

**Southwest Region Observer Program  
Field Manual  
August 2006**



**Southwest Region  
National Marine Fisheries Service  
National Oceanic and Atmospheric Administration  
United States Department of Commerce**



## Preface

This manual is intended to provide the SWR Observers in the field with reference of data collection protocols and definitions of each datum to be collected. The Biological Technician serving as an observer will also find guidance in prioritizing the work, and general discussions of expectations and policies. However, this manual is not intended to be a comprehensive observer handbook, and would be of limited use to readers that have not completed the SWR Observer Program training course.

## CONTENTS

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Introduction .....	1
Authority and Goal .....	1
Objectives .....	1
Observer Guidelines .....	1
Observer Responsibilities.....	2
Summary of Duties.....	5
Employment Purpose.....	5
General Duties.....	5
Specific Responsibilities.....	6
During a Vessel Assignment.....	8
Interference and Harassment.....	9
Injuries.....	10
Vessel Safety Examination Checklist.....	10
Trip Data Summary Form.....	10
Vessel Safety Exam Checklist sample.....	11
Trip Data Summary Form sample.....	14
After a Vessel Assignment.....	15
Trip Questionnaire.....	15
Data Review & Entry.....	15
Data Collection Instructions .....	17
General Instructions.....	17
Photographs.....	17
Data Collection Priorities.....	18
Photo Log sample.....	19
Trip Specifications Record .....	21
Introduction.....	21
General Instructions.....	21
Data Elements.....	21
Data Form sample.....	23
Gear and Set Data ( <b>Albacore &amp; Baitboat</b> ) .....	25
Introduction.....	25
General Instructions.....	25
Data Elements.....	25
Data Form sample.....	29

Gear and Set Data ( <b>CPFV</b> ) .....	31
Introduction.....	31
General Instructions.....	31
Data Elements.....	31
Data Form sample.....	35
Gear and Set Data ( <b>Drift Net</b> ) .....	37
Introduction.....	37
General Instructions.....	37
Data Elements.....	37
Data Form sample.....	47
Gear and Set Data ( <b>Purse Seine</b> ) .....	49
Introduction.....	49
General Instructions.....	49
Data Elements.....	49
Data Form sample.....	53
Gear and Set Data ( <b>Set Gillnet</b> ) .....	55
Introduction.....	59
General Instructions.....	59
Data Elements.....	59
Data Form sample.....	63
Catch Tally Sheet.....	65
Introduction.....	65
General Instructions.....	65
Data Elements.....	65
Data Form sample.....	69
Non-Fish Tally Sheet .....	71
Introduction.....	71
General Instructions.....	71
Data Elements.....	71
Data Form sample.....	75
Fish and Invertebrate Measurement Data .....	77
Introduction.....	77
General Instructions.....	77
Data Elements.....	78
Data Form sample.....	81
Shark and Billfish Life History Data.....	83
Introduction.....	83
General Instructions.....	83
Data Elements.....	83
Data Form sample.....	87
Set Net Data Form Sample.....	88

---

Sea Turtle Life History Form .....	89
Introduction .....	89
General Instructions .....	89
Data Elements.....	94
Sea Turtle Dichotomous Key.....	94
Data Form sample.....	95
Marine Mammal Life History Form .....	97
Introduction.....	97
General Instructions.....	97
Data Elements.....	98
Data Form sample.....	101
Sighting Record .....	103
Introduction.....	103
General Instructions.....	103
Data Elements.....	104
Data Form sample.....	109
Specimen Collection .....	111
General Instructions.....	111
Collection Requirements.....	112
Specimen Log sample.....	114
Data Data Review.....	116
General Instructions.....	116
Data Checks.....	116
Gear and Maintenance .....	122
Equipment List.....	122
Gear Maintenance.....	124
Appendix A	
Characteristics of Cetaceans and Pinnipeds .....	126
Appendix B	
Characteristics of Sharks and Billfish.....	139
Appendix C	
Rockfish Pictures .....	145
Appendix D	
Invertebrate Measurement Illustrations.....	150
Appendix E	

Safety Equipment and Procedure Reference Guide .... 159

Appendix F

Species and Port Codes..... 163  
  Fish..... 164  
  Invertebrates..... 183  
  Sea Birds..... 184  
  Sea Turtles..... 185  
  Marine Mammals..... 185  
  Port Codes..... 188



# INTRODUCTION

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## AUTHORITY AND GOAL

As a result of national concern for the welfare of marine mammals, the U.S. Congress passed the Marine Mammal Protection Act (MMPA) in 1972. Recent amendments to the MMPA require reliable information from a variety of fisheries about the kill of marine mammals, the adequacy of vessel owner reports and possible ways to reduce incidental mortalities.

Under the authority of the MMPA, the National Marine Fisheries Service (NMFS) places biological technicians aboard vessels to collect information on marine species associated with the California drift gillnet fisheries.

## OBJECTIVES

To meet the field responsibilities of the MMPA, the following objectives have been established for biological technicians serving as drift gillnet observers:

- ⊗ Obtain reliable research and management data on the incidental mortality of marine mammals;
- ⊗ Collect fishing effort data;
- ⊗ Document the incidental take of non-mammalian protected species;
- ⊗ Tally fishes and invertebrates caught by species; and
- ⊗ Process selected specimens for life history information.

## GUIDELINES

With **safety** and **integrity** as the watchwords of your job, it is of primary importance that you conscientiously follow the guidelines outlined below:

- ⊗ It is your responsibility to observe and accurately record biological research data as instructed. Everything you record is available to the vessel operator or his designate and is subject to

legal interpretation. Almost everything you record may be made available as public information. You are not to record extemporaneous comments, editorials or personal opinions. It is not your job to evaluate or interpret data; simply record your observations on the data forms issued.

- ⚙ It is your responsibility to maintain open communication with the vessel operator and other vessel personnel to facilitate a clear understanding as to what data are being collected.
- ⚙ It is your responsibility to advise the vessel operator of all data items recorded. If he is in disagreement with you, record his views on the original data forms. If he so chooses, the vessel operator may record his own comments on the original data forms.
- ⚙ As an observer, you are not an enforcement agent. You are not empowered to write citations, make arrests, or carry out enforcement activities. Your responsibilities require that you make observations and collect data, some of which pertain to U.S. Marine Mammal Regulations. There is no guarantee that your data will not be used as evidence to assess penalties. Legal interpretation is performed by government attorneys.
- ⚙ Your responsibility of observing and recording data is to be performed in such a manner as to minimize interference with fishing operations. Likewise, the vessel operator and any other vessel personnel are not to interfere with your duties.

## **RESPONSIBILITIES**

- ⚙ Sea assignment readiness is determined by personal fitness, training preparation and staff assessments.
- ⚙ Alcohol dependency and illicit drug use are incompatible with observer duties and are not tolerated.
- ⚙ Observers are not to keep personal diaries in any form during a cruise assignment. No recording devices, computers, or personal cameras of any type are to be taken aboard vessels.
- ⚙ Because specific objectives are mandated by the MMPA, personal research is prohibited aboard vessel assignments.
- ⚙ Retaining specimens of any kind for any personal reason is prohibited.
- ⚙ Intentionally entering the water from an assigned vessel is prohibited; such activity will compromise personal safety and data collection duties.
- ⚙ Observers do not choose vessel assignments, however observers do have the right to refuse deployment on a vessel they perceive as unsafe. The Contractor selects sea assignments through a predetermined sampling plan and confirms that the boats meet minimum U.S. Coast Guard



safety requirements. Any refusal to board a vessel after inspection must be documented and discussed with management to determine the appropriate course of action. Fishing activity dictates vessel departures and arrivals. Since vessel notification requirements limit response time, observers must be prepared for sudden sea assignments of extended and uncertain duration.

- ⚙ Never leave your assigned vessel prematurely without approval from the Logistics Coordinator, Project Manager, or an acting designate.
- ⚙ Safeguard the return of your data to your designated office. Your work is a valuable investment; treat it like your wallet.
- ⚙ **Loss of data or biological samples due to your negligence is Unacceptable.**
- ⚙ **Observers are not authorized to release their data to anyone. All requests for observer data must be referred to NMFS, Southwest Regional office. However, the vessel operator may view the observers' data forms during the observed trip**



Take Notes Here

## SUMMARY OF DUTIES

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### EMPLOYMENT PURPOSE

When aboard an assigned vessel, observers are to collect objective and accurate data on:

- ⊗ vessel gear and operations,
- ⊗ incidental take of marine species, and
- ⊗ life history parameters.

As an observer, the watchwords are safety and integrity.

### GENERAL DUTIES

- ⊗ Work at sea and ashore from a designated port.
- ⊗ Work under the supervision of the Logistics Coordinator.
- ⊗ Collect fisheries research and management data.
- ⊗ Work at sea aboard commercial fishing vessels.
- ⊗ Collect data on vessel activity and fishing operations.
- ⊗ Identify and tally marine mammals and other by-catch species by number and location in the gear.
- ⊗ Tally marine mammals and by-catch killed by drift gillnets.
- ⊗ Dissect post-mortem marine mammals and fish as instructed.
- ⊗ Record marine mammal and fish life history data.
- ⊗ Review work ashore and enter it into a computer database.

## SPECIFIC RESPONSIBILITIES

### Observers are to:

- ⚙ collect objective data on vessel activity, the take of target and non-target species and selected specimen samples;
- ⚙ perform their duties in such a manner as to minimize interference with fishing operations;
- ⚙ keep open communication with vessel personnel by informing them about observer duties and collected data;
- ⚙ use work cameras only for photographing single specimens on the deck;
- ⚙ obtain permission from the vessel captain before using any boat equipment;
- ⚙ clean up immediately and thoroughly after completing required dissections;
- ⚙ collect whole specimens as instructed, provided refrigerated space is available that does not interfere with fishing needs; availability is determined at the discretion of the vessel captain;
- ⚙ bring issued rain gear, boots, life jackets and survival suit;
- ⚙ ask the captain about emergency procedures and familiarize themselves with the locations of life rafts, fire extinguishers, and first aid kits;
- ⚙ share housekeeping routines such as dish washing and head clean-up with the crew.

### Observers are not to:

- ⚙ dictate procedures or direct fishing operations;
- ⚙ be involved with crew responsibilities such as standing watch or helping with fishing procedures;
- ⚙ keep personal diaries in any form;

- ⊗ bring aboard recording devices, computers, or personal cameras of any type;
- ⊗ compromise data or record personal comments;
- ⊗ conduct personal research of any kind;
- ⊗ keep specimens or edible fish of any kind; or
- ⊗ talk about any boat's business while aboard another or to any fishermen dockside.

**Captains are to:**

- ⊗ cooperate with the observer in the performance of the observer's duties;
- ⊗ ensure safe embarking and debarking of the observer;
- ⊗ provide observers living quarters comparable to a full crew member;
- ⊗ provide observers meals, snacks and amenities normally provided to crew members;
- ⊗ allow the observer access to areas of the vessel necessary to conduct observer duties;
- ⊗ allow the observer access to communications and navigation equipment, as necessary to perform observer duties;
- ⊗ notify the observer in a timely fashion when commercial fishing operations are to begin and end;
- ⊗ provide true vessel locations by latitude and longitude or LORAN coordinates, upon request by the observer;
- ⊗ bring aboard marine mammals killed during fishing operations for biological processing that are readily accessible to crew members, if feasible and if requested by the observer;
- ⊗ determine if refrigerated space is available for observer collected whole specimens that does not interfere with fishing needs;
- ⊗ record personal statements on the back of the observer's original forms, if they disagree with the observer's collected data;

- ⚙ comply with other guidelines, regulations or conditions in Certificates that the National Marine Fisheries Service may develop to ensure the effective deployment and use of observers; and
- ⚙ ensure, even for trips with observers aboard, that Marine Mammal Authorization Program - Mortality/Injury Reporting Forms are submitted to NMFS as prescribed by U.S. Marine Mammal Regulations.

**Captains are not to:**

- ⚙ ask observers to stand watch or help with fishing operations; or
- ⚙ harass, intimidate or attempt to influence observers, or interfere with observer duties.
- ⚙ fish without an observer on board the vessel after the owner or agent has been directed to make accommodations available for an observer.

**DURING A VESSEL ASSIGNMENT**

- ⚙ Be a good shipmate; think and react professionally to unfamiliar situations.
- ⚙ Share housekeeping routines such as dish washing and head clean up with the crew.
- ⚙ Keep open communication and good relations with vessel personnel; inform them of your duties.
- ⚙ You are not to be involved with crew responsibilities such as standing watch or aiding with fishing operations.
- ⚙ Familiarize yourself with the vessel; especially the locations of life rafts, life jackets, fire extinguisher, Emergency Position Indicating Radio Beacon (EPIRB) and first aid kits.
- ⚙ Always be safety conscious.
- ⚙ Obtain permission from the captain before using any boat equipment.
- ⚙ Keep your equipment as dry as possible and maintain it as instructed.
- ⚙ Personal research and retaining specimens of any kind are prohibited.
- ⚙ You are not an enforcement agent or an operations expert. You are not to dictate procedures or direct fishing operations.

- ⚙ If the certificated operator is interested in knowing about the data you have collected, you should show him what you have collected.
- ⚙ Vessel personnel are not to interfere with observer duties; record incidents of intimidation or interference and report them when you return to your office.
- ⚙ Process specimens according to instructions. Clean up immediately and thoroughly after completing dissections.
- ⚙ Collect whole specimens as instructed, provided refrigerated fish hold space is available and does not interfere with fishing needs. Such availability is determined at the discretion of the vessel captain.
- ⚙ Accurately record objective data. Do not compromise data or record extemporaneous or personal comments.
- ⚙ "No Data is Better Than Bad Data."

### **INTERFERENCE AND HARASSMENT**

- ⚙ Document any attempt to interfere with your work, including harassment, by preparing brief, non-inflammatory answers to the questions: Who? What? Where? When? Why? and How?
- ⚙ Harassment is defined as conduct which has the purpose or effect of unreasonably interfering with the observer's work performance, or which creates an intimidating, hostile or offensive environment.
- ⚙ Federal law defines sexual harassment as "any unwelcome sexual conduct of a sexual nature which has the purpose or effect of substantially interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment."

### **INJURIES**

- ⚙ If you are injured while aboard an assigned vessel, it is important that you record the time of the occurrence, the type and extent of the injury, how it occurred, what treatment you received, by whom, and record the names of any witnesses.

### **VESSEL SAFETY EXAMINATION CHECKLIST**

- ⊗ Observers must complete a Vessel Safety Examination Checklist before departing on any vessel. The purpose of this checklist is to verify that the vessel passed a USCG dockside examination within the past two years and to confirm that essential safety items are present.

### **TRIP DATA SUMMARY FORM**

- ⊗ As a courtesy, and if the vessel operator is interested, observers at the conclusion of their assigned trips may provide a count summary of marine mammals, sea turtles, and sea birds caught while fishing.
- ⊗ For this purpose, a Trip Data Summary form has been developed. The form is divided into two parts; the top half is for the vessel operator; the bottom half, to be completed identically, is for the NMFS Data Coordinator's records, and must be submitted for each trip.



**VESSEL SAFETY EXAMINATION CHECKLIST**

**SWR Observer Program**

**NMFS, Southwest Region**

Observers must verify the condition of each item on the list when embarking a vessel. Please advise the Logistics Coordinator or Project Manager if a vessel does not provide these safety items. **DO NOT LEAVE ON A VESSEL YOU FEEL IS UNSAFE**

Trip Number: \_\_\_\_\_ Vessel Name: \_\_\_\_\_  
 Observer Name: \_\_\_\_\_ USCG Commercial Fishing Vessel Safety  
 Signature: \_\_\_\_\_ Examination Decal  
 Date: \_\_\_\_\_ Issued Date: \_\_\_\_\_

	Present	Absent	Comments
PFD/Immersion Suit	()	()	_____
Ring Life Buoys	()	()	_____
Life Raft	()	()	_____
Packing Date: _____			_____
Hydrostatic release date: _____			_____
Stowage of Life Raft	()	()	_____
Distress Signals	()	()	_____
EPIRBS	()	()	_____
Fire Extinguishers	()	()	_____
First Aid Equipment	()	()	_____
Guards for Exposed Hazards	()	()	_____
Nautical Charts for fishing area	()	()	_____
Compass	()	()	_____
Anchor and Radar reflectors	()	()	_____
General alarm System	()	()	_____
Communication Equipment			
w/emergency power source	()	()	_____
High Water Alarm	()	()	_____
Bilge Pump	()	()	_____
Electronic Position Fixing Devices	()	()	_____
Emergency Instructions	()	()	_____

Any additional comments/concerns:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**TRIP DATA SUMMARY  
(Captain's Copy)**

		-			-				
--	--	---	--	--	---	--	--	--	--

Observer Name \_\_\_\_\_

Operator \_\_\_\_\_

Vessel Name \_\_\_\_\_

Date Depart \_\_\_\_\_

Port Depart \_\_\_\_\_

Date Arrive \_\_\_\_\_

Port Arrive \_\_\_\_\_

Days at Sea \_\_\_\_\_

No. of Sets \_\_\_\_\_

No. MM's Brought Aboard \_\_\_\_\_

No. Whole MM's Brought Back \_\_\_\_\_

**Protected Species Counts**

	CETACEANS	PINNIPEDS	OTTERS	TURTLES	BIRDS
ALIVE					
DEAD					
INJURED					
UNKNOWN					

Submitted as Accurate \_\_\_\_\_

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**TRIP DATA SUMMARY  
(Office Copy)**

		-			-				
--	--	---	--	--	---	--	--	--	--

Observer Name \_\_\_\_\_

Operator \_\_\_\_\_

Vessel Name \_\_\_\_\_

Date Depart \_\_\_\_\_

Port Depart \_\_\_\_\_

Date Arrive \_\_\_\_\_

Port Arrive \_\_\_\_\_

Days at Sea \_\_\_\_\_

No. of Sets \_\_\_\_\_

No. MM's Brought Aboard \_\_\_\_\_

No. Whole MM's Brought Back \_\_\_\_\_

**Protected Species Counts**

	CETACEANS	PINNIPEDS	OTTERS	TURTLES	BIRDS
ALIVE					
DEAD					
INJURED					
UNKNOWN					

Submitted as Accurate \_\_\_\_\_



### **AFTER A VESSEL ASSIGNMENT**

- ⚙ Observers are responsible for returning equipment and data to their office and are held accountable for issued gear and manuals. Observer gear is **not** to be left unattended in parked vehicles. To avoid being charged for field gear which has become unserviceable, bring the equipment back to the office.
- ⚙ **Loss of data or biological samples due to your negligence is Unacceptable.**

### **POST-CRUISE QUESTIONNAIRE**

- ⚙ Each observer completes a Post-Cruise Questionnaire and ensures that all questions have been answered and explanations provided.
- ⚙ The Logistics Coordinator will review the questionnaire for observer performance and instances of intimidation or interference.
- ⚙ All employee reports of injuries are documented by the Logistics Coordinator in Long Beach.

### **DATA REVIEW & ENTRY**

- ⚙ Observers review their data for completeness and accuracy prior to entering it into the database.
- ⚙ Observers enter their data into a database at their office.

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## DATA COLLECTION INSTRUCTIONS

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### GENERAL INSTRUCTIONS

- ⚙ If the information requested is not available or not applicable, leave the data or code box blank.
- ⚙ Write only with a soft (#2 lead) pencil on all data forms. An eraser should be used to correct errors made on the day of entry only. Any errors discovered thereafter should be crossed out with a single line and the new entry written above in blue pencil. Write a brief note in the margin explaining the change.
- ⚙ Print legibly.
- ⚙ Observe and accurately record descriptive and quantitative data with explicit notes and explanations. **Record data as they occur, trust nothing to memory.**
- ⚙ Record times as four digits using the 24 hour clock and local time, e.g., 5:30 P.M. is encoded as 1730.
- ⚙ **MARINE MAMMALS ARE TOP PRIORITY.** Never allow collection of secondary data to interfere with the collection of marine mammal mortality data.
- ⚙ If data are not available in the proper units, write the measure and units in the margin or comments section for later conversion (e.g. lat. & long. from LORAN lines or depth in fathoms from depth in feet).

### DATA COLLECTION PRIORITIES

The primary emphasis is to obtain reliable information about marine mammal mortality and entanglement. Therefore, a data collection hierarchy has been established and is described below. Observers are expected to know what to accomplish first. If work is interrupted or curtailed, this will help protect the top priority tasks.

1. Record vessel and trip identifying information on each form used.
2. Tally non-fish killed by species: marine mammals, sea turtles, and seabirds.
3. Place non-fish specimens aside for processing.

4. Identify areas where incidental marine mammals, turtles and birds are caught in gear.
5. Record fishing position.
6. Complete gear description.
7. Tally fishes and invertebrates caught by species.
8. Identify areas where fish are concentrated in the gear.
9. Place shark and billfish samples aside for processing.
10. Note marine mammals near but not caught in gear.
11. Process non-fish specimens: marine mammals first, turtles second, and birds third.
12. Process shark and billfish specimens.
13. Record fish and invertebrate morphometric data.

