

# NOAA Technical Memorandum NMFS



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## DOCUMENTATION OF A RELATIONAL DATABASE FOR THE CALIFORNIA RECREATIONAL FISHERIES SURVEY ONBOARD OBSERVER SAMPLING PROGRAM, 1999-2011

<sup>1,2</sup>Melissa Monk

<sup>2</sup>E. J. Dick

<sup>2</sup>Don Pearson

<sup>1</sup>Center for Stock Assessment Research  
University of California  
Santa Cruz, CA 95064

<sup>2</sup>NOAA Fisheries  
Southwest Fisheries Science Center  
Fisheries Ecology Division  
110 Shaffer Road  
Santa Cruz, CA 95060

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U. S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
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## NOAA Technical Memorandum NMFS

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### U.S. DEPARTMENT OF COMMERCE

Penny S. Pritzker, Secretary of Commerce

**National Oceanic and Atmospheric Administration**

Dr. Kathryn D. Sullivan, Acting Administrator

**National Marine Fisheries Service**

Eileen Sobeck, Assistant Administrator for Fisheries



## **Abstract**

This paper describes the relational database created for the California Department of Fish and Wildlife (CDFW) California Recreational Fisheries Survey (CRFS) Onboard Observer Sampling Program. The program surveys the commercial passenger fishing vessel (CPFV) fleet fishing out of 15 coastal counties and two counties inside San Francisco Bay, representing 46 site locations. From 1999 through 2011, observers collected spatially-explicit catch and release records for 47,417 drifts (fishing stops) during 7,043 observed trips. Lengths of discarded fish caught by observed anglers were recorded to monitor in-season discards. Presented herein is a brief description of the sampling program, an overview of the fully relational database, and quality control methods applied to the historical data. Data from the relational database are governed by confidentiality requirements and are available via permission from CDFW.



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# 1 California Recreational Fisheries Survey

California's recreational saltwater fishery is one of the largest in the United States, both in terms of number of participants and value added to the state's economy. In 2011, 1.05 million saltwater anglers spent over 900 million dollars on fishing equipment, i.e., fishing tackle, boat and vehicle expenses, in California [1]. The recreational fishing industry also supported over 10 million jobs in 2011, and contributed approximately 844 million dollars value-added to California's economy. The California Department of Fish and Wildlife (CDFW) conducts the California Recreational Fisheries Survey (CRFS) to estimate catches by species and the amount of effort by fishing mode (for-hire, private, or shore-based). This document focuses on only the CRFS surveys of the commercial passenger fishing vessel (CPFV), i.e., charter boat or for-hire fleet. The CPFV fleet is surveyed by 1) interviewing anglers and asking them about what they caught and discarded (Angler Interview), and 2) riding onboard the vessel and observing anglers as they fish (Observer Program).

Non-confidential data from Angler Interviews and Observer Program are available for download from the Recreational Fisheries Information Network's (RecFIN) website, [www.recfin.org](http://www.recfin.org). The Angler Interviews contain the angler's demographic information as well as the number of and species of fish the anglers caught during a trip. These data can be found in the Type 1 (Angler information), Type 2 (Angler-reported catch), Type 3 (Sampler-examined catch), Type 4 (Catch-group pointers), and Type 6 records (Boat group - after 1993). The only data available for download from the Observer Program is the Type 3d records (Sampler examined discards - after 2002). This document contains detailed information on data from the Observer Program and a less detailed description of the Angler Interview Type 3 records.

## 1.1 Onboard Observer Sampling Program

The goal of the Observer Program is to collect data including charter boat fishing locations, catch and discard of observed fish by species, and lengths of discarded fish. In addition to monitoring discards, the data generated can be used to inform stock assessment, providing spatially- and temporally-explicit information on catch and effort by fishing location, discards rates, and size compositions.

The Observer Program began in 1999 as part of the Marine Recreational Fisheries Statistics Survey (MRFSS) and became part of the CRFS sampling program in 2004. The current program (1999-present) is similar to previous onboard observer programs conducted by CDFW's Central California Marine Sport Fish Project in Monterey, CA [2]. Through 2011, a total of 7,043 trips were observed. Sampling occurs year-round, with higher frequency during the summer months (Table 1). Within a year, sampling intensity varies by month and is based upon historical fishing effort patterns.

The majority of the CPFV observer effort is concentrated in southern California, with 79% of all observed trips originating south of Point Conception (Figure 1; Tables 2-3). As of 2004, California is divided into six geographic districts. For this report, all trips (1999-2011) were assigned to a CRFS District based upon the port of landing (Figure 2).

The six districts are:

1. South District - Los Angeles, Orange, and San Diego counties.
2. Channel District - Santa Barbara and Ventura counties.
3. Central District - Santa Cruz, Monterey, and San Luis Obispo counties.
4. San Francisco District - Marin, San Francisco, San Mateo, and Sonoma counties, and the eight counties surrounding San Francisco and San Pablo Bays: Santa Clara, Alameda, Contra Costa, Solano, Sonoma, Marin, San Francisco, and San Mateo counties.
5. Wine District - Mendocino County and the Shelter Cove section of Humboldt County to 40°10'.
6. Redwood District - Humboldt from 40°10' and north and Del Norte Counties.

Observers receive assignments on a monthly basis and are provided with assignment lists that include sampling dates for a specific port and target survey mode. This document describes the sampling of CPFV fleet survey mode, which includes both the Observer Program and Angler Interviews. Observers are instructed to ride along on all fishing trips targeting groundfish, especially those targeting rockfish and lingcod (*Ophiodon elongatus*). However, trips targeting other species are also sampled in the Observer Program. Oftentimes, an observer will be assigned to conduct both the Onboard sampling and Angler Interviews for a given trip, i.e., ride-along on the fishing trip and conduct angler interviews dockside after the trip. There are 6,995 trips with catch data from the Angler Interviews and location-specific catch data from the Observer Program.

During an observed trip, the observer records location-specific information for each fishing location (referred to as a drift in this document). A drift is defined as a period of time when anglers have their gear in the water. At the start of each drift, the observer randomly selects a subset of the boat's eligible anglers to observe. All fish encountered by the observed anglers are recorded to the species level and recorded as either kept or discarded. Starting in 2004, lengths have been measured for discarded fish caught by the observed anglers. The observer also records the starting and ending times of each drift, the minimum and maximum bottom depths, and, if the captain allows, the starting and ending drift coordinates.

This document contains a description of the Observer Program data and metadata through 2011. The quality control of the historical data (1999-2011) is an evolving process and changes will have been made to the database after the publication date. There are 44 trips in the database, stored in separate tables, that have missing catch and/or location records. They have been excluded because they prevent the main database tables from being fully relational.

## 2 Relational Database

The Observer Program generates a large amount of data for each trip. We describe the data available from the Observer Program as well as the relational database created to store and maintain the data. At present, the historical onboard observer data are available to authorized users via the RecFIN website in a flat (text) file format. The flat file requires considerable effort to process before the data can be organized and prepared for analysis. We transferred the data to a fully relational SQL database. The advantages of storing data in relational databases are many, including the ease of data retrieval, fine-scale control over data access, the ability to summarize information quickly and to query information across tables. Microsoft SQL Server and SQL Server Management Studio were selected as the database server and management platform because of the flexibility and reliability they offer. The data can be retrieved or queried from the database server and imported into any number of data processing programs for full analyses.

Database metadata in Appendix A were compiled using SqlSpec [3]. SQL provides the flexibility of assigning a datatype to each column; columns were assigned a datatype most appropriate for the information being stored, i.e., all date and time data are stored as either datetime or smalldatetime formats (Table A.1). The metadata also indicates if a column contains *NULL* values, is a primary key, or has a foreign key relationship. Descriptions of these properties are below.

The database is organized into a set of four main tables that are related through a set of defined relationships (Figure 3). The four main tables contain the trip-level information (Boat Table), fishing drift-level information (Location Table), observed catch (Catch Table), and lengths of discarded fish (Lengths Table). The database also contains ancillary look-up tables, which contain information related to the main tables, such as scientific and common names of fish, and fishing regulations by date. Each of the main tables is assigned an identifier column (or set of columns), which is known as the primary key. The primary key must be unique for each row in a table. Foreign keys create the relational aspect of the database and allow cross-referencing of data among tables. A foreign key creates a parent/child relationship between tables by identifying columns from one table that also appear in a second table. A table may have multiple foreign keys, and a hierarchy of tables can also be created. For instance, the Boat Table is a parent of the Location Table. The Boat Table contains broader information for the trip, and the Location Table has multiple entries for each location fished on a trip. The Catch Table is a child of both the Boat Table and the Location Table, as it contains multiples entries of catch for each location on a trip.

Included in the database are also the Angler Interview Type 3 records. Type 3 records contain the number of retained and discarded fish as reported by interviewed anglers. Because an observer often conducts both the onboard sampling and angler interviews, lengths of retained catch that would have been filleted before reaching the dock are available for measurements. We matched the trips with Angler Interview to trips in the Observer Program using a combination of the vessel identification number, number of anglers aboard the vessel, and trips' starting and ending times. These records can also be matched to other record types associated with the Angler Interviews. From 1999-2011, Angler Interviews were

conducted for 6,995 trips that were also sampled by the Observer Program (Table 4). The Type 3 Angler Interview data for these trips are included in this relational database. A brief description of the Type 3 Angler Interview data can be found in Table 5; for additional information see the CRFS Sampler Manual [4].

The table descriptions below contain details for the majority of columns found in the database. Brief descriptions of all tables and columns can be found in Table 5. As a note, columns of database tables in the following text are referenced in capital letters bracketed by parentheses, e.g., (ASSN), to aid a reader's ability to quickly reference data. In addition, blank copies of all Observer Program data collection forms used over the program's history can be found in Appendix B.

## 2.1 Table Descriptions

### 2.1.1 Boat Table

The Boat Table contains trip-level information, including data pertaining to the vessel, landing port, trip type, and number of eligible anglers. Each trip is assigned a unique trip assignment identification number (ASSN). The ASSN is a concatenation of the observer's trip number for that date (first versus second assignment of the day), interviewer identification code, and the date. The ASSN number is also the primary key for the Boat Table and is the column that links the Boat Table to other tables containing trip information.

Each observer is assigned a unique identification code number (INTVUER), which is retired when the observer leaves the program. Retired observer codes are never re-assigned in the Observer Program. The number of observers has increased over time as the program has grown, with 57 observers employed in 2011 (Table 6).

From 1999 to September 11, 2002, vessel participation in the Observer Program was voluntary. An emergency rule enacted on September 12, 2002, made vessel participation mandatory. The emergency rule was repealed for a period of time, and then became a final rule on February 27, 2003. Vessels are now required to allow an observer to ride along, as long as there is room on the vessel. Every participating vessel is assigned a unique identification number (BOATNUM). A total of 381 boats have participated in the Observer Program. A handful of vessels fish out of multiple counties and some have changed passenger capacity certification during the course of the Observer Program. Charter boats with a license to carry a maximum of six passengers (six-packs) are generally not sampled in the Observer Program, but are sampled via Angler Interviews. A high percentage of the CPFV in the Redwood District have six-pack licenses. To increase the number of vessels sampled, six-packs have been included in the Observer Program in the Redwood District as of 2008.

The number of ‘eligible’ anglers (ANGLERS) is the number of passengers who fished. The captain and crew members who fish with the intention of keeping their catch are considered eligible anglers. However, if the captain and/or crew fish and contribute their catch to a paying passenger’s catch bag they are not considered eligible anglers. A passenger who intended to fish, but was too sick to fish, is counted as an eligible angler for a trip. Persons not counted as eligible anglers include passengers who have no intention of fishing, and captain or crew members who did not fish during the trip.

The landing port (INTSITE) and county (CNTY) codes are provided for each trip, where county codes are equivalent to the U.S. Federal Information Processing Standard (FIPS) county codes. The names of ports and counties are available in the Port Look-up Table (luPORT Table). The number of locations or drifts (NUMLOCS) by trip and number of observed species caught on a trip (NUMSP) are also available in the Boat Table to provide users with summary statistics.

### 2.1.2 Location Table

The Location Table contains 47,417 location-specific records of individual drifts. The Location Table has a compound (multi-column) primary key of the trip assignment number and the location number (ASSN; LOCNUM) and is linked to the Boat Table and Catch Table. For each drift, recorded information includes the number of observed anglers, minimum and maximum bottom depths, starting and ending coordinates, and starting and ending times.

The fishing boat action (FTYPE) for each drift was recorded starting in 2004. The fishing action describes the manner of fishing and can be one of the following: free drift (49% of all records), stationed (5% of records), anchored (42% of records), or trolling (4% of records). The manner of fishing is oftentimes specific to the target species.

During a free drift, the boat drifts with the current and the engine is not in gear. When the boat is stationed, the captain engages the engine as needed to maintain the boat’s position. During an anchored fishing stop, the captain drop’s the boat’s anchor to the seafloor. The engine is in gear and powered to the desired speed when the boat is trolling. The observer begins a new fishing location entry only when the anglers remove their gear from the water in order to move to a new location (or back to the previous starting location, or possibly back to the same starting location). Anglers may temporarily stop fishing during a stationed fishing stop when the captain engages the engine; however, a new fishing location is not recorded.

At the start of each drift, the observer randomly selects a set of eligible anglers (Boat Table; ANGLERS) to observe for the entire drift (OBSANG). Observers are advised to observe a subset of 10 anglers or less and the number of observed anglers may or may not include the same individuals as other drifts during the same trip.

The median percent of observed anglers can reach 100% for  $\leq 20$  eligible anglers, but most often not all anglers are observed for any given drift (Figure 4). As the number of eligible anglers increases, the percent of observed anglers decreases, which is expected, given the advice to observe 10 or fewer anglers. There are some cases in which the number of observed anglers exceeds the number of eligible anglers. In these cases it is possible that a

crew member fished and was observed during this drift but not counted as an eligible angler. The number of observed anglers is currently available for 95% of drifts in the database. Some of these cases may be resolved in the future (e.g., by consulting the paper copies of the observer data).

All location and depth information is recorded with the captain's permission. Drift coordinates are available in both the original data format and in decimal degrees. The conversion to decimal degrees is based on the recorded units of geographic coordinates (GFORMAT). The original coordinates were either recorded as DDMMMM, DDMMSS, or DDDDDD, where D is degrees, M is minutes, and S is seconds. Ninety-six percent of all drifts have complete starting and ending coordinates. If a drift is less than three minutes or the vessel traveled less than 300 feet, the observer does not record the ending coordinates. Ending coordinates for these drifts have been added to the database and denoted with an error code (see luERROR). Drifts with suspicious or possibly erroneous location data are flagged in the Location\_Error column. At the time of publication, 12% (5,752 drifts) of the location data have possible errors.

The drift times can be found in the original and the SQL smalldatetime formats. The original time format is HHMM, which has been converted to a date format of YYYY-MM-DD HH:MM:SS. Across all ports, drift times are typically less than 50 minutes, and rarely greater than 100 minutes (Figure 5). Estimates of observed catch per unit effort can be computed for 94% of all drifts, and this may increase with quality control checks.

The minimum (MINDEPTH) and maximum (MAXDEPTH) bottom depths are recorded in feet for each drift. Where reliable coordinates were available, drift starting and ending depths were inferred using bathymetry from the U.S. Coastal Relief Model [5] and added to the database (SGISDEPTH, EGISDEPTH). For nearshore drifts the GIS-inferred depths should be interpreted with caution (Figure 6). If the starting location is not recorded simultaneously with the starting depth, this could explain some of the depth difference in Figure 6. A drift may start adjacent to reef and drift over it. The observer-recorded depth may be deeper than the majority of the drift if recorded before the vessel reaches the reef, or shallower than the drift starting location if an observer is not able to record the starting depth until a minute or two into the drift.

Drifts that started or ended within a large bay, e.g., San Francisco Bay, are noted in the BAY\_START and BAY\_END columns, respectively. Drifts were also mapped and overlaid with all conservation areas and MPAs adopted prior to 2012. If a drift intersected a conservation area (regardless of the trip date) where fishing is not allowed, the name of the conservation area is in SMPA (starting location) and/or EMPA (ending location) column(s).

Data on the presence of pinnipeds were recorded for each drift from 1999-2011. As of 2012, data on the presence of pinnipeds is no longer collected. Pinnipeds were present during 8,594 (18%) of all drifts (PINNIPED). Gear was lost to pinnipeds during 326 drifts (0.7%); fishing time was lost to pinnipeds during 256 drifts (0.05%); bait was lost to pinnipeds during 1,413 drifts (3%); and hooked fish were lost to pinnipeds during 1,069 drifts (2%).



### 2.1.3 Catch Table

The Catch Table (named Catches Table in the database due to reserved words in SQL) contains records of all fish encountered by the observed anglers. The Catch Table has a compound primary key of trip assignment number, drift number, and species code (ASSN, LOCNUM, CDFWSP). The Catch Table contains 387,573 records of encounters, representing 430,873 encountered fish (310,122 kept and 120,751 discarded).

Retained catch is recorded in the KEPT column. The discarded fish column (DISCD) is the only record of discards prior to 2005. From 2005-2011, the discarded column is the sum of the discarded alive and discarded dead columns (DISCDDEAD + DISCDALIV). There are 13,452 fish recorded as discarded dead and 70,214 as discarded alive.

Species codes in the database are all RECFIN species codes (RECFINSP). These can be related to the common names, scientific names, CDFW species codes and ALPHA5 species codes in the Species Look-up Table (luSPECIES).

Through 2011, there have been 192 species and 40 general categories, e.g., rockfish genus, skate family, unidentified fish, etc., encountered in the survey (Table 7). The most commonly encountered species, vermilion rockfish (*Sebastes miniatus*), was encountered in 15% of all drifts statewide. Six other species, lingcod, California scorpionfish (*Scorpaena guttata*), blue rockfish (*Sebastes mystinus*), kelp bass (*Paralabrax clathratus*), barred sandbass (*Paralabrax nebulifer*), and chub (Pacific) mackerel (*Scomber japonicus*) were all observed in at least 10% of all drifts (Table 7). The trip's target species is not provided in RecFIN and was not used in determining these values.

Point Conception marks a regional divide in both the magnitude of fishing effort (74% of observed trips are south of Point Conception) and species' ranges, e.g., no California scorpionfish were observed north of Point Conception. Tables 8 and 9 present the same data as in Table 7, but broken out into north and south of Point Conception, respectively.

North of Point Conception 119 species and 13 generalist categories have been encountered. All 11 of the species encountered in at least 10% of drifts are groundfish. These species in order of decreasing encounter rate are blue rockfish, gopher rockfish (*Sebastes carnatus*), lingcod, yellowtail rockfish (*Sabastes flavidus*), vermilion rockfish, black rockfish (*Sebastes melanops*), rosy rockfish (*Sebastes rosaceus*), canary rockfish (*Sebastes pinniger*), olive rockfish (*Sebastes serranoides*), brown rockfish (*Sebastes auriculatus*), and starry rockfish (*Sebastes constellatus*).

South of Point Conception 174 species and 28 generalist categories have been encountered. Five species were encountered in at least 10% of all drifts, two of which are groundfish species. The five species are California scorpionfish, kelp bass, barred sandbass, vermilion rockfish and chub mackerel.

A summary of the number of fish kept, discarded and number of drifts encountered by CRFS District is also presented for all species in Table 10.

### 2.1.4 Lengths Table

The Lengths Table contains fork length measurements (mm) for discarded fish beginning in 2003 (FISHLENGTH). In addition to measuring fish from observed anglers, the observer may record fish lengths from unobserved anglers if, 1) the fish will be discarded dead or alive by any angler on the vessel, or 2) the fish was caught by anglers and retained by the boat crew. The observer's goal is to measure the number of fish equal to at least 20% of the number of fish discarded by observed anglers per drift. The measurements from unobserved anglers count towards this goal.

The disposition of individual fish (discarded alive or dead) is recorded for each record in the Lengths Table. If possible, the gender of species with external sexual characteristics is recorded. Fish weights may be recorded, but are not a priority, as they can be calculated from fish length. Fish weights are recorded in the database as calculated values, and not directly measured. Fish weight,  $W$ , is calculated as a function of length,  $L$ , using the power equation  $W = aL^b$ , where parameters  $a$  and  $b$  can be found in the luSPECIES table in columns A\_FL and B\_FL, respectively. As a note, for purposes of this document, reported lengths were not quality-controlled, and may contain errors.

Thirty-five species have more than 100 recorded discard length measurements (Figures 7 - 9). Of these species, cabezon (*Scorpaenichthys marmoratus*), lingcod, kelp greenling (*Hexagrammos decagrammus*), canary rockfish, California scorpionfish, California sheephead (*Semicossyphus pulcher*), and bocaccio (*Sebastes paucispinis*) have all been subject to minimum size limits, lower bag limits, and/or long-term fishery closures since 1999. See the Regulations Look-up Table for more detailed information on these regulation changes. Kelp bass, California scorpionfish, lingcod, rosy rockfish, blue rockfish, canary rockfish, barred sandbass, and honeycomb rockfish (*Sebastes umbrosus*) all have over 1000 discard measurements.

The discard lengths can be compared to the retained catch lengths from the Angler Interviews. The Angler Interview data presented here represent trips that were sampled by both the Observer and Angler Interview Programs. The number of fish by 2 cm length bin illustrates the differing length distribution for the discarded versus retained catch (Table 11 - 13).

The high proportions of discarded catch for canary rockfish, yelloweye rockfish (*Sebastes ruberrimus*), and lingcod are the result of fishing regulations. There are no size regulations for either black rockfish or blue rockfish, and the distributions indicate an angler preference for larger fish.

## 2.2 Ancillary (Look-up) Tables

The database contains eight ancillary tables containing information related to specific columns. The look-up tables in the database are for port information (luPORT), species information (luSPECIES), error code definitions (luERRORS), location error code definitions (luERROR\_Location\_Error), management areas (luMNGMT), fishing regulations (luREGS), bag limits (luBagLimit), and size limits (luSizeLimit).

### **2.2.1 Port Look-up Table**

The Port Look-up Table contains the port codes and names used in the Observer Program (Table 14). County names and CRFS districts are also available in this table.

### **2.2.2 Species Look-up Table**

All species in the main database tables are assigned RecFIN species codes (Table 15). The Species Look-up Table contains all of the information contained in the RecFIN database, including common name, scientific name, RecFIN assigned species codes, and the ALPHA5 species code. The Species Look-up Table also contains a column to indicate if the species falls into a regulation category, e.g., nearshore rockfish (REGS\_Group). For the additional information available in the Species Look-up Table see Table 5.

### **2.2.3 Error Code Look-up Table**

This table contains all of the possible error codes used in the database, with an exception for the Location Table (see Section 2.2.4). Error codes have the same meaning across columns and tables. The unique error codes used and their descriptions can be found in Table 16. See the Quality Control section for more information regarding the error codes and data quality monitoring.

### **2.2.4 Location Table Error Code Look-up Table**

This table (luERROR\_Location\_Error) contains all of the possible error codes used in the Location\_Error column in the Location Table. These identify why the record was flagged, i.e., GFORMAT missing, improbable times, drift coordinates on land, etc. All drifts longer than two nautical miles were flagged as well as drifts that had a calculated speed of greater than 2 knots. Data with an error code in the Location\_Error column have not been corrected or checked against the original datasheets at the time of publication. Users are advised to use these data with caution.

### **2.2.5 Management Area Look-up Table**

Since 2000, CDFW has managed the recreational groundfish fishery by geographic management areas, which are different than the CRFS districts. The management areas have changed over time and are documented by year in the Management Area Look-up Table (luMNGMT; Table 17). Each management area within a year has been assigned a number in the database (column MNGMT\_AREA in the luMNGMT\_AREAS table and also the Location Table). Each drift was assigned to a management area based on the drift's starting location.

### 2.2.6 Regulations Look-up Table

CDFW fishing regulations change both within and between years, by management areas, species, and/or species groups. The Regulations Look-up Table (luREGS) allows users to track daily regulation changes and relate them to the catch data. CDFW manages the closures based on defined management areas, which have changed over time (Table 17). See the “California Recreational Groundfish Fishery Regulations (2000-2010)” document for a complete history of the regulations [6].

Gear, depth and fishery closures for ocean fishing were enacted beginning in 2000. The Regulations Look-up Table contains information on all relevant groundfish depth, gear, and closure regulations beginning in Jan 1, 2000, with one row entry for every calendar day per management area. The Regulations Look-up Table can be linked to any other table in the database using the trip date and management area (TRPDATE in the Boat Table or STIME/ETIME in the Location Table; MNGMT\_AREA in the Location Table and luMNGMT\_AREAS Table).

### 2.2.7 Size Limit Look-up Table

The Size Limit Look-up Table (luSizeLimit) includes the recreational size limits for bocaccio, cabezon, California scorpionfish, California sheephead, greenlings (Family *Hexagrammidae*), and lingcod. The regulations are available by year starting in 1999.

### 2.2.8 Bag Limits Look-up Table

The Bag Limit Look-up Table (luBagLimit) includes the daily recreational bag limits for cabezon, California scorpionfish, California sheephead, greenlings, lingcod, ocean whitefish (*Caulolatilus princeps*), a general rockfish category, cowcod (*Sebastes levis*), bocaccio, canary rockfish, yelloweye rockfish, and nearshore rockfish. The regulations are available by year and regional area starting in 1999.

## 2.3 Angler Interview Table

The Angler Interview Table (Dockside\_Type3) includes trips that were observed by both the Observer and Angler Interview Programs. The trips with Angler Interviews are linked to the Observer database via PRT\_CODE\_NEW column assigned in the Angler Interview Type 3 data (Dockside\_Type3 Table). The Column descriptions for the data included in this database can be found in Table 5. For a complete description of the Angler Interviews see the CRFS Sampler Manual [4], available from CDFW.

## 2.4 Constraints

The primary key and foreign key relationships enforce constraints to prevent potential errors. The primary key is unique to each row in a table. In the Boat Table the primary key is the trip assignment number (ASSN). Compound primary keys are used

for the Location, Catch, and Lengths Tables. The primary key for the Location Table is the trip assignment number and the drift number (ASSN,LOCNUM). The primary key for the Catch Table is the trip assignment number, the drift number, and the species code (ASSN,LOCNUM,ODFWSP). For the Lengths Table, more than one row can contain the same trip assignment number, drift location, species, and length. Therefore, an additional identifier column was added to the Lengths Table. The primary key for the Lengths Table includes the trip assignment number, species code, and a unique record identifier (ASSN, RECFINSP, RECORD\_NUM). The drift number LOCNUM is not currently included in the primary key, due to 3,360 missing drift number entries.

Constraints can also be added manually to the database and placed on a particular column within a table. If new data violate a constraint, the user will receive an error message. Two constraints have been added to the Observer database, one for species codes and one for port codes. A species code cannot be entered in the Catch Table if it does not match a species code in the Species Look-up Table. The second constraint is on the county and site locations (CNTY and INTSITE) in the Boat Table. A combination of county and site cannot be entered unless it is present in the Port Look-up Table.

### 3 Quality Control

The original unedited data (downloaded from RecFIN in August 2012) remain in the database as separate tables (xxxBoat\_Original, xxxLocation\_Original, xxxSPECIES\_Original). Comparisons can be made between the original data and the edited tables (Boat, Location, Catch, and Lengths Tables). None of the suspicious data in the main tables have been checked against the original datasheets. However, all suspicious data or records with possible errors have been flagged in the relational database.

