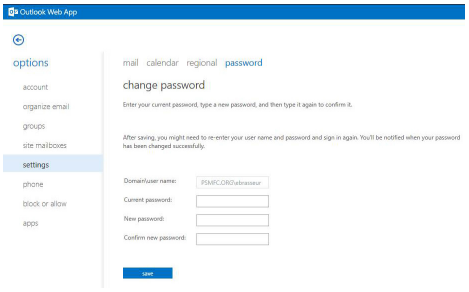
1. English uppercase characters (A through Z).
2. English lowercase characters (a through z).
3. Base 10 digits (0 through 9).
4. Non-alphabetic characters (for example, !, $, #, %).
5. User password will expire 90 days from the last change.
6. The last four passwords cannot be reused.
7. **Passwords cannot contain:** The user's account name or parts of the user's full name that exceed two consecutive characters.

Complexity requirements are enforced when passwords are changed or created.

Changing your password using web mail



1. After logging into the webmail, click the Settings icon (small gear) in the top right corner.
2. Click "Change Password" in the drop down navigation pane.
3. Enter your current password. Then enter your new password in both the "New Password" and "Confirm New Password" fields. Click "Save" your Changes.



4. You should then see the confirmation dialog, confirming the password change. Click "OK" to proceed.

The "I Can't Get Into My PSMFC E-mail" Essentials

E-mail passwords expire every 90 days, just like the WCGOP database passwords.

- Your initial password is Welcome1.
- Your user name is almost always First initial last name (Ebrasseur).You will be told if it's not.
- You will need to change your PSMFC e-mail password every 90 days.
- There is no emailed reminder.
- If you log in using the web site you will be prompted to change the password as the time gets close.
- If you use Outlook, Gmail, Thunderbird or your phone you will not receive a notice.
- If your password has expired when you log into the website you will be prompted to change your password before logging in.
- The user name is preceded by a domain when changing your password before logging in. The domain is PSMFC.ORG\USERNAME AND MUST BE ENTERED CORRECTLY.

If you do not remember your password, you will be locked out. Contact Chris Matthews at PSMFC to reset your password. E-mail: cmatthews@psmfc.org Phone: 503-595-3100

Collect information to report a problem

Problems should be reported to your coordinator and the WCGOP gear technician so they can advise you on how to proceed, reassign your vessels if required, and get your replacement to you as quickly as possible. (See the section, Reporting a Problem on page 12-40) for contact information and full procedures.

- Make a note of the PSMFC property number and the specific problem with your laptop.
- Contact the required personnel.

If you have been asked to return the laptop, attach a note directly to it indicating the problem.

Gear Pick Up: I'm An Observer Now!



Figure 12-54: Map to Lincoln Storage.

On the last day of training you will receive your gear. Gear assignment usually starts in the Barry Fisher Building loading dock and is finalized at Lincoln Storage, an off site facility located at 4809 S Coast Hwy. South Beach, OR 97366, 1.5 miles south of Hatfield. Some gear will be given to you at BFB the rest at the storage site. Check in with the staff before beginning at either location.

If you finish your final exam before 12:00 pm, go to BFB 146 to begin gear check out. The tech will give you your gear sheet and instructions so you will be able to check out your scale, laptop and PLB. If you arrive late and the gear tech is not around, please go test your assigned scale by 1:00 pm. Be sure to put your name on your scale so no one else takes it. Keep the scale test form with you until asked for it.

Everyone will meet in BFB 101 at 1:00 for "What happens next". You will be assigned a gear pick-up time during that class. If you did not manage to see the gear tech prior to this, you will do so now before heading over to the storage facility for complete gear check out. Bring everything you receive at the office to the check out site.

To check out your gear you will need to bring the following:

- A vehicle to transport your gear (make room before you get there).
- Your logbook.
- Your clipboard.
- The gear chapter from the manual, or the whole manual.
- A pencil.

A staff member will show you where your gear is and explain how to start. Only take the gear you have been assigned. Many items have serial numbers and will be tracked for safety, reporting, or legal reasons. It is imperative that you take only those items assigned to you and that you verify all information on the gear sheet. Tables will be provided for you to go through the gear and carefully check everything off.

Gear Checkout

The quickest way to check out is to remove all the gear from the baskets and systematically check and place everything back in the baskets as you proceed. This will help keep your gear separate.

All safety equipment must be reviewed by a staff member after you have completed your inspections and set up. After you have set it up correctly, filled out all applicable information on the gear form, and checked it off, ask a staff member to verify everything before you put it away. For speed, wait until you have several things ready before calling staff over. Staff will show you where everything is.

You will need to decide how many baskets you would prefer at this time. The minimum recommended is 3, however it is often useful to have 6 or more when working on trawlers. Ultimately your ability to transport your equipment may be the ruling factor. Note the number desired next to sampling baskets in the Qty. column under the Check Out heading. (WCGOP recommends 10 if you have room as you can always leave some at home if you find you use less.)

Staff will help you find equipment in the storage facility. Make sure you have everything on the list that you check off and that the quantities match. You will be given a list of "need to do" items. Be sure you complete all the tasks listed. Please remember to check with staff before putting things away. We will ask you to unpack it all if a staff member did not verify what you have received.

You must transport your gear yourself, or make arrangements with your provider to ship or store your gear. Please be prepared prior to leaving training.

Verify all information and add any missing information on the gear sheet.

EPIRB/PLB (page 12-15)

- Beacon number.
- Battery expiration month and year.
- Registration expiration month and year.
- Test it.

Immersion Suit (page 12-18)

- Serial number matches bag and form.
- Size (try it on if it doesn't fit request a new suit).
- Inspect the suit.
- Check the whistle and its attachment.
- Check the strobe date.
- Check the attachment of the rescue streamer.

Inflatable PFD (page 12-21)

- Check the whistle.
- Check the strobe and it's AA batteries, use only a C-strobe (Round).
- Check rescue streamer attachment.
- Check the hydrostatic inflator expiration date.

Computer (page 12-33)

- PSMFC #.
- Power cord matches.
- Passwords.
- Turns on, and you can log in (Check all user options).

Marel Scale(page 12-25)

- Inspect for damage (report if found).
- Record Serial number shown on faceplate.
- Turn on.
- Calibrate.
- Perform detailed weight test at the test station and record on scale test sheet.

Tally Counters

- Make sure they work.

Head lamp

- Check batteries and for corrosion.
- Make sure it works

Optional gear

- Do you have it?
- PFD work vest with attached safety equipment.
  - Attach or check whistle.
  - Attach or check strobe.
  - Attach or check rescue streamer attachment.

Once you have completed your inspection, notify a staff member of any problems, correct them, and take your check out form to the gear technician. Sign the form, turn it in, load up your gear and head out. Request a copy if you desire it. When you finish your contract the same form will be used to check in your gear. BE SAFE!

Getting Replacement Consumables

The program will provide replacements for items you will consume while doing your job. Each of the satellite WCGOP offices has a supply of goods to keep you stocked up. When visiting your debriefer make a list of what you need and notify them in advance so they can have it ready for you. You should copy paper forms as needed or visit a field station to restock forms. When making copies at an office, ask for assistance.

Consumables include:

- D Batteries
- Sample bags
- Otolith vials
- Waterproof forms
- Pens and Pencils
- Species ID labels

Always call your debriefer first for these items even if you need them shipped to you. If they are out, then contact the gear technician in Newport-Eric Brasseur.

Reporting a Problem

It is very important that any equipment problems be reported right away so that if replacement gear is needed it can be issued before your next trip. Problems should be reported by e-mail to your coordinator and the WCGOP gear technician so they can communicate your request to the proper personnel and advise you how to proceed and reassign your vessels if required.

You should contact the gear technician if:

- Your gear malfunctions.
- You set off an EPIRB, PLB, non-serviceable strobe, or inflatable PFD.
- You are having a problem with a piece of gear.
- Something is missing, lost, washed overboard or stolen.
- Something breaks.
- You are having a computer problem.

See the corresponding section in the Gear Chapter for specific information required when reporting. Have that information recorded and ready.

1. E-mail/call the gear technician and tell them what is wrong. They will advise you if it's necessary to stop working while you await a replacement.
2. Send an e-mail to your coordinator, debriefer and the gear technician with all details.
3. Label the equipment as noted in each section. Included specific notes as required.
4. Include your current physical address to ship to. A PO Box is not sufficient for Fed-Ex or UPS overnight deliveries.
5. Once reported a replacement will be shipped directly to you.
6. **Use the box your replacement came in and ship the damaged/malfunctioning item back to:**

   Eric Brasseur

   2032 SE OSU Drive

   Newport, OR 97365

In many cases a return label will be included in the package. Simply remove the previous shipping label and barcodes on the box and put the new prepaid shipping label on the package. Seal the box and take the package to the nearest drop-off center based on shipping company. If no centers are nearby you can call for a pickup.

Technical and Gear Contacts

Gear Technician	Eric Brasseur O: 541-867-0509 C: 757-897-9651(Primary) E: ebrasseur@psmfc.org
PSMFC E-mail	Chris Matthews O: 503-595-3100 E: cmatthews@psmfc.org
Database	Jim Fellows O: 603.545.9558 E: James.Fellows@noaa.gov

Non-Catch Share Coordinators

Washington & Oregon	Scott Leach O: 541-351-8250 C: 541-366-8080 E: Scott.Leach@noaa.gov
California	John LaFargue O: (707) 443-3228 C: (530) 604-7386 E: John.Lafargue@noaa.gov

WCGOP Stolen Gear Protocol

Observers Responsibilities: Reporting stolen gear

It is very important that any equipment thefts be reported immediately so that replacement gear can be issued before your next trip and authorities can begin an investigation. A police report should be filed immediately and thefts should be reported by phone and e-mail to your coordinator and the WCGOP gear technician; they will communicate your request to the proper personnel and advise you how to proceed.

Gear should always be stored securely in your house, garage or on the vessel. Never leave gear in your vehicle for storage purposes.

Follow these steps when dealing with a theft.

- Do not touch the scene if a car, home or vessel was broken into. Call the police immediately.
- Take a visual inventory of the scene to determine what has been stolen. Take pictures as well.
- Once police are done, take a physical inventory.
- Look up all serial numbers and write down as many details about the stolen items as possible for the police. Serial numbers can be obtained from the gear technician.
- Call your provider and the gear technician to report the theft and obtain any details you need about the stolen items. Pictures can be provided.
- Call your insurance company (home, renters, or auto as applicable).
- Monitor the local craigslist boards and inform the police if you suspect you have found someone selling your items.
- Obtain a copy of the police report and record all report numbers in your logbook.
- Fill out a WCGOP LOSS/THEFT REPORT FORM " (See Figure 12-55)" located in the public document of your laptop using MS word or Acrobat as applicable.

- **Save it locally on your computer for your own records and rename the file using the following format:** "WCGOP LOSS/THEFT REPORT FORM-your name-date"
- Send an e-mail to your coordinator, debriefer and the gear technician with all details by attaching the file, police report and any images. Include your physical address. We must have a physical address to ship to, a PO Box is not sufficient for Fed-Ex or UPS overnight deliveries.

Once reported a replacement will be shipped directly to you. If gear was stored improperly, you may be liable for some or all of the cost of the stolen equipment. This will be determined on a case-by-case basis.

PACIFIC STATES MARINE FISHERIES COMMISSION

NOAA Fisheries – Northwest Fisheries Science Center
West Coast Groundfish Observer Program
Hatfield Marine Science Center
2032 SE OSU Drive
Newport, OR 97365
Phone: 541-867-0509 Fax: 541-867-0505

WCGOP Loss/Theft Report Form

When filling out form please save as "WCGOP Loss/Theft REPORT FORM-yourname-date"

Date of incident: _____ Name:_____

Location of incident: _____

Police report filed Yes/No? Copy of Report requested Yes/No? Police Report received Yes/No?

Pictures taken Yes/No? Police report #:_____

Gear missing:

Item	Serial #	PSMFC #	CD number(Scale/scanner)

The details of the circumstances surrounding the loss, theft, damage, or destruction of the property:

The names, phone numbers, title, and office of individuals involved in the circumstances:

Pertinent information to the circumstances such as where and how the property was stored or moved:

What efforts to find or repair the property have been or will be taken?

"To promote the conservation, development and management of Pacific Coast fishery resources through coordinated regional research, monitoring and utilization"

Figure 12-55: WCGOP Gear Theft/Loss Report Form

Gear Check-In Procedure

NCS Gear is to be returned at the closest field office. or Newport.

CS Gear is expected to be returned in Newport, in person. If you need alternate accommodations (shipping), please contact your provider to discuss and they will make a request for you.

When you have:

- Finished your contract and have no more trips,
- Entered all your trip and data,
- Scheduled your final debrief,

Contact Eric Brasseur via e-mail at ebrasseur@psmfc.org to schedule a gear check-in. Gear check-in hours are generally 9-3 M-F. Be sure to allow 30-60 minutes to complete your check-in.

Before you leave your port:

1. Request a check-out sheet if one has not been sent to you.
2. Review the check-out sheet to verify you have all your gear. Please USE IT to check everything off as you may be required to pay for missing or damaged gear if you did not report it's loss earlier.
   - If you received replacement or additional gear it may not be noted with the correct ID number; that is OK.
   - You are responsible for everything on the list and any additional items you may have received during your deployment such as a GPS or Radio.
3. Perform all required maintenance and log book duties related to gear.
4. Thoroughly clean your gear as described below. See the gear chapter in the manual for additional tips and methods.
   - **Baskets:** Clean/scrub thoroughly with bleach and a scrub brush/scrubby. A car wash is a good place to power wash baskets.
     Recycle cracked and broken baskets.
   - **Non-inflatable PFD:** Hand scrub with a mild bleach solution, rinse and air dry completely. Or wash in a front loading washing machine, gentle cycle and air dry.
   - **Inflatable PFD:** Hand scrub with dish soap and rinse with a damp rag. Hand wash only to avoid accidental inflation.
   - **PLB:** If it's dirty, remove the case from your PLB if it has one and wash it and the case with soap. Rinse and let dry.

Note: Yellow EPIRBs are water activated; do not wash them.

   - **Marel M-1100 scale:** Clean with fresh water and soap. Scrub brown spots with a green scrubby. Rinse and dry completely.
   - **Pelican scale case:** Scrub the outside of the case. Remove everything from case except the foam. Fill with water and ¼ cup of bleach. Allow to soak for 20 minutes. Empty and rinse thoroughly with fresh water. Allow to air dry open and upside down for 24 hours. Once dry return all items to the case for transport. Batteries should be in a zip lock bag. You will need to turn on the scale in Newport for testing.
   - **Laptop:** Remove any personal files you need from the laptop. Empty the laptop bag/case of everything personal and be sure the power cords, mouse, 10 key printer, scanner, and cables are in the case.
   - **Immersion suit:** Leave the whistles and strobe lights attached. Remove personal gear from bag.
   - Report any malfunctioning or damaged equipment. (You should have already filed the appropriate reports.)
   - **Paper books:** Clean as best as you can. Let dry and air out.
   - **Water-proof species guides:** Wash with bleach if needed. Fill a sink with bleach water and soap and swish the book around. Sponge pages clean as needed. Repeat with clean water to rinse. Dry thoroughly.
   - Clean and dry the clear plano waterproof box and all small tools. Dispose of wet gloves.
   - If is October or later, recycle the paper from your observer manual and turn in just the binder, if the binder is ripped, dispose of it. You may keep the manual if desired as well as pens and pencils.
5. Once the gear is dry, pack everything using the check off sheet to assure you have all gear. Put it in your vehicle and double check for items you may have left behind.
6. **The most common items people "forget" and end up paying for are:** Head lamps, Beating the Odds , calculator, and the hand cart.
7. Consumables supplies are exactly that and you will not be charged for them (pencils, bags, vials, etc).

Note: You will be asked to clean or dry gear on the spot if it has not been properly done.

When you arrive in Newport

Bring gear to the loading bay/warehouse in the Barry Fisher Building and notify Eric Brasseur in Room 146 that you have arrived.

Unload your gear and arrange all the small gear on the red folding table in the loading bay near the freezers (first bay door). The table may be folded up, just find it and set it up.

1. Perform a detailed weight test (90-day) at the scale testing station. It must pass the test. Please see the Gear Technician if it does not. Scale test forms are on the blue clipboard.
2. Unroll your immersion suit and leave it out.
3. Double check you have everything.
4. Once ready, go get the gear technician.

Missing gear

Though rare, you may be required to pay for missing/damaged gear. See Figure 12-4 on page 12-5 for expected replacement fees. Consult the gear technician in advance if you know you are missing items. We will not clear you with a provider until everything is accounted for. You may pay for missing gear by writing a check payable to PSMFC. If gear is found at a later date and returned, your payment will be refunded.

Shipping gear

WCGOP prefers that all gear be returned to Newport in person. Observers are not authorized to ship gear without an e-mail confirmation from the WCGOP gear technician and their provider. If your provider has requested you ship your gear, please ask them to contact the gear technician for approval. Until you receive approval from the gear technician DO NOT PROCEED.

Before shipping gear

Test the scale: The observer must bring the scale in to a satellite office for a final scale test, or if the debriefer is traveling to them, request the test weights be brought so the test can be performed at that time. This will be a confirmation that the scale was working properly prior to being shipped.

Perform Maintenance, clean, and inspect all gear

Follow the same instructions as listed in (See the section, Before you leave your port: on page 12-43).

CS Gear check (optional)

It is recommended that observers with questions about the condition of their gear bring it to the location of final debriefing for a courtesy inspection. This is only a courtesy inspection to help the observer identify any issues that may need to be addressed. Debriefers assume no role in shipping or verifying the final condition or presence/absence of gear. It is the sole responsibility of the observer to assure that all gear is properly cleaned, accounted for and shipped to the Newport office. The gear should be ready to ship prior to courtesy inspections.

Missing gear: Lost/damaged gear should have been reported prior to this time. Gear reported missing at the final debrief may result in replacement fees being assessed.

Dirty gear: A $100 cleaning fee will be charged to the observer provider for all gear received unreasonably dirty. The provider may choose to have a local observer come in and clean the gear instead of accepting the fee. Gear may not be issued to new observers until dirty gear issues have been addressed.

Preparing the shipment

All items should be clean and dry. Use the check off sheet to verify all gear as it is packed. Place a copy of the check off sheet in the laptop case. Every item should be checked off in the observer check mark column or an explanation given as to why the item is missing. Excluding consumables, missing items will be assumed lost due to negligence or shipping and may be billed for appropriately.

Scale

- Write in sharpie on the scale pan any problems with the scale.
- Remove batteries from scale.
- Pack any remaining batteries in a dry zip lock bag.
- Put all items in case appropriately.
- Close case securely.
- Seal case using only Heavy duty zip ties. Reusable zip ties will not work.
- The scale in case weighs ~ 69 lbs.
- Put a shipping label directly on the case; no further packing is necessary. Tape label on securely.

Small gear:

- All items should be dry!
- Place all small gear in the Clear Plano box.
- Use the gear sheet to check everything off.

Laptop

- Pack in pelican case with mouse, power cords, 10 key, scanner and cables. Add filler if items are moving around.
- Ensure latch is tightly closed.

Immersion suit

- Remove any personal items.
- Button the bag.
- Place in a basket or box to protect from puncture damages during shipping.

PLB

- Place in Clear Plano box (Sample kit).

EPIRB

- Remove antennae
- Tape or rubber band down the trigger button
- Place in ziplock bag to prevent water activation

WCGOP Camera

- Submit all pictures
- Format card
- Pack in Clear Plano box

Recommended packing method

Packed correctly, it is not necessary to use boxes, however you may do so to add additional protection if you wish. Please try to avoid using packing peanuts. The static build up sometimes damages the electronics and may set off an EPRIB. The method described below works well when distributing new gear. You may need to pack things slightly differently depending on the size of your immersion suit.

- Seal the scale in its pelican case with zip ties. Any paperwork placed with the scale should be in a ziplock bag to keep it dry.
- **Pack the following in one basket with the lid:**
  - Clear water proof box with all small gear.
  - Form folder
  - Fish pick
  - Calipers
  - Inflatable PFD
  - Measuring board
  - Laptop in pelican case
  - Add paper filler if things are loose.
- Zip tie the lid at the ends and wrap lid and basket around middle with tape. You may place the sealed basket in a box if desired, but it should not be necessary if packed correctly.
- Attach the folded cart to the top of the basket with rope or tape. Be sure it cannot move.
- Pack books in the bucket; add filler to prevent movement if needed.
- Turtle two baskets together zip tying shut at all points with holes with the following items inside.
  - Bucket with books.
  - Immersion suit (This may not work with a jumbo suit).
  - Zip ties must be placed in every hole and baskets must be aligned properly. Tighten zip ties and leave long to prevent injury to UPS Drivers and staff.



Figure 12-56: Heavy duty zipties in all holes.(Note: please leave long unlike this image.).

- Place non inflatable PFD in bottom of one basket.
- Stack remaining baskets together on top of PFD.
- Using small rope, tie all the baskets together securely through the holes at the corners.

When all packed you should have 4 separate items to ship



Figure 12-57: Full gear set prepared for shipping.

- The scale
- 1 basket with lid and cart strapped to top
- 1 set of turtled baskets
- 1 stack of baskets (If the local office has room, they may keep your baskets)

Shipping

Attach shipping labels to all packages. Add tape if you feel they may come loose.

Insure for $10,000 total. If asked to insure packages separately, be sure to calculate the approximate value of the items you packed in each container. If packed as indicated: the scale

should be insured for $7000, the cart/basket of gear for $2000 and the turtled basket set for $1000.

Add Ebrasseur@psmfc.org to the tracking confirmation.

Add 757-897-9651 as the contact phone number for receiver.

Ship to: Eric Brasseur

West Coast Groundfish Observer Program

Hatfield Marine Science Center Room 146

2032 SE OSU Drive

Newport, OR 97365

Post shipping

Send an e-mail to the gear technician and your provider confirming the shipment. Include the expected arrival date and tracking numbers. Observers should continue to monitor their PSMFC e-mail until they are given the all clear. Please leave additional contact information if unable to do so.

Resolving gear issues

The provider and observer will be contacted via e-mail to confirm the receipt of all gear, and to notify them of any problems. Problems will first be presented to the observer to resolve. If the observer does not communicate with the program, the issue will be turned over to the provider for resolution. Missing gear must be returned within 14 days. Gear lost or damaged due to negligence or shipping must be replaced/repaired or paid for within 30 days.

Payment

The provider will be officially billed after 14 days for any unresolved gear issues.

Payment should be made out to: Pacific States Marine Fisheries Commission.

Send payment to:

Eric Brasseur

West Coast Groundfish Observer Program

Hatfield Marine Science Center Room 146

2032 SE OSU Drive

Newport, OR 97365



Regulations and Compliance

TABLE OF CONTENTS

Overview of Federal Groundfish Regulations . . . 13-2

Observer Role In Regulatory Compliance . . . 13-2
- Steps to Take if You Suspect a Violation . . . 13-2

Regulations Applying to Observers . . . 13-4
- Regulations Protecting Observers . . . 13-4
- Harassment and Assault . . . 13-5
- Intimidation . . . 13-5
- Victim Impact and Support . . . 13-6
- Victim Rights . . . 13-6
- What to Do if You Experience Harassment . . . 13-6

Partial Summary Of Federal Regulations . . . 13-7

Observer Program regulations for the Catch Share fishery and Mothership catcher vessels . . . 13-8
- Observer Coverage Requirements . . . 13-8
- Vessel Responsibilities . . . 13-8
- Observer provider responsibilities . . . 13-8
- Observer certification and responsibilities . . . 13-9

Observer Program regulations for the Limited Entry Fixed Gear and Open Access fisheries . . . 13-10
- Observer Requirements . . . 13-10
- Vessel Responsibilities . . . 13-10
- Observer Provider Responsibilities . . . 13-11
- Partial Summary of State Regulations . . . 13-11

Regulations Concerning Shark Finning . . . 13-12

Regulations Concerning Taking of Marine Mammals . . . 13-12
- Definitions . . . 13-12
- Prohibited Uses, Possession, Transportation, and Sales . . . 13-13
- Collection of Certain Marine Mammal Parts . . . 13-13
- Marine Mammal Fishery Interaction Regulations . . . 13-13
- Reporting Requirements: . . . 13-13

Observer Procedures During Law Enforcement Boardings . . . 13-13

Coast Guard Role in Homeland Security . . . 13-14

Observer Health and Safety . . . 13-14
- Pre-Trip Safety Check . . . 13-14

Marine Pollution (MARPOL) Regulations . . . 13-15
- Vessel Operator Obligations . . . 13-15
- Placards . . . 13-15
- Waste Management Plans . . . 13-15
- Marina Obligations . . . 13-15
- Reporting Violations . . . 13-15
- Observer Responsibilities . . . 13-15

Chapter 13

Overview of Federal Groundfish Regulations

Federal fisheries regulations for the West Coast of the United States are developed by the Pacific Fisheries Management Council (PFMC), approved by the U.S. Department of Commerce and administered by the National Marine Fisheries Service. In addition to fisheries regulations, commercial fishers are required to comply with many other regulations, such as those authorized by the Marine Mammal Protection Act and the Endangered Species Act.

The regulations contained in this section of your manual are enforced by the NOAA / National Marine Fisheries Service (NMFS) Office of Law Enforcement (OLE) West Coast Division, the U. S. Coast Guard, and Washington, Oregon and California natural resource law enforcement officers (who are deputized as federal officers of NMFS under Cooperative Enforcement Agreements). OLE agents and officers work closely with Observer Program staff and with other federal, state, and local law enforcement agencies.

Groundfish regulations off the West Coast are designed to conserve overfished groundfish stocks and to protect essential fish habitat and endangered species. Regulatory tools used to manage the fisheries include: Conservation Areas, fishing seasons, gear limits, catch quotas and trip limits.

Observer Role In Regulatory Compliance

Observers are responsible for accurately reporting any observations of suspected violations of regulations relevant to the conservation of marine resources or their environment. Observers should monitor for and document compliance infractions and suspected violations in their logbook and complete a written statement during debriefing. Any compliance issues that are witnessed should be documented thoroughly in the logbook and the observer program staff, lead observer, or debriefer should be notified.

The observer's role in monitoring compliance with fisheries regulations is quite different from the role of an OLE Special Agent or Fishery Enforcement Officer. Observers are not enforcement personnel and are not empowered to issue citations, or take enforcement action. Observers must not advise the crew of regulations, interpret regulations, waive regulatory requirements or enforce regulations. As an observer, you are responsible for monitoring the activities aboard your assigned vessels. You must document any suspected violations related to marine resources and/or their environment.

In the past, some observers have misinterpreted their role by either exceeding their assigned duties or by demonstrating a lackadaisical attitude about compliance. Either of these patterns of behavior may be damaging to the resource and other observers and could place your certification in jeopardy. If you have any questions regarding your role in fisheries compliance, contact an Observer Program staff member.

Follow the guidance in this section regarding documenting and reporting potential violations. It contains excerpts of regulations specific to your work as an observer. However, this Manual does not contain the entire text of any regulation. If a fisher has a question regarding the intent, scope or applicability of a regulation, refer them to an OLE field office or an Observer Program staff member, see: "Contact Addresses" in the Appendix.

Steps to Take if You Suspect a Violation

Gathering facts and documenting a suspected violation should be done as part of your routine duties. Common sense and good judgment should prevail if you suspect a violation has occurred. Your role is straightforward: Identify, Inform, Document and Report. The actions you take will depend upon the type of suspected violation, the circumstances under which it occurred, and the actions and demeanor of vessel or plant personnel.

Identify

Routine observation of all activities aboard a vessel is your first step in identifying compliance infractions. You may notice an obvious violation, such as a crew member discarding plastic bags overboard. Other violations may need some research. You may need to double check your measurements, calculations, methods, scale calibrations, and/or logbook entries. Ask the operator, plant manager, or other crew member to clarify any questions you have. By asking questions, you may determine that no violation occurred. You can contact Observer Program staff or OLE personnel to see if a particular action is a violation.

Inform

If you think a violation has occurred, notify the vessel's captain or the plant manager as soon as possible. Informing the captain of suspected violations is encouraged by the Observer Program, unless the captain or manager has failed to respond to previous reports or you feel that it may lead to a potential harassment situation. In these cases, you must document your reasons for not reporting the incident in the Daily Notes section of your logbook.

Effective communication requires some familiarity with the regulations, sound judgment, and tact. If you *do* witness a suspected violation, organize the facts and approach the skipper or manager in a calm and reasonable manner. Informing the captain provides the opportunity to correct problems and prevent future violations.

The captain/manager's response may shape how the violation is eventually handled. In most cases, the problem will be remedied immediately. If your statements are ignored and the violations continue, proper documentation is required for OLE to deal with the problem. You are in the best position to advise

NMFS on the circumstances of the suspected violation and the apparent intent of the captain/manager.

Note: Inform staff of any obvious or suspected violations (e.g., sampling interference, harassment), as well as any safety concerns you might have, as soon as possible. Waiting for staff to read about it in your observer logbook slows down the process of addressing these issues and can put you and your fellow observers in harm's way, unnecessarily.

Document

If the vessel you are covering is charged with a violation that occurred while an observer was onboard, all parties concerned will have a legal right to inspect your logbook or any other evidence known to exist. It is essential to make your entries factual and to avoid personal opinions. Do not use your logbook to blow off steam. Statements such as, "the deck boss is a slob," are irrelevant to whether a fisheries violation has been committed.

When documenting fishing violations, it is important to remain unemotional about the violation. If you are experiencing harassment or intimidation, it is critical that you document your feelings and emotions surrounding the incident.

When providing OLE with a statement, it will be much easier if you have taken the time to document the violation as outlined. Given the importance of your logbook and other types of documentation, you should take special care to safeguard them against loss and tampering.

Suspected violations should be documented in your logbook under the Daily Notes section and reported to your debriefer ASAP upon completion of your trip. Remember that copies of your logbook and any other pertinent documentation will be handed over to OLE and may be used as evidence.

Your documentation must be thorough and factual. Subjective comments should be left out, as they may make you appear partial and could jeopardize an enforcement case. All written comments must be in ink, and events should be recorded in chronological order. Good documentation contributes to your credibility as a witness.

All logbook entries of suspected violations should contain the following basic elements:

- **Who:** Identify the vessel or plant by name, permit number and vessel type.
  - Identify the individuals and witnesses involved by first and last name, position (skipper, engineer, deckhand, etc.), and function or duties.
  - Identify who was notified and how they handled the potential violation.
- **What:** Describe events and circumstances in narrative form.
  - Include what made you suspicious.
  - Detail what was discovered when you looked into the matter.
  - Describe what occurred (or didn't) as a result of your discussions with the captain and crew.
  - Use direct quotes whenever possible.
  - Record each instance of a suspected violation.
- **When:** Identify the exact or approximate time of the suspected violation - hour, day, month, year.
  - Document the haul or delivery number if appropriate.
- **Where:** Identify your vessel's position at the time of the suspected violation.
  - Include latitude/longitude or statistical reporting area. If a vessel's exact position is not known, use the closest approximation from the last haul, if available.
  - Describe where the suspected violation occurred. Draw a diagram identifying the area specifically, if applicable.
- **Why and How:** Try to determine why and how the suspected violation occurred. Document your own observations and conversations with crew members. Be as objective as possible and cite factors which may provide mitigating or aggravating information. Consider the following:
  - Could the problem be due to a mistake, such as a mathematical or transcription error?
  - Were there circumstances beyond the control of vessel or plant personnel, such as severe weather, mechanical breakdowns, or injuries?
  - Was the suspected violation intentional? On whose orders or with whose knowledge do you think it was done and why?
  - Describe any effect the violation had on your ability to perform your duties.
  - If you felt harassed or intimidated as a result, describe how the actions made you feel.

Tip: When documenting fishing violations, notes should be matter-of-fact. When documenting instances of harassment or intimidation, it is critical that you express your feelings and emotions surrounding the incident.

Report

Observers must report all suspected violations of fisheries regulations to NMFS. Notification will usually occur through an outlined process, however, there may be times in which observers will need to contact OLE directly.

Immediate Notification to OLE

If a problem you have witnessed continues and you feel the situation has interfered with your ability to complete your duties or is causing a hostile work environment, or if you are the subject of harassment, assault, intimidation or other adverse action, you must report the situation immediately to the Observer Program, your contractor, and/or OLE. Depending on your circumstance, NMFS and your contractor may be able to assist you directly. For your safety and privacy, the Observer Program and OLE may wait to take action until you have disembarked the vessel or have been debriefed. However, you are the best judge of your unique situation. If you feel unsafe and in need of immediate assistance, you must communicate this when reporting the incident.

Notification During Debriefing

If you have witnessed a suspected violation, this should be discussed with your debriefer ASAP. Do not wait for your debriefer to read about it in your logbook. You may be asked to clarify your notes or to complete a written statement describing what you saw. Your statement should not contain repeated details from other documentation. The statement should contain the basic elements of the violation, details not in your Daily Notes, and references to other documentation. References should include page numbers, dates and/or haul numbers.

Completing Written Statements

If you are requested to write and submit a statement, it will be forwarded to OLE. Provide the Observer Program with a reliable phone number or e-mail address so they may reach you. Your responsibility as a groundfish observer regarding suspected violations may require a phone call with a Special Agent or state enforcement officer.

In most cases, when you inform the vessel captain of a potential violation, they will take steps to change that behavior. Therefore, most complaints submitted by observers fall into the 'voluntary compliance' category. The majority of these complaints may not result in an enforcement action against the fishing company.

More egregious violations may be dealt with by a Summary Settlement or other civil or criminal prosecution. In some situations involving minor observer violations (e.g., not maintaining adequate accommodations, minor interference with observer duties) an enforcement agent can issue a summary settlement violation up to $1,000 on an individual or a vessel company. More serious violations can end up in civil or criminal prosecutions involving attorneys. Civil fines can be up to $140,000 per count and criminal violations may include jail time. You are required to cooperate with OLE and NOAA Fisheries General Counsel while this process is underway.

If your written statement is not acted upon, it will still be added to a database. Over time, this allows enforcement to identify patterns of behavior. If a pattern of behavior is established, the eventual result may be a prosecution. Without complete, objective documentation of suspected violations, OLE has no background to pursue these investigations. Your detailed notes are the best source of the facts and the intent.

Regulations Applying to Observers

Federal groundfish observers are not exempt from laws or regulations. Observers who falsify data, accept bribes, harass other observers or conspire with someone to do the same may face criminal charges. Observers who violate the Standards of Observer Behavior (see: Chapter 2, "Introduction to the West Coast Groundfish Observer Program") may face suspension, decertification, and/or other disciplinary action. The collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States. As such, false data reports and observer misconduct issues are dealt with seriously by OLE and/or NMFS.

Note: WCGOP staff have experience identifying falsified data. DO NOT falsify data or you will get caught.

Regulations Protecting Observers

NMFS strives to promote a safe and harassment-free work environment to protect observers and ultimately contribute to the collection of high-quality data. Your employer and vessel/plant owners and operators have the regulatory responsibility to protect you and your data.

It is unlawful for any person to do any of the following [50 CFR §660.12(e)]:

1. Forcibly assault, resist, oppose, impede, intimidate, harass, sexually harass, bribe, or interfere with an observer.
2. Interfere with or bias the sampling procedures employed by an observer, including either mechanically or manually sorting or discarding catch before sampling.
3. Tamper with, destroy, or discard an observer's collected samples, equipment, records, photographic film, papers, or personal effects without the express consent of the observer.
4. Harass an observer by conduct that has sexual connotations, has the purpose or effect of interfering with the observer's work performance, and/ or otherwise creates an intimidating, hostile, or offensive environment. In determining whether conduct constitutes harassment, the totality of the

circumstances, including the nature of the conduct and the context in which it occurred, will be considered. The determination of the legality of a particular action will be made from the facts on a case-by-case basis.

5. Fish for, land, or process fish without observer coverage when a vessel is required to carry an observer under subparts C through G of this part. [§660].
6. Require, pressure, coerce, or threaten an observer to perform duties normally performed by crew members, including but not limited to, cooking, washing dishes, standing watch, vessel maintenance, assisting with the setting or retrieval of gear, or any duties associated with the processing of fish, from sorting the catch to the storage of the finished product.

Harassment and Assault

The most serious crimes against observers are harassment, assault, and sexual assault. These are criminal offenses. The resulting cases are the highest priority of the OLE. If you find yourself in one of these situations, take care of yourself first. On a vessel, your most immediate support may come from a crew member, debriefer, or another observer. For your safety and that of future observers, you must inform your contractor and OLE. After you have made a report, a team will be assigned to support and help you. The team may consist of an advocate and legal and/or medical professionals. If you are still at sea, this team will take precautions to ensure your situation does not become worse. If necessary, immediate actions will be taken to ensure your safety. Contacts for NMFS Enforcement and other support can be found in the Appendix of this manual.

Second to your safety is the preservation of evidence. This may include gathering physical evidence of the harassment, assault, or sexual assault. While this may be painful and unpleasant, these actions are necessary to bring the perpetrator to justice. Initially, you may have difficulty remembering details of the crime or you may feel you could have done something to prevent it. These are normal feelings.

Sexual Harassment

Sexual harassment is a form of sex discrimination that violates Title VII of the Civil Rights Act of 1964. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitutes sexual harassment when submission to, or rejection of, this conduct explicitly or implicitly affects an individual's employment, unreasonably interferes with an individual's work performance, or creates an intimidating, hostile, or offensive work environment.

Sexual harassment can occur in a variety of circumstances, including, but not limited to the following:

- The victim, as well as the harasser, may be a man or a woman.
- The victim does not have to be of the opposite sex.
- The victim does not have to be the person harassed but could be anyone affected by the conduct.
- Unlawful sexual harassment may occur without economic injury to the victim.

The harasser must know the conduct is unwelcome. While some behavior is clearly offensive, in most cases it is necessary for the victim to directly inform the harasser that the conduct is unwelcome and that it must stop.

A determination of whether alleged conduct constitutes sexual harassment and the legality of a particular action will be made from the facts, on a case-by-case basis. For more information on sexual harassment or any other form of harassment or discrimination consult the Equal Employment Opportunity Commission (EEOC) Website at *www.eeoc.gov*.

NOAA also encourages all employees, including Observers, to visit the NOAA Sexual Assault/Sexual Harassment (SASH) Helpline. The NOAA SASH Helpline provides crisis intervention, referrals, and emotional support to NOAA employees, contractors, and affiliates who are victims and/or survivors of sexual harassment or sexual assault. The helpline is operated by the Rape, Abuse & Incest National Network (RAINN), the nation's largest anti-sexual violence organization. More information about RAINN is available at: http://www.rainn.org.

Through the NOAA SASH Helpline, RAINN support specialists provide live, confidential, one-on-one support regardless of the place or time of the occurrence. This support is available to all NOAA employees, contractors, and affiliates even if the incident occurs outside of the workplace or is unrelated to work. All services are anonymous, secure, and available worldwide, 24/7. The NOAA SASH Helpline is accessible through a variety of channels, including:

Phone: 1-866-288-6558

Website & Online Chat: http://NOAASASHHelpline.org

Mobile App: NOAA SASH Helpline (available via iOS and Android App Stores)

Text: (202) 335-0265

Intimidation

Intimidation is another form of harassment. The most common type involves a captain or crew member directing anger toward you verbally and/or with body language. Some people are affected very little, while others are affected immediately and for some time afterward.

In some cases, you may be able to ignore or defuse this type of behavior. If you do experience an incident that upsets you or causes you to avoid public areas of a vessel or plant, the person's behavior may have intimidated you. You have a right as an observer to work in an environment free from this kind of harassment.

Victim Impact and Support

Harassment, assault, and sexual assault disrupt the lives of employees, families, coworkers, and many others. Victims may feel shock, depression, guilt, loss of trust, fear, anger, frustration, humiliation, and embarrassment. They may experience a loss of self-esteem, motivation, and privacy. It is normal for victims of crime to minimize the traumatizing event(s) and to blame or doubt themselves.

You are not to blame! No matter what choices you make, unless you are the perpetrator, it does not give someone the right to assault you or treat you in a way that is clearly unwelcome. The person who chooses to commit an act of violence or control is solely responsible for their crime.

You are not alone! After you have reported the crime, a specially trained team will be assigned to support and help you and to answer your questions. This team may include your contractor, an advocate, a medical professional, the vessel company and captain, a legal professional, NMFS Enforcement, Observer Program staff members, and/or others.

Confidential help is also available. Numerous victim advocacy organizations throughout the West Coast provide confidential support for victims of all sorts of crime, including assault, sexual assault, and workplace harassment. They provide immediate support in a crisis, support at the hospital if an exam is necessary, law enforcement accompaniment, court and medical accompaniment, individual crisis counseling, support groups, information, and referral. You may contact NMFS OLE if you wish to locate an advocacy organization near you.

Victim Rights

During the law enforcement investigation, you will be kept informed of the status of your case at your request. Your case agent will remain your principal contact. If you have questions, be sure to contact him or her as soon as possible. A federal investigation can be complex and lengthy. Remember, your interests are important. It is normal to have questions. Your case agent is there to help.

Below is a list of rights given to victims under the Crime Control Act of 1990:

- The right to be treated with fairness and with respect for your dignity and privacy.
- The right to be reasonably protected from the accused offender.
- The right to be present at all public court proceedings related to the offense, unless the court determines that testimony by the victim would be materially affected if the victim heard other testimony at trial.
- The right to confer with the attorney for the Government in the case.
- The right to restitution.
- The right to information about the conviction, sentencing, imprisonment, and release of the offender.

What to Do if You Experience Harassment

If you experience harassment in any form, address it directly and document it completely. If you can, inform the harasser of your discomfort early on, before the situation becomes volatile. This will require you to be assertive, professional and diplomatic. However, by taking this step, you may protect yourself, as well as the next observers that will follow you. You may even prevent future trouble for the harasser, skipper and/or vessel owner.

Tip: Report all cases of harassment to the Observer Program or NMFS OLE as soon as possible. The agency is unable to help you with problems they are unaware of.