### PHOTOGRAPHS

Cameras are to be used only to take pictures of single dead cetaceans, dead turtles, unidentified fish or unidentified marine mammals on the deck. Dead identified pinnipeds are not to be photographed. Compose photographs so that the vessel and crew remain anonymous.

Label specimen photographs by printing the trip number, date, and specimen number in **large** block letters on the back of a one-sided data form. Place the specimen, label and a meter stick against a plain background. Orient the camera perpendicular to the specimen to obtain a full side view and fill the view finder with the specimen, then take the picture. Record the camera number, frame numbers, trip number, set number, specimen number, species of animal, and any notes or questions on the appropriate data form and on the Photo Log. Record the trip number on the camera.







# TRIP SPECIFICATIONS RECORD

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## INTRODUCTION

The Trip Specifications Record is used to record unique vessel characteristics and the specifics of the fishing trip.

## GENERAL INSTRUCTIONS

This form is completed only once for each observed fishing trip.

## DATA ELEMENTS

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Observer Number:** The unique three digit number assigned to each observer at the conclusion of training.

**Vessel Name:** Record the registered name of the vessel. If the vessel has no name, leave this space blank.

**Vessel ID Number:** The permit number assigned by NMFS to this vessel.

**State Plate Number:** Record the state vessel registration plate number.

**Operator Name:** This is the name of the person in charge during the trip. This is the skipper, most of the time.

**Observation Type (Gillnet Only):** In the first box, enter the code for the method which best describes the arrangements made for you to ride this vessel:

- ⊗ **1 - Pre-net-set:** If arrangement for observation was made prior to setting of the nets i.e., days before, and this trip was selected on a systematic sampling plan.
- ⊗ **2 - S / Post-net-set:** If arrangement for observation was made after the nets were set, and this trip was selected on a systematic sampling plan.

- ⊗ **3 - R / Post-net-set:** If arrangement for observation was made after the nets were set, and this trip was selected on a random sampling plan.
- ⊗ **4 - Other:** Arrangement for observation was not made as described above. Describe how and why this vessel was selected in the comments section.

In the second box, enter the code for the place where you made your observations.

- ⊗ **1 - On board.**
- ⊗ **2 - From other vessel.**

**Port of Departure:** The port of departure is the port from which the vessel leaves to begin your observed trip. The two or three letter codes are listed with the Logistic Coordinator.

**Departure date:** The date the observed vessel first leaves port

**Departure Time:** The time the observed vessel first leaves port

**Port Stops:** These are the ports that you may stop at between sets. Record the date and time the port stop begins and the date and time the port stop ends

**Port of Arrival:** This is the port in which the vessel lands at the end of your observed trip. The two or three letter port code is listed with the Logistic Coordinator.

**Arrival Date:** The date the observed vessel arrives in port at the end of the trip.

**Arrival Time:** The time the observed vessel arrives in port at the end of the trip.



# TRIP SPECIFICATIONS RECORD

TRIP NUMBER. <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	OBSERVER # <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	VESSEL NAME <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	VESSEL LENGTH <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>
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VESSEL ID # <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	STATE PLATE # <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	OPERATOR NAME <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>
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Observation Type (GILLNET ONLY) <input type="checkbox"/> 1. Pre-net-set <input type="checkbox"/> 2. S/ Post-net-set <input type="checkbox"/> 3- R/ Post-net-set <input type="checkbox"/> 4. Other	<input type="checkbox"/> 1- On Board <input type="checkbox"/> 2- From Other Vessel	<b><u>DEPARTURE</u></b>	PORT <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	DATE (YYYY MM DD) <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	TIME (HH MM) <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>
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**PORT STOPS**

BEGIN DATE (YYYY MM DD)	TIME (HH MM)	PORT	END DATE (YYYY MM DD)	TIME (HH MM)
<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>
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<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	<input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>

	PORT <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	DATE (YYYY MM DD) <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>	TIME (HH MM) <input style="width: 100%; height: 20px; border: 1px solid black;" type="text"/>
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**ARRIVAL**

COMMENTS

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## GEAR & SET DATA Albacore Troll & Bait Boat

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### INTRODUCTION

The Gear and Set Data Form is used to record the gear configuration of sampled vessels and the location and characteristics of fishing.

### GENERAL INSTRUCTIONS

Gear information may be obtained from the vessel operator. If the information requested is not available or not applicable, leave the field blank.

### DATA ELEMENTS

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** The set number is equivalent to the day fished on troll or bait boat trips. Enter 01 for the first fishing day, 02 for the second fishing day, ect.

**Date:** The date fishing occurs. Record the four digits of the year, the two digits representing the month and the two digits representing the day of the month.

**Gear Code:** Record the style of gear device used to catch the fish.

- 1 for pole and line (with bait);
- 2 for jig;
- 3 for both.

**Number of Lines:** Record the number of fishing lines used.

**Target Species:** Record the name(s) and codes(s) for the primary species that the vessel operator plans to catch.

#### Begin Fishing

**Time:** Record the local 24-hour time when fishing begins.

**Position:** Record the Latitude and Longitude at the time the fishing begins. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude

the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude

**Environmental Conditions**

**Water Temperature:** Record the surface water temperature in Fahrenheit, as a three digit number, to the nearest tenth of a degree, at the beginning of fishing.

**Temperature Type:** Record the type of instrument used to measure water temperature.

Code	Type	Description
1	Spirit	Alcohol or mineral spirit-filled thermometer.
2	Mercury	Mercury-filled thermometer.
3	Digital	Digital thermometer.
4	Vessel	Vessel's temperature gauge.
5	Other	Other - describe in notes.

**Beaufort:** Record the Beaufort Scale number 0 - 9 describing sea conditions at the beginning of fishing operations.

A wind of a given speed blowing for a sufficient time produces a characteristic appearance of the sea's surface. The Beaufort Scale describes the characteristic appearance of the sea associated with each numerical level of the Scale.

Code	Wind/Waves	Description
0	Calm	Sea like a mirror.
1	1-3 KTS. ¼ FT. Waves	Ripples with appearance of scales; no foam.
2	4-6 KTS. ½ FT. Waves	Small wavelets; crests of glassy appearance, not breaking.
3	7-10 KTS. 2 FT. Waves	Large wavelets; crests begin to break; scattered whitecaps.



4	11-16 KTS. 4 FT. Waves	Small waves, becoming longer; numerous whitecaps.
5	17-21 KTS. 6 FT. Waves	Moderate waves, taking longer form; many whitecaps; some spray
6	22-27 KTS. 10 FT. Waves	Larger waves forming; whitecaps everywhere; more spray.
7	28-33 KTS. 14 FT. Waves	Sea heaps up; white foam from breaking waves begins to be blown in streaks.
8	34-40 KTS. 18 FT.	Moderately high waves of greater length; edges of crests Waves begin to break into spindrift; foam is blown in well-marked streaks.
9	41-47 KTS. 23 FT. Waves	High waves; sea begins to roll; dense streaks of foam; spray may reduce visibility.

**End Fishing**

**Time:** Record the local 24-hour time when fishing ends.

**Position:** Record the Latitude and Longitude at the time the fishing ends. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude

*Take Notes Here*

# GEAR AND SET DATA ~ ALBACORE AND BAITBOAT

<b>TRIP NUMBER.</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> - <input style="width: 20px; height: 20px;" type="text"/> - <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<b>SET NUMBER</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<b>DATE (YYYY MM DD)</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
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<b>GEAR CODE</b> <input style="width: 20px; height: 20px;" type="text"/> <ul style="list-style-type: none"> <li>1. Pole &amp; Line</li> <li>2. Troll</li> <li>3. Both</li> </ul>	<b>NO. LINES</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<b>Target Sp.1</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<b>Target Sp. 2</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	1) _____ 2) _____
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<b>BEGIN FISHING</b>				<b>POSITION</b>				
<b>TIME (HH MM)</b>	<b>LATITUDE</b>			<b>N/S</b>	<b>LONGITUDE</b>			<b>E/W</b>
<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px; background-color: #cccccc;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px; background-color: #cccccc;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>

<b>WATER TEMP.</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px; background-color: #cccccc;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<b>TEMP. TYPE</b> <input style="width: 20px; height: 20px;" type="text"/> <ul style="list-style-type: none"> <li>1- Spirit</li> <li>2- Mercury</li> <li>3- Digital</li> <li>4- Vessel</li> <li>5- Other</li> </ul>	<b>BEAUFORT</b> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
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<b>END FISHING</b>				<b>POSITION</b>				
<b>TIME (HH MM)</b>	<b>LATITUDE</b>			<b>N/S</b>	<b>LONGITUDE</b>			<b>E/W</b>
<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px; background-color: #cccccc;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>	<input style="width: 20px; height: 20px; background-color: #cccccc;" type="text"/>	<input style="width: 20px; height: 20px;" type="text"/>

Notes:

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## GEAR & SET DATA

### Commercial Passenger Fishing Vessel

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#### INTRODUCTION

The Gear and Set Data Form is used to record the gear configuration of sampled vessels and the location and characteristics of fishing.

#### GENERAL INSTRUCTIONS

Gear information may be obtained from the vessel operator. If the information requested is not available or not applicable, leave the field blank.

#### DATA ELEMENTS

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** The set number is equivalent to the day fished on troll or bait boat trips. Enter 01 for the first fishing day, 02 for the second fishing day, ect.

**Date:** The date fishing occurs. Record the four digits of the year, the two digits representing the month and the two digits representing the day of the month.

**Number of Anglers:** Record the number of people that are on the boat and fishing.

**Target Species:** Record the name(s) and codes(s) for the primary species that the vessel operator plans to catch.

#### **Begin Fishing**

**Time:** Record the local 24-hour time when fishing begins.

**Position:** Record the Latitude and Longitude at the time the fishing begins. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude

**Environmental Conditions**

**Water Temperature:** Record the surface water temperature in Fahrenheit, as a three digit number, to the nearest tenth of a degree, at the beginning of fishing.

**Temperature Type:** Record the type of instrument used to measure water temperature.

Code	Type	Description
1	Spirit	Alcohol or mineral spirit-filled thermometer.
2	Mercury	Mercury-filled thermometer.
3	Digital	Digital thermometer.
4	Vessel	Vessel's temperature gauge.
5	Other	Other - describe in notes.

**Beaufort:** Record the Beaufort Scale number 0 - 9 describing sea conditions at the beginning of fishing operations.

A wind of a given speed blowing for a sufficient time produces a characteristic appearance of the sea's surface. The Beaufort Scale describes the characteristic appearance of the sea associated with each numerical level of the Scale.

Code	Wind/Waves	Description
0	Calm	Sea like a mirror.
1	1-3 KTS. ¼ FT. Waves	Ripples with appearance of scales; no foam.
2	4-6 KTS. ½ FT. Waves	Small wavelets; crests of glassy appearance, not breaking.
3	7-10 KTS. 2 FT. Waves	Large wavelets; crests begin to break; scattered whitecaps.
4	11-16 KTS. 4 FT. Waves	Small waves, becoming longer; numerous whitecaps.

5	17-21 KTS. 6 FT. Waves	Moderate waves, taking longer form; many whitecaps; some spray
6	22-27 KTS. 10 FT. Waves	Larger waves forming; whitecaps everywhere; more spray.
7	28-33 KTS. 14 FT. Waves	Sea heaps up; white foam from breaking waves begins to be blown in streaks.
8	34-40 KTS. 18 FT.	Moderately high waves of greater length; edges of crests Waves begin to break into spindrift; foam is blown in well-marked streaks.
9	41-47 KTS. 23 FT. Waves	High waves; sea begins to roll; dense streaks of foam; spray may reduce visibility.

**End Fishing**

**Time:** Record the local 24-hour time when fishing ends.

**Position:** Record the Latitude and Longitude at the time the fishing ends. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude

Take Notes Here



# GEAR AND SET DATA ~ COMMERCIAL PASSENGER FISHING VESSEL

TRIP NUMBER.

		-		-			
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SET NUMBER

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DATE (YYYY MM DD)

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NO. OF ANGLERS

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Target Sp.1

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Target Sp. 2

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1) \_\_\_\_\_

2) \_\_\_\_\_

BEGIN FISHING

TIME (HH MM)

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LATITUDE

					.
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POSITION

N/S

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LONGITUDE

							.
--	--	--	--	--	--	--	---

E/W

WATER TEMP

				.
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TEMP.  
TYPE

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- 1- Spirit
- 2- Mercury
- 3- Digital
- 4- Vessel
- 5- Other

BEAUFORT

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END FISHING

TIME (HH MM)

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LATITUDE

					.
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POSITION

N/S

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LONGITUDE

							.
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E/W

Notes:

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## GEAR & SET DATA Drift Net

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### INTRODUCTION

The Gear and Set Data Form is used to record the gear configuration of sampled vessels and the location and characteristics of sets. These are the instructions for the DRIFT NET data forms.

### GENERAL INSTRUCTIONS

Net information may be obtained from the vessel operator. If the information requested is not available or not applicable, leave the field blank.

### DATA ELEMENTS

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed. If you board the vessel in the middle of a net pull consider that pull set 01 and record the percentage of the total net that was observed.

**Pull Date:** The date the net was tended or retrieved. Record the four digits of the year, the two digits representing the month and the two digits representing the day of the month.

**Percentage Net Observed:** Enter your estimate of the percentage of the net you observed.

*Note: If you observe different gear components during the net pull, indicate this in the comments section and record new net information on a second Gear and Set Data Form.*

**Target Species:** Record the name(s) and codes(s) for the primary species that the vessel operator plans to catch.

**Position Type:** Record the code for the method used to determine the latitude and longitude for this set:

- ☼ **1 - Loran:** Latitude and longitude converted from loran readings by the loran system on board the vessel or the computer program in the field office. You must have actually seen the loran readings displayed by the unit on board the vessel. Otherwise use code 4 below.
- ☼ **2 - Dead Reckoning:** Latitude and longitude determined from charts at the field station using information such as: time run, course, and vessel speed from port of departure, compass bearings to known land marks, local names and descriptions of fishing locations.
- ☼ **3 - Satellite:** Latitude and longitude obtained from navigational systems using satellite.
- ☼ **4 - Verbal:** Latitude and longitude, loran readings, or other position information are reported by the vessel operator.

**Position 1:** This is the location of the vessel when the net setting begins. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude.

**Position 2:** This is the location of the vessel when the net setting ends. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude.

**Position 3:** This is the location of the vessel at the time net pull begins. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude.

**Note:** If latitude and longitude are not directly available from the navigation system on board the vessel, use the notes section at the bottom of the form to record loran readings and/or other notes relevant to the vessel's fishing location.

**Environment:** Record the one digit code describing the predominant type of environment.

- ☼ **1 - Inshore of kelp.**
- ☼ **2 - In kelp.** The vessel is considered "in kelp" if the net is deployed within 300 feet or 100 meters of growing kelp.
- ☼ **3 - Offshore of kelp.**
- ☼ **4 - No kelp.** There is no growing kelp visible at the time the net is deployed.
- ☼ **5 - Unknown.** The environment is unknown.

**Ship Activity:** Record in the code box the one digit code indicating the type of fishing activity.

- ⊗ **1 - Pull/Reset.** The net is retrieved and immediately reset in the same location.
- ⊗ **2 - Pull/Move/Reset.** The net is retrieved and the vessel moves to a new location and resets the net.
- ⊗ **3 - Pull/Bring in.** The net is retrieved and the vessel returns to port.
- ⊗ **4 - Tend only.** The net is not retrieved and the catch is removed by pulling up sections along the anchored net.
- ⊗ **5 - Net lost.** The net cannot be found.

### Time & Date

**Set Date:** Record the month and day that the net was set.

**Begin Set Time:** Record the local 24-hour time when net setting begins. If you do not observe the set, ask the fisherman for the date and time the net was set.

**Water Depth:** Record the water depth in fathoms at the time net set begins.

**Beaufort:** Record the Beaufort Scale number 0 - 9 describing sea conditions at the beginning of setting operations.

A wind of a given speed blowing for a sufficient time produces a characteristic appearance of the sea's surface. The Beaufort Scale describes the characteristic appearance of the sea associated with each numerical level of the Scale.

Code	Wind/Waves	Description
0	Calm	Sea like a mirror.
1	1-3 KTS. ¼ FT. Waves	Ripples with appearance of scales; no foam.
2	4-6 KTS. ½ FT. Waves	Small wavelets; crests of glassy appearance, not breaking.
3	7-10 KTS. 2 FT. Waves	Large wavelets; crests begin to break; scattered whitecaps.

4	11-16 KTS. 4 FT. Waves	Small waves, becoming longer; numerous whitecaps.
5	17-21 KTS. 6 FT. Waves	Moderate waves, taking longer form; many whitecaps; some spray
6	22-27 KTS. 10 FT. Waves	Larger waves forming; whitecaps everywhere; more spray.
7	28-33 KTS. 14 FT. Waves	Sea heaps up; white foam from breaking waves begins to be blown in streaks.
8	34-40 KTS. 18 FT.	Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks.
9	41-47 KTS. 23 FT.	High waves; sea begins to roll; dense streaks of foam; spray may reduce visibility.

**Water Temperature:** Record the surface water temperature in Fahrenheit, as a three digit number, to the nearest tenth of a degree, at the beginning of net set.

**Temperature Type:** Record the type of instrument used to measure water temperature.

Code	Type	Description
1	Spirit	Alcohol or mineral spirit-filled thermometer.
2	Mercury	Mercury-filled thermometer.
3	Digital	Digital thermometer.
4	Vessel	Vessel's temperature gauge.
5	Other	Other - describe in notes.

**Cloud Cover:** Record the overhead cloud cover at the beginning of net set.

Code	Amount of Cloud Cover
0	- None
1	- 1/8 of sky covered
2	- 1/4 of sky covered
3	- 3/8 of sky covered
4	- 1/2 of sky covered
5	- 5/8 of sky covered
6	- 3/4 of sky covered
7	- 7/8 of sky covered
8	- Sky completely covered
9	- Not recorded due to darkness

**Number of Light Sticks:** Record the total number of light sticks deployed along the net. If no light sticks are used, record 00. Record light stick color in the notes section.

**Floatline Pingers:** Record the total number of pingers attached to the floatline. Note: This number must be observed.

**Distance to Floatline:** Estimate in feet, the maximum distance between a floatline pinger and the floatline.

**Pinger Type:** Record the one digit code number indicating the type of pinger used on the floatline. If no pingers are used, leave blank. Describe in the notes the "Other" or "Mixed" types of pingers that are used.

- |   |                    |   |                     |
|---|--------------------|---|---------------------|
| ☼ | <b>1 - Dukane.</b> | ☼ | <b>3 - Fumunda.</b> |
| ☼ | <b>2 - Other.</b>  | ☼ | <b>4 - Mixed.</b>   |

**Leadline Pingers:** Record the total number of pingers attached to the leadline. Note: This number must be observed.

**Distance to Leadline:** Estimate in feet, the maximum distance between a leadline pinger and the leadline.

**Pinger Type:** Record the one digit code number indicating the type of pinger used on the leadline. If no pingers are used, leave blank. Describe in the notes the "Other" or "Mixed" types of pingers that are used.

- |   |                    |   |                     |
|---|--------------------|---|---------------------|
| ☼ | <b>1 - Dukane.</b> | ☼ | <b>3 - Fumunda.</b> |
|---|--------------------|---|---------------------|

☼ **2 - Other.**

☼ **4 - Mixed.**

**Begin Pull Time:** Record the local 24-hour time when the fisherman begins to retrieve or tend the net. If you only observe part of the net haul, record the time you begin observing the net haul.

**Water Depth:** Record the water depth in fathoms at the time the fisherman begins to retrieve the net or the time the fisherman begins tending the net.

**Beaufort:** Record the Beaufort Scale number 0 - 9 describing sea conditions at the beginning of hauling in operations. See scale above.

**Water Temperature:** Record the surface water temperature in Fahrenheit, as a three digit number, to the nearest tenth of a degree, at the beginning of the net pull.

**Cloud Cover:** Record the overhead cloud cover at the beginning of net pull. See scale above.

**Main Engine:** The yes or no answer to the question: Was the main engine left on all night?

**Generator:** The yes or no answer to the question: Was a generator engine left on all night?

**Sonar:** The yes or no answer to the question: Was the sonar left on all night?

**Deck Light:** The yes or no answer to the question: Were the main deck lights left on all night?

**Patrol Net:** The yes or no answer to the question: Did the vessel patrol up and down the floatline at night?

**Soak Total:** Record the elapsed time, rounded to the nearest hour, from the time the net was set to the time it was retrieved or tended. If you were not aboard the vessel at the time the net was set, ask the fisherman for the soak time.

**Lost Netting:** Record in fathoms the total amount of lost netting. The estimate should be based on fathoms lost along the length of the net. If the depth of the lost area is not from leadline to corkline, record the depth lost in the Notes Section.

**Pingers Functioning:** During the first haulback of a trip, or the earliest set where conditions are safe, listen to each pinger as it comes aboard. Record (Y/N) whether the pingers are emitting sound.



## Net Characteristics

**Section #:** Record the number of the net section which is described (i.e., 01 is the net section retrieved first and is equivalent to the Start End of the net diagram).