All of the changes made to the data thus far have been explicitly tracked and documented in the relational database so that revised records can be compared to the original data. Justification for each change in the database is also documented with error codes. For any column with edited data, an additional error code column was added to the database. For example, if an error was found in the County column (CNTY), the column CNTY\_Error was added to the database and contains the error code. Specific error codes have the same definition across tables and columns (Table 16). A description of error codes found in specific columns is available in the Error Code Look-up Table.

Possible erroneous data fall into three main categories. Changes made to date are all inferred estimates, based on information from adjacent drifts. Time and location data were inferred using the average elapsed time, distance, or speed of surrounding drifts. All drifts with a speed greater than two knots or a distance of greater than two nautical miles are flagged as possibly erroneous.

Null or empty values coded with dummy variables, e.g., 999, 998, 9998, have been replaced with *NULL* in the relational database. If an error was found in coordinate location or time columns, the correction was made to columns with original data as well as the converted formats, i.e., decimal degrees for coordinates and date format for time.

Table 1: Number of observed trips by month from 1999-2011.

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
January	1	19	15	21	32	39	37	42	34	32	48	48	35	403
February	4	20	16	28	31	30	28	45	32	46	50	38	38	406
March	21	21	16	26	31	33	52	47	47	61	62	52	54	523
April	17	23	23	34	39	33	50	61	43	57	53	50	61	544
May	31	26	19	26	38	54	52	62	55	69	74	74	54	634
June	22	25	27	27	40	63	54	59	68	80	80	77	76	698
July	24	17	21	35	48	75	65	65	71	97	82	92	80	772
August	36	15	16	40	52	74	65	68	66	91	81	82	78	764
September	37	18	14	33	44	63	56	64	73	64	66	70	65	667
October	37	22	9	37	59	73	55	55	59	67	65	54	64	656
November	30	24	8	24	38	58	54	51	55	59	68	41	53	563
December	20	22	11	29	28	32	35	38	41	40	38	24	55	413
<b>Total</b>	<b>280</b>	<b>252</b>	<b>195</b>	<b>360</b>	<b>480</b>	<b>627</b>	<b>603</b>	<b>657</b>	<b>644</b>	<b>763</b>	<b>767</b>	<b>702</b>	<b>713</b>	<b>7043</b>

Table 2: Number of observed trips by year and county.

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Del Norte	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Humboldt	0	0	9	0	0	0	1	0	0	13	20	13	6	62
Mendocino	4	0	1	3	8	16	8	0	0	10	9	11	5	75
Sonoma	7	10	3	4	9	17	12	10	7	7	10	4	6	106
Marin	4	0	2	1	8	10	25	6	1	0	0	0	0	57
San Francisco	0	0	1	0	8	12	5	2	1	0	0	0	3	32
Contra Costa	0	0	0	0	0	7	3	0	5	0	0	0	0	15
Alameda	8	0	0	6	21	42	32	29	25	6	7	7	23	206
San Mateo	19	9	20	11	19	20	21	21	20	18	14	11	19	222
Santa Cruz	9	9	13	10	17	21	16	16	6	8	8	8	13	154
Monterey	9	6	8	12	25	41	31	39	34	30	28	21	38	322
San Luis Obispo	0	1	6	18	21	30	26	26	36	23	29	35	39	290
Santa Barbara	6	4	5	8	8	8	15	34	23	24	20	21	20	196
Ventura	32	18	21	39	43	38	32	44	46	58	52	47	79	549
Los Angeles	68	77	50	105	124	160	162	171	176	227	241	237	224	2022
Orange	30	31	19	50	63	81	78	94	84	114	118	104	117	983
San Diego	84	87	37	93	106	124	137	164	180	225	210	183	121	1751
<b>Total</b>	<b>280</b>	<b>252</b>	<b>195</b>	<b>360</b>	<b>480</b>	<b>627</b>	<b>603</b>	<b>657</b>	<b>644</b>	<b>763</b>	<b>767</b>	<b>702</b>	<b>713</b>	<b>7043</b>

Table 3: Number of observed drifts by year and county.

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Del Norte	0	0	0	0	0	0	0	0	0	0	14	0	0	14
Humboldt	0	0	9	0	0	0	0	7	0	183	225	168	61	653
Mendocino	36	0	2	27	41	74	11	0	0	107	107	100	46	551
Sonoma	52	68	16	32	68	95	49	45	59	80	130	68	56	818
Marin	25	0	11	8	57	21	71	11	4	0	0	0	0	208
San Francisco	0	0	28	0	21	54	8	2	1	0	0	0	19	133
Contra Costa	0	0	0	0	0	41	11	0	12	0	0	0	0	64
Alameda	66	0	0	39	130	291	186	194	171	76	59	58	187	1457
San Mateo	113	50	184	137	139	121	137	195	216	221	163	143	231	2050
Santa Cruz	63	74	153	73	137	233	121	141	45	64	68	66	100	1338
Monterey	79	43	57	95	157	293	180	238	175	152	204	170	281	2124
San Luis Obispo	0	6	70	136	166	269	237	234	330	272	300	345	355	2720
Santa Barbara	50	22	27	46	38	46	113	207	143	148	142	159	151	1292
Ventura	291	135	114	328	327	273	276	317	401	527	504	451	872	4816
Los Angeles	438	470	249	608	733	912	936	1109	860	1196	1313	1410	1248	11482
Orange	167	178	89	278	417	453	399	508	440	669	677	598	670	5543
San Diego	729	799	280	649	732	1035	881	1107	1106	1472	1367	1265	732	12154
<b>Total</b>	<b>2109</b>	<b>1845</b>	<b>1289</b>	<b>2456</b>	<b>3163</b>	<b>4211</b>	<b>3616</b>	<b>4315</b>	<b>3963</b>	<b>5167</b>	<b>5273</b>	<b>5001</b>	<b>5009</b>	<b>47417</b>



Table 4: Number of Angler Interview trips also sampled by the Observer Program by year and county.

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Del Norte	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Humboldt	0	0	9	0	0	0	0	1	0	13	20	13	6	62
Mendocino	4	0	1	3	8	16	8	0	0	10	9	11	5	75
Sonoma	7	10	3	4	9	17	12	10	7	7	10	4	6	106
Marin	4	0	2	1	8	10	25	6	1	0	0	0	0	57
San Francisco	0	0	1	0	8	12	5	2	1	0	0	0	3	32
Contra Costa	0	0	0	0	0	7	2	0	5	0	0	0	0	14
Alameda	7	0	0	5	20	42	31	29	25	6	7	7	23	202
San Mateo	19	9	20	11	19	20	20	21	20	18	14	11	19	221
Santa Cruz	9	9	13	10	17	21	16	16	6	8	8	8	13	154
Monterey	9	6	7	9	25	41	28	39	33	30	28	21	38	314
San Luis Obispo	0	1	6	17	21	30	26	26	36	23	29	35	39	289
Santa Barbara	6	4	5	7	8	8	14	34	23	24	20	21	20	194
Ventura	32	18	21	39	43	38	32	44	46	58	52	47	79	549
Los Angeles	68	77	49	97	124	160	160	171	176	227	241	237	224	2011
Orange	30	31	19	49	62	80	77	94	84	114	118	104	117	979
San Diego	82	87	37	87	105	123	134	164	178	224	210	183	121	1735
<b>Total</b>	<b>277</b>	<b>252</b>	<b>193</b>	<b>339</b>	<b>477</b>	<b>625</b>	<b>590</b>	<b>657</b>	<b>641</b>	<b>762</b>	<b>767</b>	<b>702</b>	<b>713</b>	<b>6995</b>

Table 5: Description of the tables and columns in the database.

Table Name	Column Name	Description
BOAT	ANGLERS	This table contains trip level information
BOAT	ANGLERS_Error	Number of eligible anglers on the boat
BOAT	AREA	Indicates if there is an error in the ANGLERS column
BOAT	ASSN	Water area fished; 1 = Ocean <= 3 miles; 2 = Ocean >3 miles; M = Mexico; 5 = Inland (bay, river, sound, etc)
BOAT	ASSNN	This column contains the unique boat code
BOAT	BOATNAME	Trip assignment number for the day; e.g. 2 = second trip of the day
BOAT	BOATNUM	Boat name
BOAT	BOATNUM_Error	CDFG assigned boat identification number
BOAT	CAPTAIN	Indicates if there is an error in the BOATNUM column
BOAT	CNTY	Boat captain
BOAT	CNTY_Error	County of landing (FIPS County Codes)
BOAT	CNTYSITE_filler	Indicates if there is an error in the CNTY column
BOAT	INTSITE	Concatenation of CNTY and INTSITE; does not include leading zeroes in INTSITE codes
BOAT	INTSITE_Error	MRFSS site code
BOAT	INTVUER	Indicates if there is an error in the INTSITE column
BOAT	LANDING	Interviewer Code
BOAT	MNGMT_AREA	Landing site name/description
BOAT	NUMLOCS	Management area number assigned by the authors; see the MNGMT_AREA table for descriptions
BOAT	NUMLOCS_Error	Number of drifts on a trip
BOAT	NUMSP	Indicates if there is an error in the NUMLOCS column
BOAT	NUMSP_Error	Number of species encountered on trip
BOAT	PRT_CODE_NEW	Indicates if there is an error in the NUMSP column
BOAT	ST	The party boat code that links an Onboard Observer Program drift to a Dockside Type 3 catch record
BOAT	TARGETSP	State (CA=6)
BOAT	TRP_COUNTRY	The trip's target species as defined by the authors.
BOAT	TRPDATE	Indicates whether trips were in U.S. or Mexican waters. If at least one drift was located in Mexico, then the trips is assigned to Mexico. Country assignments by drift are available in the Location Table. 1=USA; 2=Mexico
BOAT	TRPDATE_ORIG	Date of the trip in the format YYYY-MM-DD
BOAT	TRPTYP	Date of the trip in the original format YYYYMMDD
BOAT	TRPTYP_Error	Trip type: 1=am1/2; 2=pml/2; 3=mid1/2; 4=twilight ;5=3/4-1day; 6=overnight; 7=other
BOAT	WAVE	Indicates if there is an error in the TRPTYP column
CATCHES	ASSN	Two month wave: 1=Jan-Feb, 2= March-April, 3=May-June, 4=July-August, 5=Sept-Oct, 6=Nov-Dec
CATCHES	CATCHES_Error	This table contains information on the catch at each drift
CATCHES	DISCD	Trip Assignment Code; Digit 1 = ASSNN, Digit 2 = Always 0, Digits 3-5: Sampler ID, Digits 6-9 = Year, Digits 10-11 = Month, Digits 12-13= Day
CATCHES	DISCD_Error	Indicates if there is a general error in the record, e.g., missing catch data
CATCHES		Number of fish released/discarded (pre-2005 this is DISCD; 2005-2011 sum of discdead+discdaliiv)
CATCHES		Indicates if there is an error in the DISCD column

Table 5: continued.

Table Name	Column Name	Description
CATCHES	DISCDALIV	Number of fish released/discarded alive
CATCHES	DISCDALIV_Error	Indicates if there is an error in the DISCDALIV column
CATCHES	DISCDDDEAD	Number of fish released/discarded dead
CATCHES	DISCDDDEAD_Error	Indicates if there is an error in the DISCDDDEAD column
CATCHES	KEPT	Number of fish kept
CATCHES	KEPT_Error	Indicates if there is an error in the KEPT column
CATCHES	LOCNUM	Drift number within a trip
CATCHES	RECFINSP	RecFIN species code
CATCHES	RECFINSP_Error	Indicates if there is an error in the RECFINSP column
CATCHES	SP_CODE	Species code
CATCHES	SPNUM	Species catch number, assigned by trip
Dockside_Type3	A_FT	This table contains the Type 3 catch records from the Dockside Sampling Program
Dockside_Type3	ADD_HRS	Intercept for fork to total length regression
Dockside_Type3	adfish	Added hours fished for inc trips
Dockside_Type3	ALPHA5	Fish with adipose fin clip
Dockside_Type3	AREA	ALPHA5 species code
Dockside_Type3	AREA_X	Area of fishing
Dockside_Type3	ASSNID	Collapsed area of fishing
Dockside_Type3	B_FT	Assignment ID
Dockside_Type3	CNTRBTRS	Slope for fork to total length regression
Dockside_Type3	CNTY	Number of contributing fishermen
Dockside_Type3	CRFS	County of intercept
Dockside_Type3	CWTFISH	CRFS boat number
Dockside_Type3	DATE1	Fish with coded wire tag
Dockside_Type3	DD	Date file created
Dockside_Type3	DEPTH	Descending device present
Dockside_Type3	DEPTHN	Bottom depth in feet
Dockside_Type3	DISP3	Depth number of boat
Dockside_Type3	DIST	Majority disposition of Type 3 fish
Dockside_Type3	DISTRIC1	Distance from shore
Dockside_Type3	F_SEX	CRFS coastal district
Dockside_Type3	FSHINSP	sex of fish (M=male; F = female)
Dockside_Type3	GEAR	Number of fish available
Dockside_Type3	HLOC	Type of gear
Dockside_Type3	HLOC3	Catch from harvest location
Dockside_Type3	HRSF	Reported fish harvest location
Dockside_Type3	ID_CODE	Hours fished
Dockside_Type3	ID_CODE3	ASSN + INTVUER + DATE (YYYYMMDD) + INTERVIEW #
Dockside_Type3	INITSITE	ASSN + INTVUER + DATE (YYYYMMDD) + INTERVIEW
Dockside_Type3	LEN_FLAG	Site code
Dockside_Type3	LENFLAG	Length flag: c = calculated from weight; t = total length calculated
Dockside_Type3	LNGLTH	Valid length
Dockside_Type3	LNGLTH_Error	Fish fork length (mm)
Dockside_Type3		Indicates an error in the LNGLTH column

Table 5: continued.

Table Name	Column Name	Description
Dockside_Type3	LOCN	Location number of boat
Dockside_Type3	MAXLEN	Maximum length of fish species
Dockside_Type3	MEASN	Indicates ;5 length measures on PR1 form
Dockside_Type3	MODE_F	Mode of fishing
Dockside_Type3	MODE_F_Error	Indicates and error in the MODE_F column
Dockside_Type3	MODE_FX	Collapsed mode of fishing
Dockside_Type3	MONTH	Month
Dockside_Type3	NRS	Non-recovered specimen
Dockside_Type3	NUM_TYP3	Number of Type 3 records
Dockside_Type3	NUM_TYP4	Number of Type 4 records
Dockside_Type3	NUM3	Interview Type 3 count
Dockside_Type3	NUMBER	Random number for subsampling
Dockside_Type3	OLD_LEN	Calculated total length
Dockside_Type3	OLD_WGT	Weight prior to calculation
Dockside_Type3	O_TOFISH	Fish with otoliths removed
Dockside_Type3	PRIMI	Primary target species sought
Dockside_Type3	PRIM2	Secondary target species sought
Dockside_Type3	PRT_CODE_NEW	PRT_CODE assigned by the authors to match onboard observer and dockside survey records
Dockside_Type3	REC	Measurement record
Dockside_Type3	RECFINSP	RecFIN species code
Dockside_Type3	RECNUM	Record number of assignment
Dockside_Type3	RIG	Whether near an oil rig
Dockside_Type3	SALMON	Salmon trip
Dockside_Type3	SCAN_RSLT	White seabass head scan result
Dockside_Type3	SFCODE	State fishery code
Dockside_Type3	SHORT	short form
Dockside_Type3	SP_CODE	NODC species code
Dockside_Type3	SP_CODE_Error	Indicates an error in the SP_CODE column
Dockside_Type3	SPN	Species number of boat
Dockside_Type3	ST	State of intercept
Dockside_Type3	STATUS	Interview status
Dockside_Type3	SUB_REG	Sub-region of trip
Dockside_Type3	SURVEY	Survey type/mode
Dockside_Type3	T_LEN	Calculated total length
Dockside_Type3	TAG	Fish tag code
Dockside_Type3	TempID	Unique row ID
Dockside_Type3	TIME	Time of intercept
Dockside_Type3	TRIPSAMP	CPFV trip-sampler numbers
Dockside_Type3	WAVE	Wave of data
Dockside_Type3	WEEK	Statistical week
Dockside_Type3	WGT	Weight of fish (kg)
Dockside_Type3	WGT_FLAG	Weight column flag: m= missing; r = outlier, z=oversize
Dockside_Type3	X1	Original interview order in file
Dockside_Type3	YEAR	Year

Table 5: continued.

Table Name	Column Name	Description
LENGTHS		This table contains length data for discarded fish
LENGTHS	ASSN	Trip Assignment Code; Digit 1 = ASSNN, Digit 2 = Always 0, Digits 3-5: Sampler ID, Digits 6-9 = Year, Digits 10-11 = Month, Digits 12-13 = Day
LENGTHS	DISPD	RecFIN disposition of fish: 0=boat fish, 1=thrown back alive, 2 = thrown back dead
LENGTHS	FISHLENGTH	Species fork length (mm)
LENGTHS	FISHLENGTH_Error	Indicates if there is an error in the FISHLENGTH column
LENGTHS	INTV_NUM	Interview number
LENGTHS	LOCNUM	Drift number within a trip
LENGTHS	LOCNUM_Error	Indicates if there is an error in the LOCNUM column
LENGTHS	MAXLEN	Maximum length for the species
LENGTHS	MODEFX	Collapsed fishing mode
LENGTHS	OLD.LEN	Deleted measured length
LENGTHS	OLD.WGT	Weight prior to calculation
LENGTHS	PWGT	Calculated weight from length
LENGTHS	RECFINSP	RECFIN species code
LENGTHS	RECN	Record number on coding form
LENGTHS	RECORD_NUM	Unique identifier for every record in the table
LENGTHS	RECS	Records on coding form
LENGTHS	SEX	Sex of the fish: 1 = male; 2 = female ; 6 = not applicable
LENGTHS	SUB.REG	Sub-region of trip
LENGTHS	WEIGT	Species weight
LENGTHS	WGT.FLAG	Weight column flag: m= missing; r = outlier, z=oversize
LOCATION		This table contains drift level information
LOCATION	ASSN	Trip Assignment Code; Digit 1 = ASSNN, Digit 2 = Always 0, Digits 3-5: Sampler ID, Digits 6-9 = Year, Digits 10-11 = Month, Digits 12-13 = Day
LOCATION	BAY_END	Bay name if a drift's ending location was within a large bay, e.g., San Francisco Bay
LOCATION	BAY_START	Bay name if a drift's starting location was within a large bay, e.g., San Francisco Bay
LOCATION	COUNTRY	Country (USA or Mexico) in which the drift occurred
LOCATION	EGISDEPTH	Drift ending location depth in meters as interpolated from GIS
LOCATION	EGISDEPTH1	Drift starting location depth in feet as interpolated from GIS
LOCATION	ELAT	Ending latitude in decimal degrees
LOCATION	ELAT_Error	Indicates if there is an error in the ELAT column
LOCATION	ELAT-ORIG	Ending latitude in the original RecFIN format
LOCATION	ELON	Ending longitude in decimal degrees
LOCATION	ELON_Error	Indicates if there is an error in the ELON column
LOCATION	ELON-ORIG	Ending longitude in the original RecFIN format
LOCATION	EMPA	Is the ending location of the drift in an MPA? 'Y' = yes, and NULL = no
LOCATION	ETEMP	Water surface temperature (F) at the end of the drift
LOCATION	ETIME	Drift end time
LOCATION	ETIME_Error	Indicates if there is an error in the ETIME column
LOCATION	ETIME-ORIG	Drift end time; original format
LOCATION	FTYPE	Fishing type (1=Free drift; 2=stationed; 3=anchored; 4=troll)
LOCATION	GFORMAT	Location format (1=DDMMMM; 3=DDMMSS; 4=DDDDDD)
LOCATION	GFORMAT_Error	Indicates if there is an error in the GFORMAT column
LOCATION	LOCATION_Error	Indicates if there is an error associated with location, time or gformat

Table 5: continued.

Table Name	Column Name	Description
LOCATION	LOCNUM	Drift number within a trip
LOCATION	MAXDEPTH	Maximum fishing depth (feet)
LOCATION	MAXDEPTH_Error	Indicates if there is an error in the MAXDEPTH column
LOCATION	MINDEPTH	Minimum bottom depth (feet)
LOCATION	MINDEPTH_Error	Indicates if there is an error in the MINDEPTH column
LOCATION	MONTH	Month of the trip
LOCATION	MPA	Indicates if the drift fished within a closed area, even if the fishign occured before the closed area existed: 1 = SMCA or SMR; 2 = Cordell Banks; 3 = Cowcod Conservation Area
LOCATION	OBSANG	Number of observed anglers
LOCATION	OBSANG_Error	Indicates if there is an error in the OBSANG column
LOCATION	PINNIPED	Seal or sea lion present
LOCATION	PLBAIT	Bait lost to pinnipeds
LOCATION	PLFISH	Catch lost to pinnipeds
LOCATION	PLGEAR	Gears lost to pinnipeds
LOCATION	PLTIME	Fishing time lost to pinnipeds (min)
LOCATION	PRMOVE	Boat moved due to pinniped
LOCATION	SGISDEPTH	Drift starting location depth in meters as interpolated from GIS
LOCATION	SGISDEPTH1	Drift starting location depth in feet as interpolated from GIS
LOCATION	SITENAME	Description of the site fished
LOCATION	SLAT	Starting latitude in decimal degrees
LOCATION	SLAT_Error	Indicates if there is an error in the SLAT column
LOCATION	SLAT_ORIG	Starting latitude in the original RecFIN format
LOCATION	SLON	Starting longitude in decimal degrees
LOCATION	SLON_Error	Indicates if there is an error in the SLON column
LOCATION	SLON_ORIG	Starting longitude in the original RecFIN format
LOCATION	SMPA	Is the starting location of the drift in an MPA? 'Y' = yes, and NULL = no
LOCATION	STEMP	Water surface temperature (F) at the start of the drift
LOCATION	STIME	Drift start time
LOCATION	STIME_Error	Indicates if there is an error in the STIME column
LOCATION	STIME_ORIG	Drift start time; original format
LOCATION		California recreational size limits (total length)
luBagLimit	Bocaccio	Bocaccio daily bag limit
luBagLimit	Cabezon	Cabezon daily bag limit
luBagLimit	Canary	Canary rockfish daily bag limit
luBagLimit	CaScorp	Califorania scorpionfish daily bag limit
luBagLimit	CaSheep	Califorania sheephead daily bag limit
luBagLimit	Cowcod	Cowcod daily bag limit
luBagLimit	Greenlings	Greenlings daily bag limit
luBagLimit	Lingcod	Lingcod daily bag limit
luBagLimit	NsRf	Nearshore rockfish daily bag limit
luBagLimit	OcWh	Ocean whitefish daily bag limit
luBagLimit	Region	Daily bag limit; Northern region: California/Oregon border to a line naer Cape Mendocino; Cent./South Region: waters near Cape Mendocino to the California/Mexico border
luBagLimit	Rockfish.General	Rockfish daily bag limit
luBagLimit	Year	Year

Table 5: continued.

Table Name	Column Name	Description
luBagLimit	Yelloweye	Yelloweye rockfish daily bag limit
luERROR	Column_Name	This is the look-up table for error codes in all tables
luERROR	ERROR_CODE	Column in which the error is found
luERROR	ER-	Error code
luERROR	ROR_DESCRIPTION	Description/definition of the error code
luERROR	Table_Name	Table in which the error is found
luERROR_Location_Error	Decimal_Value	This is the look-up table for error codes in the Location.Error field in the Location_new table
luERROR_Location_Error	Decimal-	Values to the right of the decimal point; each value 1-9 represents a different error
luERROR_Location_Error	Val_Description	Description of the values to the right of the decimal point
luERROR_Location_Error	Leading_Value	Value to the left of the decimal point
luERROR_Location_Error	Leading-	Description of the error code to the left of the decimal point
luERROR_Location_Error	Val_Description	Description of the error code to the left of the decimal point
luMNGMT_AREAS	MNGMT	Management area look-up table
luMNGMT_AREAS	MNGMT_AREA	Management area name
luMNGMT_AREAS	North_Border	Management area number assigned by the authors
luMNGMT_AREAS	North_Border_Name	Latitude of the management area's northern border
luMNGMT_AREAS	South_Border	Geographic area of the management area's northern border
luMNGMT_AREAS	South_Border_Name	Latitude of the management area's southern border
luMNGMT_AREAS	Year	Geographic area of the management area's southern border
luPORT	CNTY	Year
luPORT	CNTY_NAME	This table contains information on the Port and County of landing
luPORT	CNTY_NtoS	U.S. FIPS County Code
luPORT	CNTYSITE	County name
luPORT	DISTRICT	Counties numbered north to south
luPORT	INTSITE	Concatenation of CNTY and INTSITE
luPORT	MJPORT	CRFS District code: 1 = South (San Diego-Los Angeles); 2 = Channel (Ventura-Santa Barbara);
luPORT	MODE	3 = Central (San Luis Obispo-Santa Cruz); 4 = Bay (San Mateo-Sonoma); 5 = Wine
luPORT	PORT	(Mendocino and N. to 40.10); 6 = Redwood (40.10 Humboldt-Del Norte)
luPORT	PORT_DFG	MRFS/CRFS Site Code
luPORT	PORT_NAME	Major port abbreviation
luPORT	SITE_NAME	Interviewer mode: PC = party and charter boat fishing
luPORT	SUBMJPORT	CRFS port abbreviation
luPORT	YEARS	CDFG port code
luREGS	BlckRF	Port name
luREGS	Cabazon	Description of the site
		Sub-major port abbreviation
		Years in which the CNTY/INTSITE code appears in the database
		California recreational groundfish fishery regulations by day, management area, and species
		Black rockfish regulations
		Cabazon regulations

Table 5: continued.

Table Name	Column Name	Description
luREGS	CaScorp	California scorpionfish regulations
luREGS	CaSheep	California sheephead regulations
luREGS	Greenling	Greenlings regulations
luREGS	Lingcod	Lingcod regulations
luREGS	MAX_HOOKS	Maximum number of hooks allowed per angler
luREGS	MAX_LINES	Maximum number of lines allowed per angler
luREGS	MNGMT_AREA	Management area number assigned by the authors
luREGS	NsRF	Nearshore rockfish regulations
luREGS	OcWh	Ocean whitefish regulations
luREGS	Reg_Date	Date
luREGS	Sanddabs	Sanddabs regulations
luREGS	ShelfRF	Shelf rockfish regulations
luSizeLimit		This table contains information on the recreational size limits (total length, inches)
luSizeLimit	Bocaccio	Bocaccio size limit (total length, inches)
luSizeLimit	Cabezon	Cabezon size limit (total length, inches)
luSizeLimit	CaScorp	California Scorpionfish size limit (total length, inches)
luSizeLimit	CaSheep	California sheephead size limit (total length, inches)
luSizeLimit	Greenlings	Greenlings size limit (total length, inches)
luSizeLimit	Lingcod	Lingcod size limit (total length, inches)
luSizeLimit	Year	Year
luSPECIES		This is the look-up table for species information
luSPECIES	A_FL	Parameter $a$ in the length-weight equation $W = aL^b$ using fork length
luSPECIES	A_FT	Fork length to total length conversion factor for parameter $a$ in the length-weight equation $W = aL^b$ using total length
luSPECIES	A_TL	Parameter $a$ in the length-weight equation $W = aL^b$ using total length
luSPECIES	ALPHA5	ALPHA5 species code
luSPECIES	B_FL	Parameter $b$ in the length-weight equation $W = aL^b$ using fork length
luSPECIES	B_FT	Fork length to total length conversion factor for parameter $b$ in the length-weight equation $W = aL^b$ using total length
luSPECIES	B_TL	Parameter $b$ in the length-weight equation $W = aL^b$ using total length
luSPECIES	CDFGSP	CDFG Species Code
luSPECIES	CG	PFMC Group Code
luSPECIES	CG_NAME	PFMC Species Group
luSPECIES	COMMON	Species common name
luSPECIES	CSG	PFMC Super Group Code
luSPECIES	CSG_NAME	PFMC Species Super Group
luSPECIES	ESCH	Max Length (TL) in Eschmeyer. 1983.
luSPECIES	FAMILY	Family
luSPECIES	FMP_CODE	PFMC FMP Species
luSPECIES	GENUS	Genus
luSPECIES	GP_CODE	Species group code
luSPECIES	GROUP1	MRFSS Species Group
luSPECIES	HART	Maximum Length (TL) in Hart (1973) [7].
luSPECIES	LOVE	Max Length (TL) in Love (1996) [8].



