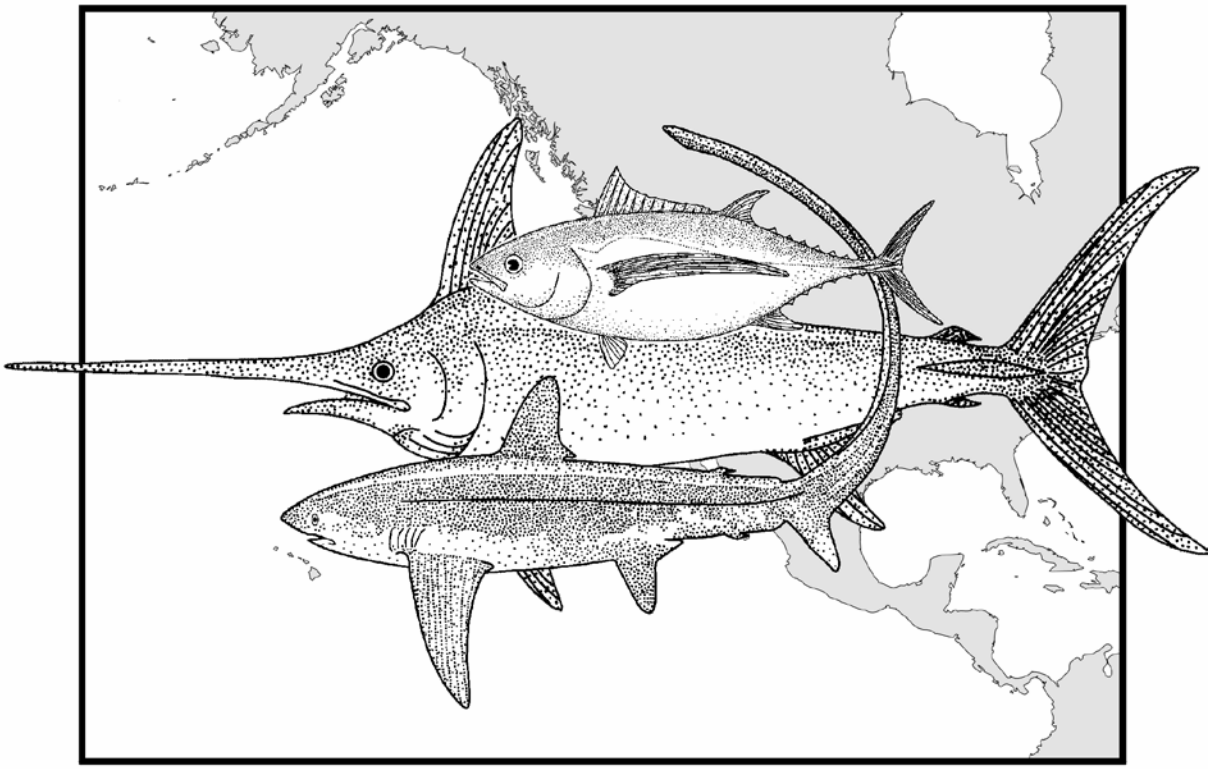
STATUS OF THE U.S. WEST COAST FISHERIES FOR HIGHLY MIGRATORY SPECIES THROUGH 2011



STOCK ASSESSMENT AND FISHERY EVALUATION

SEPTEMBER 2012

PACIFIC FISHERY MANAGEMENT COUNCIL
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Acronyms

ACL	annual catch limit
AFRF	American Fishermen's Research Foundation
B	biomass
B_0	initial (unfished) biomass
BO	Biological Opinion
BREP	Bycatch Reduction Engineering Program
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CMM	Conservation and Management Measure
Council	Pacific Fishery Management Council
CPFV	commercial passenger fishing vessel
CPUE	catch per unit of effort
CRFS	California Recreational Fisheries Survey
DGN	drift gillnet
EEZ	exclusive economic zone
EFH	essential fish habitat
EPO	eastern Pacific Ocean
ESA	Endangered Species Act
F	fishing mortality rate
FL	fork length
FMP	fishery management plan
FR	Federal Register
HAPC	Habitat Area of Particular Concern
HMS	highly migratory species
HMS FMP	Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species
HMSAS	Highly Migratory Species Advisory Subpanel
HMSMT	Highly Migratory Species Management Team
IATTC	Inter-American Tropical Tuna Commission
ISC	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific
IUU	illegal, unregulated, and unreported fishing
LOF	List of Fisheries
MFMT	maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Act, Magnuson-Stevens Fishery Conservation and Management Act
MSST	minimum stock size threshold
MSY	maximum sustainable yield
mt	metric ton
MUS	management unit species
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPO	North Pacific Ocean
NRIFSF	National Research Institute of Far Seas Fisheries (Japan)
ODFW	Oregon Department of Fish and Wildlife
OMB	Office of Management and Budget
OSP	Washington Ocean Sampling Program
OY	optimum yield
PacFIN	Pacific Fisheries Information Network

PIER	Pfleger Institute of Environmental Research
PIFSC	NMFS Pacific Islands Fisheries Science Center
PIRO	NMFS Pacific Islands Regional Office
PSAT	pop-off satellite archival tag
PSMFC	Pacific States Marine Fisheries Commission
RecFIN	Recreational Fisheries Information Network
RFMO	regional fishery management organization
SAC	IATTC Scientific Advisory Committee
SAFE	stock assessment and fishery evaluation
SBR	spawning biomass ratio
SCB	Southern California Bight
SEPO	Southeast Pacific Ocean
SLUTH	Swordfish and Leatherback Use of Temperate Habitat (Workshop)
SPOT Tag	smart position and/or temperature tag
SSB	spawning stock biomass
SST	sea surface temperature
SWFSC	Southwest Fisheries Science Center (NMFS)
SWR	Southwest Regional Office (NMFS)
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	western and central Pacific Ocean
WDFW	Washington Department of Fish and Wildlife

1 INTRODUCTION

1.1 Fishery Management Plan

The Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP) was developed by the Pacific Fishery Management Council in response to the need to coordinate state, Federal, and international management. The National Marine Fisheries Service (NMFS), on behalf of the U.S. Secretary of Commerce, partially approved the HMS FMP on February 4, 2004. The majority of HMS FMP implementing regulations became effective on April 7, 2004. Reporting and recordkeeping provisions became effective on February 10, 2005.

The HMS FMP has been amended twice since its implementation. Amendment 1, approved by NMFS on June 7, 2007, incorporates recommended international measures to end overfishing of the Pacific stock of bigeye tuna (*Thunnus obesus*). Amendment 2, approved by NMFS on June 27, 2011, makes the FMP consistent with revised National Standard 1 Guidelines.
Amendment 2 made the following changes to the HMS FMP:

- Two management unit species, bigeye thresher shark and pelagic thresher shark, are reclassified as ecosystem component (EC) species.
- Of the current 34 species identified in the FMP for monitoring purposes, six are retained as EC species.
- The international exception to setting allowable biological catches (ABCs) and ACLs are applied to the remaining 11 managed species.
- The FMP describes a process for determining the primary FMP for the purpose of identifying management reference points. Because all the managed species in the HMS FMP are also part of the Western Pacific Fishery Management Council's Pelagics Fishery Ecosystem Plan, coordination between the two councils in setting reference points is needed.
- The process described in the HMS FMP for establishing and adjusting management measures on a biennial basis also will be used to recommend changes in maximum sustainable yield (MSY), optimum yield (OY), and status determination criteria (SDC) for stocks managed under the FMP. Council-recommended changes will be reviewed by NMFS.
- The current description in the FMP of methods for determining MSY, OY, and SDC is modified slightly to more clearly specify that stock-specific considerations could be used when proposing changes to these estimates.

The HMS currently managed under the FMP are:

- Striped marlin (*Kajikia audax*[*])
- Swordfish (*Xiphias gladius)*
- Common thresher shark (*Alopias vulpinus)*
- Shortfin mako shark (bonito shark) (*Isurus oxyrinchus)*
- Blue shark (*Prionace glauca)*
- North Pacific albacore (*Thunnus alalunga)*
- Yellowfin tuna (*Thunnus albacares)*
- Bigeye tuna (*Thunnus obesus)*
- Skipjack tuna (*Katsuwonus pelamis)*
- Pacific bluefin tuna (*Thunnus orientalis)*
- Dorado, a.k.a. mahi mahi or dolphinfish (*Coryphaena hippurus)*

[*] The scientific name for this species was previously *Tetrapturus audax.*

In addition, Amendment 2 added eight EC species to the FMP. The EC category is identified in the revised National Standard 1 Guidelines. The list was compiled from monitored species previously identified in the plan and by moving two management unit species to the EC category. The EC species are:

- Bigeye thresher shark *(Alopias superciliosus*)
- Common mola (*Mola mola*)
- Escolar (*Lepidocybium flavobrunneum*)
- Lancetfishes (Alepisauridae)
- Louvar (*Luvarus imperialis*)
- Pelagic sting ray (*Dasyetis violacea*)
- Pelagic thresher shark (*Alopias pelagicus*)
- Wahoo (*Acathocybium solandri*)

EC species are not considered "in the fishery" but Councils should consider measures to mitigate and minimize bycatch of these species, to the extent practicable, consistent with National Standard 9. MSY, OY, and other reference points do not need to be specified for EC species. Identification of EC species will help the Council to track these species over time, periodically evaluate their status, and assess whether any management is needed under the FMP, in which case an EC species could be reclassified as a managed species.

1.2 The Management Cycle

The HMS FMP also establishes an annual process for the delivery of the SAFE report to the Council, intended to coincide with the management cycle: a draft report is provided in June for initial decision-making on the need for new harvest specifications and management measures. The final report is delivered in September to provide the recommendations and information necessary to develop and implement any harvest specifications and management measures. NMFS implements the Council's recommended management measures through the Federal regulatory process, if they are found to be consistent with the MSA and other applicable law. Any such measures become effective at the start of the next fishing year, April 1 of the following year, or when the rulemaking process is complete, and stay in effect unless action is taken to modify the action. Council meetings in 2006 initiated the first biennial management cycle under the HMS FMP with consideration of measures to be implemented during the April 1, 2007–March 31, 2009 biennium. In 2010 the Council considered management changes for the third biennial period, April 1, 2011–March 31, 2013.

1.3 Highly Migratory Species Management Team

Current members of the HMSMT may be found in the Roster. In 2011 Mr. Kirt Hughes replaced Ms. Carol Henry as the Washington Department of Fish and Wildlife member of the HMSMT. In addition to the HMSMT, the following people contributed to the production of the 2012 HMS SAFE:

- Mr. John Childers (logbook program, research and data needs)
  Supervisory IT Specialist, NMFS Southwest Fisheries Science Center
- Dr. Kit Dahl (project management, introductory material)
  Staff Officer, Pacific Fishery Management Council
- Mr. Craig D'Angelo (HMS permit program information)
  Business and Industry Specialist, NMFS Southwest Region
- Ms. Donna Dealy (commercial fisheries data)
  Computer Specialist, NMFS Southwest Fisheries Science Center
- Ms. Elizabeth Petras (protected species regulations affecting HMS fisheries)

Natural Resources Specialist, NMFS Southwest Region Protected Resources Division

1.4 Pacific Council Highly Migratory Species Activities in 2011

In 2011 the Pacific Council and its advisory Highly Migratory Species Management Team (HMSMT) and Highly Migratory Species Advisory Subpanel (HMSAS) took up HMS issues at their April, June, September, and November meetings. Written materials distributed at Pacific Council meetings (the "briefing book") and summaries of decisions taken at these meetings may be consulted for additional information.

1.4.1 North Pacific Albacore Tuna Conservation and Management

At the April meeting, in an effort to prepare for the release of a stock assessment for North Pacific albacore prepared by the Albacore Working Group of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC), the Council directed the HMSMT and HMSAS, to develop conservation and management recommendations based on the assumption that the pending stock assessment could possibly raise concerns about stock status. Aware of upcoming negotiations over the U.S.-Canada albacore treaty, the Pacific Council also requested the National Marine Fisheries Service (NMFS) to secure data from the Canadian government on landings by Canadian vessels in Canadian ports of albacore caught in the U.S. west coast Exclusive Economic Zone (EEZ).

At the June meeting the Pacific Council directed the HMSMT and HMSAS to develop a suite of possible alternatives for a proactive management framework for North Pacific albacore, which could be proposed at the international level through U.S. delegations. Lisa Wise Consulting, Inc. presented a report to the Council and the HMSMT and HMSAS entitled West Coast U.S. Commercial Albacore Fishery Economic Analysis.

At the November meeting the Pacific Council recommended that the U.S. attempt to reach agreement on reciprocal fishing privileges for 2012 with Canada under the U.S.-Canada Albacore Treaty. The current agreement (Fishing Regime) was set to expire at the end of 2011. The Pacific Council recommended that at the bilateral meeting occurring November 30-December 2, the U.S. delegation describe to the Canadians the perceived impacts of the Treaty on U.S. albacore fishermen. When renegotiating the reciprocal privileges, the Pacific Council identified equity of benefits as an important objective, which could be addressed through the terms setting Canadian access to the U.S. EEZ. (Note that agreement was not reached at the bilateral meeting, and the reciprocal access agreement lapsed at the end of 2011. Further negotiations were planned for 2012.)

1.4.2 Recommendations to Regional Fishery Management Organizations

At the June meeting the Pacific Council made a variety of recommendations to U.S. delegations to the 82nd Inter-American Tropical Tuna Commission (IATTC) meeting (July 4-8) and the 7th Western and Central Pacific Fish Commission (WCPFC) Northern Committee meeting (September 6-9) relative to potential conservation measures for North Pacific albacore, Pacific bluefin tuna, tropical tunas (bigeye, yellowfin and skipjack), and various monitoring, control, and surveillance (MCS) measures.

At the November meeting the Council made recommendations to the U.S. delegation to the WCPFC focusing on conservation of bigeye tuna in the Western Pacific, encouraging better cooperation between the WCPFC and the IATTC, and supported a variety of MCS measures under consideration by the WCPFC.

1.4.3 Report on U.S. West Coast Swordfish Workshop: Working Towards Sustainability

At the September meeting NMFS reported on the results of a 2-day informational swordfish workshop they hosted in San Diego, California, on May 10-11, 2011. Attendees included, among others, West Coast fishermen, processors, distributors, conservation organizations, fishery managers, natural resource economists, and legislative aides. In response to the presentation, the Council directed the HMSMT and HMSAS to compile and provide the following information:

1. All relevant new information on bycatch and bycatch mitigation in swordfish fisheries, including the amount and reasons for changes in bycatch in the Hawaii-based longline fishery since 2000, and information about new gears, such as the buoy-based gear used in Florida area fisheries;
2. Current research on the distribution of sea turtles and their critical habitat off the west coast and its relevance to potential fishery management changes, including a change to the configuration of the Pacific Leatherback Conservation Area (PLCA); and
3. Based on the information in 1 and 2 above, comparisons of protected species bycatch estimates between current, status quo west coast swordfish fisheries, the gear types described above, fisheries in place at the time of HMS Fishery Management Plan (FMP) adoption and possible future fishery designs.

The Pacific Council will use this information to inform a decision on whether to change the current west coast swordfish fishery.