Take some time to think about how you will respond. If possible, follow these steps:

1. Tell the harasser that his/her comments, actions or advances are unwanted and unwelcome and that you want them stopped. Make sure that your verbal and non-verbal messages to stop are clear. You are the judge of whether another person's actions negatively affect you.
2. Don't fight fire with fire. Keep your behavior professional and avoid being baited into arguments.
3. Document the incident(s) from the very beginning. Even if you are unsure at first whether you are experiencing harassment, record the details. They provide you with the full story if the situation escalates. In your logbook, describe the situation including your attempts to end the harassment and the response you receive.
4. If the problem continues, report it to the captain. Tell the full story, explain if your work has been affected, and request that he or she take steps to end the problem. Most captains will take steps to help you. Document the captain's actions.
5. If the harassment is sudden and severe or is not addressed by the captain, or if the problem is with the captain, report the offense to NMFS and your employer. They will work together to help you while considering your privacy. At your request, arrangements can be made for you to leave the vessel and seek help.
6. If you are concerned for your immediate safety on board, use your cell phone, radio equipment, or other forms of communication to alert your debriefer, OLE or observer provider of the problem. If other communications fail, you may use your PLB to communicate an emergency.

NOTE: If you feel that you have encountered harassment, intimidation, assault, or sampling interference, regardless of severity, we want to know about it. Please document the details in your logbook and notify staff at your earliest convenience. Help us prevent other observers from encountering it.

Partial Summary Of Federal Regulations

This summary of regulations is intended to provide observers with a working knowledge of regulations as they apply to groundfish observer duties. Full regulations are presented in title 50 of the Code of Federal Regulations (50 CFR 660), which implement the Fisheries Management Plan (FMP) for the various West Coast fisheries. *This is not a complete summary, nor is it quoted verbatim from federal law.*

The summary in this manual does not supersede, amend, or detract from federal regulations or law as printed in the Federal Register or the Code of Federal Regulations. This summary does not, nor is it intended to create any rights, substantive or procedural (enforceable at law by any party in any matter, civil or criminal) and it may not be relied on for any such purpose. This summary is for general purposes only.

The most current and complete information on these regulations, as well as current information on news releases, fishery closures, and restricted area maps, may be obtained through the West Coast Regional Offices or at http://www.westcoast.fisheries.noaa.gov. Supplementary changes to regulations are available at offices of the National Marine Fisheries Service. Substantive supplementary changes to groundfish, marine mammal, safety, and marine pollution regulations are published in the Federal Register. Copies of the various CFR's are available online, at local libraries and in State or Federal Court Buildings. They can be found online at http://www.ecfr.gov.

Regulations are organized by (in descending order) subpart, section and paragraph. Regulations for Fisheries off the West Coast States are organized into the following subparts:

Subpart	Includes sections:
General	50 CFR 660.1 - 660.3
West Coast Groundfish Fisheries	50 CFR 660.10 - 660.79
West Coast Groundfish- Limited Entry Trawl Fisheries	50 CFR 660.100 - 660.160
West Coast Groundfish- Limited Entry Fixed Gear Fisheries	50 CFR 660.210 - 660.232
West Coast Groundfish- Open Access Fisheries	50 CFR 660.310 - 660.333
West Coast Groundfish Recreational Fisheries	50 CFR 660.350 - 660.360
West Coast Salmon Fisheries	50 CFR 660.401 - 660.412
Coastal Pelagic Fisheries	50 CFR 660.501 - 660.520
Highly Migratory Fisheries	50 CFR 660.701 - 660.721

Therefore, any citations ending in tenths and hundredths (§660.2, § 660.19, etc.) cover the entire West Coast groundfish fishery (Catch Share, coops, FG and OA). Citations ending in the one hundreds (any between §660.100-660.199) are specific to West Coast groundfish limited entry trawl fisheries (which includes the Catch Share (IFQ) and coop fisheries). Citations ending in the two hundreds (§660.210-660.232) relate to limited entry fixed gear fisheries (e.g., Non-Catch Share sablefish longline). Citations ending in the three hundreds (§660.310-660.333) are for open access fisheries (e.g., nearshore trap/rod-and-reel). Within each section, regulations are organized by paragraph. For example, observer requirements in the shore based IFQ fishery can be found at paragraph §660.140(h). As some rules can be complex, paragraphs can be further organized down to six levels, for example:

§660.140(a)

§660.140(a)(1)

§660.140(a)(1)(i)

§660.140(a)(1)(i)(A)

§660.140(a)(1)(i)(A)(1)

§660.140(a)(1)(i)(A)(1)(i)

As appropriate, regulations are cited by paragraph. For example, shore based IFQ program (Catch Share) regulations are in section 660.140, but if citing a Catch Share vessel's responsibility to have on board a valid Commercial Fishing Vessel Safety Decal, the more specific citation is §660.140(h)(2)(ii)(B).

50 Code of Federal Regulations (CFR) Part 660 contains Federal Regulations for Fisheries of the Exclusive Economic Zone (EEZ) off the West Coast of the U.S. The Part is made up of several Subparts, and each Subpart is split into Sections, notated by the symbol §. Each Section is further split into the paragraphs that we most frequently reference. Each paragraph has several levels of designation as described below:

Level 1	(a),	(b),	(c),	etc.
Level 2	(1),	(2),	(3),	etc.
Level 3	(i),	(ii),	(iii),	etc.
Level 4	(A),	(B),	(C),	etc.
Level 5	(1),	(2),	(3),	etc.
Level 6	(i),	(ii),	(iii),	etc.

Observer Program regulations for the Catch Share fishery and Mothership catcher vessels

(§660.140, §660.150)

The purpose of the Groundfish Observer Program is to allow observers to collect fisheries data deemed by the NMFS Regional Administrator necessary and appropriate for management, compliance monitoring, and research of groundfish fisheries and for the conservation of marine resources or their habitat. Regulations are written to accomplish this purpose.

Regulations addressing observers deployed on shore based Catch Share and mothership catcher vessels can predominantly be found in §660.140(h) and §660.150(j). As the shore based and mothership catcher vessels are similar fleets, these observer regulations are very similar, as opposed to those for motherships and catcher processors targeting Pacific hake.

Observer Coverage Requirements

(§660.140(h)(1) and §660.150(j)(1))

Vessels must carry an observer or an electronic monitoring system on each day they fish. Shore based observers must not work more than 22 calendar days in a month (no monthly limit for mothership catcher vessels), unless a waiver is issued by the WCGOP. In case of an observer being unable to sample, vessels must be in port within 36 hours after the last haul sampled by the observer. Any boarding refusals must be reported to NMFS by an observer provider.

Vessel Responsibilities

(§660.140(h)(2) and §660.150(j)(2))

An operator and/or crew of a vessel required to carry an observer must provide:

- **Accommodations and food:** An operator of a vessel required to carry one or more observers must provide accommodations and food that are equivalent to those provided to the crew.
- **Safe conditions:** Maintain safe conditions on board including adherence to all U.S. Coast Guard and other applicable rules and have on board a valid Commercial Fishing Vessel Safety Decal.
- **Vessel position:** Allow observer(s) access to and the use of, the vessel's navigation equipment and personnel, on request, to determine the vessel's position.
- **Access:** Allow observer(s) free and unobstructed access to the vessel's bridge, trawl or working decks, holding bins, processing areas, freezer spaces, weight scales, cargo holds, and any other space that may be used to hold, process, weigh or store fish or fish products at any time.
- **Prior notification:** Notify observer(s) at least 15 minutes before fish are brought on board, or fish and/or fish products are transferred from the vessel, to allow sampling the catch or observing the transfer, unless the observer specifically requests not to be notified.
- **Records:** Allow observer(s) to inspect and copy any state or Federal logbook maintained voluntarily or as required by regulation.
- **Assistance:** Provide all reasonable assistance to observer(s) including, but not limited to: measuring decks, providing sampling/work space, collecting samples, collecting biological samples, providing time between hauls to sample and record catch, sorting retained and discarded catch into quota pound groupings, and stowing all catch before the next haul is brought aboard.
- **Sample station:** Provide observer(s) a sample station that is accessible and limits hazard to the extent possible.
- **Transfers at sea:** No transfers are allowed between catcher vessels. Transfers that take place between a mothership and a mothership catcher vessel must be during daylight hours, notify observer(s) at least 3 hours before transfer, provide safe pilot ladder, provide an experienced crew and done only with agreement of the observer(s) involved.

Observer provider responsibilities

(§660.140(h)(5) and §660.150(j)(5))

Observer provider companies are responsible to provide all logistics at the site of a processing facility and to provide all logistics to place and maintain observers aboard fishing vessels. This includes all travel arrangements, lodging and per diem, and any other services required.

Observer providers must:

- Provide qualified candidates to serve as observers. Candidates must have a Bachelor's degree in a natural science (with a minimum of 30 semester hours in applicable biological sciences), completed a minimum of five semester hours in both math and statistics and have computers skills to work competently with standard database software and computer hardware. Providers must also provide candidates with any NMFS information describing observer duties prior to their hiring.
- Have a written and signed contract with each of their observers, prior to deployment.
- Ensure that observers complete their duties in a timely manner including submitting to NMFS all their data by program deadlines, reporting for scheduled debriefing, completing all debriefing responsibilities and return all sampling and safety gear to the observer program at the

termination of their contract.

- Provide certified observers able to complete their duties to vessels.
- Respond to industry requests for observers.
- Provide observer salary, any other benefits and personal services in accordance with the terms of each observer's contract.
- **Provide observer deployment logistics ensuring:**
  - Each observer has an individually assigned cost-free cell phone,
  - Each observer's deployments are tracked,
  - Observers remain available to NOAA OLE and the observer program until the end of their debriefing,
  - Observers receive all necessary transportation to the initial location of deployment, subsequent vessel assignments and to the debriefing location when a deployment ends for any reason and
  - Observers receive lodging, per diem, and any other services necessary to observer assigned to fishing vessels. An observer under contract may be housed on a vessel to which they're assigned (not to exceed 24 hours before departure or after arrival to port following any assigned duties). At least one crew member must be aboard while an observer is housed aboard. Otherwise, each contracted observer between vessel deployments, shall be provided with accommodations as per the contract with each observer.
- Not deploy an observer on the same vessel for more than 90 calendar days in a 12 month period.
- Verify a vessel's safety decal before an observer may get underway aboard that vessel by either a provider employee (including the observer) visually inspecting the decal aboard the vessel or receiving a hard copy of the USCG documentation of the decal issuance from the vessel owner or operator.
- Maintain communication with observers on a 24 hour basis to handle emergencies or problems concerning logistics.
- **Maintain communication with the observer program office by submission of:**
  - Candidate/observer names and background information for trainings, briefings and debriefings,
  - Statements from a licensed physician that confirm each observer does not have health problems or conditions that would jeopardize that individual's safety or the safety of others while deployed or prevent them from performing their duties satisfactorily,
  - Copies of certificates of insurance to verify marine liability, US longshore and harbor workers' comp, state worker's comp and general liability coverage,
  - Copies of contracts with vessels and observers, if requested,
  - Any changes in company management or contact information,
  - Help ensure biological samples are properly stored and transported to NMFS,
  - Weekly update of observers' deployment information,
  - Copies of any informational material distributed to vessels,
  - Any information regarding potential observer harassment,
  - Any information regarding vessels violating fishery prohibitions,
  - Any concerns about vessel safety or marine casualty,
  - Any observer illness preventing an observer from completing their duties,
  - And any information, allegations or reports regarding observer conflict of interest or breach in their standards of behavior.
- Replace lost or damaged observer gear,
- Maintain data confidentiality,
- Have no conflict of interest,
- Develop, maintain and submit to NMFS a conduct and behavior policy for their observers,
- And may refuse to deploy an observer aboard a vessel if provider has determined that the requesting vessel is inadequate or unsafe pursuant to the applicable regulations.

Observer certification and responsibilities

(§660.140(h)(6) and §660.150(j)(6))

Observers must:

- Be employed by a permitted observer provider, be physically fit and have successfully completed all required training and not be decertified in another program in order to be certified by the observer program,
- Successfully perform their assigned duties, accurately record their data, write complete reports, accurately report any observations of suspected violations, not disclose data and observations made on board, successfully complete any required trainings and annual briefings to maintain their certification,
- Not have a conflict of interest,
- Meet standards of behavior including performing their

duties as described in the observer manual, reporting any time they refuse to board a vessel, accurately recording their data and not disclosing collected data and observations.

Observers may be suspended or decertified when it is alleged that the observer has not met applicable standards, including any of the following:

- Failed to satisfactorily perform duties as described or directed by the observer program
- Failed to abide by the standards of conduct for observers, including conflicts of interest
- Upon conviction of a crime
- Upon entry of a civil judgment.

Observer Program regulations for the Limited Entry Fixed Gear and Open Access fisheries

(§660.216, §660.316)

The purpose of the Groundfish Observer Program is to allow observers to collect fisheries data deemed by the NMFS Regional Administrator necessary and appropriate for management, compliance monitoring, and research of groundfish fisheries and for the conservation of marine resources or their habitat. Regulations are written to accomplish this purpose.

Regulations addressing observers deployed on limited entry fixed gear and open access vessels (Non-Catch Share) can predominantly be found in §660.216 and §660.316. As these vessels are not in the Catch Share fishery, these observer regulations are very similar, as opposed to those for the Catch Share fishery.

Observer Requirements

(§660.216(a-d) and §660.316(a-d))

- **Coverage requirements:** When NMFS notifies the owner, operator, permit holder or manager of a catcher vessel, the vessel may not be used to fish for groundfish without carrying an observer.
- **Notice of departure:** At least 24 hours (but not more than 36 hours) before departing, a vessel must notify NMFS (or its designated agent) of the vessel's intended time of departure. In the case of a weather delay beyond 36 hours from the time the original notice is given, the vessel must provide an additional notice of departure not less than 4 hours prior to departure. In the case of a vessel intending to make back-to-back fishing trips (i.e., less than 24 hours between offloading from one trip to beginning another), if the vessel has given such notice prior to the start of the first trip, it does not need to give additional notice of the second trip.
- **Cease fishing report:** Within 24 hours of ceasing the taking and retaining of groundfish, the vessel owners, operator, or managers must notify NMFS (or its designated agent) that fishing has ceased.
- **Waiver:** NMFS may provide written notification to the vessel owner stating that a determination has been made to temporarily waive coverage requirements because of circumstances deemed beyond the vessel's control.

Vessel Responsibilities

(§660.216(e) and §660.316(e))

- **Accommodations and food:** An operator of a vessel required to carry one or more observer(s) must provide accommodations and food that are equivalent to those provided to the crew.
- **Safe conditions:** Maintain safe conditions on the vessel including adherence to all USCG and other applicable rules, regulations or statutes pertaining to the safe operation of the vessel.
- **Observer communications:** Facilitate observer communications by allowing observer(s) to use the vessel's communication equipment and personnel, on request, for the entry, transmission, and receipt of work-related messages, at no cost to the observer(s) or the U.S. or designated agent and ensuring that the vessel's communication equipment used by the observer(s) is fully functional.
- **Vessel position:** Allow observer(s) access to and the use of, the vessel's navigation equipment and personnel, on request, to determine the vessel's position.
- **Access:** Allow observer(s) free and unobstructed access to the vessel's bridge, trawl or working decks, holding bins, processing areas, freezer spaces, weight scales, cargo holds, and any other space that may be used to hold, process, weigh or store fish or fish products at any time.
- **Prior notification:** Notify observer(s) at least 15 minutes before fish are brought on board, or fish and/or fish products are transferred from the vessel, to allow sampling the catch or observing the transfer, unless the observer specifically requests not to be notified.
- **Records:** Allow observer(s) to inspect and copy any state or Federal logbook maintained voluntarily or as required by regulation.
- **Assistance:** Provide all other reasonable assistance to enable observer(s) to carry out their duties, including, but not limited to measuring decks, codends, holding bins, providing the observer with a safe work area, collecting bycatch when requested by the observer, collecting and carrying baskets of fish when requested

by the observer, allowing the observer to collect biological data and samples and providing adequate space for storage of biological samples.

- **Sample station:** The vessel owner must provide an observer sampling station that must be available to the observer at all times and located within 4 meters of the location from which the observer samples unsorted catch. Unobstructed passage must be provided between the observer sampling station and the location where the observer collects sample catch.

Observer Provider Responsibilities

Observer provider companies are responsible for providing all logistics at the site of a processing facility and to provide all logistics required to place and maintain observers aboard fishing vessels. This includes all travel arrangements, lodging and per diem, and any other services required. These responsibilities are part of the contractual agreement between the observer provider and each observer.

Partial Summary of State Regulations

In addition to the federal fisheries such as limited entry fixed gear and open access groundfish, the observer program also covers fisheries that are under each state's jurisdiction such as nearshore groundfish and pink shrimp trawl. While federal regulations such as coast-wide groundfish limits or marine mammal restrictions have to be followed, each state implements regulations for these fisheries and not the federal government. Therefore, Washington, Oregon and California implemented state regulations requiring state fishery license holders to carry a state or federal observer when requested.

Washington

Washington state regulations pertaining to observers can be found in the Washington Administrative Code (WAC) accessible online at http://app.leg.wa.gov/wac/default.aspx?cite=220.

Rule WAC 220-52-050 section 14 states that owners and/or operators of commercial shrimp trawl fishing vessels are required to participate in the National Marine Fishery Service West Coast Groundfish Observer Program, to carry and accommodate a Federal fishery observer when asked, and to comply with all Federal rules and regulations pertaining to the observer program (50 CFR 660.314 and 50 CFR 600.746).

Oregon

Oregon state regulations covering observers can be found in Oregon's Administrative Rules (OARs) accessible online: http://arcweb.sos.state.or.us/pages/rules/access/index.html.

Rule 635-006-140 (7) states that as a license condition, owners or operators of commercial fishing vessels must cooperate with Department [Oregon Department of Fish and Wildlife] or Federal fishery observers, when asked to carry and accommodate an observer on fishing trips.

The rule further states if observer coverage is denied for a trip, the vessel owner or operator must provide a written explanation to the Department.

The Department may request that the Commission revoke fishing permits or licenses for failure to cooperate in the observer program.

The vessel operator or owner is not required to provide an observer with meals on observed fishing trips, but the vessel operator shall accommodate the observer with regard to reasonable eating and working conditions and access to pertinent fishing information and fishery data while aboard the vessel. Failure to provide these conditions or access to information or data to observers, or actions taken by a vessel owner or operator against an observer may lead to revocation of the vessel's fishing permits or licenses.

The state rule explicitly prohibits any person to:

- forcibly assault, resist, oppose, impede, intimidate, sexually harass, bribe, or interfere with an observer;
- interfere with or bias the sampling procedures employed by an observer, including physical, mechanical, or other sorting or discarding of any catch before sampling;
- tamper with, destroy or discard an observer's collected samples, equipment, or personal gear, without the express consent of the observer;
- prohibit or bar by command, impediment, threat, coercion, or refusal of reasonable assistance, an observer collecting samples, making observations, or otherwise performing the observer's duties;
- harass an observer by conduct that has sexual connotations, has the purpose or effect of interfering with the observer's work performance, or otherwise creates an intimidating, hostile or offensive environment; or
- require, pressure, coerce, or threaten an observer to perform duties normally performed by crew members.

California

California state regulations covering observers can be found in California's Code of Regulations (CCRs) available online: http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome

Regulation Title 14, section 105.5 states that as a license condition, owners or operators of commercial fishing vessels will cooperate with Department [California Department of Fish and Wildlife] or Federal fishery observers when asked to carry and accommodate an observer on fishing trips.

The regulation further states that if observer coverage is denied, the Department may require a written explanation. The Department may request revocation of fishing permits or licenses to the Commission for denials that it deems to be uncooperative in nature.

The vessel operator or owner is not required to provide an observer with meals or a subsistence allowance on observed fishing trips, but shall accommodate the observer with regard to reasonable eating and working conditions and access to pertinent fishing information and fishery data while aboard the vessel. Failure to provide reasonable conditions or access to information or data to observers, or actions taken by a vessel owner or operator against an observer may lead to revocation of the vessel's fishing permits or licenses.

The state rule explicitly states that to ensure that observer objectives may be reasonably and safely achieved, it is unlawful for any person to do any of the following:

- forcibly assault, resist, oppose, impede, intimidate, sexually harass, bribe, or interfere with an observer;
- interfere with or bias the sampling procedure employed by an observer, including physical, mechanical, or other sorting or discarding of any catch before sampling;
- tamper with, destroy or discard an observer's collected samples, equipment, or personal gear, without the express consent of the observer;
- prohibit or bar by command, impediment, threat, coercion, or refusal of reasonable assistance, an observer collecting samples, making observations, or otherwise performing the observer's duties;
- harass an observer by conduct that has sexual connotations, has the purpose or effect of interfering with the observer's work performance, or otherwise creates an intimidating, hostile or offensive environment; or
- require, pressure, coerce, or threaten an observer to perform duties normally performed by crew members.

Regulations Concerning Shark Finning

(50 CFR §600.1203)

The Magnuson Act prohibits the removal of shark fin(s) and the discard of the carcass at sea. It is unlawful for any person to 'engage in shark finning'. Shark finning is defined as "taking a shark, removing a fin or fins, and returning the remainder of the shark to the sea".

Note: Fins may not be consumed at sea if the remainder of the shark is discarded.

Regulations Concerning Taking of Marine Mammals

(50 CFR §216 and §229)

Definitions

§216.3

Marine mammals means those specimens of the following orders, which are morphologically adapted to the marine environment, and whether alive or dead, and any parts thereof, including but not limited to, any raw dressed or dyed fur or skin: Cetacea (whales and porpoises), and Pinnipedia (seals and sea lions), other than walrus.

Take means to harass, hunt, capture, collect, or kill; and/ or attempt to harass, hunt, capture, collect, or kill, any marine mammal. This includes, without limitation, any of the following:

- The collection of dead animals, or parts thereof;
- the restraint or detention of a marine mammal, no matter how temporary;
- tagging a marine mammal; or
- the negligent or intentional operation of aircraft or vessel, feeding or attempting to feed a marine mammal in the wild, or the doing of other negligent or intentional acts which result in the disturbing or molesting of a marine mammal.

Feeding is defined as "offering, giving, or attempting to give food or nonfood items to marine mammals in the wild. It includes operating a vessel or providing other platforms from which feeding is conducted or supported. It does *not* include the routine discard of bycatch during fishing operations or the routine discharge of waste or fish by-products from fish processing plants or other platforms if the discharge is otherwise legal and is incidental to operation of the activity."

Tip: It is unlawful and harmful to intentionally feed or attempt to feed any marine mammal.

Prohibited Uses, Possession, Transportation, and Sales

§216.13

It is unlawful for:

- Any person to use any port, harbor or other place under the jurisdiction of the United States for any purpose in any way connected with the prohibited taking or unlawful importation of any marine mammal or marine mammal product; or
- Any person subject to the jurisdiction of the United States to possess any marine mammal taken in violation of the Marine Mammal Protection Act or these regulations, or to transport, sell, or offer for sale any such marine mammal product made from any such marine mammal.

Collection of Certain Marine Mammal Parts

§216.26

- Bones, teeth or ivory (hard parts) of marine mammals may be collected from a beach or from land within 1/4 of a mile of the ocean.

Note: The Endangered Species Act contains additional restrictions prohibiting the collection of endangered species parts).

- Unless authorized by exemption, no person may collect or retain any part of a marine mammal that is retrieved in the commercial fishing gear.

Note: Observers are not authorized to collect whale vertebrae from fishing gear).

- No person may purchase, sell, or trade for commercial purpose any marine mammal part collected or imported in violation.

Marine Mammal Fishery Interaction Regulations

§229

Except as noted below, it is unlawful to take any marine mammal incidental to commercial fishing operations.

In addition, it is unlawful to (1) take any California sea otter; or (2) intentionally lethally take any Steller sea lion, any Alaskan sea otter, any cetacean, any depleted species (including the Pribilof Island population of Northern fur seal), or any endangered or threatened marine mammal. If the use of firearms or other means to deter marine mammals results in an injury or mortality of a marine mammal, the taking is presumed to be intentional lethal taking.

Marine mammals killed during fishing operations which are readily accessible to crew members must be brought aboard the vessel for biological processing, if feasible and if requested by the observer. Marine mammals designated as biological specimens by the observer must be retained in cold storage aboard the vessel, if feasible, until retrieved by authorized NMFS personnel.

Any marine mammal incidentally taken must be immediately returned to the sea with a minimum of further injury and may only be retained if authorized by an observer, by condition of the Exemption Certificate, or by a scientific research permit in possession of the operator.

Reporting Requirements:

Vessel owners or operators engaged in any commercial fishery must report all incidental mortality and injury of marine mammals in the course of commercial fishing operations to the Assistant Administrator, or appropriate Regional Office, by mail or other means, such as fax or overnight mail specified by the Assistant Administrator. Reports must be sent within 48 hours after the end of each fishing trip during which the incidental mortality or injury occurred, or, for non vessel fisheries, within 48 hours of an occurrence of an incidental mortality or injury. *An observer's report to NMFS does not replace this notification requirement!*

Observer Procedures During Law Enforcement Boardings

The U.S. Coast Guard, OLE and State Enforcement officers make periodic boardings of fishing vessels to check for fisheries and safety violations. If enforcement personnel board your vessel, introduce yourself. After that, remain in the background and let the boarding party know where you can be found. Do not join in any discussions between boarding party members and vessel personnel. The Coast Guard, NMFS agent or state officer have certain objectives to accomplish in every boarding. If your assistance is needed, they will ask for it.

If the boarding party has questions or requests your assistance, be cooperative. Most officers are not biologists, and you may be of aid in identifying species of fish and invertebrates in bins, processing areas or holds.

Make sure your logbook and paperwork are in order in case the boarding party wishes to inspect them. *Do not give away your original forms or your logbook!* Make copies as needed. If your vessel has no copy machine ask if copies can be made on board the Coast Guard or state enforcement vessel. If this is not a possibility, the enforcement personnel may make handwritten copies, or you may refer them to the Observer Program Office for copies of in-season data.

If you have information on suspected or actual violations or other problems, you may or may not wish to relay them to the

boarding party. Use your judgment to decide if a potential violation would best be reported to the boarding party or saved for debriefing. If a vessel is issued a ticket immediately based on your report, you may be in an awkward position after the enforcement vessel leaves. Enforcement personnel are aware that observers may or may not choose to advise them of witnessed violations dependent upon the situation.

If you have no information for the boarding party, but someone in the boarding party wishes to question you, find a private location for your conversation. On occasion, an uninformed boarding party member may ask you questions in front of vessel personnel. Should this happen, defer the questions until you can speak in private. If that doesn't work, ask if they will accept a written statement from you. If you are questioned in private, answer all questions completely and honestly.

Your role in an enforcement boarding is as a source of objective information for the boarding party. The boarding party will conduct their own inspections and investigations, and they may or may not require your assistance. You should cooperate fully, and not hamper the investigation.

Coast Guard Role in Homeland Security

The U.S. Coast Guard was given additional duties after the September 11, 2001 terrorist attacks. They are now required to obtain information on all vessels that could transport foreign nationals into the country. Prior to entering a port, each vessel must submit the full name, date of birth, nationality, passport number or mariner's documentation number and position or duty on the vessel, as applicable, of each crew and passenger. Observers have reported being asked for their social security numbers rather than passport numbers. The Observer Program has an agreement with the USCG that any picture ID, such as a driver's license, will suffice and that social security numbers are not needed. Bag searches may also occur, and if there are any problems please contact NMFS and your observer provider.

Observer Health and Safety

(§600.746)

An observer is not required to board, or stay aboard, a vessel that is unsafe or inadequate as described in this section.

A vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions if it does not comply with the applicable regulations regarding observer accommodations or if it has not passed a USCG safety examination or inspection.

A vessel that has passed a USCG safety examination or inspection must display one of the following:

- A current Commercial Fishing Vessel Safety Examination decal, issued within the last 2 years
- A certificate of compliance issued pursuant to 46 CFR 28.710; or
- A valid certificate of inspection pursuant to 46 U.S.C. 3311.
- Upon request by an observer, a NMFS employee, or a designated observer provider, a vessel owner/operator must provide correct information concerning any item relating to any safety or accommodation requirement prescribed by law or regulation. A vessel owner or operator must also allow an observer, a NMFS employee, or a designated observer provider to visually examine any such item. Do not physically manipulate an item, unless necessary and with the guidance of the vessel operator or designee. EPIRBs have been activated and lost as a result of observers' physical examination and improper placement back into its holding bracket.

Pre-Trip Safety Check

Before each observed trip, the observer is encouraged to briefly walk through the vessel's major spaces to ensure that no obviously hazardous conditions exist. Also, the observer is encouraged to regularly spot check the following major items for compliance with applicable USCG regulations: Personal flotation devices/immersion suits, ring buoys, distress signals, fire extinguishing equipment, emergency position indicating radio beacon (EPIRB), survival craft.

This pre-trip safety check is in addition to completing the Vessel Safety Checklist in the observer logbook. More information on vessel safety regulations and a detailed safety checklist can be found in Chapter 10, "Health and Safety Information."

Corrective Measures

If a vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions, NMFS may require the vessel owner or operator either to:

- Submit to and pass a USCG safety examination or inspection; or
- Correct the deficiency that is rendering the vessel inadequate or unsafe before the vessel is boarded by the observer.

The requirements of this section apply both at the time of the observer's boarding, at all times the observer is aboard, and at the time the observer is disembarking from the vessel.

A vessel that would otherwise be required to carry an observer, but is inadequate or unsafe for purposes of carrying an observer and for allowing operation of normal observer functions, is prohibited from fishing without observer coverage.

Marine Pollution (MARPOL) Regulations

The International Convention for the Prevention of Pollution From Ships (MARPOL) and five annexes are international agreements that were designed to halt at-sea disposal of wastes. MARPOL Annex V prohibits explicitly the at-sea disposal of all plastics. It also eliminates the discharge of other types of vessel generated garbage to specific distances from land. The at-sea disposal restrictions apply to commercial and publicly owned vessels of all sizes and classes.

Vessels complying with MARPOL Annex V have three options for dealing with wastes. 1) non-plastics can be disposed of at sea within the legal restrictions, 2) they can incinerate wastes onboard the vessel, or 3) they can hold the wastes for shoreside disposal at port.

Plastic debris has been a concern of the NMFS since the early 1980's. Studies conducted in the North Pacific have linked debris generated by commercial ground fishing vessels with detrimental impacts to fish, seabirds, and marine mammals. Fur seals and Steller sea lions have been shown to be vulnerable to entanglement in netting, rope, and packing strap discards. Entanglement in debris is thought to contribute to mortality of individuals through starvation, suffocation, infection in resulting wounds, exhaustion, bleeding, drowning, and possibly increased predation. Studies conducted by the NMFS National Marine Mammal Laboratory indicate entanglement may be contributing to the decline in northern fur seal population. In addition to entanglement in netting and plastic wastes, other species are also affected by ingestion. Stomach analysis of some seabirds and fish have found indigestible plastics.

Vessel Operator Obligations

Regulations require U.S. recreational and other vessel operators, if their vessel is 26 feet or more in length, to affix one or more placards to their vessel. These placards warn against the discharge of plastic and other forms of garbage within the navigable waters of the United States, and specify discharge restrictions beyond three miles from shore. The placard must also note that State and local regulations may further restrict the disposal of garbage.

Placards

Operators shall ensure that one or more placards are displayed in prominent locations and in sufficient numbers so that they can be observed and read by the crew and passengers.

Each placard must be at least nine inches wide and four inches high, made of durable material, and lettered with letters at least 1/8 inch high.

Waste Management Plans

The regulations require U.S. recreational and other U.S. vessel operators, if their vessel is 40 feet or more in length and engaged in commerce or equipped with a galley and berthing, to carry a Waste Management Plan if the vessel operates, or is certified to operate, beyond three nautical miles from shore.

The Waste Management Plan must be in writing and describe procedures for collecting, processing, storing, and properly disposing of garbage in a way that will not violate regulatory requirements. It must also designate the person who is in charge of carrying out the plan.

Marina Obligations

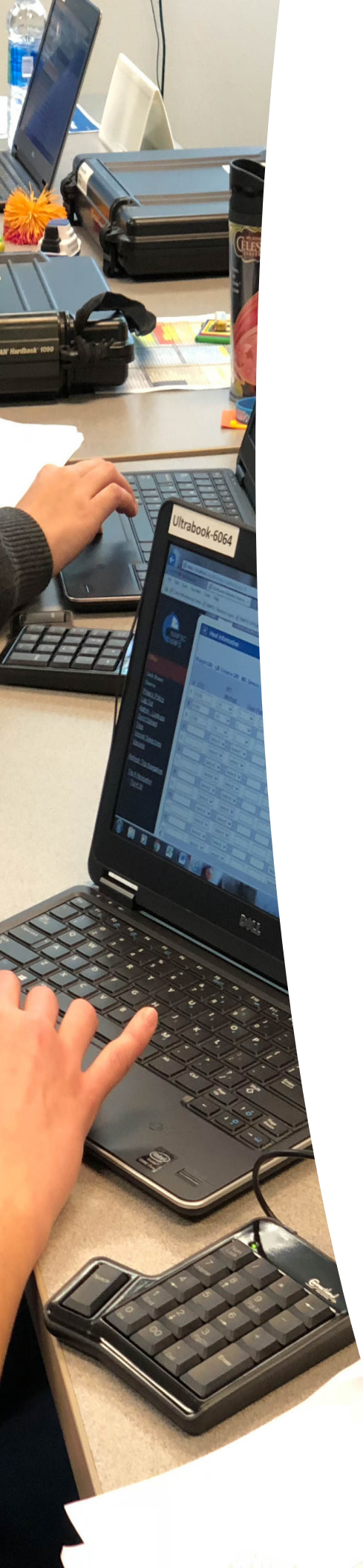
Ports and terminals that conduct business with a commercial vessel must be capable of receiving garbage from the vessel when it docks. Recreational boating facilities, capable of providing wharfage or other services for ten or more recreational vessels, must also provide adequate garbage reception facilities for any vessel that routinely calls. If a marina or terminal does not want to be directly involved in garbage collection and disposal, local firms may be retained to provide the service at the marina or terminal. Vessels must be conducting business with the facility or marina to qualify for the service. Terminals and marinas would not be expected to provide reception services to a vessel whose sole reason for docking was to offload its garbage. The marina or terminal can charge vessel operators reasonable fees for providing the reception service.

Reporting Violations

Vessels denied the ability to offload their garbage wastes at marinas or other terminals should contact the closest U.S. Coast Guard Captain of the Port or Marine Safety Office. Any U.S. citizen may report observations of dumping in violation of Annex V at these same offices.

Observer Responsibilities

Observers are responsible for the documentation of what was discharged into the ocean, how it occurred (accident, purposeful, mishap, etc.) quantity discharged, where (distance offshore or geographical position, as best as can be determined), who discarded it, and when (date and time). If they are aware of why it was discarded, that can be included as well. If they know they are within or passing through a special area, such as a marine sanctuary, they should also include that information. MARPOL violations should be documented in the Observer Safety Survey section of the Observer Logbook. This includes any items brought up in fishing gear and then thrown overboard (e.g., crab pots, tires).



Database

TABLE OF CONTENTS

Introduction . . . 14-3

OPTECS Sync/Upload . . . 14-3
- Programs and Roles . . . 14-3

System Requirements and Access . . . 14-4
- System Requirements . . . 14-4
- Logging On . . . 14-4
- Changing Role . . . 14-5
- Timing Out . . . 14-5

Navigation . . . 14-6
- Trip Navigation Tree . . . 14-6
- View and Back Links . . . 14-6
- Header Information . . . 14-6

Data Entry . . . 14-6
- Basic Data Entry . . . 14-6
- Entering Dates . . . 14-7
- Entering Notes . . . 14-7
- Error Checks . . . 14-7
- Keypunch Checks . . . 14-7

Trip Module . . . 14-8
- Web Page Hierarchy . . . 14-8
- Trip Search . . . 14-8
- Trip . . . 14-9
- Source . . . 14-9
- Hauls . . . 14-10
- Haul Locations . . . 14-10
- Species Interactions . . . 14-11
- Species Interaction Details . . . 14-11
- Trawl Bycatch Reduction Device (BRD) . . . 14-12
- Trawl Bycatch Reduction Device (BRD) Details . . . 14-12
- Hook and Line Fleet Characterization (HLFC) . . . 14-12
- Hook and Line Fleet Characterization (HLFC) Details . . . 14-12
- Catches: Trawl Sampling . . . 14-12
- Catches: Fixed Gear Sampling . . . 14-13
- Species Composition . . . 14-13
- Biological Specimens . . . 14-14
- Lengths . . . 14-14
- Specimens . . . 14-15
- Dissections . . . 14-15

Trip Error Report . . . 14-15
- Requirements . . . 14-15
- Running the Trip Error Report . . . 14-15
- Saving the Trip Error Report . . . 14-16

Trip Scans . . . 14-16
- Trips Scan Procedure . . . 14-16

Observer Module . . . 14-17
- Web Page Hierarchy . . . 14-17
- Observer Search . . . 14-17
- Observer . . . 14-17
- Emergency Contacts . . . 14-18
- Activity . . . 14-18

Chapter 14

Database

Guidelines for Entering Activity Information: 14-19
Communication Log 14-20
Observer Contact List 14-20

Evaluation Module 14-21
Web Page Hierarchy 14-21
Evaluation Search 14-21
Evaluation 14-21
Evaluation Notes 14-22

Observed Vessels 14-22
Vessels 14-22
Sampling Summary 14-22
Species ID Forms 14-23

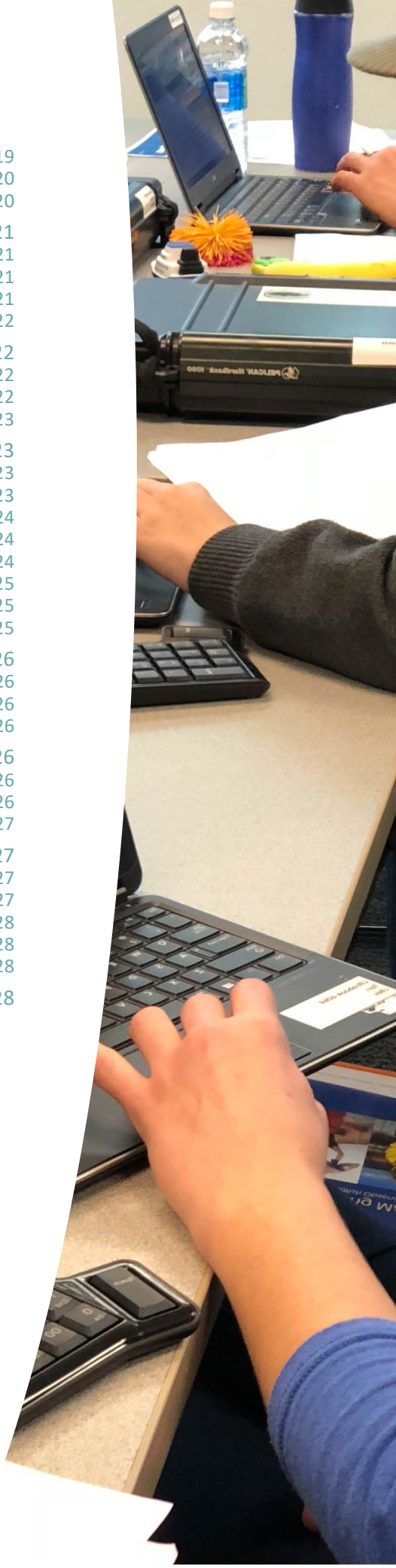
Vessel Module 14-23
Web Page Hierarchy 14-23
Vessel Search 14-23
Vessel 14-24
Vessel Photos 14-24
Communication Log 14-24
Sampling Summary 14-25
Vessel Contacts 14-25
Vessel Contact Report 14-25

Vessel Selection Module 14-26
Web Page Hierarchy 14-26
Vessel Selection Search 14-26
Selection History 14-26

Waiver Module 14-26
Web Page Hierarchy 14-26
Waiver Search 14-26
Waiver 14-27

Admin – Lookups Module 14-27
Web Page Hierarchy 14-27
Catch Categories 14-27
Species 14-28
Ports 14-28
Lookups 14-28

Common Problems and Solutions 14-28



Chapter 14

Introduction

While OPTECS is the primary data entry portal for the WCGOP, the web-based WCGOP Observer Database Application (ObsProd) is used for various tasks, such as entering certain types of data (e.g., MMSBT, BRD), storing Trip Scans, entering NCS observer activity, and reviewing observer evaluations. While some limited data corrections can be performed in ObsProd, this should be coordinated with your debriefer, to ensure that edits made in ObsProd do not create new data issues, since the calculation functionality in OPTECS does not exist in ObsProd.

Navigation through the application is facilitated by a combination of a trip navigation tree and by tab panes used to display the data. Access and editing privileges within the tab panes are controlled by a set of user roles. When observers access the system, they see only the data they have collected while NMFS staff members, such as field coordinators and debriefers can see the full data set.

The ObsProd system contains several modules. The primary module is the Trip module, which contains the catch data collected at sea. Also present are an Admin – Lookups module, used by the system administrator to maintain species, ports, catch categories and other lookup information; an Evaluation module, used to track observer performance; an Observer Gear module, used to track sampling and safety gear; an Observer module, used to track observer contact and activity information; a Vessel module, which tracks vessel identification and contact information; and a Waiver module, which tracks trips that have been waived for coverage.

The following is a list of the web pages that are part of the WCGOP Observer Database System.

OPTECS Sync/Upload

Data entered in the OPTECS software must be uploaded to ObsProd. On your tablet, to finalize the trip you must go through the End Trip function. If you don't have the fish tickets they can be entered online later or you can wait. If you do have the fish ticket(s) be sure to click Add Fish Ticket after entering the fish ticket information.

Complete the page and click Finalize and Validate in the bottom left corner once you have connected to the internet. This will take you to error checking to run a Trip Error Report one last time and mark a trip as ready to sync. Once it has been clicked you can sync from the home page, as well. After syncing, return to the home page and perform a final back up. Open IE, logon to ObsProd, navigate to your new trip and go to the Trip Scans tab. Upload the backup database file (OptecsEncryptedBackup_YYYMMDD) and the optec_logs.zip file you just created. Scan and upload any paperwork that could not be entered in OPTECS.