**Total Sections:** Record the total number of net sections described.

**Percent of Net:** Record the percent of the net which is described in this section. If gear components change along the length of the net, record the percent with different components and their characteristics in another section. The total percentages should equal 100% or be equal to the Percentage Observed.

**Net Type:** Record the one digit code indicating the type of net in the code box.

- ☼ **1 - Set.** The net is anchored at both ends and fishes on the bottom (no trammeling).
- ☼ **2 - Drift.** The net is tied to the vessel at one end and drifts with the current (not anchored).
- ☼ **3 - Float.** The net is anchored like a set net but is suspended in mid-water by surface floats.
- ☼ **4 - Trammel, 1 panel.** A set net with suspenders between the cork and lead lines to add vertical slack.
- ☼ **5 - Trammel, 2 panel.** A set net with two panels that are connected at the lead and cork lines. One panel usually has larger mesh than the other.
- ☼ **6 - Trammel, 3 panel.** A set net with three panels that are connected at the lead and cork lines. The two outer panels usually have larger mesh than the inner one.

**Net Material:** Record the one digit number indicating the material(s) of which the meshes of the net are constructed:

- ☼ **1 - Monofilament.** The net is constructed of single fiber nylon.
- ☼ **2 - Multi-filament.** The mesh is constructed of nylon or other material, with many fibers wound into twine.
- ☼ **3 - Combination.** Describe in the comments the construction of any other type of mesh.
- ☼ **4 - Twisted monofilament.** The mesh is constructed of several nylon fibers twisted together.

**Material Strength:** Record the numerical value for either pounds test or twine size for this section of net. If the operator does not know the netting strength in terms of either of these two measurements, enter any relevant information the operator can provide in the comments section on the front of the form.

**Strength Code:** Indicate the units associated with the numerical value recorded under Material Strength:

- ☼     **1 - Lbs. test.**
- ☼     **2 - Twine size.**

**Net Length:** Record the length of the net in fathoms. If gear components change, record only the length for this panel and record the characteristics and length of the different panels in other net sections. Net length is the mesh panel only; it does not include the bridle, ground, or up rope lengths. The operator will usually know the lengths of the different panels and the total net length.

**Net Depth:** Record the depth of the net in meshes. Obtain the number of meshes from the operator if you are unable to count them.

**Net Color:** Record the one digit code number indicating the color(s) of the net used. Describe in the notes any mixture of colors or other colors used.

- ☼     **1 - Green**
- ☼     **2 - Red**
- ☼     **3 - Blue**
- ☼     **4 - Brown**
- ☼     **5 - Other**

**Mesh Size:** Record the mesh size to the nearest half inch. Mesh size is measured by pulling the opposite knots of a mesh and measuring the distance between the knots as described in the Glossary. For multiple panel nets, record the size of the smaller inside mesh. Mesh sizes may be obtained from the operator. Check several meshes and enter the average in the box.

**Extender Length:** Record the length in feet of the line which joins the cork line and the surface floats.

**Hanging Line Material:** Record the one digit code number indicating the composition of the hanging line:

- ☼     **1 - Synthetic.** Nylon, plastic or a combination of synthetic and natural fibers.
- ☼     **2 - Natural.** Hemp, cotton or some other natural fiber

**Percent Slack:** Record the percentage of slack created in the net by meshes on the hanging line. If the operator does not know the percent slack in his/her net, be sure to complete the fields for the number of meshes hanging and the hanging length.

**Number of Meshes Hanging:** Record the number of meshes, including those not tied to the hanging line, between knots. For a multi-panel trammel net, record this number for the smallest mesh net. Record even if Percent Slack has been completed.

**Hanging Length:** Record the distance between the knots on the cork line to the nearest inch. Record even if Percent Slack has been completed.

## Net Diagram

The segments of the net are equivalent to those in the "location in net" column on the Non-Fish Tally Sheet. If net characteristics vary within a set, indicate the location(s) of the different net types. Start End is the first to come aboard during retrieval, same as section 01.

Every fish need not be depicted on the diagram, only general tendencies or evident groupings need to be recorded. **Target species** should be depicted individually on the diagram using the three digit code.

Marine mammals, sea turtles, and seabirds should be indicated individually using the two letter codes from the Species Codes list.

In cases where mammals or large fish are too wrapped up to determine their position on the vertical plane, indicate their position on the horizontal plane and discuss the entanglement in the comments section

If you know the location of an animal or aggregation of animals along one axis of the net, but not along the other, indicate the axis of which you are unsure by a double ended arrow.

←-----→

**Notes:** If there was zero catch for this set, write **ZERO CATCH** in the notes section of the net diagram. Use the notes section to record the net section number in which each mammal, turtle, or bird is entangled.



Take Notes Here

# Gear and Set Data ~ Drift Net

TRIP NUMBER.

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SET NUMBER

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DATE (YYYY MM DD)

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Percentage of Net Observed

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 %

Target Sp. 1

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Target Sp. 2

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1) \_\_\_\_\_

2) \_\_\_\_\_

Position Type

--	--	--	--

- 1- Loran      3- Satellite
- 2- DR        4- Verbal

Latitude

--	--	--	--	--	--	--	--	--	--	--	--

Deg.

Min.

Longitude

--	--	--	--	--	--	--	--	--	--	--	--

Deg.

Min.

Environment

--	--	--	--	--

- 1- Inshore of Kelp      4- No Kelp
- 2- In Kelp                5- Unknown
- 3- Outside of Kelp

Begin Set

Latitude

--	--	--	--	--	--	--	--	--	--	--	--

Deg.

Min.

Longitude

--	--	--	--	--	--	--	--	--	--	--	--

Deg.

Min.

Ship Activity

--	--	--	--	--

- 1- Pull / Reset                      4- Tend Only
- 2- Pull / Move / Reset            5- Net Lost
- 3- Pull / Bring In

Begin Pull

Latitude

--	--	--	--	--	--	--	--	--	--	--	--

Deg.

Min.

Longitude

--	--	--	--	--	--	--	--	--	--	--	--

Deg.

Min.

Set Date (MM DD)

--	--	--	--

Begin Set Time

--	--	--	--

Water Depth

--	--	--	--	--	--

 fms

Beaufort

--

Water Temp.

--	--	--	--	--	--

Temp. Type

--	--	--	--	--

- 1- Spirit
- 2- Mercury
- 3- Digital
- 4- Vessel
- 5- Other

Cloud Cover

--

Number of Lightsticks

--	--

Floatline Pingers

--	--

Distance to Floatline

--	--	--	--

 ft

Pinger Type

--	--	--	--

- 1- Dukane      3- Fumunda
- 2- Other        4- Mixed

Leadline Pingers

--	--

Distance to Leadline

--	--	--	--

 ft

Pinger Type

--	--	--	--

- 1- Dukane      3- Fumunda
- 2- Other        4- Mixed

Begin Pull Time

--	--	--	--

Water Depth

--	--	--	--	--	--

 fms

Beaufort

--

Water Temp.

--	--	--	--	--	--

Cloud Cover

--

Main Engine (Y/N)

--

Generator (Y/N)

--

Sonar (Y/N)

--

Deck Light (Y/N)

--

Patrol Net (Y/N)

--

Soak Total

--	--	--	--	--

 hrs

Lost Netting

--	--	--	--	--	--

 fms

Pingers Functioning (Y/N)

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Notes:

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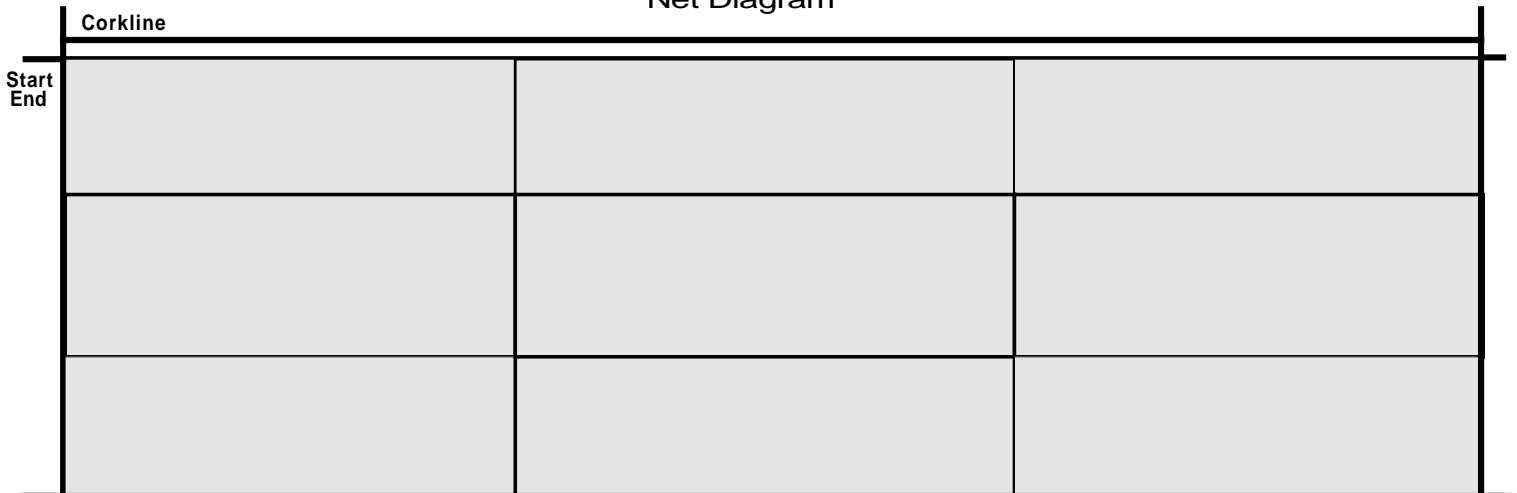
---

## Net Characteristics

<b>Section #</b>	<b>Total Sections</b>	<b>Percent of Net</b>	<b>Net type</b>	<b>Net Material</b>
<input type="text"/> <input type="text"/> OF <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> %	<input type="text"/> 1 - Set 2 - Drift 3 - Float	<input type="text"/> 1. Monofilament 2. Multifilament 3. Combination 4. Twisted Mono.
<b>Strength</b>	<b>Strength Code</b>	<b>Net Length</b>	<b>Net Depth</b>	
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> 1 - Lb. Test 2 - Twine Size	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> fms	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> meshes	
<b>Net Color</b>	<b>Mesh Size</b>	<b>Extender Length</b>		
<input type="text"/> 1. Green 4. Brown 2. Red 5. Other 3. Blue	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ins	<input type="text"/> <input type="text"/> ft		
<b>Hanging Line Material</b>	<b>Percent Slack</b>	<b>Number of Meshes Hanging</b>	<b>Hanging Length</b>	
<input type="text"/> 1 - Synthetic 2 - Natural	<input type="text"/> <input type="text"/> %	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> ins	

<b>Section #</b>	<b>Total Sections</b>	<b>Percent of Net</b>	<b>NetType</b>	<b>Net Material</b>
<input type="text"/> <input type="text"/> OF <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> %	<input type="text"/> 1 - Set 2 - Drift 3 - Float	<input type="text"/> 1 - Monofilament 2 - Multifilament 3 - Combination 4 - Twisted Mono
<b>Strength</b>	<b>Strength Code</b>	<b>Net Length</b>	<b>Net Depth</b>	
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> 1 - Lb. Test 2 - Twine Size	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> fms	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> meshes	
<b>Net Color</b>	<b>Mesh Size</b>	<b>Extender Length</b>		
<input type="text"/> 1- Green 4. Brown 2. Red 5. Other 3. Blue	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ins	<input type="text"/> <input type="text"/> ft		
<b>Hanging Line Material</b>	<b>Percent Slack</b>	<b>Number of Meshes Hanging</b>	<b>Hanging Length</b>	
<input type="text"/> 1 - Synthetic 2 - Natural	<input type="text"/> <input type="text"/> %	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> ins	

## Net Diagram



Notes:

## GEAR & SET DATA Purse Seine

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### INTRODUCTION

The Gear and Set Data Form is used to record the gear configuration of sampled vessels and the location and characteristics of sets.

### GENERAL INSTRUCTIONS

Net information may be obtained from the vessel operator. If the information requested is not available or not applicable, leave the field blank.

### DATA ELEMENTS

#### Trip Data

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed.

**Date:** The date the set is performed. Record the four digits of the year, the two digits representing the month and the two digits representing the day of the month.

#### Set Data

**Target Species:** Record the name(s) and codes(s) for the primary species that the vessel operator plans to catch.

**Fishery Type:** Record the type of fishery beign targeted.

1. Costal Pelagic Species – these include: anchovy, mackerel, sardine and squid.
2. Highly Migratory Species – for purse seine vessels, tuna only.

#### Net Characteristics

**Net Length:** Record the length of the net in fathoms.

**Net Depth:** Record the depth of the net in fathoms.

**Mesh Size:** Record the mesh size to the nearest 1/8 inch. Mesh size is measured by pulling the opposite knots of a mesh and measuring the distance between the knots. Check several meshes and enter the average in the box.

### Set Characteristics

**Set Position:** Record the latitude and longitude when the skiff is launched and begins to circle the fish. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude.

**Begin Set Time:** Record the local 24-hour time when the skiff was launched. If you do not observe the set, ask the fisherman for the date and time the net was set.

**End Haul Time:** Record the local 24-hour time when the fishing gear is completely aboard the vessel.

### Environmental Characteristics

#### Water Depth:

Record the water depth in fathoms at the time net set begins.

**Beaufort:** Record the Beaufort Scale number 0 - 9 describing sea conditions at the beginning of net setting.

A wind of a given speed blowing for a sufficient time produces a characteristic appearance of the sea's surface. The Beaufort Scale describes the characteristic appearance of the sea associated with each numerical level of the Scale.

0	Calm	Sea like a mirror.
1	1-3 KTS. ¼ FT. Waves	Ripples with appearance of scales; no foam.
2	4-6 KTS. ½ FT. Waves	Small wavelets; crests of glassy appearance, not breaking.
3	7-10 KTS. 2 FT. Waves	Large wavelets; crests begin to break; scattered whitecaps.



4	11-16 KTS. 4 FT. Waves	Small waves, becoming longer; numerous whitecaps.
5	17-21 KTS. 6 FT. Waves	Moderate waves, taking longer form; many whitecaps; some spray
6	22-27 KTS. 10 FT. Waves	Larger waves forming; whitecaps everywhere; more spray.
7	28-33 KTS. 14 FT.	Sea heaps up; white foam from breaking waves begins to be Waves blown in streaks.
8	34-40 KTS. 18 FT.	Moderately high waves of greater length; edges of crests Waves begin to break into spindrift; foam is blown in well-marked streaks.
9	41-47 KTS. 23 FT.	High waves; sea begins to roll; dense streaks of foam; spray Waves may reduce visibility.

**Water Temperature:** Record the surface water temperature in Fahrenheit, as a three digit number, to the nearest tenth of a degree, at the beginning of net pull.

**Temperature Type:** Record the type of instrument used to measure water temperature.

Code	Type	Description
1	Spirit	Alcohol or mineral spirit-filled thermometer.
2	Mercury	Mercury-filled thermometer.
3	Digital	Digital thermometer.
4	Vessel	Vessel's temperature gauge.
5	Other	Other - describe in notes.

**Light Boat:** Record whether a separate vessel was used to illuminate the water during the set. Put a yes or no in the box provided.

*If there was zero catch for this set, write **ZERO CATCH** in the notes section.*





## GEAR & SET DATA Set Gillnet

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### INTRODUCTION

The Gear and Set Data Form is used to record the gear configuration of sampled vessels and the location and characteristics of sets.

### GENERAL INSTRUCTIONS

Net information may be obtained from the vessel operator. If the information requested is not available or not applicable, leave the field blank.

### DATA ELEMENTS

#### Trip Data

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed. If you board the vessel in the middle of a net pull consider that pull set 01 and record the percentage of the total net that was observed.

**Pull Date:** The date the net was tended or retrieved. Record the four digits of the year, the two digits representing the month and the two digits representing the day of the month.

#### Set Data

**Percentage Net Observed:** Enter your estimate of the percentage of the net haul you observed.

**Target Species:** Record the name(s) and codes(s) for the primary species that the vessel operator plans to catch.

**Begin Pull Position:** This is the location of the vessel when net pull begins. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of minutes (one digit) of longitude.

**Note:** If latitude and longitude are not directly available from the navigation system on board

the vessel, use the notes section at the bottom of the form to record loran readings and/or other notes relevant to the vessel's fishing location.

**Position Type:** Record the code for the method used to determine the latitude and longitude for this set:

- ⊗ **1 - Loran:** Latitude and longitude converted from loran readings by the loran system on board the vessel or the computer program in the field office. You must have actually seen the loran readings displayed by the unit on board the vessel. Otherwise use code 4 below.
- ⊗ **2 - Dead Reckoning:** Latitude and longitude determined from charts at the field station using information such as: time run, course, and vessel speed from port of departure, compass bearings to known land marks, local names and descriptions of fishing locations.
- ⊗ **3 - GPS:** Latitude and longitude obtained from navigational systems using satellite.
- ⊗ **4 - Verbal:** Latitude and longitude, loran readings, or other position information are reported by the vessel operator.

**Environment:** Record the one digit code describing the predominant type of environment.

- ⊗ **1 - Inshore of kelp.**
- ⊗ **2 - In kelp.** The vessel is considered "in kelp" if the net is deployed within 300 feet or 100 meters of growing kelp.
- ⊗ **3 - Offshore of kelp.**
- ⊗ **4 - No kelp.** There is no growing kelp visible at the time the net is deployed.
- ⊗ **5 - Unknown.** The environment is unknown

**Orientation to Shore:** Record the one digit code indicating the position of the net relative to the shoreline. If this cannot be determined, or if the shoreline is not visible, record the compass orientation of the net, e.g. "net set northeast to southwest." in the Notes Section.

- ⊗ **1 - Parallel.**
- ⊗ **2 - Perpendicular.**
- ⊗ **3 - Diagonal.**
- ⊗ **4 - Unknown.**

**Distance Offshore:** If distance offshore can be determined from a radar unit on board the vessel or a nautical chart, record the distance in nautical miles and tenths from the net end closest to the shore. If you are unable to get distance from the closest end, but have a distance from another position along the net, record the information in the Notes Section.

**Time & Date**

**Set Date:** Record the month and day that the net was set.

**Begin Set Time:** Record the local 24-hour time when the net was set. If you do not observe the set, ask the fisherman for the date and time the net was set.

**Begin Pull Time:** Record the local 24-hour time when the fisherman begins to retrieve or tend the net. If you only observe part of the net haul, record the time you begin observing the net haul.

**Water Depth:**

☼ Record the water depth in fathoms at the time net pull begins.

**Beaufort:** Record the Beaufort Scale number 0 - 9 describing sea conditions at the beginning of hauling operation.

A wind of a given speed blowing for a sufficient time produces a characteristic appearance of the sea's surface. The Beaufort Scale describes the characteristic appearance of the sea associated with each numerical level of the Scale.

0	Calm	Sea like a mirror.
1	1-3 KTS. ¼ FT. Waves	Ripples with appearance of scales; no foam.
2	4-6 KTS. ½ FT. Waves	Small wavelets; crests of glassy appearance, not breaking.
3	7-10 KTS. 2 FT. Waves	Large wavelets; crests begin to break; scattered whitecaps.
4	11-16 KTS. 4 FT. Waves	Small waves, becoming longer; numerous whitecaps.
5	17-21 KTS. 6 FT. Waves	Moderate waves, taking longer form; many whitecaps; some spray

6	22-27 KTS. 10 FT. Waves	Larger waves forming; whitecaps everywhere; more spray.
7	28-33 KTS. 14 FT. Waves blown in streaks.	Sea heaps up; white foam from breaking waves begins to be
8	34-40 KTS. 18 FT. Waves begin to break into spindrift; foam is blown in well-marked streaks.	Moderately high waves of greater length; edges of crests
9	41-47 KTS. 23 FT. Waves may reduce visibility.	High waves; sea begins to roll; dense streaks of foam; spray

**Water Temperature:** Record the surface water temperature in Fahrenheit, as a three digit number, to the nearest tenth of a degree, at the beginning of net pull.

**Temperature Type:** Record the type of instrument used to measure water temperature.

Code	Type	Description
1	Spirit	Alcohol or mineral spirit-filled thermometer.
2	Mercury	Mercury-filled thermometer.
3	Digital	Digital thermometer.
4	Vessel	Vessel's temperature gauge.
5	Other	Other - describe in notes.

**Number of Pingers:** Record the total number of pingers deployed along the net. If no pingers are used, record 00.

**Type of Pinger:** Record the one digit code number indicating the type of pinger used. Describe in the notes if different types of pingers are used.

- |                            |                      |
|----------------------------|----------------------|
| ☼ <b>1 - Netmark 1000.</b> | ☼ <b>3 - Fumunda</b> |
| ☼ <b>2 - Other.</b>        | ☼ <b>4 - Mixed</b>   |

**Water Depth Final:**

- ☼ Record the water depth in fathoms at the time the net is completely aboard or at the time the fisherman finishes tending the net.