1.4.4 Pacific Bluefin Tuna Overfishing

On April 7, 2011, NMFS sent a letter of notification to the Pacific Council that it had determined overfishing is occurring on Pacific bluefin tuna (*Thunnus orientalis*) pursuant to Section 304(i) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Section 304(i) applies to stocks where overfishing is the result of excessive international fishing pressure. It requires the Council, within 1 year of the notification, to:

1. Develop recommendations for domestic regulations to address the relative impact of fishing vessels of the United States on the stock, and
2. Develop and submit recommendations to the Secretary of State, and to the Congress, for international actions that will end overfishing in the fishery and rebuild the affected stock, taking into account the relative impact of vessels of other nations and vessels of the United States.

The notification letter asks the Pacific Council to work closely with the Western Pacific Fishery Management Council (WPFMC) in developing measures and recommendations. A June 27, 2011, letter from the WPFMC Executive Director contains a recommendation from the WPFMC calling on the Pacific Council to address the stock's overfishing status, given the larger domestic catches of Pacific bluefin in the Pacific Council area.

At the November meeting the Pacific Council adopted the following recommendations:

1. Additional domestic regulations are unnecessary at this time because the relative impact of U.S. fisheries is negligible.
2. At the international level the U.S. should work with the WCPFC to strengthen existing measures and encourage the IATTC to adopt complementary measures. The principal causes of Pacific bluefin tuna overfishing are high catches of juvenile fish (ages 0-3), particularly in the Western Pacific. The WCPFC adopted a 2-year measure (2011-2012) to address catch of juveniles but it contains exemptions for fisheries in Korea and Japan. A successor measure should not contain these exemptions.

2 DESCRIPTION OF FISHERIES

2.1 California

2.1.1 Commercial Fisheries

2.1.1.1 Surface Hook-and-Line Fishery for Albacore

Albacore is an economically valuable fishery in California and has been a target of commercial fishermen for more than 100 years. Troll and bait boat (live bait) are the principal commercial gears, although some albacore is caught using purse seine, longline, and drift gillnet gear as well. The fishing season varies from year to year, depending on oceanographic conditions, which strongly influence the occurrence of fish within range of the California-based fleet, and economics. A typical season runs July through October, with landings peaking in the fall. A general resident or non-resident commercial fishing license and a current California Department of Fish and Game (CDFG) vessel registration are required to catch and land albacore in the state of California. Additionally, the HMS FMP requires a federal permit with a surface hook-and-line gear endorsement for all U.S. commercial and recreational charter fishing vessels that fish for HMS within the West Coast exclusive economic zone (EEZ, 3–200 nautical miles) and for U.S. vessels that pursue HMS on the high seas (seaward of the EEZ) and land their catch in California, Oregon, or Washington.

In 2001, the last operational cannery in the Port of Los Angeles closed its doors, ending a West Coast tuna-canning dynasty. Changing global market conditions and a dynamic raw material/finished goods supply environment forced the plants to close. Without domestic-based cannery operations, a majority of the albacore are landed fresh or frozen, then exported to overseas markets for processing. This may partly explain the decline in participation since the 1980s, when the number of surface hook-and-line vessels landing albacore in California ports average annually slightly over 700, compared to an average of 231 in the period from 2001 to 2010. As with participation, landings and revenues from albacore have declined since the 1980s. For the period 1981-90 California landings averaged 4,135 mt annually and inflation adjusted revenue averaged $11.6 million annually. Comparable figures for the 2001-10 period are 1,135 mt and $2.3 million.

The recent decline in landings and revenues does not necessarily reflect a decline in the albacore population but more likely reflects a shift in fishing effort by California-based vessels into waters off Oregon and Washington where albacore have been more available due to favorable oceanographic conditions. Additionally, industry representatives have indicated that in recent years lower operating costs and better landing facilities outside of California have resulted in a decrease in California landings.

Albacore landings decreased in 2011, with commercial surface hook-and-line vessels landing 568 mt of albacore, compared to the 711 mt landed in 2010 (Table 2-20). The volume and number of landings varied throughout ports in California. Thirty-six percent of the 2011 landings were delivered to the San Francisco area, 20% was landed in Crescent City and an additional 25% was landed in the Monterey and Los Angeles/San Diego areas. Nominal landings occurred January through June, peaked in October, then declined the rest of the year (Table 2-21). The ex-vessel revenue was $2.1 million in 2011, an increase of 24% compared to about $1.7 million in 2010 (Table 2-20), as average price per pound rose enough to more than fully offset the effect of decreased landings (Table 2-22).

2.1.1.2 Coastal Purse Seine Fishery for Yellowfin, Skipjack, and Bluefin Tunas

U.S. West Coast catch of yellowfin, skipjack, and bluefin tuna represents a relatively minor component of

overall EPO tuna catch. More than 90% of the catch for these species in the U.S. EEZ portion of the eastern Pacific Ocean (EPO) is made by small coastal purse seine vessels operating in the Southern California Bight (SCB) from May to October. These vessels primarily target small pelagic species, especially Pacific mackerel, Pacific sardine, anchovy, and market squid. However, they will target the tropical yellowfin and skipjack tunas when intrusions of warm water from the south bring these species within range of the coastal purse seine fleet. Similarly, purse seine vessel operators will target the higher-valued temperate water bluefin tuna when they enter the coastal waters of the SCB. The number of purse seine vessels that landed tuna in California averaged 197 annually 1981-90 but subsequently declined substantially to an annual average of 11 in the 2001-2010 period.

The decline in the number of domestic vessels is correlated with the relocation of large cannery operations. Increased labor costs for domestic production contributed to these facilities being moved overseas, where labor costs are less. Currently there are no canneries in California functioning as primary offloaders of tuna.

A general resident or non-resident commercial fishing license and a current CDFG vessel registration are required to catch and land tuna caught in purse seine gear. Additionally, the HMS FMP requires a logbook and federal permit with a purse seine gear endorsement for all U.S. vessels that use purse seine gear to fish for HMS within the West Coast EEZ and for U.S. purse seine vessels that pursue HMS on the high seas (seaward of the EEZ) and land their catch in California, Oregon, or Washington.

2.1.1.3 Harpoon Fishery for Swordfish

California's harpoon fishery for swordfish developed in the early 1900s. Prior to 1980, harpoon and hook-and-line were the only legal gears for commercially harvesting swordfish. At that time, harpoon gear accounted for the majority of swordfish landings in California ports. In the early 1980s, a limited entry drift gillnet fishery was authorized by the State Legislature and soon afterward drift gillnets replaced harpoons as the primary method for catching swordfish, and the number of harpoon permits decreased from a high of 1,223 in 1979 to a low of 25 in 2001. Fishing effort typically occurs in the SCB from May to December, peaking in August, depending on weather conditions and the availability of fish in coastal waters. Some vessel operators work in conjunction with a spotter airplane to increase the search area and to locate swordfish difficult to see from the vessel. This practice tends to increase the catch-per-unit-effort compared to vessels that do not use a spotter plane.

To participate in the harpoon fishery a state permit and logbook are required in addition to a general resident or non-resident commercial fishing license and a current CDFG vessel registration. Additionally, the HMS FMP requires a federal permit with a harpoon gear endorsement for all U.S. vessels that fish for HMS within the West Coast EEZ and for U.S. vessels that pursue HMS on the high seas (seaward of the EEZ) and land their catch in California, Oregon, or Washington.

In 2011, harpoon vessels landed 24 mt of swordfish, declining from 36 mt in 2010 (Table 2-12 and Table 2-13). Fishing effort was concentrated in coastal waters off Los Angeles County in the SCB.

The ex-vessel revenue for 2011 was $252,306, about $114 thousand less than in 2010 (Table 2-12 and Table 2-13). Because harpoon vessels spend less time on the water and are a low-volume fishery, their catch is often fresher than drift-gillnet-caught fish, so markets tend to pay more for harpooned fish. The average ex-vessel price-per-pound of landed weight for harpooned fish was $4.71 compared to $2.97 for drift gillnet caught fish in 2011.

2.1.1.4 Drift Gillnet Fishery for Swordfish and Shark

Initial development of the drift gillnet fishery in the late 1970s was founded on catches of common thresher shark. The thresher shark fishery rapidly expanded, with 228 vessels landing more than 1,000 mt of shark in 1985. Following 1985, swordfish replaced thresher shark as the primary target species because there was a greater demand for swordfish and it commanded a higher price-per-pound. Annual thresher shark landings declined in subsequent years because of the switch to swordfish to maximize economic returns and the implementation of management measures to protect the thresher shark resource.

California's swordfish fishery transformed from primarily a harpoon fishery to a drift gillnet fishery in the early 1980s; landings soared to a historical high of 2,198 mt by 1985. The drift gillnet fishery is managed by a limited entry permit system, with mandatory gear standards and seasonal area closures used to address various conservation concerns. The permit is linked to an individual fisherman, not a vessel, and is only transferable under very restrictive conditions; thus the value of the vessel does not become artificially inflated. To keep a permit active, current permittees are required to purchase a permit from one consecutive year to the next; however, they are not required to make landings using drift gillnet gear. In addition, a general resident or non-resident commercial fishing license and a current vessel registration are required to catch and land fish caught in drift gillnet gear. A logbook is also required. The HMS FMP requires a federal permit with a drift gillnet gear endorsement for all U.S. vessels that fish for HMS within the West Coast EEZ and for U.S. vessels that pursue HMS on the high seas (seaward of the EEZ) and land their catch in California, Oregon, or Washington. About 150 permits were initially issued when the limited entry program was established in 1980 and peaked at 251 permits in 1986 (Table 2-14).

Historically, the California drift gillnet fleet operated within EEZ waters adjacent to the state and as far north as the Columbia River, Oregon, during El Niño years. However, Oregon no longer permits drift gillnet. Fishing activity is highly dependent on seasonal oceanographic conditions that create temperature fronts which concentrate feed for swordfish. Because of the seasonal migratory pattern of swordfish and seasonal fishing restrictions, over 90% of the fishing effort occurs from August 15 through January 31.

In 2001, NMFS implemented two Pacific sea turtle conservation areas on the West Coast with seasonal drift gillnet restrictions to protect endangered leatherback and loggerhead turtles. The larger of the two closures spans the EEZ north of Point Conception, California (34°27' N. latitude) to mid-Oregon (45° N. latitude) and west to 129° W. longitude. Drift gillnet fishing is prohibited annually within this conservation area from August 15 to November 15 to protect leatherbacks sea turtles. A smaller closure was implemented to protect Pacific loggerhead turtles from drift gillnet gear during a forecasted or occurring El Niño event, and is located south of Point Conception, California and west of 120° W. longitude from June 1 - August 31 (72 FR 31756). Since the closure was enacted the number of active participants in the drift gillnet fishery declined by nearly half, from 78 vessels in 2000 to 40 in 2004, and has remained under 50 vessels since then.

The number of permits has declined from more than 200 in the 1980s to less than 50 active vessels since 2003 (see Table 2-14). Annual fishing effort has also decreased from a high of 11,243 sets in the 1986 fishing season to 1,043 sets in 2005. Industry representatives attribute the decline in vessel participation and annual effort to regulations implemented to protect marine mammals, endangered sea turtles, and seabirds. In addition, if oceanic or other conditions are unfavorable for swordfish, permittees may concentrate on more favorable fisheries, such as albacore; however, permittees may return to swordfish fishing once conditions improve.

In 2011, drift gillnet vessels landed 112 mt of swordfish compared to 61 mt in 2010. Landings in 2011 nearly doubled from those in 2010. The landings were concentrated in Morro Bay, but occurred at ports from San Diego to Morro Bay (Table 2-15). The landings during the 2011 season were evenly distributed

from October through December (Table 2-14).

Thresher shark landings declined 4% from 2010 landings to 66 mt. The highest landings occurred in December (Table 2-16). Landings were concentrated in San Diego (Table 2-17).

2.1.1.5 High Seas Longline Fishery for Swordfish

California prohibits pelagic longline fishing within the EEZ and the retention of striped marlin. Vessels operating outside of the EEZ can land fish in California ports if the operator has a general resident or non-resident commercial fishing license and a current CDFG vessel registration. The operator must comply with the High Seas Fishing Compliance Act, which requires U.S. vessel operators to maintain logbooks if they fish beyond the EEZ. Additionally, the HMS FMP requires a federal permit with a pelagic longline gear endorsement for all U.S. vessels that pursue HMS on the high seas (seaward of the EEZ) and land their catch in California, Oregon, or Washington.

With implementation of the HMS FMP in 2004, federal regulations were promulgated to protect endangered sea turtles east and west of 150° W longitude and north of the equator, prohibiting shallow-set longline fishing to target swordfish. Vessels permitted under the Western Pacific Fishery Management Council's Pelagics FMP may use shallow-set longline gear to target swordfish may land their catch on the West Coast. Targeting tunas with deep-set longline gear is permitted outside the EEZ under the HMS FMP. These measures have impacted the number of landings of swordfish in California ports in the 2000s.

2.1.2 Recreational Fisheries

Recreational anglers in California take the entire suite of management unit species (MUS) included within the HMS FMP using rod-and-reel gear almost exclusively; in addition, a nominal amount of fish, primarily tunas and dorado, are taken by free divers using spear guns. Fishing occurs in the EEZ waters of the U.S. as well as Mexico aboard commercial passenger fishing vessels (CPFVs) and private boats. A fishing season is dependent on oceanographic conditions, which strongly influence the availability of fish within range of the California-based fleet; a typical season begins in late spring and runs through fall. Anglers 16 years and older must have a resident or non-resident annual or short-term recreational fishing license to catch and land any ocean fish in California, and an Ocean Enhancement Stamp is required to fish within ocean waters south of Point Arguello, Southern California. California does not have size or slot limit restrictions but it does have daily possession limits for some of the MUS (Table 2-1).

Table 2-1. California's recreational daily possession limits for highly migratory MUS included within the fishery management plan.

Species	1-fish	2-fish	10-fish[2]	25-fish	No limit[1]
Tunas					
Albacore[3]			X	X	
Bigeye			X		
Bluefin[3]			X		
Skipjack					X
Yellowfin			X		
Billfishes					
Striped Marlin	X				
Swordfish		X			
Sharks					
Blue		X			
Common Thresher		X			
Mako		X			
Other Fish					
Dorado			X		

[1]-In general, no more than 20 finfish in combination of all species, with not more than 10 of any one species, may be taken or possessed by any one person, unless otherwise authorized, e.g. skipjack tunas (CCR, Title 14, 27.60).
[2]-California authorizes boat limits for two or more persons that are licensed to fish in ocean waters off California (CCR, Title 14,Section 27.60). This authorization does not apply to fishing trips originating in California where fish are taken in other jurisdictions.
[3]- Prior to November 2008, these species had no limit; however, since then new regulations have become effective: albacore south of Point Conception – 10 fish, albacore north of Point Conception – 25 fish; bluefin tuna - 10 fish statewide. These limits are in addition to the general 20 fish bag limit.

Vessel operators that charge a fee to passengers to sport fish from any vessel must have a CPFV license and a current CDFG vessel registration, and the operator must submit a monthly log of their fishing activity. Additionally, the HMS FMP requires a federal permit with a recreational gear endorsement for all U.S. CPFVs that fish for HMS within the West Coast EEZ and that pursue HMS on the high seas and land their catch in California, Oregon, and Washington.