Table 5: continued.

Table Name	Column Name	Description
luSPECIES	MLEE	Max Length (TL) in Miller and Lea (1972) [9].
luSPECIES	N_FL	F_len-wgt pairs available
luSPECIES	N2	Type 2 fish in Pacific MRFSS
luSPECIES	N3	Type 3 fish in Pacific MRFSS
luSPECIES	NAME	Comma Name
luSPECIES	NB_CNTY	Northern range county
luSPECIES	NB_ST	Northern range state
luSPECIES	NODC7	NODC V.7
luSPECIES	NODC8	NODC V.8
luSPECIES	ODFWSP	ODFW Species Code
luSPECIES	ORDER1	Order
luSPECIES	P1	Primarily sought in Pacific MRFSS
luSPECIES	P2	Secondary sought in Pacific MRFSS
luSPECIES	RECFINSP	RecFIN species code
luSPECIES	REG_GROUP	Regulations group
luSPECIES	REGION	Observed in Pacific MRFSS
luSPECIES	SB_CNTY	Southern range county
luSPECIES	SB_ST	Southern range state
luSPECIES	SCI_NAME	AFS Scientific Name
luSPECIES	SG_CODE	MRFSS Super Group Code
luSPECIES	SP_CODE	MRFSS Species Code
luSPECIES	SP_PACFIN	PacFIN species code
luSPECIES	SP_PSBBS	PSBS species code
luSPECIES	SP_WABDS	WA BDS species code
luSPECIES	SPECIES	Species
luSPECIES	SUPER	MRFSS Species Super Group
luSPECIES	TSN	ITIS taxonomic Ser. Num.
xxBoat_missing_data_all		This table contains records that need to be checked against the original datasheets before being incorporated in the relational database (i.e., missing location or catch records)
xxBoat_spcode_error		This table contains records that need to be checked against the original datasheets before being incorporated in the relational database (i.e., duplicate species records)
xxCatches_missing_data_all		This table contains the catch records corresponding to trips in the xxBoat_missing_data_all table
xxCatches_spcode_error		This table contains the catch records corresponding to trips in the xxBoat_spcode_error table
xxLocation_missing_data_all		This table contains the catch records corresponding to trips in the xxBoat_missing_data_all table
xxLocation_spcode_error		This table contains the location records corresponding to trips in the xxBoat_spcode_error table
xxxBOAT_REC_ORIGINAL		This table contains the original boat table data as downloaded from RECFIN
xxxLOCATION_REC_ORIGINAL		This table contains the original location table data as downloaded from RECFIN
xxxSPECIES_REC_ORIGINAL		This table contains the original catch table data as downloaded from RECFIN

Table 6: Number of observers participating in the program each year.

Year	Number of observers
1999	18
2000	12
2001	20
2002	20
2003	22
2004	35
2005	36
2006	38
2007	44
2008	43
2009	41
2010	32
2011	57

Table 7: All species encountered in the Observer Program (47,417 observed drifts), ranked by the number of drifts the species was encountered from 2001-2012.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Vermilion rockfish	255	19,450	1,114	7,148	15.07
Lingcod	307	3,189	7,769	5,549	11.70
California scorpionfish	296	23,367	14,472	5,438	11.47
Blue rockfish	256	25,573	8,276	5,407	11.40
Kelp bass	444	15,442	17,019	4,986	10.52
Barred sandbass	446	22,536	6,047	4,732	9.98
Chub (Pacific) mackerel	638	9,459	12,517	4,732	9.98
Gopher rockfish	288	9,318	2,018	4,165	8.78
Starry rockfish	271	7,000	1,274	3,928	8.28
Rosy rockfish	263	4,479	4,048	3,715	7.83
Bocaccio	259	10,396	1,691	3,601	7.59
Copper rockfish	241	5,011	274	3,133	6.61
Yellowtail rockfish	248	9,387	2,434	3,003	6.33
Pacific sanddab	663	34,854	2,076	2,874	6.06
Brown rockfish	236	6,548	1,640	2,826	5.96
Olive rockfish	284	6,308	1,759	2,688	5.67
Pacific barracuda	534	10,939	4,185	2,554	5.39
Honeycomb rockfish	286	4,755	3,265	2,505	5.28
California sheephead	541	3,028	1,741	2,360	4.98
Ocean whitefish	455	7,697	819	2,220	4.68
Black rockfish	253	7,631	1,725	2,019	4.26
Greenspotted rockfish	270	4,712	735	1,992	4.20
Canary rockfish	260	629	3,135	1,876	3.96
Flag rockfish	281	2,882	230	1,769	3.73
Pacific bonito	637	8,270	784	1,649	3.48
Treefish	285	2,155	478	1,617	3.41
Squarespot rockfish	275	2,723	1,020	1,473	3.11
Halfbanded rockfish	283	1,271	2,123	1,332	2.81
California halibut	666	859	1,351	1,303	2.75
Blacksmith	525	4,980	1,345	1,226	2.59
China rockfish	257	1,663	115	1,200	2.53
Speckled rockfish	278	2,563	54	950	2.00
Calico rockfish	272	260	1,719	936	1.97
White croaker	489	893	1,850	873	1.84
Yellowtail amberjack	467	3,093	101	856	1.81
Cabezon	379	410	631	814	1.72

Table 7: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Kelp rockfish	269	1,086	233	727	1.53
Kelp greenling	303	525	368	685	1.44
Chinook salmon	120	3,442	739	627	1.32
Halfmoon	499	2,845	215	612	1.29
Albacore	639	1,593	2	597	1.26
Chilipepper rockfish	249	2,001	198	586	1.24
Greenstriped rockfish	245	716	214	536	1.13
Widow rockfish	247	1,367	267	434	0.92
Rockfish genus	233	273	464	374	0.79
California lizardfish	145	57	450	346	0.73
Jack mackerel	462	1,023	259	345	0.73
Bat ray	81	22	498	341	0.72
Sanddab genus	662	3,542	328	284	0.60
White seabass	485	277	393	267	0.56
Spiny dogfish shark	55	90	263	223	0.47
Quillback rockfish	252	294	17	211	0.44
Brown smoothhound	42	43	274	207	0.44
Greenblotched rockfish	292	440	43	201	0.42
Senorita	540	20	230	180	0.38
Bigmouth sole	667	179	20	168	0.35
Black and yellow rockfish	268	233	69	164	0.35
Yelloweye rockfish	264	70	111	155	0.33
Black perch	509	201	44	151	0.32
Skipjack tuna	634	259	22	143	0.30
Yellowfin tuna	641	452	0	137	0.29
Fantail sole	668	143	12	134	0.28
Giant seabass	449	4	137	130	0.27
Striped bass	436	204	79	128	0.27
Jacksmelt	212	77	139	125	0.26
Gray smoothhound	41	16	139	122	0.26
Opaleye	497	280	17	121	0.26
Dolphinfish	475	268	0	120	0.25
Grass rockfish	280	118	37	116	0.24
Shovelnose guitarfish	60	19	118	111	0.23
Sharpnose seaperch	514	176	46	109	0.23
Bank rockfish	282	168	6	99	0.21
Giant kelpfish	568	14	135	99	0.21

Table 7: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Longfin sanddab	665	352	44	98	0.21
Rock wrasse	539	29	88	98	0.21
Speckled sanddab	664	269	48	94	0.20
Sargo	481	135	9	87	0.18
Rock sole	678	88	5	86	0.18
Coho salmon	118	3	185	85	0.18
Pacific scabbardfish	630	188	254	83	0.18
Cowcod	276	31	63	80	0.17
Squid class	710	941	52	80	0.17
Freckled rockfish	290	49	80	71	0.15
Swordspine rockfish	289	29	72	69	0.15
White seaperch	513	83	8	63	0.13
Smoothhound genus	40	8	90	63	0.13
Leopard shark	49	43	112	60	0.13
Rubberlip seaperch	516	73	6	59	0.12
Unidentified fish	0	22	54	59	0.12
Black croaker	492	43	18	48	0.10
Yellowfin croaker	491	89	86	45	0.09
Thornback	61	3	40	38	0.08
Blue shark	48	9	62	38	0.08
Wolf-eel	555	20	24	37	0.08
Starry flounder	685	39	6	34	0.07
Pacific sardine	104	98	24	31	0.07
Sablefish	313	39	40	31	0.07
Spotted sandbass	445	32	20	31	0.07
Finescale triggerfish	696	36	3	30	0.06
White sturgeon	89	10	40	28	0.06
Garibaldi	526	0	34	27	0.06
Bluefin tuna	640	44	0	27	0.06
Spotted ratfish	86	3	23	25	0.05
Petrale sole	673	59	6	25	0.05
Queenfish	494	25	25	23	0.05
California skate	67	11	22	23	0.05
Cancer genus	6	30	9	23	0.05
Flatfish order	660	9	16	23	0.05
Pacific staghorn sculpin	358	2	28	23	0.05
Swell shark	34	0	25	22	0.05

Table 7: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Rainbow seaperch	520	12	11	21	0.04
Sand sole	691	19	3	19	0.04
Big skate	66	0	21	18	0.04
Salmon genus	115	0	31	17	0.04
Pacific hake	181	0	36	17	0.04
Rosethorn rockfish	250	18	5	16	0.03
Silverside family	210	3	20	16	0.03
Mexican scad	471	33	13	16	0.03
Unidentified sharks	2	0	18	16	0.03
Shortfin mako shark	30	9	8	16	0.03
Red rock crab	7	16	19	15	0.03
Octopus order	725	5	11	15	0.03
Horn shark	16	0	16	13	0.03
Stripetail rockfish	265	18	1	13	0.03
Skate and ray order	58	0	14	13	0.03
Kelp perch	506	19	37	12	0.03
California moray	93	0	13	11	0.02
Sculpin family	318	4	9	11	0.02
Dungeness crab	8	340	77	11	0.02
Striped seaperch	508	8	5	11	0.02
Dwarf red rockfish	293	14	1	10	0.02
Sarcastic fringehead	565	2	8	10	0.02
Bronzespotted rockfish	274	36	0	10	0.02
Longspine combfish	309	1	11	10	0.02
Tiger rockfish	258	10	0	10	0.02
Rock greenling	304	8	5	9	0.02
Thresher shark	28	7	4	9	0.02
Shiner perch	507	5	5	9	0.02
Shortbelly rockfish	251	15	5	8	0.02
Diamond turbot	694	10	0	8	0.02
Soupfin shark	37	4	4	8	0.02
Bull sculpin	342	1	7	8	0.02
Pink seaperch	523	5	3	8	0.02
Surfperch family	505	2	7	7	0.01
Spotfin croaker	493	6	7	7	0.01
Redstripe rockfish	261	8	3	6	0.01
Sandbass genus	443	31	2	6	0.01

Table 7: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Lizardfish family	144	0	6	6	0.01
Shortspine combfish	310	1	5	6	0.01
Northern anchovy	109	96	1	6	0.01
Pile perch	515	8	0	6	0.01
Pinkrose rockfish	291	10	6	6	0.01
Pacific angel shark	57	0	6	6	0.01
Buffalo sculpin	339	0	8	6	0.01
Topsmelt	211	4	6	5	0.01
Silver surfperch	511	13	0	5	0.01
Lumptail searobin	299	0	5	5	0.01
Eel order	92	5	4	5	0.01
Red Irish lord	346	0	5	5	0.01
Pacific halibut	693	8	0	5	0.01
Pacific electric ray	63	0	4	4	0.01
Brown Irish lord	348	0	4	4	0.01
Salema	482	0	4	4	0.01
Righteye flounder family	669	2	3	4	0.01
Bullet mackerel	645	4	1	4	0.01
Hagfish order	13	0	5	4	0.01
Skate family	64	0	4	4	0.01
Rainbow trout	123	0	4	4	0.01
Shortspine thornyhead	294	16	0	3	0.01
Spotted turbot	689	3	0	3	0.01
Longnose skate	71	0	5	3	0.01
Walleye surfperch	510	5	0	3	0.01
Rougheye rockfish	234	2	7	3	0.01
Spiny lobster	717	0	3	3	0.01
Starry skate	73	0	3	3	0.01
Painted greenling	308	0	3	3	0.01
Threadfin bass	447	2	0	2	0
Jack family	461	1	4	2	0
Lefteye flounder family	661	2	0	2	0
Ocean sunfish	704	0	2	2	0
Round stingray	80	0	2	2	0
Plainfin midshipman	165	0	2	2	0
Drum family	484	0	2	2	0
Barred surfperch	518	2	0	2	0

Table 7: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Sockeye salmon	119	2	0	2	0
Spotfin sculpin	353	1	1	2	0
Monkeyface prickleback	596	0	2	2	0
C-O sole	687	2	0	2	0
Pelagic stingray	78	0	2	2	0
Pacific sandfish	544	2	0	2	0
Mexican rockfish	277	3	0	2	0
Ronquil family	545	0	2	2	0
Prickleback family	570	0	2	2	0
Specklefin midshipman	166	1	1	2	0
Painted greenling	315	0	2	2	0
True crabs	5	0	2	2	0
Silvergray rockfish	239	9	1	2	0
Sandpaper skate	68	0	1	1	0
Flyingfish family	199	0	1	1	0
Sharpchin rockfish	267	1	0	1	0
Smooth stargazer	550	0	2	1	0
Onespot fringehead	567	0	1	1	0
Slender sole	682	0	1	1	0
Banded guitarfish	62	0	1	1	0
Sturgeon genus	87	0	1	1	0
Surf smelt	128	0	1	1	0
Bay pipefish	228	0	1	1	0
Padded sculpin	321	0	1	1	0
Corralline sculpin	326	0	1	1	0
Island kelpfish	562	0	1	1	0
Grunt sculpin	378	0	1	1	0
Bluebanded ronquil	546	0	1	1	0
Rockweed gunnel	605	1	0	1	0
Bay goby	614	0	1	1	0
American shad	102	0	1	1	0
Redbanded rockfish	238	0	1	1	0
Popeye catalufa	452	1	0	1	0
Orangemouth corvina	488	1	0	1	0
Blackeye goby	613	0	1	1	0
Pacific hagfish	15	0	1	1	0
Green sturgeon	88	0	1	1	0



Table 7: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Pink rockfish	273	1	0	1	0
Broomtail grouper	441	0	1	1	0
Clinid family	556	0	1	1	0
Seven gill shark	21	1	0	1	0
Stingray family	75	0	1	1	0
Pacific saury	208	1	0	1	0
California corbina	490	1	0	1	0
Sailfin sandfish	543	28	17	1	0
Pacific pompano	658	1	0	1	0
Hornyhead turbot	690	1	0	1	0

Table 8: All species encountered in the Observer Program north of Point Conception(12,130 observed drifts), ranked by the number of drifts the species was encountered from 2001-2012.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Blue rockfish	256	23,829	8,061	4,786	39.46
Gopher rockfish	288	7,813	1,535	3,136	25.85
Lingcod	307	2,254	4,071	3,077	25.37
Yellowtail rockfish	248	9,198	2,401	2,889	23.82
Vermilion rockfish	255	5,519	239	2,553	21.05
Black rockfish	253	7,608	1,708	2,006	16.54
Rosy rockfish	263	1,825	2,815	1,998	16.47
Canary rockfish	260	616	3,096	1,838	15.15
Olive rockfish	284	5,139	1,069	1,836	15.14
Brown rockfish	236	4,023	178	1,365	11.25
Starry rockfish	271	2,418	635	1,351	11.14
Copper rockfish	241	1,747	63	1,209	9.97
China rockfish	257	1,661	115	1,198	9.88
Kelp greenling	303	524	367	683	5.63
Chinook salmon	120	3,433	739	621	5.12
Pacific sanddab	663	9,926	558	564	4.65
Bocaccio	259	1,021	75	510	4.20
Cabezon	379	301	116	312	2.57
Widow rockfish	247	938	229	312	2.57
Chub (Pacific) mackerel	638	1,902	240	252	2.08
California halibut	666	287	129	217	1.79
Greenspotted rockfish	270	587	67	211	1.74
Quillback rockfish	252	294	17	211	1.74
Yelloweye rockfish	264	63	107	145	1.2
Striped bass	436	204	79	128	1.06
Treefish	285	143	4	119	0.98
Black and yellow rockfish	268	185	23	105	0.87
Greenstriped rockfish	245	205	52	104	0.86
White croaker	489	140	115	104	0.86
Calico rockfish	272	10	118	102	0.84
Flag rockfish	281	122	1	102	0.84
Coho salmon	118	2	185	84	0.69
Spiny dogfish shark	55	22	106	73	0.60
Chilipepper rockfish	249	402	28	67	0.55
Jack mackerel	462	576	45	64	0.53
Speckled rockfish	278	91	5	58	0.48

Table 8: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Kelp rockfish	269	92	5	56	0.46
Rock sole	678	50	4	47	0.39
Brown smoothhound	42	3	70	44	0.36
Leopard shark	49	36	94	40	0.33
Squarespot rockfish	275	21	38	40	0.33
Bat ray	81	1	74	34	0.28
Starry flounder	685	39	6	34	0.28
Jacksmelt	212	7	36	28	0.23
Squid class	710	279	0	28	0.23
White sturgeon	89	10	40	28	0.23
Sablefish	313	35	39	26	0.21
Cancer genus	6	30	8	22	0.18
Grass rockfish	280	21	9	21	0.17
Pacific staghorn sculpin	358	2	26	21	0.17
Rockfish genus	233	3	24	19	0.16
Petrale sole	673	50	6	18	0.15
Salmon genus	115	0	31	17	0.14
Sand sole	691	17	3	17	0.14
Pacific hake	181	0	34	15	0.12
Gray smoothhound	41	1	18	13	0.11
Speckled sanddab	664	45	4	13	0.11
Sanddab genus	662	207	76	12	0.10
Albacore	639	25	0	11	0.09
Cowcod	276	7	7	11	0.09
Dungeness crab	8	340	77	11	0.09
Ocean whitefish	455	14	0	11	0.09
Rosethorn rockfish	250	9	5	11	0.09
Dwarf red rockfish	293	14	1	10	0.08
Sculpin family	318	4	8	10	0.08
Tiger rockfish	258	10	0	10	0.08
Rock greenling	304	8	5	9	0.07
Bull sculpin	342	1	7	8	0.07
Stripetail rockfish	265	11	1	8	0.07
Halfbanded rockfish	283	4	9	7	0.06
Pacific sardine	104	11	2	7	0.06
Big skate	66	0	9	6	0.05
Buffalo sculpin	339	0	8	6	0.05

Table 8: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Red rock crab	7	15	9	6	0.05
Redstripe rockfish	261	8	3	6	0.05
Unidentified fish	0	8	6	6	0.05
Pacific halibut	693	8	0	5	0.04
Wolf-eel	555	2	3	5	0.04
Brown Irish lord	348	0	4	4	0.03
California lizardfish	145	1	3	4	0.03
Pacific scabbardfish	630	38	13	4	0.03
Rainbow trout	123	0	4	4	0.03
Red Irish lord	346	0	4	4	0.03
Shortbelly rockfish	251	14	0	4	0.03
Southern shark	37	2	2	4	0.03
Bank rockfish	282	2	3	3	0.02
Blue shark	48	0	3	3	0.02
Greenblotched rockfish	292	0	3	3	0.02
Pacific bonito	637	3	0	3	0.02
Striped seaperch	508	2	1	3	0.02
Thresher shark	28	1	2	3	0.02
Yellowtail amberjack	467	2	2	3	0.02
California sheephead	541	2	0	2	0.02
Fantail sole	668	2	0	2	0.02
Flatfish order	660	1	1	2	0.02
Longspine combfish	309	0	2	2	0.02
Pacific barracuda	534	68	0	2	0.02
Painted greenling	315	0	2	2	0.02
Silvergray rockfish	239	9	1	2	0.02
Smoothhound genus	40	1	3	2	0.02
Sockeye salmon	119	2	0	2	0.02
Spotted ratfish	86	1	1	2	0.02
White seabass	485	2	0	2	0.02
Bay goby	614	0	1	1	0.01
Broomtail grouper	441	0	1	1	0.01
California skate	67	0	1	1	0.01
Corralline sculpin	326	0	1	1	0.01
Green sturgeon	88	0	1	1	0.01
Honeycomb rockfish	286	0	1	1	0.01
Lefteye flounder family	661	1	0	1	0.01

Table 8: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Longnose skate	71	0	1	1	0.01
Northern anchovy	109	0	1	1	0.01
Onespot fringehead	567	0	1	1	0.01
Pacific electric ray	63	0	1	1	0.01
Padded sculpin	321	0	1	1	0.01
Painted greenling	308	0	1	1	0.01
Redbanded rockfish	238	0	1	1	0.01
Righteye flounder family	669	1	0	1	0.01
Sarcastic fringehead	565	0	1	1	0.01
Sargo	481	1	0	1	0.01
Senorita	540	0	1	1	0.01
Seven gill shark	21	1	0	1	0.01
Sharpchin rockfish	267	1	0	1	0.01
Silver surfperch	511	1	0	1	0.01
Skate and ray order	58	0	1	1	0.01
Spotfin sculpin	353	1	0	1	0.01
Spotted sandbass	445	0	2	1	0.01
Sturgeon genus	87	0	1	1	0.01
Surf smelt	128	0	1	1	0.01
Surfperch family	505	0	1	1	0.01
True crabs	5	0	1	1	0.01
Yellowfin croaker	491	1	0	1	0.01

Table 9: All species encountered in the Observer Program south of Point Conception (35,287 observed drifts), ranked by the number of drifts the species was encountered from 2001-2012.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
California scorpionfish	296	23,367	14,472	5,438	15.41
Kelp bass	444	15,442	17,019	4,986	14.13
Barred sandbass	446	22,536	6,047	4,732	13.41
Vermilion rockfish	255	13,931	875	4,595	13.02
Chub (Pacific) mackerel	638	7,557	12,277	4,480	12.70
Bocaccio	259	9,375	1,616	3,091	8.76
Starry rockfish	271	4,582	639	2,577	7.30
Pacific barracuda	534	10,871	4,185	2,552	7.23
Honeycomb rockfish	286	4,755	3,264	2,504	7.10
Lingcod	307	935	3,698	2,472	7.01
California sheephead	541	3,026	1,741	2,358	6.68
Pacific sanddab	663	24,928	1,518	2,310	6.55
Ocean whitefish	455	7,683	819	2,209	6.26
Copper rockfish	241	3,264	211	1,924	5.45
Greenspotted rockfish	270	4,125	668	1,781	5.05
Rosy rockfish	263	2,654	1,233	1,717	4.87
Flag rockfish	281	2,760	229	1,667	4.72
Pacific bonito	637	8,267	784	1,646	4.66
Treefish	285	2,012	474	1,498	4.25
Brown rockfish	236	2,525	1,462	1,461	4.14
Squarespot rockfish	275	2,702	982	1,433	4.06
Halfbanded rockfish	283	1,267	2,114	1,325	3.75
Blacksmith	525	4,980	1,345	1,226	3.47
California halibut	666	572	1,222	1,086	3.08
Gopher rockfish	288	1,505	483	1,029	2.92
Speckled rockfish	278	2,472	49	892	2.53
Yellowtail amberjack	467	3,091	99	853	2.42
Olive rockfish	284	1,169	690	852	2.41
Calico rockfish	272	250	1,601	834	2.36
White croaker	489	753	1,735	769	2.18
Kelp rockfish	269	994	228	671	1.90
Blue rockfish	256	1,744	215	621	1.76
Halfmoon	499	2,845	215	612	1.73
Albacore	639	1,568	2	586	1.66
Chilipepper rockfish	249	1,599	170	519	1.47
Cabezon	379	109	515	502	1.42

Table 9: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Greenstriped rockfish	245	511	162	432	1.22
Rockfish genus	233	270	440	355	1.01
California lizardfish	145	56	447	342	0.97
Bat ray	81	21	424	307	0.87
Jack mackerel	462	447	214	281	0.80
Sanddab genus	662	3,335	252	272	0.77
White seabass	485	275	393	265	0.75
Greenblotched rockfish	292	440	40	198	0.56
Senorita	540	20	229	179	0.51
Bigmouth sole	667	179	20	168	0.48
Brown smoothhound	42	40	204	163	0.46
Black perch	509	201	44	151	0.43
Spiny dogfish shark	55	68	157	150	0.43
Skipjack tuna	634	259	22	143	0.41
Yellowfin tuna	641	452	0	137	0.39
Fantail sole	668	141	12	132	0.37
Giant seabass	449	4	137	130	0.37
Widow rockfish	247	429	38	122	0.35
Opaleye	497	280	17	121	0.34
Dolphinfish	475	268	0	120	0.34
Yellowtail rockfish	248	189	33	114	0.32
Shovelnose guitarfish	60	19	118	111	0.31
Gray smoothhound	41	15	121	109	0.31
Sharpnose seaperch	514	176	46	109	0.31
Giant kelpfish	568	14	135	99	0.28
Longfin sanddab	665	352	44	98	0.28
Rock wrasse	539	29	88	98	0.28
Jacksmelt	212	70	103	97	0.27
Bank rockfish	282	166	3	96	0.27
Grass rockfish	280	97	28	95	0.27
Sargo	481	134	9	86	0.24
Speckled sanddab	664	224	44	81	0.23
Pacific scabbardfish	630	150	241	79	0.22
Freckled rockfish	290	49	80	71	0.20
Cowcod	276	24	56	69	0.20
Swordspine rockfish	289	29	72	69	0.20
White seaperch	513	83	8	63	0.18

Table 9: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Smoothhound genus	40	7	87	61	0.17
Black and yellow rockfish	268	48	46	59	0.17
Rubberlip seaperch	516	73	6	59	0.17
Unidentified fish	0	14	48	53	0.15
Squid class	710	662	52	52	0.15
Black croaker	492	43	18	48	0.14
Yellowfin croaker	491	88	86	44	0.12
Rock sole	678	38	1	39	0.11
Canary rockfish	260	13	39	38	0.11
Thornback	61	3	40	38	0.11
Blue shark	48	9	59	35	0.10
Wolf-eel	555	18	21	32	0.09
Finescale triggerfish	696	36	3	30	0.09
Spotted sandbass	445	32	18	30	0.09
Bluefin tuna	640	44	0	27	0.08
Garibaldi	526	0	34	27	0.08
Pacific sardine	104	87	22	24	0.07
Queenfish	494	25	25	23	0.07
Spotted ratfish	86	2	22	23	0.07
California skate	67	11	21	22	0.06
Swell shark	34	0	25	22	0.06
Flatfish order	660	8	15	21	0.06
Rainbow seaperch	520	12	11	21	0.06
Leopard shark	49	7	18	20	0.06
Mexican scad	471	33	13	16	0.05
Shortfin mako shark	30	9	8	16	0.05
Silverside family	210	3	20	16	0.05
Unidentified sharks	2	0	18	16	0.05
Octopus order	725	5	11	15	0.04
Black rockfish	253	23	17	13	0.04
Horn shark	16	0	16	13	0.04
Big skate	66	0	12	12	0.03
Kelp perch	506	19	37	12	0.03
Skate and ray order	58	0	13	12	0.03
California moray	93	0	13	11	0.03
Bronzespotted rockfish	274	36	0	10	0.03
Yelloweye rockfish	264	7	4	10	0.03



Table 9: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Red rock crab	7	1	10	9	0.03
Sarcastic fringehead	565	2	7	9	0.03
Shiner perch	507	5	5	9	0.03
Diamond turbot	694	10	0	8	0.02
Longspine combfish	309	1	9	8	0.02
Pink seaperch	523	5	3	8	0.02
Striped seaperch	508	6	4	8	0.02
Petrale sole	673	9	0	7	0.02
Spotfin croaker	493	6	7	7	0.02
Chinook salmon	120	9	0	6	0.02
Lizardfish family	144	0	6	6	0.02
Pacific angel shark	57	0	6	6	0.02
Pile perch	515	8	0	6	0.02
Pinkrose rockfish	291	10	6	6	0.02
Sandbass genus	443	31	2	6	0.02
Shortspine combfish	310	1	5	6	0.02
Surfperch family	505	2	6	6	0.02
Thresher shark	28	6	2	6	0.02
Eel order	92	5	4	5	0.01
Lumptail searobin	299	0	5	5	0.01
Northern anchovy	109	96	0	5	0.01
Rosethorn rockfish	250	9	0	5	0.01
Sablefish	313	4	1	5	0.01
Stripetail rockfish	265	7	0	5	0.01
Topsmelt	211	4	6	5	0.01
Bullet mackerel	645	4	1	4	0.01
Hagfish order	13	0	5	4	0.01
Salema	482	0	4	4	0.01
Shortbelly rockfish	251	1	5	4	0.01
Silver surfperch	511	12	0	4	0.01
Skate family	64	0	4	4	0.01
Soupin shark	37	2	2	4	0.01
Pacific electric ray	63	0	3	3	0.01
Righteye flounder family	669	1	3	3	0.01
Rougheye rockfish	234	2	7	3	0.01
Shortspine thornyhead	294	16	0	3	0.01
Spiny lobster	717	0	3	3	0.01

Table 9: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Spotted turbot	689	3	0	3	0.01
Starry skate	73	0	3	3	0.01
Walleye surfperch	510	5	0	3	0.01
Barred surfperch	518	2	0	2	0.01
China rockfish	257	2	0	2	0.01
C-O sole	687	2	0	2	0.01
Drum family	484	0	2	2	0.01
Jack family	461	1	4	2	0.01
Kelp greenling	303	1	1	2	0.01
Longnose skate	71	0	4	2	0.01
Mexican rockfish	277	3	0	2	0.01
Monkeyface prickleback	596	0	2	2	0.01
Ocean sunfish	704	0	2	2	0.01
Pacific hake	181	0	2	2	0.01
Pacific sandfish	544	2	0	2	0.01
Pacific staghorn sculpin	358	0	2	2	0.01
Painted greenling	308	0	2	2	0.01
Pelagic stingray	78	0	2	2	0.01
Plainfin midshipman	165	0	2	2	0.01
Prickleback family	570	0	2	2	0.01
Ronquil family	545	0	2	2	0.01
Round stingray	80	0	2	2	0.01
Sand sole	691	2	0	2	0.01
Specklefin midshipman	166	1	1	2	0.01
Threadfin bass	447	2	0	2	0.01
American shad	102	0	1	1	0
Banded guitarfish	62	0	1	1	0
Bay pipefish	228	0	1	1	0
Blackeye goby	613	0	1	1	0
Bluebanded ronquil	546	0	1	1	0
California corbina	490	1	0	1	0
Cancer genus	6	0	1	1	0
Clinid family	556	0	1	1	0
Coho salmon	118	1	0	1	0
Flyingfish family	199	0	1	1	0
Grunt sculpin	378	0	1	1	0
Hornyhead turbot	690	1	0	1	0

Table 9: continued.