**Ship Activity:** Record in the code box the one digit code indicating the type of fishing activity.

- ☼ **1 - Pull/Reset.** The net is retrieved and immediately reset in the same location.
- ☼ **2 - Pull/Move/Reset.** The net is retrieved and the vessel moves to a new location and resets the net.
- ☼ **3 - Pull/Bring in.** The net is retrieved and the vessel returns to port.
- ☼ **4 - Tend only.** The net is not retrieved and the catch is removed by pulling up sections along the anchored net.
- ☼ **5 - Net lost.** The net cannot be found.

**Soak Total:** Record the time, rounded to the nearest hour from the time the net was set, to the time it was retrieved or tended. If you were not aboard the vessel at the time the net was set, ask the fisherman for the soak time.

**Lost Netting:** Record in fathoms the total amount of lost netting. The estimate should be based on fathoms lost along the length of the net. If the depth of the lost area is not from leadline to corkline, record the depth lost in the Notes Section.

### Net Characteristics

**Section #:** Record the number of the net section which is described (i.e., 01 is the net section retrieved first and is equivalent to the Start End of the net diagram).

**of**

**Total Sections:** Record the total number of net sections described.

**Percentage of Net:** Record the percentage of the net which is described in Section 1. If gear components change along the length of the net, record the percentage observed with different components and their characteristics in Section 2. The total percentages should equal 100% or be equal to the Percentage Observed.

**Net Type:** Record the one digit code indicating the type of net in the code box.

- ☼ **1 - Set.** The net is anchored at both ends and fishes on the bottom (no trammeling).

- ☼ **2 - Drift.** The net is tied to the vessel at one end and drifts with the current (not anchored).
- ☼ **3 - Float.** The net is anchored like a set net but is suspended in mid-water by surface floats.
- ☼ **4 - Trammel, 1 panel.** A set net with suspenders between the cork and lead lines to add vertical slack.
- ☼ **5 - Trammel, 2 panel.** A set net with two panels that are connected at the lead and cork lines. One panel usually has larger mesh than the other.
- ☼ **6 - Trammel, 3 panel.** A set net with three panels that are connected at the lead and cork lines. The two outer panels usually have larger mesh than the inner one.

**Net Material:** Record the one digit number indicating the material(s) of which the meshes of the net are constructed:

- ☼ **1 - Monofilament.** The net is constructed of single fiber nylon.
- ☼ **2 - Multi-filament.** The mesh is constructed of nylon or other material, with many fibers wound into twine.
- ☼ **3 - Combination.** Describe in the comments the construction of any other type of mesh.
- ☼ **4 - Twisted monofilament.** The mesh is constructed of several nylon fibers twisted together.

**Material Strength:** Record the numerical value for either pounds test or twine size for this section of net. If the operator does not know the netting strength in terms of either of these two measurements, enter any relevant information the operator can provide in the comments section on the front of the form.

**Strength Code:** Indicate the units associated with the numerical value recorded under Material Strength:

- ☼ **1 - lb. test.**
- ☼ **2 - Twine size.**

**Net Length:** Record the length of the net in fathoms. If gear components change, record only the length for this panel and record the characteristics and length of the different panels on other Gear and Set Data Forms. Net length is the mesh panel only; it does not include the bridle, ground, or up rope lengths. The operator will usually know the lengths of the different panels and the total net length.

**Net Depth:** Record the depth of the net in meshes. Obtain the number of meshes from the operator if you are unable to count them.

**Mesh Size:** Record the mesh size to the nearest half inch. Mesh size is measured by pulling the opposite knots of a mesh and measuring the distance between the knots as described in the Glossary. For multiple panel nets, record the size of the smaller inside mesh. Mesh sizes may be obtained from the operator. Check several meshes and enter the average in the box.

**Mesh Size (Multi-Panel Trammel Only):** Record the mesh size to the nearest half inch of the outside panel. Mesh size is measured by pulling the opposite knots of a mesh and measuring the distance between the knots as described in the Glossary. Mesh sizes may be obtained from the operator. Check several meshes and enter the average in the box.

**Suspender Length:** Record the length in feet of the line joining the lead and cork lines.

**Hanging Line Material:** Record the one digit code number indicating the composition of the hanging line:

- ☼ **1 - Synthetic.** Nylon, plastic or a combination of synthetic and natural fibers.
- ☼ **2 - Natural.** Hemp, cotton or some other natural fiber

**Percent Slack:** Record the percentage of slack created in the net by meshes on the hanging line. If the operator does not know the percent slack in his/her net, be sure to complete the fields for the number of meshes hanging and the hanging length.

**Number of Meshes Hanging:** Record the number of meshes, including those not tied to the hanging line, between knots. For a multi-panel trammel net, record this number for the smallest mesh net. Record even if Percent Slack has been completed.

**Hanging Length:** Record the distance between the knots on the cork line to the nearest inch. Record even if Percent Slack has been completed.

## Net Diagram

The segments of the net are equivalent to those in the "location in net" column on the Non-Fish Tally Sheet. If net characteristics vary within a set, indicate the location(s) of the different net types.

Every fish need not be depicted on the diagram, only general tendencies or evident groupings

need to be recorded. **Target species** should be depicted individually on the diagram using the three digit code.

Marine mammals, seabirds, and sea turtles should be indicated individually using the two letter codes from the species list beginning on page 105.

In cases where mammals or large fish are too wrapped up to determine their position on the vertical plane, indicate their position on the horizontal plane and discuss the entanglement in the comments section

If you know the location of an animal or aggregation of animals along one axis of the net, but not along the other, indicate the axis of which you are unsure by a double ended arrow.

←-----→



*If there was zero catch for this set, write **ZERO CATCH** in the notes section of the net diagram.*

TAKE NOTES HERE

# Gear and Set Data ~ Set Net

TRIP NUMBER

		-			-				
--	--	---	--	--	---	--	--	--	--

SET NUMBER

--	--

PULL DATE (YYYY MM DD)

--	--	--	--	--	--	--	--

Percentage Net Observed

--	--	--	--	--

 %

Target Sp. 1

--	--	--	--

Target Sp. 2

--	--	--	--

1) \_\_\_\_\_

2) \_\_\_\_\_

Begin Pull Position

Latitude

--	--	--	--	--	--	--	--

Deg.

Min.

Longitude

--	--	--	--	--	--	--	--

Deg.

Min.

Position Type

--

1- Loran 3- Satellite  
2- DR 4- Verbal

Environment

--

1- Inshore of Kelp 4- No Kelp  
2- In Kelp 5- Unknown  
3- Outside of Kelp

Orientation to Shore

--

1- Parallel 4- Unknown  
2- Perpendicular  
3- Diagonal

Distance Offshore

--	--	--	--	--

nms

Set Date (MM DD)

--	--	--	--

Begin Set Time

--	--	--	--

Begin Pull Time

--	--	--	--

Water Depth

--	--	--	--

fms

Beaufort

--

Water Temp.

--	--	--	--

Type

--

1- Spirit  
2- Mercury  
3- Digital  
4- Vessel  
5- Other

Number of Pingers

--	--

Pinger Type

--

1- Netmark 1000  
2- Other  
3- Fumunda  
4- Mixed

Water Depth Final

--	--	--	--

fms

Ship Activity

--

1- Pull / Reset 4- Tend Only  
2- Pull / Move/Reset 5- Net Lost  
3- Pull / Bring In

Soak Total

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hrs

Lost Netting

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fms

Notes:

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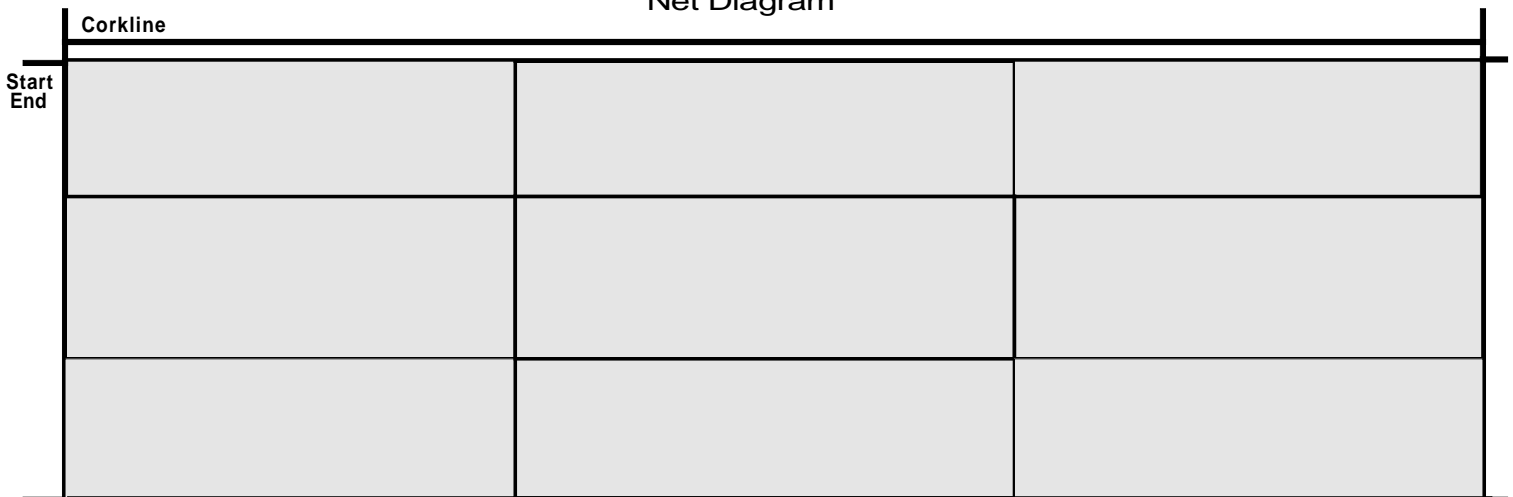
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## Net Characteristics

<b>Section #</b>	<b>Total Sections</b>	<b>Percent of Net</b>	<b>Net Type</b>	<b>Net Material</b>
<input type="text"/> <input type="text"/> OF <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> %	<input type="text"/> 1 - Set 2 - Drift 3 - Float	4 - Trammel, 1 panel 5 - Trammel, 2 panel 6 - Trammel, 3 panel
<b>Strength</b>	<b>Strength Code</b>	<b>Net Length</b>	<b>Net Depth</b>	
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> 1 - Lb. Test 2 - Twine Size	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> fms	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> meshes	
<b>Mesh Size</b>	<b>Mesh Size (Multi-Panel Trammel Only)</b>	<b>Suspender Length</b>		
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ins	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ins	<input type="text"/> <input type="text"/> ft		
<b>Hanging Line Material</b>	<b>Percent Slack</b>	<b>Number of Meshes Hanging</b>	<b>Hanging Length</b>	
<input type="text"/> 1 - Synthetic 2 - Natural	<input type="text"/> <input type="text"/> %	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> ins	

<b>Section #</b>	<b>Total Sections</b>	<b>Percent of Net</b>	<b>Net Type</b>	<b>Net Material</b>
<input type="text"/> <input type="text"/> OF <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> %	<input type="text"/> 1 - Set 2 - Drift 3 - Float	4 - Trammel, 1 panel 5 - Trammel, 2 panel 6 - Trammel, 3 panel
<b>Strength</b>	<b>Strength Code</b>	<b>Net Length</b>	<b>Net Depth</b>	
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> 1 - Lb. Test 2 - Twine Size	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> fms	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> meshes	
<b>Mesh Size</b>	<b>Mesh Size (Multipanel Trammel Only)</b>	<b>Suspender Length</b>		
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ins	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> ins	<input type="text"/> <input type="text"/> ft		
<b>Hanging line Material</b>	<b>Percent Slack</b>	<b>Number of Meshes Hanging</b>	<b>Hanging Length</b>	
<input type="text"/> 1 - Synthetic 2 - Natural	<input type="text"/> <input type="text"/> %	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> ins	

## Net Diagram



Notes:

## CATCH TALLY SHEET

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### INTRODUCTION

The Catch Tally Sheet is listed by species of the total number of fish and invertebrates captured and their disposition. The data are used to determine success rates for target species and the extent of involvement of non-target species in the fishery.

### GENERAL INSTRUCTIONS

Use the common names from the Species Code list for the species of fish caught. Abundant species may be tallied with a hand counter. **If catch is tallied using hash marks, sum the marks, enter and circle the total.** The sum of all the disposition categories excluding damaged should equal the total catch for each species. If you run out of space for tallying a species, continue on another line.

Possible indications of marine mammal depredation of the catch are: tooth rake marks on the bodies of fish; fish with their belly sections bitten out and the skin torn off the carcass; and fish heads with the bodies bitten off. Describe in detail in the Notes Section those factors which you believe indicate marine mammal depredation.

### DATA ELEMENTS

#### Trip Data

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed.

**Marine Mammal Damage:** Record a "Y" in this field if you observe fish which you believe have been damaged by marine mammals or if you have observed marine mammals in the act of depredated the catch. Record a "N" if you do not believe the catch has been depredated by marine mammals or you are unsure of the source of damage.

**Number of Albacore with Gillnet Markings** - (*Albacore Troll/Baitboat Only*) –Record the total percentage, of all the albacore caught, that have gillnet markings on them.

## Catch Data

**Species Name:** Record the common name of the species caught. If more species or individuals are caught than there are lines for, record the data on another Catch Data Tally Sheet.

**Species Code:** Enter the three digit species code from the Species Code list for all fish and invertebrates. Note that there are codes for unidentified and other identified animals.

**Units:** Record the units involved during the measurement of the total catch. This is only performed while observing in the purse seine fishery.

1. Ton- if the catch is recorded in tons
2. Pounds- if the catch is recorded in pounds
3. Single- if only individuals are counted and no weight is recorded. This will be a whole number.

**Total:** Record the total number of individuals of each species caught in the net.

**Disposition:** Indicate the condition and fate of all individuals by recording the number of individuals in each of the following categories:

**Kept** - any part of the fish kept by the fishermen for sale or personal consumption.

**Returned** - individuals of any species that are returned to the environment, retained by the observer for processing, or fall out of the net.

**Alive** - Alive indicates that the animals swam away when released from the gear with minimal or no visible signs of physical damage. In the case of invertebrates, the animal should show obvious signs of muscular activity.

**Dead** - Dead indicates that the animal does not swim away after release from the net. There is no visible muscular activity and the animal may be stiff or limp (freshly dead).

**Unknown** - The animal was returned but the observer is unable to determine whether it was alive or dead, or the animal was returned in a condition not described above. Describe any Unknown disposition animals in the Notes Section.

**Number Damaged:** Record the total number of any fish species damaged (including both shark and marine mammal damage) before removal from the net.

**Marine Mammal (MM) Damaged:** Record the total number of any fish species damaged by marine mammals before removal from the net.



## **Notes**

Use this section to describe damaged animals, animals with unknown disposition, photo frame numbers, camera number and other notes on the catch.

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# Catch Tally Sheet

Number of Albacore  
With Gillnet Markings  
(Albacore Troll / Bait Boat)

TRIP NUMBER

		-			-				
--	--	---	--	--	---	--	--	--	--

SET NUMBER

--	--

MM DAMAGE (Y/N)

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--	--	--

1	SPECIES NAME (Fish and Invertebrates)	Sp. Code	Units 1. Ton 2. Lbs 3. Single Purse Seine Only	Total	DISPOSITION			DAMAGED	MM DAMAGED
					Kept	Returned			
						Alive	Dead		
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

	SPECIES NAME (Fish and Invertebrates)	Sp. Code	Units 1. Ton 2. Lbs 3. Single Purse Seine Only	Total	DISPOSITION			DAMAGED	MM DAMAGED
					Kept	Returned			
						Alive	Dead		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

Notes:

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# NON-FISH TALLY SHEET

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## INTRODUCTION

The Non-Fish Tally Sheet is a record by species of the total number of marine mammals, sea turtles and seabirds captured while fishing and their disposition. The data are used to determine the extent of involvement of non-target species in the fishery.

## GENERAL INSTRUCTIONS

An entry on this form should be completed for every marine mammal or sea turtle that has been captured. Live marine mammals or sea turtles observed becoming entangled in the net during net pull should also be recorded on a Sighting Record. If a marine mammal or sea turtle is brought aboard the vessel or biopsied alongside the vessel, complete a Life History Form.

Record all captured seabirds.

Describe the identifying characteristics of each animal that is recorded on this form in the Notes Section.

## DATA ELEMENTS

### Trip Data

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed.

### Catch Data

**Species Name:** Record the common name of the species caught. If more individuals are caught than there are lines for, record the data on another Non-Fish Tally Sheet.

**Species Code:** Enter the two or three letter species code from the Species Code list.

**Location in Net Horizontal (*Gillnet Only*):** Record the one digit code indicating the animal's position relative to total length of the net as it is retrieved. (Must match location on Gear and Set Form, Net Diagram)

- ☼ **1** - Found in the first third of net
- ☼ **2** - Found in the middle third of net
- ☼ **3** - Found in the final third of net
- ☼ **4** - Position unknown or impossible to determine

**Location in Net Vertical (*Gillnet Only*):** Record the one digit code indicating the animal's position relative to total depth of the net. (Must match location on Gear and Set Form, Net Diagram)

- ☼ **1** - Found near the cork line, or in the upper third of the net
- ☼ **2** - Found mid-net, in middle third of the net
- ☼ **3** - Found near the lead-line, or in lower third of the net
- ☼ **4** - Position unknown or impossible to determine

**Condition:** Record the letter code indicating the condition of each animal removed from the net.

- ☼ **D** - An animal removed from the net in a postmortem state. Animals will show a lack of muscular activity and may float passively at or below the water's surface.
- ☼ **A** - An animal released from the net that can swim or fly normally. It is likely that the animal will have minor cuts and abrasions from being entangled. Describe the extent of these superficial injuries in the Notes Section.
- ☼ **I** - An animal removed from the net with obvious physical injury or with attached netting. An injured animal may lie at the surface, breathing irregularly or swim or fly in an abnormal manner. Fully describe the extent and nature of the injuries in the Notes Section.
- ☼ **U** - An animal lost, released, or escaped from the net whose condition you were not able to determine.

**Sex:** For cetaceans, pinnipeds and otters determine the sex and record an "F" for female or an "M" for male. Record a "U" if you were unable to determine the sex of the animal. In the case of marine mammals, record the reason why sex was not determined in the Notes Section.



*Note: Photographs should be taken on the deck of all single dead cetaceans, sea turtles and any specimen which is unidentified and can not be brought back. Dead identified pinnipeds are not to be photographed.*

- ⚙ specific identifying characteristics that led to your identification of the animal.





# Non-Fish Tally Sheet

TRIP NUMBER

		-			-				
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SET NUMBER

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	Species Name	Sp. Code	Location (GN Only)		Condition	Sex	Specimen Number	Tag Y/N	Pinger Distance (ft)	Pinger Type	Pinger Location	Pinger Functioning (Y/N)	Notes
			H	V									
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
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16													
17													
18													
19													
20													

<u>Location</u>	<u>Condition</u>	<u>Sex</u>	<u>Pinger Type</u>	<u>Pinger Location</u>
1 - First 3rd/upper 3rd	D - Dead	M - Male	1 - Dukane	1 - Floatline
2 - Middle 3rd	A - Alive	F - Female	2 - Other	2 - Leadline
3 - Final 3rd/lower 3rd	I - Injured	U - Unknown	3 - Fumunda	
4 - Unknown	U - Unknown			

	Species Name	Sp. Code	Location (GN Only)		Condition	Sex	Specimen Number	Tag Y/N	Pinger Distance (ft)	Pinger Type	Pinger Location	Pinger Functioning (Y/N)	Notes
			H	V									
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40													

Location

- 1 - First 3rd/upper 3rd
- 2 - Middle 3rd
- 3 - Final 3rd/lower 3rd
- 4 - Unknown

Condition

- D - Dead
- A - Alive
- I - Injured
- U - Unknown

Sex

- M - Male
- F - Female
- U - Unknown

Pinger Type

- 1 - Dukane
- 2 - Other
- 3 - Fumunda

Pinger Location

- 1 - Floatline
- 2 - Leadline

## FISH & INVERTEBRATE MEASUREMENT DATA

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### INTRODUCTION

The Fish and Invertebrate Measurement Data Form contains information used for length frequency analyses and sex ratio determinations. The form is used to collect data only on specifically identified species of invertebrates and fishes.

### GENERAL INSTRUCTIONS

Record data on the following species:

- albacore tuna
- bigeye tuna
- bluefin tuna
- skipjack tuna
- yellowfin tuna
- California halibut
- lingcod
- spotted sand bass
- barred sand bass
- kelp bass
- California barracuda
- white seabass
- Pacific bonito
- yellowtail
- opah
- Pacific salmon (all species)
- spiny lobster
- dungeness crab

*For albacore troll/baitboat and CPFV data, record the measurements in this data form and only measure the following species: all tuna species, Pacific bonito and Yellowtail*

*No measurements are taken during purse seine observing.*

## DATA ELEMENTS

### Trip Data

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator. In the first block, record "D" for drift. After the first dash, enter "LB" for Long Beach. After the second dash, enter the four digit sequential number.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed. If you board the vessel in the middle of a pull consider that pull set 01.