Fishery statistics are available from both PSMFC, through their Recreational Fisheries Information Network (RecFIN) website,[1] and the CDFG CPFV logbook program. The RecFIN provides estimates based on field sampling of catch and a telephone survey for effort—California data are provided by the California Recreational Fisheries Survey (CRFS) program—while the state's logbook program provides a record of fishing activity for most CPFVs. The fact that catches of highly migratory MUS constitute a relatively rare event is why logbooks are preferred over CRFS in determining the catch of these species by anglers fishing from CPFVs. Logbooks also have the advantage of supplying catch information on MUS taken in Mexico. However, CRFS data are the best available for making catch estimates of anglers fishing from private boats.

With the exception of sharks, most HMS MUS are caught by anglers fishing from CPFVs in the Mexican EEZ (Table 4-66). However, for some species the entire reported catch for the fleet comes from California (U.S. waters).

[1]www.psmfc.org/recfin

Table 2-2. Annual number of highly migratory MUS kept and thrown back by recreational anglers fishing from California commercial passenger fishing vessels (CPFV) in U.S. EEZ waters , 2009–2010.

	2009		2010		2011	
	No. Fish		No. Fish		No. Fish	
Species	(kept)	(thrown back[1])	(kept)	(thrown back[1])	(kept)	(thrown back[1])
Tunas						
Albacore	4,777	236	5,712	12	681	77
Bigeye	0	0	0	0	0	0
Bluefin	2,788	6	306	21	2,743	0
Skipjack	1,883	339	7	1	222	69
Yellowfin	7,259	97	1,033	487	1,236	1
Billfishes						
Striped Marlin	4	4	0	0	0	0
Swordfish	0	0	0	0	0	0
Sharks						
Blue	11	291	140	309	6	117
Common Thresher	39	17	68	42	133	43
Shortfin Mako	43	304	32	225	52	233
Other Fish						
Dorado	1,825	78	3	128	166	0
Total	18,629	1,372	7,301	1,225	5,239	540

Source: California's Commercial Fisheries Information System (CFIS), CPFV logbook data, extracted Oct.31**,** 2012.
Additional Processing Information:
[1]-The condition (live or dead) of fish thrown back fish is not available; includes "lost to seals."

Table 2-3. Estimated number of highly migratory MUS kept and thrown back alive by recreational anglers fishing from California private vessels in U.S. EEZ waters, 2009–2011.

	2009			2010			2011		
	No. Fish			No. Fish			No. Fish		
Species	kept[1]	reported dead[2]	released alive[2]	kept[1]	reported dead[2]	released alive[2]	kept[1]	reported dead[2]	released alive[2]
Tunas									
Albacore	9,548	6,268	32	9,589	1,019	32	3,735	1,338	51
Bigeye	0	0	0	0	0	0	0	0	0
Bluefin	141	64	7	20	0	0	28	0	0
Skipjack	334	236	1,639	0	0	0	0	0	0
Yellowfin	1,465	5,258	241	27	168	0	0	0	0
Billfishes									
Striped Marlin	7	0	51	9	0	125	0	0	0
Swordfish	0	0	0	0	0	0	0	0	0
Sharks									
Blue	17	51	1,715	0	13	997	13	10	326
Common Thresher	1,722	284	2,957	981	279	1,002	1,841	692	747
Shortfin Mako	373	246	924	87	263	436	202	98	199
Other Fish									
Dorado	660	1,795	319	46	0	0	0	0	0
Total	14,267	14,202	7,885	10,759	1,742	2,592	5,819	2,138	1,323

Source: Pacific States Marine Fisheries Commission, Recreational Fisheries Information System, California Recreational Fisheries Survey data, extracted November 2, 2012.
Additional Processing Information:
[1]-Examined by sampler.[2]-The angler reported the fish as dead or thrown back alive after capture.

Retained albacore catch dropped to 12% of the previous year for CPFV vessels in 2011, while estimates of retained albacore catch by private vessels in 2011 was 39% of the previous year. For other tunas, there were no estimates of catch for private vessels, although CPFV logs reported larger catches than in 2010. Catches of thresher shark also increased from 2010 for both CPFV and private vessels. In 2011, approximately 114 CPFVs logged 470 days at-sea within the U.S. EEZ compared to 118 CPFVs that logged 535 days at-sea in 2010. The total number of MUS kept by CPFV anglers decreased from 7,301 fish in 2010 to 5,239 fish in 2011, primarily due to the large drop in albacore catch (Table 2-2); the number caught and retained increased for most MUS. Tunas made up about 93% of CPFV vessel catch and 65% of the numbers of MUS caught by private/rental boats. Total numbers of sharks released were greater than those kept for CPFV, but not for private/rental boats in 2011.

2.1.3 Highly Migratory Species Taken in Non-HMS Fisheries in California

In California, HMS MUS are occasionally taken by fisheries targeting other species (Table 2-18 and Table 2-19). Although the amount of thresher shark taken in set gill net gear is significant, they are caught incidentally to fisheries for California halibut and white seabass, which command a much higher ex-vessel price; set gill net is not subject to the restrictions on HMS that small mesh drift gill net is. Both thresher shark and albacore have also been taken in coastal pelagic species (CPS) purse seines.

2.1.4 Highly Migratory Species Fisheries in California, 2009-11

Landings for nearly all commercial and recreationally caught HMS species except for albacore (which increased in 2010, and declined again in 2011), recreational thresher and CPFV tuna in 2011 were characterized by declines in landings. While much of 2009 was an El Niño year, cooler La Niña conditions prevailed in the latter part of 2010, possibly affecting availability of HMS species. The commercial swordfish industry has characterized oceanic conditions for swordfish over the last several years as very poor.

2.2 Oregon

2.2.1 Commercial HMS Fisheries in Oregon

2.2.1.1 Surface Hook-and-Line Fishery for Albacore

Albacore has been fished commercially off of Oregon since the mid-1930s when the fishery expanded north from the traditional grounds off southern California. For many years, both bait boats and jig boats fished for albacore off Oregon, but in recent years, predominantly jig-caught (troll-caught) fish have been landed. The current fleet consists primarily of small to medium (20 ft to 60 ft) "combination" boats, which may fish crab, salmon, or bottom fish at other times of the year, and large freezer boats (most longer than 60 ft) that travel the north and south Pacific, principally fishing albacore.

Oregon commercial albacore landings have been highly variable through the years, ranging from a low of 12.3 mt in 1936 to a high of over 17,000 mt in 1968. Since 1981, when PacFIN records begin, albacore landings in Oregon have generally increased. Average annual landings and inflation adjusted revenue were 1,272 mt and slightly less than $3.8 million during 1981-1990, compared to 4,077 mt and $9.2 million during 2001-2010. The average number of surface hook-and-line vessels making albacore landings increased from 241 vessels per year during 1981-1990, to 388 vessels during 2001-2010. In 2011, 422 vessels landed 4,387.5 mt of albacore in Oregon, totaling $18.7 million in ex-vessel revenue.

Sampling of Oregon's commercial albacore fishery is a cooperative effort between the ODFW, NMFS, and the PSMFC.

Surface Hook and Line Fishery for Albacore, 2009-2011

In Oregon, a total of 4,387.5 mt of albacore were landed in 2011 with an ex vessel revenue over $18.7 million. Participation in the fishery has been relatively stable for the past several years, but prices were at record levels in 2011 and contributed to a 51% increase in ex-vessel revenue over 2010.

A total of 422 vessels made at least one landing of albacore into Oregon ports during the 2011 season. The number of landings (1,685) in 2011 was 16% higher than in 2010, with the majority of the increase observed in the Coos Bay area (Table 2-21). In contrast, the amount of albacore landed was nearly 10% lower in 2011, although still above the recent ten-year average. Ports on the north coast experienced lower volumes of albacore landed whereas ports on the north on the south coast, primarily in the Coos Bay area, saw increased amounts of albacore landed in 2011 (Table 2-21).

The 2011 Oregon albacore fishery occurred somewhat later during the year than in the past. Although it began with two small landings in late June, the main fishery began in early July and continued through early November. Landings peaked during the middle of August, and record amounts occurred in October and December (Table 2-20). Rough ocean conditions throughout the summer and early fall may have contributed to the delays in landings. Prices rose to historic highs (averaging well over $2.00 per pound) near the end of the season and may also have contributed to increased landings during the fall (Table 2-22).

Astoria and Newport were the top Oregon ports in 2011, followed closely by Charleston in the Coos Bay area (Table 2-21). On average, an albacore landing into Columbia River ports, such as Astoria, was more than twice as large as landings made to more southerly ports.

Ex-vessel prices for albacore continued their climb of recent years, with the 2011 fishery setting all-time records (Table 2-22). Since 2009, the average price per pound for albacore landed in Oregon has nearly doubled, from $1.01 per pound in 2009 to $1.94 per pound in 2011. Markets for blast frozen albacore started off extremely strong, with buyers paying up to $1.80 per pound for top quality fish. Prices increased throughout the summer, finishing with some landings bringing $2.75 per pound. Brine markets also started off strong with prices in July ranging from $1.35 to $1.60 per pound. Continued foreign demand pushed prices up throughout the season to finish between $1.70 and $2.00 per pound. Similarly, fresh, iced prices at the beginning of the season ranged from $1.35 to $1.75 per pound, and increased to $2.00 per pound by the end of the season. In recent years, more fishers are marketing their catches directly from their vessels to the public to improve the value of their albacore. Their prices ranged from $1.75 to $3.00 per pound.

2.2.1.2 Drift Gillnet Fishery for Swordfish and Shark

The Oregon commercial DGN fishery historically existed as an extension of the California fishery. In Oregon, the DGN fishery for swordfish had been managed under the Developmental Fisheries Program, which authorized up to ten annual permits to fish for swordfish with DGN gear. For the past several years, the fishery was inactive and no one applied for permits. As part of a substantial reduction in the Developmental Fisheries Program, the Oregon Fish and Wildlife Commission removed swordfish from the program, beginning in 2009. Consequently, state permits to fish with DGN gear off Oregon are no longer allowed.

2.2.1.3 Highly Migratory Species Taken in Non-HMS Fisheries in Oregon.

In Oregon, most Highly Migratory Species (MUS) are rarely landed by gears targeting other species. During 2009-2011, a total of 1.1 mt of HMS shark species, consisting primarily of small amounts of blue shark and thresher shark species, were landed in 18 trips by non-HMS fisheries (Table 2-18). Fewer than three trips landed other HMS species during this three-year period and for confidentiality reasons, the amount landed is not reported.

2.2.2 Recreational Fisheries in Oregon

Recreational anglers fishing from private vessels and from commercial passenger fishing vessels (CPFVs) target albacore and only occasionally take other HMS species, such as blue sharks. They fish almost exclusively with rod-and-reel gear, and success is highly dependent upon the distance from port to the fish, weather and ocean conditions, and fuel prices. Albacore typically begin to show up within range of the Oregon recreational fishery in mid to late June, and are available through late September or early October in most years. Albacore fishing tournaments, usually to benefit a charity, began in 2005 but have been limited due to poor weather or ocean conditions.

Anglers 14 and older must have a recreational license to catch and land fish in Oregon. Albacore and other HMS MUS are included in a daily catch limit of 25 fish in the aggregate for offshore pelagic species, which includes all tunas, mackerels, swordfish; billfish; jacks; opah; dorado; Pacific pomfret; and all sharks, except leopard shark, spiny dogfish, white shark, soupfin shark, and basking shark. The possession limit is two daily catch limits (50 fish, with 25 fish caught on each of 2 days).

Vessel operators that charge a fee to passengers to sport fish from any vessel must have a license issued by the Oregon Marine Board. Additionally, the HMS FMP requires a federal permit with a recreational gear endorsement for all U.S. CPFVs that fish for HMS within the West Coast EEZ and that pursue HMS on the high seas and land their catch in California, Oregon, and Washington.

Statistics for the recreational fisheries, including private, CPFV, and tournament fisheries, are available from the ODFW Ocean Recreational Boat Survey Program. RecFIN estimates of recreational fishery statistics are also available from PSMFC. Statistics for the CPFV fishery are also available from the federal charter logbook program.

2.2.2.1 Recreational Fisheries for Albacore, 2009-2011

The 2011 recreational albacore fishery landed an estimated 29,422 albacore (244 mt) in Oregon, about 30% fewer than the record high of 42,055 fish in 2009. However, the 2011 total was still the fourth highest.

The fishery began in late June and continued into late October. Most of the recreational albacore effort and catch (charter and private vessels combined) came from the ports of Newport, Charleston and Depoe Bay. In 2010, ports on the north coast saw a surge in private and charter catch and effort for albacore, whereas catch and effort decreased in southern ports. This trend was reversed in 2011, with reduced catches and effort in northern ports and increases in southern ports (Table 2-4, Table 2-5, and Table 2-6).

Recreational fishing opportunity and success are highly influenced by distances to the fish, as well as weather and ocean conditions. The 2011 fishery experienced fairly typical weather conditions with strong northerly winds that limited access to albacore early in the season. Weather improved later during the summer and allowed fishing to continue well into the fall.

Recreational fishing effort for albacore totaled 10,790 angler trips in 2011, second highest to the record of 11,377 trips in 2010 (Table 1). Directed charter fishing effort for albacore totaled 2,449 angler trips in 2011, just 26 fewer trips than in 2010. As in most years, Newport and Depoe Bay on the central Oregon coast accounted for the majority of these trips. Directed private albacore trips totaled 8,342 angler trips, 6% less than in 2010.

In comparison to 2010, catches dropped more than effort (Table 2). Effort declined by about 5%, whereas the numbers of albacore caught dropped by 22% from 2010 levels. Both the directed charter and private boat fisheries experienced this drop. The directed charter catch of albacore totaled 5,200 fish in 2011, 24% less than in 2010, and the directed private albacore catch totaled 24,222 fish, 22%% less than in 2010.

Recreational catch-per-unit of effort declined 18% in 2011 due to reductions in both catch and effort from 2010 levels (Table 3). Charter vessel catch rates declined from 2.7 fish per angler trip in 2010 to 2.1 in 2011 and private vessel catch rates dropped from 3.5 to 2.9 fish per trip. Catch rates in 2010 were also lower than those in 2009, so that overall recreational catch rates of albacore averaged 1.4 fewer fish per trip over the past three year period.

Table 2-4. Oregon albacore effort (angler trips) for charter and private boats by year and port, 2009-2011.

Port	Charter			Private			Combined		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Astoria	330	399	193	59	242	97	389	641	290
Garibaldi	117	212	150	1,059	2,535	579	1,176	2,747	729
Pacific City	1	8	-	92	246	80	93	254	80
Depoe Bay	432	595	503	694	1,067	930	1,126	1,662	1,433
Newport	1,260	970	1,217	1,991	2,969	2,519	3,251	3,929	3,736
Florence	-	-	-	15	16	24	15	16	24
Winchester Bay	12	-	-	370	177	475	382	177	475
Coos Bay	240	142	206	2,962	1,526	2,871	3,202	1,668	3,077
Bandon	222	149	166	239	19	94	461	168	260
Gold Beach	48	-	-	28	-	108	76	-	108
Brookings	20	-	14	166	115	564	186	115	578
Total	2,682	2,475	2,449	7,675	8,902	8,341	10,357	11,377	10,790
Private boat (%)							74%	78%	77%

Data Source: ODFW Ocean Recreational Boat Survey.

Table 2-5. Oregon albacore catch (number of fish) for charter and private boats by year and port, 2009-2011.