Common name	RecFIN species code	Number kept	Number discarded	Drifts encountered	Percent (%) of drifts encountered
Island kelpfish	562	0	1	1	0
Lefteye flounder family	661	1	0	1	0
Orangemouth corvina	488	1	0	1	0
Pacific hagfish	15	0	1	1	0
Pacific pompano	658	1	0	1	0
Pacific saury	208	1	0	1	0
Pink rockfish	273	1	0	1	0
Popeye catalufa	452	1	0	1	0
Red Irish lord	346	0	1	1	0
Rockweed gunnel	605	1	0	1	0
Sailfin sandfish	543	28	17	1	0
Sandpaper skate	68	0	1	1	0
Sculpin family	318	0	1	1	0
Slender sole	682	0	1	1	0
Smooth stargazer	550	0	2	1	0
Spotfin sculpin	353	0	1	1	0
Stingray family	75	0	1	1	0
True crabs	5	0	1	1	0

Table 10: Species encountered in at least 1.0% of all observed trips in the Observer Program by CRFS district. Data within each county represent at least three vessels to meet CDFW standards for confidential data.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Albacore	Redwood	0	0	0
Albacore	Wine	0	0	0
Albacore	San Fran.	25	0	11
Albacore	Central	0	0	0
Albacore	Channel	139	0	8
Albacore	South	1429	2	578
Barred sandbass	Redwood	0	0	0
Barred sandbass	Wine	0	0	0
Barred sandbass	San Fran.	0	0	0
Barred sandbass	Central	0	0	0
Barred sandbass	Channel	1576	171	288
Barred sandbass	South	20960	5876	4444
Black rockfish	Redwood	2153	727	457
Black rockfish	Wine	262	30	123
Black rockfish	San Fran.	4188	835	1132
Black rockfish	Central	1005	116	294
Black rockfish	Channel	21	17	12
Black rockfish	South	2	0	1
Blacksmith	Redwood	0	0	0
Blacksmith	Wine	0	0	0
Blacksmith	San Fran.	0	0	0
Blacksmith	Central	0	0	0
Blacksmith	Channel	366	130	119
Blacksmith	South	4614	1215	1107
Blue rockfish	Redwood	119	248	127
Blue rockfish	Wine	962	813	253
Blue rockfish	San Fran.	7327	1961	1523
Blue rockfish	Central	15421	5039	2883
Blue rockfish	Channel	1657	187	542
Blue rockfish	South	87	28	79
Bocaccio	Redwood	0	0	0
Bocaccio	Wine	0	0	0
Bocaccio	San Fran.	241	7	132
Bocaccio	Central	780	68	378
Bocaccio	Channel	2969	767	1111
Bocaccio	South	6406	849	1980

Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Brown rockfish	Redwood	2	0	2
Brown rockfish	Wine	0	1	1
Brown rockfish	San Fran.	1455	50	650
Brown rockfish	Central	2566	127	712
Brown rockfish	Channel	1041	506	442
Brown rockfish	South	1484	956	1019
Cabezon	Redwood	9	4	11
Cabezon	Wine	23	8	27
Cabezon	San Fran.	208	61	195
Cabezon	Central	61	43	79
Cabezon	Channel	12	69	58
Cabezon	South	97	446	444
Calico rockfish	Redwood	0	0	0
Calico rockfish	Wine	0	0	0
Calico rockfish	San Fran.	1	4	5
Calico rockfish	Central	9	114	97
Calico rockfish	Channel	23	195	119
Calico rockfish	South	227	1406	715
California halibut	Redwood	3	14	11
California halibut	Wine	0	0	0
California halibut	San Fran.	263	97	189
California halibut	Central	21	18	17
California halibut	Channel	103	49	106
California halibut	South	469	1173	980
California scorpionfish	Redwood	0	0	0
California scorpionfish	Wine	0	0	0
California scorpionfish	San Fran.	0	0	0
California scorpionfish	Central	0	0	0
California scorpionfish	Channel	789	164	481
California scorpionfish	South	22578	14308	4957
California sheephead	Redwood	0	0	0
California sheephead	Wine	0	0	0
California sheephead	San Fran.	0	0	0
California sheephead	Central	2	0	2
California sheephead	Channel	283	62	217
California sheephead	South	2743	1679	2141

Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Canary rockfish	Redwood	0	47	32
Canary rockfish	Wine	20	171	115
Canary rockfish	San Fran.	369	1403	756
Canary rockfish	Central	227	1475	935
Canary rockfish	Channel	7	31	26
Canary rockfish	South	6	8	12
Chilipepper rockfish	Redwood	0	0	0
Chilipepper rockfish	Wine	0	0	0
Chilipepper rockfish	San Fran.	170	5	26
Chilipepper rockfish	Central	232	23	41
Chilipepper rockfish	Channel	538	105	242
Chilipepper rockfish	South	1061	65	277
China rockfish	Redwood	10	0	10
China rockfish	Wine	270	23	160
China rockfish	San Fran.	918	52	633
China rockfish	Central	463	40	395
China rockfish	Channel	2	0	2
China rockfish	South	0	0	0
Chinook salmon	Redwood	30	1	4
Chinook salmon	Wine	111	30	25
Chinook salmon	San Fran.	2725	645	373
Chinook salmon	Central	567	63	219
Chinook salmon	Channel	8	0	5
Chinook salmon	South	1	0	1
Chub (Pacific) mackerel	Redwood	0	0	0
Chub (Pacific) mackerel	Wine	1	0	1
Chub (Pacific) mackerel	San Fran.	205	29	42
Chub (Pacific) mackerel	Central	1696	211	209
Chub (Pacific) mackerel	Channel	532	748	332
Chub (Pacific) mackerel	South	7025	11529	4148
Copper rockfish	Redwood	8	1	9
Copper rockfish	Wine	21	0	21
Copper rockfish	San Fran.	402	15	309
Copper rockfish	Central	1316	47	870
Copper rockfish	Channel	2099	103	998
Copper rockfish	South	1165	108	926

Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Flag rockfish	Redwood	0	0	0
Flag rockfish	Wine	0	0	0
Flag rockfish	San Fran.	10	0	9
Flag rockfish	Central	112	1	93
Flag rockfish	Channel	657	67	463
Flag rockfish	South	2103	162	1204
Gopher rockfish	Redwood	2	1	2
Gopher rockfish	Wine	136	7	93
Gopher rockfish	San Fran.	1688	213	914
Gopher rockfish	Central	5987	1314	2127
Gopher rockfish	Channel	566	203	376
Gopher rockfish	South	939	280	653
Greenspotted rockfish	Redwood	0	0	0
Greenspotted rockfish	Wine	0	0	0
Greenspotted rockfish	San Fran.	156	14	65
Greenspotted rockfish	Central	431	53	146
Greenspotted rockfish	Channel	2139	232	669
Greenspotted rockfish	South	1986	436	1112
Greenstriped rockfish	Redwood	0	0	0
Greenstriped rockfish	Wine	0	0	0
Greenstriped rockfish	San Fran.	56	22	27
Greenstriped rockfish	Central	149	30	77
Greenstriped rockfish	Channel	142	46	119
Greenstriped rockfish	South	369	116	313
Halfbanded rockfish	Redwood	0	0	0
Halfbanded rockfish	Wine	0	0	0
Halfbanded rockfish	San Fran.	0	0	0
Halfbanded rockfish	Central	4	9	7
Halfbanded rockfish	Channel	130	540	343
Halfbanded rockfish	South	1137	1574	982
Halfmoon	Redwood	0	0	0
Halfmoon	Wine	0	0	0
Halfmoon	San Fran.	0	0	0
Halfmoon	Central	0	0	0
Halfmoon	Channel	211	5	46
Halfmoon	South	2634	210	566

Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Honeycomb rockfish	Redwood	0	0	0
Honeycomb rockfish	Wine	0	0	0
Honeycomb rockfish	San Fran.	0	0	0
Honeycomb rockfish	Central	0	1	1
Honeycomb rockfish	Channel	155	130	179
Honeycomb rockfish	South	4600	3134	2325
Kelp bass	Redwood	0	0	0
Kelp bass	Wine	0	0	0
Kelp bass	San Fran.	0	0	0
Kelp bass	Central	0	0	0
Kelp bass	Channel	1424	656	426
Kelp bass	South	14018	16363	4560
Kelp greenling	Redwood	36	74	88
Kelp greenling	Wine	80	37	81
Kelp greenling	San Fran.	298	148	332
Kelp greenling	Central	110	108	182
Kelp greenling	Channel	1	0	1
Kelp greenling	South	0	1	1
Kelp rockfish	Redwood	0	0	0
Kelp rockfish	Wine	0	0	0
Kelp rockfish	San Fran.	9	0	3
Kelp rockfish	Central	83	5	53
Kelp rockfish	Channel	370	123	244
Kelp rockfish	South	624	105	427
Lingcod	Redwood	45	32	51
Lingcod	Wine	79	127	135
Lingcod	San Fran.	1325	1470	1177
Lingcod	Central	805	2442	1714
Lingcod	Channel	337	1564	1007
Lingcod	South	598	2134	1465
Ocean whitefish	Redwood	0	0	0
Ocean whitefish	Wine	0	0	0
Ocean whitefish	San Fran.	0	0	0
Ocean whitefish	Central	14	0	11
Ocean whitefish	Channel	1156	84	321
Ocean whitefish	South	6527	735	1888



Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Olive rockfish	Redwood	1	10	8
Olive rockfish	Wine	83	35	59
Olive rockfish	San Fran.	1596	145	537
Olive rockfish	Central	3459	879	1232
Olive rockfish	Channel	596	438	400
Olive rockfish	South	573	252	452
Pacific barracuda	Redwood	0	0	0
Pacific barracuda	Wine	0	0	0
Pacific barracuda	San Fran.	67	0	1
Pacific barracuda	Central	1	0	1
Pacific barracuda	Channel	1170	63	188
Pacific barracuda	South	9701	4122	2364
Pacific bonito	Redwood	0	0	0
Pacific bonito	Wine	0	0	0
Pacific bonito	San Fran.	0	0	0
Pacific bonito	Central	3	0	3
Pacific bonito	Channel	203	30	61
Pacific bonito	South	8064	754	1585
Pacific sanddab	Redwood	0	0	0
Pacific sanddab	Wine	0	1	1
Pacific sanddab	San Fran.	2136	32	90
Pacific sanddab	Central	7790	525	473
Pacific sanddab	Channel	2319	291	616
Pacific sanddab	South	22609	1227	1694
Rosy rockfish	Redwood	0	0	0
Rosy rockfish	Wine	43	14	30
Rosy rockfish	San Fran.	498	457	385
Rosy rockfish	Central	1284	2344	1583
Rosy rockfish	Channel	1626	776	908
Rosy rockfish	South	1028	457	809
Speckled rockfish	Redwood	0	0	0
Speckled rockfish	Wine	0	0	0
Speckled rockfish	San Fran.	28	0	16
Speckled rockfish	Central	63	5	42
Speckled rockfish	Channel	1061	13	340
Speckled rockfish	South	1411	36	552

Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Squarespot rockfish	Redwood	0	0	0
Squarespot rockfish	Wine	0	0	0
Squarespot rockfish	San Fran.	3	5	3
Squarespot rockfish	Central	18	33	37
Squarespot rockfish	Channel	507	295	388
Squarespot rockfish	South	2195	687	1045
Starry rockfish	Redwood	0	0	0
Starry rockfish	Wine	7	0	4
Starry rockfish	San Fran.	297	84	175
Starry rockfish	Central	2114	551	1172
Starry rockfish	Channel	1515	157	872
Starry rockfish	South	3067	482	1705
Treefish	Redwood	0	0	0
Treefish	Wine	0	0	0
Treefish	San Fran.	2	0	2
Treefish	Central	141	4	117
Treefish	Channel	412	39	298
Treefish	South	1600	435	1200
Vermilion rockfish	Redwood	24	0	15
Vermilion rockfish	Wine	70	0	56
Vermilion rockfish	San Fran.	964	25	632
Vermilion rockfish	Central	4461	214	1850
Vermilion rockfish	Channel	5065	159	1529
Vermilion rockfish	South	8866	716	3066
White croaker	Redwood	0	0	0
White croaker	Wine	0	0	0
White croaker	San Fran.	55	91	78
White croaker	Central	85	24	26
White croaker	Channel	28	63	42
White croaker	South	725	1672	727
Yellowtail amberjack	Redwood	0	0	0
Yellowtail amberjack	Wine	1	1	2
Yellowtail amberjack	San Fran.	0	0	0
Yellowtail amberjack	Central	1	1	1
Yellowtail amberjack	Channel	151	0	44
Yellowtail amberjack	South	2940	99	809

Table 10: continued.

Common name	CRFS District	Number kept	Number discarded	Drifts encountered
Yellowtail rockfish	Redwood	2	45	29
Yellowtail rockfish	Wine	163	77	120
Yellowtail rockfish	San Fran.	2833	754	874
Yellowtail rockfish	Central	6200	1525	1866
Yellowtail rockfish	Channel	148	30	86
Yellowtail rockfish	South	41	3	28

Table 11: Number of individual rockfish by species measured from the Observer Program (discarded, n=7,043 trips) and from Angler Interviews (kept, n=6,995 trips).

Fork length (cm)	Black rockfish		Blue rockfish		Bocaccio		Brown rockfish	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	0	0
2-3	0	0	2	1	0	0	0	0
4-5	0	0	0	0	0	0	0	0
6-7	0	1	0	0	0	0	0	0
8-9	0	0	0	1	0	0	1	2
10-11	1	3	3	11	1	0	0	4
12-13	0	1	1	12	0	3	0	11
14-15	3	2	10	33	2	3	6	13
16-17	6	6	48	68	11	16	34	45
18-19	21	18	199	92	10	19	154	76
20-21	111	55	982	143	24	19	396	118
22-23	353	57	2768	218	40	20	566	86
24-25	736	72	5084	284	149	17	757	64
26-27	1287	88	5767	172	419	20	1013	42
28-29	1756	52	6651	130	617	23	1205	35
30-31	2078	38	7979	106	782	22	1369	35
32-33	1717	20	6752	68	979	12	1472	31
34-35	1116	11	4330	28	1177	16	1466	30
36-37	606	4	2057	11	1281	21	1446	23
38-39	388	1	722	4	1394	21	1071	14
40-41	322	0	136	0	1504	32	641	12
42-43	224	0	15	0	1416	39	305	4
44-45	168	1	12	0	1298	20	134	3
46-47	118	0	8	0	1158	19	53	0
48-49	57	0	3	0	882	17	12	0
50-51	38	2	3	0	819	5	2	0
52-53	12	0	2	0	649	4	1	0
54-55	5	0	0	0	454	2	1	0
56-57	1	0	0	0	338	3	1	0
58-59	0	0	0	0	239	1	0	0
60-61	1	0	3	0	160	0	0	0
62-63	0	0	1	0	96	0	0	0
64-65	0	0	1	0	62	1	0	0
66-67	0	0	1	0	45	0	0	0
68-69	0	0	0	0	27	0	0	0
70-71	0	0	0	0	10	0	0	0
72-73	0	0	0	0	7	0	0	0
74-75	0	0	1	0	1	0	1	0
76-77	0	0	1	0	5	0	0	0
78-79	0	0	0	0	3	1	0	0
80-81	0	0	0	0	0	0	0	0
82-83	0	0	0	0	0	0	0	0
84-85	0	0	0	0	0	0	0	0
86-87	0	0	0	0	0	0	0	0
88-89	0	0	0	0	0	0	0	0
90-91	0	0	0	0	0	0	0	0
92-93	0	0	0	0	0	0	0	0
94-95	0	0	0	0	0	0	0	0
96-97	0	0	0	0	0	0	0	0
98-99	0	0	0	0	1	0	0	0
Total	11438	432	44430	1382	16756	376	12502	648
Mean	31.91	26.05	29.88	24.87	42.05	34.65	32.46	24.99
Std. Dev.	5.39	4.84	4.28	4.99	8.70	10.84	5.96	6.83

Note: The proportion of measured kept fish to measured discarded fish in Tables 9-11 are not equal to the proportion of kept to discarded fish from all trips.

Table 11: continued.

Fork length (cm)	Calico rockfish		Canary rockfish		Chilipepper rockfish		China rockfish	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0	0
4-5	0	0	0	0	0	0	0	0
6-7	0	2	0	0	0	0	0	0
8-9	0	8	0	0	0	0	0	0
10-11	3	31	0	1	1	1	0	0
12-13	53	263	1	2	0	0	0	0
14-15	121	393	0	3	0	5	0	0
16-17	93	215	1	15	23	15	1	0
18-19	24	16	5	35	92	4	4	0
20-21	5	1	5	77	265	7	23	0
22-23	3	1	8	111	409	6	98	4
24-25	3	0	14	113	510	6	253	4
26-27	1	0	38	123	426	1	503	4
28-29	0	0	61	132	323	1	769	3
30-31	0	0	87	183	232	1	675	2
32-33	0	0	100	163	199	2	324	4
34-35	0	0	128	152	149	0	98	1
36-37	0	0	135	89	113	1	35	0
38-39	0	0	124	65	128	0	12	0
40-41	0	0	73	36	166	0	2	1
42-43	0	0	52	25	184	0	1	0
44-45	0	0	28	7	118	0	1	0
46-47	0	0	15	6	70	0	3	0
48-49	0	0	8	4	21	0	1	0
50-51	0	0	6	1	5	0	0	0
52-53	0	0	0	0	0	0	0	0
54-55	0	0	0	1	0	0	0	0
56-57	0	0	0	0	0	0	0	0
58-59	0	0	0	0	1	0	0	0
60-61	0	0	0	0	0	0	1	0
62-63	0	0	0	0	0	0	1	0
64-65	0	0	0	0	0	0	0	0
66-67	0	0	0	0	0	0	0	0
68-69	0	0	0	0	0	0	0	0
Total	332	930	918	1344	3558	50	2947	23
Mean	15.89	14.80	35.83	30.42	30.20	20.92	29.42	28.60
Std. Dev.	2.24	1.74	5.58	6.27	7.69	5.16	3.25	4.66

Table 11: continued.

Fork length (cm)	Copper rockfish		Flag rockfish		Gopher rockfish		Greenspotted rockfish	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0	0
4-5	0	0	0	0	2	0	0	0
6-7	0	0	0	0	0	0	0	0
8-9	0	0	0	0	1	2	0	0
10-11	0	0	1	0	0	3	0	2
12-13	1	3	1	0	0	7	3	9
14-15	3	2	19	2	3	17	37	25
16-17	12	10	66	21	29	28	152	51
18-19	63	11	186	20	148	40	305	54
20-21	208	13	346	26	639	79	615	33
22-23	379	15	524	11	1658	102	936	28
24-25	591	18	711	11	3636	160	1319	20
26-27	804	21	865	8	5350	151	1464	10
28-29	910	9	817	7	3701	69	1451	14
30-31	997	10	573	2	1395	22	1215	4
32-33	1145	8	307	3	286	5	795	1
34-35	1050	5	155	0	44	2	410	0
36-37	1010	6	60	0	67	0	168	2
38-39	968	5	24	0	39	0	70	0
40-41	811	1	9	0	2	0	28	0
42-43	539	3	2	0	3	0	15	0
44-45	338	1	1	0	1	0	6	0
46-47	154	1	0	0	0	0	2	0
48-49	53	1	0	0	1	0	0	0
50-51	17	0	2	1	1	0	0	0
52-53	12	0	0	0	1	0	0	0
54-55	5	0	0	0	0	0	0	0
56-57	1	0	0	0	0	0	0	0
58-59	1	0	0	0	0	0	1	0
60-61	0	0	0	0	2	0	0	0
62-63	0	0	0	0	0	0	0	0
64-65	0	0	0	0	0	0	0	0
66-67	2	0	0	0	0	0	0	0
68-69	1	0	0	0	0	0	0	0
Total	10459	143	4926	112	17599	687	9267	253
Mean	33.95	26.73	27.08	22.06	26.87	24.25	27.57	20.43
Std. Dev.	6.53	7.27	4.41	5.09	2.97	4.00	4.69	4.58

Table 11: continued.

Fork length (cm)	Greenstriped rockfish		Halfbanded rockfish		Honeycomb rockfish		Kelp rockfish	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	0	0
2-3	0	0	0	0	1	0	0	0
4-5	0	0	0	0	0	1	0	0
6-7	0	0	0	0	0	1	0	0
8-9	0	0	2	2	1	3	0	0
10-11	0	1	5	13	7	33	0	0
12-13	1	2	23	62	51	95	0	2
14-15	1	3	137	184	374	245	1	2
16-17	5	12	470	206	1056	326	2	1
18-19	33	20	546	99	2077	288	3	7
20-21	119	13	143	33	2109	177	46	8
22-23	209	6	15	2	1037	61	143	17
24-25	235	4	1	5	344	8	339	9
26-27	217	4	2	0	95	1	480	8
28-29	146	1	2	0	33	3	575	6
30-31	69	0	1	0	5	0	401	3
32-33	16	1	0	0	7	0	192	2
34-35	11	0	0	0	5	0	54	0
36-37	1	0	0	0	3	0	15	1
38-39	0	0	0	0	1	0	9	0
40-41	0	0	0	0	0	0	1	0
42-43	0	0	0	0	0	0	1	0
44-45	0	0	0	0	0	0	1	0
46-47	0	0	0	0	0	0	0	0
48-49	0	0	0	0	1	0	0	0
50-51	0	0	0	0	0	0	0	0
52-53	0	0	0	0	0	0	1	0
Total	1112	67	1414	606	2327	66	11629	301
Mean	25.57	20.19	18.11	16.49	28.42	23.80	35.02	27.04
Std. Dev.	3.31	3.83	1.95	2.32	3.27	4.71	6.23	7.18

Table 11: continued.

Fork length (cm)	Olive rockfish		Rosy rockfish		Speckled rockfish		Squarespot rockfish	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0	0
4-5	0	0	0	0	0	0	0	0
6-7	0	0	0	1	0	0	1	0
8-9	0	0	2	1	0	0	0	1
10-11	1	1	1	11	0	0	7	5
12-13	0	4	21	26	1	0	7	11
14-15	1	4	120	137	1	1	29	25
16-17	6	12	574	279	5	0	137	48
18-19	13	29	1485	431	23	2	581	60
20-21	74	31	2230	362	118	2	1609	82
22-23	295	36	1820	132	313	10	1374	33
24-25	565	34	557	20	706	8	501	10
26-27	828	30	129	10	942	20	131	14
28-29	945	21	100	8	911	5	50	3
30-31	997	25	36	2	579	6	2	0
32-33	1031	20	24	1	483	2	3	0
34-35	1297	13	7	3	310	1	1	0
36-37	1367	16	2	0	151	2	1	0
38-39	1387	12	1	0	51	1	0	0
40-41	1080	8	0	0	11	0	0	0
42-43	640	1	0	0	6	0	0	0
44-45	386	1	0	0	2	0	0	0
46-47	224	1	1	0	1	0	0	0
48-49	94	1	0	0	2	0	0	0
50-51	26	1	0	0	0	0	0	0
52-53	3	0	1	0	0	0	0	0
54-55	4	0	0	0	0	0	0	0
56-57	2	0	0	0	1	0	0	0
58-59	3	0	0	0	0	0	0	0
60-61	1	0	0	0	2	0	0	0
62-63	0	0	0	0	0	0	0	0
64-65	2	0	0	0	0	0	0	0
Total	11629	301	7351	1424	4789	60	12967	339
Mean	35.02	27.04	21.35	19.24	28.90	26.88	28.37	22.56
Std. Dev.	6.23	7.18	2.83	2.85	4.14	4.40	4.36	5.39



Table 11: continued.