List of Web Pages

Admin - Lookups Module
Catch Categories
Species
Ports
Lookups
Selection Cycle

Evaluation Module
Evaluation Trips
Evaluation Notes
Observed Vessels
Vessel Sampling Summary
Species Id Forms

Observer Gear
Gear Check In/Out List

Observer Module
Observer Contact Report
Personal Contact Information
Emergency Contact Information
*Activity Log
*Communication Log

Sync/Upload Module
*Non-Catch Share Only

Trip Module
Trip Information
Species Interactions
BRD & HLFC Tabs
Haul Locations
Hauls
Catches
Species Compositions
Length Frequencies
Biological Specimens
Dissections
Trip Error Report

Vessel Module
Vessel Contact Search
Vessel Contact Report
Vessel Information
Vessel Photos
Communication Log
Vessel Sampling Summary

***Waiver Module**
Waiver Information

***Vessel Selection Module**

Programs and Roles

The application uses the combination of a program and role to control data access and editing privileges. Programs are used as a high-level means of grouping trips by major fisheries. The two main programs that the WCGOP groups trips under are Limited Entry for vessels that have federal limited entry groundfish permits, and Open Access for vessels that do not have federal groundfish permits.

Roles are used to control who can see what data. Observers are given a role of Observer, which allows them to access and edit trip data that they have personally collected. Debriefers have a role of Debriefer, which allows them to access and edit data for the entire fishery.

System users who have the role of Observer have access privileges to data as follows:

1. Admin - Lookups Module
   - Observers can access all port, species, catch category and lookup information.
   - Observers can only view the information.
2. Evaluation Module
   - Observers can access only their own information.
   - Observers can only view the information.
3. Observer Gear Module
   - Observers can access only their own information.
   - Observers can only view the information.

4. Observer Module
   - Observers can access only their own information.
   - Observers can view, add, edit and delete their own information.
   - Observers can also view a contact list for all active observers.
5. Sync/Upload Module
6. Trip Module
   - Observers can access only their own data.
   - Observers can view, add, edit and delete their own data.
7. Vessel Module
   - Observers can access vessel information for the entire fleet.
   - Observers can only view the information.
8. Waiver Module
   - Observers can access waiver information for the entire fleet.
   - Observers can only view the information.
9. Vessel Selection Module
   - Allows observers to access vessel selection information in the Non-Catch Share fisheries.
   - Observers can only view the information.

System Requirements and Access

Below are the items needed to access and run the WCGOP Observer Database Application.

System Requirements

Specific computer and web browser requirements must be met to use the database system.

1. Web browser requirements
   - Internet Explorer version 6.0 or above is required.
   - The 'Compatibility View' must be enabled in Internet Explorer to use the application.
   - The application will not work with Edge, Chrome or Mozilla Firefox.
2. Computer requirements
   - At minimum, a PC running Microsoft Windows 7 is required.
   - A Macintosh or Linux based computer will not work to run the application.
3. Network and server availability
   - The network and database server at the NWFSC must be up and running to access the system online or to upload data from OPTECS
   - Occasionally there will be a network or server outage due to planned maintenance or to a hardware/software failure.
   - Monitor your email for notifications about network and server outages.

Logging On

Accessing the observer database application online requires an active Internet session, a user account, and password. You can always identify the system by the description in the upper left corner of the screen.

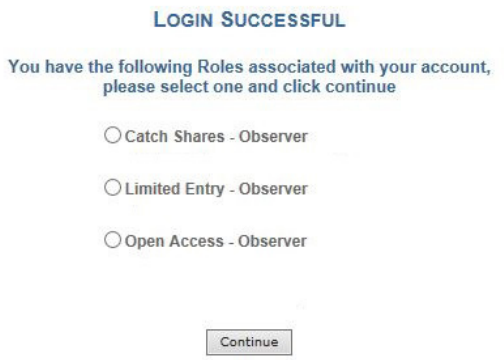
Log into the database application using the following procedure:

1. Connect to the internet.
2. Start Internet Explorer.
3. Go to the WCGOP database website.
   - **https:**//nwcoa3.nwfsc.noaa.gov/obsprod/logon.display
4. Logon to the website
   - User Name
     - Your first name plus your last name without a space (e.g., JohnObserver)
     - Your user name is not case sensitive.
   - Password
     - Passwords are case sensitive and must be changed every 90 days. You will be prompted to do so.
     - Passwords must also meet the guidelines in the following section.



5. Click the Logon button or press the Enter key.

6. Select a Program/Role combination.
   - To enter Limited Entry data choose "Limited Entry – Observer."



7. Click the Continue button.

Password syncing:

The password for the online database application and OPTECS should always be the same. They will synchronize automatically, but only in one direction (ObsProd to OPTECS). For additional details, refer to the OPTECS User Manual.

If you have trouble changing your password, contact your debriefer or Jim Fellows at James.Fellows@NOAA.gov

Password Policy

1. **Passwords must be created consistent with the following criteria:**
   - Passwords must have at least eight (8) non-blank characters.
   - **It must contain characters from at least three of the following four categories:**
     - English upper case characters (A...Z) (required for all passwords);
     - English lower case characters (a...z);
     - Base 10 digits (0...9); and
     - Non-alphanumeric (For example, !,$#%).
   - Six of the characters must not occur more than once in the password (e.g., 'AAAAAAA1' is not acceptable, but 'A%rmp2g3' and 'A%ArmA2g3' are acceptable).
2. **Passwords must not include any of following:** vendor/manufacturer default passwords: names (e.g., system user names, part or your entire account name, family names), words found in dictionaries (i.e., words from any dictionary, spelled forward or backward), addresses, profanity or birthdays, or common character sequences (e.g., 3456, ghijk, 2468).
3. Passwords must be changed every 90 days.
4. **Do not reuse a password you have used:**
   - any of the last 8 times you have changed your password
   - more recently than 2 years from when you last used the password.
5. Internet browsers must not be enabled to save passwords for re-use.

Changing Role

If you have logged into the database under one program/role and wish to switch to a new program/role without logging out of the database do the following:

1. Click the Change Role link in the left navigation bar.
2. The Logon Successful page will appear.
3. Select a new program/role to use.
4. Click the Continue button.

Timing Out

The application times out after 15 minutes of idle time. If you suspect the application has timed out:

1. Click a tab, link or the Update button.
   - The application has timed out if the message "Current Session Timed Out" appears.
2. Use the displayed logon screen to log back into the application.

IMPORTANT: If you enter data into a screen that has timed out, your data will NOT be saved to the database.

Navigation

The application uses a combination of methods to provide access to data. Module access is provided by a set of links listed in the upper left-hand panel. Within a module, sets of data are displayed using tab panes. View and Back links within the tab panes provide access to lower and upper levels of data.



Within the Trip module, there is also a Trip Navigation Tree that displays in the left-hand panel and allows users to directly access a specific haul or catch within the displayed trip. The tree is a useful tool for quickly accessing data that needs to be edited.

Trip Navigation Tree



The Trip Navigation Tree can be used to navigate to a specific Haul or Catch.

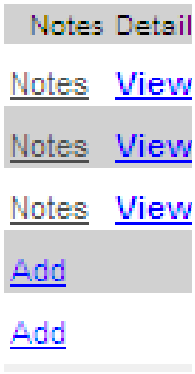
1. The Trip Navigation Tree is located in the left panel of the screen.
2. **Catches are displayed in the following format:** 1 ZMIS D – SC, BS
   - **1:** Catch number
   - **ZMIS:** Catch category
   - **D:** Catch disposition (Retained or Discarded)
   - **SC:** Species composition sample exists for the catch
   - **BS:** Biological specimen sample exists for the catch
3. New Haul and Catch nodes are NOT automatically added to the Trip Navigation Tree.
   - To update the trip navigation tree, click on Refresh Trip Navigation.



View and Back Links

View and Back links can be used to move forward and back in the application.

1. The links appear as gray, underlined text on most pages.
2. Clicking a View link will drill you down one level.
3. Clicking a Back link will pop you up one level.



4. View links are displayed as data are entered at each level of the trip hierarchy.
5. Blue View links indicate that data exists at the next level down.

Header Information

In some of the application modules, header information is displayed to help orient the user. This is especially true of the Trip module where the program, observer, vessel, trip number, and trip status are displayed at all times in the header at the top of the screen. As haul and catch data is entered, the header in the Trip Module also displays the haul number, catch number, catch category, and catch disposition.

Data Entry

Most data entry for the WCGOP Observer Database Application is simply a matter of typing the data into the appropriate field or selecting from various drop-down options, then clicking the "Update" button to save. The information that follows describes basic data entry, as well as data entry for dates, notes, and, etc.

Basic Data Entry

Basic data entry consists of adding new data, editing existing data and deleting unwanted data. In all of these cases, the most important thing to remember is to click the Update button to save any changes.

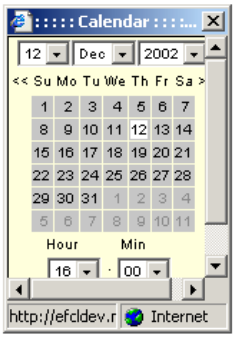
1. General
   - It will take a few seconds to display each web page.
   - Use the tab button to move from left to right through the data columns.
2. Entering New Data
   - Enter information into the empty data entry fields.
   - Click the Update button to save the data.
3. Updating Existing Data
   - Correct information as needed.
   - Click the Update button to save the changes.
4. Deleting Existing Data
   - Select the check box next to the item you want to delete.
   - Click the Update button to delete the item.
5. Data Entry Rows
   - Each page displays with an initial number of data entry rows.
   - **To get additional data entry rows do the following:**
     - Fill all existing rows with data.

- Click the Update button to save the data.
- Additional data entry rows will be displayed when the page refreshes.

6. The Update Button

- Additions, updates, and deletions are not in effect until the Update button is pressed.
- **The following will result in your changes being lost:**
  - Moving to a new page in the application before clicking Update.
  - Closing Internet Explorer before clicking Update.
  - Being "timed out" of the application before clicking Update.
  - Disconnecting from the Internet before clicking Update.
- Remember to Press UPDATE!

Entering Dates



When entering date and time information, dates may be typed by hand or a pop-up calendar is available.

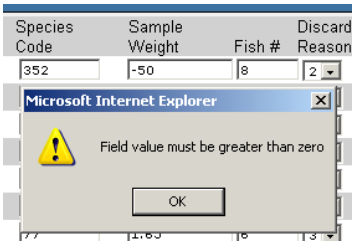
When entering dates by hand, as you type the numbers for the date, the slashes and colon will be automatically added. Dates must be formatted as MM/DD/YYYY and the 24-hour military time must be formatted as HH:MM. For example: 01/02/2004 08:30. Dates that are not formatted correctly will result in an error message being displayed.

To use the pop-up calendar, click the calendar icon that appears to the right of the date field. Use the drop-down boxes at the top of the calendar to select the day, month, and year or click on the desired date on the calendar. Use drop-down boxes at the bottom of the calendar to select the hour and minute.

Entering Notes

Many of the web pages in the application contain blue "Notes" links that appear directly to the left of a data entry line. Clicking on a "Notes" link will pop-up a small box where a note can be entered about the item. Each note may be as many as 4000 characters long. Beware, clicking the OK button will close the note data entry box but does not save the note. The note will be saved when the Update button is clicked on the web page containing the item that the note was entered for. If an item has a pre-existing note, the "Notes" link will appear as green text instead of blue text. Notes and Comments must begin with an alphanumeric character (e.g., A, c, 2), not a symbol (e.g., ",-,~).

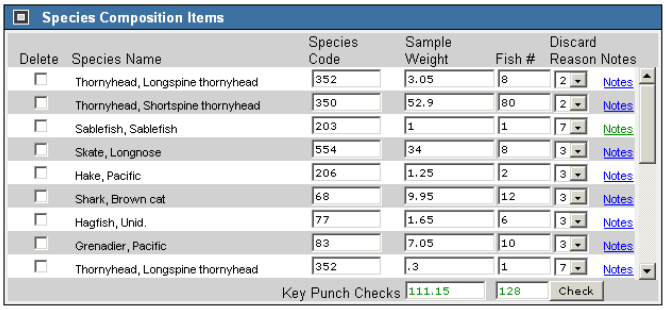
Error Checks



Each time the Update button is pressed, a set of basic error checks are run on the data being submitted to the database. If data in a particular field fails an error check, a message will display that describes the problem and the cursor will move to the data entry field that is not correct. The data must be corrected then resubmitted to the database by clicking the Update button. Above is an example of the error message that results from incorrectly entering a negative weight as part of a species composition sample.

Keypunch Checks

In the Trip Module, keypunch checks must be entered on the Hauls, Catches, Species Composition, Lengths and Specimens web pages. The keypunch data entry fields are located at the bottom of data columns that require them. Enter the keypunch information for a column then click either the Check button or the Update button to validate the keypunch values. Keypunches that are correct will appear in green text. Keypunches that are incorrect appear in bold red text. If a keypunch is incorrect, check your data entry to be sure information was entered correctly from your data form and/or check the math for your keypunch value. Keypunch checks are not required for data uploaded from OPTECS.



Trip Module

The Trip module is the most critical part of the application as it is the interface used to display and edit trip data collected at sea. Twelve separate web pages exist for this information. Data are viewed in a hierarchical fashion, starting at the trip level then gradually working downwards to the more detailed levels of species composition and biological sampling information. As data are uploaded or entered into the application, additional tab panes become available to the user.

Web Page Hierarchy

Trip Search

- Trip
  - Species Interactions
  - Haul Locations
  - Hauls
    - Catches

Species Compositions

Biological Specimens

Length Frequencies

Specimens

Dissections

Trip Search

The Trip Search page is used to search the database for existing fishing trips or to create a new trip. As an observer, you are only able to search for trips that you have entered into the database.

Buttons and Links

Search: **Searches for trips based on the criteria entered into the Trip Start Date, the Trip End Date, Trip Number, Observer Last Name, Vessel Name, Coast Guard Number, State Registration Number, and Return Port State fields. Multiple criteria can be entered to narrow the search results.**

Reset: **Refreshes the page and clears the last search.**

New Trip: **Opens a blank Trip page for adding a new trip.**

View: **Links to the Trip page for the selected trip.**

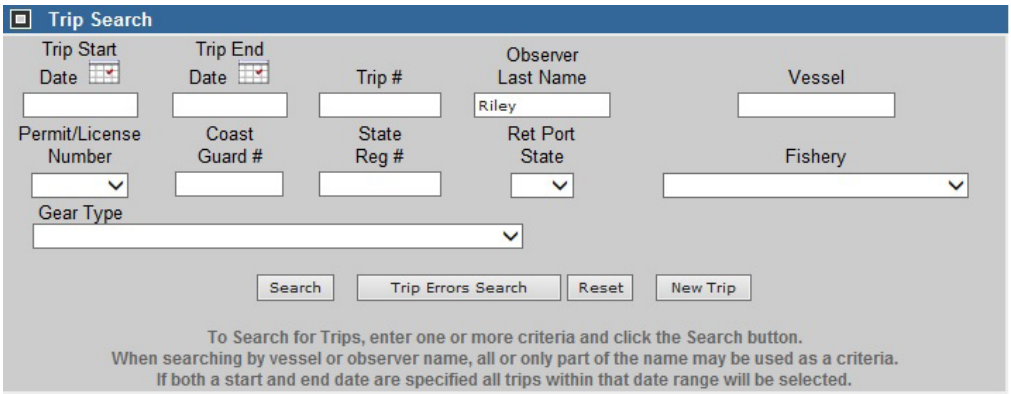
Trip Errors: **Runs the Trip Error Report for ALL of the trips displayed.**

Headers: **Selecting a column header will sort the trip list by the selected column.**

Additional Information

Trips can be searched for using only part of an Observer Last Name or Vessel Name. For example, running a search by typing the letter “a” in the Vessel Name field will return all trips for all vessels that begin with the letter “a.”

Trips that fall within a date range can be searched for by specifying both a Trip Start Date and a Trip End Date.





Trip

Source

: OPTECS

Required for All Trips: Vessel, Fishery, Skipper, Partial Trip, # of Crew, Permit or License when applicable, Vessel Logbook Name when applicable, Vessel Logbook # when applicable, Observer Logbook #, Departure Date, Return Date, Departure Port, Return Port, Fish Ticket Number, State and Ticket Date

Buttons and Link

Trip Errors: Runs the Trip Error Report.

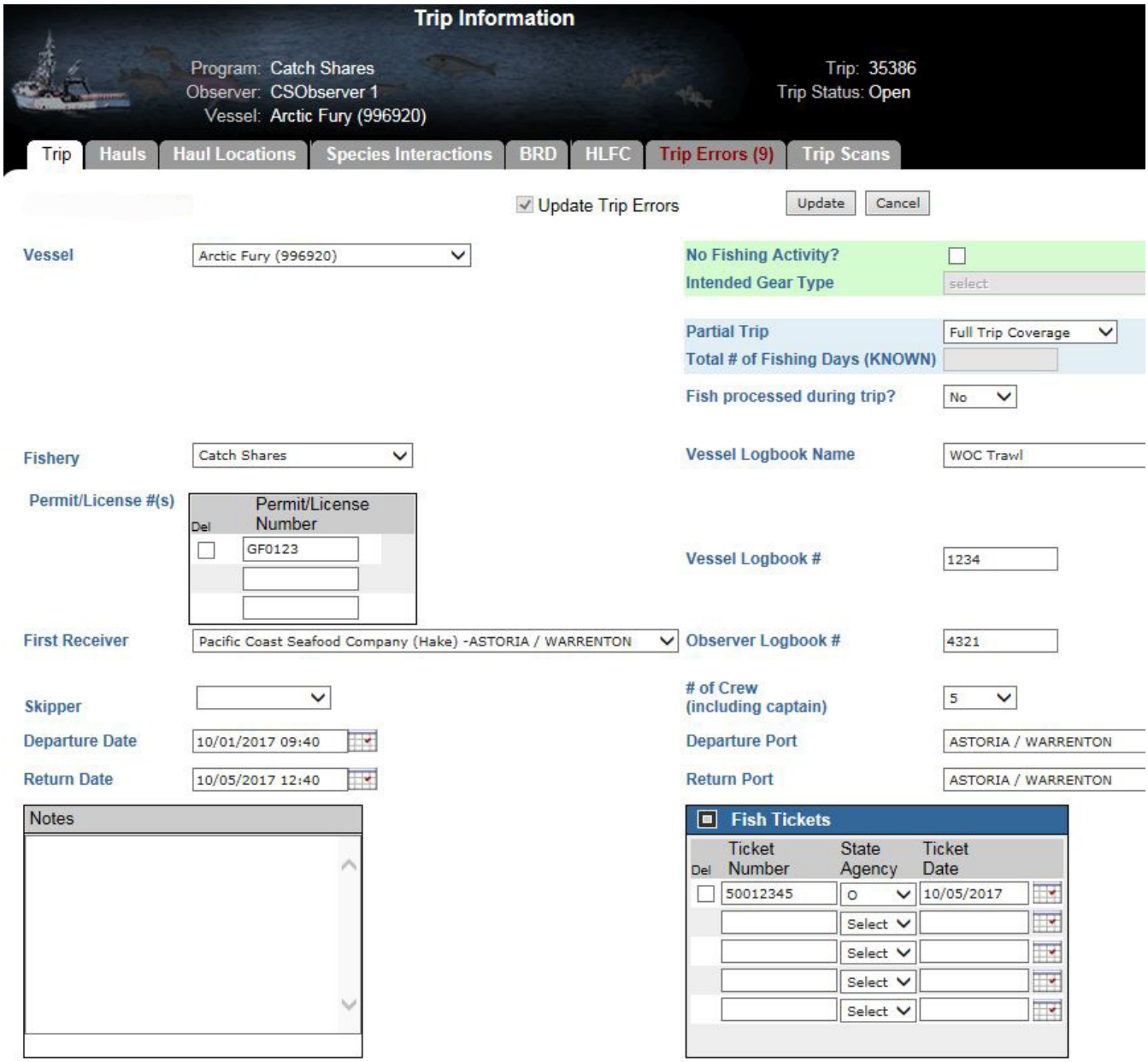
Update: Saves all changes.

Cancel: Refreshes the page without saving changes.

Additional Information:

Each new trip in the database is assigned a unique identifying number. This unique number is called the Trip Number, and the trip number is located in the upper right corner of the trip header information on the Trip web page. For data tracking purposes, Trip Number must be recorded on all paper work associated with the fishing trip.

In Open Access fishing, skippers sometimes make multiple day trips before landing their fish. If you have not observed all of the fishing days included in the landing, mark the trip as a Partial Trip (P).



Hauls

Source: OPTECS

Required for All Hauls/Sets: OTC, Weight Method, Gear Performance, Keypunch Checks

Required for Fixed Gear Sets: Total Hooks or Pots

Buttons and Links

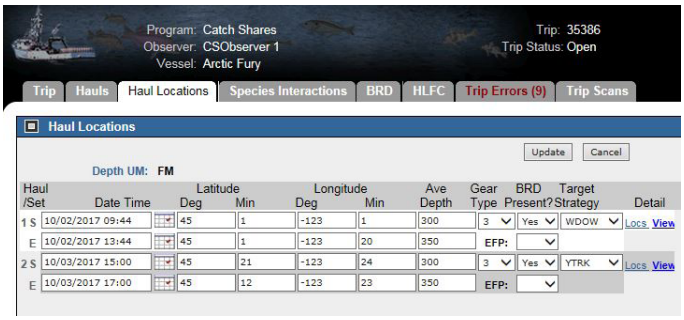
Update: Saves all changes and checks Keypunch values.

Cancel: Refreshes the page without saving changes.

Notes: Displays a pop-up box to add a note for the haul or set.

View: Drills down to the Catch page (link displays after bottom Hauls and Haul Locations pages have been completed).

Check: Saves all changes and checks Keypunch values.



Haul Locations

Source: OPTECS

Required for All Hauls/Sets: Date/Time, Latitude, Longitude, Ave Depth, Gear Type, Target Strategy

Buttons and Links

Update: Saves all changes.

Cancel: Refreshes the page without saving changes.

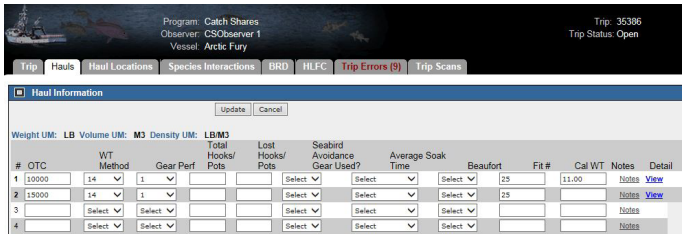
View: Drills down to the Catch page (link displays after both Hauls and Haul Locations pages have been completed).

Additional Information

Location data entry fields for a specific haul will not display until the haul has been first entered on the Hauls web page.

Occasionally the WCGOP covers vessels that are participating in an Experimental Fishery Program (EFP). Fishing trips for EFPs are uploaded/entered into the database under a program specific for the EFP, and each haul for the fishing trip must be marked to whether it was EFP directed fishing or not. It is possible that a single fishing trip may contain a mix of both EFP and non-EFP hauls.

On the Haul Locations web page, an EFP data entry drop-down box appears below the Target Strategy drop-down box. If the haul is EFP directed fishing, select “EFP” from the EFP drop-down box. The default is to assume that the haul is not an EFP haul and to leave the selection box blank.



Species Interactions

The Species Interactions web page is used to enter data for Marine Mammal and Seabird Sightings. These data cannot be entered via OPTECS.

Buttons and Links

Add New: Opens a Species Interaction Details page for adding a new sighting.

Delete: Deletes any sighting that has the Delete check box selected.

View: Links to the Species Interaction Details page for the selected sighting.

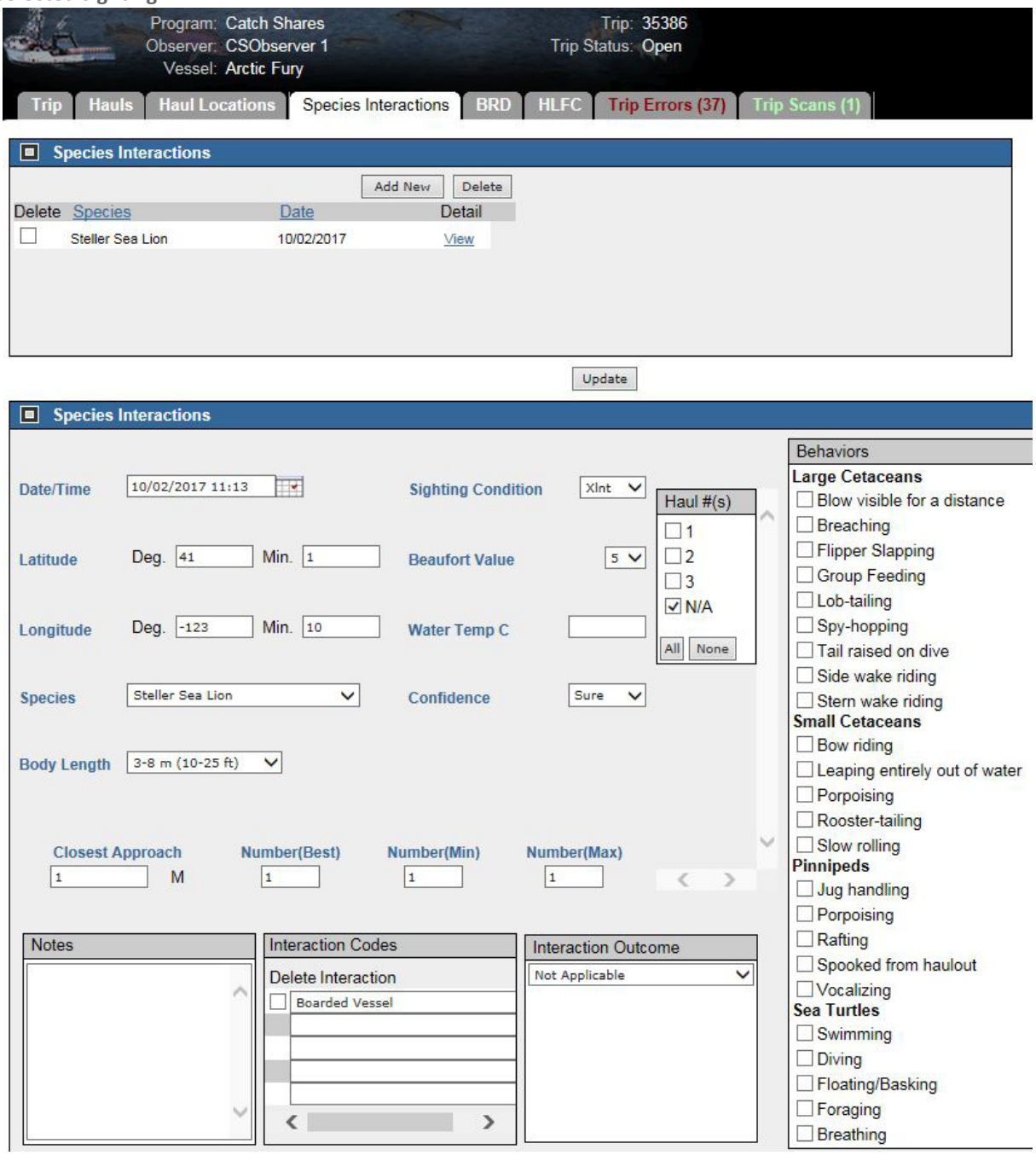
Headers: Selecting a column header will sort the sighting list by the selected column.

Species Interaction Details

Source: Marine Mammal Sighting Form or Seabird Sighting Form

Required for All Sightings: Date/Time, Latitude, Longitude, Species, Sighting Condition, Beaufort Value, Confidence, Closest Approach, Number (Best), Number (Min), Number (Max), Haul Number(s), Interaction Code(s), and Interaction Outcome

Required for Marine Mammal Sightings: Body Length



Trawl Bycatch Reduction Device (BRD)

The Bycatch Reduction Device (BRD) tab is used to enter data for BRD descriptions. These data cannot be entered via OPTECS.

Buttons and Links

Add New: Opens a Trawl Bycatch Reduction Device (BRD) details page for adding a new BRD configuration.

Delete: Deletes any BRD that has the Delete check box selected.

View: Links to the BRD Details page for the selected BRD entry.

Headers: Selecting a column header will sort the BRD list by the selected column.

Trawl Bycatch Reduction Device (BRD) Details

Source: Trawl Bycatch Reduction Device (BRD) Characterization Form

Required for All BRD configurations: Fill out a form for all BRD configurations. If there are multiple configurations, they should apply to all hauls listed on the form. Otherwise, a new entry is required.

Hook and Line Fleet Characterization (HLFC)

The Hook and Line Fleet Characterization (HLFC) tab is used to enter data HLFC descriptions.

Buttons and Links

Add New: Opens a Hook and Line Fleet Characterization (HLFC) details page for adding a new HLFC configuration.

Delete: Deletes any HLFC that has the Delete check box selected.

View: Links to the HLFC Details page for the selected HLFC entry.

Headers: Selecting a column header will sort the HLFC list by the selected column.

Hook and Line Fleet Characterization (HLFC) Details

Source: Hook and Line Fleet Characterization (HLFC)

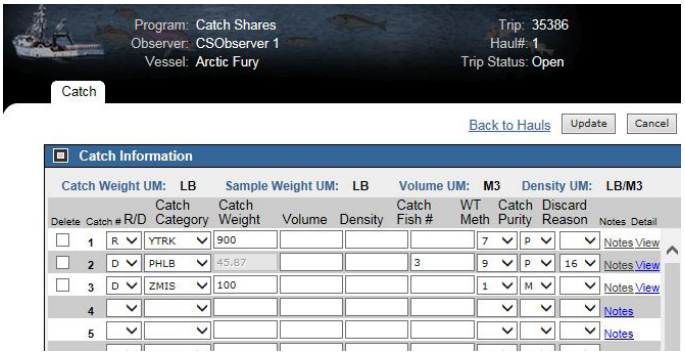
Required for All HLC configurations: Fill out a form for all HLFC configurations. If there are multiple configurations, they should apply to all hauls listed on the form. Otherwise, a new entry is required.

Catches: Trawl Sampling

Source: OPTECS

Required for All Sets: Disposition (R/D), Catch Category, Catch Weight, Catch Fish Number, Weight Method, and Keypunch Checks

Required for Discarded Catches with no Species Composition Sample: Discard Reason



PHLB Auto-calculation for Catch Weight:

The catch and sample weight for Pacific halibut (PHLB) is auto-calculated by the application when catch weight methods 9 or 19 are used. The catch weight calculation is dependent on the number of fish and the lengths entered on the Lengths and/or Specimens screens.

To generate a PHLB catch weight do the following:

1. Enter a PHLB catch category and the number of Pacific halibut observed in the Catch screen.
2. Leave the catch or sample weight blank.
3. Enter Catch Weight Method 9 and click update. The catch weight field will be grayed out upon clicking update.
4. The catch weight will not be auto-calculated when any other weight method is used. If you use a weight method other than 9 or 19, you are required to manually enter the weight.
5. After entering or updating the lengths or specimens screens, click update to generate the catch weight.
6. To see the calculated weight navigate back to the Catch tab.
7. You will not be able to edit the catch weight directly unless the Catch Weight Method is changed to something other than 9.

NOTE: Always consult with debriefer before making any edits to Catch Level data in ObsProd. This includes edits made to PHLB catch.

Buttons and Links

Back to Hauls: Links back to the Hauls page for the trip.

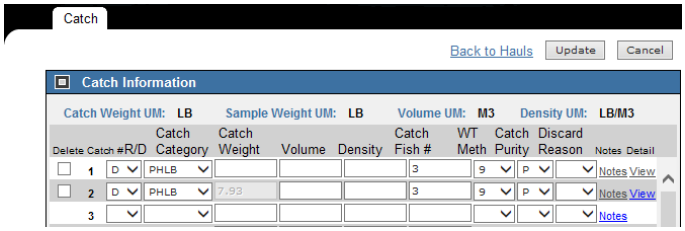
Update: Saves all changes and checks Keypunch values.

Cancel: Refreshes the page without saving changes.

Notes: Displays a pop-up box to add a note for the catch.

View: Links to the Species Composition and Biological Specimens pages.

Check: Saves all changes and checks Keypunch values.



Catches: Fixed Gear Sampling

Source: OPTECS

Required for All Sets: Disposition (R/D), Catch Category, Sample Weight, Sample Fish Number, Hooks Sampled, Weight Method, and Keypunch Checks

Required for Discarded Catches with no Species Composition Sample: Discard Reason

Buttons and Links

Back to Hauls: Links back to the Hauls page for the trip.

Update: Saves all changes and checks Keypunch values.

Cancel: Refreshes the page without saving changes.

Notes: Displays a pop-up box to add a note for the catch.

View: Links to the Species Composition and Biological Specimens pages.

Check: Saves all changes and checks Keypunch values.



Species Composition

Source: OPTECS

Required for All Sets: Species Code, Sample Weight, Fish Number, Discard Reason and Keypunch Checks

Buttons and Links

Species Code List: Displays a list of species and species code.

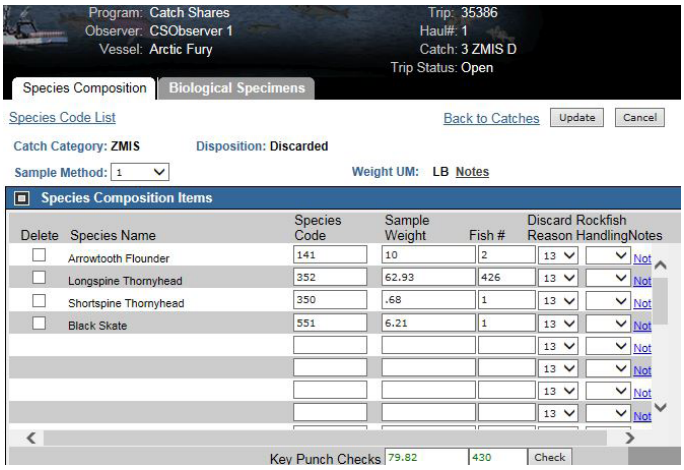
Back to Catches: Links back to the Catch page for the haul or set.

Update: Saves all changes and checks Keypunch values.

Cancel: Refreshes the page without saving changes.

Notes: Displays a pop-up box to add a note for the species composition.

Check: Saves all changes and checks Keypunch values.



Biological Specimens

Source: OPTECS

Required for All Sets: Species Code and Biosample Method

Buttons and Links

Species Code List: Displays a list of species and species codes.

Back to Catches: Links back to the Catch page for the haul or set.

Update: Saves all changes and checks Keypunch values.

Cancel: Refreshes the page without saving changes.

Notes: Displays a pop-up box to add a note for the biological specimen sample.

View: Links to the Lengths and Specimens web pages.

Additional Information

This page is the gateway to the Lengths and Specimens pages. The Lengths page is for entering data from a set of fish where you have only collected length or sex/length data If you have collected information on individual fish (individual weights, viabilities, etc.) or you have taken a dissection, the data need to be entered on the Specimens page.



Lengths

Source: OPTECS

Required for All Length Frequencies: Length and Frequency

Buttons and Links

Back to Bio Specimens: Links back to the Biological Specimen page.

Update: Saves all changes and checks Keypunch values.

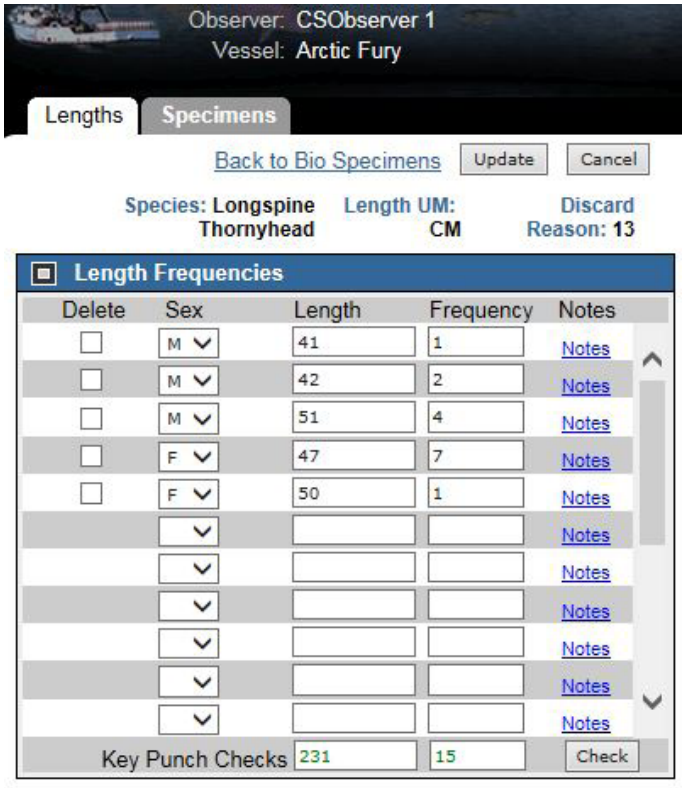
Cancel: Refreshes the page without saving changes.

Notes: Displays a pop-up box to add a note for the Length Frequency.

Check: Saves all changes and checks Keypunch values.

Additional Information:

Length frequency data is entered by species! Do not mix data from multiple species.



Specimens

Source: OPTECS

Required for All Specimens: Length or Weight

Buttons and Links

Back to Bio Specimens: Links back to the Biological Specimen web page

Update: Saves all changes and checks Keypunch values.

Cancel: Refreshes the page without saving changes.

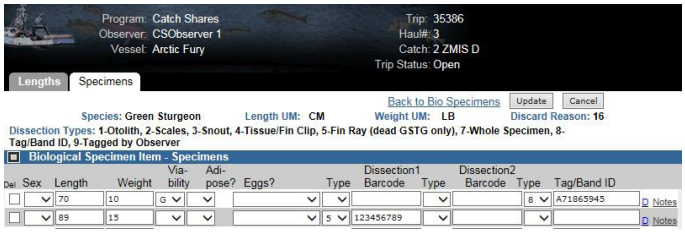
D: Links to the Dissections web page.

Notes: Displays a pop-up box to add a note for the Length Frequency.

Check: Saves all changes and checks Keypunch values.

Additional Information

Specimen data is entered by species! Do not mix data from multiple species.



Dissections

Source: OPTECS

Required for All Dissections: Dissection Type and Barcode Number

Additional Information

The dissection pop-up allows for additional dissection entries after the two dissection barcode fields on the Specimens page have been used. This section is also used by staff to enter Coded Wire Tag (CWT) information.

Buttons and Links

Update: Saves all changes.

Close: Closes the Dissection page without saving changes.



Trip Error Report

The Trip Error Report is a set of approximately 300 database queries that need to be run to check data from a fishing trip after the trip has been uploaded/entered into the WCGOP database. The data checks look for a wide variety of errors including missing data, values that fall out of range, and data that does not adhere to WCGOP data collection rules.

NOTE: A Trip Error Report must be run anytime data are uploaded to and/or changes are made to data in ObsProd.

Requirements

Running the Trip Error Report for each trip and correcting all reported errors immediately after completing data entry is a mandatory data-editing requirement for Observers.

The data checks fall into two categories: errors and warnings. Showstoppers (S) and Errors (E) represent data that have been recorded incorrectly and must be fixed prior to debriefing. Warnings (W) represent data that are anomalous or out of normal range but not necessarily incorrect. Data marked with a warning (W) must be double-checked to ensure accuracy Please be prepared to explain to your debriefer why these data are unusual.

Running the Trip Error Report

The trip error report can only be run from the Trip page in the WCGOP Database Application.

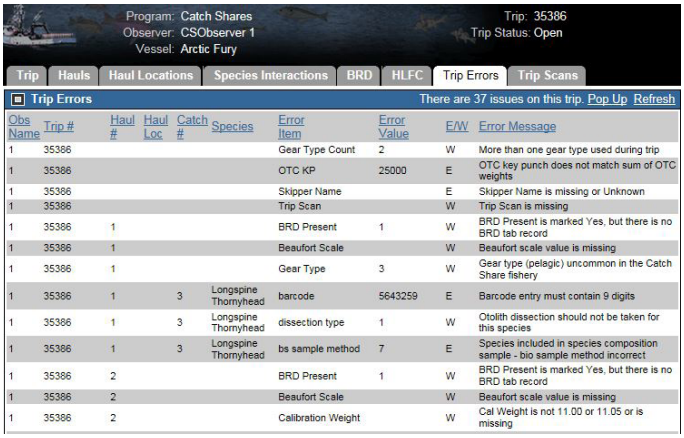
Running the Trip Error Report

1. Enter all the data for your trip.
2. The error report runs automatically upon clicking update on any screen.
3. Click on the Trip Errors tab to see the list of errors.
4. Depending on the amount of data, a status message may appear stating the trip error process is running.
5. Simply click the “Refresh” link at the top of the pane to display the updated list of errors.
6. The tab will change color based on the severity of the errors in the data. Red =Show stoppers and Errors. Yellow = Warnings.
7. The number of issues will be displayed at the top of the pane.
8. The error reports can be left open and minimized while you make corrections. To open the report in a separate window click the “Pop Up” link at the top of the pane.
9. The trip error report will always display a current set of errors, which are re-run anytime you click update.
10. To refresh the list of errors in the Trip Error tab or in the pop-up window, click the ‘Refresh’ link or press F5.

Saving the Trip Error Report

Save information from a Trip Error Report using the following procedure:

1. While the Trip Error Report is displayed, select and copy all of the reported errors.
   - Do not try to copy the headers.
   - The headers and errors will not copy together.
2. Open Excel and paste the error messages into a new worksheet.
   - Each of the columns from the Trip Error Report will now appear as separate Excel columns.
   - Suggestion – create a template Excel file with column headers and the correct column sizing to use for saving your error reports.
   - Save or print the Excel file.