Port	Charter			Private			Combined		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Astoria	1,016	1,294	366	247	344	208	1,263	1,638	574
Garibaldi	322	651	149	4,119	10,309	539	4,441	10,960	688
Pacific City	4	20	-	767	1,468	387	771	1,488	387
Depoe Bay	942	1,552	858	3,458	3,477	2,277	4,400	5,029	3,135
Newport	3,419	2,364	2,231	10,887	9,911	5,843	14,306	12,275	8,074
Florence	-	-	-	41	32	13	41	32	13
Winchester Bay	31	-	-	969	547	1,281	1,000	547	1,281
Coos Bay	850	410	537	12,036	4,617	10,629	12,886	5,027	11,166
Bandon	1,727	510	1,034	813	28	539	2,540	538	1,573
Gold Beach	161	-	-	21	-	967	182	-	967
Brookings	41	-	25	184	187	1,539	225	187	1,564
Total	8,513	6,801	5,200	33,542	30,920	24,222	42,055	37,721	29,422
Private boat (%)							80%	82%	82%

Data Source: ODFW Ocean Recreational Boat Survey.

Table 2-6. Oregon albacore catch per unit of effort (number of fish/angler trip), for charter and private boats by year and port, 2009-2011.

Port	Charter			Private			Combined		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Astoria	3.1	3.2	1.9	4.2	1.4	2.1	3.2	2.6	2.0
Garibaldi	2.8	3.1	1.0	3.9	4.1	0.9	3.8	4.0	0.9
Pacific City	4.0	2.5	-	8.3	6.0	4.8	8.3	5.9	4.8
Depoe Bay	2.2	2.6	1.7	5.0	3.3	2.4	3.9	3.0	2.2
Newport	2.7	2.4	1.8	5.5	3.3	2.3	4.4	3.1	2.2
Florence	-	-	-	2.7	2.0	0.5	2.7	2.0	0.5
Winchester Bay	2.6	-	-	2.6	3.1	2.7	2.6	3.1	2.7
Coos Bay	3.5	2.9	2.6	4.1	3.0	3.7	4.0	3.0	3.6
Bandon	7.8	3.4	6.2	3.4	1.5	5.7	5.5	3.2	6.1
Gold Beach	3.4	-	-	0.8	-	9.0	2.4	0.0	9.0
Brookings	2.1	-	1.8	1.1	1.6	2.7	1.2	1.6	2.7
Overall	3.2	2.7	2.1	4.4	3.5	2.9	4.1	3.3	2.7

Data Source: ODFW Ocean Recreational Boat Survey.

2.3 Washington

2.3.1 Washington Commercial HMS Fisheries

The commercial and recreational highly migratory species fisheries off the Washington coast are primarily for albacore tuna, although there are occasional smaller landings of thresher shark and blue shark. While there is not a fixed season, albacore fisheries generally begin in early to mid-July and continue until the tuna are no longer accessible off the Washington coast, usually around late September.

The albacore fisheries off Washington include commercial troll, bait boats, charter boats, and recreational fishing boats. There is no state commercial fishing license requirement for albacore tuna in Washington; however, a delivery permit is required to land commercially caught albacore into Washington. If fishers do not already have a fishing permit, which includes a delivery permit, fishers are required to purchase a delivery permit from the state.

Ilwaco and Westport are the two Washington ports with the highest HMS landings of albacore from the commercial surface hook-and-line fishery and on average account for about 95% of the annual landings into the state. The portion of landings into Westport in recent years has increased to nearly 60% of the total landings into Washington ports. Several other ports along the coast and in Puget Sound receive albacore landings as well. Landings at these ports vary and are a direct reflection of market conditions. Many vessels, particularly in Westport, sell their product directly to the public off the dock rather than to fish buyers for processing. Landed catch sold directly to the public is accounted for in a manner similar to sales to commercial processors.

In recent years, large amounts of albacore tuna have been landed into Washington, with 2011 being the highest on record. Although the landings have generally increased from the 1990s through 2011, the tuna fishery has remained stable through this timeframe. Variability in tuna landings has likely been an indication of changes in availability of tuna, rather than effort, as the number of participating vessels and the effort expended has been fairly consistent. As provided for under the U.S.–Canada albacore treaty, some Washington ports also receive albacore landings from Canadian vessels (see Table 2-7). Canadian landings into the state are far more variable due and generally in decline since 2003. There are a number of variables that appear to influence this including; annual distribution of the fish, vessel size, market conditions, among other influences. With that said, anecdotal evidence suggests this drop was attributable to new rules implemented by U.S. Customs and Border Protection under the U.S. Trade Act of 2002, rather than to any shift in Canadian catch or effort.

Table 2-7. U.S. and Canadian albacore landings into Washington ports, 1995–2011.

U.S. Vessels			Canadian Vessels		Total	
Year	Mt	$	Mt	$	Mt	$
1995	3,337.12	5,868,111	71.80	130,794	3,408.93	5,998,906
1996	4,936.37	8,962,593	6.20	10,833	4,942.57	8,973,426
1997	3,662.89	6,570,385	77.74	137,757	3,740.62	6,708,141
1998	6,473.15	8,441,892	138.18	137,965	6,611.33	8,579,856
1999	1,894.54	3,312,925	180.14	316,084	2,074.68	3,629,009
2000	3,080.74	5,604,227	134.98	262,902	3,215.73	5,867,130
2001	3,828.67	7,270,632	320.03	647,970	4,148.70	7,918,602
2002	4,721.31	6,444,736	626.34	930,085	5,347.66	7,374,821
2003	7,988.26	11,352,266	2787.60	4,268,068	10,775.86	15,620,334
2004	7,426.79	13,437,940	875.84	2,367,778	8,302.63	15,805,718
2005	4,514.74	9,784,195	383.46	1,069,562	4,898.20	10,853,757
2006	8,568.03	14,804,508	164.46	355,611	8,732.49	15,160,119
2007	5,879.77	10,244,909	75.00	168,055	5,954.77	10,412,964
2008	6,340.71	16,065,465	384.33	1,159,756	6,725.04	17,225,221
2009	6,904.37	15,346,582	435.10	1,078,547	7,339.46	16,425,128

2.3.2 Recreational Fisheries in Washington State

Fishing effort in the recreational albacore fishery during 2011 was, in total, similar to that in 2009 and 2010; however, catch was down by 52% compared to 2010. The reason for the difference appears to be largely accounted for by a decrease in effort by the charter fleet. Catch by vessels operating out of North Coast ports dropped from approximately 1,500-2,500 fish in 2009 and 2010 respectively to only 214 fish; meanwhile, catch by vessels out of Westport and Ilwaco was down 47% and 48% respectively. Even though catch was down in 2011, the private fleet maintained their usual proportion of catch compared to the charter fleet (Table 2-8 and Table 2-9). Total catch per unit of effort was down in 2011 for both charter and private (Table 2-10).

Table 2-8. Washington albacore fishing effort (angler trips) for charter and private boats, and combined, by year and port area, 2009–11.

Port Area	Charter			Private			Combined		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
North Coast	48	92	4	194	285	124	242	377	128
Westport	1,013	1,337	926	550	1,118	856	1,563	2,455	1,783
Ilwaco	568	696	681	1,082	1,386	1,153	1,650	2,082	1,834
Total	1,629	2,125	1,612	1,826	2,789	2,133	3,455	4,914	3,744
Private boat (%)	—	—	—	—	—	—	52.90%	56.80%	57.00%

Data source: WDFW Ocean Sampling Program, extracted May 2012.

Table 2-9. Washington albacore catch (number of fish) for charter and private boats, and combined, by year and port area, 2009–11.

Port Area	Charter			Private			Combined		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
North Coast	406	505	2	1158	1922	212	1564	2427	214
Westport	12,978	15,160	8012	2134	4,983	2580	15,112	20,143	10,592
Ilwaco	3887	3480	2105	4,044	5,445	2,511	7,931	8,925	4,616
Total	17,271	19,145	10,119	7,336	12,350	5,303	24,607	31,495	15,422
Private boat (%)	—	—	—	—	—	—	29.80%	39.20%	34.40%

Data source: WDFW Ocean Sampling Program, extracted May 2012.

Table 2-10. Washington albacore catch per unit of effort (number of fish/angler trip) for charter and private boats, and combined, by year and port, 2009–11.

Port Area	Charter			Private			Combined		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
North Coast	8.5	5.5	0.5	6	6.7	1.7	6.5	6.4	1.7
Westport	12.8	11.3	8.7	3.9	4.5	3	9.7	8.2	5.9
Ilwaco	6.8	5	3.1	3.7	3.9	2.2	4.8	4.3	2.5
Total	10.6	9	6.3	4	4.4	2.5	7.1	6.4	4.1

Data source: WDFW Ocean Sampling Program, extracted May 2012.

Beginning in 2005, a mandatory charter boat tuna logbook program was implemented to provide additional information on location and effort in the charter albacore fishery. Average catch per angler as reported in logbooks was 12.0 in 2005, then increased to 12.8 in 2006 and 2007 and declined in both 2009 and 2010 to 11.6 and 11.2, respectively (Table 2-11). The average weight (pounds) per tuna caught and reported in the logbooks was 19.1 in 2005, and subsequently decreased to 16.1 in 2006, increased to 19.8 in 2007 and decreased to 18.2 in both 2008 and 2009 and increased to 20.3 in 2011.

Table 2-11. Washington albacore catch per unit of effort (number of fish/angler trip) and average weight (pounds) per tuna caught by year, 2005–11 as reported in charter logbook program.

Year	Average CPUE	Average Weight per Albacore (pounds)
2005	12	19.1
2006	12.8	16.1
2007	12.8	19.8
2008	12.1	18.2
2009	11.6	18.2
2010	11.2	19.6
2011	6.5	20.3

2.4 State-level Summary of PacFIN Data on Commercial Fishery Landings and Revenue

These tables are based on a data download from the PacFIN database on May 31, 2012. The PacFIN database continuously receives updates and adjustments to landings information so 2011 data in these tables should be considered provisional.

Table 2-12. Monthly landings and ex-vessel revenue for swordfish landed in California by the harpoon fleet, 2009-11.

	2009			2010			2011		
Month	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Jan.-Jun.	7	0.9	$12,210	6	0.8	$10,779	7	1.7	$19,111
July	46	9.3	$101,152	6	0.8	$10,180	28	5.4	$65,359
August	43	9.9	$107,246	38	5.7	$68,898	46	12	$130,641
September	75	16.9	$143,415	27	5.2	$57,951	10	1.7	$19,562
Oct.-Dec.	48	12.8	$102,624	90	24.8	$218,859	4	3.5	$17,633
Total	**219**	**49.8**	**$466,647**	**167**	**37.3**	**$366,667**	**95**	**24.3**	**$252,306**

Table 2-13. Annual commercial landings and ex-vessel revenue for swordfish landed in California port groups by the harpoon fleet, 2009-11.

	2009			2010			2011		
Port	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Los Angeles and North	125	28.5	$267,407	111	25	$250,959	69	18.3	$189,797
San Diego	94	21.3	$199,239	56	12.4	$115,707	26	5.9	$62,508
Total	**219**	**49.8**	**$466,646**	**167**	**37.4**	**$366,666**	**95**	**24.2**	**$252,305**

Table 2-14. Monthly commercial landings and ex-vessel revenue for swordfish landed in California by the large mesh drift gillnet fleet, 2009-11.

	2009			2010			2011		
Month	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Jan.-Aug.	22	16.7	$69,969	28	20.6	$126,325	3	0.4	$2,511
September	20	19.8	$86,393	11	4	$27,884	14	3.6	$29,369
October	32	29.6	$129,673	20	4.5	$34,609	31	36.6	$227,958
November	74	63.6	$295,148	49	25.3	$173,215	39	34.8	$211,158
December	81	121.2	$495,354	10	6.1	$38,509	33	36.2	$260,283
Total	**229**	**250.9**	**$1,076,537**	**118**	**60.5**	**$400,542**	**120**	**111.6**	**$731,279**

Table 2-15. Annual commercial landings and ex-vessel revenue for swordfish landed in California port groups by the large mesh drift gillnet fleet, 2009-11.

	2009			2010			2011		
Port	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Monterey	7	8.7	$37,069	5	8.4	$57,854	0	0	$0
Morro Bay	32	44.3	$198,288	14	19	$123,243	61	64.6	$409,365
Santa Barbara	10	8.4	$38,049	13	5.5	$39,024	24	21.8	$132,786
Los Angeles	26	17.7	$83,092	7	2.2	$14,478	35	25.2	$189,128
San Diego	154	171.9	$720,036	79	25.5	$165,942			
Total	**229**	**251**	**$1,076,534**	**118**	**60.6**	**$400,541**	**120**	**111.6**	**$731,279**

Table 2-16. Monthly commercial landings and ex-vessel revenue for common thresher shark landed in California by the large mesh drift gillnet fleet, 2009-11.

	2009			2010			2011		
Month	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
January	42	11.8	$23,660	28	5.1	$9,233	16	2.8	$5,039
February				31	4.4	$8,197	8	0.7	$1,672
March	27	5.9	$14,066	9	0.7	$1,232	4	0.2	$424
April				25	3.3	$6,903	12	1.3	$2,823
May	13	1.5	$3,825				41	2.9	$6,032
June	75	10.4	$15,598	78	9.4	$14,399	32	1.8	$3,447
July	68	9.9	$16,332	61	5.2	$9,010	35	1.5	$2,955
August	65	9.4	$17,748	37	4.1	$5,958	17	1.3	$3,039
September	34	2.5	$4,207	37	5.5	$11,326	24	2.4	$4,917
October	19	1.9	$3,238	23	3.3	$6,398	14	1.2	$2,526
November	47	14	$21,620	26	14.6	$18,677	46	14.8	$21,830
December	56	13.5	$21,608	20	13.3	$10,856	37	35.4	$33,151
Total	**446**	**80.8**	**$141,902**	**375**	**68.9**	**$102,189**	**286**	**66.3**	**$87,855**

Table 2-17. Annual commercial landings and ex-vessel revenue for common thresher shark landed in California port groups by the large mesh drift gillnet fleet, 2009-11.

	2009			2010			2011		
Port	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Monterey and Morro Bay	13	5.3	$8,145	22	12.9	$14,578	34	20.1	$19,042
Santa Barbara	251	35.2	$57,917	207	23	$34,891	102	11.6	$16,517
Los Angeles	37	9.9	$13,989	42	9.3	$11,544	26	1.4	$2,178
San Diego	145	30.3	$61,850	104	23.8	$41,176	83	30.3	$44,087
Total	**446**	**80.7**	**$141,901**	**375**	**69**	**$102,189**	**245**	**63.4**	**$81,824**

Table 2-18. Landings of HMS Species with non-HMS gears by state, 2009-2011 (data grouped for 3 years).

	California			Oregon			Washington		
Species	Landings			Landings			Landings		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Sharks	835	45.16	$83,602	18	1.1	$529	3	0.2	$42
Other HMS	9	1.66	$8,741	*	*	*	7	20.6	$60,458
Total	**844**	**46.82**	**$92,343**	*****	*****	*****	**10**	**20.8**	**$60,500**

*excluded for data confidentiality.

Table 2-19. Landings of HMS Species with non-HMS gears by gear type, 2009-2011 (data grouped for 3 years).

	Net Gear			Other Non-HMS Gear		
Species	Landings			Landings		
	no.	mt	rev.	no.	mt	rev.
Sharks	817	44.3	$82,819	39	2.2	$1,354
Other HMS	7	1.6	$8,500	10	20.7	$60,734
Total	**824**	**45.9**	**$91,319**	**49**	**22.9**	**$62,088**

Table 2-20. Monthly commercial landings and ex-vessel revenue for albacore by the surface hook-and-line fleet, by state, 2009-11.