Fork length (cm)	Starry rockfish		Treefish		Vermilion rockfish		Widow rockfish	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	0	0
2-3	0	0	0	0	3	0	0	0
4-5	0	0	0	0	0	0	0	0
6-7	0	1	0	1	1	0	0	0
8-9	0	0	0	0	1	1	0	0
10-11	1	2	1	0	1	1	1	0
12-13	6	9	4	0	4	6	0	0
14-15	26	11	3	3	28	35	0	1
16-17	107	51	9	6	162	56	1	4
18-19	277	49	56	19	410	95	12	2
20-21	632	55	171	18	952	60	30	7
22-23	1051	45	347	27	1389	54	81	7
24-25	1507	30	680	28	2057	39	103	8
26-27	2001	19	830	33	2468	30	169	7
28-29	2252	30	944	27	2910	39	180	14
30-31	2091	18	590	25	3481	49	255	24
32-33	1448	12	263	16	3295	39	311	24
34-35	675	5	72	2	3136	24	290	6
36-37	277	2	18	2	2844	22	240	1
38-39	82	0	8	0	2398	18	196	0
40-41	12	0	0	0	2190	11	128	0
42-43	7	0	0	0	1831	8	80	0
44-45	3	0	0	0	1378	7	53	1
46-47	3	0	1	0	996	3	38	0
48-49	0	0	0	0	623	1	3	0
50-51	0	0	0	0	294	0	0	0
52-53	0	0	0	0	146	1	0	0
54-55	0	0	0	0	97	1	0	0
56-57	0	0	0	0	47	0	0	0
58-59	1	0	0	0	17	0	0	0
60-61	0	0	0	0	4	0	0	0
62-63	0	0	0	0	8	0	0	0
64-65	0	0	0	0	2	0	0	0
66-67	0	0	0	0	2	0	0	0
68-69	0	0	0	0	1	0	0	0
70-71	0	0	0	0	1	0	0	0
72-73	0	0	0	0	0	0	0	0
74-75	0	0	0	0	1	0	0	0
Total	12967	339	4146	207	34342	600	2303	106
Mean	28.37	22.56	27.64	25.79	34.15	25.62	33.67	28.83
Std. Dev.	4.36	5.39	3.49	4.93	7.61	8.03	5.88	5.13

Table 11: continued.

Fork length (cm)	Yellowtail rockfish	
	Kept	Discarded
0-1	0	0
2-3	0	0
4-5	0	0
6-7	0	0
8-9	0	1
10-11	0	1
12-13	0	9
14-15	3	20
16-17	29	43
18-19	175	67
20-21	394	127
22-23	963	140
24-25	1791	144
26-27	2532	147
28-29	2898	96
30-31	2602	56
32-33	1727	16
34-35	1080	9
36-37	832	5
38-39	689	6
40-41	463	1
42-43	325	2
44-45	178	1
46-47	97	0
48-49	41	1
50-51	11	0
52-53	3	0
54-55	1	0
56-57	1	0
58-59	0	0
60-61	1	0
62-63	0	0
64-65	1	0
66-67	0	0
68-69	0	0
70-71	0	0
72-73	0	0
74-75	0	0
Total	17337	892
Mean	30.53	24.61
Std. Dev.	5.54	4.86

Table 12: Lengths of groundfish (non-rockfish) species measured from the Observer (discarded, n=7,043 trips) Program and from Angler Interviews (kept, n=6,995 trips).

Fork length (cm)	Cabezon		California halibut		California scorpionfish		California sheephead	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
10-11	0	0	0	0	0	10	0	0
12-13	0	0	0	0	0	24	1	0
14-15	0	2	0	0	3	74	0	1
16-17	0	1	0	1	10	59	0	1
18-19	0	2	0	1	29	161	1	4
20-21	1	5	1	0	109	391	2	19
22-23	0	9	1	1	346	832	18	40
24-25	0	16	0	3	4852	1030	48	101
26-27	3	13	1	5	9951	127	77	149
28-29	2	33	1	5	7929	111	314	204
30-31	2	35	0	10	5174	68	763	57
32-33	5	29	0	18	2556	37	715	45
34-35	9	49	2	19	1227	32	565	27
36-37	21	43	0	18	438	11	484	29
38-39	73	18	1	12	150	3	342	22
40-41	78	11	1	24	27	1	285	27
42-43	76	6	0	24	9	0	213	23
44-45	76	10	0	27	3	0	152	11
46-47	73	4	0	29	4	0	91	11
48-49	73	6	1	27	1	0	55	2
50-51	51	6	5	20	1	0	55	4
52-53	37	9	12	26	0	0	29	5
54-55	27	1	66	16	0	0	31	3
56-57	17	2	108	2	0	0	25	0
58-59	12	3	88	2	0	0	19	1
60-61	8	1	69	0	0	0	4	1
62-63	4	0	47	1	0	0	3	0
64-65	5	1	61	1	0	0	4	0
66-67	3	0	57	0	0	0	2	0
68-69	0	0	46	1	0	0	1	0
70-71	0	0	41	0	0	0	0	0
72-73	1	0	52	1	0	0	0	0
74-75	0	0	42	1	0	0	2	0
76-77	0	1	50	1	0	0	0	0
78-79	0	0	48	1	0	0	1	0
80-81	0	0	57	0	0	0	0	0
82-83	0	0	34	0	0	0	0	0
84-85	0	0	23	0	0	0	0	0
86-87	0	0	32	0	0	0	0	0
88-89	0	0	24	0	0	0	0	0
90-91	0	0	17	1	0	0	0	0
92-93	1	0	10	0	0	0	0	0
94-95	0	0	16	0	1	0	0	0
96-97	0	0	10	0	0	0	0	0
98-99	0	0	7	0	0	0	0	0
100-101	0	0	10	0	0	0	0	0
102-103	0	0	5	0	0	0	0	0
104-105	0	0	4	0	0	0	0	0
106-107	0	0	5	0	0	0	0	0
108-109	0	0	4	0	0	0	0	0
110+	0	0	9	1	0	0	0	0
Total	658	316	1068	299	32820	2971	4302	787
Mean	46.24	35.20	70.96	44.35	28.80	23.73	36.22	30.53
Std. Dev.	6.88	8.69	13.75	10.36	2.96	3.60	6.45	6.63

Table 12: continued.

Fork length (cm)	Kelp greenling		Lingcod		Ocean whitefish		Pacific sanddab	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
0-1	0	0	0	0	0	0	1	1
2-3	0	0	0	0	1	0	2	0
4-5	0	0	0	0	0	0	0	0
6-7	0	0	0	0	0	0	1	0
8-9	0	0	1	0	0	0	2	0
10-11	0	0	0	0	0	0	16	4
12-13	0	0	0	1	1	0	104	16
14-15	0	1	0	0	1	0	301	15
16-17	0	1	0	4	2	0	827	30
18-19	0	0	1	1	15	1	2032	39
20-21	3	1	3	4	71	2	3439	48
22-23	8	4	1	6	238	13	3995	35
24-25	2	15	2	8	711	21	4666	36
26-27	10	19	4	19	1268	34	3510	12
28-29	22	36	3	28	1737	42	1208	9
30-31	144	16	7	63	1784	20	152	1
32-33	219	12	4	59	1563	30	31	0
34-35	165	9	1	57	1381	13	5	0
36-37	95	2	5	52	973	7	13	1
38-39	44	4	2	80	781	7	4	0
40-41	12	2	2	96	500	8	1	0
42-43	5	0	2	103	396	3	1	0
44-45	1	0	2	130	244	2	0	0
46-47	1	1	0	142	168	2	0	0
48-49	1	0	4	173	99	2	0	0
50-51	0	0	3	190	68	1	0	0
52-53	0	0	16	238	49	0	0	0
54-55	1	0	106	216	27	1	0	0
56-57	0	0	150	201	19	0	0	0
58-59	0	0	294	174	9	0	0	0
60-61	1	0	693	64	3	0	0	0
62-63	1	0	685	24	2	0	0	0
64-65	2	0	545	19	2	0	0	0
66-67	0	0	448	17	0	0	0	0
68-69	0	0	340	18	0	0	0	0
70-71	0	0	291	12	0	0	0	0
72-73	0	0	215	10	0	0	0	0
74-75	0	0	204	4	0	0	1	0
76-77	0	0	172	3	0	0	0	0
78-79	0	0	135	3	0	0	0	0
80-81	0	0	104	2	1	0	0	0
82-83	0	0	67	0	0	0	0	0
84-85	0	0	42	2	0	0	0	0
86-87	0	0	40	1	0	0	0	0
88-89	0	0	25	1	0	0	0	0
90-91	0	0	25	2	0	0	0	0
92-93	0	0	13	0	1	0	0	0
94-95	0	0	3	0	0	0	0	0
96-97	0	0	6	0	0	0	0	0
98-99	0	0	8	0	0	0	0	0
100+	0	0	11	0	0	0	0	0
Total	737	123	4685	2227	12115	209	20312	247
Mean	34.06	29.63	67.03	49.51	33.27	30.92	23.49	20.63
Std. Dev.	3.96	4.49	8.53	9.85	6.16	5.94	3.44	4.49

Table 13: Lengths of non-groundfish measured from the Observer Program (discarded, n=7,043 trips) and Angler Interviews (kept, n=6,995 trips).

Fork length (cm)	Barred sandbass		Blacksmith		Chinook salmon		Chub mackerel	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
10-11	0	0	2	0	0	0	1	0
12-13	2	0	6	6	0	0	0	1
14-15	0	0	134	14	0	0	1	0
16-17	1	4	971	48	0	0	13	2
18-19	0	8	2406	91	0	0	85	14
20-21	7	22	2585	43	1	1	275	20
22-23	12	36	1196	20	0	0	603	31
24-25	11	133	245	3	0	7	941	42
26-27	36	304	46	1	0	3	1292	38
28-29	1358	463	27	1	0	3	1257	38
30-31	6124	97	4	0	0	0	807	15
32-33	7067	57	6	0	1	0	548	16
34-35	6366	41	1	0	0	2	614	5
36-37	5165	27	0	0	1	1	599	9
38-39	3901	27	0	0	1	0	408	6
40-41	2633	15	1	0	4	0	145	3
42-43	1706	8	1	0	3	0	20	1
44-45	1197	5	0	0	14	1	6	0
46-47	731	9	0	0	100	4	3	0
48-49	422	4	0	0	187	3	2	0
50-51	245	3	0	0	182	6	0	0
52-53	127	3	0	0	184	0	0	0
54-55	58	1	0	0	224	0	1	0
56-57	23	0	0	0	177	2	2	0
58-59	11	0	0	0	197	0	1	0
60-61	3	0	0	0	202	0	0	0
62-63	2	0	0	0	184	0	1	0
64-65	2	0	0	0	182	0	0	0
66-67	0	0	0	0	194	0	0	0
68-69	1	0	0	0	234	0	0	0
70-71	0	0	0	0	236	3	0	0
72-73	2	0	0	0	258	2	0	0
74-75	0	0	0	0	216	2	0	0
76-77	0	0	0	0	215	0	1	0
78-79	2	0	0	0	178	0	0	0
80-81	1	0	0	0	158	0	0	0
82-83	0	0	0	0	122	0	0	0
84-85	0	0	0	0	90	0	0	0
86-87	0	0	0	0	56	0	0	0
88-89	0	0	0	0	40	0	0	0
90-91	0	0	0	0	32	0	0	0
92-93	1	0	0	0	19	0	0	0
94-95	0	0	0	0	14	0	0	0
96-97	0	0	0	0	6	0	0	0
98-99	0	0	0	0	4	0	0	0
100-101	0	0	0	0	3	0	0	0
102-103	0	0	0	0	2	0	0	0
104-105	0	0	0	0	2	0	0	0
106-107	0	0	0	0	1	0	0	0
108-109	0	0	0	0	0	0	0	0
110-111	0	0	0	0	1	0	0	0
Total	37217	1267	7631	227	3925	40	7626	241
Mean	36.22	29.31	20.33	19.16	66.84	44.47	29.80	27.17
Std. Dev.	4.86	4.67	2.24	2.42	11.80	17.17	5.27	5.15

Table 13: continued.

Fork length (cm)	Halfmoon		Kelp bass		Pacific barracuda		Pacific bonito	
	Kept	Discarded	Kept	Discarded	Kept	Discarded	Kept	Discarded
10-11	1	0	0	3	0	0	0	0
12-13	1	0	1	8	0	0	0	0
14-15	3	0	0	17	0	0	0	0
16-17	15	0	2	51	1	0	0	1
18-19	88	0	7	71	0	0	2	0
20-21	291	1	7	152	0	0	3	1
22-23	630	8	25	333	3	1	2	0
24-25	898	5	29	750	3	0	9	1
26-27	1023	8	73	1079	3	3	23	1
28-29	857	10	2276	1255	2	1	65	1
30-31	579	2	6610	176	6	1	163	6
32-33	358	2	5158	56	2	1	417	4
34-35	136	0	3400	58	5	1	829	13
36-37	43	0	2184	20	2	1	1246	24
38-39	22	0	1411	15	3	6	1328	46
40-41	6	0	904	13	5	4	1164	27
42-43	1	0	583	8	1	12	998	21
44-45	1	0	328	8	2	22	344	2
46-47	0	0	184	18	2	11	180	6
48-49	0	0	112	8	2	23	395	12
50-51	0	0	64	3	3	27	896	11
52-53	0	0	16	4	1	22	1308	9
54-55	0	0	12	1	2	21	884	3
56-57	0	0	4	1	3	18	391	3
58-59	0	0	3	0	5	19	277	2
60-61	0	0	1	1	22	28	229	0
62-63	0	0	1	1	98	29	154	0
64-65	0	0	1	1	385	22	112	0
66-67	0	0	0	1	647	9	110	3
68-69	0	0	0	0	726	21	46	0
70-71	0	0	0	0	981	12	27	0
72-73	0	0	0	0	1117	5	17	0
74-75	0	0	0	0	1322	7	4	0
76-77	0	0	0	0	1370	13	2	0
78-79	0	0	0	0	1309	4	1	0
80-81	0	0	0	0	1193	10	0	0
82-83	0	0	0	0	975	14	0	0
84-85	0	0	0	0	699	5	0	0
86-87	0	0	0	0	470	9	1	0
88-89	0	0	0	0	284	3	0	0
90-91	0	0	0	0	139	0	0	0
92-93	0	0	0	0	46	0	1	0
94-95	0	0	1	0	32	0	0	0
96-97	0	0	0	0	7	0	0	0
98-99	0	0	0	0	5	0	0	0
100-101	0	0	0	0	1	0	0	0
Total	4953	36	23397	4112	11884	385	11628	197
Mean	27.30	26.83	34.08	27.22	76.88	60.31	45.68	41.80
Std. Dev.	3.87	3.11	4.21	4.29	9.04	13.04	9.03	7.50

Table 13: continued.

Fork length (cm)	White croaker		Yellowtail amberjack	
	Kept	Discarded	Kept	Discarded
10-11	0	1	0	0
12-13	5	0	0	0
14-15	9	1	0	0
16-17	10	0	0	0
18-19	23	13	0	0
20-21	120	28	0	0
22-23	296	41	1	0
24-25	414	35	1	0
26-27	282	15	0	0
28-29	106	4	1	0
30-31	18	4	1	0
32-33	10	7	3	0
34-35	2	5	0	0
36-37	3	0	1	1
38-39	0	1	1	2
40-41	0	0	19	3
42-43	0	0	38	1
44-45	0	0	45	0
46-47	0	0	39	0
48-49	0	0	30	0
50-51	0	0	36	0
52-53	0	0	38	0
54-55	0	0	72	0
56-57	0	0	92	2
58-59	0	0	107	0
60-61	0	0	138	1
62-63	0	0	210	1
64-65	0	0	232	4
66-67	0	0	305	5
68-69	0	0	289	1
70-71	0	0	254	1
72-73	0	0	206	0
74-75	0	0	184	0
76-77	0	0	201	1
78-79	0	0	185	1
80-81	0	0	173	0
82-83	0	0	175	1
84-85	0	0	191	0
86-87	0	0	172	0
88-89	0	0	130	1
90-91	0	0	118	1
92-93	0	0	85	0
94-95	0	0	55	2
96-97	0	0	49	2
98-99	0	0	28	0
100-101	0	0	16	1
102-103	0	0	8	0
104-105	0	0	9	0
106-107	0	0	4	0
108-109	0	0	2	0
110+	0	0	6	0
Total	1298	155	3950	32
Mean	24.91	24.39	73.22	67.50
Std. Dev.	2.85	4.17	12.79	19.24

Table 14: Port and county names and codes for ports sampled in the Observer Program.

FIPS County Code	INTSITE	CRFS District	Site Name	County	Years Sampled
15	301	6	Crescent City Charters	Del Norte	ALL
23	121	6	Eureka CPFV Woodley Isl	Humboldt	ALL
23	307	6	Trinidad Charters	Humboldt	ALL
23	401	6	Trinidad charterboats	Humboldt	PRE-2004
23	402	6	Eureka-King Salmon charterboats	Humboldt	PRE-2004
45	400	5	North Noyo Harbor	Mendocino	ALL
97	400	4	Porto Bodega CPFV	Sonoma	ALL
41	400	4	Sausalito PC	Marin	ALL
41	402	4	Loch Lomond PC	Marin	ALL
75	400	4	SF Fishermens Wharf PC	San Francisco	ALL
13	400	4	Crockett PC	Contra Costa	ALL
13	403	4	San Pablo PC	Contra Costa	ALL
1	400	4	Berkeley PC	Alameda	ALL
1	401	4	Emeryville PC	Alameda	ALL
81	400	4	Princeton PC	San Mateo	ALL
87	101	3	Santa Cruz Charters	Santa Cruz	ALL
53	104	3	Moss Landing Charters	Monterey	ALL
53	402	3	Randy's Sportfishing	Monterey	ALL
53	403	3	Chris' Sportfishing	Monterey	ALL
79	100	3	Morro Bay Charters	San Luis Obispo	ALL
79	101	3	Avila Charters	San Luis Obispo	ALL
83	400	2	Sea Landing	Santa Barbara	ALL
83	401	2	Hornet Sportfishing	Santa Barbara	PRE-2004
111	43	2	Channel Island/Ciscos	Ventura	ALL
111	44	2	Harbor Village Sportfishing	Ventura	PRE-2004
111	45	2	Capt. Hooks Sportfishing	Ventura	ALL
111	103	2	Ventura Harbor PC	Ventura	ALL
37	10	1	Marina Del Rey Sportfishing	Los Angeles	ALL
37	13	1	Long Beach Sportfishing	Los Angeles	ALL
37	14	1	22nd Street Sportfishing	Los Angeles	ALL
37	15	1	LA Harbor Sportfishing	Los Angeles	ALL
37	17	1	Long Beach Marina Sportfishing	Los Angeles	ALL
37	202	1	Pierpoint Landing	Los Angeles	ALL
37	303	1	Redondo Beach Sportfishing	Los Angeles	ALL
37	401	1	Malibu Sportfishing	Los Angeles	ALL
37	402	1	Belmont pier and charterboats	Los Angeles	PRE-2004
59	101	1	Dana Wharf Sportfishing	Orange	ALL
59	106	1	Newport Sportfishing	Orange	ALL
59	111	1	Davey's Locker Sportfishing	Orange	ALL
59	301	1	Seal Beach Pier (barge)	Orange	PRE-2004
73	18	1	Seaforth Sportfishing	San Diego	ALL
73	19	1	H&M Sportfishing	San Diego	ALL
73	20	1	Point Loma Sportfishing	San Diego	ALL
73	21	1	Fisherman's Landing	San Diego	ALL
73	108	1	Mission Bay Sportfishing	San Diego	ALL
73	113	1	Helgren's Sportfishing	San Diego	ALL



Table 15: Species information for species observed in the Observer Program.

RecFIN species code	Scientific name	Common name	Regulations Group	ALPHA5 species code	CDFW species code
0	-	Unidentified fish	-	UNIFH	-
2	-	Unidentified shark	-	SHUNI	-
5	<i>Brachyura trabe</i>	True crabs	-	CRABS	-
6	<i>Cancer</i>	Cancer genus	-	CRBGN	-
7	<i>Cancer productus</i>	Red rock crab	-	CRBRR	-
8	<i>Cancer magister</i>	Dungeness crab	-	CRBDG	-
13	<i>Myzminidae</i>	Hagfish order	-	HAGFM	-
15	<i>Eptatretus stouti</i>	Pacific hagfish	-	HAGPA	2
16	<i>Heterodontus francisci</i>	Horn shark	-	SHHRN	106
21	<i>Notorynchus maculatus</i>	Seven gill shark	-	SHSEV	103
28	<i>Alopias vulpinus</i>	Thresher shark	-	SHTHR	111
30	<i>Isurus paucus</i>	Shortfin mako shark	-	SHSMK	114
34	<i>Cephaloscyllium ventriosum</i>	Swell shark	-	SHSWL	122
37	<i>Galeorhinus zyopterus</i>	Southern shark	-	SHFIN	134
40	<i>Mustelus</i>	Smoothhound genus	-	SHSGN	-
41	<i>Mustelus californicus</i>	Gray smoothhound	-	SHGSM	135
42	<i>Mustelus henlei</i>	Brown smoothhound	-	SHBSM	139
48	<i>Prionace glauca</i>	Blue shark	-	SHBLU	137
49	<i>Triakis semifasciata</i>	Leopard shark	-	SHLEP	140
55	<i>Squalus acanthias</i>	Spiny dogfish shark	-	SHSDG	163
57	<i>Squatina californica</i>	Pacific angel shark	-	SHANG	171
58	<i>Rajiformes</i>	Skate and ray order	-	RAJOR	-
60	<i>Rhinobatos productus</i>	Shovelnose guitarfish	-	GUJNS	212
61	<i>Platyrhinoidis triseriata</i>	Thorback	-	THRBK	211
62	<i>Zapteryx exasperata</i>	Banded guitarfish	-	GUIDB	213
63	<i>Torpedo californica</i>	Pacific electric ray	-	ERYPA	218
64	<i>Rajidae</i>	Skate family	-	SKFAM	-
66	<i>Raja binoculata</i>	Big skate	-	SKBIG	222
67	<i>Raja inornata</i>	California skate	-	SKTCA	223
68	<i>Bathyraja interrupta</i>	Sandpaper skate	-	-	-
71	<i>Raja rhina</i>	Longnose skate	-	SKLGN	224
73	<i>Raja stellulata</i>	Starry skate	-	SKSTY	225
75	<i>Dasyatidae</i>	Stingray family	-	SGFAM	-
78	<i>Dasyatis violacea</i>	Pelagic stingray	-	SGPEL	232
80	<i>Urolophus halleri</i>	Round stingray	-	SGRND	234
81	<i>Myliobatis californica</i>	Bat ray	-	RYBAT	240
86	<i>Hydrolagus collieri</i>	Spotted ratfish	-	RATFS	300
87	<i>Acipenser</i>	Sturgeon genus	-	STGEN	-
88	<i>Acipenser medirostris</i>	Green sturgeon	-	STGRN	1501
89	<i>Acipenser transmontanus</i>	White sturgeon	-	STWHT	1502
92	<i>Anguilliformes</i>	Eel order	-	EELOR	-
93	<i>Gymnothorax mordax</i>	California moray	-	MORAY	1535
102	<i>Alosa sapidissima</i>	American shad	-	SHADA	1001

Table 15: continued.

RecFIN species code	Scientific name	Common name	Regulations Group	ALPHA5 species code	CDFW species code
104	<i>Sardinops sagax</i>	Pacific sardine	-	SARPA	1006
109	<i>Engraulis mordax</i>	Northern anchovy	-	ANCNO	1514
115	<i>Oncorhynchus spp.</i>	Salmon genus	-	SALGN	-
118	<i>Oncorhynchus kisutch</i>	Coho salmon	-	SALCO	1103
119	<i>Oncorhynchus nerka</i>	Sockeye salmon	-	SALSE	1104
120	<i>Oncorhynchus tshawytscha</i>	Chinook salmon	-	SALCK	1105
123	<i>Oncorhynchus mykiss</i>	Rainbow trout	-	SALRB	1107
128	<i>Hypomesus pretiosus</i>	Surf smelt	-	SMSUR	1203
144	<i>Symodontidae</i>	Lizardfish family	-	LZDFM	-
145	<i>Symodus lunioceps</i>	California lizardfish	-	LZDCA	1525
165	<i>Porichthys notatus</i>	Plainfin midshipman	-	MIDPF	4032
166	<i>Porichthys myriaster</i>	Specklefin midshipman	-	MIDSP	4031
181	<i>Merluccius productus</i>	Pacific hake	-	PHAKE	1303
199	<i>Exocoetidae</i>	Flyingfish family	-	FLYFM	-
208	<i>Cololabis saira</i>	Pacific saury	-	SAUPA	1540
210	<i>Atherinidae</i>	Silverside family	-	SVRFM	-
211	<i>Atherinops affinis</i>	Topsmelt	-	SMTOP	2691
212	<i>Atherinopsis californiensis</i>	Jacksmelt	-	SMJAK	2692
228	<i>Syngnathus leptorhynchus</i>	Bay pipefish	-	PIPEB	1582
233	<i>Sebastes</i>	Rockfish genus	-	RFGEN	2398
234	<i>Sebastes aleutianus</i>	Rougheye rockfish	-	RFRGH	2301
236	<i>Sebastes auriculatus</i>	Brown rockfish	NsRF	RFRBN	2304
238	<i>Sebastes babcocki</i>	Redbanded rockfish	-	RFRBD	2364
239	<i>Sebastes brevispinis</i>	Silvergray rockfish	ShelfRF	RFSLG	2306
241	<i>Sebastes caurinus</i>	Copper rockfish	NsRF	RFROP	2308
245	<i>Sebastes elongatus</i>	Greenstriped rockfish	ShelfRF	RFGST	2315
247	<i>Sebastes entomelas</i>	Widow rockfish	ShelfRF	RFWID	2316
248	<i>Sebastes flavidus</i>	Yellowtail rockfish	ShelfRF	RFYTL	2318
249	<i>Sebastes goodei</i>	Chilipepper rockfish	ShelfRF	RFPEP	2320
250	<i>Sebastes helvomaculatus</i>	Rosethorn rockfish	ShelfRF	RFRTN	2321
251	<i>Sebastes jordani</i>	Shortbelly rockfish	ShelfRF	RFSHB	2323
252	<i>Sebastes maliger</i>	Quillback rockfish	NsRF	RFQIL	2326
253	<i>Sebastes melanops</i>	Black rockfish	NsRF	RFBLK	2327
255	<i>Sebastes miniatus</i>	Vermilion rockfish	ShelfRF	RFVER	2329
256	<i>Sebastes mystinus</i>	Blue rockfish	NsRF	RFBLU	2330
257	<i>Sebastes nebulosus</i>	China rockfish	NsRF	RFCHN	2331
258	<i>Sebastes nigrocinctus</i>	Tiger rockfish	ShelfRF	RFTIG	2332
259	<i>Sebastes paucispinus</i>	Bocaccio	ShelfRF	RFBOC	2334
260	<i>Sebastes pinniger</i>	Canary rockfish	ShelfRF	RFCAN	2335
261	<i>Sebastes proriger</i>	Redstripe rockfish	ShelfRF	RFRST	2336
263	<i>Sebastes rosaceus</i>	Rosy rockfish	ShelfRF	RFROS	2339
264	<i>Sebastes ruberrimus</i>	Yelloweye rockfish	ShelfRF	RFYEY	2340
265	<i>Sebastes saxicola</i>	Stripetail rockfish	ShelfRF	RFSTR	2342
267	<i>Sebastes zacentrus</i>	Sharpchin rockfish	-	RFSCN	2349

Table 15: continued.