Obs Name	Trip #	Haul #	Haul Loc	Catch #	Species	Error Item	Error Value	E/W	Error Message
1	35386					Gear Type Count	2	W	More than one gear type used during trip
1	35386					OTC KP	25000	E	OTC key punch does not match sum of OTC weights
1	35386					Skipper Name		E	Skipper Name is missing or Unknown
1	35386					Trip Scan		W	Trip Scan is missing
1	35386	1				BRD Present	1	W	BRD Present is marked Yes, but there is no BRD tab record
1	35386	1				Beaufort Scale		W	Beaufort scale value is missing
1	35386	1				Gear Type	3	W	Gear type (pelagic) uncommon in the Catch Share fishery
1	35386	1		3	Longspine Thornyhead	barcode	5643259	E	Barcode entry must contain 9 digits
1	35386	1		3	Longspine Thornyhead	dissection type	1	W	Otolith dissection should not be taken for this species
1	35386	1		3	Longspine Thornyhead	bs sample method	7	E	Species included in species composition sample - bio sample method incorrect
1	35386	2				BRD Present	1	W	BRD Present is marked Yes, but there is no BRD tab record
1	35386	2				Beaufort Scale		W	Beaufort scale value is missing
1	35386	2				Calibration Weight		W	Cal Weight is not 11.00 or 11.05 or is missing

Trip Scans

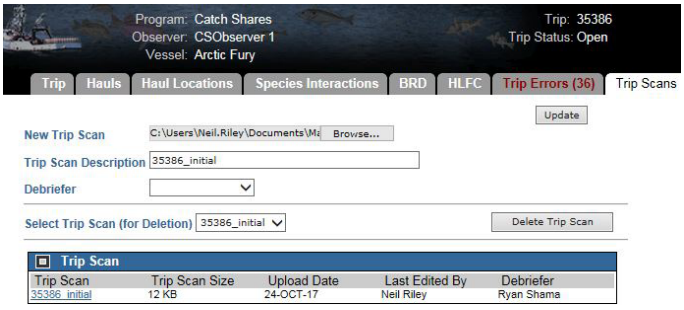
The Trip Scans tab is a mechanism to upload scanned PDF copies of data forms All data forms must be scanned to a government encrypted computer, and PDFs uploaded to the WCGOP database- within 3 days of disembarking.

Trips Scan Procedure

Observers will use the 'Trip Scans' tab located on the Trip Information page. All data entry must be complete and a Trip Error Report run, prior to uploading trip scans. This ensures that any final corrections made to the trip are represented in the scans.

Steps for submitting initial draft of trip data:

- Scan the entire trip, using the scanner provided
- Name the file, using the trip number followed by "Initial" to designate this as the initial draft (e.g., 23543_Initial). DO NOT use symbols (e.g., #, %, &), as they may interfere with the upload
- Log onto the Observer Database and navigate to the Trip Information page for the trip being scanned
- Click on the 'Trip Scans' tab
- Enter the file location in the 'New Trip Scan' field or click 'Browse', find the correct file and double click on the icon
- In the 'Trip Scan Description' field, the file name of the trip being uploaded will populate (e.g., 2345_Initial).
- Select your debriefers name.
- Click 'Update'.
- A pop-up will appear, listing the location of the file on the local drive.
- Click 'OK' to complete the upload (may take several seconds).
- Trip Scan tab will turn green once the scanned documents are successfully uploaded.



Note: Files can be deleted by clicking on the drop-down list in the 'Select Trip Scan (for Deletion)' field. Select the file intended for deletion and click on the 'Delete Trip Scan' button.

Remember:

- Trip Scan is NOT the same as the Sync/Upload.
- Trip scans may not be sent via email!
- See scanning instruction Chapter 12, "Gear" for details on how to use the scanner.

Observer Module

The Observer Module contains personal contacts, emergency contacts, observer activity and communication log information.

Web Page Hierarchy

Observer Search

- Observer
- Emergency Contacts
- Activity
- Observer Communication Log
- Contact List

Observer Search

The Observer Search page is used to search the database for observer information. As an observer, you are only able to search for information about yourself.

Buttons and Links

Contact List: Displays a list of contact information for all current observers which can be exported to Excel.

Search: Searches for observers based on the name entered into the last name field.

Reset: Refreshes the page and clears the last search.

View: Links to the Observer web page for the selected observer.

Headers: Selecting a column header will sort the observer list by the selected column.

Additional Information

Observer information can be searched for using only part of an Observer Last Name. For example, running a search by typing the letter “a” in the Last Name field will return all observers with a last name that starts with the letter “a.”

Searching by Status will return either all active or all non-active observers. As an observer, searching for all active observers will only return information about you.



Observer

Required Information: Home phone number, cell phone number, work email address, address, and birthdate

Buttons and Links

Back to Observer Search: Links back to the Observer Search web page.

Update: Saves all changes.

Cancel: Refreshes the page without saving changes.

Select Photo: Displays the photo selected from the drop-down list.

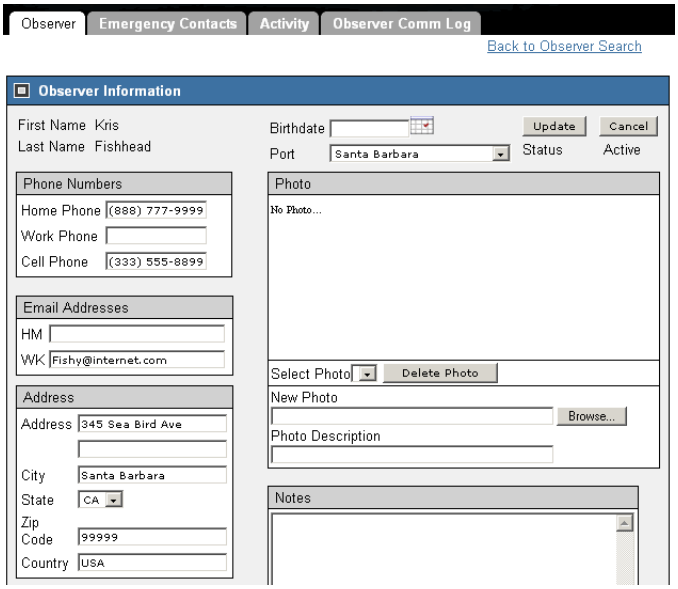
Delete Photo: Deletes the currently displayed photo.

Browse: Use to search your file directory for a photo.

Additional Information

There is a “mask” on the phone number fields that formats the phone numbers as you type them. For example, if you type 2223334444 it will automatically get reformatted as (222) 333-4444. Be sure to include area codes when you are entering your phone numbers.

If your main mailing address is a PO box, you must include a street address that packages can be delivered to in the Notes section. WCGOP often sends materials via UPS, which will not deliver to PO boxes. It is imperative that you keep all your contact information current and up-to-date.



Emergency Contacts

Required Information: First name, last name, contact type, relationship, home phone and address

Buttons and Links

Back to Observer Search: Links back to the Observer Search web page.

Add New: Sets the Contact Information panel ready to enter a new contact.

Delete: Deletes any contact that has the Delete check box selected.

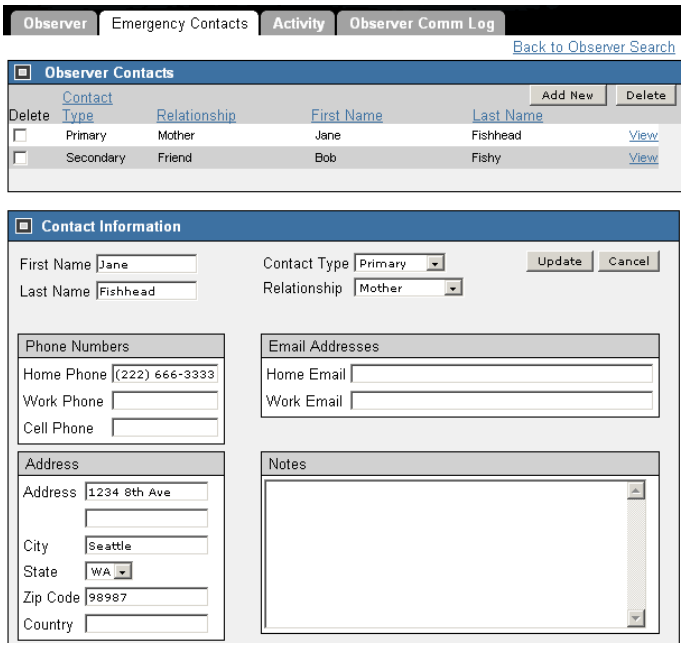
View: Displays the contact information for the selected contact.

Update: Saves all changes to the currently displayed contact.

Cancel: Refreshes the page without saving changes.

Additional Information

There is a "mask" on the phone number fields that formats the phone numbers as you type them. For example, if you type 2223334444 it will automatically get reformatted as (222) 333-4444. Be sure to include area codes when you are entering your phone numbers.



Activity

Only applies to Non-Catch Share observers

Required Information for All Dates: Activity - See guidelines section below for additional requirements.

Buttons and Links:

Back to Observer Search: Links back to the Observer Search web page.

Update: Saves all changes.

Cancel: Refreshes the page without saving changes.

Month/Year: Displays activity for the selected month and year.

Prev: Displays activity for the previous month.

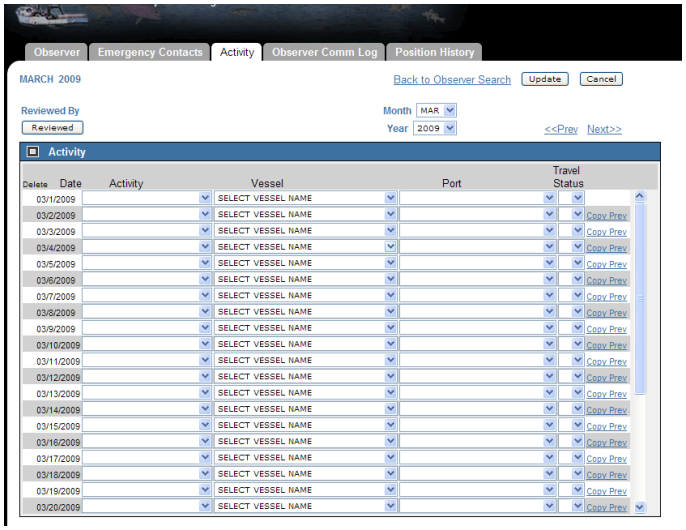
Next: Displays activity for the next month.

Copy Prev: Copies the information from the previous line onto the current line.

Additional Information:

Activity information should be updated on at least a weekly basis. Monthly activity needs to be fully completed by the 2nd of each month for the preceding month. If you anticipate being at sea when your activity is due, complete your activity before departing on your trip.

When the Activity page is first loaded, the default is to display your activity for the current month. Each day of the month is listed in chronological order from the top to the bottom of the screen.



Guidelines for Entering Activity Information:

At Sea and Observed Days

1. **Required information:** Activity, Vessel and Port
2. All At Sea and Observed days need to be associated with a port.
   - Enter a port even for days when you are on the water and have no contact with land.
   - Use the departure port for all sea days even if the fish are landed in a different port.
3. An Observed day is defined as any day you are aboard a vessel and fishing gear is set or hauled.
4. An At Sea day is defined as any day you are aboard a vessel and there is no fishing activity.
5. **Sometimes you will have an At Sea day on one vessel and an Observed day on another vessel on the same date. In this case, you only need to enter the activity with the highest priority. The priorities for At Sea and Observed days are listed as follows:**
   - **1st priority:** Limited entry trawl Observed days
   - **2nd priority:** Limited entry fixed gear Observed days
   - **3rd priority:** Open access Observed days
   - **4th priority:** Limited entry trawl At Sea days
   - **5th priority:** Limited entry fixed gear At Sea days
   - **6th priority:** Open access At Sea days
6. At Sea and Observed days should always be recorded instead of any other activity that you may have had on a given day.

Standby Days

1. **Required information:** Activity and Port
2. Enter the home port you are based out of or your temporary port assignment if you are on travel.
3. Do not enter a vessel as you are likely covering more than one vessel.

Briefing, Debriefing, Meeting and Training Days

1. **Required information:** Activity and Port (if applicable)
2. If the activity takes place in a port location, enter the port as well as the activity.
3. A Debriefing day is any day that you are debriefed by your debriefer or coordinator.

Vacation and Unpaid Leave Days

1. **Required information:** Activity

Travel Days

1. **Required information:** Activity, Travel Status and Port (if applicable).
2. If you are traveling to a port location, enter the port you are traveling to as well as the activity.
3. A Travel day is defined as any day where the focus is on driving, flying, etc. to a meeting or port where you will be staying overnight.

Travel Status

1. The Travel Status column is used to track days you are eligible for per diem.
2. For days you are eligible for per diem (as per the rules provided to you by Alaskan Observers, Inc.), select “Y” in the Travel Status column.
3. Usually, being eligible for per diem is triggered by overnight travel away from your home port just prior to boarding a vessel or just after departing a vessel.

Activity Codes Defined

At-sea Coding:

1. **At-sea (Longline):** Use for days when you are steaming to and from the grounds, AND no gear is hauled on a limited entry longliner.
2. **At-sea (pot):** Use for days when you are steaming to and from the grounds, AND no gear is hauled on a limited entry pot vessel.
3. **At-sea (trawl):** Use for days when you are steaming to and from the grounds AND no gear is hauled on a limited entry trawler.
4. **At-sea (open access):** Use for days when you are steaming to and from the grounds AND no gear is hauled on an open access vessel using any type of gear.

Observed Coding:

1. **Observed (Longline):** Use for days when the vessel is fishing AND you are collecting data on a limited entry long liner.
2. **Observed (pot):** Use for days when the vessel is fishing AND you are collecting data on a limited entry pot vessel.
3. **Observer (trawl):** Use for days when the vessel is fishing AND you are collecting data on a limited entry trawler.
4. **Observed (open access):** Use for days when the vessel is fishing AND you are collecting data on an open-access vessel using any type of gear.

Land Day Coding:

1. **Briefing:** Use for the annual observer briefing only.
2. **Debriefing:** Use for days that you complete the "debriefing interview" with your debriefer.
3. **Meeting:** Use for attending observer program meetings, other than debriefings, trainings, or coordination purposes.
4. **Standby:** Use for days when you are available for work and/or conducting onshore duties.
5. **Training:** Use for the new observer training course only.
6. **Travel:** Use when you have been directed to travel to a different port group and stayed away from your home port overnight.
7. **Vacation:** Use for paid vacation days only.
8. **Unpaid Leave:** Use for unpaid vacation days only.

Communication Log

Only applies to Non-Catch Share observers

Required Information: Include: date, vessel, contact and a note

Buttons and Links

Back to Observer Search: Links back to the Observer Search web page.

Update: Saves all changes.

Cancel: Refreshes the page without saving changes.

Search by Month/Year: Displays communications for the selected month and year.

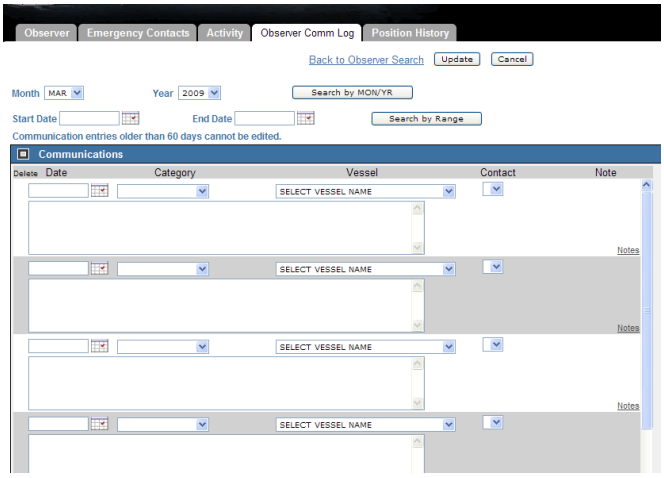
Search by Range: Displays communications for the selected date range.

Notes: Displays a large pop-up box for entering note information.

Additional Information

When the Communication Log page is first loaded, the default is to display all your communications for the current month in chronological order.

Sixty days after a vessel communication is first entered, the information about the communication will become read-only and cannot be edited.



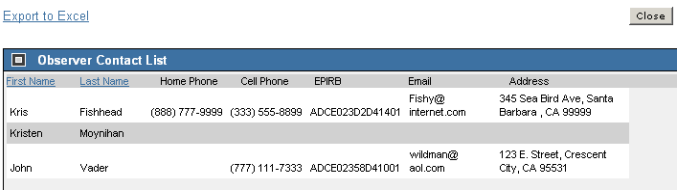
Observer Contact List

Buttons and Links

Export to Excel: Opens a File Download dialog box which allows you to select a directory and save the data as an Excel file.

Close: Closes the Observer Contact List.

Headers: Selecting a blue column header will sort the contact list by the selected column.



Evaluation Module

The Evaluation Module provides access to the written evaluations that observers receive at the end of each debriefing period. The module also contains a list of the trips covered during the evaluation period, a sampling summary for each vessel covered and a list of all species ID forms completed.

Web Page Hierarchy

- Evaluation Search
  - Evaluation Trips
  - Evaluation Notes
  - Observed Vessels
    - Sampling Summary
  - Species ID Forms

Evaluation Search

Buttons and Links

Search: Searches for evaluations based on name, status, start date or end date. Searches can be based on either single or multiple criteria.

Reset: Refreshes the page and clears the last search.

Add New: Used by debriefers to create new evaluations.

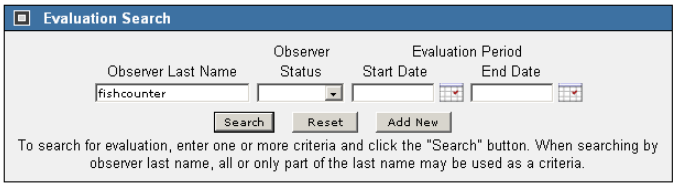
View: Links to the Evaluation web page for the selected evaluation.

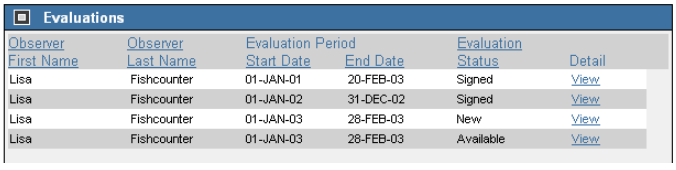
Headers: Selecting a column header will sort the evaluation list by the selected column.

Additional Information

Evaluations can be searched for using only part of an Observer Last Name. For example, running a search by typing the letter “a” in the Last Name field will return all observers with a last name that starts with the letter “a.”

Searching by Status will return evaluations for either all active or all non-active observers. As an observer, searching for all active observers will only return your evaluations.



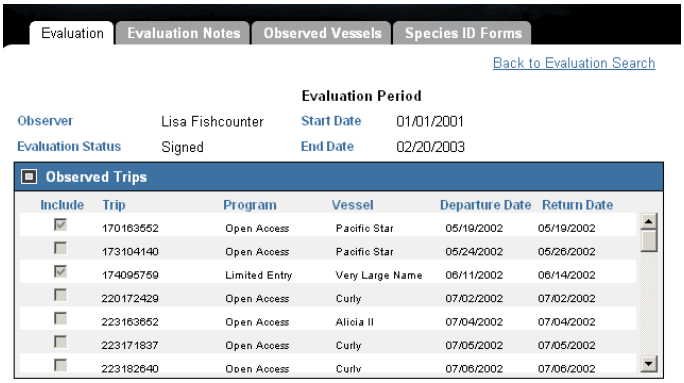


Evaluation

The Evaluation page lists all trips that you covered during the evaluation period. If the Include check box contains a mark, your debriefer has included the trip as part of the evaluation.

Buttons and Links

Back to Evaluation Search: Links back to the Evaluation Search web page.



Evaluation Notes

The Evaluation Notes web page displays the Assessment, Summary, Areas for Improvement, and Coordinator Notes (NCS only) for the selected Evaluation Period. For more information on observer evaluations, see Chapter 11 - Observer Life.

Buttons and Links

Back to Evaluation Search: Links back to the Evaluation Search web page.

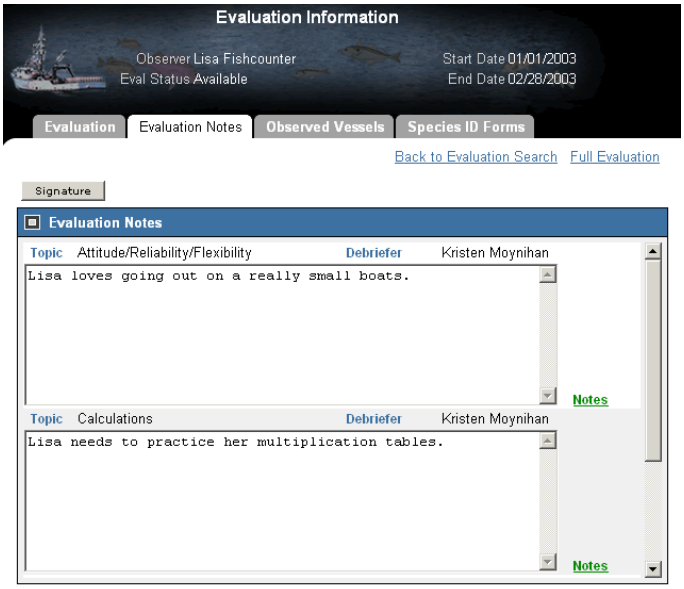
Full Evaluation: Displays all of evaluation notes as a single page report.

Signature: Click the Signature button to acknowledge that you have read your evaluation.

Notes: Displays the evaluation note in a large pop-up box.

Additional Information

If you would like a paper copy of your evaluation, click on the Full Evaluation link and print out the resulting report.



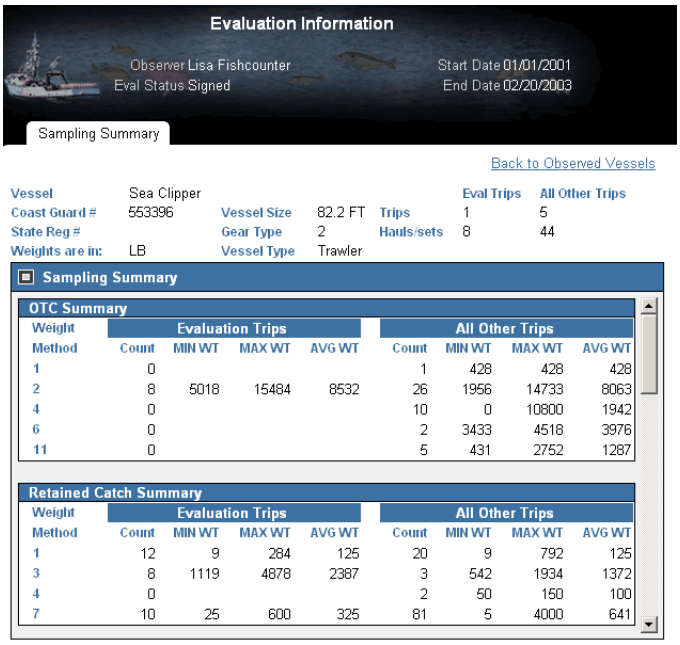
Sampling Summary

The Sampling Summary page displays a summary of sample methods and sample sizes for the selected vessel and gear type. Sampling information is calculated for the following areas: OTC, Retained Catch, Discarded Catch, Retained Species Compositions, Discarded Species Compositions, Priority Biospecimens and Other Biospecimens.

The left side of the page displays summary information for all trips for the selected vessel that are included as part of the current evaluation. The right side of the page displays summary information for all other trips on the selected vessel and does not include any trips that are part of the current evaluation.

Buttons and Links

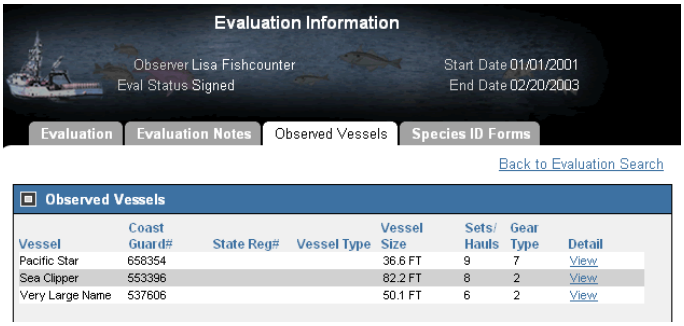
Back to Observed Vessels: Links back to the Observed Vessels web page.



Observed Vessels

Vessels

The Observed Vessels page displays a list of all vessels covered



Species ID Forms

The Species ID Form web page displays a list of species encountered during species composition sampling. The list can be filtered to display only fish from the current evaluation period or all fish ever encountered.

Buttons and Links

Back to Evaluation Search: Links back to the Evaluation Search web page.

Species ID Forms: Displays species encountered.

List Options

All Species: All species ever encountered with or without a completed id form.

All Species – No Form: All species ever encountered without a completed id form.

Eval Species: All species encountered during the evaluation period with or without a completed species id form.

Eval Species- No Form: All species encountered during the evaluation period without a completed species id form.



Vessel Module

The Vessel Module contains data on the vessels observed by the WCGOP. Basic information about the vessel, as well as contact information, photos, and observer communications with the vessel are available. If a vessel is not shown in the database please request that it be added by contacting Jim Fellows at James.Fellows@NOAA.gov

Web Page Hierarchy

- Vessel Search
  - Vessel
  - Vessel Photos
  - Communication Log
  - Sampling Summary
- Vessel Contacts

Vessel Search

The Vessel Search page is used to search the database for vessels.

Buttons and Links

Search: Searches for vessels based on the criteria entered into the vessel name, coast guard number, state registration number, port, state or vessel type fields. Multiple criteria can be entered to narrow the search results.

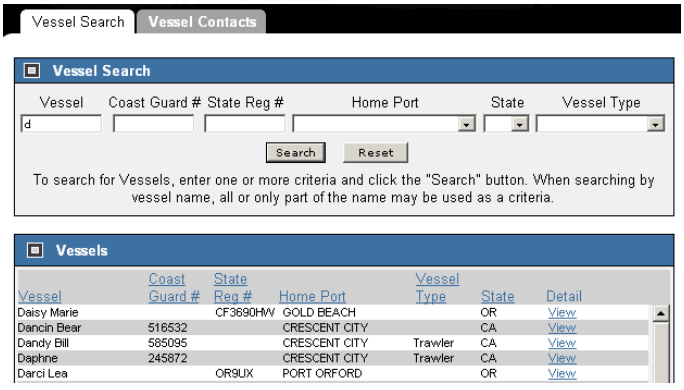
Reset: Refreshes the page and clears the last search.

View: Links to the Vessel page for the selected vessel.

Headers: Selecting a column header will sort the vessel list by the selected column.

Additional Information

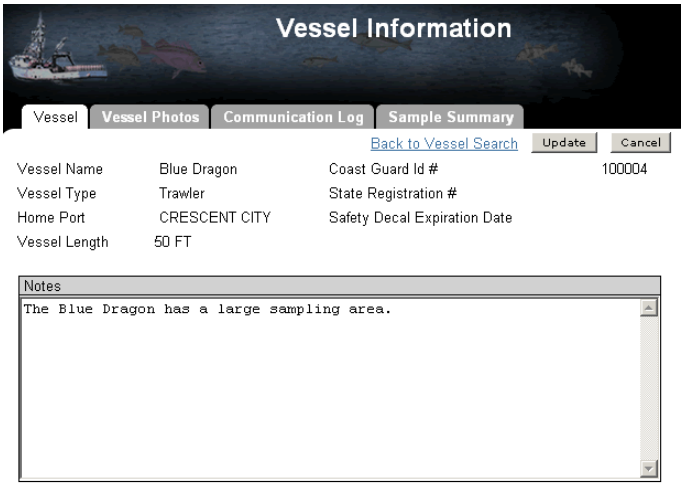
Vessels can be searched for using only part of a Vessel Name. For example, running a search by typing the letter “a” in the Vessel Name field will return all vessels that begin with the letter “a.”



Vessel

Buttons and Links

Back to Vessel Search: Links back to the Vessel Search web page.



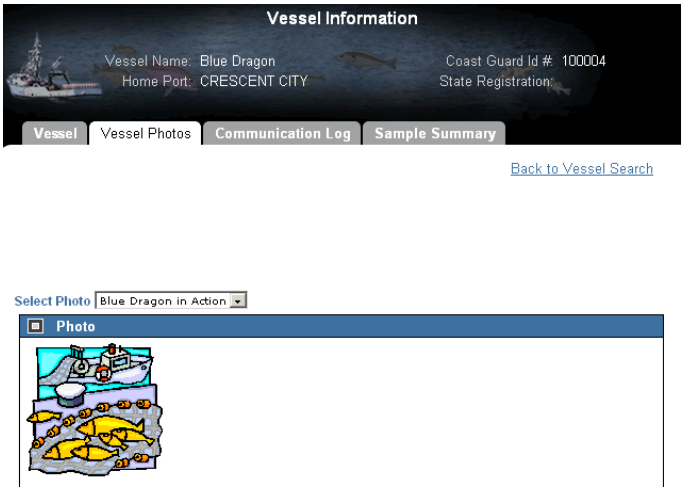
Vessel Photos

The Vessel Photos web page displays photos of vessel exteriors, decks, cabins, and gear. Photos are not available for all vessels.

Buttons and Links

Back to Vessel Search: Links back to the Vessel Search web page.

Select Photo: Select a photo description to view one of the vessel photos.



Communication Log

Only applies to Non-Catch Share observers

Buttons and Links

Back to Vessel Search: Links back to the Vessel Search web page.

Search by Month/Year: Displays communications for the selected month and year.

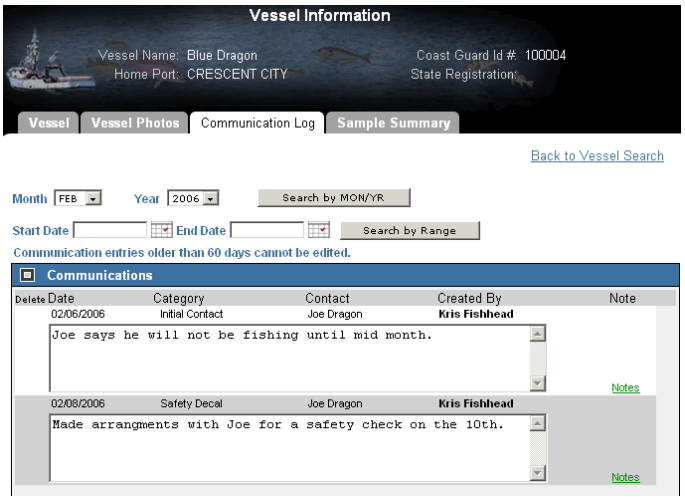
Search by Range: Displays communications for the selected date range.

Notes: Displays a large pop-up box for entering note information.

Additional Information

The vessel Communication Log web page displays notes from observers and staff about their conversations with vessel personnel concerning initial contact with the vessel, safety decals, and other items. The Communication Log page in the Vessel Module is very similar to the Communication Log page located in the Observer Module. The main difference is that in the Vessel Module all communications for the vessel are displayed regardless of which observer or staff member entered the information. In the Observer Module, observers only have access to communication data that they have entered personally.

When the Communication Log page is first loaded, the default is to display all communications for the selected vessel for the current month in chronological order.



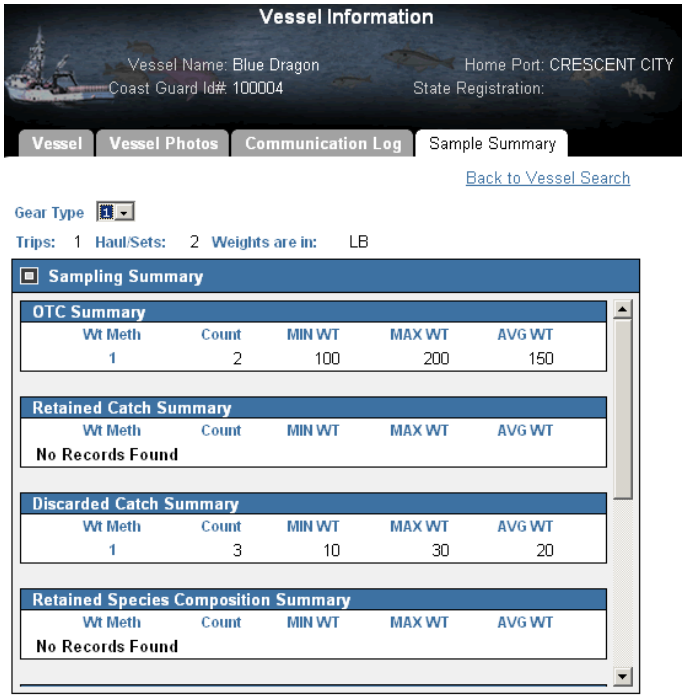
Sampling Summary

The Sampling Summary page displays a summary of sample methods and sample sizes for the selected gear type. Sampling information is calculated for the following areas: OTC, Retained Catch, Discarded Catch, Retained Species Compositions, Discarded Species Compositions, Priority Biospecimens and Other Biospecimens.

Buttons and Links

Back to Vessel Search: Links back to the Vessel Search web page.

Gear Type: Select a gear type to view the sampling summary for that gear.



Vessel Contacts

The Vessel Contacts web page displays contact information for vessel skippers, owners, and crew members.

Buttons and Links

A - Z: Displays a list of all contacts with a last name that starts with the selected letter.

Vessel Contact Report: Displays a list of contact information for all vessels which can be exported to Excel.

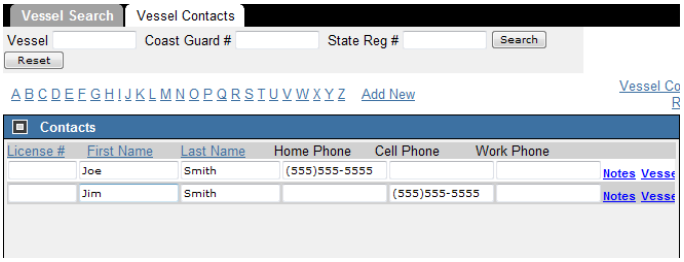
Notes: Displays a pop-up box with notes for the vessel contact.

Vessels: Displays the list of vessels that the contact is associated with.

Headers: Selecting a column header will sort the contacts by the selected column.

Additional Information

It is the responsibility of the lead observers and field coordinators to keep the vessel contact information up-to-date. If you have a skipper who needs to be added to the database, please email the lead observer for your port group with the skipper's name, phone number and vessel (include the vessel number as there may be several vessels that have the same name). The Database manager will then add the information to the system.



Vessel Contact Report

Buttons and Links

Export to Excel: Opens a File Download dialog box which allows you to select a directory and save the data as an Excel file.

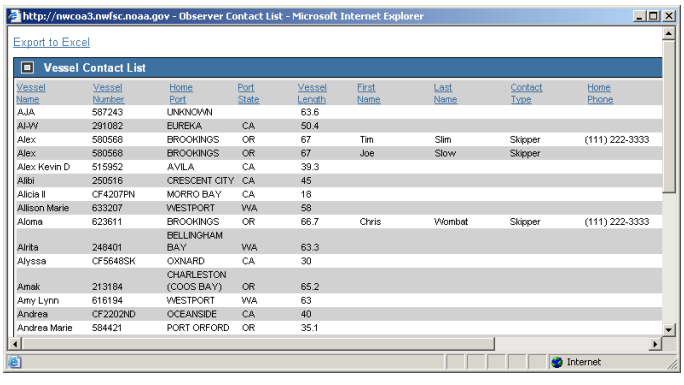
Close: Closes the Vessel Contact Report.

Headers: Selecting a blue column header will sort the contact list by the selected column.

Additional Information

If a skipper has worked on multiple vessels, his name will show up next to each vessel he has worked on. If no contact information has been entered for a vessel, there will not be any names listed next to the vessel.

The page is very wide. You may need to expand the page to see all the columns and to access the vertical scroll bar.



Vessel Selection Module

Only applies to Non-Catch Share observers

The Vessel Selection Module contains data on the permits and vessels selected by the WCGOP for coverage within a given cycle. Information about the vessel, as well as contact information, permits and coverage status are available.

Web Page Hierarchy

Vessel Selection Search

- Vessel Selection
- Selection History

Vessel Selection Search

The Vessel Selection Search page is used to search the database for vessels selected for a specific fishery.

Buttons and Links

Search: Searches for vessels based on the criteria entered into the Vessel Name, Coast Guard Number, State Registration Number, Port, State, Vessel Type, Fishery, Year, Cycle or Period fields. Multiple criteria can be entered to narrow the search results.

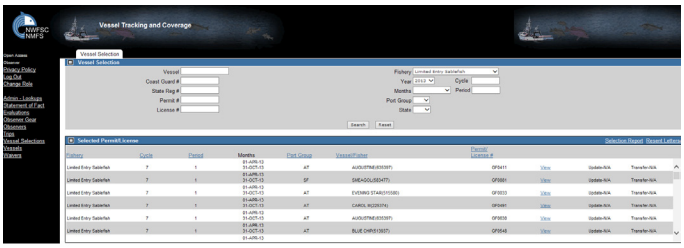
Reset: Refreshes the page and clears the last search.

View: Links to the Vessel Selection History page for the selected vessel.

Headers: Selecting a column header will sort the vessel list by the selected column.

Additional Information:

Vessels can be searched for using only part of a Vessel Name. For example, running a search by typing the letter “a” in the Vessel Name field will return all vessels that begin with the letter “a.”



Selection History

Only applies to Non-Catch Share observers

Buttons and Links:

Selection Report: Displays all queried vessels in a separate window.

Back to Selection History Search: Links back to the Vessel Selection Search web page.

Export to Excel: Displays all queried vessels in a separate window.

Additional Information:

There is a hyperlink in the vessel name that links back to the Vessel Search tab. Click on the name of the vessel and it will display the vessel and all the current contact information.



Waiver Module

Only applies to Non-Catch Share observers

Periodically, the WCGOP is unable to place an observer on a selected vessel for a specific trip or coverage period due to observer illness, lack of enough observers in a specific port at a specific time, or vessel safety issues. When the WCGOP is unable to cover a fishing trip, the vessel is issued a waiver that allows them to fish without an observer being aboard. Only field coordinators or specific lead observers are allowed to issue waivers to a vessel.

Web Page Hierarchy

Waiver Search

- Waiver

Waiver Search

The Waiver Search page provides the ability to search for existing waivers.

Buttons and Links

Search: Searches for waivers based on the criteria entered into the Vessel Name, Issued By, Issue Start Date, Issue End Date, Fishery, Permit/License, Waiver Type or Waiver Reason fields. Multiple criteria can be entered to narrow the search results.

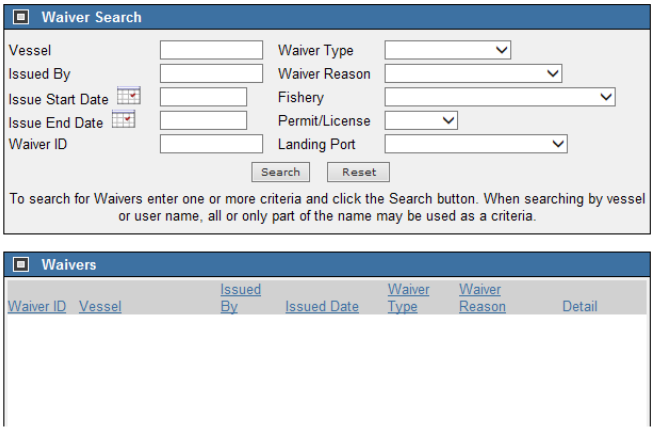
Reset: Refreshes the page and clears the last search.

View: Links to the Waiver page for the selected waiver.

Headers: Selecting a column header will sort the waiver list by the selected column.

Additional Information: Waivers can be searched for using only part of a Vessel Name. For example, running a search by typing the letter "a" in the Vessel Name field will return all waivers for all vessels that begin with the letter "a."

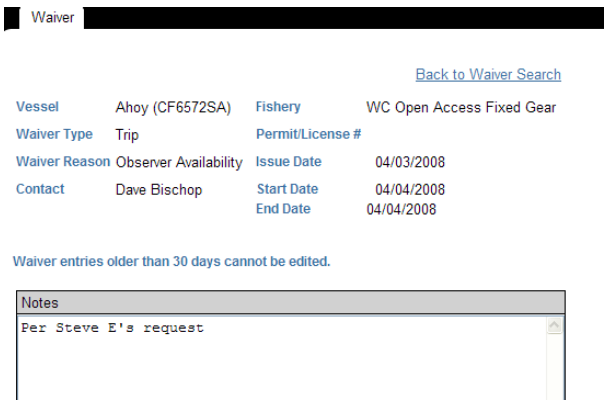
Waivers that fall within a date range can be searched for by specifying both an Issue Start Date and an Issue End Date.



Waiver

Buttons and Links:

Back to Waiver Search: Links back to the Waiver Search web page.



Admin – Lookups Module

The purpose of the Admin - Lookups section of the application is primarily for the system administrator to be able to easily add new fish, ports, and catch categories to the database and to be able to update the selection lists for the numerous drop-down boxes that appear throughout the application.

Web Page Hierarchy

- Catch Categories
  - Species in Category
- Species
- Ports
- Lookups
- Selection Cycle

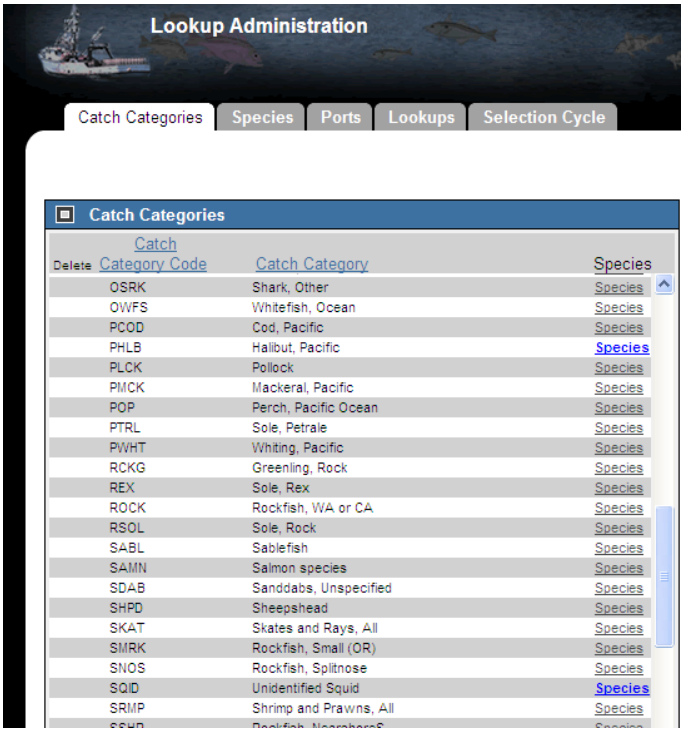
Catch Categories

The Catch Categories web page displays a list of the catch categories and target strategies used by the WCGOP.

Buttons and Links

Species: Displays a list of all species included in the catch category.

Headers: Selecting a column header will sort the catch categories by the selected column.