	2009								
	California			Oregon			Washington		
Month	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Apr.-Jul.	73	56.6	$139,479	488	1,621.1	$3,582,994	220	1,686.9	$3,615,546
August	159	133.6	$324,038	677	1,917.9	$4,053,189	407	2,762.2	$5,918,893
September	135	76.0	$238,675	297	819.8	$2,007,621	317	2,371.5	$5,622,979
October	47	51.6	$127,732	37	195.6	$498,813	46	474.7	$1,180,302
Nov.-Dec.	10	31.6	$82,215	2	19.3	$48,045	4	44.3	$88,273
Total	**424**	**349.4**	**$912,139**	**1,501**	**4,573.7**	**$10,190,662**	**994**	**7,339.6**	**$16,425,993**
	2010								
	California			**Oregon**			**Washington**		
Month	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Apr.-Jul.	19	6.5	$19,606	350	1,482.3	$3,809,220	201	1,507.4	$3,791,638
August	82	27.4	$78,039	654	1,836.7	$4,603,478	312	1,927.5	$4,573,585
September	174	190.3	$499,648	350	1,048.0	$2,761,919	272	2,511.9	$6,151,725
October	116	485.9	$1,115,515	102	484.5	$1,240,728	46	311.3	$839,021
Nov.-Dec.	3	0.8	$2,192	1	2.1	$7,064	0	0.0	$0
Total	**394**	**710.9**	**$1,715,000**	**1,457**	**4,853.6**	**$12,422,409**	**831**	**6,258.1**	**$15,355,969**
	2011								
	California			**Oregon**			**Washington**		
Month	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Apr.-Jul.	16	11.4	$33,765	406	727.6	$2,714,414	115	633.2	$2,323,568
August	67	57.4	$193,699	670	1,463.7	$5,974,109	283	1,393.1	$5,275,492
September	106	193.0	$798,978	332	1,065.1	$4,673,400	213	1,483.5	$5,264,281
October	73	258.1	$921,656	263	1,048.7	$4,963,063	309	2,442.9	$9,127,546
Nov.-Dec.	9	47.9	$179,562	14	82.5	$422,753	5	26.1	$146,268
Total	**271**	**567.8**	**$2,127,660**	**1,685**	**4,387.6**	**$18,747,739**	**925**	**5,978.8**	**$22,137,155**

Table 2-21. Annual commercial landings and ex-vessel revenue for albacore tuna landed in port groups by the surface hook-and-line fleet, by state, 2009-10.

	2009			2010			2011		
Port	**Landings**			**Landings**			**Landings**		
	no.	mt	rev.	no.	mt	rev.	no.	mt	rev.
Washington									
North Puget Sound	22	175.8	$440,814	24	238.8	$708,009	40	280.9	$1,239,509
South Puget Sound	10	11.5	$27,650	8	32.7	$73,158			
Washington Coast	583	4,189.9	$9,165,696	434	3,347.2	$7,491,438	532	3,546.8	$11,535,472
Columbia River and Other Ports	379	2,962.3	$6,791,834	365	2,639.2	$7,083,365	352	2,150.8	$9,360,973
Washington Subtotal	**994**	**7,339.5**	**$16,425,994**	**831**	**6,257.9**	**$15,355,970**	**924**	**5,978.5**	**$22,135,954**
Oregon									
Columbia River (Oregon)	210	1,210.6	$2,740,685	237	1,994.7	$5,420,715	257	1,418.4	$6,895,037
Tillamook Area	125	102.0	$216,000	175	101.4	$233,374	160	77.8	$262,312
Newport Area	636	2,275.5	$5,071,942	685	1,882.9	$4,566,760	700	1,656.4	$6,628,098
Coos Bay Area	483	947.4	$2,067,566	334	839.0	$2,114,166	520	1,188.6	$4,770,708
Brookings Area	47	38.2	$94,467	26	35.5	$87,393	48	46.3	$191,584
Oregon Subtotal	**1,501**	**4,573.7**	**$10,190,660**	**1,457**	**4,853.5**	**$12,422,408**	**1,685**	**4,387.5**	**$18,747,739**
California									
Crescent City Area	77	99.7	$212,326	55	135.1	$300,545	44	111.1	$349,881
Eureka Area	125	109.0	$307,361	140	301.7	$735,687	43	54.9	$206,497
Fort Bragg Area	35	11.9	$51,527	45	72.6	$196,441	35	11.4	$50,310
Bodega Bay Area	10	8.2	$18,489	8	8.6	$21,250	5	19.4	$70,026
San Francisco Area	53	20.0	$72,944	23	13.1	$44,428	35	201.7	$859,644
Monterey Area	55	37.1	$93,353	37	26.2	$68,142	58	80.1	$268,386
Morro Bay Area	32	7.0	$19,172	60	15.9	$38,474	40	15.8	$74,964
Santa Barbara Area				5	3.4	$9,182	4	12.7	$53,904
Los Angeles Area	16	50.8	$121,097	12	130.0	$286,006	7	60.7	$194,049
San Diego Area	21	5.7	$15,868	9	4.3	$14,847			
California Subtotal	**424**	**349.4**	**$912,137**	**394**	**710.9**	**$1,715,002**	**271**	**567.8**	**$2,127,661**
Coastwide Total	**2,919**	**12,262.6**	**$27,528,791**	**2,682**	**11,822.3**	**$29,493,380**	**2,880**	**10,933.8**	**$43,011,354**

Table 2-22. Average price per pound for albacore landed in California, Oregon, and Washington, by month, 2009-11.

2009			2010			2011		
California	**Oregon**	**Washington**	**California**	**Oregon**	**Washington**	**California**	**Oregon**	**Washington**
$1.12	$1.00	$0.97	$1.38	$1.17	$1.14	$1.34	$1.69	$1.66
$1.10	$0.96	$0.97	$1.29	$1.14	$1.08	$1.53	$1.85	$1.72
$1.42	$1.11	$1.08	$1.19	$1.20	$1.11	$1.88	$1.99	$1.61
$1.12	$1.16	$1.13	$1.04	$1.16	$1.22	$1.62	$2.15	$1.69
$1.18	$1.13	$0.90	$1.27	$1.50	$0.00	$1.70	$2.32	$2.54

3 FISHERY MANAGEMENT REGULATIONS

3.1 Regulations Currently In Place

On April 7, 2004, NMFS published a final rule to implement the approved provisions of the HMS FMP (69 FR 18444), with the exception of the Reports and Record-keeping requirements, which were granted a delayed effectiveness pending collection-of-information clearance by the Office of Management and Budget (OMB). Clearance of these delayed requirements, which covers logbooks, permits, vessel monitoring systems, and pre-trip notifications, was received by OMB and became effective on February 10, 2005 (70 FR 7022). In addition, five HMS FMP regulatory amendments have been prepared and finalized since the original final rule was put in place along with the recent implementation of regulatory measures in support of the HMS FMP Amendment 2.

Table 3-1. History of HMS FMP domestic regulatory amendments.

Title of Regulation	Federal Register Number	Date Published	Date Effective
Revised Method for Renewing and Replacing Permits Issued under the HMS FMP	72 FR 10935	6/12/07	4/11/07
Amended Regulatory Text Governing Closures of the Swordfish Drift Gillnet Fishery in the Pacific Loggerhead Sea Turtle Conservation Area during an El Niño Event	72 FR 31756	6/8/07	7/9/07
Amended Vessel Identification Regulations for HMS Recreational Charter Vessels	72 FR 43563	8/6/07	9/5/07
Daily Bag Limits for Sport Caught Albacore and Bluefin Tuna in the EEZ off California	72 FR 58258	10/15/07	11/14/07
Establishment of an HMS Permit Fee	74 FR 37177	7/28/09	08/27/09
Amendment 2 to the HMS FMP, Annual Catch Limits and Accountability Measures	76 FR 56327	9/13/11	10/13/11

- For a description of these HMS regulations see previous SAFE documents
- Copies of the current suite of HMS FMP regulations, along with an HMS FMP Compliance Guide, can be found on the NMFS Southwest Region website (http://swr.nmfs.noaa.gov/)

Since fishery rules frequently change, fishermen must familiarize themselves with the latest regulations and are responsible for complying with the current official regulations set forth in the Code of Federal Regulations at 50 CFR Part 660.

The HMS FMP identified 13 highly migratory species as management unit species and defines the legal gear types and management measures used to harvest them. The final rule implementing FMP Amendment 2 modified the suite of management unit species (MUS) from 13 species to 11 species. The final rule also modifies the process for revising and seeking NMFS approval for numerical estimates of maximum sustainable yield and optimal yield, and specifies status determination criteria so that overfishing and overfished determinations can be made for stocks and stock complexes that are part of a fishery. The 11 MUS will fall under the international exception for setting annual catch limits (ACLs), as described at §660.310(h)(2)(ii).

The HMS FMP regulations are necessary for Federal management of U.S. fishing vessels targeting HMS within the West Coast EEZ of California, Oregon, and Washington and the adjacent high seas waters. This HMS FMP applies to all U.S. vessels that fish for HMS within the EEZ off California, Oregon, or Washington and to U.S. vessels that pursue HMS on the high seas (seaward of the EEZ) and land their fish in California, Oregon, or Washington. The HMS FMP does not apply to U.S. vessels that fish for

HMS on high seas and land into a non-U.S. port. Additional restrictions apply under the High Seas Fishing Compliance Act and for Western Pacific longline permitted vessels landing into West Coast ports.

Regulations for HMS in Washington, Oregon, and California vary from state to state. The HMS FMP contains Federal measures for HMS fisheries, which provide a region-wide management regime applicable to all vessels landing in West Coast ports. State regulations not superseded by the initial Federal regulations will continue to remain in effect until such time as the Pacific Council determines they should be supplanted by Federal regulations. Some of the state regulations are inconsistent from state to state, but these inconsistencies do not pose management problems that require immediate Federal action.

The HMS FMP, under the management auspices of the Pacific Council, serves as a mechanism to cooperate with other regional and international management bodies to work towards consistent management of U.S. fisheries in the Pacific Ocean. Federal measures impacting these fisheries, which arise from several different federal laws, may be more efficiently addressed within the Pacific Council framework, and related regulations can be viewed together. An important goal of the HMS FMP is to assure that issues of national and international concern are addressed, and to determine how recommendations of international bodies should be applied to domestic fisheries of the West Coast.

The fishing gears described below are authorized for the commercial and recreational harvest of HMS in the EEZ by all permitted vessels, and beyond the EEZ by vessels landing into West Coast ports. Gear that is not defined as legal gear is prohibited from harvesting HMS under the HMS FMP. Specific management measures regulating the use of legal gear types will be developed if necessary, using the framework procedures of the HMS FMP.

3.1.1 HMS Commercial Gear

Harpoon: Fishing gear consisting of a pointed dart or iron attached to the end of a line several hundred feet in length, the other end of which is attached to a flotation device. Harpoon gear is attached to a pole or stick that is propelled only by hand, and not by mechanical means.

Surface Hook-and-Line: One or more hooks attached to one or more lines (includes troll, rod and reel, handline, albacore jig, live bait, and bait boat; excludes pelagic longline and mousetrap gear[*]). Surface hook-and-line is always attached to the vessel.

Drift Gillnet: A panel of netting, suspended vertically in the water by floats along the top and weights along the bottom, which is neither stationary nor anchored to the bottom. The HMS FMP final rule defines drift gillnet gear as 14 inch (35.56 cm) stretched mesh or greater.

Purse Seine: A floated and weighted encircling net that is closed by means of a purse line threaded through rings attached to the bottom of the net (includes encircling net, purse seine, ring net, drum purse seine, lampara net).

Pelagic Longline: A main line that is suspended horizontally in the water column, which is neither stationary nor anchored, and from which dropper lines with hooks (gangions) are attached.

[*] Mousetrap gear means a free-floating set of gear thrown from a vessel, composed of a length of line with a float on one end and one or more hooks or lures on the opposite end.

3.1.2 HMS Recreational Gear

Rod-and-Reel (pole-and-line): A hand-held (including rod holder) fishing rod with a manually or electrically operated reel attached.

Spear: A sharp, pointed, or barbed instrument on a shaft. Spears can be operated manually or shot from a gun or sling.

Hook-and-Line: One or more hooks attached to one or more lines (excludes mousetrap gear).

3.1.3 Landings and Gear Use Regulations

At this time there are no quotas for HMS species, although there are harvest guidelines. A quota is a specified numerical harvest objective, the attainment of which triggers the closure of the fishery or fisheries for that species. A harvest guideline is a numerical harvest level that is a general objective and is not a quota. If a harvest guideline has been reached, NMFS will initiate a review of the species in question according to provisions in the HMS FMP and in consideration of Council guidance. The HMS FMP establishes annual harvest guidelines of 340 mt for common thresher sharks and 150 mt for shortfin mako sharks. Because total catches and basic population dynamic parameters for these shark species are poorly known, they are being managed using precautionary harvest guidelines.

The HMS FMP final rule prohibits the retention of the species listed below in Table 3-2. In general, prohibited species must be released immediately if caught while targeting HMS, unless other provisions for their disposition are established in accordance with HMS FMP guidelines.

Table 3-2. Prohibited Species covered under the HMS FMP final rule.

Common Name	Scientific Name
great white shark	*Carcharodon carcharias*
basking shark	*Cetorhinus maximus*
megamouth shark	*Megachasma pelagio*
Pacific halibut	*Hippoglossus stenolepis*
pink salmon	*Onchorhynchus gorbuscha*
Chinook salmon	*O. tshawytscha*
chum salmon	*O. keta*
sockeye salmon	*O. nerka*
coho salmon	*O. kisutch*

U.S. citizens fishing in waters covered under the HMS FMP are bound by the rules and regulations set forth in the Shark Finning Prohibition Act of 2000. (See also Small Entity Compliance Guide Outlining the Regulations to Implement Shark Finning Prohibition Act.) The Act prohibits, among other things, any person subject to U.S. jurisdiction from: 1) engaging in shark finning, 2) possessing shark fins aboard a U.S. fishing vessel without the corresponding carcass, or 3) landing shark fins without a corresponding carcass. The Act requires an annual report to Congress detailing progress made in addressing the elements of the Act. The report highlights work being conducted by NMFS to monitor and conserve HMS shark populations under Pacific Council management.

The HMS FMP prohibits the sale of striped marlin by all vessels as a means to provide for and maximize recreational fishing opportunities for this species. Striped marlin is considered to have far greater value as a recreational target species than as a commercial target species. Prohibiting sale removes the incentive

for commercial fishermen to take striped marlin.

3.1.4 Incidental Landings

The HMS FMP authorizes incidental commercial landings of HMS, within limits, for non-HMS gear such as bottom longline, trawl, pot gear, small mesh drift gillnet, set/trammel gillnets, and others. Incidental catch refers to harvest of HMS that are unavoidably caught while fishing for other species or fishing with gear that is not legal for the harvest of HMS.

Small-mesh drift gillnetters and bottom set net gillnetters are not permitted to land swordfish but would be permitted to land other HMS, with the restriction of 10 fish per landing of each non-swordfish HMS.

Bottom longline (set line) fishery landings are restricted to three HMS sharks, or 20% of total landings by weight of HMS sharks, whichever is greater.