RecFIN species code	Scientific name	Common name	Regulations Group	ALPHA5 species code	CDFW species code
268	<i>Sebastes chrysomelas</i>	Black and yellow rockfish	NsRF	RFBAY	2310
269	<i>Sebastes atrovirens</i>	Kelp rockfish	NsRF	RFKLP	2303
270	<i>Sebastes chlorostictus</i>	Greenspotted rockfish	ShelfRF	RFGRN	2309
271	<i>Sebastes constellatus</i>	Starry rockfish	ShelfRF	RFSTA	2311
272	<i>Sebastes dalla</i>	Calico rockfish	NsRF	RFULO	2313
273	<i>Sebastes eos</i>	Pink rockfish	ShelfRF	RFPNK	2317
274	<i>Sebastes gilli</i>	Bronzespotted rockfish	ShelfRF	RFBSP	2319
275	<i>Sebastes hopkinsi</i>	Squarespot rockfish	ShelfRF	RFBSQ	2322
276	<i>Sebastes levis</i>	Cowcod	ShelfRF	RFOW	2324
277	<i>Sebastes macdonaldi</i>	Mexican rockfish	ShelfRF	RFMEX	2325
278	<i>Sebastes ovalis</i>	Speckled rockfish	ShelfRF	RFSPK	2333
280	<i>Sebastes rastrelliger</i>	Grass rockfish	NsRF	RFGRS	2337
281	<i>Sebastes rubrivinctus</i>	Flag rockfish	ShelfRF	RFFLG	2341
282	<i>Sebastes rufus</i>	Bank rockfish	-	RFBNK	2368
283	<i>Sebastes semicinctus</i>	Halfbanded rockfish	ShelfRF	RFHBD	2343
284	<i>Sebastes serranoides</i>	Olive rockfish	NsRF	RFOLV	2344
285	<i>Sebastes serripiceps</i>	Treefish	ShelfRF	RFTRF	2345
286	<i>Sebastes umbrosus</i>	Honeycomb rockfish	ShelfRF	RFHNC	2346
288	<i>Sebastes carnatus</i>	Gopher rockfish	NsRF	RFGOP	2307
289	<i>Sebastes ensifer</i>	Swordspine rockfish	ShelfRF	RFSDS	2338
290	<i>Sebastes lentiginosus</i>	Freckled rockfish	ShelfRF	RFFRK	2362
291	<i>Sebastes simulador</i>	Pinkrose rockfish	ShelfRF	RFPRS	2361
292	<i>Sebastes rosenblatti</i>	Greenblotched rockfish	ShelfRF	RFGBL	2363
293	<i>Sebastes rofinanus</i>	Dwarf red rockfish	ShelfRF		2366
294	<i>Sebastolobus alascanus</i>	Shortspine thornyhead	-	RFSST	2351
296	<i>Scorpaena guttata</i>	California scorpionfish	CaScorp	SCRCA	2353
299	<i>Prionotus stephanophrys</i>	Lumptail searobin	-	SERLT	-
303	<i>Hexagrammos decagrammus</i>	Kelp greenling	Greenling	GRNKP	2661
304	<i>Hexagrammos lagocephalus</i>	Rock greenling	Greenling	GRNRK	2663
307	<i>Ophiodon elongatus</i>	Lingcod	Lingcod	LNGCD	2664
308	<i>Oxylebius pictus</i>	Painted greenling	Greenling	GRNPT	2665
309	<i>Zaniolepis latipinnis</i>	Longspine combfish	-	CBFLS	2672
310	<i>Zaniolepis frenata</i>	Shortspine combfish	-	CBFSS	2671
313	<i>Anoplopoma fimbria</i>	Sablefish	-	SABLE	2668
315	<i>Oxylebius pictus</i>	Painted greenling	Greenling		2665
318	<i>Cottidae</i>	Sculpin family	-	SCFAM	-
321	<i>Artedius fenestratis</i>	Padded sculpin	-	SCPAD	2414
326	<i>Artedius corallinus</i>	Corralline sculpin	-		2429
337	<i>Cottus asper</i>	Prickly sculpin	-	SCPRK	-
339	<i>Enophrys bison</i>	Buffalo sculpin	-	SCBUF	2404
342	<i>Enophrys taurina</i>	Bull sculpin	-	SCBUL	2421
346	<i>Hemilepidotus hemilepidotus</i>	Red Irish lord	-	SCRIL	2405
348	<i>Hemilepidotus spinosus</i>	Brown Irish lord	-	SCBIL	2406
353	<i>Icelinus tenuis</i>	Spotfin sculpin	-	SCSPT	2426

Table 15: continued.

RecFIN species code	Scientific name	Common name	Regulations Group	ALPHA5 species code	CDFW species code
358	<i>Leptocottus armatus</i>	Pacific staghorn sculpin	-	SCPSH	2407
378	<i>Rhamphocottus richardsoni</i>	Gnunt sculpin	-	SCGRU	-
379	<i>Scorpaenichthys marmoratus</i>	Cabezon	Cabezon	SCCAB	2410
436	<i>Morone saxatilis</i>	Striped bass	-	STBAS	2007
441	<i>Mycteroperca xenarcha</i>	Broomtail grouper	-	GRPBT	2003
443	<i>Paralabrax</i>	Sandbass genus	-	SBGEN	-
444	<i>Paralabrax clathratus</i>	Kelp bass	-	SBKLP	2004
445	<i>Paralabrax maculatofascia</i>	Spotted sandbass	-	SBSPT	2005
446	<i>Paralabrax nebulifer</i>	Barred sandbass	-	SBBAR	2006
447	<i>Promotogrammus multifasciatus</i>	Threadfin bass	-	SBTHF	-
449	<i>Stereolepis gigas</i>	Giant seabass	-	GNTSB	2008
452	<i>Pristigeyns serrula</i>	Popeye catalufa	-	CTFPE	-
455	<i>Caulolatilus princeps</i>	Ocean whitefish	OcWh	OCWHT	2610
461	<i>Carangidae</i>	Jack family	-	JACFM	-
462	<i>Trachurus symmetricus</i>	Jack mackerel	-	JACMK	2607
467	<i>Seriola lalandi</i>	Yellowtail amberjack	-	YELTL	2606
471	<i>Decapterus scombrinus</i>	Mexican scad	-	MSCAD	-
475	<i>Coryphaena hippurus</i>	Dolphinfish	-	DRADO	2612
481	<i>Anisotremus davidsoni</i>	Sargo	-	SARGO	-
482	<i>Xenistius californiensis</i>	Salema	-	SALEM	2617
484	<i>Sciaenidae</i>	Drum family	-	DRMFM	-
485	<i>Atractoscion nobilis</i>	White seabass	-	SBWHT	-
488	<i>Cynoscion xanithulus</i>	Orangemouth corvina	-	COROM	-
489	<i>Geryonemus lineatus</i>	White croaker	-	CROWT	2509
490	<i>Menticirrhus undulatus</i>	California corbina	-	CRBCA	2510
491	<i>Umbrina roncadore</i>	Yellowfin croaker	-	CRKYF	2513
492	<i>Cheilotrema saturnum</i>	Black croaker	-	CRKBK	2502
493	<i>Roncadore steamsi</i>	Spotfin croaker	-	CRKSF	-
494	<i>Seriphus politus</i>	Queenfish	-	QUEEN	2512
497	<i>Girella nigricans</i>	Opaleye	-	OPALE	2625
499	<i>Medialuna californiensis</i>	Halfmoon	-	HALFM	2621
505	<i>Embiotocidae</i>	Surfperch family	-	SPFAM	-
506	<i>Brachyistius frenatus</i>	Kelp perch	-	SPKLP	2104
507	<i>Cymatogaster aggregata</i>	Shiner perch	-	SPSHR	2105
508	<i>Embiotoca lateralis</i>	Striped seaperch	-	SPSTR	2108
509	<i>Embiotoca jacksoni</i>	Black perch	-	SPBLK	2107
510	<i>Hyperprosopon argenteum</i>	Walleye surfperch	-	SPWAL	2110
511	<i>Hyperprosopon ellipticum</i>	Silver surfperch	-	SPSIL	2111
513	<i>Phanerodon furcatus</i>	White seaperch	-	SPWHT	2116
514	<i>Phanerodon atripes</i>	Sharpnose seaperch	-	SPSHN	2115
515	<i>Rhacochilus vacca</i>	Pile perch	-	SPPIL	2118
516	<i>Rhacochilus tozotes</i>	Rubberlip seaperch	-	SPRUB	2117
518	<i>Amphistichus argenteus</i>	Barred surfperch	-	SPBAR	2101
520	<i>Hypsurus caryi</i>	Rainbow seaperch	-	SPRBW	2112

Table 15: continued.

RecFIN species code	Scientific name	Common name	Regulations Group	ALPHA5 species code	CDFW species code
523	<i>Zalembius rosaceus</i>	Pink seaperch	-	SPPNK	2119
525	<i>Chromis punctipinnis</i>	Blacksmith	-	BLKSM	2627
526	<i>Hypsipops rubicundus</i>	Garibaldi	-	GARIB	2628
534	<i>Sphyræna argentea</i>	Pacific barracuda	-	BARPA	2720
539	<i>Halichoeres semicinctus</i>	Rock wrasse	-	WRARK	2631
540	<i>Oxyjulis californica</i>	Senorita	-	SEHOR	2632
541	<i>Semicossyphus pulcher</i>	California sheephead	CaSheep	SHEEP	2633
543	<i>Arctoscopus japonicus</i>	Sailfin sandfish	-	SNDPA	4060
544	<i>Trichodon trichodon</i>	Pacific sandfish	-	RNQFM	-
545	<i>Bathymasteridae</i>	Ronquil family	-	RNQBB	-
546	<i>Rathbunella hypoplecta</i>	Bluebanded ronquil	-	-	-
550	<i>Kathetostoma averruncus</i>	Smooth stargazer	-	-	4080
555	<i>Anarrhichthys ocellatus</i>	Wolf-eel	-	WOLFE	2679
556	<i>Clinidae</i>	Climid family	-	KLPFM	-
562	<i>Alloclinus holderi</i>	Island kelpfish	-	KLPIS	2755
565	<i>Neoclinus blanchardi</i>	Sarcastic fringehead	-	KLPSF	2754
567	<i>Neoclinus urinotatus</i>	Onespot fringehead	-	KLPOF	2753
568	<i>Heterostichus rostratus</i>	Giant kelpfish	-	KLPGT	2757
570	<i>Stichaeidae</i>	Prickleback family	-	PRKFM	2790
596	<i>Cebidichthys violaceus</i>	Monkeyface prickleback	-	PRMKI	2775
605	<i>Apodichthys fuorum</i>	Rockweed gunnel	-	-	2827
613	<i>Coryphopterus nicholsi</i>	Blackeye goby	-	GOBBE	-
614	<i>Lepidogobius lepidus</i>	Bay goby	-	BOGBY	2879
630	<i>Lepidopus fitchi</i>	Pacific scabbardfish	-	-	2636
634	<i>Katsuwonus pelamis</i>	Skipjack tuna	-	TNASJ	2206
637	<i>Sarda chiliensis</i>	Pacific bonito	-	BONPA	2210
638	<i>Scomber japonicus</i>	Chub (Pacific) mackerel	-	MACPA	2209
639	<i>Thunnus alalunga</i>	Albacore	-	TNAAB	2214
640	<i>Thunnus thynnus</i>	Bluefin tuna	-	TNABF	2215
641	<i>Thunnus albacares</i>	Yellowfin tuna	-	TNAYF	2207
645	<i>Auzis rochei</i>	Bullet mackerel	-	MACBL	2202
658	<i>Peprilus simillimus</i>	Pacific pompano (butterfish)	-	POMPA	2712
660	<i>Pleuronectiformes</i>	Flatfish order	-	FLTOR	-
661	<i>Bothidae</i>	Lefteye flounder family	-	FLLFN	3000
662	<i>Citharichthys</i>	Sanddab genus	Sanddabs	DABGN	-
663	<i>Citharichthys sordidus</i>	Pacific sanddab	Sanddabs	DABPA	3001
664	<i>Citharichthys stigmaceus</i>	Speckled sanddab	Sanddabs	DABSP	3002
665	<i>Citharichthys xanthostigma</i>	Longfin sanddab	Sanddabs	DABLF	3003
666	<i>Paralichthys californicus</i>	California halibut	-	HALCA	3005
667	<i>Hippoglossina stomata</i>	Bigmouth sole	-	SOLBG	3004
668	<i>Xystreureys liolepis</i>	Fantail sole	-	SOLFT	3006
669	<i>Pleuronectidae</i>	Righteye flounder family	-	FLRFM	-
673	<i>Eopsetta jordani</i>	Petrale sole	-	SOLPT	3103
678	<i>Lepidopsetta bilineatus</i>	Rock sole	-	SOLRK	3108

Table 15: continued.

RecFIN species code	Scientific name	Common name	Regulations Group	ALPHA5 species code	CDFW species code
682	<i>Lyopsetta exilis</i>	Slender sole	-	SOLS	3109
685	<i>Platichthys stellatus</i>	Starry flounder	-	FLRST	3121
687	<i>Pleuronichthys coenosus</i>	C-O sole	-	SOLCO	3122
689	<i>Pleuronichthys ritteri</i>	Spotted turbot	-	SOLST	3124
690	<i>Pleuronichthys verticalis</i>	Hornyhead turbot	-	SOLHT	3125
691	<i>Psettiichthys melanostictus</i>	Sand sole	-	SOLSD	3126
693	<i>Hippoglossus stenolepis</i>	Pacific halibut	-	HALPA	3105
694	<i>Pleuronichthys guttulatus</i>	Diamond turbot	-	SOLDT	3106
696	<i>Balistes polylepis</i>	Finescale triggerfish	-	FTRIG	4011
704	<i>Mola mola</i>	Ocean sunfish	-	SUNOC	4021
710	<i>Cephalopoda</i>	Squid class	-	SQUID	-
717	<i>Panulirus interruptus</i>	Spiny lobster	-	LOBSP	820
725	<i>Octopoda</i>	Octopus order	-	OCTOP	-

Note: Abbreviations for the Regulations group are as follows: NsRf = nearshore rockfish; ShelfRF = Shelf rockfish; Casheep = California sheephead; CaScorp = California scorpionfish; OcWh = Ocean whitefish.

Table 16: Error codes found in the database. A complete list of error codes by table and column can be found in the ancillary Look-up Error Codes Table.

Error Code	Error Code Description
1	Value was corrected
1.1	Value was corrected; sampler error
1.2	Value was corrected; key entry error
1.3	Value was corrected; sampler error; based on adjacent rows, drifts
1.4	Correct value added
2	Value was incorrect; replaced with <i>NULL</i>
2.1	Value was not collected; sampler error; replaced with '98'
2.5	Value was incorrect; datasheets missing; replaced with <i>NULL</i>
2.6	Value was incorrect; data not collected in 2003
3.3	Value was replaced with informed guess; based on surrounding drifts
3.5	Value was added based on informed guess; datasheets missing
4	Row added
4.1	Value was added based on speeds of other drifts
5.1	No values in row corrected; datasheets missing
5.2	Value was not corrected; datasheets missing
6	Possible lat long error; no error identified and no change to the database
7	Checked datasheet for errors; no error found and no change to the database
96 or 99	Value improbable or missing; may be replaced with <i>NULL</i> in database

Table 17: Management Area Look-up Table from the database.

Assigned Management Area	Management Area Name	Year	Northern Border (Latitude)	Southern Border (Latitude)
1	Northern	2000	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2001	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2002	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2003	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2004	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2005	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2006	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2007	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2008	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2009	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2010	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2011	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
1	Northern	2012	California/Oregon Border (42°00' N)	Near Cape Mendocino (40°10' N)
2	North-Central	2008	Near Cape Mendocino (40°10' N)	Point Arena (38°57' N)
2	North-Central	2009	Near Cape Mendocino (40°10' N)	Point Arena (38°57' N)
2	North-Central	2010	Near Cape Mendocino (40°10' N)	Point Arena (38°57' N)
2	North-Central	2011	Near Cape Mendocino (40°10' N)	Point Arena (38°57' N)
2	North-Central	2012	Near Cape Mendocino (40°10' N)	Point Arena (38°57' N)
3	North-Central	2005	Near Cape Mendocino (40°10' N)	Pigeon Point (37°11' N)
3	North-Central	2006	Near Cape Mendocino (40°10' N)	Pigeon Point (37°11' N)
3	North-Central	2007	Near Cape Mendocino (40°10' N)	Pigeon Point (37°11' N)
4	Central	2000	Near Cape Mendocino (40°10' N)	Lopez Point (36°00' N)
4	Central	2004	Near Cape Mendocino (40°10' N)	Lopez Point (36°00' N)
5	North-Central	2001	Near Cape Mendocino (40°10' N)	Point Conception (34°27' N)
5	North-Central	2002	Near Cape Mendocino (40°10' N)	Point Conception (34°27' N)
5	North-Central	2003	Near Cape Mendocino (40°10' N)	Point Conception (34°27' N)
6	North-Central	2008	Point Arena (38°57' N)	Pigeon Point (37°11' N)
6	North-Central	2009	Point Arena (38°57' N)	Pigeon Point (37°11' N)
6	North-Central	2010	Point Arena (38°57' N)	Pigeon Point (37°11' N)
6	North-Central	2011	Point Arena (38°57' N)	Pigeon Point (37°11' N)
6	North-Central	2012	Point Arena (38°57' N)	Pigeon Point (37°11' N)
7	Monterey South-Central	2005	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
7	Monterey South-Central	2006	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
7	Monterey South-Central	2007	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
7	Monterey South-Central	2008	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
7	Monterey South-Central	2009	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
7	Monterey South-Central	2010	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
7	Monterey South-Central	2011	Pigeon Point (37°11' N)	Lopez Point (36°00' N)
8	Morro Bay South-Central	2004	Lopez Point (36°00' N)	Point Conception (34°27' N)
8	Morro Bay South-Central	2005	Lopez Point (36°00' N)	Point Conception (34°27' N)
8	Morro Bay South-Central	2006	Lopez Point (36°00' N)	Point Conception (34°27' N)
8	Morro Bay South-Central	2007	Lopez Point (36°00' N)	Point Conception (34°27' N)



Table 17: continued.

Assigned Management Area	Management Area Name	Year	Northern Border (Latitude)	Southern Border (Latitude)
8	Morro Bay South-Central	2008	Lopez Point (36°00' N)	Point Conception (34°27' N)
8	Morro Bay South-Central	2009	Lopez Point (36°00' N)	Point Conception (34°27' N)
8	Morro Bay South-Central	2010	Lopez Point (36°00' N)	Point Conception (34°27' N)
8	Morro Bay South-Central	2011	Lopez Point (36°00' N)	Point Conception (34°27' N)
9	Southern	2000	Lopez Point (36°00' N)	U.S./Mexico Border (NA)
10	South-Southern	2001	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2002	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2003	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2004	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2005	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2006	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2007	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2008	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2009	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2010	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2011	Point Conception (34°27' N)	U.S./Mexico Border (NA)
10	South-Southern	2012	Point Conception (34°27' N)	U.S./Mexico Border (NA)
11	Monterey South-South Central	2011	Pigeon Point (37°11' N)	Point Conception (34°27' N)
11	Monterey South-South Central	2012	Pigeon Point (37°11' N)	Point Conception (34°27' N)

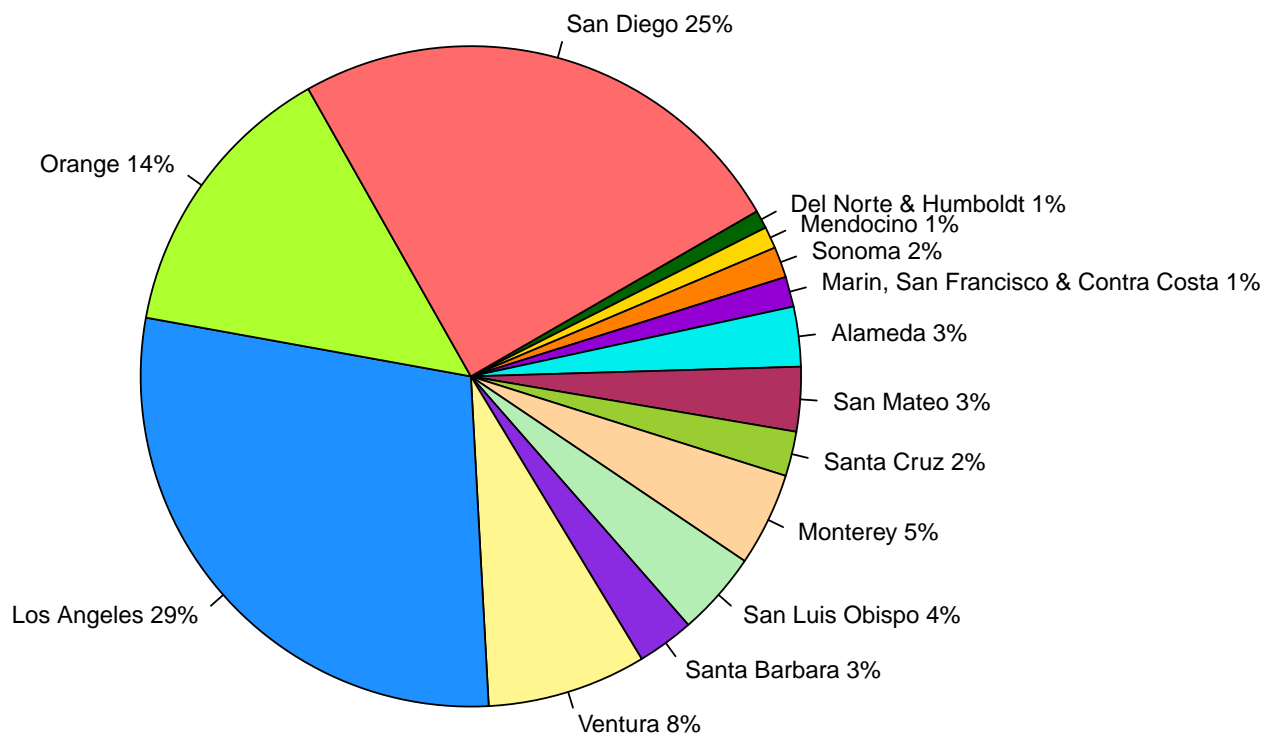


Figure 1: Percent of observed trips by county.

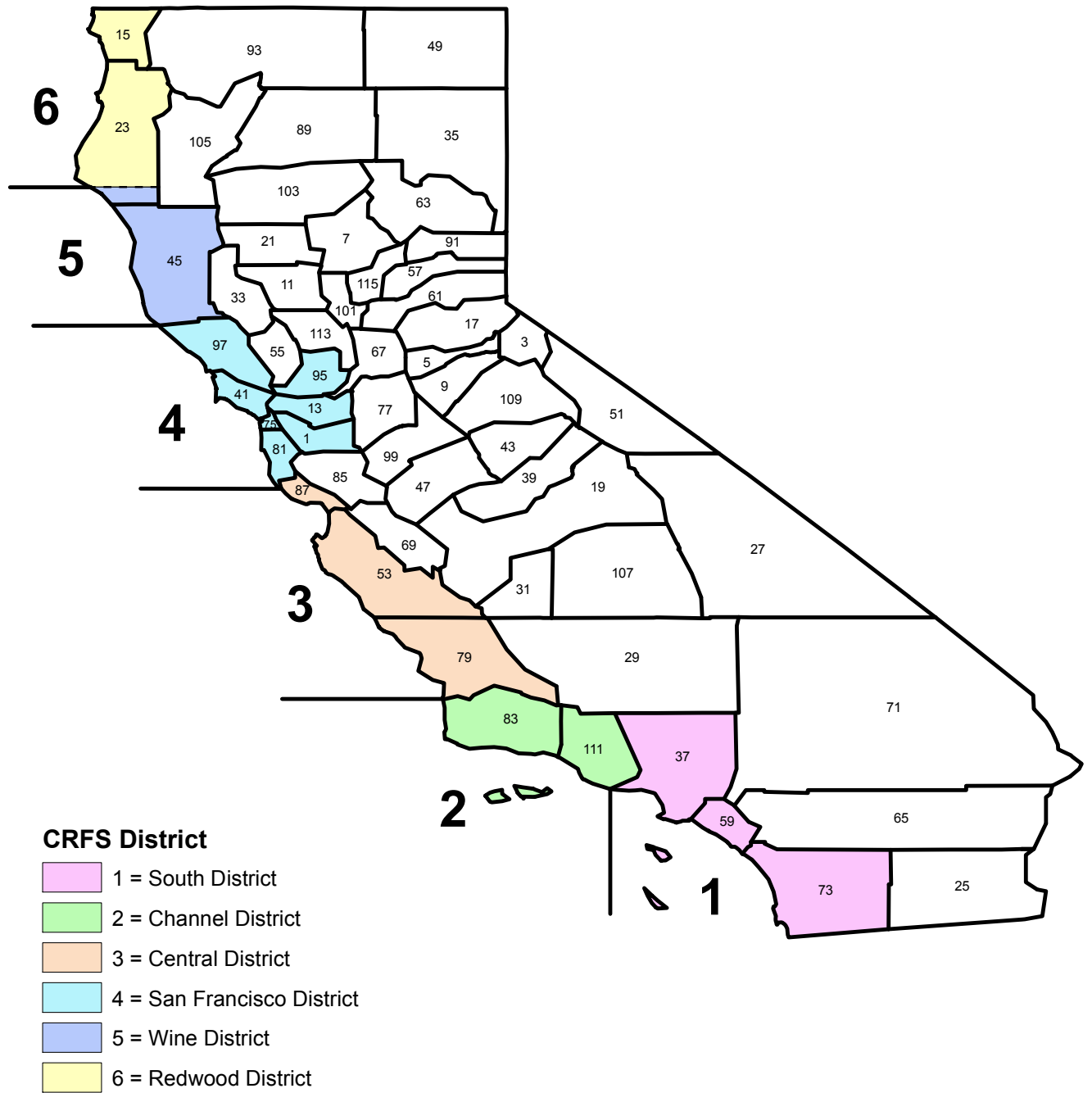


Figure 2: Map of the California Recreational Fisheries Survey (CRFS) districts. Counties are labeled by the FIPS county codes (see Table 14).