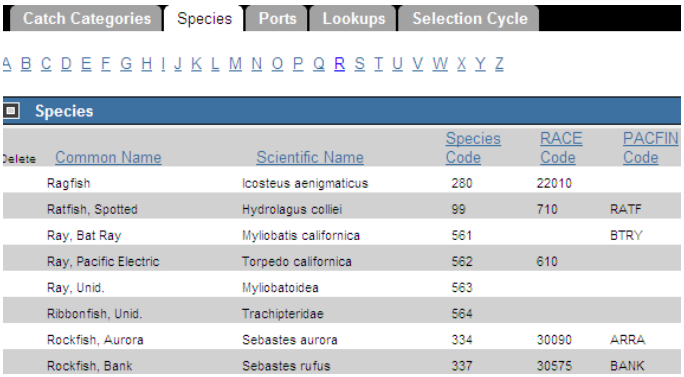
Species

The Species web page displays a list of the species encountered by WCGOP Observers.

Buttons and Links

A,B,C,D, etc.: Displays a list of all species with a common name that starts with the selected letter.

Headers: Selecting a column header will sort the species by the selected column.

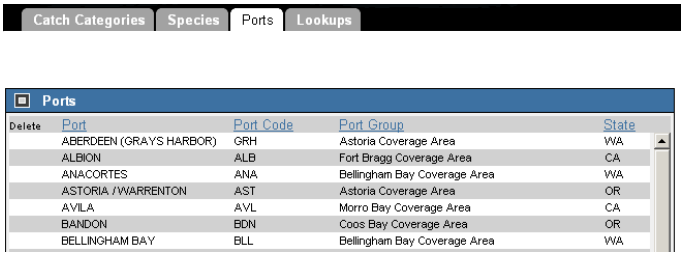


Ports

The Ports web page displays a list of the ports covered by the WCGOP.

Buttons and Links

Headers: Selecting a column header will sort the ports by the selected column.



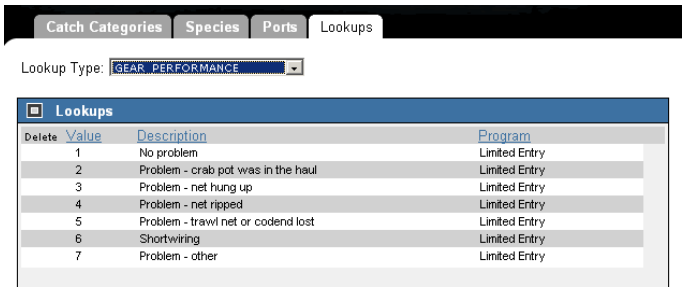
Lookups

The Lookups web page displays lists of weight methods, dissection types, permit types, etc. These lists are used throughout the application to populate the drop-down lists seen when entering data. Each item is displayed with a value and a description. Frequently, only the values are displayed in the drop-down boxes in the application. This page is useful for getting descriptions of items that are normally referred to only by letter or number codes.

Buttons and Links:

Lookup Type: Select a Lookup Type from the drop-down box to view the values and descriptions for that lookup type.

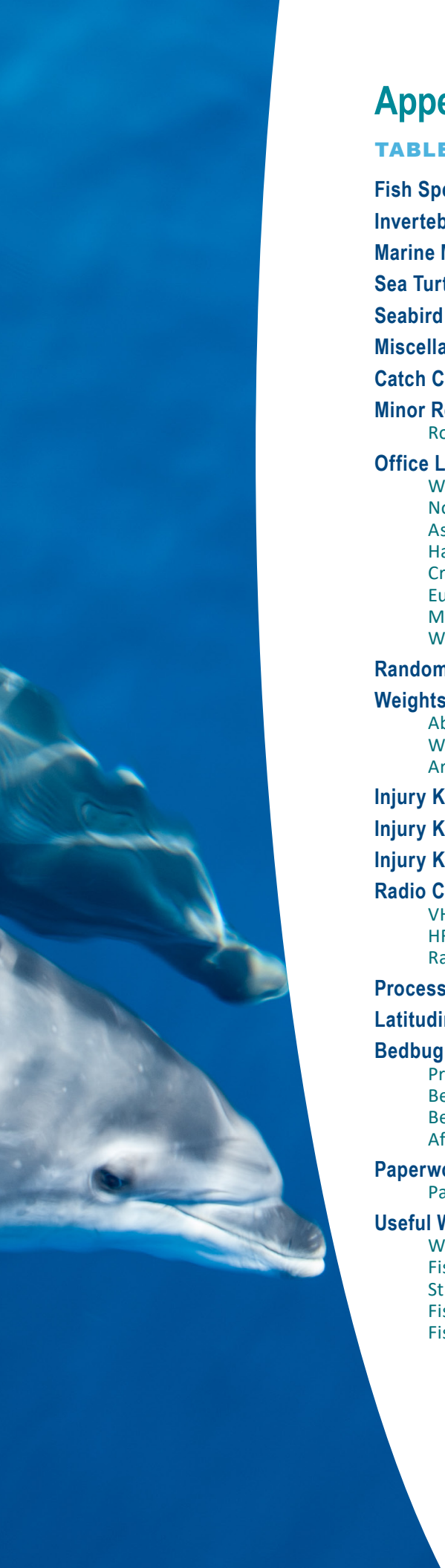
Headers: Selecting a column header will sort the lookup type by the selected column.



Common Problems and Solutions

If you encounter a problem in ObsProd please contact your debriefer and Jim Fellows at James.Fellows@NOAA.gov. Remember that you should not make any changes to data uploaded via the OPTECS software unless you discuss it with your debriefer first. OPTECS performs all calculations but the production web site does not. Changing any value will require making several changes, depending on what other values rely on those data.

- **Using the wrong browser:** Only Internet Explorer can be used. Other browsers may appear to work but will not allow you to save/update your data.
- **Forgetting to hit update:** After entering your data be sure to click the update button or your changes will not be saved.
- **Timing out:** Typing does not reset the timer. You must click update or navigate to keep from timing out.
- **Forgot your password:** Contact Jim Fellows at 603-545-9558 or via email at james.fellows@noaa.gov.
- **Entering data on a timed out page:** Be sure to refresh a page prior to entering data if you walked away for a few minutes or have not navigated or updated recently. If this happens the only solution is re-entry.
- **Unable to upload from tablet:** Most likely your password on line is expired.
  - Change your password on the production website.
  - Open OPTECS and retrieve updates.
  - Close OPTECS.
  - Open OPTECS again and proceed to sync the trip.



Appendix:

TABLE OF CONTENTS

Fish Species List and Codes . . . A-3
Invertebrate Species List and Codes . . . A-7
Marine Mammal and Sea Turtle Species List and Codes . . . A-9
Sea Turtle Species Codes . . . A-9
Seabird Species List and Codes . . . A-9
Miscellaneous List and Codes . . . A-10
Catch Categories Code Lists and Target Strategies . . . A-11
Minor Rockfish Species . . . A-14
- Rockfish Categories . . . A-14

Office Locations . . . A-16
- West Coast Groundfish Observer Program . . . A-16
- Northwest Fisheries Science Center . . . A-16
- Astoria Office . . . A-16
- Hatfield Marine Science Center . . . A-16
- Crescent City Office . . . A-16
- Eureka Office . . . A-16
- Morro Bay Office . . . A-16
- WCGOP Staff Locations and Contact Details . . . A-17

Random Number Table . . . A-19
Weights, Measures, and Conversions . . . A-20
- Abbreviations . . . A-20
- Weights and Measures . . . A-20
- Area, Volume and Product Formulas . . . A-20

Injury Key for Trawl Caught Pacific Halibut . . . A-22
Injury Key for Pot Caught Pacific Halibut . . . A-23
Injury Key for Hook & Line Caught Pacific Halibut . . . A-24
Radio Communications . . . A-25
- VHF-FM Radios . . . A-25
- HF-SSB Radios . . . A-25
- Radio Procedure . . . A-25

Processors . . . A-27
Latitudinal and Depth Distribution of Groundfish Adult Species . . . A-31
Bedbug Protocol . . . A-35
- Prior to Trip . . . A-35
- Before Departing on Trip . . . A-35
- Bed Bugs Spotted During Trip . . . A-35
- After Trip . . . A-35

Paperwork Reduction Act . . . A-36
- Paperwork Reduction Act Information . . . A-36

Useful Websites . . . A-37
- WCGOP Observer-Related Sites . . . A-37
- Fisheries Management on the West Coast . . . A-37
- State Agencies . . . A-37
- Fisheries Research on the West Coast . . . A-37
- Fish Identification . . . A-37

Chapter A

Appendix:

Fisheries Regulations . . . A-37
Marine Safety . . . A-38
Vessel and Landings Information . . . A-38
Observer Associations, Interest Groups . . . A-38
Observer Programs Worldwide . . . A-38

Vessel Monitoring System (VMS)* . . . A-39
Why does the Pacific coast groundfish fishery need a vessel monitoring program? A-39
Parts of the Vessel Monitoring Program . . . A-39
Commonly Asked Questions . . . A-39

Electronic Monitoring EFP . . . A-40
Covering Electronic Monitoring (EM) EFP Vessels . . . A-40
EM EFP Observer Information Sheet . . . A-41

IFQ Species by Location Table . . . A-42

Beaufort Scale . . . A-44

Glossary . . . A-45
A - B . . . A-45
C . . . A-45
D - E . . . A-46
F . . . A-46
G . . . A-46
H - K . . . A-46
L - O . . . A-47
P . . . A-47
R . . . A-48
S . . . A-48
T - Z . . . A-49

Acknowledgements . . . A-50



Chap

Fish Species List and Codes

Code	Common Name	Scientific Name
1226	Abyssal Grenadier	*Coryphaenoides armatus*
1236	Alaska Skate	*Bathyraja parmifera*
710	Albacore Tuna	*Thunnus alalunga*
1237	Aleutian Skate	*Bathyraja aleutica*
606	American Shad	*Alosa sapidissima*
605	Anchovy Unid	*Engraulidae*
10645	Anglerfish Unid	*Lophiiformes*
141	Arrowtooth Flounder	*Atheresthes stomias*
204	Atka Mackerel	*Pleurogrammus monopterygius*
334	Aurora Rockfish	*Sebastes aurora*
180	Banded Guitarfish	*Zapteryx exasperata*
337	Bank Rockfish	*Sebastes rufus*
770	Barracudina Unid	*Paralepididae*
475	Barred Sand Bass	*Paralabrax nebulifer*
796	Barreleyes/Spookfishes	*Opisthoproctidae*
264	Basketweave Cusk-eel	*Ophidion scrippsae*
480	Bass Unid	*Percichthyidae/ Serranidae*
561	Bat Ray	*Myliobatis californica*
185	Bay Pipefish	*Syngnathus leptorynchus*
252	Bearded Eelpout	*Lyconema barbatum*
1238	Bering Skate	*Bathyraja interrupta*
550	Big Skate	*Raja binoculata*
454	Bigeye Starsnout Poacher	*Bathyagonus pentacanthus*
575	Bigeye Thresher Shark	*Alopias superciliosus*
711	Bigeye Tuna	*Thunnus obesus*
254	Bigfin Eelpout	*Lycodes cortezianus*
119	Bigmouth Sole	*Hippoglossina stomata*
10646	Bigscale Unid	*Melamphaidae*
355	Black and Yellow Rockfish	*Sebastes chrysomelas*
725	Black Croaker	*Cheilotrema saturnum*
255	Black Eelpout	*Lycodes diapterus*
850	Black Hagfish	*Eptatretus deani*
306	Black Rockfish	*Sebastes melanops*
551	Black Skate	*Bathyraja trachura*
630	Black Surfperch	*Embiotoca jacksoni*
256	Blackbelly Eelpout	*Lycodes pacificus*
683	Blackchin Unid	*Neoscopelidae*
684	Blackdragon Unid	*Idiacanthinae*
455	Blackedge Poacher	*Xeneretmus latifrons*
456	Blackfin starnose Poacher	*Bathyagonus nigripinnis*
319	Blackgill Rockfish	*Sebastes melanostomus*
257	Blackmouth Eelpout	*Lycodapus fierasfer*
685	Blacksmith	*Chromis punctipinnis*
856	Blob Sculpin	*Psychrolutes phrictus*
69	Blue Shark	*Prionace glauca*
316	Blue/Deacon Rockfish	*Sebastes mystinus*
1241	Bluebarred Prickleback	*Plectobranchus evides*
712	Bluefin Tuna	*Thunnus thynnus*
457	Bluespotted Poacher	*Xeneretmus triacanthus*
302	Bocaccio Rockfish	*Sebastes paucispinis*
1219	Bonito [Shortfin Mako] Shark	*Isurus oxyrinchus*
687	Bristlemouth Unid	*Gonostomatidae*
356	Bronzespotted Rockfish	*Sebastes gilli*
68	Brown Cat Shark	*Apristurus brunneus*
408	Brown Irish Lord Sculpin	*Hemilepidotus spinosus*
332	Brown Rockfish	*Sebastes auriculatus*
576	Brown Smoothhound Shark	*Mustelus henlei*
409	Buffalo Sculpin	*Enophrys bison*
410	Bull Sculpin	*Enophrys taurina*
198	Bullet Mackerel	*Auxis rochei*
109	Butter Sole	*Isopsetta isolepis*
689	Cabezon	*Scorpaenichthys marmoratus*
357	Calico Rockfish	*Sebastes dalli*
631	Calico Surfperch	*Amphistichus koelzi*
682	California Barracuda	*Sphyraena argentea*
1234	California Butterfly Ray	*Gymnura marmorata*
692	California Corbina	*Menticirrhus undulatus*
1225	California Grenadier	*Nezumia stelgidolepis*
124	California Halibut	*Paralichthys californicus*
151	California Lizardfish	*Synodus lucioceps*
1212	California Moray	*Gymnothorax mordax*
423	California Scorpionfish	*Scorpaena guttata*
794	California Sheephead	*Semicossyphus pulcher*
552	California Skate	*Raja inornata*
160	California Slickhead	*Alepocephalus tenebrosus*
113	California Tonguefish	*Symphurus atricauda*
314	Canary Rockfish	*Sebastes pinniger*
604	Capelin	*Mallotus villosus*
870	Cat Shark Unid	*Scyliorhinidae*
358	Chameleon Rockfish	*Sebastes phillipsi*
325	Chilipepper Rockfish	*Sebastes goodei*
359	China Rockfish	*Sebastes nebulosus*
222	Chinook [King] Salmon	*Oncorhynchus tshawytscha*
221	Chum [Dog] Salmon	*Oncorhynchus keta*
118	C-O [C-O Turbot] Sole	*Pleuronichthys coenosus*
1247	Cod Unid	*Gadidae*
223	Coho [Silver] Salmon	*Oncorhynchus kisutch*
1210	Combfish Unid	*Zaniolepis*

Code	Common Name	Scientific Name
577	Common Thresher Shark	*Alopias vulpinus*
327	Copper Rockfish	*Sebastes caurinus*
360	Cowcod Rockfish	*Sebastes levis*
1221	Crested Bigscale	*Poromitra crassiceps*
727	Croaker Unid	*Sciaenidae*
117	Curlfin Sole	*Pleuronichthys decurrens*
262	Cusk-eel Unid	*Ophidiidae*
227	Cutthroat Trout	*Oncorhynchus clarkii clarkii*
311	Darkblotched Rockfish	*Sebastes crameri*
609	Deepbody Anchovy	*Anchoa compressa*
553	Deepsea Skate	*Bathyraja abyssicola*
693	Deepsea smelt Unid	*Bathylagidae*
110	Deepsea Sole	*Embassichthys bathybius*
559	Diamond Stingray	*Dasyatis dipterura*
121	Diamond Turbot	*Hypsopsetta guttulata*
578	Dogfish Shark Unid	*Squalus sp.*
228	Dolly Varden	*Salvelinus malma*
694	Dolphinfish	*Coryphaena hippurus*
107	Dover Sole	*Microstomus pacificus*
1101	Dragonfish Unid	*Stomiidae*
1266	Dreamers Unid	*Ceratioidea*
1273	Duckbill Eels	*Nettastomatidae*
1216	Dusky Sculpin	*Icelinus burchami*
783	Dwarf Wrymouth	*Cryptacanthodes aleutensis*
361	Dwarf-red Rockfish	*Sebastes rufinanus*
1281	Eastern Pacific Black Ghost Shark	*Hydrolagus melanophasma*
250	Eelpout Unid	*Zoarcidae*
108	English Sole	*Parophrys vetulus*
601	Eulachon	*Thaleichthys pacificus*
855	Fangtooth	*Anoplogaster cornuta*
120	Fantail Sole	*Xystreurys liolepis*
1229	Filamented Grenadier	*Coryphaenoides filifer*
579	Filetail Cat Shark	*Parmaturus xaniurus*
854	Finescale Triggerfish	*Balistes polylepis*
1239	Fine-spined Skate	*Bathyraja microtrachys*
777	Fish unknown; unspecified	*Vertebrata*
362	Flag Rockfish	*Sebastes rubrivinctus*
258	Flatcheek Eelpout	*Lycenchelys crotalinus*
100	Flatfish Unid	*Pleuronectiformes*
103	Flathead Sole	*Hippoglossoides elassodon*
858	Flying Fish Unid	*Exocoetidae*
363	Freckled Rockfish	*Sebastes lentiginosus*
197	Frigate Mackerel	*Auxis thazard*
411	Fringed Sculpin	*Icelinus fimbriatus*

Code	Common Name	Scientific Name
853	Garibaldi	*Hypsypops rubicundus*
1227	Ghostly Grenadier	*Coryphaenoides leptolepis*
82	Giant Grenadier	*Albatrossia pectoralis*
740	Giant Kelpfish	*Heterostichus rostratus*
476	Giant Sea Bass	*Stereolepis gigas*
760	Giant Wrymouth	*Cryptacanthodes giganteus*
364	Gopher Rockfish	*Sebastes carnatus*
365	Grass Rockfish	*Sebastes rastrelliger*
580	Gray Smoothhound Shark	*Mustelus californicus*
231	Green Sturgeon	*Acipenser medirostris*
366	Greenblotched Rockfish	*Sebastes rosenblatti*
102	Greenland Turbot	*Reinhardtius hippoglossoides*
390	Greenling Unid	*Hexagrammidae*
339	Greenspotted Rockfish	*Sebastes chlorostictus*
313	Greenstriped Rockfish	*Sebastes elongatus*
80	Grenadier Unid	*Macrouridae*
412	Grunt Sculpin	*Rhamphocottus richardsoni*
430	Gunnel Unid	*Pholidae*
695	Hachetfish Unid	*Sternoptychidae*
77	Hagfish Unid	*Myxinidae*
367	Halfbanded Rockfish	*Sebastes semicinctus*
697	Halfmoon	*Medialuna californiensis*
323	Harlequin Rockfish	*Sebastes variegatus*
1265	Herring Unid	*Clupeidae*
368	Honeycomb Rockfish	*Sebastes umbrosus*
581	Horn Shark	*Heterodontus francisci*
122	Hornyhead Turbot	*Pleuronichthys verticalis*
155	Hundred fathom Mora	*Physiculus rastrelliger*
116	Hybrid Sole	*Inopsetta ischyra*
175	Jacksmelt	*Atherinopsis californiensis*
207	Jackmackerel	*Trachurus symmetricus*
477	Kelp Bass	*Paralabrax clathratus*
392	Kelp Greenling	*Hexagrammos decagrammus*
369	Kelp Rockfish	*Sebastes atrovirens*
632	Kelp Surfperch	*Brachyistius frenatus*
742	Kelpfish Unid	*Clinidae*
608	King of the Salmon	*Trachipterus altivelis*
75	Lamprey Unid	*Petromyzontidae*
699	Lancetfish Unid	*Alepisauridae*
700	Lanternfish Unid	*Myctophidae*
867	Lavender Sculpin	*Leiocottus hirundo*
1251	Leaf Like Eel	*Thalassenchelys coheni*
582	Leopard Shark	*Triakis semifasciata*

Code	Common Name	Scientific Name
150	Lightfish Unid	*Phosichthyidae*
603	Lingcod	*Ophiodon elongatus*
10647	Longfin Dragonfish	*Tactostoma macropus*
1249	Longfin Mako Shark	*Isurus paucus*
125	Longfin Sanddab	*Citharichthys xanthostigma*
1253	Longfin Smelt	*Spirinchus thaleichthys*
852	Longnose Cat Shark	*Apristurus kampae*
785	Longnose Lancetfish	*Alepisaurus ferox*
554	Longnose Skate	*Raja rhina*
690	Longspine Combfish	*Zaniolepis latipinnis*
352	Longspine Thornyhead	*Sebastolobus altivelis*
152	Loosejaw Unid	*Malacosteinae*
153	Louvar	*Luvarus imperialis*
525	Lumpsucker Unid	*Cyclopteridae*
792	Lumptail Searobin	*Prionotus stephanophrys*
196	Mackerel Unid	*Scombridae*
774	Manefish	*Caristius macropus*
1231	Manta Ray	*Manta birostris*
154	Medusafish	*Icichthys lockingtoni*
370	Mexican Rockfish	*Sebastes macdonaldi*
869	Midshipman [Toadfish] Unid	*Batrachoididae*
259	Midwater Eelpout	*Melanostigma pammelas*
810	Mola Mola [Sunfish]	*Mola mola*
272	Monkeyface Prickleback	*Cebidichthys violaceus*
1262	Moridae Unid	*Moridae*
176	Night Smelt	*Spirinchus starksi*
1263	Non-Eulachon Smelt Unid	*Non-Eulachon Osmeriformes*
679	North Pacific Daggertooth	*Anotopterus nikparini*
610	Northern Anchovy	*Engraulis mordax*
303	Northern Rockfish	*Sebastes polyspinis*
241	Northern Ronquil	*Ronquilus jordani*
458	Northern spearnose Poacher	*Agonopsis vulsa*
798	Ocean Whitefish	*Caulolatilus princeps*
371	Olive Rockfish	*Sebastes serranoides*
435	Onespot Fringehead	*Neoclinus uninotatus*
297	Opah	*Lampris gattatus*
157	Opaleye	*Girella nigricans*
295	Oxeye Oreo	*Allocyttus folletti*
583	Pacific Angel Shark	*Squatina californica*
681	Pacific Argentine	*Argentina sialis*
1250	Pacific Black Dogfish	*Centroscyllium nigrum*
686	Pacific Bonito	*Sarda chiliensis*
688	Pacific Butterfish	*Peprilus simillimus*
202	Pacific Cod	*Gadus macrocephalus*
562	Pacific Electric Ray	*Torpedo californica*

Code	Common Name	Scientific Name
214	Pacific Flatnose	*Antimora microlepis*
83	Pacific Grenadier	*Coryphaenoides acrolepis*
79	Pacific Hagfish	*Eptatretus stouti*
206	Pacific Hake	*Merluccius productus*
101	Pacific Halibut	*Hippoglossus stenolepis*
611	Pacific Herring	*Clupea pallasii*
1298	Pacific Lamprey	*Entosphenus tridentatus*
199	Pacific Mackerel	*Scomber japonicus*
301	Pacific Ocean Perch Rockfish	*Sebastes alutus*
158	Pacific Pomfret	*Brama japonica*
137	Pacific Sanddab	*Citharichthys sordidus*
239	Pacific Sandfish	*Trichodon trichodon*
670	Pacific Sandlance	*Ammodytes hexapterus*
614	Pacific Sardine	*Sardinops sagax*
607	Pacific Saury	*Cololabis saira*
1218	Pacific Scabbardfish	*Lepidopus xantusi*
62	Pacific Sleeper Shark	*Somniosus pacificus*
1261	Pacific Snake Eel	*Ophichthus triserialis*
66	Pacific Spiny Dogfish	*Squalus suckleyi*
530	Pacific Spiny Lumpsucker	*Eumicrotremus orbis*
413	Pacific Staghorn Sculpin	*Leptocottus armatus*
209	Pacific Tom Cod	*Microgadus proximus*
797	Pacific Viperfish	*Chauliodus macouni*
394	Painted Greenling	*Oxylebius pictus*
260	Pallid Eelpout	*Lycodapus mandibularis*
762	Paperbone Unid	*Notosudidae*
862	Pelagic Stingray	*Pteroplatytrygon violacea*
585	Pelagic Thresher Shark	*Alopias pelagicus*
112	Petrale Sole	*Eopsetta jordani*
633	Pile Surfperch	*Rhacochilus vacca*
225	Pink [Humpback] Salmon	*Oncorhynchus gorbuscha*
372	Pink Rockfish	*Sebastes eos*
634	Pink Surfperch	*Zalembius rosaceus*
373	Pinkrose Rockfish	*Sebastes simulator*
664	Plainfin Midshipman	*Porichthys notatus*
450	Poacher Unid	*Agonidae*
84	Popeye Grenadier	*Coryphaenoides cinereus*
750	Prickleback Unid	*Stichaeidae*
459	Pricklebreast Poacher	*Stellerina xyosterna*
586	Prickly Shark	*Echinorhinus cookei*
205	Prowfish	*Zaprora silenus*
374	Puget Sound Rockfish	*Sebastes emphaeus*
1242	Purple Brotula	*Grammonus diagrammus*
460	Pygmy Poacher	*Odontopyxis trispinosa*
335	Pygmy Rockfish	*Sebastes wilsoni*
159	Queenfish	*Seriphus politus*

Code	Common Name	Scientific Name
343	Quillback Rockfish	*Sebastes maliger*
280	Ragfish	*Icosteus aenigmaticus*
1252	Rainbow Smelt	*Osmerus mordax*
635	Rainbow Surfperch	*Hypsurus caryi*
563	Ray Unid	*Myliobatiformes*
1215	Red Brotula	*Brosmophycis marginata*
407	Red Irish Lord Sculpin	*Hemilepidotus hemilepidotus*
308	Redbanded Rockfish	*Sebastes babcocki*
324	Redstripe Rockfish	*Sebastes proriger*
636	Redtail Surfperch	*Amphistichus rhodoterus*
105	Rex Sole	*Glyptocephalus zachirus*
564	Ribbonfish Unid	*Trachipteridae*
1299	River Lamprey	*Lampetra ayresii*
393	Rock Greenling	*Hexagrammos lagocephalus*
104	Rock Sole	*Lepidopsetta*
1213	Rock Wrasse	*Halichoeres semicinctus*
300	Rockfish Unid	*Sebastes*
461	Rockhead Poacher	*Bothragonus swanii*
240	Ronquil Unid	*Bathymasteridae*
309	Rosethorn Rockfish	*Sebastes helvomaculatus*
312	Rosy Rockfish	*Sebastes rosaceus*
414	Roughback Sculpin	*Chitonotus pugetensis*
307	Rougheye/Blackspotted Rockfish	*Sebastes aleutianus*
114	Roughscale Sole	*Clidoderma asperrimum*
1235	Roughshoulder/Broad Skate	*Amblyraja badia*
612	Round Herring	*Etrumeus teres*
560	Round Stingray	*Urobatis halleri*
200	Roundfish Unid	*Roundfish unid*
637	Rubberlip Surfperch	*Rhacochilus toxotes*
203	Sablefish	*Anoplopoma fimbria*
1243	Salmon Shark	*Lamna ditropis*
220	Salmon Unid	*Oncorhynchus*
115	Sand Sole	*Psettichthys melanostictus*
136	Sanddab Unid	*Citharichthys*
555	Sandpaper Skate	*Bathyraja kincaidii*
436	Sarcastic Fringehead	*Neoclinus blanchardi*
1217	Sargo	*Anisotremus davidsonii*
1268	Scabbardfishes/Cutlassfishes Unid	*Trichiuridae*
790	Scaleless Dragonfish Unid	*Melanostomiinae*
791	Scaly Dragonfish Unid	*Stomiinae*
400	Sculpin Unid	*Cottidae*
1270	Seadevils	*Ceratiidae*
375	Semaphore Rockfish	*Sebastes melanosema*
793	Senorita Senorita	*Oxyjulis californica*

Code	Common Name	Scientific Name
1220	Sevengill Shark	*Notorynchus cepedianus*
65	Shark Unid	*Squaliformes*
304	Sharpchin Rockfish	*Sebastes zacentrus*
415	Sharpnose Sculpin	*Clinocottus acuticeps*
638	Shiner Surfperch	*Cymatogaster aggregata*
318	Shortbelly Rockfish	*Sebastes jordani*
326	Shortraker Rockfish	*Sebastes borealis*
354	Shortraker/Rougheye/ Blackspotted Rockfish	*Sebastes Shortraker/ Rougheye/Blackspotted*
691	Shortspine Combfish	*Zaniolepis frenata*
350	Shortspine Thornyhead	*Sebastolobus alascanus*
349	Shortspine/ Longspine Thornyhead	*Sebastolobus*
1222	Shoulderspot Grenadier	*Caelorinchus scaphopsis*
181	Shovelnose Guitarfish	*Rhinobatos productus*
639	Silver Surfperch	*Hyperprosopon ellipticum*
310	Silvergray Rockfish	*Sebastes brevispinis*
416	Silverspotted Sculpin	*Blepsias cirrhosus*
78	Sixgill Shark	*Hexanchus griseus*
90	Skate Unid	*Rajidae*
1274	Skilfish	*Erilepis zonifer*
713	Skipjack Tuna	*Euthynnus lineatus*
860	Slender Codling	*Halargyreus johnsonii*
111	Slender Sole	*Lyopsetta exilis*
162	Slickhead Unid	*Alepocephalidae*
417	Slim Sculpin	*Radulinus asprellus*
270	Smalleye Squaretail	*Tetragonurus cuvieri*
602	Smelt Unid	*Osmeridae*
1224	Smooth Grenadier	*Nezumia liolepis*
857	Smooth Stargazer	*Kathetostoma averruncus*
462	Smootheye Poacher	*Xeneretmus leiops*
1246	Smoothhound Shark Unid	*Mustelus Sp.*
1233	Smoothtail Mobula	*Mobula thurstoni*
795	Snaggletooth Unid	*Astronesthinae*
500	Snailfish Unid	*Liparidae*
868	Snakehead Eelpout	*Lycenchelys crotalinus*
1214	Snipe Unid Eel	*Nemichthyidae*
186	Snubnose Pipefish	*Cosmocampus arctus*
224	Sockeye [Red] Salmon	*Oncorhynchus nerka*
263	Soft Eelpout	*Bothrocara molle*
1223	Softhead Grenadier	*Malacocephalus laevis*
64	Soupfin Shark	*Galeorhinus galeus*
463	Southern Spearnose Poacher	*Agonopsis sterletus*
376	Speckled Rockfish	*Sebastes ovalis*
126	Speckled Sanddab	*Citharichthys stigmaeus*
665	Specklefin Midshipman	*Porichthys myriaster*
1232	Spinetail Mobula	*Mobula japanica*

Code	Common Name	Scientific Name
464	Spinycheek Starnose Poacher	*Bathyagonus infraspinatus*
1277	Spinyfins	*Diretmidae*
418	Spinyhead Sculpin	*Dasycottus setiger*
315	Splitnose Rockfish	*Sebastes diploproa*
1300	Splitnose Searobin	*Bellator xenisma*
726	Spotfin Croaker	*Roncador stearnsi*
419	Spotfin Sculpin	*Icelinus tenuis*
640	Spotfin Surfperch	*Hyperprosopon anale*
1283	Spotted Batfish	*Zalieutes elater*
261	Spotted Cusk-eel	*Chilara taylori*
99	Spotted Ratfish	*Hydrolagus colliei*
478	Spotted Sand Bass	*Paralabrax maculatofasciatus*
123	Spotted Turbot	*Pleuronichthys ritteri*
377	Squarespot Rockfish	*Sebastes hopkinsi*
142	Starry Flounder	*Platichthys stellatus*
378	Starry Rockfish	*Sebastes constellatus*
556	Starry Skate	*Raja stellulata*
226	Steelhead [Rainbow Trout]	*Oncorhynchus mykiss*
479	Striped Bass	*Morone saxatilis*
741	Striped Kelpfish	*Gibbonsia metzi*
156	Striped Mullet	*Mugil cephalus*
641	Striped Surfperch	*Embiotoca lateralis*
242	Stripefin Ronquil	*Rathbunella hypoplecta*
328	Stripetail Rockfish	*Sebastes saxicola*
452	Sturgeon Poacher	*Podothecus acipenserinus*
230	Sturgeon Unid	*Acipenser*
177	Surf Smelt	*Hypomesus pretiosus*
642	Surfperch Unid	*Embiotocidae*
587	Swell Shark	*Cephaloscyllium ventriosum*
379	Swordspine Rockfish	*Sebastes ensifer*
557	Thornback	*Platyrhinoidis triseriata*
420	Thornback Sculpin	*Paricelinus hopliticus*
421	Threadfin Sculpin	*Icelinus filamentosus*
161	Threadfin Slickhead	*Talismania bifurcata*
1285	Thresher Shark Unid	*Alopias*
329	Tiger Rockfish	*Sebastes nigrocinctus*
178	Top Smelt	*Atherinops affinis*
380	Treefish Rockfish	*Sebastes serriceps*
1278	Triggerfish Unid	*Balistidae*
465	Tubenose Poacher	*Pallasina barbata*
807	Tubeshoulder Unid	*Platytroctidae*
253	Twoline Eelpout	*Bothrocara brunneum*
331	Vermilion Rockfish	*Sebastes miniatus*
805	Viperfish Unid	*Chauliodontinae*
201	Walleye Pollock	*Gadus chalcogramma*
643	Walleye Surfperch	*Hyperprosopon argenteum*
466	Warty Poacher	*Chesnonia verrucosa*
251	Wattled Eelpout	*Lycodes palearis*
1248	Whiptail Gulper Unid	*Saccopharyngidae*
728	White Croaker	*Genyonemus lineatus*
481	White Seabass	*Atractoscion nobilis*
558	White Skate	*Bathyraja spinosissima*
232	White Sturgeon	*Acipenser transmontanus*
644	White Surfperch	*Phanerodon furcatus*
613	Whitebait Smelt	*Allosmerus elongatus*
273	Whitebarred Prickleback	*Poroclinus rothrocki*
391	Whitespotted Greenling	*Hexagrammos stelleri*
305	Widow Rockfish	*Sebastes entomelas*
780	Wolf-eel	*Anarrhichthys ocellatus*
799	Wrymouth Unid	*Cryptacanthodidae*
1228	Yaquina Grenadier	*Coryphaenoides yaquinae*
422	Yellowchin Sculpin	*Icelinus quadriseriatus*
322	Yelloweye Rockfish	*Sebastes ruberrimus*
729	Yellowfin Croaker	*Umbrina roncador*
714	Yellowfin Tuna	*Thunnus albacares*
320	Yellowmouth Rockfish	*Sebastes reedi*
698	Yellowtail Jack	*Seriola lalandi*
321	Yellowtail Rockfish	*Sebastes flavidus*

Invertebrate Species List and Codes

Code	Common Name	Scientific Name
1206	Amiphpod Unid	*Amphipoda*
55	Anemone Unid	*Actiniaria*
19	Angulatus Tanner Crab	*Chionoecetes angulatus*
1291	Anthoptilum grandiflorum	*Anthoptilum grandiflorum*
888	Arched Swimming Crab	*Callinectes arcuatus*
5	Armed Box Crab	*Platymera gaudichaudii*
4	Bairdi Tanner Crab	*Chionoecetes bairdi*
1260	Bamboo Corals	*Isididae*
48	Barnacles Unid	*Cirripedia*
27	Bivalves Unid	*Bivalvia*
1201	Black Coral	*Antipatharia*
1271	Blind lobster unid	*Polychelidae*
1287	Bobtail Squid	*Sepiolida*
866	Brachiopod Unid	*Brachiopoda*
22	Brittle/Basket Star Unid	*Ophiuroidea*

Code	Common Name	Scientific Name
6	Brown Box Crab	*Lopholithodes foraminatus*
1293	CA Sea Cucumber	*Parastichopus californicus*
7	California King Crab	*Paralithodes californiensis*
10	Cancer Unid Crab	*Cancridae*
28	Chiton Unid	*Neoloricata*
32	Corals Unid	*Anthozoa*
1	Crab Unid	*Brachyura/Anomura*
53	Crinoids Unid	*Crinoidea*
892	Crustacean Unid	*Crustacea*
39	Decorator/Spider Crab Unid	*Majidae*
871	Deep-sea Rock Crab	*Glyptolithodes cristatipes*
872	Deep-sea Spider Crab	*Paralomis manningi*
12	Dungeness Crab	*Cancer magister*
1284	Ectoprocta	*Ectoprocta*
38	Flat-legged Spider Crab	*Paralomis verrilli*
873	Furrowed Rock Crab	*Cancer branneri*
1202	Gorgonian Coral Unid	*Alcyonacea*
44	Graceful Crab	*Cancer gracilis*
874	Green Crab	*Carcinus maenas*
17	Hair Crab	*Paralomis multispina*
875	Heart Crab	*Phyllolithodes papillosus*
15	Hermit Unid Crab	*Paguridae*
1258	Horny Gorgonians	*Holaxonia*
620	Humboldt [Jumbo] Squid	*Dosidicus gigas*
1205	Hydrocoral	*Stylasteridae*
13	Invertebrate Unid	*Animalia*
1240	Irregular Echinoids	*Echinoidea*
33	Isopod Unid	*Isopoda*
35	Jellyfish Unid	*Scyphozoa*
876	Kelp Unid Crab	*Pugettia spp*
2	King Unid Crab	*Lithodidae*
877	Long-armed Spider Crab	*Macroregonia macrochira*
840	Lyre Unid Crab	*Hyas spp.*
1272	Mantis Shrimp	*Stomatopoda*
878	Masking Crab	*Loxorhynchus crispatus*
34	Mollusk Unid	*Mollusca*
1292	Mushroom Coral	*Anthomastus ritteri*
1264	Non Humboldt Squid Unid	*Teuthida*
25	Nudibranch Unid	*Nudibranchia*
60	Octopus Unid	*Octopoda*
1289	Orange Sea Pen	*Ptilosarcus gurneyi*
879	Pacific Rock Crab	*Cancer antennarius*
1208	Peanut Worm Unid	*Sipuncula*
880	Porcelain Unid Crab	*Porcellanidae*

Code	Common Name	Scientific Name
1288	Primnoid Unid	*Primnoidae*
881	Puget Sound King Crab	*Lopholithodes mandtii*
882	Purple Globe Crab	*Randallia ornata*
1304	Pyrosome Unid	*Pyrosoma spp*
9	Red Rock Crab	*Cancer productus*
883	Rhinoceros Crab	*Rhinolithodes wosnesenskii*
1276	Sail Jellyfish	*Velella velella*
1275	Salp Unid	*Thaliacea*
40	Sand Dollar Unid	*Clypeasteroida*
16	Scarlet King Crab	*Lithodes couesi*
41	Sea Cucumber Unid	*Holothuroidea*
1259	Sea Fans	*Calcaxonia*
1255	Sea Pansies	*Renillidae*
1256	Sea Pens	*Pennatulacea*
30	Sea Snail Unid	*Gastropoda*
889	Sea Spider Unid	*Pycnogonida*
47	Sea Squirts Unid	*Ascidiacea*
20	Sea Star Unid	*Asteroidea*
1254	Sea Whips	*Pennatulacea*
884	Sheep Crab	*Loxorhynchus grandis*
70	Shrimp Unid	*Caridea*
1267	Skeleton shrimp unid	*Caprellidae*
1203	Soft Coral	*Alcyoniina*
1207	Solenogastres Unid	*Solenogastres*
885	Spiky King Crab	*Neolithodes diomedeae*
8	Spiny King Crab	*Paralithodes rathbuni*
1230	Spiny Lithode Crab	*Acantholithodes hispidus*
891	Spiny Lobster Unid	*Palinuridae*
26	Sponge Unid	*Porifera*
1257	Spongy Gorgonians	*Scleraxonia*
76	Spot Prawn	*Pandalus platyceros*
890	Squat Lobster Unid	*Galatheidae*
50	Squid Unid	*Teuthida*
1204	Stony Coral	*Scleractinia*
3	Tanner Unid Crab	*Chionoecetes spp.*
18	Tanneri Tanner Crab	*Chionoecetes tanneri*
49	Tunicata Unid	*Tunicata*
1290	Umbelluilidae sp.	*Umbelluilidae sp.*
886	Umbrella Unid Crab	*Cryptolithodes ssp*
54	Urchin Unid	*Echinoidea*
1294	Warty Sea Cucumber	*Parastichopus parvimensis*
1209	Worm Unid	*Annelida*
887	Xantus Swimming Crab	*Portunus xantusii*
11	Yellow Rock Crab	*Cancer anthonyi*

Marine Mammal and Sea Turtle Species List and Codes

Code	Common Name	Scientific Name
1001	Bairds Beaked Whale	*Berardius bairdii*
1008	Beaked Whale Unid	*Ziphiidae*
1002	Blainevilles Beaked Whale	*Mesoplodon densirostris*
1031	Blue Whale	*Balaenoptera musculus*
1024	California Sea Lion	*Zalophus californianus*
1295	Cetacean Unid	*Cetacean Unid*
1044	Common Unid Dolphin	*Delphinus*
1009	Common Bottlenose Dolphin	*Tursiops truncatus*
1003	Cuviers Beaked Whale	*Ziphius cavirostris*
1021	Dalls Porpoise	*Phocoenoides dalli*
1016	Dolphin Unid	*Delphinidae*
1032	Dwarf Sperm Whale	*Kogia sima*
1033	Fin Whale	*Balaenoptera physalus*
1019	Fur Seal Unid	*Arctocephalinae*
1004	Gingko-toothed Beaked Whale	*Mesoplodon ginkgodens*
1034	Gray Whale	*Eschrichtius robustus*
1017	Guadalupe Fur Seal	*Arctocephalus townsendi*
1022	Harbor Porpoise	*Phocoena phocoena*
1028	Harbor Seal	*Phoca vitulina*
1005	Hectors Beaked Whale	*Mesoplodon hectori*
1006	Hubbs Beaked Whale	*Mesoplodon carlhubbsi*
1035	Humpback Whale	*Megaptera novaeangliae*
1036	Killer Whale	*Orcinus orca*
1010	Long-beaked Common Dolphin	*Delphinus capensis*
1000	Marine mammal Unid	*Mammalia*
1037	Minke Whale	*Balaenoptera acutorostrata*
1029	Northern Elephant Seal	*Mirounga angustirostris*
1018	Northern Fur Seal	*Callorhinus ursinus*
1038	Northern Pacific Right Whale	*Eubalaena glacialis*
1011	Northern Right Whale Dolphin	*Lissodelphis borealis*
1012	Pacific White-sided Dolphin	*Lagenorhynchus obliquidens*
1020	Pinniped Unid	*Caniformia*
1023	Porpoise Unid	*Phocoenidae*
1039	Pygmy Sperm Whale	*Kogia breviceps*
1013	Rissos Dolphin	*Grampus griseus*
1026	Sea Lion Unid	*Otariidae*
1027	Sea Otter	*Enhydra lutris*
1030	Seal Unid	*Phocidae*
1040	Sei Whale	*Balaenoptera borealis*
1014	Short-beaked Common Dolphin	*Delphinus delphis*
1041	Short-finned Pilot Whale	*Globicephala macrorhynchus*
1042	Sperm Whale	*Physeter macrocephalus*
1007	Stejnegers Beaked Whale	*Mesoplodon stejnegeri*
1025	Steller Sea Lion	*Eumetopias jubatus*
1015	Striped Dolphin	*Stenella coeruleoalba*
1043	Whale Unid	*Cetacea*