For trawl, pot gear, and other non-HMS gear, a maximum of 1% of total weight per landing for all HMS shark species combined is allowed (i.e., blue shark, shortfin mako shark, and bigeye, pelagic, and common thresher sharks) or two HMS sharks, whichever is greater.

A drift gillnet vessel with a stretched mesh size less than 14 inches may not target HMS, although an incidental landing of 10 HMS per trip, other than swordfish, will be allowed to minimize bycatch while fishing for state-managed species.

Albacore surface hook-and-line vessels may not deploy small-mesh drift gillnets to target albacore as was customarily practiced by selected vessels prior to passage of the HMS FMP final rule.

In Washington, it is unlawful to land thresher shark taken by any means from state and offshore waters of the Pacific Ocean north of the Washington-Oregon boundary and south of the U.S.-Canada boundary. It is unlawful to land any thresher shark in Washington taken south of the Washington-Oregon boundary unless each thresher shark landed is accompanied by a minimum of two swordfish.

In Oregon, it is unlawful to take thresher shark, swordfish or other HMS species for commercial purposes with gillnets in State waters. It is also unlawful, based on a 2009 Oregon State regulation change, to land any of these species in Oregon if taken with gillnets, including fish taken outside State waters. However, thresher shark, swordfish, or other HMS species taken with authorized commercial gear (i.e., approved gear other than gillnet) may be landed in Oregon provided that the gear and catch are in compliance with all other applicable regulatory measures.

3.2 Monitoring and Enforcement

3.2.1 Status of HMS Permits

The reporting and recordkeeping requirements of the HMS FMP became effective February 10, 2005, and formalized the requirement for an HMS permit. Title 50, Section 660.707 of the Code of Federal Regulations outlines the required HMS permit with an endorsement for a specific gear for all U.S. commercial and recreational charter fishing vessels fishing for HMS within the U.S. EEZ off the States of California, Oregon, and Washington. The permit requirements also apply for U.S. commercial fishing vessels that land or transship HMS shoreward of the outer boundary of the U.S. EEZ off the States of California, Oregon, and Washington. The permit must be on board the vessel and available for inspection by an authorized officer.

Table 1 shows the number of HMS permits active by year. The permit data presented reflects valid permits and does not necessarily reflect total number of active vessels (i.e., vessels with catch and effort history in a given fishery year).

Table 3-3. HMS permits recorded in the permit database for each year since the regulation became effective on February 10, 2005.

Year	California	Oregon	Washington	Other	Total
2005	677	626	298	135	**1,736**
2006	800	684	339	152	**1,975**
2007	785	561	318	108	**1,772**
2008	826	569	331	84	**1,810**
2009	903	650	381	54	**1,988**
2010	887	620	383	80	**1,970**
2011	862	650	340	106	**1,958**

Notes: The permits are issued to the vessel owner(s) not to the vessels themselves. The totals indicate the number of permits outstanding in each year and cannot be added across years. "Other" column includes non-west coast home ports/states and permits issued with no home port/state designated.

3.2.2 Compliance Check

Compliance with the HMS permit requirement remained above 90% during 2011 with 34 vessels identified as having fished for HMS without having had a valid HMS permit. In 2010, there were 24 vessels identified. The CPFV portion of the 2011 compliance check found 10 vessels out of compliance an improvement from the roughly 20 identified in 2010. Vessels which appeared to be in noncompliance with the HMS regulations were either sent a certified warning letter or referred to the NOAA Fisheries Office for Law Enforcement for investigation.

3.2.3 HMS Fisheries Data Collections

Catch, effort, and catch disposition data are critical for monitoring HMS fisheries and assessing the status of the stocks. All commercial fishing operations conducted with HMS FMP approved gear, including HMS recreational charter vessels, are required to maintain logbooks. All information specified on the logbook forms must be recorded on the forms within 24 hours after the completion of each fishing day. The original logbook form for each day of the fishing trip must be submitted to NMFS within 30 days of each landing or transshipment of HMS. Each form must be signed and dated by the fishing vessel operator.

Logbooks from a total of 1,578 North Pacific albacore trips (including both albacore troll and pole-and-line gears) from 419 vessels were submitted to the NMFS Southwest Fisheries Science Center (SWFSC) in La Jolla, California, in 2011 compared to 1,630 logbooks that were submitted from 450 vessels in 2010. A total of 11,172 mt of albacore was landed by albacore troll and pole-and-line vessels in 2011 compared to 12,634 mt in 2010. A total of 7,046 mt of albacore were recorded as catch in mandatory logbook submissions for 2011 compared to 8,912 mt in 2010. This equates to a 63% logbook compliance rate estimate for 2011 based on landing weights. (Note that these catch estimates match those submitted by NMFS to RFMOs, but may not match data in relevant tables elsewhere in this report. The estimation process for RFMO submissions uses other data such as Port Sampling reports, in addition to PacFIN landings.)

The CDFG implemented a harpoon logbook and permit program in 1974. The logbook has been modified over time, but the primary focus has been to document catch, effort, and oceanographic conditions on the fishing grounds. In 2010, 17 vessels submitted logbooks out of 26 that landed swordfish (PacFIN). In

2011, 13 out of the 17 vessels that landed swordfish, submitted logbooks to SWFSC.. According to landings data, in 2010 twenty-six vessels landed 37 mt of swordfish. Seventeen vessels submitted logbooks from the 2010 harpoon fishery, recording 440 vessel-days of effort. In 2011, seventeen vessels landed 24 mt of swordfish. Thirteen vessels submitted logbooks from the 2011 harpoon fishery recording 293 vessel-days of effort.

The gillnet logbook program was implemented in 1980 by CDFG to study the development of the drift gillnet shark fishery to determine the effects of the fishery on swordfish and striped marlin. In 2010, 53 drift gillnet vessels landed 61 mt of swordfish and 69 mt of common thresher shark. Thirty vessels submitted logbooks out of the 53 that landing swordfish or common thresher shark from the 2010 drift gillnet fishery, resulting in 932 vessel-days of effort. In 2011, 24 vessels submitted logbooks out of 49 drift gillnet vessels that landed 108 mt of swordfish and 58 mt of or common thresher shark. Twenty-four vessels submitted logbooks from the 2011 drift gillnet fishery resulting in 568 vessel-days of effort.

Purse seine vessels primarily target CPS along the west coast but occasionally target HMS when HMS fish are available and market conditions are favorable, as described in the section 2.1.1.2. In 2010, less than three purse seine vessels caught albacore. In 2011 three vessels caught 41 mt of albacore.

3.3 Protected Resources Regulations

3.3.1 HMS FMP Protected Species Measures

Longline and drift gillnet vessels on rare occasions encounter endangered and threatened species of sea turtles and marine mammals while targeting HMS. HMS longline vessels also infrequently encounter a number of sea birds. Endangered and threatened marine species are protected through a number of Federal laws, including the ESA and the MMPA. The HMS FMP final rule (69 FR 18444) adopted measures to minimize interactions of HMS gears with protected species and to ensure that the HMS fisheries are operating consistent with Federal laws. These measures include time and area closures, gear requirements, and safe handling and release techniques for protected seabirds and sea turtles. Refer to 50 CFR 660.712, 713, and 720 and 50 CFR 229.31 and 223.206 for the complete list and text of the regulations.

Impacts of the HMS FMP on ESA-listed protected resources (including marine mammals and sea turtles) were analyzed as part of the section 7 consultation and 2004 biological opinion (BO). The BO included an Incidental Take Statement with anticipated mortalities and entanglements of ESA-listed marine mammals and sea turtles that are likely to interact with the drift gillnet vessels targeting HMS fish species (see Table 1). Except where noted, the anticipated mortalities are annual estimates. The BO considered the impacts of the proposed shallow-set longline fishery and found that the fishery was likely to jeopardize the continued existence of threatened loggerhead sea turtles. As a result, the shallow-set longline HMS fishery was prohibited.

Table 3-4. Anticipated incidental takes of ESA-listed marine mammal and sea turtle species in the drift gillnet HMS fishery.

Species	Estimated Entanglements*	Estimated Mortalities*	Typical Conditions Resulting in Take
Fin whale	4 in 3 years	2 in 3 years	
Humpback whale	4 in 3 years	0	
Sperm whale	4 in 3 years	2 in 3 years	
Green turtle	4	1	SSTs in fishing area similar to Nov 99
Leatherback turtle	3	2	
Loggerhead turtle	5	2	Only in El Niño years
Olive ridley turtle	4	1	SSTs in fishing area similar to Nov 99

Notes: SST – sea surface temperature.

*Except where noted, the numbers below are annual estimates. For species like green, olive ridley, or loggerhead sea turtles, the number is applied over a calendar year when the environmental conditions conducive to expected takes in the CA/OR drift gillnet fishery have been present.

In early 2011, NMFS completed a BO on the deep-set longline component of the HMS fishery. When the 2004 BO was completed, there was no deep-set longline fishing effort, so there was no analysis done. However, since 2005 there has been deep-set longline fishing in the high seas, and NMFS was required to complete an Environmental Assessment and BO. The take of ESA-listed species in the deep-set longline fishery is rare, and the fishery is observed at 100%. The anticipated incidental take is shown in Table 2. No ESA-listed marine mammals are expected to be taken in the deep-set longline fishery.

Table 3-5. Anticipated number of turtle entanglements and associated mortality from the deep-set longline HMS fishery during 2011-2013.

Species	Estimated entanglements (mortality) in three years
Green turtle	1
Leatherback turtle	1
Olive Ridley turtle	3
Loggerhead turtle	1

3.3.2 Sea Turtles

Takes of green, olive ridley and loggerhead sea turtles are uncommon in the California drift gillnet fishery except under certain environmental conditions (e.g., El Niño or higher than usual sea surface temperatures) when turtles may move into the areas of drift gillnet fishing. Takes of leatherbacks are also rare, likely due to the time/area closure which has been in effect since the 2001 season and subsequent reductions in fishing effort. Since 2001, only one leatherback has been observed taken (released alive) in the drift gillnet fishery, in 2009.

On January 29, 2012 NMFS published a final rule that designates areas off the U.S. west coast as critical habitat for endangered leatherback sea turtles (77 FR 4170). The final rule designates as critical habitat an area of approximately 41,914 square miles from Point Arguello to Point Arena, California, and from Cape Blanco in Oregon to Cape Flattery, Washington.

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service published a final rule to list nine distinct population segments (DPSs) of the loggerhead turtle (*Caretta caretta*) pursuant to the ESA. The next step in the listing process is to consider designation of critical habitat for the two DPSs that occur within the EEZ of the United States: the North Pacific DPS (listed as endangered) and the Northwest Atlantic DPS (listed as threatened). A loggerhead critical habitat review team was formed in late 2011,

met January 24-26, 2012, and are currently preparing documents associated with a critical habitat designation, if warranted. Under section 4(b)(2) of the ESA, NMFS and the U.S. Fish and Wildlife Service shall designate critical habitat on the basis of the best scientific data available and after taking into consideration the economic impact, the impact to national consideration, and any other relevant impact. Under the current schedule, the team will complete a proposed rule within a year of the final listing of loggerheads, which translates into a completion of the proposed rule and associated documents by September/October of 2012.

3.3.3 Marine Mammals

Takes of listed marine mammals are rare events and are calculated over a three-year time period, consistent with the MMPA permit required under section 101(a)(5)(E) for incidental take of ESA-listed marine mammals in fisheries. The last 101(a)(5)(E) permit was completed in September 2007 with a Federal Register Notice published on October 26, 2007 (72 FR 60816). The three-year permit expired on October 26, 2010. The Southwest Regional Office's Protected Resources Division is in the process of evaluating the estimated takes of ESA-listed marine mammals (fin whales, blue whales, and humpback whales) in the California drift gillnet fishery. A draft negligible impact determination is currently under review.

The MMPA requires that all commercial fisheries in the U.S. be categorized and included on an annual List of Fisheries. The fisheries are placed in one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery:

I **frequent** incidental mortality or serious injury of marine mammals
II **occasional** incidental mortality or serious injury of marine mammals
III **remote likelihood of/no known** incidental mortality or serious injury of marine mammals

The final 2012 LOF was published on November 29, 2011 (76 FR 73912). The drift gillnet HMS fishery is listed as a Category II fishery. The tuna purse seine fishery and pelagic longline fishery are listed as Category III fisheries.

Any incidental injuries or mortalities of marine mammals occurring during fishing operations must be reported to NMFS. Injury/mortality report forms and instructions for submitting forms to NMFS are available on the NOAA Fisheries website. Owners of vessels in Category I or II fisheries are required to register with NMFS and obtain a marine mammal authorization to lawfully incidentally take marine mammals. They may also be required to accommodate an observer aboard the vessel, upon request by NMFS.

3.4 Bycatch and Other Monitored Species

Table 3-6 summarizes the total catch and final disposition by species of all fish, marine mammals, sea turtles, and seabirds observed caught in the California/Oregon drift gillnet fishery during the 2011/2012 fishing season. Data were collected at sea by contract observers, and represent a total of 97 sets. Estimated total fishing effort for the season is 525 sets.

Table 3-6 NMFS California/Oregon Drift Gillnet Observer Program Observed Catch - 2011/2012 Fishing Season May 1, 2011, through January 31, 2012

	Total	Number	Number Returned			Number	Catch per
Species	Caught	Kept	Alive	Dead	Unknown	Damaged	100 Sets
Swordfish	127	126	1	0	0	3	130.9
Albacore	57	52	0	5	0	14	58.8
Bluefin Tuna	156	138	0	18	0	23	160.8
Skipjack Tuna	3	2	0	1	0	0	3.1
Common Thresher Shark	209	172	9	28	0	0	215.5
Soupfin Shark	1	1	0	0	0	0	1.0
Shortfin Mako Shark	100	93	3	4	0	0	103.1
Blue Shark	49	0	21	28	0	0	50.5
Salmon Shark	20	0	2	18	0	0	20.6
Pelagic Stingray	2	0	2	0	0	0	2.1
Common Mola	418	0	393	25	0	0	430.9
Louvar	7	7	0	0	0	1	7.2
Opah	189	187	2	0	0	9	194.8
Pacific Bonito	6	6	0	0	0	0	6.2
Pacific Mackerel	20	0	8	12	0	0	20.6
Bullet Mackerel	4	0	0	4	0	0	4.1
Oarfish	1	0	0	1	0	0	1.0
Jack Mackerel	2	0	0	2	0	0	2.1
Bay Pipefish	1	0	1	0	0	0	1.0
Pacific Pomfret	6	6	0	0	0	0	6.2
Jumbo (Humboldt) Squid	4	0	2	2	0	0	4.1
Short Beak Common Dolphin	4	0	0	4	0	0	4.1
Long Beak Common Dolphin	1	0	0	1	0	0	1.0
Risso's Dolphin	1	0	0	1	0	0	1.0
Northern Right Whale Dolphin	2	0	0	2	0	0	2.1
Minke Whale	1	0	1	0	0	0	1.0
California Sea Lion	18	0	0	18	0	0	18.6

4 STATISTICAL SUMMARIES OF CATCH, REVENUE, AND EFFORT

4.1 Overview of HMS Fisheries Coastwide

This chapter presents an overview of HMS fisheries in as of 2011 from a coastwide perspective, based on data summaries which are representative of the commercial and recreational fisheries as of 2011. These include summaries of landings, revenues, and participation for the commercial fisheries and summaries of catch and effort for the recreational fisheries in the accompanying data tables. These tables are based on a data downloads from the PacFIN database on various dates in mid 2012. The PacFIN database continuously receives updates and adjustments to landings information so 2011 data in these tables should be considered provisional.