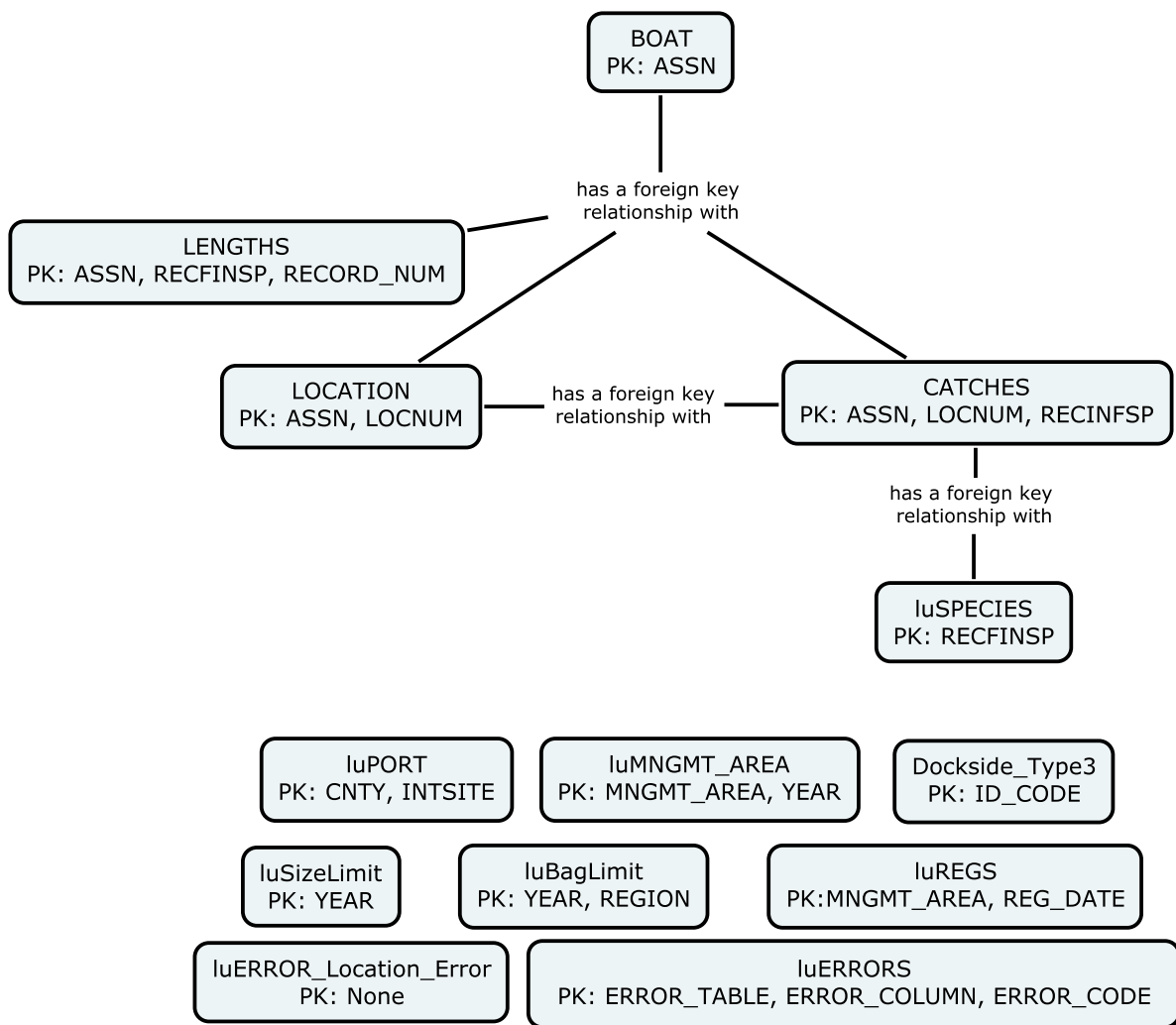


Figure 3: CDFW Observer Program database diagram, including primary keys (PK) and foreign key relationships.

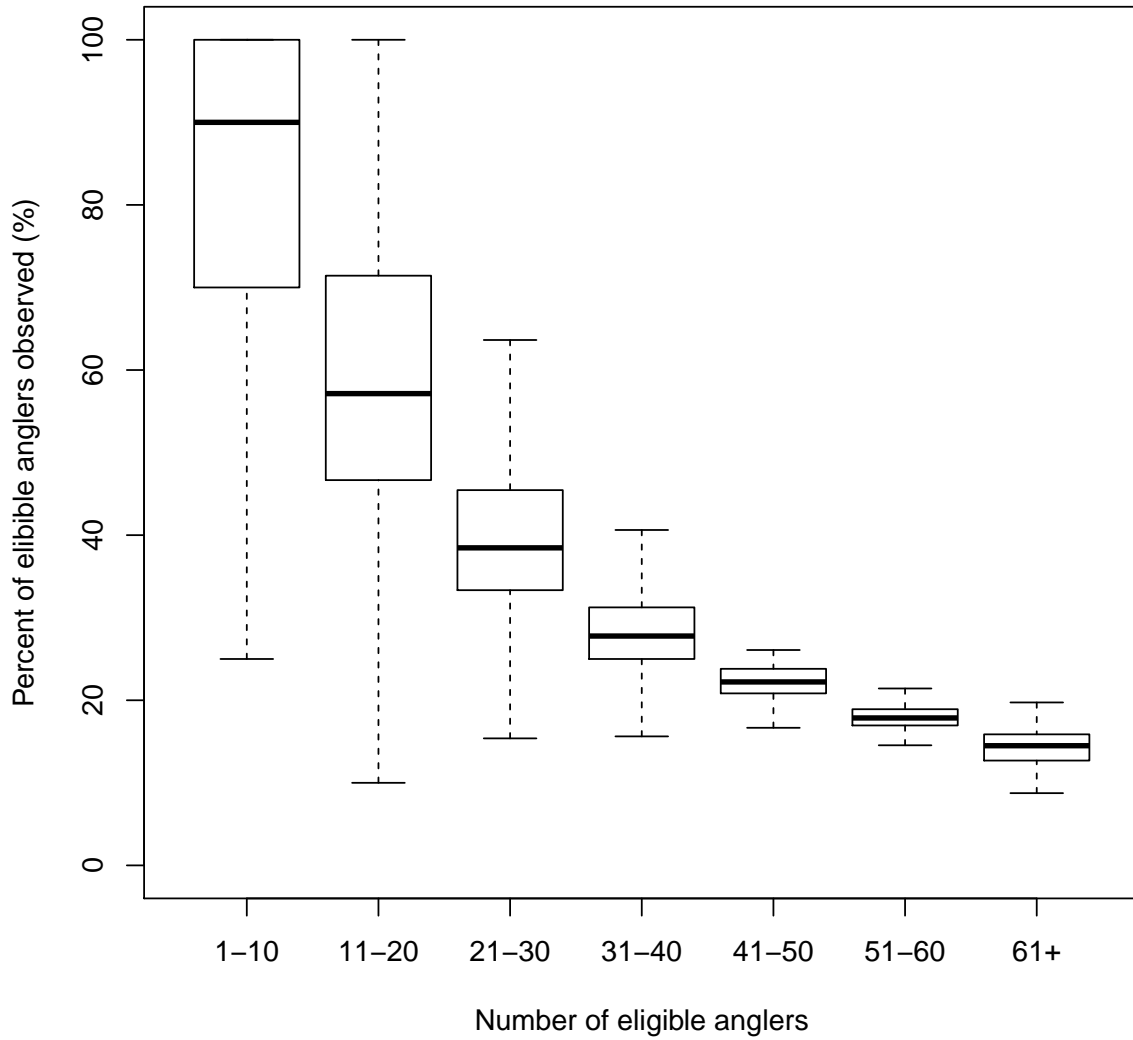


Figure 4: Percent of anglers observed plotted against the number of eligible anglers on a trip. Outliers are not plotted.

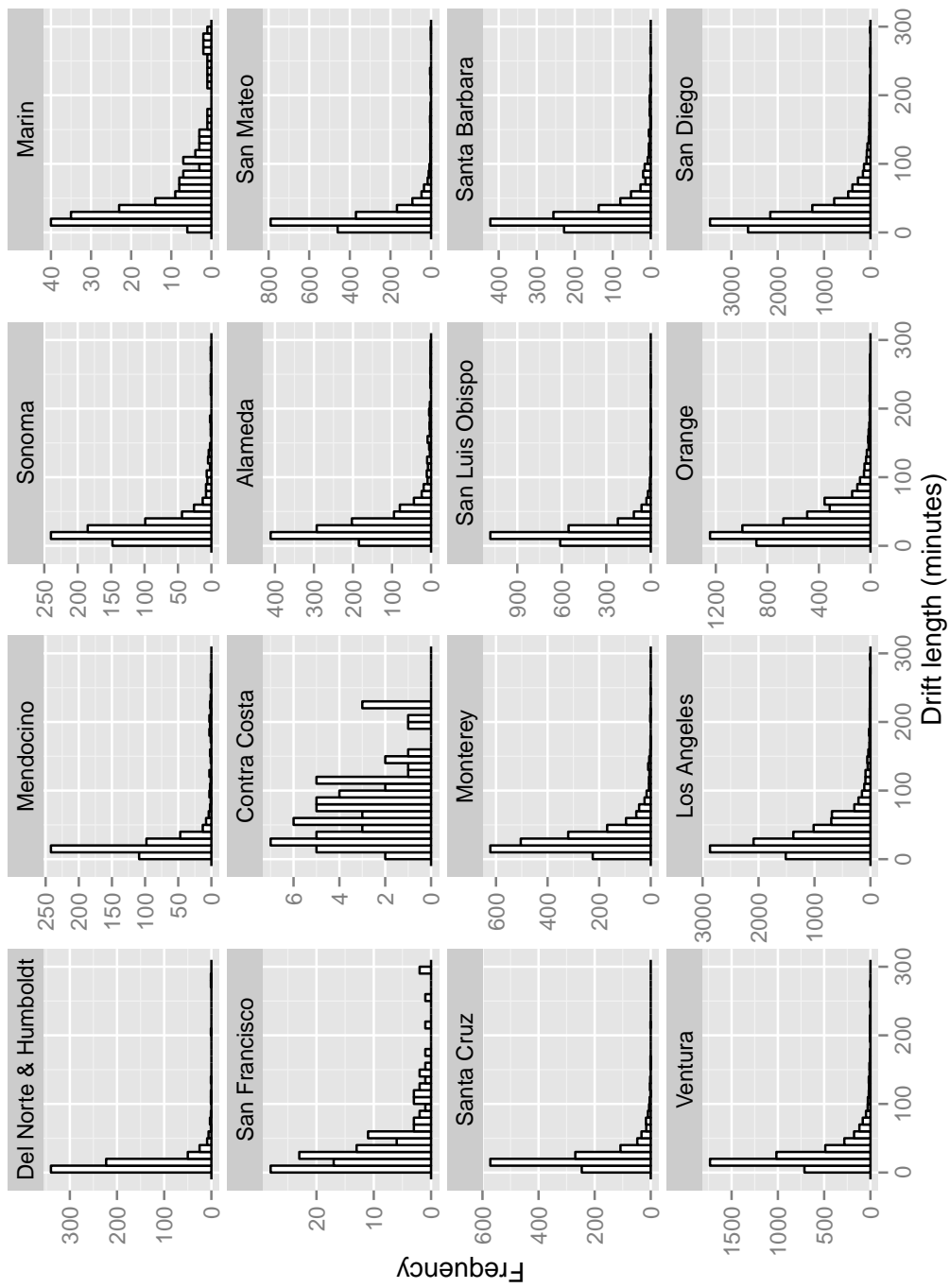


Figure 5: Histograms of elapsed drift times by county, when starting and ending time data are available.

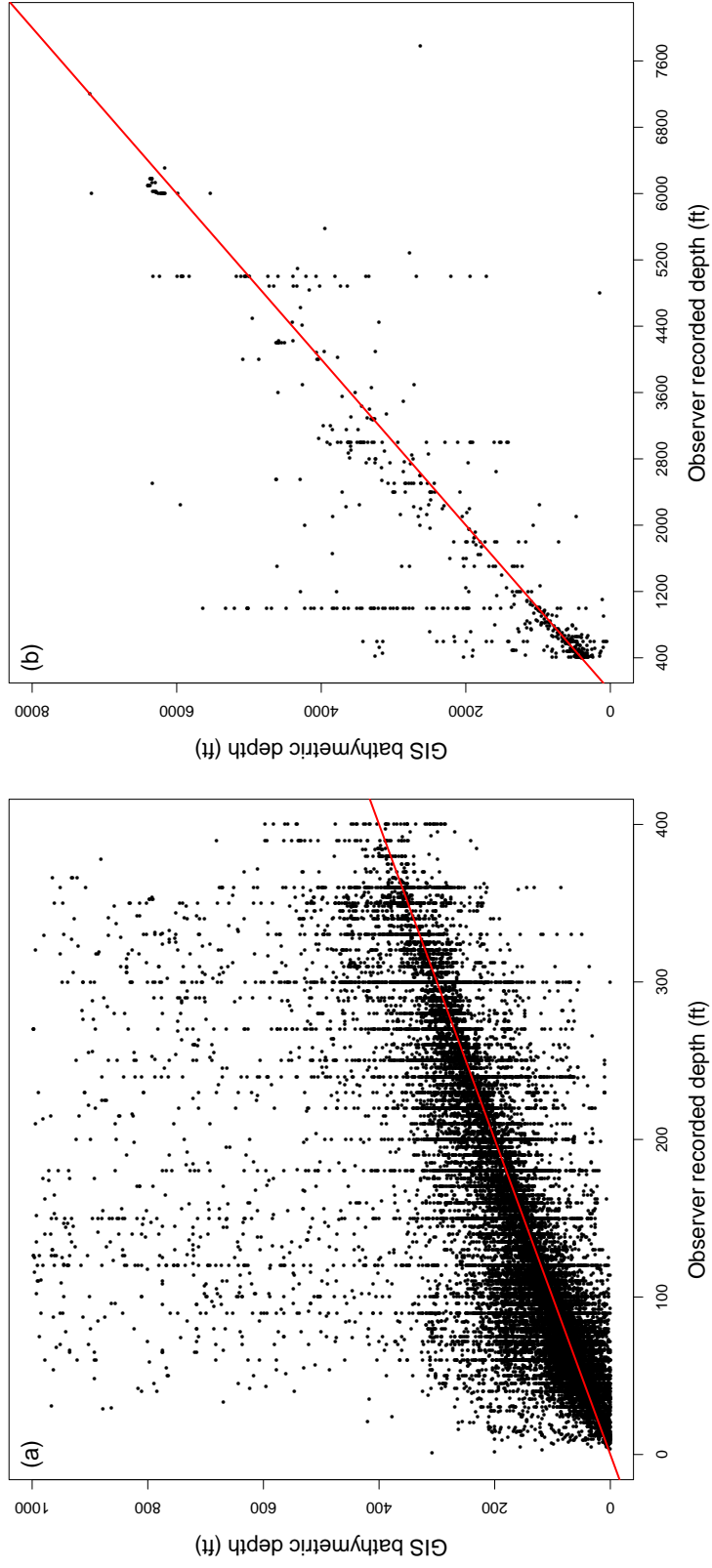


Figure 6: Comparison between the observer-recorded drift starting depth and the GIS-inferred bottom depth calculated using the drift starting location, for observer-recorded drifts of (a) 0-400ft and (b) 401-8000ft.

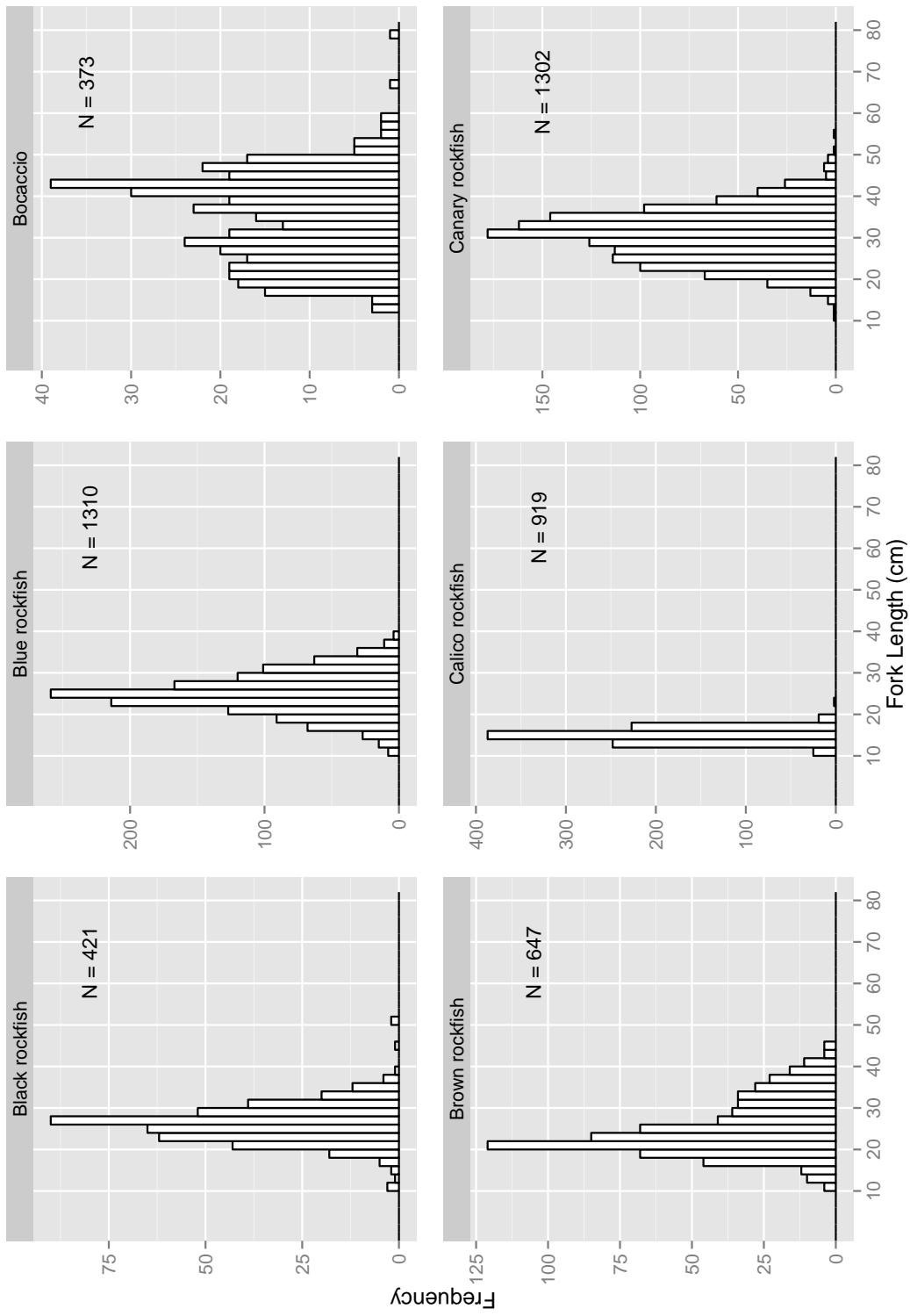


Figure 7: Length distributions of discarded rockfish for species with more than 100 measured fish in the database, all years combined.



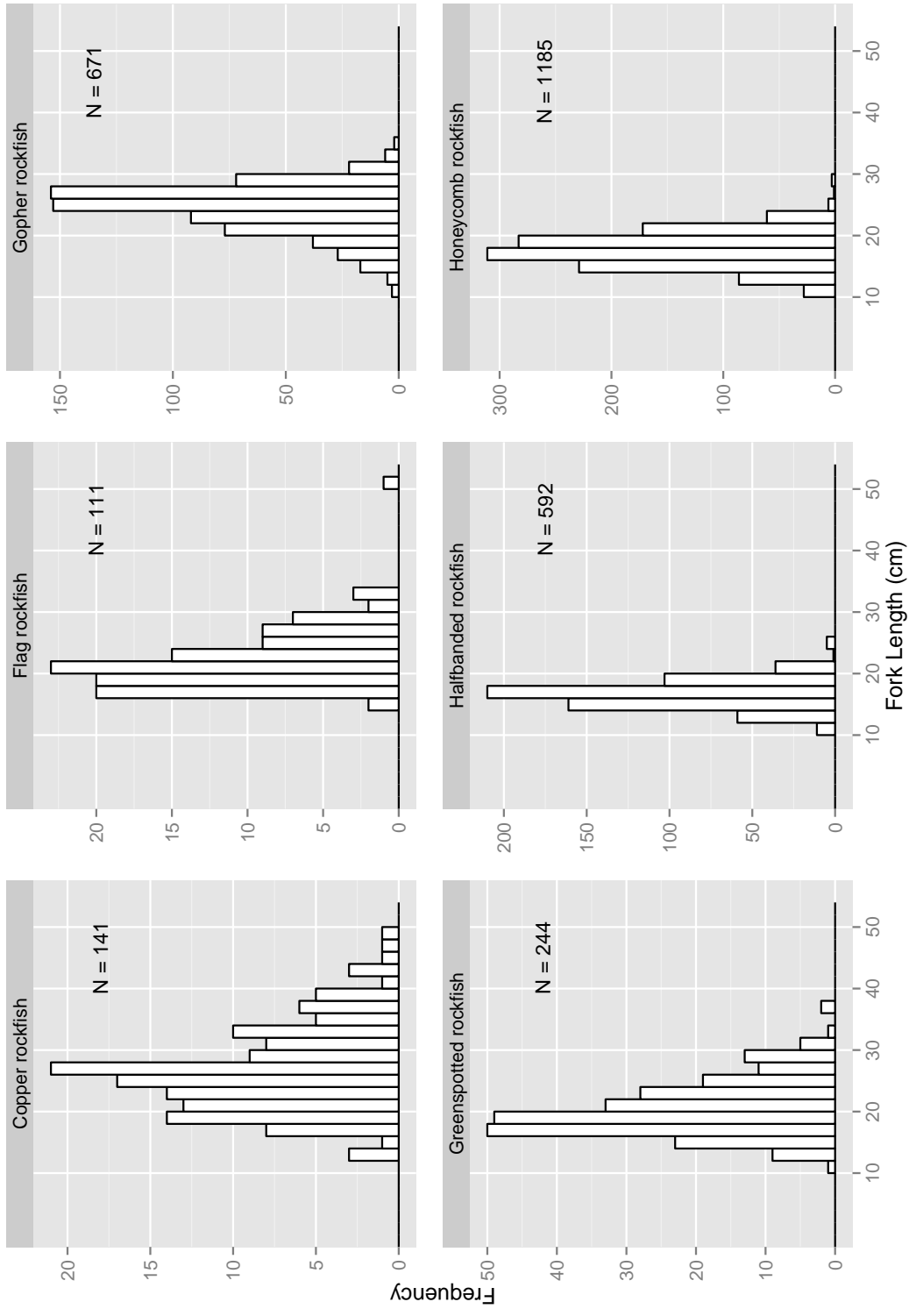


Figure 7: continued.

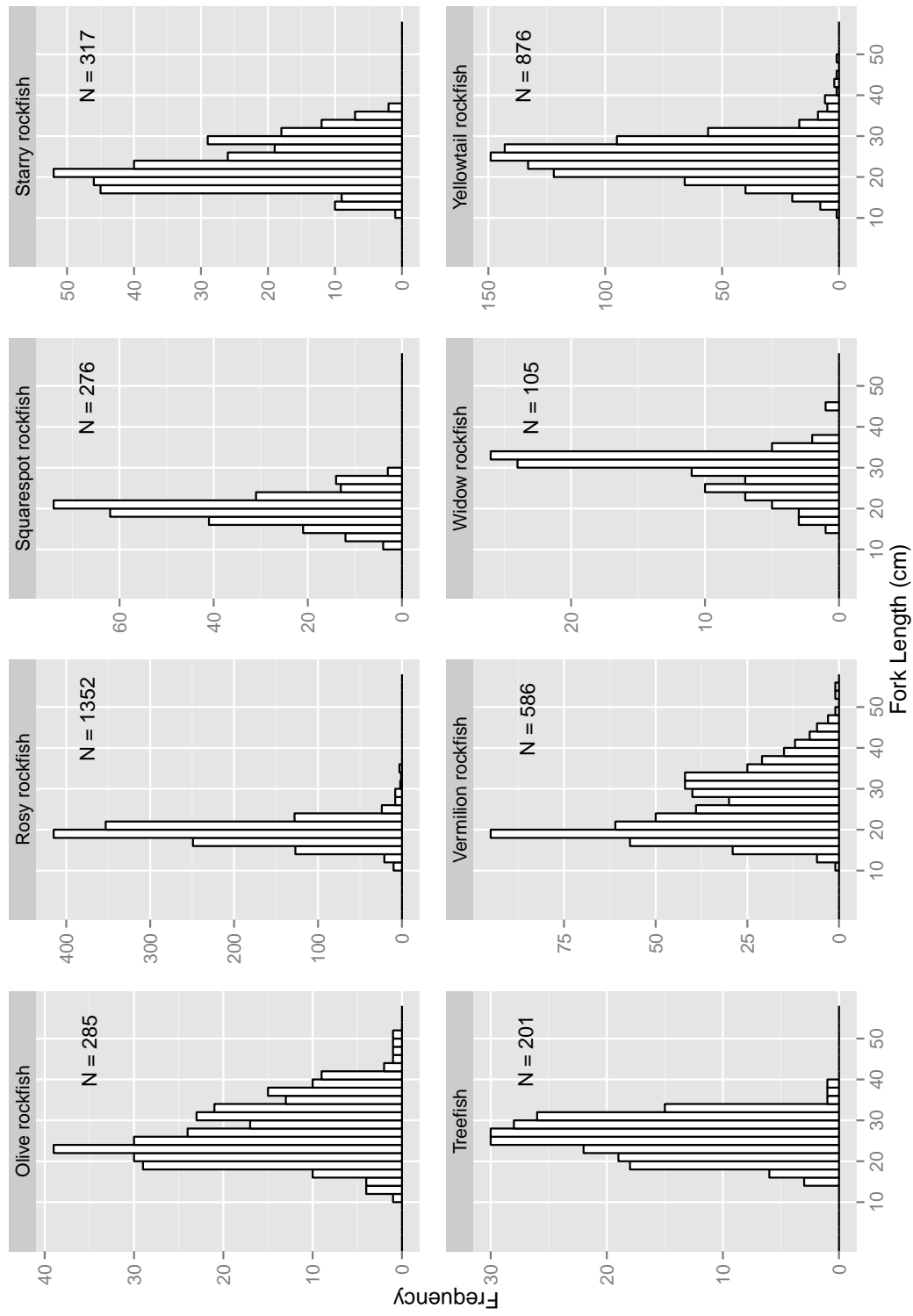


Figure 7: continued.

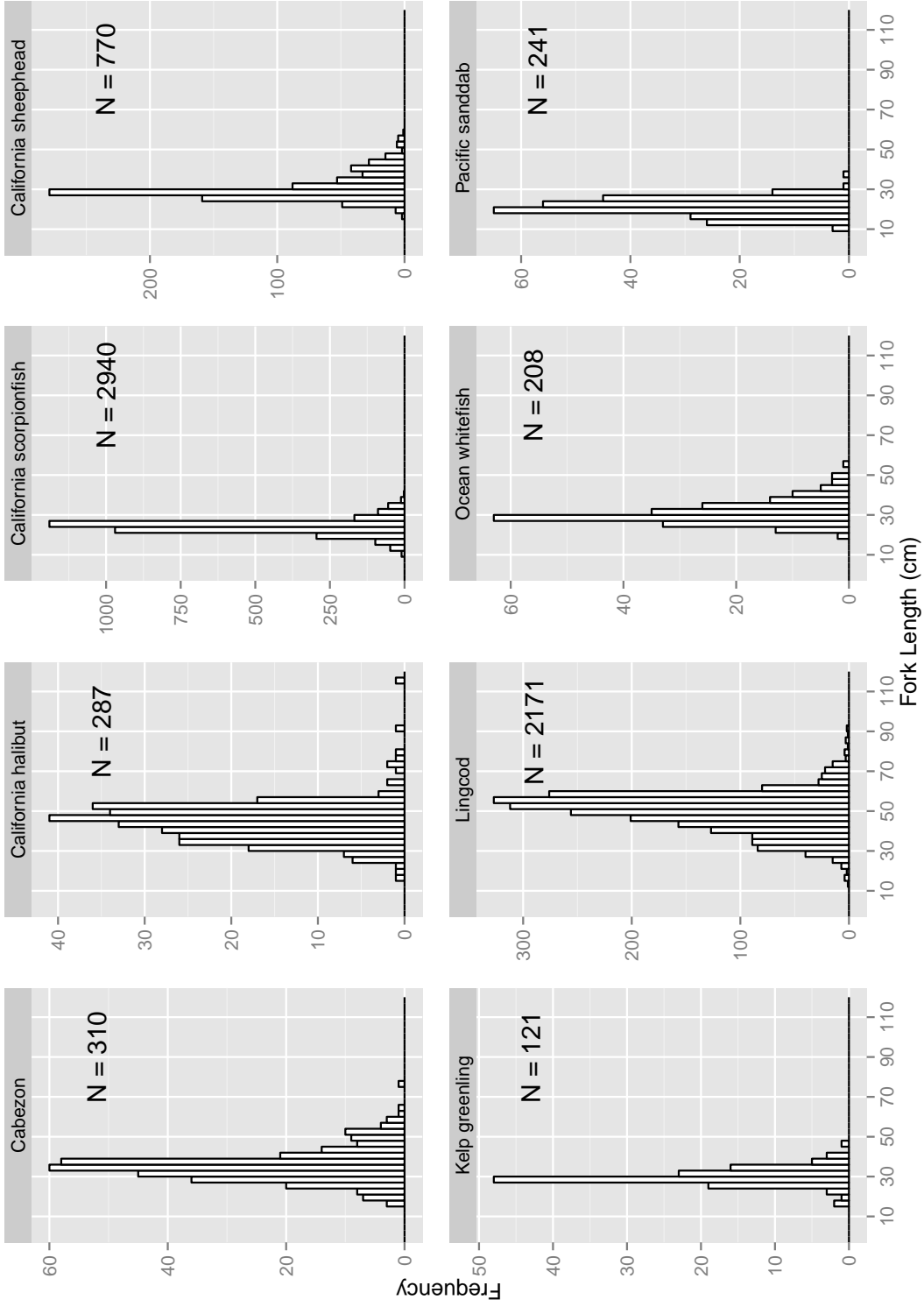


Figure 8: Length distributions of discarded groundfish (non-rockfish) for species with more than 100 measured fish in the database, all years combined.