### Measurement Data

**Species Name:** Record the common name listed on the Species Code list of the fish or invertebrate being processed.

**Species Code:** Record the three digit code from the Species Code list for each animal listed.

**Length:** Record the length, to the nearest centimeter, of the following species:

Fork Length (snout to center of tail fork) for:

- Pacific bonito
- yellowtail
- albacore tuna
- bigeye tuna
- bluefin tuna
- skipjack tuna
- yellowfin tuna
- opah

Total Length (snout to tip of tail) for:

- white seabass
- California halibut
- lingcod
- spotted sand bass
- barred sand bass
- kelp bass
- California barracuda
- Pacific salmon (all species)

Carapace Length (rear edge eye socket to carapace end) for:

- spiny lobster

Carapace Width (edge to edge in front of spines) for:

- dungeness crab

*See Appendix E in the back of this field manual for an illustrated measurement example on lobsters and crabs.*

**Sex:** Record the sex of all species. Use "M" for male, "F" for female and leave it blank for unknown.

**Disposition:** Record the one digit code indicating the disposition of fish and invertebrates processed:

- ☼ **1** - Kept (\* not damaged)
- ☼ **2** - Kept (\* damaged)
- ☼ **3** - Returned dead (\* not damaged)
- ☼ **4** - Returned dead (\* damaged)
- ☼ **5** - Returned alive
- ☼ **6** - Returned alive (\*\* tagged)
- ☼ **7** - Finned (sharks only): dorsal, pectoral or other fins removed by fisherman prior to discarding.
- ☼ **8** - Dispatched (sharks only): shark is intentionally killed by fisherman prior to discarding.
- ☼ **9** - Returned unknown: animal was returned, but you were unsure of its condition or the condition cannot be classified as alive or dead.

*\* Note: "damage" refers to damage done to the fish while in the net or on the hook, it does not refer to damage done by the fisherman. Crabs that are crushed by the fisherman and kept are code 1. Fish with bite marks are code 2 or code 4.*

**\*\*** For sharks - record the presence of any pre-existing tag, regardless of the disposition. Note the tag number and description including color, construction and type.

- ⊗ **Alive:** The animal swam away with minimal or no visible signs of physical damage. For invertebrates, the animal shows signs of muscular activity.
- ⊗ **Dead:** The animal does not swim away, floats at or below the surface or sinks. For invertebrates, there is no sign of muscular activity.
- ⊗ **Unknown:** The animal swims away with cuts, deep abrasions or swim bladder everted. For invertebrates, appendages are missing but muscular activity is present.

**Notes:** Record anything unusual about the processed animals. Record the frame and camera number of any photographs taken.

Take Notes Here

# Fish and Invertebrate Measurement Data

TRIP NUMBER

SET NUMBER

		-			-				
--	--	---	--	--	---	--	--	--	--

--	--

	Species Name	Sp. Code	LENGTH (CM)	SEX	DISP. CODE	NOTES, PHOTO FRAME & CAMERA *
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Disposition Codes

- 1 - kept, not damaged
- 2 - kept, damaged
- 3 - returned dead, not damaged
- 4 - returned dead, damaged
- 5 - returned alive

- 6. returned Alive, tagged
- 7. fined, shark only
- 8. dispatched, shark only
- 9. returned unknown

Sex Codes

- M - male
- F - female
- U - unknown

	Species Name	Sp. Code	LENGTH (CM)	SEX	DISP. CODE	NOTES, PHOTO FRAME & CAMERA *
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Disposition Codes

- 1 - kept, not damaged
- 2 - kept, damaged
- 3 - returned dead. not damaged
- 4 - returned dead, damaged
- 5 - returned alive

- 6. returned Alive, tagged
- 7. fined, shark only
- 8. dispatched, shark only
- 9. returned unknown

Sex Codes

- M - male
- F - female
- U - unknown



# SHARK & BILLFISH LIFE HISTORY DATA

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## INTRODUCTION

Data on these forms are used to establish basic life history parameters for certain species of sharks and billfish. Analysis of these data provides information on sex ratio, sexual maturity, length frequency, fecundity and age.

## GENERAL INSTRUCTIONS

Different measurements and samples are required depending on the species processed. An animal is considered processed when requested life history samples are collected, or at least one valid straight-line measurement is taken. Process priority species first, and other species as time permits. Priority species in the drift net fishery are thresher sharks, shortfin mako sharks, and billfish. Rare and uncommon species such as megamouth, large female white and mako sharks have precedence over standard collections.

## SHARK and BILLFISH DATA ELEMENTS

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Set Number:** The two digit number which corresponds to the set number recorded on the gear and set form which the processed animal was caught.

**Species:** The common name, listed on the Species Code list, of the shark or billfish being processed. Sharks are recorded at the top of this form and billfish (most commonly swordfish and striped marlin) are recorded in the bottom section.

**Code:** The three digit code, listed on the Species Code list, which corresponds to the common name of the shark or billfish being processed.

**Specimen Number:** The assigned three letter code and consecutive four digit number recorded for each shark or billfish that had life history specimens collected. Append an "S" to the specimen number of all sharks and billfish processed.

## SHARK LIFE HISTORY DATA

### Shark Sampling Protocol

Collect ovaries, fetuses and vertebrae from all pregnant female sharks. Pregnancy is indicated when eggs present in ovary are enlarged and appear yellow and the uterus is enlarged, or when elongated egg capsules are present in the oviduct or uterus. Collect ovaries, uterus and vertebrae from non-pregnant females when the fork length is equal to or greater than the length listed below. Collect vertebrae from all male sharks with fork length equal to or greater than the length listed below. Refer to Appendix B, figures 1a and 1b for diagrams of the male urogenital system, and figures 2a and 2b for female.

Minimum lengths (cm) for collection of life history samples, non-pregnant female or male sharks:

Species	Code	Fork Length (cm)
-----	—	—
Blue	167	>= 200
Shortfin Mako	151	>= 200 **
Longfin Mako	938	All
Common Thresher	155	pregnant females only
Bigeye Thresher	147	>= 200
Pelagic Thresher	148	All

Other sharks: Collect photos, biopsies, vertebrae and mature female reproductive material from rare or unusual specimens (including megamouth, white, 6- & 7-gill, hammerhead, prickly).

Collect vertebrae from all pelagic threshers and longfin makos.

\*\* Collect un-opened stomachs, reproductive tracts, vertebrae, and photos from all mako sharks greater than 200 cm fork length. Collect and freeze all whole mako sharks under 60 cm total. Photograph tooth detail and collect sample teeth if possible from these large mako specimens.

\*\*\*Collect biopsies from all sharks

### Shark Data Elements

**Sex:** Indicate the sex of the specimen by recording an "F" for female or an "M" for male.

**Length:** Record the fork length, as a straight-line measurement to the nearest centimeter, for all mako (151), common thresher (155) and blue shark (167) specimens processed. When fork length is not possible, record the total and/or alternate (Dorsal 1 to Dorsal 2) length. Record the total, fork

and alternate lengths of all other shark specimens processed. Accurate total or fork length measurements cannot be obtained from sharks after the tail has been removed. Record clasper length for all male sharks. Refer to Appendix B for diagrams of the following measurements:

- ⊗ **Total length:** Straight-line measurement from the tip of snout to tip of tail.
- ⊗ **Fork length:** Straight-line measurement from the tip of snout to fork in tail.
- ⊗ **Dorsal 1-Dorsal 2 length:** Straight-line measurement from **origin** (leading edge) of the first dorsal fin to the **origin** of the second dorsal fin.
- ⊗ **Clasper length:** For male sharks, straight-line measurement from the tip of the clasper to the crotch between claspers.

**Collected Y/N:** Record a "Y" if you collected any specimens (then record specimen type in the Notes section). If No specimens were collected, record an "N".

**Maturity Data:** Record a "Y" for Yes or "N" for No only if you are sure. It is not always easy to determine the proper answer to each of the maturity questions. If you are not sure of an answer or you did not check, leave blank. Refer to Appendix B for diagrams of the male and female urogenital system.

**For male sharks:**

- ⊗ If the claspers are calcified, stiff and hard, record a "Y" for yes; if not record a "N".
- ⊗ If claspers rotate forward with a definite "elbow" action, record a "Y", if the claspers bend forward but do not actually rotate record a "N".
- ⊗ If sharks are dressed in the field, determine the presence of seminal fluid by milking the seminal vesicle toward the claspers. Record the presence of seminal fluid with a "Y".

**For female sharks:**

- ⊗ If developing eggs in the ovary are enlarged and yellow, record a "Y"; if not, record a "N".
- ⊗ If uterus is enlarged record a "Y"; if not, record a "N".
- ⊗ If eggs, elongated egg cases, embryos or fetuses are present in the uterus record a "Y"; if not, record a "N".

## BILLFISH LIFE HISTORY DATA

### Billfish Sampling Protocol

Billfish life history data collection is required for all billfish. Biopsies and photographs should be taken of all sizes of striped marlin, blue marlin, black marlin, sailfish, and shortbilled spearfish. Length measurements of all marlin is considered a high priority, and should be collected whenever possible.

### Billfish Data Elements

**Length:** Obtain the measurements listed below for all marlin. Measure half girth and posterior eye orbit-to-fork length for all swordfish possible. If swordfish have been dressed before collecting measurements, record the cleithrum to fork length. Refer to Appendix B, figure 3 for diagrams of the measurements below:

- ⊗ **Half-Girth:** Measure from the anterior insertion of the dorsal fin to the anterior insertion of the left pectoral fin. Take the measurement before the fish is dressed.
- ⊗ **Fork length:** Straight-line measurement from the tip of **lower** jaw to fork in tail.
- ⊗ **Eye to fork:** Straight-line measurement from the posterior margin of eye orbit to the fork in tail.
- ⊗ **Cleithrum to fork:** Straight-line measurement from the inside leading edge of the cleithrum to the fork in tail. The cleithrum is the bony structure which anchors the pectoral girdle. It is the bony anterior margin of the body after head removal, and is light in color and slightly concave.

**Collected - Y/N:** Record a "Y" if you collected any specimens (then record specimen type in the Notes section). If No specimens were collected, record an "N".

**Comments:** Include any unusual information regarding individual sharks or billfish, their condition (e. g. injuries), appearance, behavior, parasite infestations, reproductive condition, data collection problems or missing data etc. Identify tagged specimens here and record the tagging information. Field notes are encouraged and appreciated.





# SEA TURTLE LIFE HISTORY FORM

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## INTRODUCTION

The Sea Turtle Life History Form (STLHF) is used for recording biological data on sea turtles processed by scientific technicians. These data will be used to determine the number, species, size and condition of sea turtles involved in the gillnet fishery in the eastern Pacific. Other data are recorded on the movements and preferred habitats of the various populations of sea turtles. These data are critical to the development of conservation and recovery strategies for these marine reptiles.

## GENERAL INSTRUCTIONS

Complete a STLHF every time a sea turtle is caught during fishing operations. You should not expect to be able to identify every turtle, especially at first. If you are not sure of the number of scutes on the carapace, or you cannot take accurate measurements, leave the data blank, or record it as unknown. Take photographs and skin biopsies of all captured turtles.

With a little experience, sea turtles seen close up are generally easy to identify. Refer to the dichotomous key on page 88.

## DATA ELEMENTS

### Trip Data

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Specimen Number:** Record your three letter observer code before the "T" and the three digit consecutive number after the "T". Your turtle specimen numbers in this fishery begin with 001 and continue sequentially.

**Date:** The date the turtle was processed. Record the last two digits of the year, the two digits representing the month, and the two digits representing the day.

**Set Number:** Record the set number from the Gear and Set Data; include a leading zero to make this set number three digits.

**Latitude:** Record the degrees (two digits), and minutes (two digits) of latitude at the time of capture.

**Longitude:** Record the degrees (three digits), and minutes (two digits) of longitude at the time of capture.

*Note: If position information is Loran or dead reckoning, record these numbers in the ADDITIONAL COMMENTS section.*

**Species:** Record the two letter code from the Species Code list which corresponds to the species of the captured turtle in the code box. If you are unsure of the species, leave the box blank.

## Identification

**Number of Left Costal Scutes:** Count the number of costal scutes on the left side of the carapace and record the number in the code box.

**Number of Right Costal Scutes:** Count the number of costal scutes on the right side of the carapace and record the number in the code box.

**Number Vertebral Scutes:** Count the number of scutes on the midline of the carapace and record the number in the code box.

**Number Inframarginal Scutes:** Count the number of scutes on either side of the plastron. If the number of inframarginal scutes on each side differs, enter the higher number in the box, and record the other the back of the form.

**Overlapping Scutes:** Are there overlapping scutes on the dorsal surface? Record a 1 for yes, 2 for no, or 3 for unknown.

**Inframarginal Pores:** Are there pores on the ventral inframarginal scutes? Record a 1 for yes, 2 for no, or 3 for unknown.

**1 Pair Prefrontal Scales:** Does the turtle have one pair of prefrontal scales? Record a 1 for yes, 2 for no, or 3 for unknown.

**Lacks Bony Shell:** Does the turtle lack a bony shell? Record a 1 for yes, 2 for no, or 3 for unknown.



**Dorsal Coloration:** What is the dorsal coloration of the turtle? Record a 1 for orange/red, 2 for grayish, or 3 for other/unknown.

## Dimensions

Take measurements in centimeters, to the nearest 0.5 cm, using a tape measure, **not** the calipers used for measuring dolphins. Consult the illustrations on the back of the form for guidance. If epibiota affect any of these measurements, record the details on the back of the form.

**Carapace Length:** Record 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 turtles with a keel running down the center of the carapace (leatherbacks, and juvenile olive ridleys and loggerheads), measure to one side of the median keel, not on top of it.

**Carapace Width:** Record the maximum distance between the lateral edges of the carapace, measured over the curvature of the shell.

**Tail Length:** Record the distance between the posterior most point of the carapace and the tip of the tail. If the stretched tail does not extend beyond the carapace, enter "0000".

## Condition of Turtle

Record in the code box the number corresponding to the fate of the turtle. In the notes section, record specific notes about any damage to the turtle.

**Previously Dead [1]:** The turtle was already dead when it was sighted or captured.

*Note: A **previously dead** turtle will usually have rotten tissue around the eyes and vents, and it may be bloated and foul smelling. It also may have sloughing scutes and scales.*

**Released Unharmd [2]:** You observed the turtle returned to the sea alive and uninjured. This could apply to entangled sea turtles.

**Released Injured [3]:** 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 [4]:** The turtle died due to injuries incurred during fishing operations, or was returned to the sea while comatose.

**Escaped [5]:** You observed the turtle leaving the gear or deck unaided after capture or entanglement, with no apparent injuries.

**Treated as Catch [6]:** The turtle was not previously dead and was sacrificed for market, table, or other use.

**Other/Unknown [7]:** The final fate of the turtle involved in the set is unknown or whose condition after leaving the gear or deck was unobserved.

**Describe Any Injuries:** If you make any notes in this section of the form, record a 1 for yes in the code box; if not, record a 2 for no.

**Photos Taken?** If you took photographs of the turtle, record a 1 for yes in the code box; if not, record a 2 for no. Record the camera and frame numbers on the back of the form.

**Samples Collected?** If you collect biopsies (see Specimen Collection section for Sea Turtle, Biopsy sample instructions), record a 1 for yes in the code box; if not record a 2 for no. Describe the sample taken on the back of the form.

### **Position in Net (*Gillnet Only*)**

**Horizontal:** In the box, record the one digit code indicating the animal's position in the net relative to the length of the net as it is retrieved.

- ☼ **1** - Found in the first third of the net.
- ☼ **2** - Found in the middle third of net.
- ☼ **3** - Found in the final third of net.
- ☼ **4** - Position unknown or impossible to determine

**Vertical:** In the box, record the one digit code indicating the animal's position relative to the depth of the net.

- ☼ **1** - Found near the cork line, or in the upper third of the net.

- ☼ **2** - Found mid-net, in middle third of the net.
- ☼ **3** - Found near the lead line, or in lower third of the net.
- ☼ **4** - Position unknown or impossible to determine.

## Tags

**Tags Present When Captured:** If the turtle has been tagged, record a 1 for yes in the code box and record tag numbers in the six digit code boxes. Right justify tag numbers; leading zeroes are not necessary. If there are no tags on the turtle, record a 2 for no, or a 3 for unknown.

**Tag Type:** If the tag is metal, record a 1 in the code block. If the tag is plastic, record a 2.

**Tag Number:** Record the tag number of any tag found on this turtle.

**Tags Removed:** Did you remove the tag? Record a 1 for yes, 2 for no. Only unreadable tags or those that are about to fall off should be removed. Tags may also be removed from dead turtles.

**Address:** On this line, print the return address on the tag(s).


**Tags Applied By Observer:** Did you apply a tag(s) to the turtle? Record a 1 for yes, 2 for no.

**Tag Type:** If the tag is metal, record a 1 in the code block. If the tag is plastic, record a 2.

**Tag Number:** Record the tag number of any tag you attached to this turtle.



## SEA TURTLE DICHOTOMOUS KEY




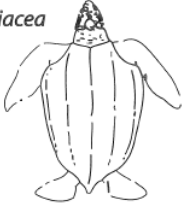
# Sea Turtle Identification

**DOES THE TURTLE HAVE A HARD SHELL?**

**NO**

**Leatherback:** 5 to 7 longitudinal ridges on back; no scales or claws on flipper; adults reach 8 to 9 ft

*Dermochelys coriacea*

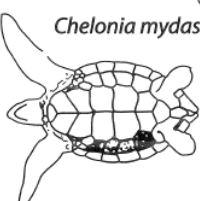
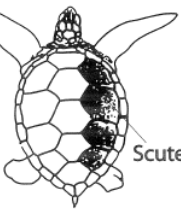
Belly Back

**YES**

**Four (4) Pairs of Lateral Scutes**

**Green:** serrated lower jaw; four pairs non-overlapping scutes adults reach 5 ft

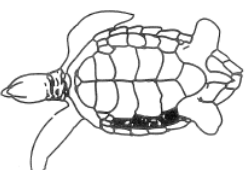
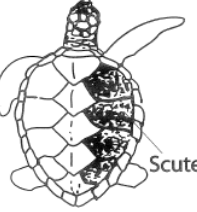
*Chelonia mydas*

Belly Back

**Hawksbill:** non-serrated lower jaw four pairs thick overlapping scutes adults reach 3 ft

*Eretmochelys imbricata*

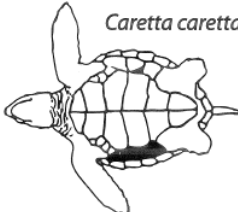
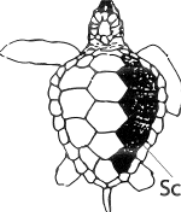



Belly Back

**Five (5) or More Pairs of Lateral Scutes**

**Loggerhead:** reddish-brown coloring 5 pairs of scutes adults reach 7 ft

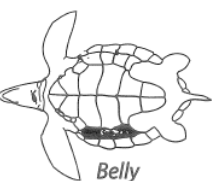
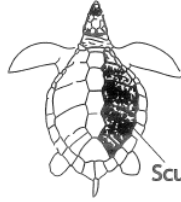
*Caretta caretta*

Belly Back

**Olive (Pacific) Ridley:** grey to olive green coloring 5 or more pairs of scutes adults reach 2 ft

*Lepidochelys olivacea*

Belly Back

Images provided to NMFS by: Seattle Aqu/W.J. Nickols 2003

# SEA TURTLE LIFE HISTORY FORM

SET #

DATE (YYYY, MM, DD)

TRIP -

SPECIMEN    **T**

LATITUDE

LONGITUDE

### SPECIES:

OLIVE RIDLEY [ LV ]

GREEN / BLACK [ CM ]

LEATHERBACK [ DC ]

HAWKSBILL [ ET ]

LOGGERHEAD [ CC ]

UNIDENTIFIED [ LIT ]

### 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

### POSITION IN NET:

HORIZONTAL

VERTICAL

[ 1 ] FOUND IN FIRST THIRD OF NET

[ 1 ] FOUND IN UPPER THIRD OF NET

[ 2 ] FOUND IN MIDDLE THIRD OF NET

[ 2 ] FOUND IN MIDDLE THIRD OF NET

[ 3 ] FOUND IN FINAL THIRD OF NET

[ 3 ] FOUND IN LOWER THIRD OF NET

[ 4 ] POSITION UNKNOWN

[ 4 ] POSITION UNKNOWN

### TAGS:

1. TAGS PRESENT WHEN CAPTURED: YES NO UNK  PLASTIC [ 1 ]   
[ 1 ] [ 2 ] [ 3 ] METAL [ 2 ]

TAG # TAG # TAG(S) REMOVED?

YES NO   
[ 1 ] [ 2 ]

ADDRESS: \_\_\_\_\_

2. TAGS APPLIED BY OBSERVER: YES NO  PLASTIC [ 1 ]   
[ 1 ] [ 2 ] METAL [ 2 ]

TAG # TAG #

### 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 ] \_\_\_\_\_

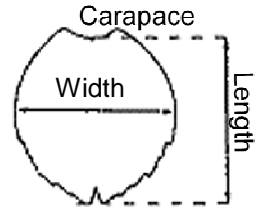
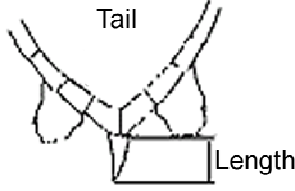
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PHOTOS Taken?