4.1.1 Commercial Fisheries

Table 4-1. West Coast commercial HMS landings, revenues, and average prices by species, 2010-2011.

	2010			2011		
Species	**Landings (round mt)**	**Ex-vessel revenue ($1000)**	**Average price ($/ round lb)**	**Landings (round mt)**	**Ex-vessel revenue ($1000)**	**Average price ($/ round lb)**
Tunas						
Albacore	11,856	$29,576	$1.13	11,041	$43,354	$1.78
Yellowfin	1	$7	N.A.	4	$14	N.A.
Skipjack	1	$2	N.A.	1	$2	N.A.
Bigeye	31	$242	$3.54	46	$327	$3.22
Bluefin	1	$6	N.A.	118	$247	$0.95
Unspecified Tuna	1	$6	N.A.	<0.5	$1	N.A.
Tunas subtotal	**11,891**	**$29,839**	**$1.14**	**11,210**	**$43,945**	**$1.78**
Swordfish	**370**	**$2,206**	**$2.70**	**619**	**$3,353**	**$2.46**
Sharks						
Common Thresher	96	$157	$0.74	76	$105	$0.63
Shortfin Mako	21	$36	$0.78	19	$38	$0.90
Blue	<0.5	< $0.5	N.A.	<0.5	< $0.5	N.A.
Sharks subtotal	**117**	**$193**	**$0.75**	**95**	**$143**	**$0.68**
Dorado	**4**	**$16**	**N.A.**	**3**	**$11**	**N.A.**
Total HMS	**12,382**	**$32,254**	**$1.18**	**11,927**	**$47,452**	**$1.80**

Table 4-1 compares summaries of West Coast HMS commercial catch, ex-vessel revenues and average prices by species between 2010 and 2011. Overall HMS revenues for 2011 increased by $15,198, an amount largely explained by the increase in albacore revenues. The increase in albacore revenues is due to a 56% year-on-year increase in the ex-vessel price, as the total amount landed declined between 2010

and 2011. Swordfish revenues largely explain the remaining increase in 2011 HMS revenues, due to a 67% increase in West Coast landings, as the price paid for swordfish landings declined in 2011.

Table 4-2. West Coast commercial Highly Migratory Species landings, revenues, and average prices by fishery, 2010-2011.

	2010			2011		
Fishery	Landings (round mt)	Ex-vessel revenue ($1000)	Average price ($/ round lb)	Landings (round mt)	Ex-vessel revenue ($1000)	Average price ($/ round lb)
Surface Hook-and-line***	10,869	$26,434	$1.10	9,834	$37,465	$1.73
Drift gillnet	241	$867	$1.63	279	$1,199	$1.95
Harpoon	38	$368	$4.40	26	$255	$4.45
Longline	**	**	**	611	$2,935	$2.18
Purse seine	*	*	*	140	$292	$0.95
Total HMS	**11,148**	**$27,669**	**$1.13**	**10,890**	**$42,146**	**$1.76**

* Not reported due to data confidentiality requirements (fewer than three vessels).
** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)
*** Canadian vessels are excluded.

Table 4-2 shows total West Coast commercial HMS catch for the indicated fisheries. The surface hook-and-line fishery represented 90.3% of the total catch, with the commercial swordfish fisheries (drift gillnet, harpoon and longline) representing most of the remaining share of landings. Total current dollar West Coast commercial HMS fishery ex-vessel revenue of $42.1 million in 2011 increased from $29.5 million in 2010, or 42.7%, primarily reflecting the large increase in albacore revenues.

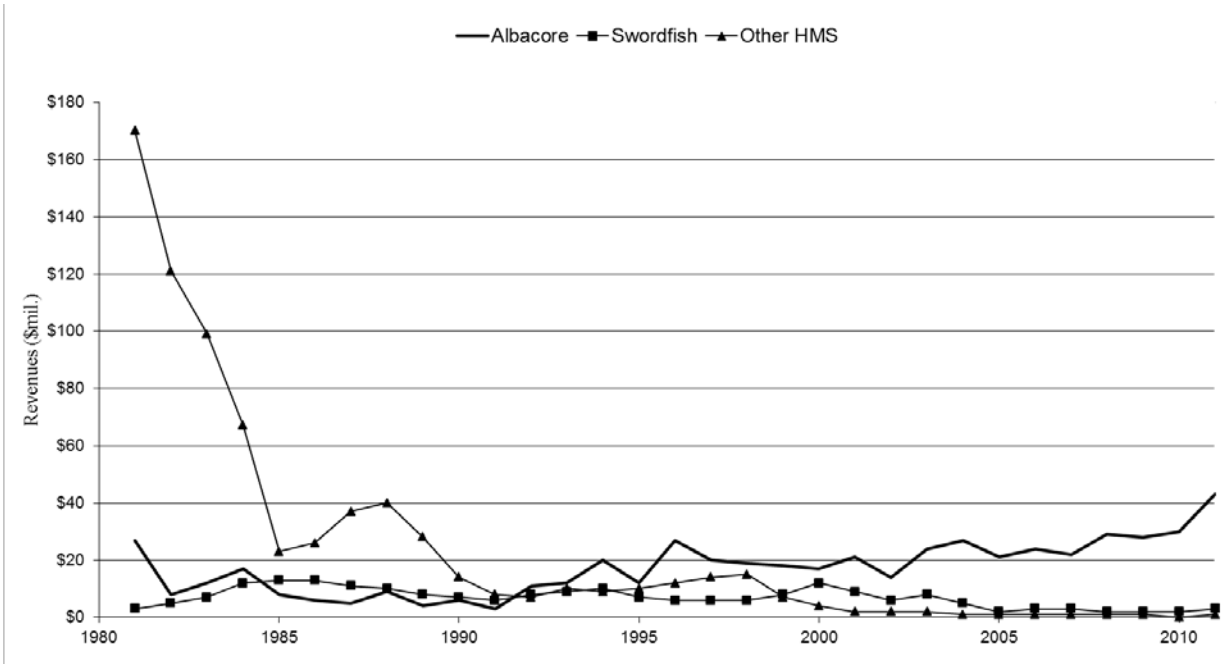

Figure 4-1. West Coast commercial HMS revenues for swordfish, albacore and all other HMS Species, 1981–2011.

Figure 4-1 shows West Coast commercial revenues separately for the two primary commercial HMS

species, albacore and swordfish, and for all other species combined. Since the collapse of the purse seine fishery on tropical tunas in the early 1980s, HMS fisheries revenues generally declined through the mid-1990s, when albacore and swordfish became the dominant species as shares of HMS revenues. In more recent years, albacore revenues have climbed to the highest level back to the early 1980s, exceeding $40 million for the first time in 2011. By contrast, swordfish fishery revenues from West Coast based vessels have drastically declined compared to their mid-1990s levels, reflecting a decrease in effort, participation and landings in the drift gillnet and shallow-set longline fisheries in recent years. However, Hawaii shallow-set longline vessels fishing for swordfish outside the West Coast EEZ make landings in West Coast ports. Landings vary seasonally and are highest in the winter months. Between 2009 and 2011 nine longline vessels targeting swordfish landed a total of 743 mt valued at $3.7 million.*

4.1.2 Recreational Fisheries

The following discussion refers to the data summaries on catch and effort for recreational fisheries in the accompanying data appendix. Figures are incorporated here for convenience of reference.

4.1.2.1 Private Recreational Vessel Catch

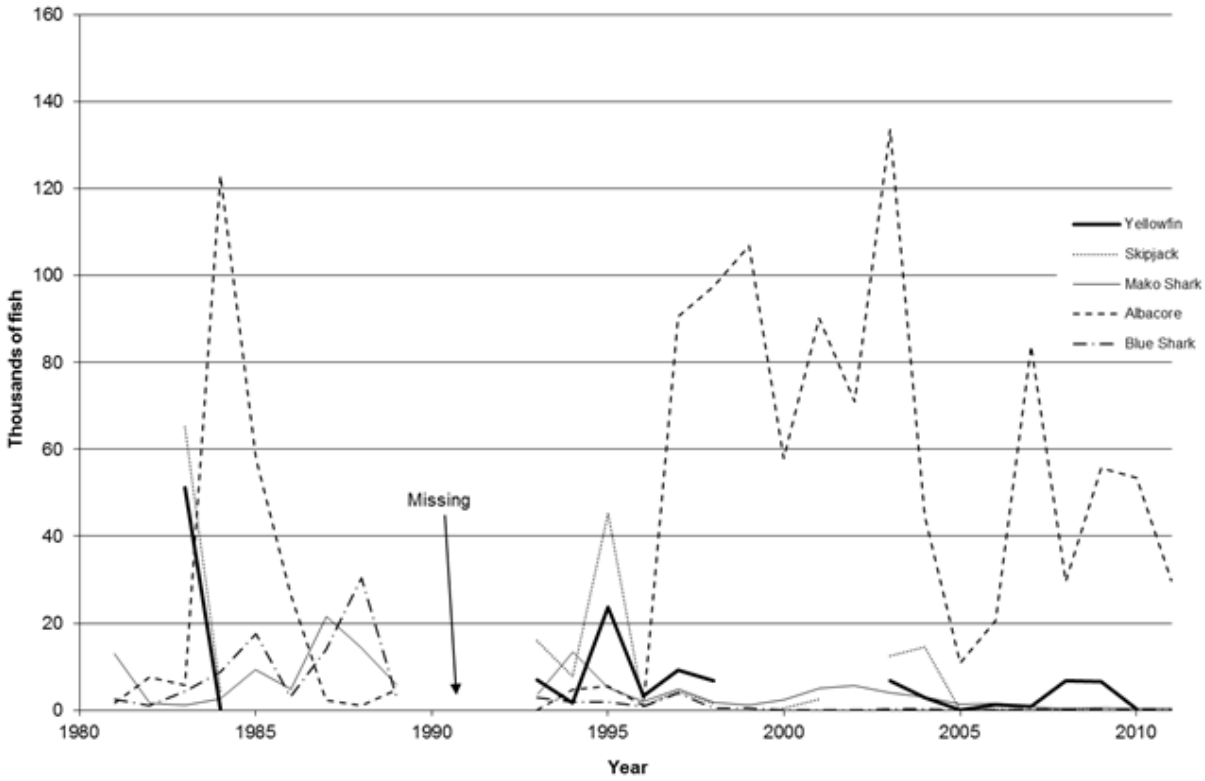

Figure 4-2 Figure 4-12Catches by species (thousands of fish) for the West Coast recreational private sport fishing fleet, 1981–2011.

RecFIN data were used to summarize HMS catch estimates for the private vessel fleet in years 2011 and before, as shown in Figure 4-2. Estimated private vessel recreational catch counts were relatively low in

* Only landings where swordfish comprised more than 50% of the total landing and amounted to at least 500 lb were counted in order to screen out incidental landings by West Coast vessels.

2011 compared to other years, with estimated albacore catch below 30,000 fish compared to levels exceeding 100,000 fish a year at points in the past decade. Other HMS species catch estimates were at negligible levels for 2011.

4.1.2.2 California CPFV Vessel Catch and Effort

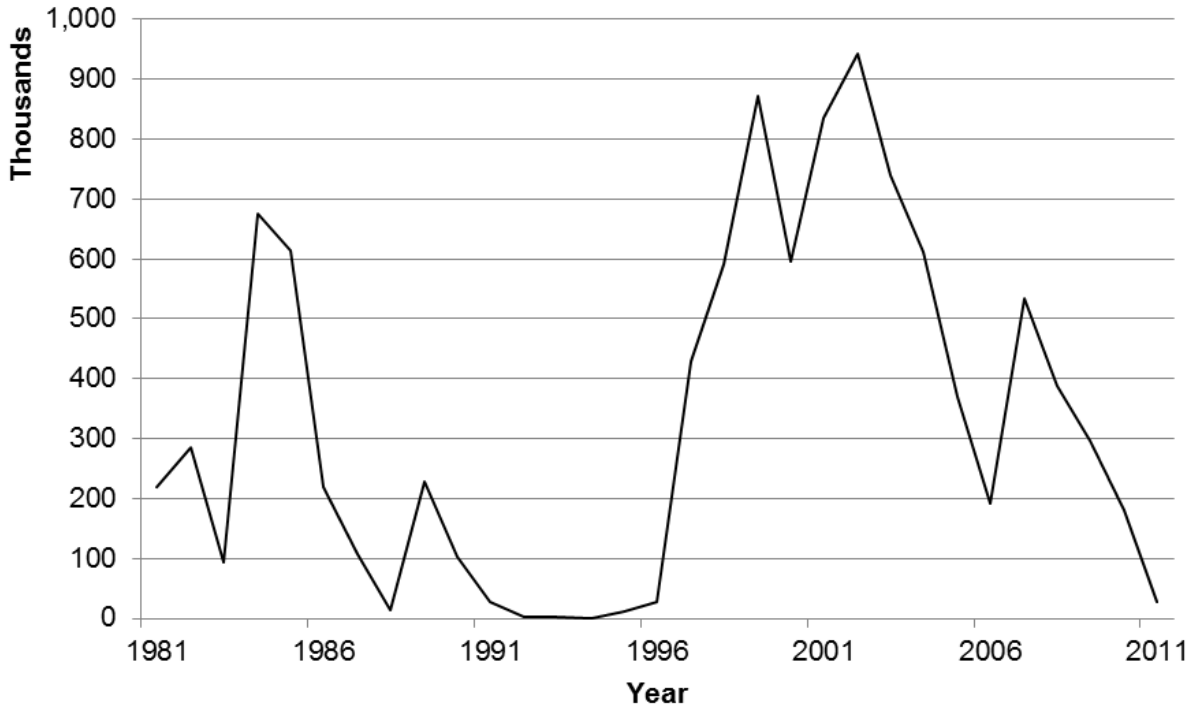

Figure 4-3. Albacore fishing hours for the California CPFV fleet, 1981-2011.

The CPFV logbook database was used to produce summaries of catch and effort for HMS species in 2011 and previous years.

Albacore fishing hours and overall CPFV hours spent fishing for HMS are shown in Figure 4-3 and Figure 4-4, respectively. Albacore fishing hours continued their pattern of steep decline since a peak in the early 2000s, approaching some of the lowest levels on record in 2011. By contrast, overall CPFV fishing hours targeting HMS showed a slight uptick in 2011 compared to their level in 2010.