Sea Turtle Species Codes

Code	Common Name	Scientific Name
1071	Green Turtle	*Chelonia mydas*
1072	Hawksbill Turtle	*Eretmochelys imbricata*
1073	Leatherback Turtle	*Dermochelys coriacea*
1074	Loggerhead Turtle	*Caretta caretta*
1075	Olive Ridley Turtle	*Lepidochelys olivacea*
1070	Turtle Unid	*Chelonidae*

Seabird Species List and Codes

Code	Common Name	Scientific Name
949	Albatross Unid	*Diomedeidae*
983	Alcid Unid	*Alcidae*
912	American Coot	*Fulica americana*
993	Ancient Murrelet	*Synthliboramphus antiquus*
1305	Ashy Storm-Petrel	*Oceanodroma homochroa*
900	Bird Unid	*Aves*
959	Black Storm-Petrel	*Oceanodroma melania*
952	Black-footed Albatross	*Phoebastria nigripes*
976	Black-legged Kittiwake	*Rissa tridactyla*
953	Black-vented Shearwater	*Puffinus opisthomelas*
962	Brandts Cormorant	*Phalacrocorax penicillatus*
998	Brown Booby	*Sula leucogaster*
910	Brown Pelican	*Pelecanus occidentalis*
975	California Gull	*Larus californicus*
1286	California Least Tern	*Sternula antillarum browni*
911	Caspian Tern	*Hydroprogne caspia*
996	Cassins Auklet	*Ptychoramphus aleuticus*
941	Common Loon	*Gavia immer*
989	Common Murre	*Uria aalge*
961	Cormorant Unid	*Phalacrocoracidae*
963	Double-crested Cormorant	*Phalacrocorax auritus*
960	Fork-tailed Storm-Petrel	*Oceanodroma furcata*
979	Glaucous-winged Gull	*Larus glaucescens*
946	Grebe Unid	*Podicipedidae*

Code	Common Name	Scientific Name
948	Guillemot Unid	*Cepphus*
974	Gull Unid	*Laridae*
978	Heermanns Gull	*Larus heermanni*
977	Herring Gull	*Larus argentatus*
945	Horned Grebe	*Podiceps auritus*
951	Laysan Albatross	*Phoebastria immutabilis*
965	Leachs Storm-Petrel	*Oceanodroma leucorhoa*
966	Least Storm-Petrel	*Oceanodroma microsoma*
1297	Long-Tailed Jaeger	*Stercorarius longicaudus*
944	Loon Unid	*Gaviidae*
994	Marbled Murrelet	*Brachyramphus marmoratus*
980	Mew Gull	*Larus canus*
987	Murre Unid	*Uria*
954	Northern Fulmar	*Fulmarus glacialis*
940	Pacific Loon	*Gavia pacifica*
1279	Parasitic Jaeger	*Stercorarius parasiticus*
964	Pelagic Cormorant	*Phalacrocorax pelagicus*
947	Pigeon Guillemot	*Cepphus columba*
955	Pink-footed Shearwater	*Puffinus creatopus*
1296	Pomarine Jaeger	*Stercorarius pomarinus*
942	Red-necked Grebe	*Podiceps grisegena*
1301	Red-necked Phalarope	*Phalaropus lobatus*
939	Red-throated Loon	*Gavia stellata*
995	Rhinoceros Auklet	*Cerorhinca monocerata*
981	Ring-billed Gull	*Larus delawarensis*
997	Shearwater Unid	*Puffinus*
950	Short-tailed Albatross	*Diomedea albatrus*
957	Short-tailed Shearwater	*Puffinus tenuirostris*
1282	Snowy Plover	*Charadrius alexandrinus*
956	Sooty Shearwater	*Puffinus griseus*
1280	South Polar Skua	*Stercorarius maccormicki*
958	Storm-Petrel Unid	*Hydrobatidae*
992	Tufted Puffin	*Fratercula cirrhata*
943	Western Grebe	*Aechmophorus occidentalis*
982	Western Gull	*Larus occidentalis*

Miscellaneous List and Codes

Code	Common Name	Scientific Name
899	Decomposed Fish	Decomposed fish
91	Egg case Unid	Egg case unid
777	Fish, unspecified	Vertebrata
1310	Pot - DCRB	Fishing Gear
1311	Pot - SABL	Fishing Gear
1312	Pot - Unidentified	Fishing Gear
1313	Pot - Slime Eel	Fishing Gear
1314	Trawl Gear	Fishing Gear
1315	Longline Gear	Fishing Gear
1316	Gear - Unidentified	Fishing Gear
1317	Bait Jars	Fishing Gear
1318	Buoys/Floats	Fishing Gear
1319	Fishing line, Netting	Fishing Gear
1320	Plastics	Garbage
1321	Glass	Garbage
1322	Metal	Garbage
1323	Rubber	Garbage
1324	Fabric	Garbage
1325	Styrofoam	Garbage
1326	Hazardous or miltary waste	Garbage
667	Garbage - Mix, unsorted	Garbage
1328	Garbage - Tires	Natural bottom items
1329	Natural - Mud/Rock	Natural bottom items
1330	Natural - Wood	Natural bottom items
1331	Natural - Bone	Natural bottom items
1332	Shells	Natural bottom items
26	Sponge Unid	Organism
13	Invertebrates	Organism
1335	Kelp	Organism
20	Sea Star Unid	Organism
54	Urchins Unid	Organism

Catch Categories Code Lists and Target Strategies

Below are tables of catch category codes; 1) Unsampled Haul Catch Codes 2) Target Strategies 3) Marine Debris or Bottom Item Catch Codes 4) Marine Mammal Catch Category Codes, 5) Seabird Catch Category Codes 6) Species Grouping Catch Category Codes, 7) Species Specific Catch Category Codes. All catch categories may be used as a target strategy. Do not use target strategies as catch categories. Use Species Specific Catch Categories when ever possible.

Unsampled Haul Catch Codes		Target Strategies			
Code	Species Name	Code	Species Name	Code	Species Name
IFQM	Mixed IFQ Species	BRSH	Bottom rockfish shelf - target	MSC2	Miscellaneous - target
NIFQ	Non-IFQ Fish Species	BRSL	Bottom rockfish slope - target	NSM	Nearshore mix - target
UNST	Discarded unsorted catch not sampled	DTS	Dover/thornyheads/sablefish -target	UNKN	Unknown - target
RDIS	Retained Shoreside Discard (EM-EFP only)	DWD	Deepwater dover - target		

Marine Mammal Catch Category Codes							
Code	Species Name	Code	Species Name	Code	Species Name	Code	Species Name
BDOL	Bottlenose Dolphin	GDFS	Guadalupe Fur Seal	NOFS	Northern Fur Seal	RISO	Risso's Dolphin
CASL	California Sea Lion	HPRP	Harbor Porpoise	NORW	Northern Right Whale	SELN	Sea Lion Unid
CETN	Cetacean Unid	HSEL	Harbor Seal	PWSD	Pacific White-sided Dolphin	SOTT	Sea Otter
DRPR	Dall's Porpoise	ZMRM	Marine Mammal	PNPD	Pinniped Unid	SEAL	Seal Unid
DLPH	Dolphin Unid	NOES	Northern Elephant Seal	PRPS	Porpoise Unid	STSL	Stellar Sea Lion

Seabird Catch Category Codes							
Code	Species Name	Code	Species Name	Code	Species Name	Code	Species Name
ALBA	Albatross Unid	FULM	Northern Fulmar	XBRD	Seabird	STAL	Short-tailed Albatross
BFAL	Black-footed Albatross	PJAE	Parasitic Jaeger	GULL	Seagull Unid	SPSA	South Polar Skua
LSAL	Laysan Albatross	XPET	Petrel Unid	SWTR	Shearwater Unid		

Species Grouping Catch Category Codes							
Code	Species Name	Code	Species Name	Code	Species Name	Code	Species Name
UANC	Anchovy Unid	LAMP	Lamprey Unid	ORAY	Ray Other	OSKT	Skate Other
ANEM	Anemone Unid	LOOS	Loosejaw Unid	SAMN	Salmon Unsp.	NSLP	Slope Rockfish N
BASS	Bass Unid	UMCK	Mackerel Unid	SALP	Salp Unid	SSLP	Slope Rockfish S
UCAT	Catshark Unid	UMRY	Moray Unid	SCLP	Sculpin Unid	SMLT	Smelt Unid
UCMB	Combfish Unid	UMOR	Moridae Unid	USCU	Sea Cucumber Unid	SNLF	Snailfish Unid
OCRB	Crab Other	MYCT	Myctophid Unid	SPEN	Sea Pen Unid	SPNG	Sponge Unid
UCRK	Croaker Unid	NSHR	Nearshore Rockfish N	SEST	Sea Star Unid	USTG	Sturgeon Unid
POUT	Eelpout Unid	SSHR	Nearshore Rockfish S	SWHP	Sea Whip Unid	USRF	Surfperch Unid
GRDR	Grenadier Unsp.	NHBS	Non Humboldt Squid Unid	OSRK	Shark Other	THDS	Thornyhead Unsp.
UHAG	Hagfish Unid	NEST	Non-Eulachon Smelt	NSLF	Shelf Rockfish N	UTRG	Triggerfish Unid
HERR	Herring Unid	OCTP	Octopus Unsp.	SSLF	Shelf Rockfish S	SQID	Unidentified Squid
JACK	Jack Unid	PCHR	Poacher Unid	UDW1	Shortraker/Rougheye/ Blackspotted Rockfish	UURC	Urchin Unid
UJEL	Jellyfish Unid	UPRK	Prickleback Unid			UWRY	Wrymouth Unid
UKLP	Kelpfish Unid			SRMP	Shrimp and Prawns	**ZMIS**	**Miscellaneous**
	NCS ONLY:	FISH	Fish, Unsp.	OFLT	Flatfish, Other	URCK	Rockfish, Unsp.

Species Specific Catch Category Codes							
Code	Species Name	Code	Species Name	Code	Species Name	Code	Species Name
ALBC	Albacore Tuna	DSOL	Deepsea Sole	ASRK	Pacific Angel Shark	SRGO	Sargo
ASHD	American Shad	DTRB	Diamond Turbot	ARGN	Pacific Argentine	SVSK	Sevengill Shark
ARTH	Arrowtooth Flounder	DOVR	Dover Sole	PBNT	Pacific Bonito	SHRP	Sharpchin Rockfish
ARRA	Aurora Rockfish	DCRB	Dungeness Crab	PBTR	Pacific Butterfish	SHCR	Sheep Crab
BANK	Bank Rockfish	EGLS	English Sole	PCOD	Pacific Cod	SHPD	Sheepshead
BTRY	Bat Ray	EULC	Eulachon	PERY	Pacific Electric Ray	SBLY	Shortbelly Rockfish
BSKT	Big Skate	FNTS	Fantail Sole	PFNS	Pacific Flatnose	SRKR	Shortraker Rockfish
ISRK	Bigeye Thresher Shark	FCAT	Filetail Catshark	GREN	Pacific Grenadier	SSPN	Shortspine Thornyhead
BYEL	Black and Yellow Rockfish	FLAG	Flag Rockfish	PWHT	Pacific Hake	SLGR	Silvergray Rockfish
BLCK	Black Rockfish	FSOL	Flathead Sole	PHLB	Pacific Halibut	SXSK	Sixgill Shark
BLSK	Black Skate	GGRN	Giant Grenadier	PHRG	Pacific Herring	SLNS	Slender Sole
BLGL	Blackgill Rockfish	GBAS	Giant Sea Bass	PMCK	Pacific Mackeral	SLCK	Slickhead Unid
BKSM	Blacksmith	GPHR	Gopher Rockfish	POP	Pacific Ocean Perch	SMSU	Smoothhound Shark Unid
BSRK	Blue Shark	GRAS	Grass Rockfish	PDAB	Pacific Sanddabs	SOCK	Sockeye [Red] Salmon
BLUR	Blue/Deacon Rockfish	GSTG	Green Sturgeon	PSSK	Pacific Sleeper Shark	SSRK	Soupfin Shark
BCAC	Bocaccio Rockfish	GBLC	Greenblotched Rockfish	DSRK	Pacific Spiny Dogfish	SPKL	Speckled Rockfish
BRNZ	Bronzespotted Rockfish	GSPT	Greenspotted Rockfish	PSRK	Pelagic Thresher Shark	SNOS	Splitnose Rockfish
CSRK	Brown Cat Shark	GSRK	Greenstriped Rockfish	PTRL	Petrale Sole	SPRW	Spot Prawn
BRWN	Brown Rockfish	HBRK	Halfbanded Rockfish	PINK	Pink [Humback] Salmon	RATF	Spotted Ratfish
BSOL	Butter Sole	HFMN	Halfmoon	PNKR	Pink Rockfish	STRY	Starry Flounder
CBZN	Cabezon	HLQN	Harelquin Rockfish	MSHP	Plainfin midshipman	STAR	Starry Rockfish
CLCO	Calico Rockfish	HNYC	Honeycomb Rockfish	PGMY	Pygmy Rockfish	SSKT	Starry Skate
CHLB	California Halibut	HTRB	Hornyhead Turbot	PYRO	Pyrosome Unid	STRB	Striped Bass
LZRD	California Lizardfish	HBSD	Humboldt Squid	QLBK	Quillback Rockfish	STRK	Stripetail Rockfish
SCOR	California scorpionfish	JKSM	Jacksmelt	RAGF	Ragfish	TCRB	Tanner Crab
CASL	California Sea Lion	KLPG	Kelp Greenling	RDBD	Redbanded Rockfish	THRS	Thresher Shark Unid
CSKT	California Skate	KLPR	Kelp Rockfish	REDS	Redstripe Rockfish	TIGR	Tiger Rockfish
LOBS	California Spiny Lobster	LSRK	Leopard Shark	REX	Rex Sole	TREE	Treefish Rockfish
CNRY	Canary Rockfish	LCOD	Lingcod	RPRW	Ridgeback Prawn	VRML	Vermilion Rockfish
CLPR	Chilipepper Rockfish	LSKT	Longnose Skate	RCRB	Rock crab	PLCK	Walleye Pollock
CHNA	China Rockfish	LSPN	Longspine Thornyhead	RCKG	Rock Greenling	WCRK	White Croaker
CHNK	Chinook [King] Salmon	MEDU	Medusafish	RSOL	Rock Sole	WBAS	White Seabass
CHUM	Chum [Dog] Salmon	MOLA	Mola Mola [Sunfish]	RSTN	Rosethorn Rockfish	WSTG	White Sturgeon
COHO	Coho [Silver] Salmon	MEEL	Monkeyface Prickleback	ROSY	Rosy Rockfish	WDOW	Widow Rockfish
TSRK	Common thresher shark	NANC	Northern Anchovy	REYE	Rougheye/Blackspotted Rockfish	WEEL	Wolf-eel
COPP	Copper Rockfish	OWFS	Ocean Whitefish	SABL	Sablefish	YEYE	Yelloweye Rockfish
CWCD	Cowcod Rockfish	OLVE	Olive Rockfish	SMNS	Salmon Shark	YMTH	Yellowmouth Rockfish
CSOL	Curlfin Sole	OPAL	Opaleye	SSOL	Sand Sole	YTRK	Yellowtail Rockfish
DBRK	Darkblotched Rockfish	CUDA	Pacific / CA Barracuda	SPSK	Sandpaper Skate		

Marine Debris/Bottom Item Category Codes							
Code	Species Name	Code	Species Name	Code	Species Name	Code	Species Name
GRPTC	Gear - Pot - DCRB	GRPBJ	Gear - Bait Jars	GARBR	Garbage - Rubber	NTRBN	Bone
GRPTS	Gear - Pot - SABL	GRPBF	Gear - Buoys/Floats	GARBS	Garbage - Styrofoam	NTRSH	Shells
GRPTU	Gear - Pot - UnID	GRPFL	Gear - Fishing line, Netting unid.	GARBH	Garbage - Hazardous /Military waste	SPNG	Sponge Unid
GRPTE	Gear - Pot - Slime Eel	GARBP	Garbage - Plastics	GARBX	Garbage - Mix of types-unsorted	INVT	Invertebrates Unid
GRPTR	Gear - Trawl	GARBG	Garbage - Glass	GARBT	Garbage - Tires	KELP	Kelp
GRPLL	Gear - Longline	GARBM	Garbage - Metal	NTRMR	Mud/Rock	SEST	Sea Star Unid
GRPUN	Gear - Unid	GARBF	Garbage - Fabric	NTRWD	Wood	UURC	Urchins Unid

Minor Rockfish Species

Rockfish Categories

Currently, many regulations are designed to lessen the impacts of fishing on certain species of rockfish. Rockfish (except thornyheads) are divided into categories north and south of 40°10' N. latitude, depending on the depth where they are often caught: nearshore, shelf, or slope.

"Nearshore" is defined (by the California Nearshore Fishery Management Plan) as the area from the high-tide line offshore to a depth of 120 ft (20 fm). "Shelf" refers to the continental shelf, while "slope" refers to the continental slope.

Note: Species listed in bold have their own catch category names when caught in the opposite region. For example, bocaccio rockfish is listed in bold in the Shelf rockfish list North of 40°10' N. lat., therefore north of 40°10' N. lat., bocaccio rockfish is listed under the catch category NSLF, and south of 40°10' N. lat., bocaccio is in its own catch category: BCAC.

- NSHR- Nearshore Rockfish North
- SSHR - Nearshore Rockfish South
- NSLF - Shelf Rockfish North
- SSLF - Shelf Rockfish South
- NSLP - Slope Rockfish North
- SSLP - Slope Rockfish South

North of 40°10' N. lat.	South of 40°10' N. lat.
Nearshore (to depth of 20 fm)	
NHSR	*SSHR*
black- *Sebastes melanops*	black- *Sebastes melanops*
black and yellow- *S. chrysolmelas*	black and yellow- *S. chrysolmelas*
blue- *S. mystinus*	blue- *S. mystinus*
brown- *S. auriculatus*	brown- *S. auriculatus*
calico- *S. dallli*	**California scorpionfish**- *S. guttata*
china- *S. nebulosus*	calico- *S. dalli*
copper- *S. caurinus*	china- *S. nebulosus*
gopher- *S. carnatus*	copper- *S. caurinus*
grass- *S. rastrelliger*	gopher- *S. carnatus*
kelp- *S. atrovirens*	grass- *S. rastrelliger*
olive- *S. serranoides*	kelp- *S. atrovirens*
quillback- *S. maliger*	olive- *S. serranoides*
treefish- *S. serriceps*	quillback- *S. maliger*
	treefish- *S. serriceps*
SLOPE	
NSLP	*SSLP*
aurora- *S. aurora*	aurora- *S. aurora*

North of 40°10' N. lat.	South of 40°10' N. lat.
bank- *S. rufus*	bank- *S. rufus*
blackgill- *S. melanostomus*	blackgill- *S. melanostomus*
darkblotched- *S. crameri*	darkblotched- *S. crameri*
redbanded- *S. babcocki*	**pacific ocean perch**- *S. alutus*
rougheye- *S. aleutianus*	redbanded- *S. babcocki*
sharpchin- *S. zacentrus*	rougheye- *S. aleutianus*
shortraker- *S. borealis*	sharpchin- *S. zacentrus*
splitnose- *S. diploproa*	shortraker- *S. borealis*
yellowmouth- *S. reedi*	yellowmouth- *S. reedi*
Shelf	
NSLF	*SSLF*
bronzespotted- *S. gilli*	bronzespotted- *S. gilli*
bocaccio- *S. paucispinis*	chameleon- *S. phillipsi*
chameleon- *S. phillipsi*	dwarf-*red- S. refianus*
chilipepper- *S. goodie*	flag- *S. rubrivinctus*
cowcod- *S. levis*	freckled- *S. lentiginosus*
dwarf-*red- S. refianus*	greenblotched- *S. rosenblatti*
flag- *S. rubrivinctus*	greenspotted- *S. chlorostictus*
freckled- *S. lentiginosus*	greenstriped- *S. elongates*
greenblotched- *S. rosenblatti*	halfbanded- *S. semicinctus*
greenspotted- *S. chlorostictus*	honeycomb- *S. umbrosus*
greenstriped- *S. elongates*	mexican- *S. macdonaldi*
halfbanded- *S. semicinctus*	pink- *S. eos*
honeycomb- *S. umbrosus*	pinkrose- *S. simulator*
mexican- *S. macdonaldi*	pygmy- *S. wilsoni*
pink- *S. eos*	redstriped- *S. proriger*
pinkrose- *S. simulator*	rosethorn- *S. helvomaculatus*
pygmy- *S. wilsoni*	rosy- *S. rosaceus*
redstriped- *S. proriger*	silvergrey- *S. brevispinus*
rosethorn- *S. helvomaculatus*	speckled- *S. ovalis*
rosy- *S. rosaceus*	squarespot- *S. hopkinsi*
silvergrey- *S. brevispinus*	starry- *S. constellatus*
speckled- *S. ovalis*	stripetail- *S. saxicola*
squarespot- *S. hopkinsi*	swordspine- *S. ensifer*
starry- *S. constellatus*	tiger- *S. nigorcinctus*
stripetail- *S. saxicola*	vermilion- *S. miniatus*
swordspine- *S. ensifer*	yelloweye- *S. ruberrimus*
tiger- *S. nigorcinctus*	**yellowtail**- *S. flavidus*
vermilion- *S. miniatus*	
yelloweye- *S. ruberrimus*	

WCGOP Codes

Gear Type

1 - Groundfish Trawl, Footrope < 8 inches (small footrope, not an OR Set-back Flatfish net)
2 - Groundfish Trawl, Footrope > 8 inches (large footrope)
3 - Midwater Trawl
7 - Vertical Hook and Line Gear
8 - Pole (Commercial)
9 - Other Hook and Line Gear
10 - Fish Pot
12 - Shrimp Trawl Single Rigged
13 - Shrimp Trawl Doubled Rigged
14 - All Net Gear Except Trawl
15 - All Troll Gear
16 - All Other Miscellaneous Gear
17 - OR Set Back Flatfish Net (Pineapple Trawl)
19 - Longline Gear (fixed hooks)
20 - Longline Gear (snap-on hooks)

Weight Method

3 - Basket Weight Determination (BWD)
5 - OTC-Retained
6 - Other
7 - Vessel Estimate
8 - Extrapolation
9 - P. Halibut Length/Weight Conversion
11 - Retained + Discard
13 - Tally Sample
14 - Visual Experience
15 - Visual Spatial
19 - P. Halibut Length/Weight Extrapolation
20 - Actual Weight - Whole Haul
21 - Actual Weight - Subsample

Vessel Logbook Names

WOC Trawl
CA Shrimp/ Prawn Trawl
OR Shrimp Trawl Logbook
OR Nearshore
OR Fixed Gear
Daily Trap Fishing
CBFA- used in the Community Based Fishing Association
WDFW Shrimp Trawl Log
Electronic Monitoring Fixed Gear Logbook
IPHC Halibut Logbook

BioSample Methods

10 - P. Halibut Visual Length Estimate
12 - Random
13 - Opportunistic

Reason For Discard

11 - Incidental/Accidental	16 - Regulation
12 - Drop-Off	17 - Safety
13 - Market	18 - Market (Dockside only)
14 - Other	19 - Utilized on board
15 - Predation	20 - Survival

Dissection Type

1 - Otoliths	8 - Tag/ Band
2 - Scales	9 - Tagged by Observer
3 - Snout	10 - Fin Clip
5 - Fin Ray (Dead GSTG only)	11 - Tissue
7 - Whole Specimen	

P. Halibut Viabilities

Trawl & Pot	Longline
E - Excellent	MI - Minor
P - Poor	MO - Moderate
D - Dead	S - Severe
	D - Dead

CA Halibut Viabilities

A - Alive	D - Dead

Rockfish Release Methods (Nearshore only)

TO- Thrown directly over
MV- Mostly vented
DC- Mostly released at depth - cage
DW- Mostly released at depth - weighted line
DO- Mostly released at depth - other
DO- Mostly released at depth - other
OM- Other method of release
NC- Not collected

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 in the comments section.
8 - Retrieved gear

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	Hatfield Marine Science Center 2032 SE OSU Dr. Newport, OR 97365 Office: (541) 867-0527 Fax: (541) 867-0505
California	**Crescent City Office** 445 Elk Valley Rd. Suite 12 Crescent City, CA 95531 Office: (707) 440-9155
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Random Number Table

To use the random number table, enter the table at a random point. The easiest way to do this is by closing your eyes and placing your finger on the table. The column and row nearest your finger is the starting point. Determine how many digits in the row you are using: if you need numbers between 1 and 250, use three digits in the row. If you need numbers between 1 and 25, use two digits in the row, and so on. Decide in which direction you will move through the table. Then proceed in any direction through the table (even diagonally), recording appropriate numbers and skipping numbers too high or repeated, until you have enough random numbers. You should decide on a direction and enter the table at a different random starting point every time you use it.

For example, if you need to choose 3 numbers between 1 and 25, you could enter the table by placing your finger on the table to choose a column and row. Your criterion is two digit numbers between 01 and 25 (inclusive). For this example, you decided to work up the column from your starting point. As you move up the column, the first number you encounter is 14. This is a two-digit number between 01 and 25; it fits the criterion, so you write it down. The next number is 09; it also fits the criterion, so you write it down. The next number is 58 and does not fit the criterion so you skip this number. Keep moving up the column, skipping the numbers that do not fit the criterion, until you choose the all the numbers you need.

5	2	5	2	9	2	3	5	1	5	3	8	6	2	1	4	0	0	9	2	5	1	0	5	2	1	8	4	6
0	1	3	6	1	7	6	4	0	5	0	2	0	9	6	3	2	3	2	2	4	9	3	5	7	6	1	7	3
7	1	0	6	4	4	4	4	8	3	5	3	6	8	3	6	7	2	1	0	0	0	6	0	0	9	3	0	7
8	4	1	3	4	8	4	8	2	7	7	5	2	7	7	4	0	3	0	4	1	4	0	3	3	8	0	9	4
5	4	2	2	8	7	7	5	9	8	5	8	4	7	5	5	9	9	0	3	9	6	8	2	0	2	4	5	4
3	6	2	4	4	9	1	7	3	6	6	5	2	0	0	2	9	5	9	5	3	8	3	1	5	3	4	8	9
3	8	5	3	5	0	2	8	0	9	7	9	2	8	1	6	7	7	7	4	2	0	7	2	6	6	6	4	0
6	0	8	9	3	4	1	1	7	2	8	8	1	0	3	7	3	9	6	6	3	1	6	7	2	6	7	6	5
5	0	5	3	2	6	1	6	5	8	6	3	6	0	1	9	6	4	6	0	0	6	2	3	8	4	6	5	9
6	8	5	7	4	7	6	6	4	7	5	1	0	5	5	9	9	2	7	9	9	5	9	1	7	7	2	3	8
4	1	3	6	7	1	3	5	2	5	5	5	7	0	6	0	8	2	2	7	3	1	1	4	6	6	3	3	8
9	5	2	6	1	6	7	4	0	9	0	6	9	7	7	7	5	0	5	2	1	3	1	1	1	1	2	8	3
0	6	6	2	6	8	4	5	1	4	5	3	3	6	9	2	3	0	5	9	9	7	2	8	7	0	8	9	8
3	7	5	0	9	4	8	2	4	1	7	4	7	8	3	1	1	7	0	1	5	0	0	0	9	8	7	7	2
6	0	5	1	1	7	6	4	7	1	8	2	1	2	5	9	0	4	7	0	5	9	5	6	1	8	5	2	8
1	8	8	1	3	7	3	7	8	5	7	3	8	6	9	9	8	7	6	2	2	9	6	6	3	8	3	5	5
7	9	5	5	4	9	3	4	8	0	2	0	9	2	8	0	8	6	4	6	3	9	0	2	8	1	9	0	7
2	2	1	4	2	4	8	0	8	7	3	7	9	1	4	4	4	3	5	2	4	8	3	2	5	6	7	4	1
6	0	1	4	5	0	1	7	9	9	2	7	4	7	7	1	4	4	8	1	6	9	6	6	7	6	1	0	1
9	7	0	8	6	1	7	5	3	9	0	1	8	9	8	2	5	3	0	7	5	4	8	6	9	3	6	5	2
7	8	2	6	1	7	1	1	2	2	5	0	3	1	2	3	1	1	2	0	4	8	9	8	6	4	2	2	3
2	6	9	9	8	6	1	2	0	2	8	9	7	5	9	5	8	5	1	5	7	5	8	3	3	2	9	3	5
8	2	6	5	7	1	7	1	1	9	7	1	2	7	7	5	9	8	8	4	2	3	0	0	3	8	3	4	2
6	7	3	0	7	4	4	2	8	2	4	2	6	7	8	7	6	5	5	6	8	8	3	8	9	9	0	6	2
2	6	4	8	0	6	9	1	0	4	0	3	9	8	1	6	5	9	1	6	9	3	1	3	9	7	3	3	2
4	0	5	0	9	2	1	3	7	5	9	7	2	7	0	1	6	8	9	3	3	2	2	5	2	9	8	3	2
0	9	4	0	9	6	9	2	7	9	4	3	8	1	3	6	8	6	6	9	7	9	9	5	5	8	4	3	5
5	2	5	3	5	9	9	5	4	1	9	7	5	2	5	6	2	3	3	0	4	7	4	9	0	8	1	6	2
7	4	0	1	8	3	1	4	2	7	3	1	9	4	3	1	5	3	9	1	8	7	4	1	7	1	4	3	1
9	6	2	9	8	8	3	3	6	4	5	2	5	6	9	5	3	8	5	2	1	3	5	3	1	9	4	7	0
6	1	0	0	4	2	5	5	9	1	5	6	4	1	8	8	9	4	9	0	2	4	9	1	4	3	8	7	0
8	5	8	8	9	4	2	3	3	6	9	9	2	7	7	4	2	9	3	7	4	5	2	8	1	9	8	2	0
3	9	6	6	9	1	0	5	2	1	0	1	5	5	0	6	8	1	6	4	1	0	4	0	2	5	7	8	7

Figure A-1: Random Number Table

Weights, Measures, and Conversions

Abbreviations

Inch (in)	Millimeter (mm)	Kilograms (kg)	Minute (min)	Foot (ft)
Centimeter (cm)	Metric ton (mt)	Pounds (lbs)	Meter (m)	Liter (L)
Ton (t)	Kilometer (km)	Quart (qt)	Mile (mi)	Celsius ©
Latitude (lat)	Fahrenheit (F)	Grams (g)	Longitude (lon)	

Weights and Measures

- 1 in = 2.540 cm
- 1cm = 10 mm = 0.3937 in
- 1 ft = 0.3048 m = 0.1667 fathoms
- 1m = 100 cm = 3.2808 ft = 0.5468 fathoms
- 1 fathom = 6 ft = 1.829 m
- 1000 m = 1 km = 0.6214 statute mi
- 1 L = 1.0567 U.S. qt
- F° = (1.8 x C°) + 32C°
- C° = 5/9(F° - 32)
- 1 statute mi = 5,280 ft = 1.609 km = 0.86899 nautical mi = 880 fathoms
- 1 nautical mi = 1.15078 statute mi = 1 min lat = 1.852 km = 1,012.6859 fathoms = 1,852 m
- 1 fathom = 0.0009875 nautical mi = 0.0011364 statute mi
- 1 lb = 0.4536 kg = 16 oz
- total catch wt. in lbs ÷ 2.2046 = total catch wt. in kg
- 1 mt = 1,000 kg = 2204.6 lbs.

Area, Volume and Product Formulas

- Number of Product Units x Average Unit Weight = Total Weight of Product
- Area of a circle = pr2 Circumference = 2 pr (p = 3.1416 = ∏)
- Area of a square or rectangle = length × width
- Area of a triangle = ½ X base X height
- Volume of a right angle cone = 1/3 X ∏ r2h
- Volume of a Sphere = 4/3 X ∏ X r3
- Length of the triangle hypotenuse “C” where A and B equal the length of the opposite two sides-
  - A2 + B2 = C2

Pacific Halibut Length/Weight Table

CM	Lbs.	CM	Lbs.	CM	Lbs.	CM	Lbs.	CM	Lbs.	CM	Lbs.
10	0.02	50	2.95	90	19.8	130	65.17	170	155.45	210	308.25
11	0.02	51	3.15	91	20.53	131	66.82	171	158.42	211	313.03
12	0.02	52	3.35	92	21.25	132	68.48	172	161.44	212	317.86
13	0.04	53	3.57	93	22.02	133	70.17	173	164.51	213	322.73
14	0.04	54	3.79	94	22.8	134	71.89	174	167.6	214	327.67
15	0.07	55	4.01	95	23.59	135	73.66	175	170.75	215	332.65
16	0.07	56	4.25	96	24.41	136	75.44	176	173.92	216	337.7
17	0.09	57	4.52	97	25.24	137	77.25	177	177.14	217	342.79
18	0.11	58	4.76	98	26.08	138	79.08	178	180.4	218	347.93
19	0.13	59	5.05	99	26.96	139	80.95	179	183.71	219	353.13
20	0.15	60	5.31	100	27.87	140	82.87	180	187.06	220	358.38
21	0.18	61	5.62	101	28.77	141	84.79	181	190.46	221	363.69
22	0.2	62	5.93	102	29.7	142	86.75	182	193.87	222	369.05
23	0.24	63	6.24	103	30.67	143	88.76	183	197.36	223	374.45
24	0.26	64	6.57	104	31.64	144	90.79	184	200.86	224	379.92
25	0.31	65	6.9	105	32.63	145	92.84	185	204.43	225	385.45
26	0.35	66	7.25	106	33.64	146	94.93	186	208.03	226	391.03
27	0.4	67	7.61	107	34.68	147	97.05	187	211.67	227	396.67
28	0.46	68	7.98	108	35.74	148	99.21	188	214.71	228	402.36
29	0.51	69	8.38	109	36.84	149	101.39	189	218.5	229	408.09
30	0.57	70	8.77	110	37.94	150	103.62	190	222.89	230	413.91
31	0.62	71	9.19	111	39.07	151	105.87	191	226.7	231	419.76
32	0.71	72	9.61	112	40.21	152	108.16	192	230.56	232	425.69
33	0.77	73	10.05	113	41.38	153	110.5	193	234.48	233	431.66
34	0.84	74	10.49	114	42.59	154	112.83	194	238.45	234	437.68
35	0.93	75	10.98	115	43.81	155	115.24	195	242.44	235	443.76
36	1.01	76	11.44	116	45.06	156	117.66	196	246.5	236	449.91
37	1.1	77	11.95	117	46.32	157	120.13	197	250.6	237	456.13
38	1.21	78	12.46	118	47.62	158	122.62	198	255.74	238	462.39
39	1.32	79	12.99	119	48.94	159	125.16	199	258.93	239	468.72
40	1.43	80	13.51	120	50.29	160	127.71	200	263.17	240	475.09
41	1.59	81	14.07	121	51.65	161	130.32	201	267.46	241	481.55
42	1.68	82	14.64	122	53.07	162	132.96	202	271.79	242	488.05
43	1.81	83	15.23	123	54.48	163	135.65	203	276.17	243	494.6
44	1.94	84	15.83	124	55.93	164	138.36	204	280.6	244	501.24
45	2.09	85	16.45	125	57.41	165	141.12	205	285.1	245	507.92
46	2.25	86	17.09	126	58.91	166	143.9	206	289.62	246	514.66
47	2.43	87	17.75	127	60.43	167	146.72	207	294.21	247	521.48
48	2.58	88	18.41	128	61.99	168	149.54	208	298.84	248	528.36
49	2.76	89	19.09	129	63.56	169	152.49	209	303.51	249	535.28

Injury Key for Trawl Caught Pacific Halibut

1a. Fish is alive ..... **Go to 2a**

1b. Fish is dead when sorted from the catch..... **Code DEAD**

- Fish is in rigor and lifeless, even if no apparent injuries.
- Gills appear washed out, i.e., dull red, pink, or white in color.
- Mouth may contain sediment.

2a. Body of fish appears uninjured, or has only minor injuries ..... **Go to 3a**

2b. Injuries to fish are significant and obvious .. **Code DEAD**

- Body cavity is ripped open, exposing internal organs.
- Body tissue may be torn or ripped in a rough, ragged manner.
- Red hemorrhaging observed on 25% or more of the white side of fish.

3a. Fish is able to close operculum when stimulated..... ..... **Go to 4a**

- Operculum is closed strongly or weakly, but pressure is evident.
- Operculum may not stay closed for long, though pressure may last up to 5 seconds or longer.

3b. Fish cannot close operculum, even when stimulated..... ..... **Code DEAD**

4a. Fish displays activity and has muscle tone ..... **Go to 5a**

- Fish displays a minimal amount of activity, especially when stimulated.
- May be able to clench jaw tightly.

4b. Fish exhibits no muscle tone ..... **Code DEAD**

5a. Fish is not bleeding, or only slightly bleeding, if at all..... ..... **Go to 6a**

5b. Blood is flowing freely and continuously in large quantities (profusely) ..... **Code DEAD**

- Bleeding is coming from a torn or severed gill arch, or a body injury.

6a. Body injuries are minimal, perhaps difficult to find..... ..... **Go to 7a**

- May consist of superficial nicks or cuts on body.
- Less than 10% of dorsal and anal fin area is frayed.

6b. Body injuries are readily apparent..... **Code POOR**

- Skin is damaged with abrasions.
- Cuts and lacerations in body extend through the skin and just barely into the flesh (not deeply).
- Dorsal and anal fin area is frayed between 10-50%.
- Fin edges may be bleeding.
- Roughly 10-25% of the white side of fish shows red hemorrhaging.

7a. Operculum pressure is strong and sustained ... **Go to 8a**

7b. Operculum pressure is weak and not sustained..... ..... **Code POOR**

8a. Fish is strong and lively, displaying good muscle tone .... **Go to 9a**

- Fish is flopping around the deck , hard to control.
- Jaw may be tightly clenched, difficult to open.

8b. Fish appears weak ..... **Code POOR**

- Movement is intermittent, perhaps occurring when provoked or stimulated.
- Body is limp.

9a. Fish is bleeding from gills..... **Code POOR**

- Blood is flowing continuously, slow and steadily, but not profusely.
- Gills are deep to bright red in color.

9b. No bleeding observed ..... **Code EXCELLENT**

- Gills are deep red in color.

Injury Key for Pot Caught Pacific Halibut

1a. Fish is alive..... **Go to 2a**

1b. Fish is dead when sorted from the catch.... **Code DEAD**

- Fish is in rigor and lifeless, even if no apparent injuries.
- Gills appear washed out, i.e., dull red, pink, or white in color.

2a. No penetration of the body or head by sand fleas..... ..... **Go to 3a**

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body and can be wiped off with your hand.
- Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.

2b. Sand fleas have penetrated the body via the eyes, fins, or anus ..... **Code DEAD**

- Membrane surrounding eye may be partially or completely missing.
- Dorsal and/or anal fin membranes may be eaten away, leaving fin rays exposed.
- Skin on the body is separated from tissue where sand fleas have eaten.

3a. No predation of the fish's body by crabs in the pot is noted ..... **Go to 4a**

3b. Predation by crabs has occurred ..... **CODE DEAD**

- Crabs in the pot may have attacked and eaten the fish.

4a. Body of fish appears uninjured, or has only minor injuries ..... **Go to 5a**

4b. Injuries to fish are obvious and significant . **Code DEAD**

- Body cavity is ripped open, exposing internal organs.
- Body tissue may be torn or ripped in a rough, ragged manner.
- Red hemorrhaging observed on 25% or more of the white side of fish.

5a. Fish is able to close operculum when stimulated..... .....**Go to 6a**

- Operculum is closed strongly or weakly, but pressure is evident.
- Operculum may not stay closed for long, though pressure may last up to 5 seconds or longer.

5b. Fish cannot close operculum, even when stimulated..... ..... **Code DEAD**

6a. Fish displays activity and has muscle tone ..... **Go to 7a**

- Fish displays a minimal amount of activity, especially when stimulated.
- May be able to clench jaw, perhaps tightly.

6b. Fish exhibits no muscle tone ..... **Code DEAD**

- Physical activity absent or limited to fin ripples or twitches.
- Little, if any, response to stimuli.
- Jaw is hanging open and is slack.

7a. Fish is not bleeding, or only slightly bleeding, if at all .... **Go to 8a**

7b. Blood is flowing freely and continuously in large quantity (profusely) ..... **Code DEAD**

- Bleeding is coming from fin edges or a body injury.

8a. Body injuries are minimal, perhaps difficult to find..... ..... **Go to 9a**

- May consist of superficial nicks or cuts on body.
- Less than 10% of dorsal and anal fin area is frayed.
- Hemorrhaging of skin on white side limited to 5-10% of surface area.

8b. Body injuries are readily apparent..... **Code POOR**

- Skin is damaged with abrasions.
- Cuts and lacerations in body extend through the skin and just barely into the flesh (not deeply).
- Dorsal and anal fin area is frayed between 10-50%. Fin edges may be bleeding slightly.
- Roughly 10-25% of the white side of fish shows red hemorrhaging.

9a. Operculum pressure is strong and sustained ..**Go to 10a**

- Fish should be able to close operculum for at least 5-10 seconds.

9b. Operculum pressure is weak and not sustained..... ..... **Code POOR**

10a. Fish is strong and lively, displaying good muscle tone ... .**Go to 11a**

- Fish is flopping around the deck, hard to control.
- Jaw may be tightly clenched, difficult to open.

10b. Fish appears weak ..... **Code POOR**

- Movement is intermittent and of short duration.
- Perhaps occurring when provoked or stimulated.
- Body appears limp, not in rigor mortis.

11a. Fish is bleeding from fin edges or body .... **Code POOR**

- Blood is oozing continuously from fin edges or body wounds.
- Gills are deep to bright red in color.