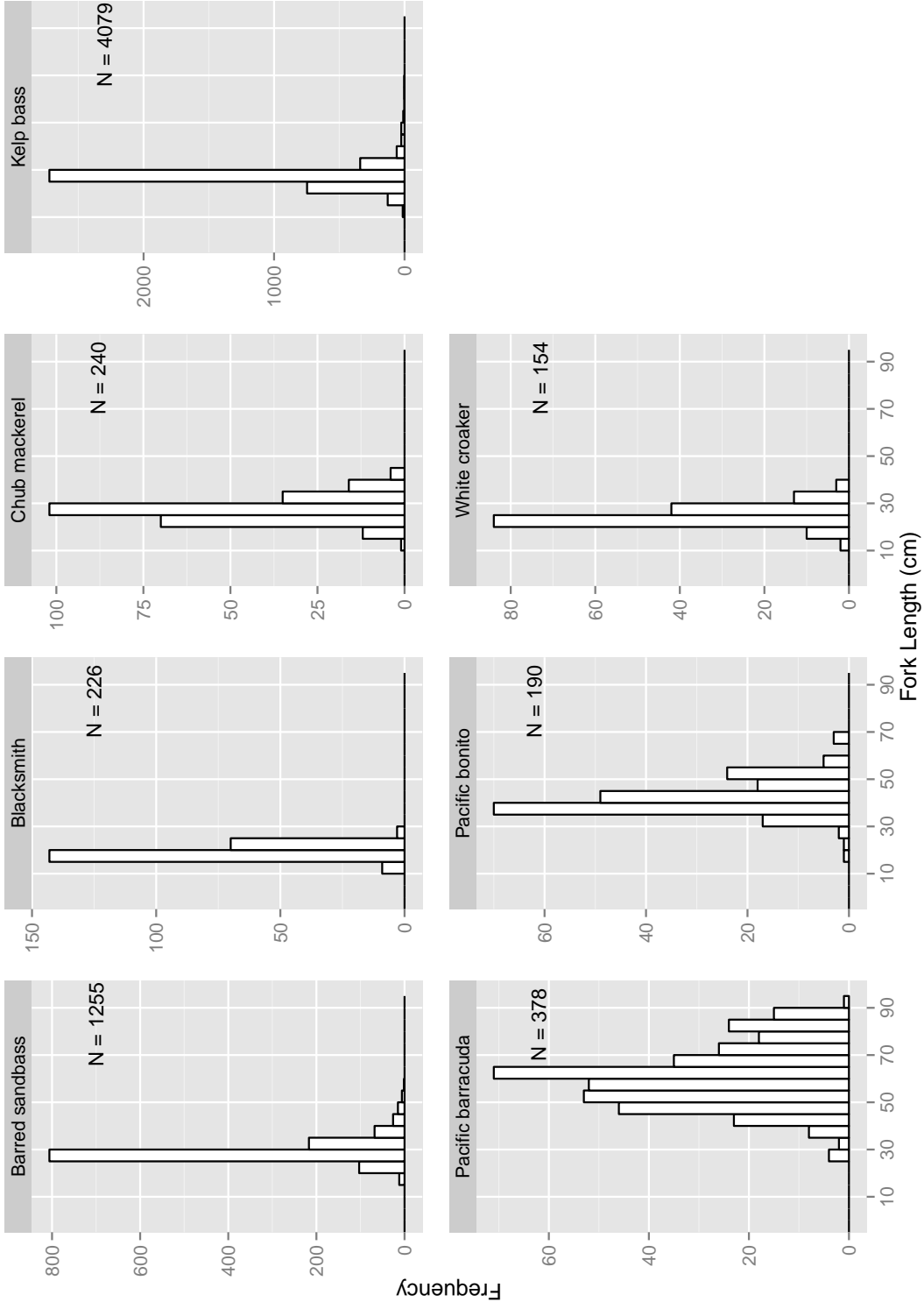


Figure 9: Length distributions of discarded fish (non-groundfish) for species with more than 100 measured fish in the database, all years combined.

## Acknowledgments

We would like to thank Connie Ryan, Deb Wilson-Vandenberg, and Meisha Key for lending their expertise of the recreational fishery sampling programs and for comments that greatly improved the document. We would also like to thank Ed Hibsich and Craig Miller for answering all of our questions about the data and the database, and Kevin Hitchcock for reviewing the document.

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## Appendix A. Metadata

This appendix contains the metadata associated with the CDFW Observer Program relational database.

Table A.1: Database table metadata generated from SqlSpec [3].

Table	Column	Datatype	Length	Bytes	NULL values	Primary key	Foreign key (FK)	Computed
BOAT	A	float	15	4	yes			no
BOAT	ANGLERS	float	15	4	yes			no
BOAT	ANGLERS_Error	float	15	4	yes			no
BOAT	AREA	varchar	1	1	yes			no
BOAT	AREA_Error	float	15	4	yes			no
BOAT	ASSN	bigint	19	8	no			no
BOAT	ASSNN	float	15	4	yes	yes		no
BOAT	BOATNAME	varchar	32	32	yes			no
BOAT	BOATNUM	float	15	4	yes			no
BOAT	BOATNUM_Error	float	15	4	yes			no
BOAT	CAPTAIN	varchar	24	24	yes			no
BOAT	CNTY	float	15	4	yes			no
BOAT	CNTY_Error	float	15	4	yes			no
BOAT	INTSITE	float	15	4	yes			no
BOAT	INTSITE_Error	float	15	4	yes			no
BOAT	INTVUER	float	15	4	yes			no
BOAT	LANDING	varchar	32	32	yes			no
BOAT	MNGMT_AREA	float	15	4	yes			no
BOAT	NUMLOCS	float	15	4	yes			no
BOAT	NUMLOCS_Error	float	15	4	yes			no
BOAT	NUMSP	float	15	4	yes			no
BOAT	NUMSP_Error	float	15	4	yes			no
BOAT	PRT_CODE_NEW	varchar	50	50	yes			no
BOAT	ST	float	15	4	yes			no
BOAT	TRP_COUNTRY	float	15	4	yes			no
BOAT	TRPDATE	date	10	3	yes			no
BOAT	TRPDATE_ORIG	float	15	4	yes			no
BOAT	TRPTYP	float	15	4	yes			no
BOAT	TRPTYP_Error	float	15	4	yes			no
BOAT	WAVE	float	15	4	yes			no
CATCHES	ASSN	bigint	19	8	no	composite PK	composite FK to LOCATION.ASSN	no
CATCHES	ASSNLOCNUM	varchar	50	50	yes			no
CATCHES	Catches_Error	float	15	4	yes			no
CATCHES	COUNTER	float	15	4	yes			no
CATCHES	DISC	float	15	4	yes			no
CATCHES	DISCD_Error	float	15	4	yes			no
CATCHES	DISCDALIV	float	15	4	yes			no
CATCHES	DISCDALIV_Error	float	15	4	yes			no
CATCHES	DISCDDEAD	float	15	4	yes			no

Table A.1: continued.

Table	Column	Datatype	Length	Bytes	NULL values	Primary key	Foreign key (FK)	Computed
CATCHES	DISCDEAD_Error	float	15	4	yes			no
CATCHES	DROP1	float	15	4	yes			no
CATCHES	KEPT	float	15	4	yes			no
CATCHES	KEPT_Error	float	15	4	yes			no
CATCHES	LOCNUM	float	15	4	no	composite PK	composite FK to LOCATION.LOCNUM	no
CATCHES	REFINSP	smallint	5	2	no	composite PK	luSPECIES.REFINSP	
CATCHES	REFINSP_Error	float	15	4	yes			no
CATCHES	SP_CODE	float	15	4	yes			no
CATCHES	SPNUM	float	15	4	yes			no
LENGTHS	ASSN	bigint	19	8	no			no
LENGTHS	DISPD	varchar	50	50	yes			no
LENGTHS	FISHPLENGTH	float	15	4	yes			no
LENGTHS	FISHPLENGTH_Error	float	15	4	yes			no
LENGTHS	ID_CODE	varchar	50	50	no			no
LENGTHS	LOCNUM	float	15	4	yes			no
LENGTHS	LOCNUM_Error	float	15	4	yes			no
LENGTHS	maxlen	varchar	50	50	yes			no
LENGTHS	MODE.FX	varchar	50	50	yes			no
LENGTHS	old_len	varchar	50	50	yes			no
LENGTHS	old_wgt	varchar	50	50	yes			no
LENGTHS	pwgt	varchar	50	50	yes			no
LENGTHS	REFINSP	varchar	50	50	yes			no
LENGTHS	recn	varchar	50	50	yes			no
LENGTHS	RECS	varchar	50	50	yes			no
LENGTHS	SEX	varchar	50	50	yes			no
LENGTHS	SUB.REG	varchar	50	50	yes			no
LENGTHS	WEIGHT	varchar	50	50	yes			no
LENGTHS	wgt_Flag	varchar	50	50	yes			no
LOCATION	ANGHRS	float	15	4	yes			no
LOCATION	ASSESS_AREA	varchar	1	1	yes			no
LOCATION	ASSN	bigint	19	8	no	composite PK	BOAT.ASSN	no
LOCATION	BAY_END	varchar	50	50	yes			no
LOCATION	BAY_START	varchar	50	50	yes			no
LOCATION	COUNTRY	nvarchar	max	2.15E+09	yes			no
LOCATION	EGISDEPTH	float	15	4	yes			no
LOCATION	EGISDEPTH1	float	15	4	yes			no



Table A.1: continued.

Table	Column	Datatype	Length	Bytes	NULL values	Primary key	Foreign key (FK)	Computed
LOCATION	ELAT	float	15	4	yes			no
LOCATION	ELAT_Error	float	15	4	yes			no
LOCATION	ELAT_ORIG	float	15	4	yes			no
LOCATION	ELON	float	15	4	yes			no
LOCATION	ELON_Error	float	15	4	yes			no
LOCATION	ELON_ORIG	float	15	4	yes			no
LOCATION	EMPA	nvarchar	50	200	yes			no
LOCATION	ETEMP	float	15	4	yes			no
LOCATION	ETIME	small-datetime	16	4	yes			no
LOCATION	ETIME_Error	float	15	4	yes			no
LOCATION	ETIME_ORIG	float	15	4	yes			no
LOCATION	FTYPE	float	15	4	yes			no
LOCATION	GFORMAT	float	15	4	yes			no
LOCATION	GFORMAT_Error	float	15	4	yes			no
LOCATION	Location_Error	float	15	4	yes			no
LOCATION	LOCNUM	float	15	4	no	compos- ite PK		no
LOCATION	MAXDEPTH	float	15	4	yes			no
LOCATION	MAXDEPTH_Error	float	15	4	yes			no
LOCATION	MINDEPTH	float	15	4	yes			no
LOCATION	MINDEPTH_Error	float	15	4	yes			no
LOCATION	MISS-							
LOCATION	INGCPUE_DATA	float	15	4	yes			no
LOCATION	MNGMT_END	float	15	4	yes			no
LOCATION	MNGMT_Error	float	15	4	yes			no
LOCATION	MNGMT_NEW	float	15	4	yes			no
LOCATION	MNGMT_START	float	15	4	yes			no
LOCATION	MONTH	float	15	4	yes			no
LOCATION	MPA	float	15	4	yes			no
LOCATION	OBSANG	float	15	4	yes			no
LOCATION	OBSANG_Error	float	15	4	yes			no
LOCATION	PINNIPED	float	15	4	yes			no
LOCATION	PLBAIT	float	15	4	yes			no
LOCATION	PLFISH	float	15	4	yes			no
LOCATION	PLGEAR	float	15	4	yes			no
LOCATION	PLTIME	float	15	4	yes			no
LOCATION	PRMOVE	float	15	4	yes			no
LOCATION	SGHDEPTH	float	15	4	yes			no
LOCATION	SGHDEPTH1	float	15	4	yes			no
LOCATION	SITENAME	varchar	32	32	yes			no

Table A.1: continued.

Table	Column	Datatype	Length	Bytes	NULL values	Primary key	Foreign key (FK)	Computed
LOCATION	SLAT	float	15	4	yes			no
LOCATION	SLAT_Error	float	15	4	yes			no
LOCATION	SLAT_ORIG	float	15	4	yes			no
LOCATION	SLON	float	15	4	yes			no
LOCATION	SLON_Error	float	15	4	yes			no
LOCATION	SLON_ORIG	float	15	4	yes			no
LOCATION	SMPA	nvarchar	50	200	yes			no
LOCATION	STEMP	float	15	4	yes			no
LOCATION	STIME	small-datetime	16	4	yes			no
LOCATION	STIME_Error	float	15	4	yes			no
LOCATION	STIME_ORIG	float	15	4	yes			no
luBagLimit	Bocaccio	varchar	50	50	yes			no
luBagLimit	Cabezon	varchar	50	50	yes			no
luBagLimit	Canary	varchar	50	50	yes			no
luBagLimit	CaScorp	varchar	50	50	yes			no
luBagLimit	CaSheep	varchar	50	50	yes			no
luBagLimit	Cowcod	varchar	50	50	yes			no
luBagLimit	Greenlings	varchar	50	50	yes			no
luBagLimit	Lingcod	varchar	50	50	yes			no
luBagLimit	NsRf	varchar	50	50	yes			no
luBagLimit	OcWh	varchar	50	50	yes			no
luBagLimit	Region	varchar	50	50	yes			no
luBagLimit	Rockfish_General	varchar	50	50	yes			no
luBagLimit	Year	varchar	50	50	yes			no
luBagLimit	Yelloweye	varchar	50	50	yes			no
luERROR	Column_Name	varchar	50	50	yes			no
luERROR	ERROR_CODE	float	15	4	yes			no
luERROR	ER-							
luERROR	ROR_DESCRIPTION	varchar	500	500	yes			no
luERROR	Table_Name	varchar	50	50	yes			no
luER-	Decimal_Value	float	15	4	yes			no
luER-	Decimal-Val_Description	nchar	500	2000	yes			no
luER-	Leading_Value	float	15	4	yes			no

Table A.1: continued.

Table	Column	Datatype	Length	Bytes	NULL values	Primary key	Foreign key (FK)	Computed
luER-ROR_Location_Error	Leading-Val_Description	nchar	500	2000	yes			no
luMNGMT_AREA	MNGMT	nvarchar	255	1020	yes			no
luMNGMT_AREA	MNGMT_AREA	float	15	4	yes			no
luMNGMT_AREA	North_Border	float	15	4	yes			no
luMNGMT_AREA	North_Border_Name	nvarchar	255	1020	yes			no
luMNGMT_AREA	South_Border	float	15	4	yes			no
luMNGMT_AREA	South_Border_Name	nvarchar	255	1020	yes			no
luMNGMT_AREA	Year	float	15	4	yes			no
luSizeLimit	Bocaccio	varchar	50	50	yes			no
luSizeLimit	Cabezon	varchar	50	50	yes			no
luSizeLimit	CaScorp	varchar	50	50	yes			no
luSizeLimit	CaSheep	varchar	50	50	yes			no
luSizeLimit	Greenlings	varchar	50	50	yes			no
luSizeLimit	Lingcod	varchar	50	50	yes			no
luSizeLimit	Year	varchar	50	50	yes			no
luSPECIES	A_FL	varchar	50	50	yes			no
luSPECIES	A_FT	varchar	50	50	yes			no
luSPECIES	A_TL	varchar	50	50	yes			no
luSPECIES	ALPHA5	varchar	50	50	yes			no
luSPECIES	B_FL	varchar	50	50	yes			no
luSPECIES	B_FT	varchar	50	50	yes			no
luSPECIES	B_TL	varchar	50	50	yes			no
luSPECIES	CDFGSP	varchar	50	50	yes			no
luSPECIES	CG	varchar	50	50	yes			no
luSPECIES	CG_NAME	varchar	50	50	yes			no
luSPECIES	COMMON	varchar	50	50	yes			no
luSPECIES	CSG	varchar	50	50	yes			no
luSPECIES	CSG_NAME	varchar	50	50	yes			no
luSPECIES	ESCH	varchar	50	50	yes			no
luSPECIES	FAMILY	varchar	50	50	yes			no
luSPECIES	FMP_CODE	varchar	50	50	yes			no
luSPECIES	GENUS	varchar	50	50	yes			no
luSPECIES	GP_CODE	varchar	50	50	yes			no
luSPECIES	GROUP1	varchar	50	50	yes			no
luSPECIES	HART	varchar	50	50	yes			no
luSPECIES	LOVE	varchar	50	50	yes			no
luSPECIES	MLEE	varchar	50	50	yes			no
luSPECIES	N_FL	varchar	50	50	yes			no
luSPECIES	N2	varchar	50	50	yes			no
luSPECIES	N3	varchar	50	50	yes			no
luSPECIES	NAME	varchar	50	50	yes			no
luSPECIES	NB_CNTY	varchar	50	50	yes			no

Table A.1: continued.

Table	Column	Datatype	Length	Bytes	NULL values	Primary key	Foreign key (FK)	Computed
luSPECIES	NB_ST	varchar	50	50	yes			no
luSPECIES	NODC7	varchar	50	50	yes			no
luSPECIES	NODC8	varchar	50	50	yes			no
luSPECIES	ODFWSP	varchar	50	50	yes			no
luSPECIES	ORDER1	varchar	50	50	yes			no
luSPECIES	P1	varchar	50	50	yes			no
luSPECIES	P2	varchar	50	50	yes			no
luSPECIES	REFINSP	smallint	5	2	no	yes		no
luSPECIES	REG_GROUP	varchar	50	50	yes			no
luSPECIES	REGION	varchar	50	50	yes			no
luSPECIES	SB_CNTY	varchar	50	50	yes			no
luSPECIES	SB_ST	varchar	50	50	yes			no
luSPECIES	SCI_NAME	varchar	50	50	yes			no
luSPECIES	SG_CODE	varchar	50	50	yes			no
luSPECIES	SP_CODE	varchar	50	50	yes			no
luSPECIES	sp-pacfin	varchar	50	50	yes			no
luSPECIES	sp-psbs	varchar	50	50	yes			no
luSPECIES	sp-wabds	varchar	50	50	yes			no
luSPECIES	SPECIES	varchar	50	50	yes			no
luSPECIES	SUPER	varchar	50	50	yes			no
luSPECIES	TSN	varchar	50	50	yes			no

## **Appendix B. Data collection forms**

This appendix contains the data forms used by observers in the CDFW Observer Program from 1999-2011. Datasheets include the general data form used to collected catch information and the data forms used to collect lengths of discarded fish and gear information.

# CPFV SPECIES TALLY SHEET

Assn#		Sampler									Type										
Date		Date		Site		1		2		3		4		5		6		7			
Species																					
1																					Kept
2																					Reid
3																					Kept
4																					Reid
5																					Kept
6																					Reid
7																					Kept
8																					Reid
9																					Kept
10																					Reid
11																					Kept
12																					Reid
13																					Kept
14																					Reid

Figure B.1: Onboard observer data form for 1999.

On-board Party Charter Approximate Location Fished for 2000 MRFSS Survey

Assignment		Date				Eligible Anglers Onboard	
Interviewer Code		Sampler				County	
Boat#		Boat name				Site Code	
						Landing	

1	Time		Latitude		Longitude		BDepth ft.		Obs Angs	TempF	Seal	Moved boat
	S	E					Min	Max				
1												
	Site Name:								GFormat	Ftype	gear lost	fish lost
2												
	Site Name:								GFormat	Ftype	gear lost	fish lost
3												
	Site Name:								GFormat	Ftype	gear lost	fish lost
4												
	Site Name:								GFormat	Ftype	gear lost	fish lost
5												
	Site Name:								GFormat	Ftype	gear lost	fish lost
6												
	Site Name:								GFormat	Ftype	gear lost	fish lost
7												
	Site Name:								GFormat	Ftype	gear lost	fish lost
8												
	Site Name:								GFormat	Ftype	gear lost	fish lost
9												
	Site Name:								GFormat	Ftype	gear lost	fish lost
10												
	Site Name:								GFormat	Ftype	gear lost	fish lost
11												
	Site Name:								GFormat	Ftype	gear lost	fish lost

S=Start E=End (time & loc.) Ftype: 1=Free drift 2=Stationed 3=Anchored 4=Troll N = Number of Fish Gformat: 1=deg,min 2=site 3=deg,min,sec 4=loran

Figure B.2: Onboard observer data form for 2000-2002.

**ON-BOARD PASSENGER FISHING VESSEL SAMPLING**

STOP#	1		2		3		4		5		6		7	
	Lat	Lon 1	Lat	Lon 1	Lat	Lon 1	Lat	Lon 1	Lat	Lon 1	Lat	Lon 1	Lat	Lon 1
<b>START</b>														
<b>END</b>														
<b>Depths</b>														
<b>Temps</b>														
<b>ObsAng</b>														
<b>Area</b>														
<b>Gear</b>														
<b>Bait</b>														
<b>Fish</b>														
<b>1</b>														
<b>2</b>														
<b>3</b>														
<b>4</b>														
<b>5</b>														
<b>6</b>														
<b>7</b>														
<b>8</b>														
<b>9</b>														
<b>10</b>														
<b>11</b>														
<b>12</b>														

Figure B.3: Onboard observer data form for 2003-2004.



2005 CPFV ON-BOARD CATCH SAMPLING FORM - CRFS

STOP#	1					2					3					4					5														
	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1	Time	Lat	Lon 1						
<b>START</b>																																			
<b>END</b>																																			
max																																			
max																																			
<b>ObsAng</b>																																			
<b>Gear Time</b>																																			
<b>Bait Fish</b>																																			
1	KEPT																																		
2	KEPT																																		
3	KEPT																																		
4	KEPT																																		
5	KEPT																																		
6	KEPT																																		
7	KEPT																																		
8	KEPT																																		
9	KEPT																																		

Figure B.4: Onboard observer data form for 2005.

CRFS ON-BOARD CPFV SAMPLING FORM

Sheet  of  1/23/2013

Assign  Spps:  Spp:

Sampler=  Date

Boat #

Boat =

Cnty=

Site / Lndg=

Elg Angs

Trip Type=

Area =

Capit =

Trp Typ: 1=am12, 2=pm12, 3=mid12, 4=twilight, 5=3/4-day, 6=overnight, 7=other

Area: 1=US, 2=US-3mi, 3=Mexico, 4=Mexico-3mi

Ftyp: 1=Drift, 2=Stat, 3=Anchor, 4=Troll

Gfmit: 3=deg.min.sec 1=deg.min.100thmin

STOP#	1					2					3					4					5				
	Lat	Lon 1	Time	Gfmit		Lat	Lon 1	Time	Gfmit		Lat	Lon 1	Time	Gfmit		Lat	Lon 1	Time	Gfmit		Lat	Lon 1	Time	Gfmit	
<b>START</b>																									
<b>END</b>																									
max 1 min																									
Depths																									
max 1 min																									
Temps																									
ObsAng																									
1=Yes 0=No																									
<b>Gear</b>																									
<b>Bait</b>																									
<b>Fish</b>																									
<b>LOST</b>																									
<b>KEPT</b>																									
REL																									
alive-dead																									
<b>KEPT</b>																									
REL																									
alive-dead																									
<b>KEPT</b>																									
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alive-dead																									
<b>KEPT</b>																									
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alive-dead																									
<b>KEPT</b>																									
REL																									
alive-dead																									
<b>KEPT</b>																									
REL																									
alive-dead																									
<b>KEPT</b>																									
REL																									
alive-dead																									

Figure B.5: Onboard observer data form for 2006-2011.

# RECENT TECHNICAL MEMORANDUMS

SWFSC Technical Memorandums are accessible online at the SWFSC web site (<http://swfsc.noaa.gov>). Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (<http://www.ntis.gov>). Recent issues of NOAA Technical Memorandums from the NMFS Southwest Fisheries Science Center are listed below:

- NOAA-TM-NMFS-SWFSC-519 Documentation of a relational database for the Oregon sport groundfish onboard sampling program.  
MONK, M. E., E. J. DICK, T. BUELL, L. ZUMBRUNNEN, A. DAUBLE and D. PEARSON  
(September 2013)
- 520 A fishery-independent survey of cowcod (*SEBASTES LEVIS*) in the Southern CA bight using a remotely operated vehicle (ROV).  
STIERHOFF, K. L., S. A. MAU, and D. W. MURFIN  
(September 2013)
- 521 Abundance and biomass estimates of demersal fishes at the footprint and piggy bank from optical surveys using a remotely operated vehicle (ROV).  
STIERHOFF, K. L., J. L. BUTLER, S. A. MAU, and D. W. MURFIN  
(September 2013)
- 522 Klamath-Trinity basin fall run chinook salmon scale age analysis evaluation.  
SATTERTHWAITE, W. H., M. R. O'FARRELL, and M. S. MOHR  
(September 2013)
- 523 Status review of the Northeastern Pacific population of white sharks (*CARCHARODON CARCHARIAS*) under the endangered species act.  
DEWAR, H., T. EGUCHI, J. HYDE, D. KINZEY, S. KOHIN, J. MOORE, B. L. TAYLOR, and R. VETTER  
(December 2013)
- 524 AMLR 2010-2011 field season report.  
WALSH, J. G., ed.  
(February 2014)
- 525 The Sacramento harvest model (SHM).  
MOHR, M. S., and M. R. O'FARRELL  
(February 2014)
- 526 Marine mammal, sea turtle and seabird bycatch in California gillnet fisheries in 2012.  
CARRETTA, J. V., L. ENRIQUEZ, and C. VILLAFANA  
(February 2014)
- 527 White abalone at San Clemente Island: population estimates and management recommendations.  
STIERHOFF, K. L., M. NEUMANN, S. A. MAU and D. W. MURFIN  
(May 2014)
- 528 Recommendations for pooling annual bycatch estimates when events are rare.  
CARRETTA, J. V. and J. E. MOORE  
(May 2014)