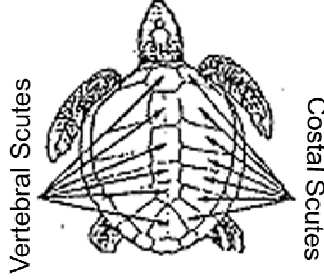
SAMPLES COLLECTED? YES [ 1 ] NO [ 2 ] (describe on back)

95 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.

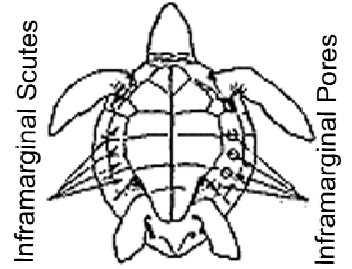
ADDITIONAL COMMENTS

Dorsal View



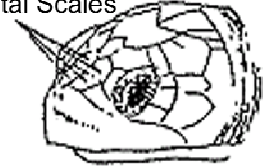
Ventral View



One Pair Prefrontal Scales



More Than One Pair Prefrontal Scales




# MARINE MAMMAL LIFE HISTORY FORM

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## INTRODUCTION

The Marine Mammal Life History Form (MMLH) is used to record the biological data from specimens processed by observers. Emphasis is on obtaining baseline reproductive data of coastal marine mammal species for which little information is available. These data are used to estimate age at sexual maturity, birth rates, gestation periods, calving interval, life span and sex ratios. The life history data together with the mortality and population abundance data will be used to ascertain whether changes in population abundance are due to activities of the fishery.

The MMLH is designed for volume specimen processing in the field, allowing the observer to write a minimum of information by checking off blocks in the upper "field" section of the form. The related shaded blocks are coded after review and verification of the forms and the collected specimen parts by lab personnel. Collected specimen materials are processed in the lab, and the data are then recorded in the lower "lab" section of the MMLH.

## GENERAL INSTRUCTIONS

Whenever possible, collect the entire carcass of cetaceans, sea otters, Steller sea lions, and fur seals. Assign each animal a specimen number, identify the species (or stock if appropriate), determine sex, measure total length, maximum girth, flipper length (pinnipeds only), and collect a tissue biopsy. Record this information on the MMLH.

If the whole carcass is collected, mark the "YES" box next to carcass under the section "Were these Collected?". Otherwise dissect the specimen and collect the requested specimen material. Dissection techniques may be reviewed in *Small Cetacean Dissection and Sampling*: NOAA-TM-NMFS-SWFC-198.

If you cannot collect a particular sample or measurement, explain why in the ADDITIONAL COMMENTS section.

Complete only the "In Field" portion of the form. Do not mark the shaded boxes.

Dissection priority is as follows:

Sex  
Length  
Girth  
Rear Flipper Length (pinnipeds only)  
Carcass  
Head  
Gonads (ovaries or testes)  
Teeth  
Tissue Biopsy  
Stomach  
Blubber  
Adrenals  
Fetus  
Fetus Biopsy  
Other - Check special instructions

## DATA ELEMENTS

**Specimen Number:** Record your three letter code and consecutive four digit number for each specimen biopsied, sexed and measured, collected whole or dissected.

**Cruise Number:** Record the unique ten digit number assigned by the Logistics Coordinator.

**Date:** Date the net was tended or retrieved. Record the last two digits of the year, the two digits representing the month, and the two digits representing the day.

**Set Number:** Sets are numbered consecutively for each observed trip beginning with 01. If you board the vessel in the middle of a trip, begin the number sequence for the observed sets with 01, not with the number of the sets that the vessel has already completed.

**Latitude:** Record the degrees (two digits), minutes (two digits) and tenths of latitude at the time of capture.

**Longitude:** Record the degrees (three digits), minutes (two digits) and tenths of longitude at the time of capture.

**Species:** Record the scientific name of the specimen.

**Sex:** Mark the box representing the sex of the specimen.



**Length:** For cetaceans, record to the nearest centimeter, the length from the tip of the upper jaw to the notch of the tail fluke. For pinnipeds, record to the nearest centimeter, the length from the tip of the snout to the end of the tail.

*Note: If the animal cannot be straightened out due to rigor mortis, record the curvilinear length along the animal's backbone.*

**Curvilinear:** If the length of the animal was determined by a curvilinear measurement mark the "Y" box, if not mark "N".

**Girth:** For cetaceans, record to the nearest centimeter the girth measured just anterior to the leading edge of the dorsal fin. For *Lissodelphis borealis* and pinnipeds, measure girth at the axilla, just posterior to the insertion of the flippers.

**Rear Flipper Length:** For PINNIPEDS, record the distance in centimeters from the anterior insertion of the **right** rear flipper to the tip of the first toe.

**Lactating:** Is there any indication of lactation? Mark the appropriate box. If the specimen is a male, leave this box blank.

**Fetus M/F:** Mark the appropriate box indicating the sex of any fetus  $\geq 25$  cm.

**Fetus Length:** Record in centimeters and tenths the length of any fetus  $\geq 25$  cm.

*Note: If the animal cannot be straightened out due to rigor mortis, record the curvilinear length along the animal's backbone.*

**Curvilinear:** If the length of the fetus was determined by a curvilinear measurement mark the "Y" box, if not mark "N".

### Were These Collected?

Mark the box or boxes for each specimen processed indicating which items you have collected. If the question is not relevant to the sex of the specimen, leave the boxes blank.

**Carcass:** Did you tag and store the whole specimen in the ship's freezer or cooler?

**Head:** Did you collect, tag and package the head? Leave blank if the whole carcass was collected.

**Teeth:** Did you remove, tag and store a jaw sample? Leave blank if the head or carcass was collected.

**Stomach:** Did you remove, tag, package and place the stomach in a cooler or freezer? Leave blank if the whole carcass was collected.

**Blubber:** Did you collect a 10 cm by 10 cm section of skin, blubber and underlying muscle? (cetacean, dorsal side - pinniped, ventral side) Leave blank if the whole carcass was collected.

**Tissue Biopsy:** Did you cut a 2 cm by 4 cm section of skin or use a biopsy dart to collect a sample? (cetacean, dorsal body surface - pinniped, rear flipper)

**Ovaries:** Did you remove the reproductive tract with ovaries intact, tag the left horn of the uterus, and store in the cooler or freezer? Leave blank if the whole carcass was collected.

**Fetus:** Did you collect a fetus <25cm long? Leave blank if the fetus was  $\geq 25$  cm or the whole carcass was collected.

**Fetus Biopsy:** Did you collect a skin biopsy from a processed fetus  $\geq 25$ cm?

**Testis:** Did you remove, tag and store the right testis with epididymis? Leave blank if the whole carcass was collected.

**Adrenals:** Did you collect the adrenal glands from this specimen? Leave blank if the whole carcass was collected.

**Other:** Did you collect any items not specifically listed? Describe what you collected in the ADDITIONAL COMMENTS section. Leave blank if the whole carcass was collected.

**Photos:** Did you take any photographs of this specimen? Record the camera and frame numbers in the ADDITIONAL COMMENTS section.

## Identification

**Diagnostic Characteristics:** List at least five of the diagnostic characteristics you used to identify this animal.

**Sketch:** Sketch the features you saw and used to identify this animal.

**ADDITIONAL COMMENTS:** Use this section to record any supplemental information pertinent to this specimen.

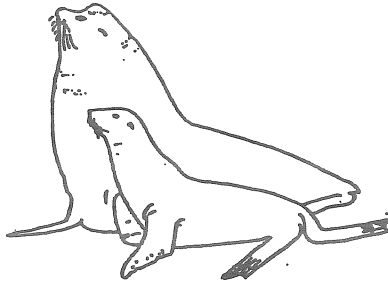






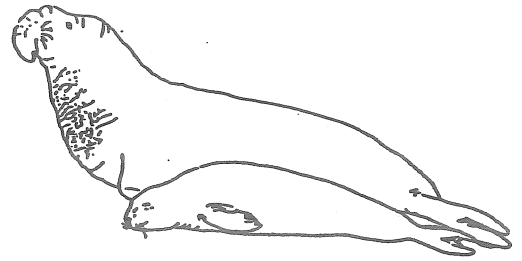
**Steller Sea Lion**  
*(Eumatopias jubatus)*

M. to 13'/1800#; F. to 9'/600#; external ear flaps; long foreflippers; gap between 4th and 5th post canine teeth; short, stiff hair, brown to blonde; no distinct sagittal crest.



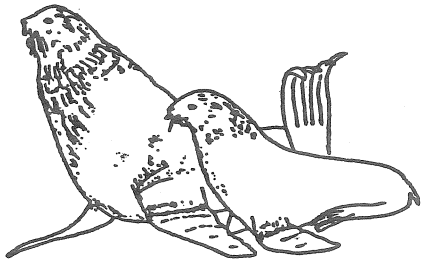
**California Sea Lion**  
*(Zalophus californianus)*

M. to 8'/800#; F. to 6'/600#; external ear flaps, long foreflippers; M. prominent sagittal crest-light top knot; short, stiff hair, dark brown to light tan.



**Northern Elephant Seal**  
*(Mirounga angustirostris)*

M. to 16'/4000#; F. to 10'/2000#; M. large, pendulous nose; F. "roman nosed"; short foreflippers; hind flippers angled backwards; 1st and 5th hind toes noticeably longer than others; minute ear hole; 4 incisors upper jaw.



**Northern Fur Seal**  
*(Callorhinus ursinus)*

M. to 7'/650#; F. to 5'/130#; very long hind flippers; short, pointed snout; fur on foreflippers stops abruptly at wrist; soft underfur/course guard hairs; external ear flaps.



**Guadalupe Fur Seal**  
*(Arctocephalus townsendi)*

M. to 8.5'/650#; F. to 6'/270#; very long hind flippers; fur extends onto foreflippers; "collie-like" face-dished in profile; soft underfur/course guard hairs; external ear flaps.



**Harbor Seal**  
*(Phoca vitulina)*

M./F. to 6'/300#; spotted/blotchy coat-variable coloration; short foreflippers; hind flippers angled backwards; large ear hole; sharp nails near ends of toes; round head; 6 incisors upper jaw.

ADDITIONAL COMMENTS:

## SIGHTING RECORD

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### INTRODUCTION

This form is used to record sightings of **live** marine mammals, turtles and protected seabirds and to document any interactions between these animals and the fishing vessel or gear. It is not used to record seabird sightings, with one important exception. Any and all sightings of **Brown Pelicans** (during fishing activity only) are recorded on the form. This form should also be used to document any interactions between **Brown Pelicans** with the fishing gear. Documentation of marine mammal, turtle and pelicans with fishing gear and vessels is used to quantify incidental or intentional take of these animals. These data are also used for analyses of distribution.

Interaction data are high priority items. However, documentation of interactions should not compromise the data you collect on marine mammals and turtles captured by the gear.

Marine mammal, turtle and protected seabird sighting data for animals not interacting with the gear or vessel are low priority. Do not allow searching for marine mammals to interfere with observing fishing activities or documenting interactions between animals and the gear.

### GENERAL INSTRUCTIONS

This form documents an interaction or sighting involving as many as three species of animals. If several species are in the area, but do not form a group, they should be treated as separate sightings or interactions. In this case, complete a separate data form with a unique sighting number for each cohesive group of animals. If the sighting or interaction involves more than three species, use additional forms as needed. In this case, record the same sighting number on each additional form.

#### Sighting

A sighting is the initial observation of a single marine mammal or turtle or a group of marine mammals or turtles. A group is defined as an association of animals behaving in a similar or unified manner. Groups may contain several different species of animals engaged in similar behaviors or traveling together (e.g. a school of dolphins traveling as a cohesive group in the same direction; a number of sea lions and white-sided dolphins milling and feeding together over the same area; or a diffuse group of Risso's dolphins traveling in the same direction or milling over the same general area).

Separate sightings may include situations where distinct groups of animals pass each other or cross paths during their individual activities. Defining a sighting can be very subjective at times, especially if animals are moving between groups or groups are splitting and fusing. Generally, in these situations, you would begin another sighting form if a new, distinct group of animals came into play. With experience, you will be able to sense cohesiveness within marine mammal groups.

Turtles infrequently associate in groups. If several turtles are visible in the same area, classify them as a single sighting or interaction and describe the association in the Narrative Section.

**Brown Pelicans will frequently be at the docks, in the harbor or you may see them on the way to the fishing ground. If the gear is not in the water and fishing is not occurring, do not report these sightings. Brown Pelican sightings should only be reported while the fishing gear is deployed.**

### **Interaction**

An interaction occurs when marine mammals, turtles or protected seabirds come within 100 meters of the boat or net. In the situation where a sighting becomes an interaction, the sighting and the interaction are considered one event. Evidence of animals interacting with the gear or catch includes: observation of animals at the net; animals stealing fish from the net; and evidence of fresh marine mammal damage to the catch. Use as many data forms as necessary to document the event; all forms receive the same sighting number.

## **DATA ELEMENTS**

**Trip Number:** The unique ten digit number assigned by the Logistics Coordinator.

**Sighting Number:** The consecutive two digit number corresponding to this sighting or interaction. Begin with sighting 01 on each observed trip.

**Date:** The date this sighting or interaction occurred. Record the four digits of the year, the two digits representing the month, and the two digits representing the day of the month.

**Set Number:** This set number is the same as the set number recorded on the Gear and Set Data form for this set. If the vessel activity is other than net retrieval, leave this field blank.

**Position:** The position of the vessel at the time of the sighting. If the net is being retrieved, the position may be obtained from the Gear and Set Data form. Record the degrees (two digits), minutes (two digits), and tenths of a minute (one digit) of latitude. Record the degrees (three digits), minutes (two digits), and tenths of a minute (one digit) of longitude. If latitude and longitude are not

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available on board the vessel, use the Narrative Section to record information which will allow you to determine the position later at the field office.

**Loran:** If latitude and longitude are not available, record the loran readings for this sighting on the line below the prompt.

**Time Begin:** Record the local 24 hour time when the interaction or sighting begins. If a sighting becomes an interaction, record the time at which the sighting became an interaction in the Narrative Section.

**Time End:** Record the local 24 hour time when the interaction or sighting ends.

**Vessel Activity:** Record the activity of the vessel at the time of sighting:

- ☼ **1 - Net Retrieval** - During net retrieval only. Must have a set number.
- ☼ **2 - Net Set** - During net setting or while net is set.
- ☼ **3 - Drifting** - Drifting, not fishing.
- ☼ **4 - Motoring**
- ☼ **5 - Other.** Describe any other activity in the Narrative Section.
- ☼ **6 – Trolling** – Vessel is actively trolling with jigs
- ☼ **7 – Pole and Line Fishing** – Vessel is actively fishing with pole & line

**Gear Encounter:** If you observe behavior that would lead you to believe the species recorded above is interacting with the gear or catch, record a "Y" for yes in this box; if not, record an "N" for no.

**Closest Distance to Vessel:** Record in meters, the closest distance any animal came to the vessel during the time of the sighting or interaction.

**Closest Distance to Gear:** Record in meters, the closest distance any animal came to the fishing gear during the time of the sighting or interaction.

## Deterrents

**Firearm:** If the vessel operator uses any firearm as a deterrent, record a "Y" for yes; if not, record an "N" for no. Describe the use of this deterrent and the animal's reaction to it in the Narrative Section.

**Seal Bomb:** If the vessel operator uses seal bombs as a deterrent, record a "Y" for yes; if not, record an "N" for no. Describe the use of this deterrent and the animal's reaction to it in the Narrative Section.

**Other:** If the vessel operator uses any other form of deterrent, record a "Y" for yes; if not, record an "N" for no. Describe the use of this deterrent and the animal's reaction to it in the Narrative Section.

## Species 1

**Species Name:** Record the common name of the first species observed. If this is not known, print "unidentified" coupled with the closest taxonomic classification you are certain pertains to the animal (e.g., unidentified phocid).

**Species Code:** Record the code from the Species Code list.

**Best Estimate:** Record your best estimate of the number of individuals of this species (four digits).

**High:** Record your high estimate of the number of individuals of this species (four digits).

**Low:** Record your low estimate of the number of individuals of this species (four digits).

**Injured:** Record the number of individuals of this species (three digits) that are clearly injured as a result of an interaction.

*Note: An injured animal is one that has sustained an obvious physical injury. Levels of injury may range from potentially life-threatening (cranial gunshot wound) or serious (profuse bleeding, loss of limbs, loss of an eye, gunshot wound) to moderate (limited bleeding with associated tissue loss, broken limbs). An injured animal may lie at the surface, breathing irregularly. It may appear to swim abnormally, listing to one side, or weakly swimming at or near the water's surface. Animals that are released from the net with netting attached should be classified as injured. If you categorize an animal as injured, describe its injuries in the Narrative Section.*



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*If the animal releases itself or is released from the net by fishermen and can swim normally, it should not be recorded as injured. It is likely that the animal will have minor cuts and abrasions from entangling in the net. Describe the extent of these superficial injuries in the Narrative Section.*

**Dead:** Record the number of animals of this species that are clearly dead as a result of this interaction.

*Note: Any animal in an obvious post mortem state is defined as dead. Dead animals will show a lack of muscular activity and may float passively at or below the water's surface. Marine mammals and turtles are very robust and have a tremendous healing capacity. Unless you actually see an animal die of its injuries, classify it as injured.*

**List Identifying Characteristics:** List all identifying characteristics you saw which led to your identification of this species.

**Sketch Identifying Characteristics:** Sketch the animal using the identifying characteristics you observed to make your species identification.

## Narrative

Describe concisely the behavior of the animals during the sighting or interaction. In the case of an interaction, describe carefully the use of any deterrents. Include times of particular events, or observations. Use this section to explain any information that you feel could not be adequately documented in the coded information on the front of the form.

## Species 2

**Species Name:** Record the common name of the second species observed. If this is not known, print "unidentified" coupled with the closest taxonomic classification you are certain pertains to the animal (e.g., unidentified phocid).

Record data elements Species Code, Best Estimate, High, Low, Injured and Dead as described for Species 1 above.

**List Identifying Characteristics:** List all identifying characteristics you saw which led to your identification of this species.

**Sketch Identifying Characteristics:** Sketch the animal using the identifying characteristics you observed to make your species identification.

### **Species 3**

**Species Name:** Record the common name of the second species observed. If this is not known, print "unidentified" coupled with the closest taxonomic classification you are certain pertains to the animal (e.g., unidentified phocid).

Record data elements Species Code, Best Estimate, High, Low, Injured and Dead as described for Species 1 above.

**List Identifying Characteristics:** List all identifying characteristics you saw which led to your identification of this species.

**Sketch Identifying Characteristics:** Sketch the animal using the identifying characteristics you observed to make your species identification.

### **Additional Notes/Sketches**

Use this section for notes or sketches that could not be included in the Narrative Section or boxes for diagrams.



# Sighting Record

TRIP NUMBER   -   -       SIGHTING #   DATE (YYYY MM DD)       SET NUMBER

Position - Latitude         Position - Longitude         Loran: \_\_\_\_\_  
Deg. Min. Deg. Min.

Time Begin     Time End     Vessel Activity  1- Net Retrieval 5- Other  
2- Net Set 6- Trolling  
3- Drifting 7- Pole & Line  
4- Motoring Gear Encounter (Y/N)

Closest Distance to Vessel    Meters Closest Distance to Gear    Meters Deterrent(s) Used (Y/N)  Fire arm  Seal Bomb  Other

Species 1 \_\_\_\_\_ Species Name \_\_\_\_\_ Sp. Code

Best Estimate     High     Low     Injured    Dead

List Identifying Characteristics:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Sketch Identifying Characteristics:

Narrative:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

Species 2

Species Name

Sp. Code

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Best Estimate

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High

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Low

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Injured

--	--	--

Dead

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List Identifying Characteristics:

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Sketch Identifying Characteristics:

Species 3

Species Name

Sp. Code

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Best Estimate

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High

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Low

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Injured

--	--	--

Dead

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List Identifying Characteristics:

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Sketch Identifying Characteristics:

Additional Notes / Sketches:

## SPECIMEN COLLECTION

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### GENERAL INSTRUCTIONS

Process dead animals in the following order: cetaceans, pinnipeds, sea otters, sea turtles, sea birds, fish and invertebrates.