11b. No bleeding observed..... **Code EXCELLENT**

- Gills are deep red in color.
- Fins are not bleeding.

Injury Key for Hook & Line Caught Pacific Halibut

1a. Fish is alive..... **Go to 2a**

1b. Fish is dead when brought to the surface on the gear ..... **Code DEAD**

- Fish is in rigor and lifeless, even if no apparent injuries.
- Gills appear completely devoid of blood (light pink or white in color).

2a. Body shows no signs of marine mammal predation..... **Go to 3a**

- Fish's body is intact.
- Flesh may be torn, but no missing tissue.

2b. Body is missing pieces of flesh..... **Code DEAD**

- Pieces of tissue are missing from predation by marine mammals.
- Missing pieces are typical of bites from sea lions or other large marine mammals.

3a. No penetration of the body or head by sand fleas..... **Go to 4a**

- Membranes surrounding eyes and anus are intact, without any holes from sand fleas.
- A few sand fleas may be seen on body and can be wiped off with your hand.
- Typically, no penetration occurs when only a few (e.g., <10) sand fleas are found on the body.

3b. Sand fleas have penetrated the body via the eyes, fins, or anus..... **Code DEAD**

- Membrane surrounding eye may be partially or completely missing.
- Dorsal and/or anal fin membranes may be eaten away, leaving finrays exposed.
- Skin on the body is separated from tissue where sand fleas have eaten.

4a. No wounds of any kind to abdominal organs. Abdominal wall not punctured..... **Go to 5a**

4b. Abdominal organs are damaged, possibly by a gaff ..... **Code DEAD**

- Abdominal cavity wall is punctured or torn.
- Viscera are visible and exposed, and may be protruding.

5a. Fish is not bleeding from gills (but may be bleeding from elsewhere)..... **Go to 6a**

5b. Fish is bleeding from gills..... **Code DEAD**

- Bleeding is occurring from a torn or severed gill arch.

6a. Fish is not bleeding at all, or bleeding is minor to moderate (not from gills) ..... **Go to 7a**

- Blood may be seen around mouth and/or jaw.
- Blood may be oozing continuously, or bleeding may be continuing very slowly a few drops at a time, or bleeding may have stopped.

6b. Bleeding is severe..... **Code DEAD**

- Blood from any source is flowing freely and continuously in large quantity.

7a. Injuries to head and/ or jaw are minor to moderate. ..... **Go to 8a**

- No structures are missing

7b. Major injuries to head and jaw, resulting in missing pieces ..... **Code SEVERE**

- Side of the head, possibly including the jaw, has been torn loose and missing from the fish, and/or lower jaw has been torn away and is missing.

8a. Wounds to the head (forward of preopercle and above cheek and jaw) are only surface scratches on the skin .... **Go to 9a**

8b. Skin on head (forward of preopercle) is ripped and torn deeply..... **Code SEVERE**

- Internal organs are likely exposed.

9a. Eye or eye socket is not punctured..... **Go to 10a**

9b. Eye or eye socket is punctured..... **Code MODERATE**

10a. No wounds to the body are evident..... **Go to 11a**

10b. Wounds in body consist of puncture holes in skin, with possibly a flesh tear..... **Code MODERATE**

11a. Lower jaw is significantly damage... **Code MODERATE**

- Lower jaw may be broken into 2 pieces at the snout, but each is still attached at the base of the jaw.
- Jaw may be torn on one side or the other, possibly extending through the cheek.

11b. Damage to lower jaw, if any, is slight..... **Code MINOR**

- Injuries include the hook entrance/exit hole around the jaw or in the cheek, or a tear in the cheek.
- A piece of the lip may be torn and hanging from the jaw. If gangion was cut, the hook and some length of residual gangion may be hanging from the mouth.

Radio Communications

The radios that you will encounter most often are VHF-FM (Very High Frequency Modulation), used for short-range vessel-to-vessel and vessel-to-shore communication, and HF-SSB (High Frequency-Single Side Band), used for communication when the stations are out of VHF range with each other. Both types offer certain special advantages, and each requires a specific operating procedure. The use of radio communication equipment requires a licensed operator. If your vessel has given you permission to use the radio, you must follow the FCC rules for calling and speaking on the type of radio (VHF or SSB) you use. Ask first how to operate the radio and use these pages as a guide for calling. Be aware that obstructing others' transmissions with your call (by conversing for too long), using profanities or making false distress calls can cost the permit holder and/or you a heavy fine and/or prison sentence.

VHF-FM Radios

In the United States, the VHF Band is broken up into 71 channels, with a frequency range of from 156.000 to 163.000 MHz, including six WX (Weather) channels. By law, all operating VHF stations are required to have at least three of these channels: channel 6, channel 16, and at least one other working channel.

Channel 6 (156.300 MHz) is the Intership Safety Channel, used for intership safety purposes, search-and rescue (SAR) communications with ships and aircraft of the U.S. Coast Guard, and vessel movement reporting within ports and inland waterways. This channel must not be used for non-safety communications.

Channel 16 (156.800 MHz) is the International Distress, Safety, and Calling Channel (Intership and Ship-to-Coast). This channel must be monitored at all times the station is in operation (except when actually communicating on another channel). This channel is also monitored by the U.S. Coast Guard, Public Coastal Stations, and many Limited Coastal Stations. Calls to vessels are normally initiated on this channel. Then, except in an emergency, you must switch to a working channel. It is against FCC regulations to conduct business on this channel. In addition, vessels calling must use their assigned call sign at the beginning and end of each transmission.

Channel 22A (157.100 MHz) is the U.S. Coast Guard Liaison Channel. This channel is used for communications with U.S. Coast Guard ships, aircraft, and coastal stations after first establishing contact on channel 16. Navigational warnings and, where not available on WX channels, Marine Weather forecasts are also broadcast on this frequency.

Channels 24. 25. 26. 27 and 28 (also 84. 85. 86 and 87) are the Public Correspondence channels (ship-to-coast). These are available to all vessels to communicate with Public Coastal stations (Marine Operator).

Channels 26 and 28 are the primary public correspondence channels.

Channels 1. 3. 5. 12. 13. 14. 15. 17. 65. 66. 73. 74. 77. 81. 82 and 83 are channels with special designations (port traffic communications, U.S. government communications, locks and bridges, environmental, etc.), and their use close to shore or to ports should be minimized.

Channels 7. 8. 9. 10. 11. 18. 19. 67. 68. 69. 70. 71. 72. 78. 79. 80 and 88 are commercial and non-commercial working channels that are available for conducting business. The abbreviated format (no call signs) is acceptable on these frequencies. It should be noted that some of these channels may be locally restricted (off the Washington Coast, for example, channel 11 is Tofino Coast Guard Traffic Control for the entry into Juan de Fuca Strait, used for reporting ship locations), in which case their use for business should be avoided.

HF-SSB Radios

To communicate over distances of beyond twenty miles, you will need to use satellite communication or a medium to high frequency radiotelephone referred to as Single Side Band (SSB) radio. The signal is poorer in quality than VHF and susceptible to slight atmospheric shifts. Lower frequencies are used for medium distances and higher frequencies for greater distances. The general rule for single sideband frequency selection is: multiply the frequency in MHz by 100 to obtain the approximate coverage distance in miles. At night however, the ranges of SSB radio wave travel are from 2-3 times greater. Therefore, use a lower frequency at night to cover the same distance.

All ship SSB radiotelephones must be capable of operating on 4125 kHz, the international distress and calling frequency, and at least 2 other frequencies. Numerous channels are available for your use; which ones are available varies from place to place. However, channel 2670 kHz is only used for communicating with the Coast Guard and should not be used for other purposes.

When using SSB radiotelephone, you must observe radio silence on channel 4125 kHz, the emergency channel, for 3 minutes immediately after the hour and the half hour. The purpose of radio silence on the emergency hailing channel is to clear the airwave for weak or distant distress signals. No radio silence is used on the VHF emergency channel: channel 16.

Radio Procedure

In as much as the airwaves are in the public domain, it is the responsibility of the radio station operator to conduct business according to established guidelines and procedures. While on the air, the operator should follow the following format outline:

1. Listen before beginning transmission in order to ensure that you are not interfering with other stations or with emergency radio traffic.
2. Identify your station when calling. On the SSB, a calling station must limit the duration of the hail to not more

than 30 seconds. If there is no reply, the hail may be repeated at 2 minute intervals up to a maximum of three times, at which time the calling station must sign off and wait a minimum of 15 minutes before making another attempt. This requirement does not apply in emergency situations.

3. Keep transmissions short and concise, giving the other station a chance to respond, ask questions, or reconfirm an unclear message. A long, complicated message can best be effected in short segments with breaks in between to ensure that the receiving station has copied each portion of the message correctly.
4. Follow correct radio procedure while on the air. The phonetic alphabet should be learned and used spelling unclear words with an extemporaneous phonetic alphabet can lead to misunderstood messages. You should also know and use the radio "punctuation" words ("over", clear", "out", "roger", "words twice", "say again", "standing by", and "break"). Since most radio communication is only one way at a time, these words can be invaluable for signaling your intentions to the receiving station. Make sure to speak directly into the microphone; speaking loudly, slowly, and distinctly-but not shouting-can significantly improve the legibility of radio broadcasts. The use of profanity on the public airwaves is strictly forbidden.
5. Upon completing a transmission, you must sign off by identifying your station and using the words "clear" or "out" (or, if you expect to soon resume contact with the same station, by using the phrase "standing by").

Radios are different from telephones in that they cannot transmit and receive simultaneously. Therefore when you have temporarily finished talking and are ready to listen, say "over," and release the button on your microphone. When the other party is ready to listen they will say "over." At the end of your entire message, say "out" rather than "over." Keep in mind that people on other ships can overhear your conversation, so watch what you say.

Sounds are easily garbled on marine radios so the phonetic alphabet is used when sailors want to spell something. Here are the words that the Coast Guard will recognize as letters:

USCG Spoken Alphabet			
A - alpha	I - indigo	Q - quebec	Y- yankee
B - bravo	J - juliet	R - romeo	Z - zulu
C - charlie	K - kilo (keeloes)	S - sierra	
D - delta	L - lima (Leema)	T - tango	
E - echo	M - mike	U - uniform	
F - foxtrot	N - november	V - victor	
G - gulf	O - oscar	W - whiskey	
H - hotel	P - papa	X - x-ray	

Every ship and all Coast Guard stations continually listen to the emergency frequencies. Therefore when you want to talk to someone, call on an emergency frequency. As soon as you contact them, arrange to switch to another channel. It is illegal, impolite, unfair, and dangerous to talk on emergency channels. Sometimes atmospheric conditions are such that the emergency frequencies are the only ones that work. At those times you simply cannot communicate via radio except to report emergencies.

Emergency frequencies are:

- FM Channel 16, international distress
- FM Channel 13, for ships to use to avoid collisions. You can contact other ships on 13, but not Coast Guard shore stations.
- AM 4125, international distress (Almost certainly as an observer you will only be using FM frequencies.)
- When you initially contact another station make sure you state what channel you are broadcasting on, since all ships and stations constantly listen to several.
- Speak in normal tones, using normal conversational pauses and emphasis.
- Ensure that your messages are brief and businesslike. No chatter.
- When trying to establish communications repeat the other station's name, and your name, at least twice.
- **A typical message may be as follows:**

You: Coast Guard Station San Francisco Coast Guard Station San Francisco; this is the fishing vessel Starry Flounder, Whiskey Tango Zulu four, one, nine, zero; this is the fishing vessel Starry Flounder, Whiskey Tango Zulu four, one, nine, zero on channel sixteen, over.

C.G.: Fishing vessel Starry Flounder this is Coast Guard Station San Francisco shift and answer on channel eleven, out.

You: Coast Guard Station San Francisco Coast Guard Station San Francisco this is the Starry Flounder on channel eleven, over.

C.G.: Fishing vessel Starry Flounder, this is Coast Guard Station Kodiak send your traffic, over.

You: San Francisco this is the Starry Flounder, I am an observer talking for the captain. A crewman has a badly crushed arm and needs hospitalization. Can you evacuate the crewman? Over. "

C.G.: Vessel Starry Flounder, this is San Francisco. Affirmative. What is your current position? Over.

You: San Francisco this is the Starry Flounder. Position is fifty-five degrees fifty minutes north, 157 degrees, twenty-four minutes west, over.

NATIONAL INVENTORY STATUS: U.S. INVENTORY (TSCA): Listed on inventory. TSCA 12(b) EXPORT NOTIFICATION: Not listed. CANADA INVENTORY (DSL/NDSL): Not determined. SECTION 16 OTHER INFORMATION

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Processors

California		
Plant	**City**	**Phone**
Murphys Sunnybrae	Arcata	(707) 822-1157
Murphys Glendale	Arcata	(707) 822-2271
Unknown	Arcata	(707) 826-8670
Shin Fish	Artesia	(562) 402-4747
Central Coast Seafood	Atascadero	(805) 772-1280
Armstrongs Fish Market & Seafood	Avalon	(310) 510-0113
Petes Pierside Cafe	Avila Beach	(805) 595-7627
Olde Port Fisheries Inc	Avila Beach	(805) 595-9456
Del Mar Seafoods Inc	Avila Beach	(805) 595-9456
Bj Enterprizes	Avila Beach	(805) 929-5757
The Tides	Bodega Bay	(707) 875-3560
The Tides Wharf	Bodega Bay	(707) 875-2777
Lucas Wharf Inc	Bodega Bay	(707) 875-3571
Paisano Bros	Bodega Bay	(707) 875-3576
Fresh Fish	Bodega Bay	(707) 875-9633
Drews Fish	Bolinas	(415) 868-1320
Moores Seafood Inc	Camarillo	(805) 384-9277
Pellys Fish Market And Deli	Carlsbad	(760) 431-8454
Sea Harvest	Carmel	(408) 626-3626
Pacific Fish & Crab Market	Carson	(310) 518-4042
Mr Lee Bbq House	Cerritos	(562) 809-1339
Pacific Seafoods	Crescent City	(707) 464-5558
Caito Fisheries Inc	Crescent City	(707) 464-9483
Crescent City Hook & Line Group	Crescent City	(707) 465-6857
Alber Seafoods Inc	Crescent City	(707) 464-8122
Tin Tin Oriental Market	Cupertino	(408) 255-7804
West Basin Trap & Lobster	Dana Point	(760) 868-5713
Morning Star Fisheries	El Granada	(415) 728-3729
Exclusive Freshness	El Granada	(415) 728-7321
Three Captains Sea Products	El Granada	(650) 726-3111
Three Captains Sea Products Inc	El Granada	(650) 726-3111
Pemberton Fish	El Granada	(650) 740-0615
Pacific Seafoods	Eureka	(707) 442-2981
Mr. Fish Seafood	Eureka	(707) 443-2661
Caito Fisheries Inc	Eureka	(707) 443-0550
Murphys Markets Inc	Eureka	(707) 822-7665
Eureka Co-op	Eureka	(707) 443-6027
Caito Fisheries Inc	Fort Bragg	(707) 964-6368
Bassler Fisheries	Fort Bragg	(707) 964-0597
Empress Seafood Llc	Fort Bragg	(707) 964-3557
North Coast Fishing Adventures Inc	Fort Bragg	(707) 964-3000
The Fish Market	Fort Bragg	(707) 964-1600
Ocean Fresh Seafood Products Jv	Fort Bragg	(707) 964-1394
Ocean Fresh Seafood Products Jv	Fort Bragg	(707) 964-1652
P Seafood	Fort Bragg	(415) 203-5155
Voyatzis Fish Company	Fountain Valley	(949) 673-1833
Central Fish Company	Fresno	(209) 237-2049
Pacific Fresh Seafood Company	Fresno	(209) 264-3474
Empress Seafood Llc	Ft Bragg	(707) 964-3557
Crystal Food Inc	Fullerton	(714) 447-3610

California		
Princeton Seafood Company	Half Moon Bay	(650) 726-2722
Fitz Buskirk Inc	Half Moon Bay	(650) 726-6953
Ma Seafood	Hawaiian Gardens	(562) 421-1698
C J Seafood	Huntington Beach	(714) 960-7733
Yale Fish Company	La Crescenta	(213) 324-9577
Fukushima	Lemon Grove	(619) 461-2443
Del Mar Seafoods Inc	Long Beach	(562) 628-1800
Lb Seafood	Long Beach	(562) 426-8353
Pacific Fresh Fish Company Inc	Los Angeles	(213) 623-6220
American Fish And Seafood Company	Los Angeles	(213) 612-0350
Los Angeles Fish	Los Angeles	(213) 612-0350
Showa Marine Inc	Los Angeles	(213) 627-4091
Dy Fish Trading Co	Los Angeles	(213) 447-1622
Capn Zachs Crabhouse Inc	Mckinleyville	(707) 839-9050
T & L Trading Inc	Montebello	(323) 887-8838
Monterey Fish Company Inc	Monterey	(831) 375-3511
Royal Seafoods Inc	Monterey	(831) 373-7920
Deyerle Brothers Seafood Inc	Monterey	(831) 632-2574
Central Coast Seafoods	Morro Bay	(805) 462-3474
Bayshores Fish Company	Morro Bay	(805) 772-8411
Giovannis Wholesale Fish	Morro Bay	(805) 772-1276
Tognazzinis Dockside Restaurant	Morro Bay	(805) 772-8100
Bay Fresh	Moss Landing	(831) 633-5160
Bay Fresh Seafood	Moss Landing	(831) 633-5160
Monterey Fish Company Inc	Moss Landing	(831) 633-4808
Phils Fish Market & Eatery	Moss Landing	(831) 633-2152
Sea Harvest	Moss Landing	(831) 633-6300
Sea Harvest	Moss Landing	(831) 632-2574
Solomon Live Fish	Moss Landing	(831) 632-0304
Del Mar Seafoods Inc	Moss Landing	(831) 753-5100
Del Mar Seafoods Inc	Moss Landing	(831) 753-5100
Bay Fresh Seafoods	Moss Landing	(408) 633-5160
Beticia	Moss Landing	(831) 671-9261
Newport Dory Fleet Co Op	Newport Beach	(714) 754-0915
Woods Ocean Products	Oak View	(805) 708-0483
New Sang Chong Market	Oakland	(510) 451-2018
Yet Sun Market	Oakland	(510) 451-3625
Nor Cal Seafood Inc	Oakland	(510) 532-7823
New Tins Market	Oakland	(510) 832-6256
Ken S Sio Inc	Oakland	(510) 390-2549
Ma Seafood	Oakland	(510) 865-3381
Lucky Seafood Market	Oakland	(510) 436-6068
Lucky Seafood Mkt 2	Oakland	(510) 436-6068
Juan Vazquez Company	Orange	(714) 997-9061
Fishermans House	Oxnard	(805) 984-3443
Del Mar Seafoods Inc	Oxnard	(831) 753-5100
Hc Seafoods Inc	Oxnard	(805) 382-8173
Sunrise Ii	Oxnard	(805) 231-0205
Fisherman Fresh Seafood	Oxnard	(805) 701-0018
Cactus Cove	Palm Desert	(760) 340-1418
Pacific West Seafood Co Inc	Petaluma	(707) 763-2917
Lemons Philo Mkt Inc	Philo	(707) 895-3552

California		
Pemberton Fish	Pillar Point Harbor	(650) 740-0615
Stacey Joanne	Pillar Point Harbor	(650) 740-0615
Monterey Fish Company Inc	Port Hueneme	(805) 488-1151
Ocean Fresh Seafood Products Jv	Pt Arena	(707) 882-1662
Captain Kidds Fish Market	Redondo Beach	(310) 372-7703
Kingfisher Trading Company Inc	S El Monte	(626) 448-9222
Ocean Harvestors Company	S El Monte	(626) 705-8198
Ly North Star Seafood Inc	S El Monte	(626) 582-8188
Pacific Fresh Sea Food Company	Sacramento	(916) 419-5500
Sachiko Fish	Sacramento	(916) 429-6604
Monterey Fish Company Inc	Salinas	(831) 775-0522
Monterey Fish Company Inc	Salinas	(831) 769-9155
Franks Fish Market	Salinas	(408) 422-0879
Marina Fish & Poultry	Sam Leandro	(510) 357-0421
Sportsmens Seafoods Inc	San Diego	(619) 224-3551
Catalina Offshore Products	San Diego	(619) 297-9797
Chesapeake Fish Company Inc	San Diego	(619) 238-0526
Mrs Kellys Inc/dba Pt Loma Seafoods	San Diego	(619) 223-1109
Andys Fish	San Diego	(619) 417-5097
Madruga Fish	San Diego	(619) 225-9247
Wild West	San Diego	(858) 272-6958
All Ways Fishing	San Diego	(619) 840-7375
Johnnys	San Diego	(619) 218-8242
Pacific Seafoods	San Francisco	(415) 441-2121
Osprey Seafood Of California Inc	San Francisco	(415) 291-0156
Pacific San Francisco	San Francisco	(415) 474-0150
23rd Irving Supermarket Inc	San Francisco	(415) 682-0926
Wah Lian Supermarket Inc	San Francisco	(415) 681-3982
C & L Sea Food Wholesale Inc	San Francisco	(415) 816-1472
New Lun Wah Company Inc	San Francisco	(415) 986-0756
Costarella Seafoods	San Francisco	(415) 674-0175
W F Alber Inc	San Francisco	(415) 292-1640
Wah Lian Super Market	San Francisco	(415) 665-7598
Jamie Supermarket	San Francisco	(415) 956-5398
New Sang Sang Market Inc	San Francisco	(415) 433-0403
P & T Flannery Seafoods Inc	San Francisco	(415) 346-1303
Robalo	San Francisco	(415) 982-7903
New Luen Sing Fish Market Inc	San Francisco	(415) 566-6299
Royal Hawaiian Seafood	San Francisco	(415) 824-1177
Next Seafood Company Inc	San Francisco	(415) 929-1803
San Pedro Fish Market & Restaurant	San Pedro	(310) 832-4251
Np Seafood	San Pedro	(310) 832-4119
Mus Seafood Company	Santa Barbara	(805) 963-1266
Santa Barbara Fishermens Market	Santa Barbara	(805) 965-9564
Far West Marine Seafood	Santa Cruz	(408) 287-5524
Stagnaro Bros Seafood Inc	Santa Cruz	(408) 423-1188
Hans Fish	Santa Cruz	(831) 588-7338
North Coast Fisheries Inc	Santa Rosa	(707) 579-0679
Young Brothers Fish	Scotts Valley	(831) 818-4428
The Cove Restaurant	Shelter Cove	(707) 986-1197
Del Mar Seafoods Inc	Terminal Island	(831) 753-5100

California		
Seascape Restaurant	Trinidad	(707) 677-0211
Murphys Trinidad	Trinidad	(707) 677-3643
Katys Smokehouse	Trinidad	(707) 677-0151
Del Mar Seafoods	Ventura	(831) 763-3000
Pierpont Seafood	Ventura	(805) 658-2069
American Fish - Sacramento	W Sacramento	(213) 612-0350
Monterey Fish Company Inc	Watsonville	(831) 761-5579
Del Mar Seafoods Inc	Watsonville	(831) 763-3000
Del Mar Seafoods Inc	Watsonville	(831) 753-5100
Marios Restaurant & Bar	Whitethorn	(707) 986-1401

Oregon		
Morlock, Randy Morlock	Aloha	(503) 310-2655
Allen, Benji	Astoria	(503) 244-3010
American Canadian Fisheries	Astoria	(360) 398-1117
Astoria Holdings Inc	Astoria	(503) 338-1288
Astoria Pacific Seafoods	Astoria	(503) 325-3156
Astoria Seafoods Llc	Astoria	(503) 741-7264
Bornstein Seafoods of Oregon	Astoria	(503) 325-6164
Bruski's Dock	Astoria	(503) 338-8072
Custom Freezers Llc	Astoria	(503) 325-3419
Da Yang Seafoods Inc	Astoria	(425) 971-6596
Evans, Randall C	Astoria	(503) 338-8405
Fish Landing Llc	Astoria	(503) 325-1067
Fishhawk Fisheries	Astoria	(503) 325-5252
Ocean Crest Seafoods Inc	Astoria	(253) 861-3273
Tarabochia, Brian	Astoria	(503) 325-8516
Uniontown Fish Market	Astoria	(503) 325-9592
West Bay Marketing	Astoria	(503) 325-6636
Pacific Oyster Co	Bay City	(503) 377-2330
Ihander, Kirk	Bend	(541) 390-9516
Angler Seafood	Brookings	(541) 469-5900
Caito Fisheries Inc	Brookings	(541) 469-7628
Johns Fresh Seafood	Brookings	(541) 469-7671
Little J Live Crab	Brookings	(541) 469-6934
Pacific Seafoods	Brookings	(541) 412-7072
Pratco	Brookings	(541) 469-4166
Sio Inc	Brookings	(510) 912-4960
Wild Billl Fisheries	Brookings	(541) 469-3109
Ecola Seafoods Inc	Cannon Beach	(503) 436-9130
Keller, William M	Cannon Beach	(503) 436-0248
Supreme Seafood Co	Cave Junction	(541) 592-4987
Bandon Pacific Inc	Charleston	(541) 888-9626
Chucks Seafoods Inc	Charleston	(541) 888-5525
Fishermens Wharf	Charleston	(541) 888-8862
Hallmark Fisheries	Charleston	(541) 888-3253
K Lyn Fisheries	Charleston	(541) 888-0267
Noyes, Mary C	Charleston	(541) 888-3122
Seahawk Seafood	Charleston	(541) 888-6645
Starvin Marvin's Seafood	Charleston	(541) 888-5808
Pacific Seafood Co Inc	Clackamas	(503) 657-1101
Klam King Clams Llc	Coos Bay	(541) 266-7707
Oregon Brand Seafood Llc	Coos Bay	(541) 888-1748
Penningtons Crab Co	Coos Bay	(541) 888-9018

Oregon		
Young Shin Fisheries Corp	Coquille	(541) 396-6979
Scott's Smokehouse	Corbett	(503) 667-4836
Seals, Carroll	Cottage Grove	(541) 942-5048
Tucker Industries Inc	Cottage Grove	(541) 942-6465
Jim's Seafood	Depoe Bay	(541) 994-6276
Neptunes Choice Llc	Depoe Bay	(541) 765-4000
Ocean Brite Seafood	Depoe Bay	(541) 270-7714
Henry H Pelfrey	Fairview	(503) 661-5093
Almendinger, Gary	Florence	(541) 902-1922
F/v Lassie	Florence	(541) 997-2664
International C Food Marketing	Florence	(541) 997-7978
Krab Kettle Fisheries Inc	Florence	(541) 997-8996
Weber's Fish Market	Florence	(541) 997-8886
Bay Ocean Seafood Co	Garibaldi	(503) 322-9629
Brothers Three Fisheries Inc	Garibaldi	(503) 791-8636
Deep Water Seafoods Llc	Garibaldi	(503) 755-9122
Dougs Diving, Doug Alm Dba	Garibaldi	(503) 322-2200
Network Fisheries	Garibaldi	(503) 791-0227
Oregon Gourmet Crab	Garibaldi	(503) 322-2544
Tillamook Bay Boathouse Llc	Garibaldi	(503) 322-3600
Nor-cal Seafoods Inc	Gold Beach	(541) 247-0773
Rogue King Seafood	Gold Beach	(541) 247-9494
Point Adams Packing Co	Hammond	(503) 861-2226
Chetco Seafood Co	Harbor	(541) 469-9251
Dick & Casey's Gourmet Seafood	Harbor	(541) 469-9494
Fox, Bingham	Harbor	(541) 661-4774
Great Amer Smkhse & Seafood	Harbor	(541) 469-6903
North Coast Fisheries Inc	Harbor	(707) 579-0679
Lawler, David	Hillsboro	(503) 440-3061
Barnacle Bills Seafood	Lincoln City	(541) 994-3022
Bills Seafood, Ii	Lincoln City	(541) 994-8110
Granville Fisheries Inc	Logsden	(541) 444-2460
Wild Planet	Mckinleyville	(707) 839-3170
Sausage Kitchen Inc	Milwaukie	(503) 656-9766
Adams, Charles	Newport	(541) 574-7863
Bay Street Crab Company	Newport	(541) 752-1822
Bornstein's	Newport	(541) 265-3201
Carvalho Fisheries Inc	Newport	(707) 839-3270
Caught In Oregon	Newport	(541) 961-8333
Codys Sea To You Seafoods	Newport	(541) 574-0284
Eder Fish Company	Newport	(541) 265-6650
F/v Judy, Robert Kemp, Ii	Newport	(541) 270-3752
Local Ocean Seafoods Inc	Newport	(541) 574-7959
Newell Seafoods	Newport	(541) 336-5615
Ocean Beauty Seafoods Inc Nwf	Newport	(503) 325-0656
Pacific Seafoods	Newport	(541) 265-4215
Pfister, Tom	Newport	(541) 265-9143
Robinson (R And S Seafood), Jim	Newport	(541) 961-1946
Roles, Dallas	Newport	(541) 270-1482
Sawyer's Landing	Newport	(541) 265-3907
Trident Seafoods Corp	Newport	(541) 265-7279
Yaquina Bay Fruit Processors	Newport	(541) 867-3314
Seafood Services Inc	North Bend	(541) 756-5139
Superior Seafood	North Bend	(541) 267-4423

Oregon		
Tony's Smoke House & Cannery Inc	Oregon City	(503) 656-7512
Pastime Fisheries	Otis	(541) 994-3440
Sea Star Enterprise	Otter Rock	(541) 765-2111
Cape Kiwanda Rv Park	Pacific City	(541) 921-0281
Sea Q Fish Ltd	Pacific City	(503) 965-6352
D S Seafoods	Port Orford	(541) 332-2245
Oregon Bait Co	Port Orford	(541) 332-0848
Happy Crab Seafoods Inc	Portland	(503) 285-7154
Hongland Market	Portland	(503) 252-3000
Jessica Dressel Llc	Portland	(503) 866-8082
O M Seafood Co	Portland	(503) 788-1984
Ocean Beauty Seafoods Inc	Portland	(503) 224-1611
Cowlitz River Smelt Co	Rainier	(360) 273-7354
George And Barker Fish Co	Redmond	(503) 741-0240
Jetty Fishery Llc	Rockaway	(503) 368-5746
Coastwide Seafood	Salem	(503) 947-6178
Mikes Custom Seafood	Salem	(503) 588-0302
Murtle Bee Tuna Llc	Salem	(503) 302-8431
Native Fish	Seal Rock	(541) 270-7889
Cox, Paul & Ilene	South Beach	(541) 961-3939
Donald Snow DBA F/V Summer Place	South Beach	(541) 867-7419
Lighthse Deli/fish Co, James Ive	South Beach	(541) 867-6800
Newport Bay Fish Co	South Beach	(541) 270-8023
Reinholdt Fishing Ent	St Helens	(503) 397-3369
Gilson Marine Farms	Tillamook	(503) 842-2955
Netarts Seafood Company	Tillamook	(503) 842-3698
Tillamook Bait Company	Tillamook	(503) 842-5031
Aue, Robert	Toledo	(541) 336-8107
Signature Salmon Llc	Tualatin	(503) 638-2943
Barto, James J	Veneta	(541) 935-3106
Cold Creek	Waldport	(541) 563-2146
Leland Arce Dba Seafood	Waldport	(541) 563-2835
Paulson, Keith	Waldport	(541) 563-4656
Waldport Seafood Company Llc	Waldport	(541) 563-4107
Heuker Brothers Inc	Warrendale	(541) 374-8255
Jessie's Ilwaco Fish Co	Warrenton	(360) 642-3773
Oregon Ocean Seafoods	Warrenton	(503) 861-1434
Pacific Coast Seafoods Company	Warrenton	(503) 861-2201
Sliders Select Seafoods	Warrenton	(503) 791-4762
Griff's Bayside Rest And Seafood	Winchester Bay	(541) 271-2512
Sloan's Wharf	Winchester Bay	(541) 271-1331
Sportsmen's Cannery & Smoke-house	Winchester Bay	(541) 271-3293

Washington		
Arrowac	Bellingham	(360) 676-1606
Bcs (Fish House)	Bellingham	(360) 733-1640
Bornstein Seafoods	Bellingham	(360) 734-7990
Dakota Fisheries	Blaine	(360) 332-4131
K-c Fish Co.	Blaine	(360) 332-5121
Boundary Fish Co.	Blaine	(360) 332-6715
Jessie's Fish House	Ilwaco	(360) 642-3773
High Tide	La Push	(360) 374-9494
High Tide	Neah Bay	(360) 645-2016
High Tide	Port Angeles	(360) 452-8488
Besecker, Inc.	Seattle	(206) 232-5040
South Bend Packer	South Bend	(360) 875-6570
D & M Live	Westport	(360) 268-3919
Washington Crab	Westport	(360) 268-9234
Merino Seafood	Westport	(360) 268-9286
Washington Crab	Westport	(360) 268-9410

Latitudinal and Depth Distribution of Groundfish Adult Species

Latitudinal and depth distributions of groundfish species (adults) managed under the Pacific Coast Groundfish Fishery Management Plan[a]

Common Name	Scientific Name	Overall Latitudinal Distribution	Highest Density Latitudinal Distribution	Overall Depth Distribution (fm)	Highest Density Depth Distribution (fm)
Arrowtooth flounder	Atheresthes stomias	N. 34° N lat.	N. 40° N lat.	10 - 400	27 - 270
Butter sole	Isopsetta isolepis	N. 34° N lat.	N. 34° N. lat	0 - 200	0 - 100
Curlfin sole	Pleuronichthys decurrens	Coastwide	Coastwide	4 - 291	4 - 50
Dover sole	Microstomus pacificus	Coastwide	Coastwide	10 - 500	110 - 270
English sole	Parophrys vetulus	Coastwide	Coastwide	0 - 300	40 - 200
Flathead sole	Hippoglossoides elassodon	N. 38° N lat	N. 40° N lat	3 - 300	100 - 200
Pacific Sanddab	Citharichthys sordidus	Coastwide	Coastwide	0 - 300	0 - 82
Petrale sole	Eopsetta jordani	Coastwide	Coastwide	10 - 250	160 - 250
Rex sole	Glyptocephalus zachirus	Coastwide	Coastwide	10 - 350	27 - 250
Rock sole	Lepidopsetta	Coastwide	N. 32°30´ N. lat	0 - 200	summer 10 - 44 winter 70 - 150
Sand sole	Psettichthys melanostictus	Coastwide	N. 33°50´ N. lat	0 - 100	0 - 44
Starry flounder	Platichthys stellatus	Coastwide	N. 34°20´ N. lat	0 - 150	0 - 82
Aurora rockfish	Sebastes aurora	Coastwide	Coastwide	100 - 420	82 - 270
Bank rockfish	Sebastes rufus	S. 39°30´ N lat	S. 39°30´ N lat	17 - 135	115 - 140
Black rockfish	Sebastes melanops	N. 34° N lat	N. 34° N lat	0 - 200	0 - 30
Black-and-yellow rockfish	Sebastes chrysomelas	S. 40° N lat	S. 40° N lat	0 - 20	0 - 10
Blackgill rockfish	Sebastes melanostomus	Coastwide	S. 40° N lat	48 - 420	125 - 300
Blue rockfish	Sebastes mystinus	Coastwide	Coastwide	0 - 300	13 - 21
Bocaccio rockfish	Sebastes paucispinis	Coastwide	S. 40° N lat, N. 48° N lat	15 - 180	54 - 82
Bronzespotted rockfish	Sebastes gilli	S. 37° N lat	S. 37° N lat	41 - 205	110 - 160
Brown rockfish	Sebastes auriculatus	Coastwide	S. 40° N lat	0 - 70	0 - 50
Calico rockfish	Sebastes dallii	S. 38° N lat	S. 33° N lat	10 - 140	33 - 50
California scorpionfish	Scorpaena gutatta	S. 37° N lat	S. 34°27´ N lat	0 - 100	0 - 100

Latitudinal and depth distributions of groundfish species (adults) managed under the Pacific Coast Groundfish Fishery Management Plan[a]

Common Name	Scientific Name	Overall Latitudinal Distribution	Highest Density Latitudinal Distribution	Overall Depth Distribution (fm)	Highest Density Depth Distribution (fm)
Canary rockfish	Sebastes pinniger	Coastwide	Coastwide	27 - 460	50 - 100
Chameleon rockfish	Sebastes phillipsi	37°- 33° N lat	37°- 33° N lat	95 - 150	95 - 150
Chilipepper rockfish	Sebastes goodei	Coastwide	34°- 40° N lat	27 - 190	27 - 190
China rockfish	Sebastes nebulosus	N. 34° N lat	N. 35° N lat	0 - 70	2 - 50
Copper rockfish	Sebastes caurinus	Coastwide	S. 40° N lat	0 - 100	0 - 100
Cowcod	Sebastes levis	S. 40° N lat	S. 34°27′ N lat	22 - 270	100 - 130
Darkblotched rockfish	Sebastes crameri	N. 33° N lat	N. 38° N lat	16 - 300	96 - 220
Dusky rockfish	Sebastes ciliatus	N. 55° N lat	N. 55° N lat	0 - 150	0 - 150
Dwarf-red rockfish	Sebastes rufinanus	33° N lat	33° N lat	>100	>100
Flag rockfish	Sebastes rubrivinctus	S. 38° N lat	S. 37° N lat	17 - 100	shallow
Freckled rockfish	Sebastes lengtingnosus	S. 33° N lat	S. 33° N lat	22 - 92	22 - 92
Gopher rockfish	Sebastes carnatus	S. 40° N lat	S. 40° N lat	0 - 30	0 - 16
Grass rockfish	Sebastes rastrelliger	S. 44°40′ N lat	S. 40° N lat	0 - 25	0 - 8
Greenblotched rockfish	Sebastes rosenblatti	S. 38° N lat	S. 38° N lat	33 - 217	115 - 130
Greenspotted rockfish	Sebastes chlorostictus	S. 47° N lat	S. 40° N lat	27 - 110	50 - 100
Greenstriped rockfish	Sebastes elongatus	Coastwide	Coastwide	33 - 220	27 - 136
Halfbanded rockfish	Sebastes semicinctus	S. 36°40′ N lat	S. 36°40′ N lat	32 - 220	32 - 220
Harlequin rockfish	Sebastes variegatus	N. 40° N lat	N. 51° N lat	38 - 167	38 - 167
Honeycomb rockfish	Sebastes umbrosus	S. 36°40′ N lat	S. 34°27′ N lat	16 - 65	16 - 38
Kelp rockfish	Sebastes atrovirens	S. 39° N lat	S. 37° N lat	0 - 25	3 - 4
Longspine thornyhead	Sebastolobus altivelis	Coastwide	Coastwide	167 - >833	320 - 550
Mexican rockfish	Sebastes macdonaldi	S. 36°20′ N lat	S. 36°20′ N lat	50 - 140	50 - 140
Olive rockfish	Sebastes serranoides	S. 41°20′ N lat	S. 40° N lat	0 - 80	0 - 16
Pacific ocean perch	Sebastes alutus	Coastwide	N. 42°′ N lat	30 - 350	110 - 220
Pink rockfish	Sebastes eos	S. 37° N lat	S. 35° N lat	40 - 200	40 - 200
Pinkrose rockfish	Sebastes simulator	S. 34° N lat	S. 34° N lat	54 - 160	108
Puget Sound rockfish	Sebastes emphaeus	N. 40° N lat	N. 40° N lat	6 - 200	6 - 200
Pygmy rockfish	Sebastes wilsoni	N. 32°30′ N lat	N. 32°30′ N lat	17 - 150	17 - 150

Latitudinal and depth distributions of groundfish species (adults) managed under the Pacific Coast Groundfish Fishery Management Plan[a]

Common Name	Scientific Name	Overall Latitudinal Distribution	Highest Density Latitudinal Distribution	Overall Depth Distribution (fm)	Highest Density Depth Distribution (fm)
Quillback rockfish	Sebastes maliger	N. 36°20′ N lat	N. 40° N lat	0 - 150	22 - 33
Redbanded rockfish	Sebastes babcocki	Coastwide	N. 37° N lat	50 - 260	82 - 245
Redstripe rockfish	Sebastes proriger	N. 37° N lat	N. 37° N lat	7 - 190	55 - 190
Rosethorn rockfish	Sebastes helvomaculatus	Coastwide	N. 38° N lat	65 - 300	55 - 190
Rosy rockfish	Sebastes rosaceus	S. 42° N lat	S. 40° N lat	8 - 70	30 - 58
Rougheye rockfish	Sebastes aleutianus	Coastwide	N. 40° N lat	27 - 400	27 - 250
Semaphore rockfish	Sebastes melanosema	S. 34°27′ N lat	S. 34°27′ N lat	75 - 100	75 - 100
Sharpchin rockfish	Sebastes zacentrus	Coastwide	Coastwide	50 - 175	50 - 175
Shortbelly rockfish	Sebastes jordani	Coastwide	S. 36° N lat	50 - 175	50 - 155
Shortraker rockfish	Sebastes borealis	N. 39°30′ N lat	N. 44° N lat	110 - 220	110 - 200
Shortspine thornyhead	Sebastolobus alascanus	Coastwide	Coastwide	14 - >833	55 - 550
Silvergray rockfish	Sebastes brevispinis	Coastwide	N. 40° N lat	17 - 200	55 - 160
Speckled rockfish	Sebastes ovalis	S. 38° N lat	S. 37° N lat	17 - 200	41 - 83
Splitnose rockfish	Sebastes diploproa	Coastwide	Coastwide	50 - 317	55 - 250
Squarespot rockfish	Sebastes hopkinsi	S. 38° N lat	S. 36° N lat	10 - 100	10 - 100
Starry rockfish	Sebastes constellatus	S. 38° N lat	S. 37° N lat	13 - 150	13 - 150
Stripetail rockfish	Sebastes saxicola	Coastwide	Coastwide	5 - 230	5 - 190
Swordspine rockfish	Sebastes ensifer	S. 38° N lat	S. 38° N lat	38 - 237	38 - 237
Tiger rockfish	Sebastes nigrocinctus	N. 35° N lat	N. 35° N lat	30 - 170	35 - 170
Treefish	Sebastes serriceps	S. 38° N lat	S. 34°27′ N lat	0 - 25	3 - 16
Vermillion rockfish	Sebastes miniatus	Coastwide	Coastwide	0 - 150	4 - 130
Widow rockfish	Sebastes entomelas	Coastwide	N. 37° N lat	13 - 200	55 - 160
Yelloweye rockfish	Sebastes ruberrimus	Coastwide	N. 36° N lat	25 - 300	27 - 220
Yellowmouth rockfish	Sebastes reedi	N. 40° N lat	N. 40° N lat	77 - 200	150 - 200
Yellowtail rockfish	Sebastes flavidus	Coastwide	N. 37° N lat	27 - 300	27 - 160
Cabezon	Scorpaenichthys marmoratus	Coastwide	Coastwide	0 - 42	0 - 27
Kelp greenling	Hexagrammos decagrammus	Coastwide	N. 40° N lat	0 - 25	0 - 10

Latitudinal and depth distributions of groundfish species (adults) managed under the Pacific Coast Groundfish Fishery Management Plan[a]

Common Name	Scientific Name	Overall Latitudinal Distribution	Highest Density Latitudinal Distribution	Overall Depth Distribution (fm)	Highest Density Depth Distribution (fm)
Lingcod	Ophiodon elongatus	Coastwide	Coastwide	0 - 233	0 - 40
Pacific cod	Gadus macrocephalus	N. 34° N lat	N. 40° N lat	7 - 300	27 - 160
Pacific whiting	Merluccius productus	Coastwide	Coastwide	20 - 500	27 - 270
Sablefish	Anoplopoma fimbria	Coastwide	Coastwide	27 - >1,000	110 - 550
Big Skate	Raja binoculata	Coastwide	S. 46° N lat	2 - 110	27 - 110
California skate	Raja inornata	Coastwide	S. 39° N lat	0 - 367	0 - 10
Leopard shark	Triakis semifasciata	S. 46° N lat	S. 46° N lat	0 - 50	0 - 2
Longnose skate	Raja rhina	Coastwide	N. 46° N lat	30 - 410	30 - 340
Soupfin shark	Galeorhinus zyopterus	Coastwide	Coastwide	0 - 225	0 - 225
Pacific spiny dogfish	Squalus acanthias	Coastwide	Coastwide	0 - >640	0 - 190
Finescale codling	Antimora microlepis	Coastwide	N. 38° N lat	190 - 1,588	190 - 470
Pacific rattail	Coryphaenoides acrolepis	Coastwide	N. 38° N lat	85 - 1,350	500 - 1,350
Ratfish	Hydrolagus colliei	Coastwide	Coastwide	0 - 499	55 - 82

[a]Data from (Casillas, et al. 1998), (Eschmeyer, et. al 1983), (Hart 1988), (Miller and Lea 1972), (Love, et. al 2002), and NMFS Survey data. Depth distributions refer to offshore distributions, not vertical distributions in the water column.