***Specimen numbers are to be assigned only to specimens that have been sexed and measured or biopsied while in the water.***

The priorities of sample collection are as follows:

- ☼ Collect data on sex, length, girth, flipper length from all marine mammal specimens.
- ☼ Collect the entire carcass of cetaceans, sea otters, Steller sea lions, and fur seals.
- ☼ If the entire carcass cannot be collected, bring back the heads of cetaceans, Steller sea lions, and fur seals.
- ☼ Collect gonads, teeth, tissue biopsy, stomachs, blubber and underlying muscle, adrenal glands from all dissected marine mammals.
- ☼ Collect fetus <25 cm and skin biopsy from fetus > or = 25 cm.
- ☼ Collect tissue biopsies and photos from all sea turtles. Collect descriptive and tag data on sea turtles. Discard all sea turtles after processing; retain any tags.
- ☼ Discard all seabirds, even if you are unable to identify them.
- ☼ Record fish and invertebrate measurements of the species specified on the Fish and Invertebrate Data Form.
- ☼ Record and collect shark measurements, gonads and vertebrae.
- ☼ Record and collect billfish measurements. Take photographs of striped marlin, blue marlin, black marlin, sailfish, and shortbilled spearfish.

## COLLECTION REQUIREMENTS

Each sample is to be individually tagged and labeled. The label is to have the following information: specimen number, species of animal, cruise number, and sample identification (e.g. stomach). If many samples are collected from the same animal and placed into a common plastic bag, ensure that each part is properly tagged and labeled. Label the plastic bag with a large tag clearly stating its contents.

Label whole specimens with tags through the lower jaw, inside the blow hole, and the anus. Carve the specimen number into the carcass if possible.

Straight line body lengths are measured using a measuring stick and calipers; a measuring tape is used for curvilinear body measurements.

**Biopsy samples:** Collect a section of skin tissue, 2 cm by 4 cm, from each marine mammal and place it into the vial, being sure all tissue is submerged. Leave off as much blubber as possible. Vials contain dimethyl sulfoxide (DMSO). Avoid contact with this solution. Although DMSO is not toxic, it can be an irritant that will penetrate skin and draw other chemicals along with it.

- a. Use a fresh blade and gloves for each sample taken to avoid contamination of the samples.
- b. Insert a label with the specimen number, cruise number, and species of animal written with a pencil into the collection vial.
- c. Label the outside of the vial with a permanent marker.
- d. Store at room temperature. **Do Not Freeze.**

## Cetaceans

Tag carcasses or samples with the appropriate specimen number. A specimen number is assigned to all animals that are at least biopsied, or measured and sexed, and have data recorded on a life history form. Fetuses are assigned the same specimen numbers as their mothers. Append an "F" to fetal biopsy specimen numbers.

Dissection methods are described in *Small Cetacean Dissection and Sampling: A Field Guide*: NOAA-TM-NMFS-SWFC-198.

Whenever feasible, collect the whole animal. If the whole dolphin or porpoise cannot be retained, retain the head. Do not remove a jaw section and take all other required samples.

If circumstance prohibits collection of the entire head, collect the jaw along with the other required samples.

## **Pinnipeds**

Whenever feasible, collect the entire carcasses of Steller sea lions, northern fur seals and Guadalupe fur seals.

**Head:** If the entire carcass can not be collected, collect heads from Steller sea lions, northern fur seals and Guadalupe fur seals. Collect heads from all tagged or branded pinnipeds.

**Teeth:** Collect undamaged the upper and lower canine teeth. To insure that the entire canine root is collected, the jaws should be cut between the 3rd and 4th post- canine (premolar) teeth on both the left and right sides. Another reference point for this cut is just in front of the orbital arch (the eye socket) and angled slightly back. The jaw section can be stored dry or frozen. Do not place the jaw in formalin or alcohol. **Note:** Teeth and jaw samples from cetaceans are collected and preserved using a different method.

**Blubber:** Collect a 4 inch square section of skin, blubber and underlying muscle from the **ventral** side of the animal. Do not take blubber from the head or limbs. Wrap the sample in aluminum foil (shiny side out) and place in a plastic bag with the specimen label both inside and on the outside. Put the sample in the freezer or cold storage. Do not put the sample in formalin or alcohol.

**Stomach:** Collect stomachs from all pinnipeds. Make sure the bag is labeled both inside and out with the specimen number. Freeze as soon as possible. Do not store in alcohol or formalin.

## **Sea Turtles**

**Biopsy samples:** Collect a section of skin tissue, 2 cm by 4 cm, from each sea turtle. Skin dorsal of the hind flippers is the preferred area to biopsy. However, if for some reason it is not possible to sample this region, skin in the ventral pectoral area, at the base of the front flippers, may be used. Place the skin tissue into a Whirl-Pak plastic bag. Add ordinary table salt, being sure to cover all tissue.

- a. Use a fresh blade and gloves for each sample taken to avoid contamination of the samples.
- b. Insert a label with the specimen number, cruise number, and species of animal written with a pencil into the collection vial.
- c. Label the outside of the Whirl-Pak bag with a permanent marker.







## DATA REVIEW

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### GENERAL INSTRUCTIONS

Prior to data entry each form should be checked carefully for Vessel Codes, Observer Codes, Port Codes, and Species Codes. When editing at your office, use a blue pencil to cross out the current entry and write in the new one. Explain why the change was made in the margin and initial the form. Do not erase or obliterate the field data and be sure to use a blue pencil.

### DATA CHECKS

Check the following data items on the top line of all forms:

**Trip Number:** Check all data forms to ensure you entered the correct trip number.

**Date:** Check all data forms to be sure that the date is encoded correctly.

**Set Number:** Set numbers should begin with the number 01 for a given trip and follow consecutively. Check for missing numbers and duplicates.

### Trip Specifications Record

**Vessel Name:** Verify the spelling of the vessel name.

**Vessel Permit Number:** Verify the Vessel Permit Number.

**State Plate Number:** Verify the vessel's State Plate Number.

**Port of Departure and Landing:** Enter and verify the port code of the port of departure and landing.

### Gear and Set Data Form

**Percent Net Observed:** If you observed the whole net, this should equal 100%. If you only observed a portion of the net, this should equal the percentage observed.

**Target Species:** Verify the codes and spelling of the target species.

**Latitude and Longitude:** If latitude and longitude were not available at the time of the set, calculate the position from the Loran readings using the conversion program. Calculate dead reckoning positions from your notes.

**Environment:** Be sure "In Kelp" was recorded only if there was a kelp bed within 300 ft. "In Kelp" should not be recorded if there was only floating kelp in the area.

**Water Depth:** Water depth should be recorded in fathoms.

**Date:** Verify that the month and day are the date the net was set.

**Begin Set Time:** If you did not observe or were unable to ascertain the time of the setting of the net, leave this field blank.

**Begin Pull Time:** This is the time observation began even if only a portion of the net was observed.

**Soak Total Time:** If the net was set overnight, make sure that the total hours are correct.

**Ship Activity:** Verify the code entered is correct.

**Lost Netting:** If any netting was lost, check that this code block was completed.

**Percentage Net:** Verify that the percentage equals 100 or that the total of the sections filled out equals 100.

**Net Type:** Verify that the code entered represents the type of net observed.

**Material:** Verify that the code entered represents the type material observed.

**Strength:** If the operator did not know the twine size or pounds test, this field should be left blank.

**Length:** If the net is composed of several different gear types, this is not the total length of the net. It is the length of the piece described in this section. Check the other NET CHARACTERISTICS sections to be sure the correct lengths were entered.

**Depth:** Net depth should be recorded in number of meshes.

**Hanging Line Material:** Verify that the code used represents the type of material observed.

**Mesh Sizes:** Verify that the mesh size is entered to the nearest half inch.

**Hanging Length:** This should be the distance between knots on the corkline to the nearest inch.

**Meshes Hanging:** This should not exceed two digits. Be sure that dropped meshes are included.

**Extender Length:** This should be the length of the line joining the corkline to the surface floats.

### **Catch Tally Sheet**

**Species Name:** Check the spelling of the species name.

**Species Code:** Verify the species code used.

**Total:** Recount the hash marks to be sure the total number is accurate.

**Disposition:** The total of these three fields should equal the total number caught.

**Number Damaged:** Recount the hash marks to verify the total.

### **Non-Fish Tally Sheet**

**Species Name:** Check the spelling of the species name.

**Species Code:** Verify the species code used.

**Location:** Verify the location in the net with that shown on the net diagram.

**Condition:** Check that only the codes D, A, I, or U are used.

**Sex:** Check that only the codes M, F, or U are used.

**Specimen Number:** Verify the specimen number with the one used on the life history form.

### **Fish and Invertebrate Measurement Data**

**Species Name:** Check the spelling of the species name.

**Species Code:** Verify the species code used.

**Length:** This should be in centimeters and not exceed three digits.

**Sex:** Only an "M", "F" or a "U" should be entered.

**Disposition Code:** Verify that the disposition code reflects what was done with the fish.

### **Shark and Billfish Life History Data**

**Species Name:** Check the spelling of the species name.

**Species Code:** Verify the species code used.

**Sex:** Only an "M" , "F" or a "U" should be entered.

**Length:** All lengths should be in centimeters.

**Collection:** When Y appears in the first column a specimen number must appear in the second. The specimen number must end in an S for sharks and billfish.

**Maturity:** The fields should only be filled for one sex and should not be filled with N's if the animal was not examined.

Check that the number of sharks and billfish processed is less than or equal to the total recorded for each species on the Catch Tally Sheet.

### **Sea Turtle Life History Form**

Verify that a Sea Turtle Life History Form exists for every instance of sea turtle entanglement.

**Specimen Number:** Verify that the specimen is correctly numbered in the sequence for turtles.

**Position:** Verify the position data with that recorded on the Gear and Set Data Form.

**Identification:** Check that the boxes are completely filled out.

**Dimensions:** Check that the boxes are completely filled out and that measurements are in centimeters.

**Condition:** Check to see that the fate of the turtle has been recorded.

## Marine Mammal Life History Form

**Specimen Number:** Check that the number is sequentially correct.

**Position:** Verify the position data with that recorded on the Gear and Set Data Form.

**Species Name (scientific):** Check the spelling of the species name.

**Sex:** Verify that only one box is checked.

**Length:** This is the length measured to the nearest centimeter. Estimates belong in the ADDITIONAL COMMENTS section. Was the measurement curvilinear?

**Girth:** Check that measurements are in whole centimeters.

**Rear Flipper Length (pinnipeds only):** Verify that measurements are recorded in centimeters.

**Fetus:** Was fetus data collected?

**Were These Collected?:** Check to see that all required boxes are correctly marked.

**Diagnostic Characteristics:** Check that the characteristics of this specimen are listed.

**Sketch:** Check to see that a sketch of the specimen was completed.

Check the Non-Fish Tally Sheet to ensure that this specimen was recorded there and the Gear and Set Data Form to ensure that location in the net was recorded.

## Sighting Record

**Sighting Number:** Verify that this sighting number is in the proper sequence.

**Set Number:** A set number should only be entered if vessel activity is "net retrieval".

**Position:** Verify the position data with that recorded on the Gear and Set Data Form.

**Identification:** Check that the listed characteristics match the sketch and support the identification.

**Vessel Activity:** Verify the code used is correct.

**Deterrent(s):** If deterrents were used, verify the type with your notes.

**Species Code:** Verify the species code with the species name.



## GEAR & MAINTENANCE

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**Observers are responsible for the safe use and maintenance of equipment issued and accountable for lost or damaged gear.** Observer gear is **not** to be left unattended in parked vehicles. The following is a list of the equipment that is issued to observers on each trip. All things on the list will accompany the gillnet observers while other fisheries may only require some of the items.

### EQUIPMENT LIST

**Form holder:** Used as a clipboard and stores extra forms, pencils, etc.

**Pencils and waterproof marker:** Number two pencils are used on the forms and black test scoring pencils on the specimen tags. The felt tip marker is used for luggage labels.

**Data Forms:** The forms are printed on waterproof paper.

**Click counters:** Hand held counters are used to record the numbers of individual species entangled in the net.

**Tape measure:** Used to measure sea turtles and the girth of cetaceans and pinnipeds; the length of fish (except sharks and billfish), and invertebrates.

**Measuring stick:** Used with moveable caliper jaws to measure total body length of cetaceans, pinnipeds, sea otters, sharks, and billfish.

**Sharpening steel:** A sharpening steel is used to maintain a sharp cutting edge on the dissection knife.

**Knife:** The knife is a sturdy, stainless steel boning knife used in dissections.

**Loppers:** Used to collect jaw/tooth samples from cetaceans and pinnipeds.

**Plastic bags:** A variety of plastic bags are issued for gonad, blubber, adrenal gland, stomachs, and cetacean heads.

**Aluminum foil:** Blubber samples are wrapped in aluminum foil (**shiny side out**).

**Cable ties:** Cable ties are used to tie off stomachs and secure specimen tags to samples.



**Body bags:** These are used to bring back whole animals, when possible.

**Specimen tags:** Tags are used to label specimens whether whole animals, tissue or jaw samples. Use test scoring pencils for labeling specimen tags.

**Field guides:** To assist with species identification; **stow inside, out of the weather.**

**Sea Bag:** Used to transport and store observer gear

**Safety and foul weather gear:** Observers are issued an Immersion Suit and a Type I PFD for use when vessel safety is in jeopardy. Both are equipped with emergency strobe lights. Observers are also issued foul weather gear, boots, and rubber gloves.

**EPIRB:** An Emergency Position Indicating Radio Beacon.

**GPS Unit:** A handheld global positioning system will be provided to record latitude and longitude. Make sure spare batteries are available for the unit.

**Camera:** A disposable 35 mm camera is issued for photographing marine mammals, turtles, and specimens which can not be identified or brought back for positive identification.

**Five gallon bucket:** Used to store and transport the observer's frozen specimens.

**Binoculars:** A pair of 7x50 binoculars is supplied to aid the observer in marine mammal sightings and identification.

**Watch:** Issued to ensure that time related data entries are accurate.

**Biopsy kit:** Used to collect tissue samples. The kit contains a knife handle, a supply of clean blades, a marker for labeling, DMSO vials, and specimen labels.

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## GEAR MAINTENANCE

*It is the observer's responsibility to maintain field gear.*

Exposure to seawater promotes corrosion and deterioration. Routine use of 3-in-1 oil or lubricating spray on the metal and moving parts of your equipment will help greatly to keep your gear in operating condition. **Please use them.**

Keep caliper jaws and meter sticks clean and dry. Calibrate with the measuring tape and adjust the stationary end of the caliper jaws as necessary.

Those items that have moving parts are susceptible to rust and corrosion. Tape measures, calipers, and loppers should be rinsed and wiped dry.

Life jackets, clipboards, knives, etcetera should all be cleaned with soap and water and then dried thoroughly. Foul weather gear can be washed in cold water on gentle cycle and line dried. Lubricate the zipper of the immersion suit and inspect the strobe light before every trip. Knives should be sharpened upon return from each trip.

The EPIRB is waterproof with its external antenna installed. Salt build-up on the case or exposed parts may be rinsed using fresh water.

Small bags, ties, and gloves are disposable and should be discarded properly after use. Identification guides and other paper goods should be wiped dry and kept inside.

The biopsy kit should be kept organized. Ensure that the lids are securely tightened on all of the vials. Keep the X-ACTO blades clean and dry. Make sure that the knife handle is rinsed with fresh water after each use to prevent corrosion.

Ensure that the camera and binoculars stay dry. If the binoculars get salt water on them, they should be rinsed with soap and water.

If any piece of equipment becomes unusable, the observer should return it to the Logistics Coordinator for a replacement.

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SPECIES CODES		AUGUST 2006
COMMON NAME	CODE	SCIENTIFIC NAME
Unknown Species	000	Unknown Species
<b>FISH</b>		
Anchovy, Northern	110	<i>Engraulis mordax</i>
Barracuda, California	130	<i>Sphyaena argentea</i>
Barracuda, Great	131	<i>Sphyaena barracuda</i>
Barracudinas	056	
Bass, Barred Sand	278	<i>Paralabrax nebulifer</i>
Bass, Giant Sea	280	<i>Stereolepis gigas</i>
Bass, Kelp	277	<i>Paralabrax clathratus</i>
Bass, Spotted Sand	276	<i>Paralabrax maculatofasciatus</i>
Bass, Striped	913	<i>Roccus saxatilis</i>
Billfish, Other Identified	950	Istiophoridae
Billfish, Unidentified	089	
Blacksmith	479	<i>Chromis punctipinnis</i>
Bonito, Pacific	003	<i>Sarda chiliensis</i>
Butterfish, Pacific	080	<i>Peprilus simillimus</i>
Cabazon	261	<i>Scorpaenichthys marmoratus</i>
Cod, Pacific	197	<i>Gadus macrocephalus</i>
Corbina, California	426	<i>Menticirrhus undulatus</i>
Crestfish	906	<i>Lophotus lacepede</i>
Croaker, Black	421	<i>Cheilotrema saturnum</i>
Croaker, Spotfin	422	<i>Roncador stearnsii</i>
Croaker, White	435	<i>Genyonemus lineatus</i>
Croaker, Yellowfin	423	<i>Umbrina roncadore</i>
Dogfish, Spiny	152	<i>Squalus acanthias</i>
Dogfish, Velvet	097	<i>Scymnodon squamulosus</i>

**COMMON NAME****CODE****SCIENTIFIC NAME**

COMMON NAME	CODE	SCIENTIFIC NAME
Dolphinfish	914	<i>Coryphaena hippurus</i>
Escolar, (Smith's)	013	<i>Lepidocybium flavobrunneum</i>
Escolar, Longfin (Black mackerel)	054	<i>Scombrolabrax heterolepis</i>
Fish, Other Identified	910	Pisces
Fish, Unidentified	700	Pisces
Flatfish, Other Identified	955	Pleuronectiformes
Flatfish, Unidentified	200	Pleuronectiformes
Flounder, Starry	231	<i>Platichthys stellatus</i>
Flyingfish, California	445	<i>Cypselurus spp.</i>
Fringehead, Onespots	681	<i>Neoclinus uninotatus</i>
Fringehead, Sarcastic	680	<i>Neoclinus blanchardi</i>
Garibaldi	482	<i>Hypsypops rubicundus</i>
Greenling, Painted	289	<i>Oxylebius pictus</i>
Grunion, California	181	<i>Leuresthes tenuis</i>
Guitarfish, Banded	183	<i>Zapteryx exasperata</i>
Guitarfish, Shovelnose	174	<i>Rhinobatos productus</i>
Hagfish Pacific	496	<i>Eptatretus stoutii</i>
Hake, Pacific	495	<i>Merluccius productus</i>
Halfmoon	478	<i>Medialuna californiensis</i>
Halibut Pacific	917	<i>Hippoglossus stenolepis</i>
Halibut, California	222	<i>Paralichthys californicus</i>
Herring, Pacific	121	<i>Clupea pallasii</i>
Herring, Round	122	<i>Etrumeus teres</i>
Jacksmelt	184	<i>Atherinopsis californiensis</i>
Kelpfish, Giant	501	<i>Heterostichus rostratus</i>
King Of The Salmon	912	<i>Trachipterus altivelis</i>
Lampfish, Bigfin	822	<i>Symbolophorus californiensis</i>

COMMON NAME	CODE	SCIENTIFIC NAME
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Lampfish, Dogtooth	824	<i>Ceratosopelus townsendi</i>
Lampfish, Sunbeam	823	<i>Lampadena urophaos</i>
Lancetfish, Longnose	909	<i>Alepisaurus ferox</i>
Lingcod	195	<i>Ophiodon elongatus</i>
Lizardfish, California	473	<i>Synodus lucioceps</i>
Louvar	191	<i>Luvarus imperialis</i>
Mackerel, Bullet	019	<i>Auxis rochei</i>
Mackerel, Jack	055	<i>Trachurus symmetricus</i>
Mackerel, Pacific	051	<i>Scomber japonicus</i>
Mackerel, Unidentified	050	<i>Auxis Spp.</i>
Manta	129	<i>Manta birostris - ? Sp.</i>
Marlin, Black	090	<i>Makaira indica</i>
Marlin, Blue	093	<i>Makaira nigricans</i>
Marlin, Striped	092	<i>Tetrapturus audax</i>
Midshipman, Plainfin	485	<i>Porichthys notatus</i>
Midshipman, Specklefin	486	<i>Porichthys myriaster</i>
Mobula	128	<i>Mobula sp.</i>
Mola, Common	292	<i>Mola mola</i>
Mola, Slender	298	<i>Ranzania laevis</i>
Mullet, Striped	135	<i>Mugil cephalus</i>
Needlefish, California	476	<i>Strongylura exilis</i>
Oarfish	911	<i>Regalecus glesne</i>
Oilfish	014	<i>Ruvettus pretiosus</i>
Opah	467	<i>Lampris guttatus</i>
Opaleye	475	<i>Girella nigricans</i>
Pacific sauri	114	<i>Cololabis saira</i>
Pipefish Bay	140	<i>Syngnathus leptorhynchus</i>
Pipefish, Snubnose	141	<i>Syngnathus arctus</i>