Bedbug Protocol

Prior to Trip

If you think bed bugs are present on a vessel notify your coordinator and contractor. Try to verify visually. Look under mattresses, pads, bunks, etc for bed bugs. Ask crew about any measures they have taken to exterminate the bed bugs. Document what was done and when in your logbook.

Before Departing on Trip

If the boat you have been assigned has bed bugs recently, make sure that you have flying insect repellent, caladryl lotion, plenty of garbage bags, and a mattress cover that can be zipped around the mattress. It is a good idea to take a thermarest mattress as well in case the cover doesn't work and you don't want to sleep on that mattress. Even if the vessel fumigated it doesn't mean the bedbugs are completely gone. Continue to watch for them and keep your mattress covered. Make sure to keep a clean set of clothes in a zip lock bag so you have bed bug free clothes to wear home.

Bed Bugs Spotted During Trip

Bed bugs are active at night so this is when they will be more likely to be spotted. They do not like extreme heat or extreme cold so there are some steps that you can take while you are out there to try to get rid of them. One observer noticed that when the air conditioner was cranked up they did not come out. Another possibility is to bag your mattress in garbage bags and put it in the freezer for at least 12 hours or put it in a dry area on deck where it can cook in the sun. Another option is to spray the mattress with the bug spray; make sure that you give it plenty of time to air out before sleeping on it and follow all warnings and precautions listed on the can of spray. In order to keep the bugs form getting in your clothes you should keep your clothes in garbage bags. Make sure that you call your coordinator and contractor to report that you witnessed bed bugs on the vessel.



Figure A-2: Bedbug bites on legs.



Figure A-3: Bedbug bites on side of body.

After Trip

- FREEZE GEAR for at least 24 hours. Put gear in garbage bags.

IMPORTANT: Do not freeze electronic gear, except for EPIRB. Your EPIRB can go into the freezer with your survival suit.

- **BAG GEAR:** Everything that comes off the vessel should be in sealed garbage bags. When you take infected gear back to you house make sure you treat it right away to avoid getting bed bugs in your house. Wash all clothes right away in hot water and dry them with high heat in the dryer. Personal bags and stuff that cannot be washed in a machine can be treated by freezing or leaving it in a plastic bag and letting it bake in the hot sun. If for some reason you cannot take care of gear immediately then place it somewhere far away from furniture and carpeting. A garage would be an ideal place but if not possible a tiled bathroom or in the tub would also work.



Figure A-4: Bedbug bites on arms.

Paperwork Reduction Act

The PRA requires federal agencies to obtain clearance in order to ask questions of members of the public. All questions asked by west coast groundfish observers have been approved under OMB Control No. 0648-0593 through 12/31/2021. Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and implementing regulations, vessels are required to answer any question related to observer and vessel safety. However, vessels are not required to answer any other question asked by the observer. Vessel's willingness to answer all questions asked by observers is voluntary and this willingness is appreciated as it will ensure observer data collected on the vessel can be used in future analyzes.

The observer program can be contacted toll free at (866) 780-8064 or by the program's email address at NWFSC.observerprogram@noaa.gov if anyone has any questions.

A "Paperwork Reduction Act Information" sheet is mailed to all selected vessels for observer coverage and is included with their selection letter.

Paperwork Reduction Act Information

Information collected through the observer program is used to: (1) monitor catch and bycatch; (2) understand the population status and trends of fish stocks and protected species, as well as the interactions between them; (3) determine the quantity and distribution of net benefits derived from living marine resources; (4) predict the biological, ecological, and economic impacts of existing management actions and proposed management options; and (5) ensure that the observer programs can safely and efficiently collect the information required for the previous four uses. In particular, these biological and economic data collection programs contribute to legally mandated analyses required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order 12866 (EO 12866), and other applicable law.

Most of the information collected by observers is obtained through "direct observation by an employee or agent of the sponsoring agency or through non-standardized oral communication in connection with such direct observations". Under the Paperwork Reduction Act (PRA) regulations at 5 C.F.R. 1320.3(h)(3), facts or opinions obtained through such observations and communications are not considered to be "information" subject to the PRA. The public reporting burden for responding to the questions that observers ask and that are subject to the PRA is estimated to average 34 minutes per trip, including the time for hearing and understanding the questions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: West Coast Groundfish Observer Program, 2725 Montlake Blvd. East, Seattle, WA 98112.

Providing information related to observer and vessel safety is mandatory under regulations at 50 C.F.R. 600.746. However, all other requested information is voluntary. Although you are under no legal obligation to answer non-safety related observer questions, we would appreciate your support as it ensures observer data can be used for its intended purpose.

The information collected will be kept confidential as required under Section 402(b) of the MSA (18 U.S.C. 1881a(b)) and regulations at 50 C.F.R. Part 600, Subpart E. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

Useful Websites

WCGOP Observer-Related Sites

West Coast Groundfish Observer Program

http://www.nwfsc.noaa.gov/research/divisions/fram/observer/index.cfm

NOAA Pacific Coast Groundfish Individual Fishing Quota

https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=155:1:::NO:::

WCGOP Database Log-on

http://nwcoa3.nwfsc.noaa.gov/obsprod/logon.display

Pacific States Marine Fisheries Commission (PSMFC)

http://www.psmfc.org

Alaskan Observers, Inc. (AOI)

http://www.alaskanobservers.com/

Saltwater Inc.

http://www.saltwaterinc.com/

Fisheries Management on the West Coast

NOAA Fisheries

http://www.nmfs.noaa.gov

Main portal to access national and regional information on NOAA managed marine fisheries. Sign up for the newletter at the bottom of the main page to keep up to date on fisheries news.

NOAA Fisheries Northwest Regional Office (groundfish management)

https://www.fisheries.noaa.gov/region/west-coast

https://www.fisheries.noaa.gov/west-coast/sustainable-fisheries/fisheries-management-west-coast

West Coast Groundfish Region Public Notices

https://www.fisheries.noaa.gov/rules-and-announcements/bulletins

This site will subscribe you to receive email updates on West Coast groundfish regulations as they occur.

Pacific Fishery Management Council (PFMC)

http://www.pcouncil.org/

International Pacific Halibut Commission

https://www.iphc.int/

State Agencies

California Department of Fish and Game (DFG)

https://www.wildlife.ca.gov/

Oregon Department of Fish and Wildlife (ODFW)

http://www.dfw.state.or.us/

Washington Department of Fish and Wildlife (WDFW)

http://wdfw.wa.gov/

Fisheries Research on the West Coast

NOAA Northwest Fisheries Science Center

https://www.nwfsc.noaa.gov

Fish Identification

Fish Base: Database of over 28,000 species with images.

http://www.fishbase.org/search.cfm

Fisheries Regulations

West Coast Groundfish Regulations

https://www.ecfr.gov/cgi-bin/text-idx?SID=7d07fc2d84dba370c4f19c664b33d0c0&mc=true&tpl=/ecfrbrowse/Title50/50cfr660_main_02.tpl

See §660.16 for the observer program regs.

Marine Regulations

WASHINGTON:

https://wdfw.wa.gov/fishing/commercial

OREGON:

http://www.dfw.state.or.us/MRP/regulations/commercial_fishing/index.asp

CALIFORNIA:

https://www.wildlife.ca.gov/Fishing/Commercial

Marine Safety

The Alaska Marine Safety Education Council

http://www.amsea.org/

EPIRB On-line registration and forms

http://www.sarsat.noaa.gov/beacon.html

US Coast Guard Commercial Fishing Vessel Industry

http://www.fishsafewest.info/

Commercial Fishing Vessel Safety Checklist Generator

http://www.fishsafewest.info/checklist/generator.html

NOAA: National Marine Weather Services

https://www.weather.gov/marine/

Independent Service (iwindsurf.com)

http://www.iwindsurf.com/windandwhere.iws

Vessel and Landings Information

Landings, Port and Vessel Search

http://www.st.nmfs.noaa.gov/st1/CoastGuard/VesselByName.html

NW Region List of LE and CS permits

https://www.webapps.nwfsc.noaa.gov/apex_ifq/f?p=112:23

PacFIN Network

https://pacfin.psmfc.org/#

Marine Traffic Ship Tracking

https://www.marinetraffic.com/

Observer Associations, Interest Groups

Association for Professional Observers

http://www.apo-observers.org

International Fisheries Observer & Montitoring Conference

Note: this site changes every conference so google it.

https://ifomcvigo.com/

Database on Sustainable Seafood

http://www.fishwatch.gov/

Observer Programs Worldwide

Domestic

National Observer Program

https://www.fisheries.noaa.gov/topic/fishery-observers

North Pacific Groundfish Observer Program

https://www.fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-program

Alaska Marine Mammal Observer Program

https://www.fisheries.noaa.gov/alaska/fisheries-observers/alaska-marine-mammal-observer-program

NOAA Fisheries is not operating the Alaska Marine Mammal Observer Program (AMMOP) due to a lack of available resources to fund additional observations of the southeast Alaska salmon drift gillnet fishery. We will reassess future AMMOP activities as funding permits

Northeast Fisheries Observer Program

https://www.fisheries.noaa.gov/about/fishery-monitoring-and-research-northeast

Florida Museum of Natural History: Shark Fishery Observer Program:

https://www.floridamuseum.ufl.edu/sharks/

Southeast Pelagic Observer Program

https://www.fisheries.noaa.gov/southeast/fisheries-observers/southeast-pelagic-observer-program

Hawaii Longline Observer Program

https://www.fisheries.noaa.gov/pacific-islands/pacific-islands-region-observer-program

Foreign

Canadian At-Sea Fisheries Observer Program

http://www.archipelago.ca/fisheries-monitoring/at-sea-observers/

Marine Resources Assessment Group (MRAG) (multiple programs)

https://www.mragamericas.com/

NOAA Latitude/Longitude Distance Calculator

https://www.nhc.noaa.gov/gccalc.shtml

Vessel Monitoring System (VMS)*

Why does the Pacific coast groundfish fishery need a vessel monitoring program?

A vessel monitoring program is an enforcement tool that can be used to monitor compliance with areas closed to fishing. Since the vessel monitoring pilot program was implemented on January 1, 2004, new closed areas have gone into effect and the Council has prioritized expanding the original requirements to the Open Access commercial groundfish fleet in order to monitor compliance with groundfish conservation areas. The groundfish conservation areas include Rockfish Conservation Areas (RCAs), Cowcod Conservation Areas (CCAs), Cordell Banks Closed Area, Farallon Islands Closed Areas, Essential Fish Habitat Conservation Areas (EFHCAs), and Yelloweye Rockfish Conservation Areas (YRCAs). A complete description of these closed areas, including detailed location information and to which sectors and gears they apply, is available on the NMFS Northwest Region website by clicking on "Groundfish & Halibut", "Groundfish Fishery Management", then "Groundfish Closed Areas". Over time, the groundfish conservation areas will likely change. The National Marine Fisheries Service (NMFS) will keep the fishing fleet informed as these changes are made.

Parts of the Vessel Monitoring Program

The Pacific Coast vessel monitoring program consists of a vessel monitoring system and declaration reports. The vessel monitoring system (VMS) consists of equipment that tracks a vessel's geographic position through a satellite communication system. A VMS transceiver unit is installed aboard the vessel that communicates via a satellite to a processing center. For the Pacific Coast program, a basic VMS system with 1-way communication will be used to track vessel activity in relation to closed areas within 200 nautical miles along the Pacific coast. The declaration reports are reports given by fishermen before a fishing trip to identify which gear type will be used for fishing, which fishery they are participating in, and if the vessel operator intends to fish within an RCA. Declaration reports are necessary for all fisheries required to have VMS and reports must be provided to NMFS Office of Law Enforcement (OLE) before a vessel leaves port.

Commonly Asked Questions

Q: Who is required to have VMS?

A: Any vessel registered to a limited entry groundfish permit must have VMS to fish in state or federal waters (0-200 nautical miles offshore). Non-groundfish trawl vessels, vessels that use trawl gear but are not registered to limited entry groundfish permits, must have VMS to fish in state or federal waters (0-200 nautical miles offshore). Any vessel using non-trawl gear, that is not registered to a limited entry groundfish permit, must have VMS on trips in which groundfish are taken and retained, possessed or landed in federal waters (3-200 nautical miles offshore).

Q: Does a non-trawl vessel that is not registered to a limited entry groundfish permit need to have VMS if the vessel is used to fish in state waters and only transits through Federal waters with groundfish onboard?

A: Yes, VMS is required.

Q: Does a non-trawl vessel that is not registered to a limited entry groundfish permit need to have VMS to fish in both state and federal waters on the same trip when only groundfish from state waters are retained?

A: Yes, VMS is required.

Q: What are the vessel owner's responsibilities?

A: The vessel owner must install and use (according to NMFS OLE installation and operation instructions) a type-approved VMS transceiver unit 24 hours per day; establish a service agreement with a type-approved communication service provider; send an activation report at least 72 hours prior to leaving port on the first trip that requires VMS and maintain a valid declaration report with NMFS OLE.

Q: Who pays for the costs associated with VMS?

A: The vessel owner or operator is responsible for purchasing the VMS equipment and paying all charges from the communication service provider to ensure continuous operation of the VMS transceiver units. Vessel owners may be reimbursed for the cost of some VMS units.

For more information or go to: https://www.fisheries.noaa.gov/topic/enforcement#vessel-monitoring

or call: **Northwest Division Office for Law Enforcement (206) 526-6133**

*From the Compliance Guide for the Pacific Coast Groundfish Fishery Vessel Monitoring Program, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

Electronic Monitoring EFP

Covering Electronic Monitoring (EM) EFP Vessels

Meet with your debriefer!

- You must meet with your debriefer before and after your first EM/EFP trip in each calendar year.
- Your debriefer should always know when you are covering an EM vessel.
- EM vessels are sampled according to Catch Share sampling protocols. Therefore, a NCS>CS Briefing is required before going out on one of these vessels. This is performed by the debriefer and can usually be completed within 2 hours.

Read the Vessel Monitoring Plan (VMP)

- Unique to each EM vessel.
- Obtain from your debriefer. Also available on vessel.
- Contains all of the EFP rules, including what can and cannot be discarded and screenshots of all camera angles.
- These are living documents that can change from year-to-year and mid-season.
- DO NOT email VMPs without removing personal information (i.e., crew names, phone numbers, and addresses).

Don't obstruct camera views!

Handling Discards

- Discarding is only allowed at designated "Discard Control Points".
- Do not assume that something can be discarded. Ask what can be discarded and where, before tossing anything overboard.
    - Best practice is to allow the crew to do all of the actual discarding, after you have sampled, until you are comfortable with the rules that apply to each particular vessel. Ultimately, it is the vessel operator's responsibility to ensure that discarding is handled properly, so don't be afraid to ask the skipper and document his/her responses in your logbook.
- The vessel will likely have a particular way in which they have to deal with predated fish on fixed gear vessels (e.g., tote). Get counts and let them discard.
    - Referred to as "depredated" fish in the VMP.
- Salmon must be retained.
- Other protected/prohibited species (e.g., GSTG, marine mammals, PHLB) must be discarded.

Retained Shoreside Discards (RDIS)

- This refers to a mix of NIFQ/IFQ species (usually predominantly NIFQ) that might normally be discarded at-sea, but that are required to be landed by the rules of the vessel's EFP.
- Place in a retained RDIS catch category and take a species composition sample.
- If RDIS contains IFQ species, notify the catch monitor by adding a comment to the Priority Species Tracking form.

Access to Catch

- Since the crew may not be used to having an observer onboard, be sure to make it clear to them that you need access to all discards and RDIS. Otherwise, they may inadvertently discard species like PHLB, before you have an opportunity to sample them.

Catch Monitoring

- Catch monitoring services must be contracted separately.
    - YOU ARE NOT THE CATCH MONITOR, unless your provider and/or the catch monitoring program say you are (even if you've served that role in past contracts).

Database

- Enter EM data under the Electronic Monitoring EFP role. If you do not have this role or you enter data under the wrong role, contact your debriefer or Jim Fellows immediately.
- Flag each EM haul/set as "EFP" in the "Haul Location" tab, below the "BRD Present?" field.

EM EFP Observer Information Sheet

Project Objective: To test the viability of Electronic Monitoring (EM) as a source of data to document individual accountability of catch and bycatch in the Pacific Trawl Rationalization Program.

Welcome Aboard an Electronic Monitoring (EM) Exempted Fishing Permit (EFP) Vessel

The EM program has plans to deploy EM systems on IFQ fishing vessels fishing bottom trawl, fixed, and midwater trawl gears in 2018. Please take a few minutes to read though this instruction sheet and acquaint yourself with camera and equipment positioning and the skipper's instructions.

Electronic Monitoring System (EMS) Equipment for Archipelago



Figure A-5: Vessel Mounted GPS receiver.

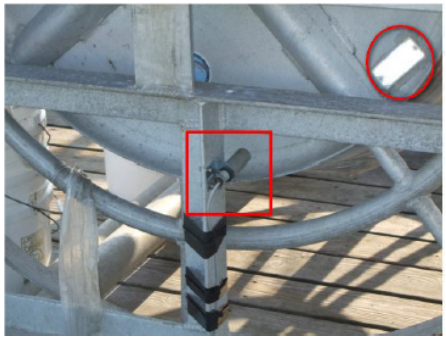


Figure A-6: Winch/Drum Rotation Sensor.



Figure A-7: Control Box/User Interface.



Figure A-8: EMS Camera (3-4 per vessel).

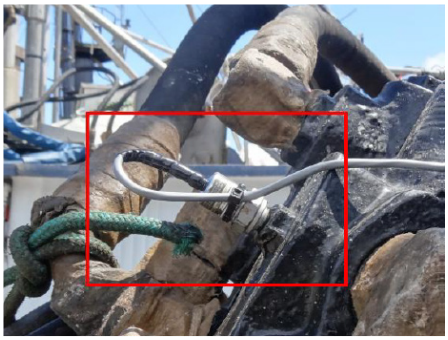


Figure A-9: HydraulicPressureTransducer.

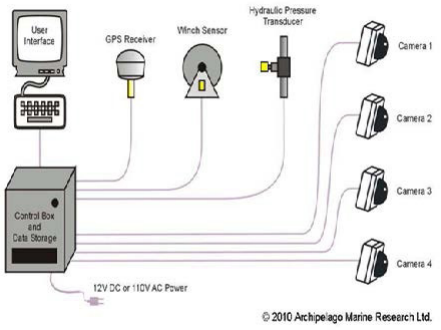


Figure A-10: EMSbasicsystemcomponents.

Marine Research

Observer Instructions:

- Perform all WCGOP duties as you would on any standard trip.
- Do not handle or interact with the equipment in any manner (e.g., adjusting, blocking, cleaning).
- Avoid interaction with winch and hydraulic sensors.
- Use the monitor in the wheelhouse to get a sense of where cameras are pointing on the deck. Think about body positioning relative to the camera focused on your work area to avoid blocking view of the fish.
- Any discarding of catch must be done in full view of a camera, if safe. All vessels have designated "discard control points". Refer to the vessel's Individual Vessel Monitoring Plan to learn where these are. Please use these locations on the vessel when discarding sampled catch.
- Skippers are required to fill out logbooks as part of the EFP. If asked, and you have information or expertise that might be useful in this process (identification, weight estimation, etc.), please provide what assistance you can, as time allows.

IFQ Species by Location Table

IFQ = Individual Fishing Quota

IBQ = Individual By-catch Quota

Species Name	North of 42°N latitude	42°N to 40°10'N latitude	40°10'N to 36° latitude	36°N to 34°27'N latitude	South of 34°27'N latitude
Arrowtooth flounder	Arrowtooth flounder				
Aurora rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Bank rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Blackgill rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Bocaccio rockfish	Minor Shelf North of 40°10'N		**Boccacio rockfish South of 40°10'N - OVERFISHED**		
Bronzespotted rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Butter sole	Other Flatfish				
Canary rockfish	**Canary rockfish - Managed under rebuilding plan**				
Chameleon rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Chilipepper rockfish	Minor Shelf North of 40°10'N		Chilipepper rockfish South of 40°10'N		
Cowcod rockfish	Minor Shelf North of 40°10'N		**Cowcod rockfish South of 40°10'N - OVERFISHED**		
Curlfin sole	Other Flatfish				
Darkblotched rockfish	**Darkblotched rockfish - OVERFISHED**				
Dover sole	Dover sole				
Dusky rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Dwarf-red rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
English sole	English sole				
Flag rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Flathead sole	Other Flatfish				
Freckled rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Greenblotched rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Greenspotted rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Greenstriped rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Halfbanded rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Harlequin rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Honeycomb rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Lingcod	Lingcod North of 40°10'N		Lingcod South of 40°10'N		
Longspine Thornyhead	Longspine thornyhead North of 34°27'N				**No IFQ - Trip Limits**
Mexican rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Pacific cod	Pacific cod				
Pacific halibut	**Pacific halibut IBQ**		**No IBQ Needed**		
Pacific Ocean Perch	**POP North of 40°10'N - OVER-FISHED**		Minor Slope South of 40°10'N		
Pacific sanddab	Other Flatfish				
Pacific whiting	Pacific whiting				
Petrale sole	**Petrale sole - Managed under rebuilding plan**				
Pink rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Pinkrose rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		

Species Name	North of 42°N latitude	42°N to 40°10'N latitude	40°10'N to 36° latitude	36°N to 34°27'N latitude	South of 34°27'N latitude
Pygmy rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Redbanded rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Redstripe rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Rex sole	Other Flatfish				
Rock sole	Other Flatfish				
Rosethorn rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Rosy rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Rougheye rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Sablefish	Sablefish North of 36°N			Sablefish South of 36°N	
Sand sole	Other Flatfish				
Sharpchin rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Shortraker rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Shortspine thornyhead	Shortspine thornyhead North of 34°27'N				SSPN South of 34°27'N
Silvergray rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Speckled rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Splitnose rockfish	Minor Slope North of 40°10'N		Splitnose rockfish South of 40°10'N		
Squarespot rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Starry flounder	Starry flounder				
Starry rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Stripetail rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Swordspine rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Tiger rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Vermilion rockfish	Minor Shelf North of 40°10'N		Minor Shelf South of 40°10'N		
Widow rockfish	Widow rockfish				
Yelloweye rockfish	**Yelloweye rockfish - OVERFISHED**				
Yellowmouth rockfish	Minor Slope North of 40°10'N		Minor Slope South of 40°10'N		
Yellowtail rockfish	Yellowtail rockfish North of 40°10'N		Minor Shelf South of 40°10'N		

Beaufort Scale



Figure A-11: Wind at sea visualization chart.

Glossary

A - B

ABC: "Acceptable Biological Catch" - The ABC is a scientific calculation of the sustainable harvest level of a fishery and is used to set the upper limit of the annual total allowable catch. It is calculated by applying the estimated (or proxy) harvest rate that produces maximum sustainable yield to the estimated exploitable stock biomass (the portion of the fish population that can be harvested)

ACL: Annual catch limit

Aft: Towards the stern or back end of a vessel

Amidships: Midway between the bow and stern of a ship, or on the centerline

Anchor/Buoy lines: Sections of line that join the groundline and anchors on the bottom of the ocean to the buoys or "bags" on the surface.

Athwart ships: Side-to-side across a ship, perpendicular to the centerline

Bag: The codend or another name for a buoy.

Bait bags/jars: Containers filled with ground bait that are hung inside pots to attract fish.

Beam: Width of a ship

Benthic: Living in direct relation with the bottom

Bias: Tending to yield one outcome more frequently than others. Factors affecting the randomness of a sample, including possible mechanical sorting of catch by an incline belt, or purposeful presorting by a crew member, will introduce bias.

Bight: A loop or turn in a line

Bleeder/Sorter: Crewman assigned to sort bycatch out of the catch, and to cut the "throat"of the cod.

Block/Hydro/Hauler: Hydraulically driven wheel into which the groundline is placed during gear retrieval. As the wheel spins the groundline is drawn on board.

Boat Share: The percentage of the gross which goes to the vessel owner

Bobbin: A round, rubber or steel roller used in the footrope of a bottom net to protect the net from damage

Bosun: Person in charge of a ship's rigging, anchors, cables and deck crew

Bottom: (1) ocean floor, (2) fishing depth, or (3) a ship hull. Which meaning to apply must be taken from context.

Bow: The front section of a boat or ship

Bowline: A type of knot used to form an eye in the end of a rope.

Brailer: A type of netting that is attached to a crane and used to transport fish and other materials from one vessel to the dock or to another vessel

Breech: A behavioral characteristic of some marine mammals such as humpback whales, where they rise vertically out of the water, and then with most of their body above the surface, they fall to their back or side

Bridge: The control center of a ship

Bridle: Wire attached to the headrope, footrope or side panel of a net, by which the net is towed

Bulkhead: A wall separating compartments of a ship

Bulwarks: The upper section of the side plating of a ship, which extends above and around the upper deck

C

Capstan (gypsy): An upright, spool-shaped, power rotational cylinder around which cables or hawsers are wound

Catch Category: Categories comprised of one or more species for management purposes.

Catcher boat: Vessel that is used for catching fish and that does not process (freeze) fish on board

Chaffing gear: Protective carpeting (or strands of nylon forming a carpet pile) on the outer, underside of the trawl net to keep it from catching and ripping on obstacles on the bottom

Chief: The engineer; responsible for care of engines and deck machinery

Choker, choke strap: A loop of wire or rope used to cinch off the net or codend

Chopper: Machine used to grind frozen herring or squid for bait or the person assigned this duty.

Cleat: A heavy piece of wood or metal having two horns around which ropes may be made fast or belayed, usually secured to a fixed object such as the dock or deck

Coded wire tag: Small tag (3mm) etched with binary code that are inserted into the snout of fishes for later identification

Codend: The end "bag" of a trawl net where the majority of the fish are collected and held

Coiler: Person or machine that is designated to coil line as it is retrieved by the block.

Combing: A low partition that separates the trawl deck from the side pockets

Companionway: Entrance/stairway from deck to fo'c'sle and engine room

Compliance: Being in accordance with the fishing regulations

Composition: In the groundfish Observer Program, this refers to the makeup of harvested species in a catch, and the sample you collect.

Cookie (disc): A flat, round piece of rubber with a hole in the center strung on a wire rope or chain to protect it from abrasion and to stir up a mud cloud. Used on non-pelagic trawl gear.

Crucifier: A pair of rollers or steel pegs which stand vertically with only enough room for the groundline to pass between. During gear retrieval the groundline passes between the rollers and the hooks are pulled out of the fish.

D - E

Demersal: Dwelling at or near the bottom

Discard: Everything that is not retained.

Disembark: To get off a vessel

Diver/Trailer buoys: A small buoy attached to the main buoy with a length of line. The diver buoy "trails" behind the main buoy and allows a larger target for grappling.

Dogs: Metal hooks that are hydraulically controlled to secure a pot to a launcher.

Door: A large steel or alloy structure attached to each main wire (in front of the net) to spread the net horizontally by means of hydrodynamic and friction forces

Draft: Vertical distance from keel to waterline of a ship

Drop-off: Those organisms that fall or are knocked off of a hook prior to their being landed.

Drum: A metal spool or cylinder around which cable, etc. is wound

Drumhead: The top of a capstan, into which bars are inserted for leverage in turning it

Ebb tide: Outgoing tide

EEZ: "Exclusive Economic Zone" - the term for the 200 mile jurisdiction zone, in which a nation has exclusive fishing rights, formerly called the FCZ

Embarkation: To board a vessel

EPIRB: "Emergency Position Indicator Radio Beacon"

Expansion straps (container lines): A series of lines running around the circumference of a codend to provide strength and help maintain the shape of the bag

F

Fathom: A measure of length or depth equal to six feet

Fingers/Triggers: Small plastic strips located in the tunnel of a pot which allow fish to enter a pot but not exit.

Fishfinder: An electronic device for locating schools of fish under a vessel

Fishing line: A length of chain or wire in the bottom, front end of a net between the footrope and the bolsh line

Fishing mortality: Removal (deaths) of fish from a population due to fishing activity.

Flatfish: Fish which are laterally compressed and orient themselves in the water with their lateral surfaces or sides towards the surface and bottom.

Flatlink: A piece of cut or cast hardware, generally oblong in shape, with leg diameter smaller in certain areas to allow attachment of a G-hook; used where wires must be connected and disconnected frequently

Flood tide: Incoming tide

Fo'c'sle (from forecastle): The forward part of a ship where sailor's quarters are located

Footrope: On a non-pelagic net, a series of bobbins, tires or discs strung on chain or wire rope attached to the bottom front of a bottom net to protect the net from damage. On a midwater net, the rope or wire running along the front, bottom edge of the net.

Forward: Towards the bow of a vessel

Fresh weight: The weight of the whole fish (or animal) as it was when alive. Also called round weight, whole weight.

G

Galley: Ship's kitchen and/or mess hall

Gallows: Structure from which trawl blocks are hung; separate units port and starboard

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

Gantry: A frame structure, usually at the aft of a vessel, which supports pulleys (blocks) used in setting and retrieving trawl nets

Gas bladder: A sac filled with air or similar gases in the body cavity of a fish. May or may not be attached to the throat by a duct.

G-hook: A piece of cut or cast iron hardware in the shape of a "G", used with a flatlink where wires must be connected and disconnected frequently

Gill rakers: Bony tooth like structures on the anterior edges of the gill arches. For protection or straining out food.

Gilson: A single hookline (as distinguished from a multiple block) used to assist in setting, hauling and moving gear on deck

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

Gunnel or Gunwale: The upper edge of the side of a boat

Gurdy: Special winch for hauling of longlines or trolling lines

Gypsyhead: A metal drum with a smooth concave surface, usually mounted on a winch. Several wraps of line around the gypsy provide enough friction while it is turning to raise heavy loads smoothly because the line slips and is easily controlled, like the friction on a clutch plate.

H - K

Halibut excluder: A divider located in the tunnel of a pot that restricts the size of the opening.

Hatch: An opening in a deck or bulkhead of a ship.

Haul: A catch of fish from one tow of a net or longline

Haulback: When the vessel lifts the net out of the fishing depth

Hawser: Any large rope (generally five inches or more in circumference) used primarily for towing, mooring or hauling

High grading: When a vessel puts up product but later discards it overboard in favor of a more valuable product

Hook: Usually a three pronged grappling hook used to snag the trailer buoy line.

Hook Counts: The average number of hooks per segment of gear.

Horn Off: To knock organisms off of a hook using the butt of a gaff.

I-beam: A steel beam shaped like an "I" in cross section

Intermediate: A gradually tapered section, generally of small mesh, between the back body of a trawl and the codend.

Joint Venture: A cooperative fishing/processing effort between vessels of different nationalities

Knot: A measure of time multiplied by distance, equaling speed. One knot equals one nautical mile (6080 feet) in one hour.

L - O

Launcher: Hydraulic lift, usually located on the port side of a vessel, used to "launch" pots over the side of the vessel and to adjust the angle of the pot when it is being emptied.

Lay: The direction in which the strands of a rope are twisted (right or left) or the degree of tightness with which they are twisted (soft, medium, hard, etc.)

Lazaret: A storage place between the decks of a ship

Lee, Leeward: The side protected from the wind, opposite the "windward" side

Live Tanks: Tanks or bins on factory trawler vessels where the catch is dumped prior to sorting or processing

Lobby: Another name for a fish bin on a catcher/processor

Main Wires: The two large cables used to connect the trawl net to the vessel while fishing

Master: Fishing master and/or captain

MSY: Maximum sustainable yield. An estimate of the largest average annual catch or yield that can be continuously taken over a long period from a stock under prevailing ecological and environmental conditions.

Mustang suit: Insulated and waterproof coveralls worn in the cold months while sampling on deck.

Net reel: A hydraulic drum on the deck on which the net and most of the rigging are wound

Optimum Yield (OY): A range within which summed Total Allowable Catches must fall

Otter trawl: The type of net gear used on stern trawlers

Otterboard: Another name for a trawl door

Overfished: Any stock or stock complex whose size is sufficiently small that a change in management practices is required to achieve an appropriate level and rate of rebuilding. The term generally describes any stock or stock complex determined to be below its overfished/rebuilding threshold. The default proxy is generally 25% of its estimated unfished biomass; however, other scientifically valid values are also authorized.

Overfishing: Fishing at a rate or level that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis. More specifically, overfishing is defined as exceeding a maximum allowable fishing mortality rate.

P

Panel: Mesh netting attached to a square metal frame. Two large panels and four smaller panels are attached to a heavy steel frame box to form the six sides of a pot.

Pelagic: Midwater

Peritoneum: The lining of the gut cavity

Pew, Pew stick: A sharp-ended pole, which is used to skewer fish and toss them to another location

Pick/"Running the hook": Hook connected to the end of the boom which is attached to the bridle and is used to lift a pot onto the launcher as the pot is being retrieved.

Plotter: Electronic mapping device that displays the local area and the vessel's position on it. The plotter allows skippers to record the area of a string and also the number of pots in a string on a digital map display.

Pod: A school of marine mammals; such as seals, whales or dolphins

Population: The total of individuals occupying an area or making up a whole. When sampling aboard a trawler, a population is defined as the catch from a single haul.

Porthole: A window in the hull or the outside bulkhead of a ship

Pot Tie: A short piece of line used to tie pots together when they are stacked on deck.

Predominant species: Species that are the most abundant in the catch - not necessarily the target species.

Presorting: The segregation and/or removal of any item(s) or organism(s) from the catch prior to the point where an Observer is collecting a sample.

Prohibited species or prohibited species groups: Species whose allowable retention is zero. Salmon, Pacific Halibut, and Dungeness crab are prohibited species.

Prohibited species sampling: The weight of groundfish catch sorted by the Observer to determine only the numbers and weights of salmon, herring, halibut, king crab, and tanner crab present

Prohibited Species Catch (PSC): A harvest limit usually placed on halibut, salmon, crabs or other species which must be discarded in the groundfish fisheries

R

R.D.F.: Radio direction finder

Radio Call Sign: Four letters and/or numbers, which are an international identifier of a vessel. The International Radio Call Sign (IRCS) is painted in large letters on the side of each vessel and on the deck of the flying bridge.

Random: Relating to a set, each of whose elements have an equal probability of occurring in a sample. These elements are chosen as sample units in a manner, which eliminates subjectivity.

Random sample frame: The population divided into independent countable units.

Regenerated scale: A fish scale that has grown in to replace one that was lost. Regenerated scales are useless for aging a salmon, but can be used to identify it to species.

Reserve: A portion of quota set aside at the beginning of the fishing year to allow for uncertainties in preseason estimates of DAP catch

Riblines: Heavy lines or chains that run down the length of the trawl net to strengthen it

Roller: A device made up of one or more metal pins that spin allowing the groundline to be pulled up and over the rail of a vessel during retrieval such that tension and friction on the line is reduced.

Roller station/pit: Term used to describe the area where fishermen stand while retrieving the line and gaffing fish coming in over the roller.

Rollerman: A crewman who stands in the roller station and monitors the retrieval of the gear. The rollerman lands any commercially valuable fish and excludes any non-commercially valuable fish from being landed.

Rostrum: A pointed, calcareous, median extension on the anterior end of crab carapaces

Round weight: The weight of the whole fish (or animal) as it was when alive, synonymous with fresh weight and whole weight

Roundfish: Fish that orient themselves in the water with the dorsal side towards the surface and ventral side towards the bottom

"Run pots": A phrase used interchangeably with "retrieve pots". It is the phrase used in the vessel logbook to indicate the number of pots that have been retrieved from a string.

S

Sample size: The portion of the population that is sampled.

Sample type: The method used to select part of a population.

Sample weight: The actual weight in kilograms of a composition sample.

Sampling: The process of selecting part of a population for the purpose of determining the parameters, or characteristics, of the whole population. Composition sampling refers to taking samples of a haul in order to determine the fishing mortality of species occurring in the sample.

Scupper: A hole in the bulwarks which allows water to drain from the deck

Segment of Gear: In this manual a segment of gear refers to the standard unit the vessel uses for measuring gear. This could refer to a mag, skate, tub, or coil of gear.

Set: The entire length of groundline from the first hook to the last hook, also referred to as a "string" of gear.

Sheave: A wheel with a grooved rim, such as is mounted in a pulley block to guide the rope or cable

Shot: A pre-measured length of buoy line, usually 10 to 20 fathoms long. Normally there are two set lengths, a "Long" shot and a "Short" shot. When setting a string, the skipper will tell the crew how many shots to tie to a pot for various bottom depths.

Skate: A length of longline gear, usually 100 fathoms or 600 feet long

Skate bottom: A fabric square with lines on the corners to tie it into a bundle once a longline "skate" has been coiled onto it.

Skate or Mag markers: Markers in the groundline that separate the sections of gear. These may be fluorescent tape woven onto the line, knots, line splices, carabineers, or magazine (mag) clips.

Skates/Tubs/Coils: Terms used to describe the smaller segments of gear within a set or a magazine.

Spatial: Referring to a unit of space used in random sampling. For example: a third of a bin, or a section of trawl alley, are spatial units.

Species composition sample: To sort a defined weight of catch such that each organism sampled for is grouped by family or by species and to determine the number and weight of the organisms in each group

Spring line: A mooring line attached amidships

SSB: "Single Side Band" radio used for long distance contact

Stack: This term is used on pot vessels to refer to pots stacked on the back deck.

Starboard: The right side of a ship (when one is looking forward)

Stern: The aft or back end of a vessel

Stern ramp (slip): A sloping ramp in the stern of a trawler between the deck and the water line, through which the net is set and hauled.

Stern trawler: Any of various sized fishing vessels which trawl a conical shaped mesh net through the water, haul it up a ramp

through the stern of the ship, empty, and process the catch to make a wholesale fish product. These vessels may fish for a month or more at sea without support.

String: Pots deployed individually and are not attached to one another in any way. This term refers to pots set at a similar time in a similar area and depth. What a skipper calls a string varies considerably between vessels. Strings are analogous to sets.

Sub-sample: The weight of catch designated by the Observer which weighs less than the sample weight and is processed for a supplemental task to determining the composition of a haul, such as sampling for average weight.

T - Z

Table: Some vessels have a sorting table on the back deck that pivots on one axis. The contents of a pot are dumped onto the table, and the table is swung out of the way to re-launch the pot.

Total Allowable Catch(TAC): Annual harvest levels based on biological, economic and social factors

Taper: To cut webbing according to a given formula for fitting into a trawl

Tare: A deduction from gross weight to obtain net weight. Usually made to allow for the weight of a container.

Temporal: Referring to a unit of time used in random sampling. For example: one hour of processing time, or systematic intervals of ten minutes, are examples of temporal units.

Trawl: A cone shaped net, towed through the water to catch fish

Trawl Alley: The central passage on a trawl vessel where the codend is placed after haulback

Trawl Doors: Often referred to as "doors," these are two metal plates, each attached to a main wire, designed to keep the mouth of the net open while fishing

Trip: The time period when a vessel leaves the dock with the intention of fishing, regardless of whether or not fishing activity occurs, until it returns to the dock.

Trip Limit: The amount of a catch category that a vessel is allowed to retain by trip.

Tuning/Overhauling gear: Term used to describe the work involved in straightening hooks, replacing gangions, or splicing the damaged groundlines.

Tunnel: Short mesh-lined openings on two or three sides of a pot. These are the entrances to the trap. Fish and crab are able to swim in but are unable to make their way back out due to the fingers/triggers.

Under way: Vessel in forward motion, running. According to Coast Guard regulation, a vessel is under way if it is not at anchor or at dock, so a vessel adrift is technically under way.

Warp (main wire): The cables on a trawler which run from the main winches to the trawl doors on the net

Weighed sample: A "basket" sample. The catch sampled by the Observer is weighed on a scale.

Winch: A hydraulic machine with one or more drums on which to coil rope, chain, or cable for hauling or hoisting

Wing: The sides off a trawl net near the opening, usually with larger mesh than the rest off the net

Wrister: A coated cloth tube worn on the arm, extending from the elbow and covering the wrists. Keeps arms warm and dry. Fish blood and slime are more easily washed out from these than from shirtsleeves.

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