COMMON NAME	CODE	SCIENTIFIC NAME
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Pomfret, Dagger	907	<i>Taractes rubescens</i>
Pomfret, Pacific	915	<i>Brama japonica</i>
Pomfret, Sickle	908	<i>Taractichthys steindachneri</i>
Puffer, Pelagic	293	<i>Lagocephalus lagocephalus</i>
Queenfish	440	<i>Seriplus politus</i>
Rainbow Runner	058	<i>Elagatis bipinnulatus</i>
Ratfish, Spotted	166	<i>Hydrolagus colliei</i>
Ray, Bat	171	<i>Myliobatis californica</i>
Ray, California Butterfly	120	<i>Gymnura marmorata</i>
Ray, Pacific Electric	172	<i>Torpedo californica</i>
Ray, Unidentified	170	Myliobatoidea
Remora	127	<i>Remora remora</i>
Rockfish Yellowtail	259	<i>Sebastes flavidus</i>
Rockfish, Bank	663	<i>Sebastes rufus</i>
Rockfish, Black and Yellow	251	<i>Sebastes chrysomelas</i>
Rockfish, Blue	665	<i>Sebastes mystinus</i>
Rockfish, Bocaccio	253	<i>Sebastes paucispinis</i>
Rockfish, Bronzespotted	662	<i>Sebastes gilli</i>
Rockfish, Brown	267	<i>Sebastes auriculatus</i>
Rockfish, Canary	247	<i>Sebastes pinniger</i>
Rockfish, Chilipepper	254	<i>Sebastes goodei</i>
Rockfish, China	258	<i>Sebastes nebulosus</i>
Rockfish, Copper	655	<i>Sebastes caurinus</i>
Rockfish, Cowcod	245	<i>Sebastes levis</i>
Rockfish, Flag	657	<i>Sebastes rubrivinctus</i>
Rockfish, Gopher	263	<i>Sebastes carnatus</i>
Rockfish, Grass	652	<i>Sebastes rastelliger</i>
Rockfish, Kelp	659	<i>Sebastes atrovirens</i>
Rockfish, Olive	651	<i>Sebastes serranoides</i>
Rockfish, Other Identified	920	<i>Sebastes spp.</i>
Rockfish, Pink	653	<i>Sebastes eos</i>
Rockfish, Rosy	268	<i>Sebastes rosaceus</i>
Rockfish, Shortbelly	672	<i>Sebastes jordani</i>
Rockfish, Speckled	669	<i>Sebastes ovalis</i>
Rockfish, Treefish	658	<i>Sebastes serriceps</i>
Rockfish, Unidentified	250	<i>Sebastes sp.</i>
Rockfish, Vermillion	249	<i>Sebastes miniatus</i>
Sablefish	190	<i>Anoplopoma fimbria</i>
Sailfish	095	<i>Istiophorus platypterus</i>

COMMON NAME	CODE	SCIENTIFIC NAME
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Salmon, King	302	<i>Oncorhynchus tshawtscha</i>
Salmon, Other Identified	930	<i>Oncorhynchus spp.</i>
Sanddab, Longfin	226	<i>Citharichthys xanthostigma</i>
Sanddab, Pacific	227	<i>Citharichthys sordidus</i>
Sanddab, Speckled	228	<i>Citharichthys stigmaeus</i>
Sardine, Pacific	100	<i>Sardinops sagax</i>
Sargo	480	<i>Anisotremus davidsonii</i>
Scabbardfish, Razorback	053	<i>Assurger anzac</i>
Scorpionfish, California	260	<i>Scorpaena guttata</i>
Seabass, White	400	<i>Atractoscion nobilis</i>
Searobin, Lumptail	674	<i>Prionotus stephanophrys</i>
Senorita	144	<i>Oxyjulis californica</i>
Shad, American	325	<i>Alosa sapidissima</i>
Shark or Ray, Unidentified	102	<i>Elasmobranchii</i>
Shark, Basking	156	<i>Cetorhinus maximus</i>
Shark, Bigeye Thresher	147	<i>Alopias superciliosus</i>
Shark, Blue	167	<i>Prionace glauca</i>
Shark, Brown Smoothhound	154	<i>Mustelus henlei</i>
Shark, Common Thresher	155	<i>Alopias vulpinus</i>
Shark, Cookie Cutter	136	<i>Isistius brasiliensis</i>
Shark, Crocodile	143	<i>Pseudocarcharias kamoharai</i>
Shark, Dusky	164	<i>Carcharhinus obscurus</i>
Shark, Gray Smoothhound	179	<i>Mustelus californicus</i>
Shark, Horn	169	<i>Heyterodontus francisci</i>
Shark, Leopard	153	<i>Triakis semifasciata</i>
Shark, Longfin Mako	938	<i>Isurus paucus</i>
Shark, Megamouth	192	<i>Megachasma pelagios</i>
Shark, Other Identified	935	Chondrichthys
Shark, Pacific Angel	165	<i>Squatina californica</i>
Shark, Pelagic Thresher	148	<i>Alopias pelagicus</i>
Shark, Prickly	963	<i>Echinorhinus cookei</i>
Shark, Salmon	168	<i>Lamna ditropis</i>
Shark, Sevengill	162	<i>Notorynchus cepedianus</i>
Shark, Shortfin Mako	151	<i>Isurus oxyrinchus</i>
Shark, Sixgill	161	<i>Hexanchus griseus</i>



COMMON NAME	CODE	SCIENTIFIC NAME
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Shark, Smooth Hammerhead	158	<i>Sphyrna zygaena</i>
Shark, Soupfin	159	<i>Galeorhinus zyopterus</i>
Shark, Swell	163	<i>Cephaloscyllium ventriosum</i>
Shark, Unid. Hammerhead	157	<i>Sphyrna sp.</i>
Shark, Unidentified	936	Chondrichthys
Shark, Unidentified Mako	939	<i>Isurus sp.</i>
Shark, Unidentified Thresher	937	<i>Alopiidae sp.</i>
Shark, White	096	<i>Carcharodon carcharias</i>
Sheephead, California	145	<i>Semicossyphus pulcher</i>
Skate, Big	176	<i>Raja binoculata</i>
Skate, California	177	<i>Raja inornata</i>
Skate, Longnose	941	<i>Raja rhina</i>
Skate, Other Identified	940	Rajidae
Skate, Starry	079	<i>Raja stellulata</i>
Skate, Unidentified	175	Rajidae
Smelt, Surf	182	<i>Hypomesus pretiosus</i>
Snake Mackerel	295	<i>Gempylus serpens</i>
Sole, Bigmouth	202	<i>Hippoglossina stomata</i>
Sole, Butter	208	<i>Isopsetta isolepis</i>
Sole, Dover	211	<i>Microstoma pacificus</i>
Sole, English	206	<i>Parophrys vetulus</i>
Sole, Fantail	204	<i>Xystreurys liolepis</i>
Sole, Petrale	209	<i>Eopsetta jordani</i>
Sole, Rex	207	<i>Glyptocephalus zachirus</i>
Sole, Rock	203	<i>Lepidopsetta bilineata</i>
Sole, Sand	205	<i>Psettichthys melanostictus</i>
Sole, Slender	210	<i>Lyopsetta exilis</i>
Spearfish, Shortbill	094	<i>Tetrapturus angustirostris</i>
Stargazer Smooth	673	<i>Kathetostoma averruncus</i>
Stingray, Pelagic	193	<i>Dasyatis violacea</i>
Stingray, Round	173	<i>Urolophus halleri</i>
Sturgeon Unidentified	470	Acipenseridae
Sturgeon, Green	471	<i>Acipenser medirostris</i>
Sturgeon, White	472	<i>Acipenser transmontanus</i>
Surfperch, Barred	551	<i>Amphistichus argenteus</i>
Surfperch, Black	552	<i>Embiotoca jacksoni</i>
Surfperch, Other Identified	945	Embiotocidae
Surfperch, Pile	559	<i>Rhacochilus vacca</i>

COMMON NAME	CODE	SCIENTIFIC NAME
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Surfperch, Pink	563	<i>Zalemnius rosaceus</i>
Surfperch, Rainbow	562	<i>Hypsurus caryi</i>
Surfperch, Reef	946	<i>Micrometrus aurora</i>
Surfperch, Rubberlip	558	<i>Rhacochilus toxotes</i>
Surfperch, Shiner	554	<i>Cymatogaster aggregata</i>
Surfperch, Silver	564	<i>Hyperprosopon ellipticum</i>
Surfperch, Striped	565	<i>Embiotoca lateralis</i>
Surfperch, Unidentified	550	Embiotocidae
Surfperch, Walleye	557	<i>Hyperprosopon argenteum</i>
Surfperch, White	556	<i>Phanerodon furcatus</i>
Swordfish, Broadbill	091	<i>Xiphias gladius</i>
Thornback	178	<i>Platyrrhinoidis triseriata</i>
Tonguefish, California	212	<i>Symphurus atricauda</i>
Topsmelt	186	<i>Atherinops affinis</i>
Triggerfish, Finescale	290	<i>Balistes polyepis</i>
Triggerfish, Unidentified	291	Balistidae
Tuna, Albacore	005	<i>Thunnus alalunga</i>
Tuna, Bigeye	916	<i>Thunnus obesus</i>
Tuna, Bluefin	004	<i>Thunnus thynnus</i>
Tuna, Skipjack	002	<i>Euthynnus pelamis</i>
Tuna, Unidentified	006	Scombridae
Tuna, Yellowfin	001	<i>Thunnus albacares</i>
Turbot Hornyhead	238	<i>Pleuronichthys verticalis</i>
Turbot, C-O	237	<i>Pleuronichthys coenosus</i>
Turbot, Curlfin	235	<i>Pleuronichthys decurrens</i>
Turbot, Diamond	236	<i>Hypsopsetta guttulata</i>
Turbot, Spotted	239	<i>Pleuronichthys ritteri</i>
Wahoo	057	<i>Acanthocybium solandri</i>
Whitefish, Ocean	490	<i>Caulolatilus princeps</i>
Wolf-eel	---	<i>Anarrhichthys ocellatus</i>
Wrasse, Rock	146	<i>Halichoeres semicinctus</i>
Yellowtail	040	<i>Seriola lalandei</i>
Zebra-perch	602	<i>Hermosilla azurea</i>

**COMMON NAME****CODE****SCIENTIFIC NAME**

<b>COMMON NAME</b>	<b>CODE</b>	<b>SCIENTIFIC NAME</b>
<b>INVERTEBRATES</b>		
Abalone, Red	702	<i>Haliotis rufescens</i>
Argonauts/Paper Nautilus	684	<i>Argonauta sp.</i>
Cephalopod, Unidentified	688	<i>Cephalopoda</i>
Crab, California King	804	<i>Paralithodes sp.</i>
Crab, Decorator	832	<i>Loxorhynchus crispatus</i>
Crab, Dungeness	800	<i>Cancer magister</i>
Crab, Hermit	830	<i>Pagurus sp.</i>
Crab, Marble	831	<i>Randallia ornata</i>
Crab, Northern Kelp	833	<i>Pugettia producta</i>
Crab, Opossum	808	<i>Lopholithodes forminatus</i>
Crab, Parasol	806	<i>Paromola faxoni</i>
Crab, Pelagic Red	807	<i>Pleuroncodes planipes</i>
Crab, Pointer	809	<i>Mursia gaudichaudii</i>
Crab, Rock	801	<i>Cancer sp.</i>
Crab, Sand	805	<i>Emerita sp.</i>
Crab, Southern Kelp	802	<i>Taliepus nutallii</i>
Crab, Spider	803	<i>Loxorhynchus sp.</i>
Crustacean, Unidentified	899	Crustacea
Echinoderm, Unidentified	750	Echinodermata
Hare, Sea	749	<i>Aplysia californica</i>
Invertebrate, Unidentified	999	Invertebrata
Krill, Pacific	821	<i>Euphausia pacifica</i>
Lobster, California Spiny	820	<i>Panulirus interruptus</i>
Mollusk, Unidentified	799	Mollusca
Octopus	715	<i>Ocythoe tuberculata</i>
Octopus, Giant	683	<i>Haliphron atlanticus</i>
Octopus, Unidentified	712	<i>Octopus sp.</i>
Prawn, Golden	817	<i>Penaeus californiensis</i>
Prawn, Spot	815	<i>Pandalos platyceros</i>
Scallop, Unidentified	719	Pectinidae

**COMMON NAME****CODE****SCIENTIFIC NAME**

Sea Cucumber	755	Holothuroidea
Sea Star	751	Asteroidea
Sea Urchin	752	<i>Strongylocentrotus sp.</i>
Shrimp, Bay	810	Crangonidae
Shrimp, Mantis	811	<i>Hemisquilla ensigera</i>
Shrimp, Unidentified	814	Caridea
Snail, Moon	736	<i>Polinices lewisii</i>
Snail, Unidentified	732	Gastropoda
Squid, Flowervase Jewell	686	<i>Histioteuthis dofleini</i>
Squid, Gonatus sp.	714	<i>Gonatus sp. squid</i>
Squid, Jumbo (Humboldt)	717	<i>Dosidicus gigas</i>
Squid, Market	711	<i>Loligo opalescens</i>
Squid, Robust Clubhook	687	<i>Moroteuthis robusta</i>
Squid, Unidentified	713	Teuthoidea
Squids, Jewell/Umbrella	685	<i>Histioteuthis sp.</i>
Squids, Octopus	682	<i>Octopoteuthis sp.</i>
Tunicates, Pelagic	840	<i>Tunicates spp.</i>
Whelk	731	<i>Kellettia sp.</i>
<b>SEABIRDS</b>		
Albatross, Black-Footed	dNG	<i>Phoebastria nigripes</i>
Albatross, Laysan	dIM	<i>Phoebastria immutabilis</i>
Albatross, Short-tailed	dAL	<i>Phoebastria albatrus</i>
Albatross, Unidentified	dSP	<i>Phoebastria sp.</i>
Alcid, Unidentified	dSP	Alcidae
Bird, Unidentified	dVE	Aves
Booby, Brown	sLP	<i>Sula leucogaster plotus</i>
Booby, Masked	sDP	<i>Sula dactylatra personata</i>
Booby, Red-Footed	sSR	<i>Sula sula rubripes</i>
Cormorant, Brandt's	pPN	<i>Phalacrocorax penicillatus</i>
Cormorant, Double-crested	pAU	<i>Phalacrocorax auritus</i>
Cormorant, Pelagic	pPL	<i>Phalacrocorax pelagicus</i>
Cormorant, Unidentified	pSP	<i>Phalacrocorax sp.</i>

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Fulmar, Northern	fGL	<i>Fulmarus glacialis</i>
Grebe, Unidentified	pOD	<i>Podiceps sp.</i>
Grebe, Western	aOC	<i>Aechmophorus occidentalis</i>
Guillemot, Pigeon	cCO	<i>Cephus columba</i>
Loon, Common	gIM	<i>Gavia immer</i>
Loon, Pacific	gPA	<i>Gavia pacifica</i>
Loon, Red-throated	gST	<i>Gavia stellata</i>
Loon, Unidentified	gSP	<i>Gavia sp.</i>
Murre, Common	uAA	<i>Uria aalge</i>
Murrelet, Marbled	bMA	<i>Brachyramphus marmoratus</i>
Pelican, Brown	pOC	<i>Pelecanus occidentalis</i>
Oystercatcher, Black	hBA	<i>Haematopus bachmani</i>
Scoter, Surf	mDE	<i>Melanitta perspicillata</i>
<b>SEA TURTLES</b>		
Turtle, Green/Black	CM	<i>Chelonia mydas/agassizi</i>
Turtle, Hawksbill	EI	<i>Eretmochelys imbricata</i>
Turtle, Leatherback	DC	<i>Dermochelys coriacea</i>
Turtle, Loggerhead	CC	<i>Caretta caretta</i>
Turtle, Olive Ridley	LV	<i>Lepidochelys olivacea</i>
Turtle, Unidentified	UT	Chelonidae
Turtle, Unidentified Hardshell	UH	other than Leatherback
<b>MARINE MAMMALS</b>		
Beaked Whale, Baird's	BD	<i>Berardius bairdii</i>
Beaked Whale, Blainville's	MD	<i>Mesoplodon densirostris</i>
Beaked Whale, Cuviers	ZI	<i>Ziphius cavirostris</i>
Beaked Whale, Ginkgo-toothed	MG	<i>Mesoplodon ginkgodens</i>
Beaked Whale, Hector's	MH	<i>Mesoplodon hectori</i>
Beaked Whale, Hubbs'	MC	<i>Mesoplodon carlhubbsi</i>
Beaked Whale, Mesoplodont	UM	<i>Mesoplodon spp.</i>
Beaked Whale, Stejneger's	MT	<i>Mesoplodon stejnegeri</i>

COMMON NAME	CODE	SCIENTIFIC NAME
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Beaked Whale, Unidentified	ZU	Ziphiidae
Cetacean, Unidentified	UC	Cetacea
Dolphin, Bottlenose	TT	<i>Tursiops truncatus</i>
Dolphin, Fraser's	LH	<i>Lagenodelphis hosei</i>
Dolphin, Long-Beaked Common	DL	<i>Delphinus capensis</i>
Dolphin, Northern Right Whale	LB	<i>Lissodelphis borealis</i>
Dolphin, Pacific White-sided	LO	<i>Lagenorhynchus obliquidens</i>
Dolphin, Risso's	GG	<i>Grampus griseus</i>
Dolphin, Rough-toothed	SB	<i>Steno bredanensis</i>
Dolphin, Short-Beaked Common	DS	<i>Delphinus delphis</i>
Dolphin, Spinner	SL	<i>Stenella longirostris</i>
Dolphin, Spotted	SA	<i>Stenella attenuata</i>
Dolphin, Striped	SC	<i>Stenella coeruleoalba</i>
Dolphin, Unidentified	UD	Delphinidae
Dolphin, Unidentified Common	DD	<i>Delphinus sp.</i>
Porpoise Dall's	PD	<i>Phocoenoides dalli</i>
Porpoise, Harbor	PP	<i>Phocoena phocoena</i>
Porpoise, Unidentified	UP	Phocoenidae
Whale, Blue	BM	<i>Balaenoptera musculus</i>
Whale, Dwarf Sperm	KS	<i>Kogia simus</i>
Whale, False Killer	PC	<i>Pseudorca crassidens</i>
Whale, Fin	BP	<i>Balaenoptera physalus</i>
Whale, Gray	ER	<i>Eschrichtius robustus</i>
Whale, Humpback	MN	<i>Megaptera novaeangliae</i>
Whale, Killer	OO	<i>Orcinus orca</i>
Whale, Melon-headed	PE	<i>Peponocephala electra</i>
Whale, Minke	BA	<i>Balaenoptera acutorostrata</i>
Whale, Pygmy Killer	FA	<i>Feresa attenuata</i>
Whale, Pygmy Sperm	KB	<i>Kogia breviceps</i>
Whale, Sei	BB	<i>Balaenoptera borealis</i>
Whale, Short-finned Pilot	GM	<i>Globicephala macrorhynchus</i>
Whale, Sperm	PM	<i>Physeter macrocephalus</i>
Whale, Unidentified	UW	Cetacean whale
Whale, Unidentified Kogia	UK	<i>Kogia</i>
Fur Seal, Guadalupe	AT	<i>Arctocephalus townsendi</i>
Fur Seal, Northern	CU	<i>Callorhinus ursinus</i>
Fur Seal, Unidentified	UA	Arctocephalinae
Pinniped, Unidentified	PU	Pinnipedia
Sea Lion, California	ZC	<i>Zalophus californianus</i>
Sea Lion, Steller	EJ	<i>Eumetopias jubatus</i>
Sea Lion, Unidentified	UO	Otariinae

# PORT CODES

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PORT	PORT DEPART	PORT RETURN
Albion	ALB	ALB
Alviso	ALV	ALV
Astoria Oregon	AST	AST
Avalon	AVA	AVA
Avila Beach	AVI	AVI
Bellingham	BEL	BEL
Bodega bay	BOD	BOD
Carpinteria	CAR	CAR
Catalina Harbor	CAT	CAT
Coos bay	COO	COO
Crescent City	CC	CC
Dana Point	DAN	DAN
Eureka	EUR	EUR
Everett	EV	EV
Fort Bragg	FB	FB
Gunther Island (Eureka)	GUN	GUN
Half Moon Bay	HMB	HMB
Huntington Beach	HB	HB
Incline Village	INC	INC
Juneau	JUN	JUN
Lompoc	LOM	LOM
Long Beach	LB	LB
Los Angeles	LA	LA
Malibu	MAL	MAL
Mission Bay	MB	MB
Monterey	MON	MON
Morro Bay	MOR	MOR
Moss Landing	MOS	MOS
Newport	NEW	NEW
Newport Beach	NB	NB
Oakland	OAK	OAK
Oceanside	OCE	OCE
Oxnard	OXN	OXN
Pillar Point	PIL	PIL
Port Hueneme	PH	PH
Port San Luis	PSL	PSL
Redondo Beach	RB	RB
Richmond	RMD	RMD
San Bruno	SBO	SBO

PORT	PORT DEPART	PORT RETURN
San Diego	SD	SD
San Francisco	SF	SF
San Luis Obispo	SLO	SLO
San Pedro	SP	SP
Sand Point	SPT	SPT
Santa Barbara	SB	SB
Santa Cruz	SCR	SCR
Santa Paula	SPA	SPA
Seal Beach	SLB	SLB
Seattle	SEA	SEA
Solana Beach	SOL	SOL
Trinidad	TRI	TRI
Unknown	UNK	UNK
Ventura	VEN	VEN
Westport	WES	WES
Wilmington	WIL	WIL