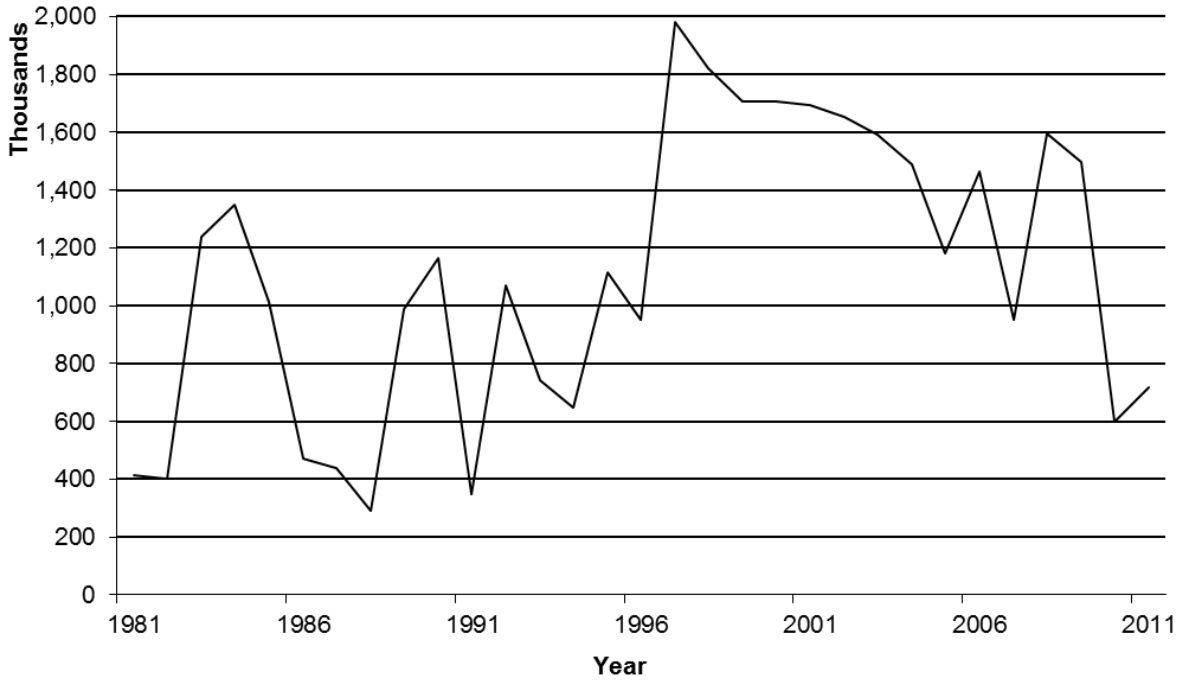

Figure 4-4. Numbers of HMS angler hours for the California CPFV fleet, 1981-2011.

Figure 4-5. Number of CPFV vessels targeting HMS in California waters, 1981–2011.

Figure 4-5 shows the number of vessels in the California CPFV fleet which targeted HMS in California

waters within each year from 1981 through 2011. The number of vessels targeting HMS in California waters peaked at 206 in 2001 before declining to a level near 110 vessels in 2011.

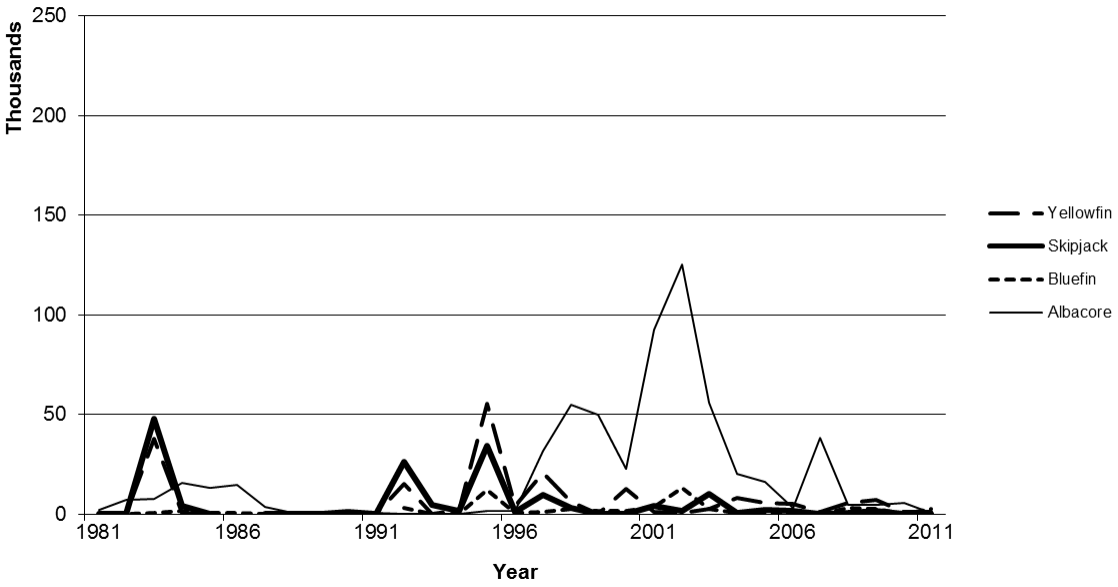

Figure 4-6. Catch in number of fish by species for the California CPFV fleet in California waters, 1981–2011.

Figure 4-6 shows California CPFV fleet HMS catches by species which were caught in California waters. The graph only displays the four most important constituents of the catch, all of which are tuna species. Albacore was of increasing importance relative to other species of tuna in recent years; however, levels of all HMS caught by the CPFV fleet in California waters were very low in recent years compared to levels of the early-2000s, particularly for albacore.

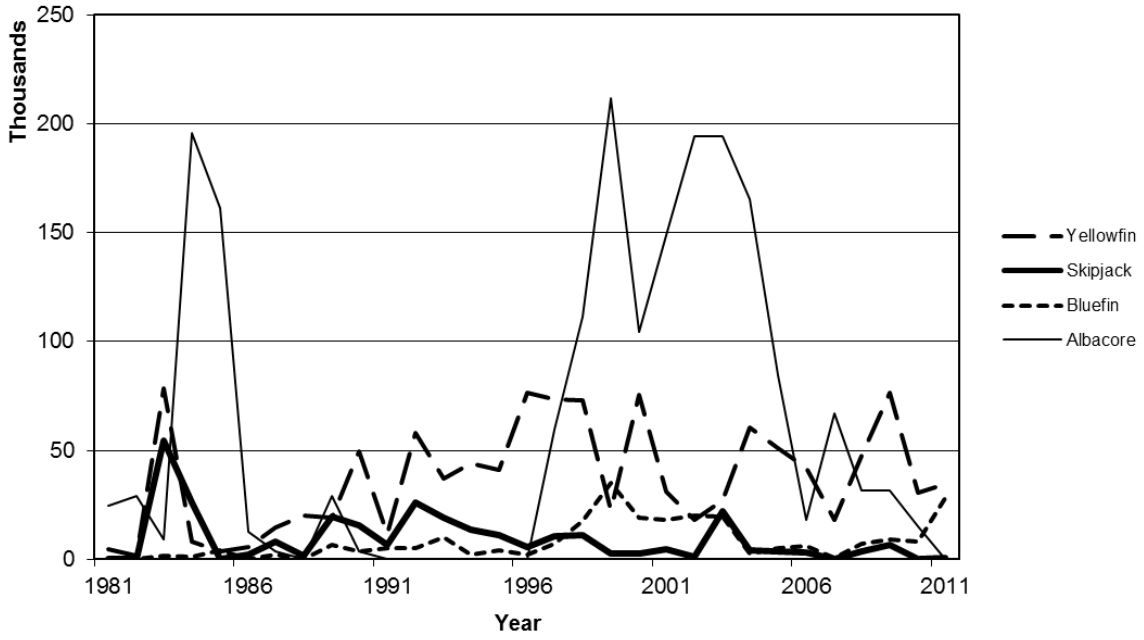

Figure 4-7. Catch in number of fish by species for the California CPFV fleet in Mexico waters, 1981–2011.

Figure 4-7 shows California CPFV fleet HMS catches by species which were caught in Mexico waters. The graph only displays the four most important constituents of the catch, all of which are tuna species. California waters for the CPFV fleet. The principal species targeted are the tunas. Since the early-2000s, albacore catch has declined, while yellowfin tuna followed by bluefin tuna were the most important HMS CPFV catch species in Mexico waters for 2011.

4.2 Commercial Fisheries – Figures

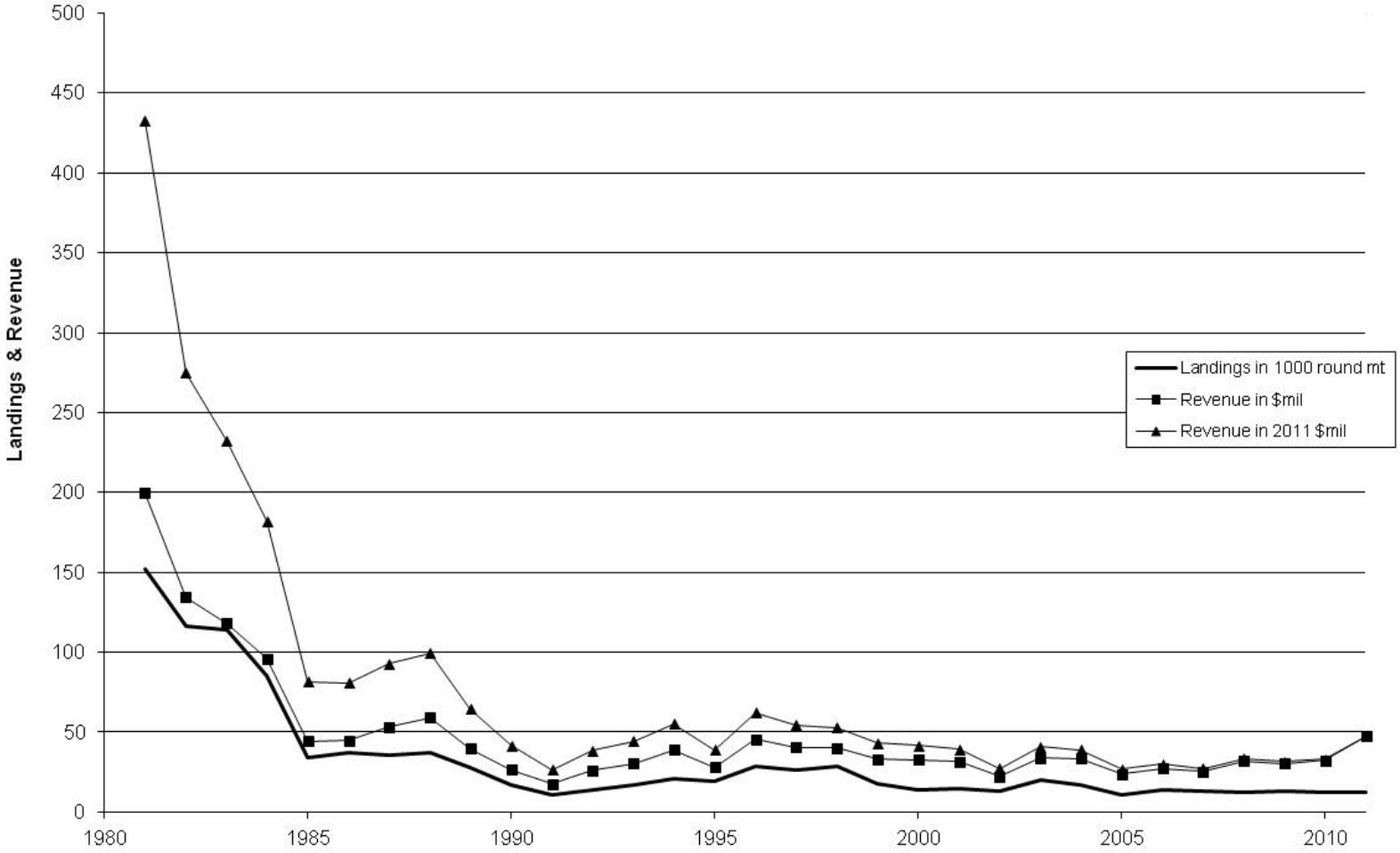

Figure 4-8. West Coast commercial HMS landings and revenues, 1981-2011

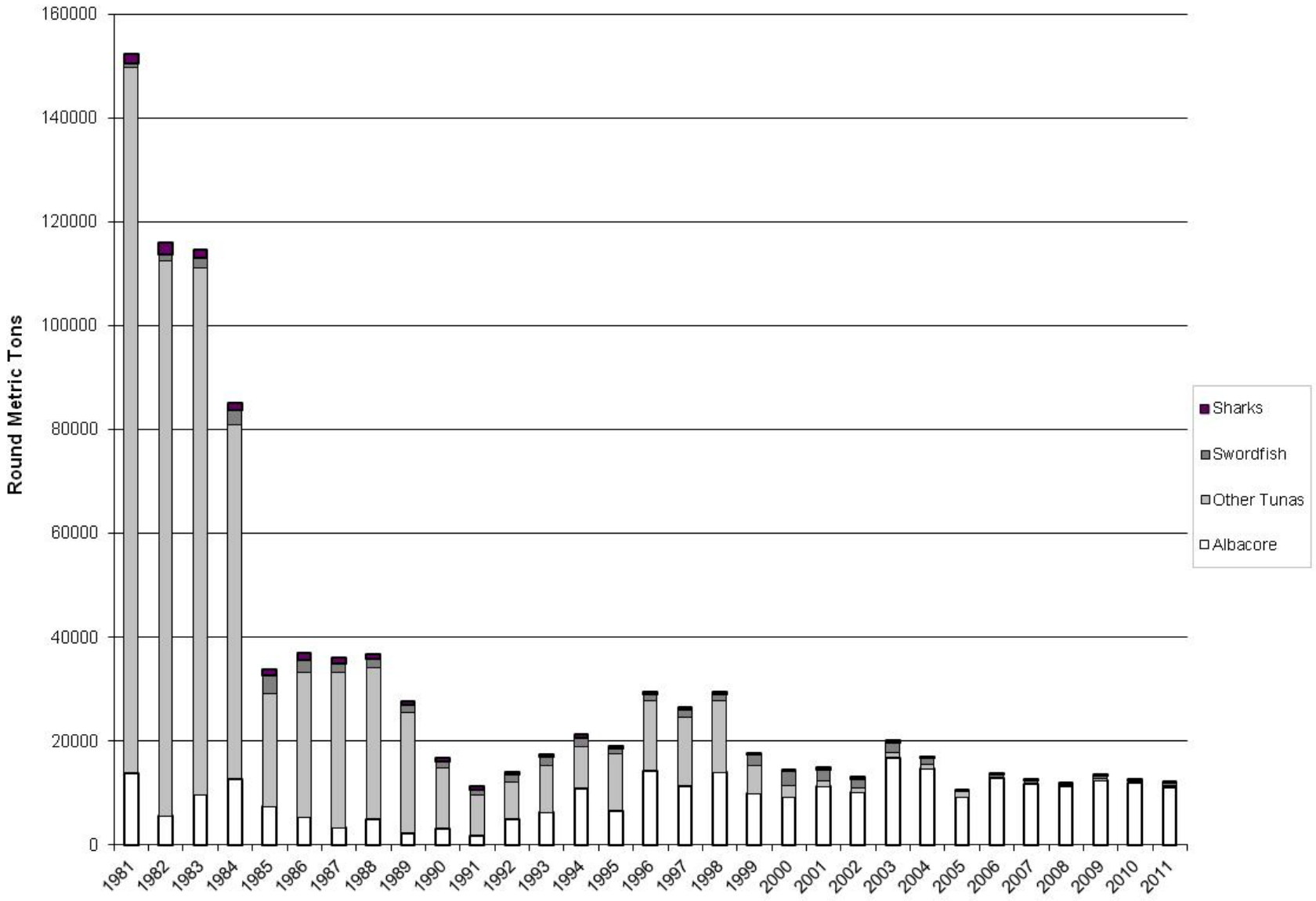

Figure 4-9. West Coast commercial landings of albacore, other tunas, swordfish, and sharks, 1981-2011.

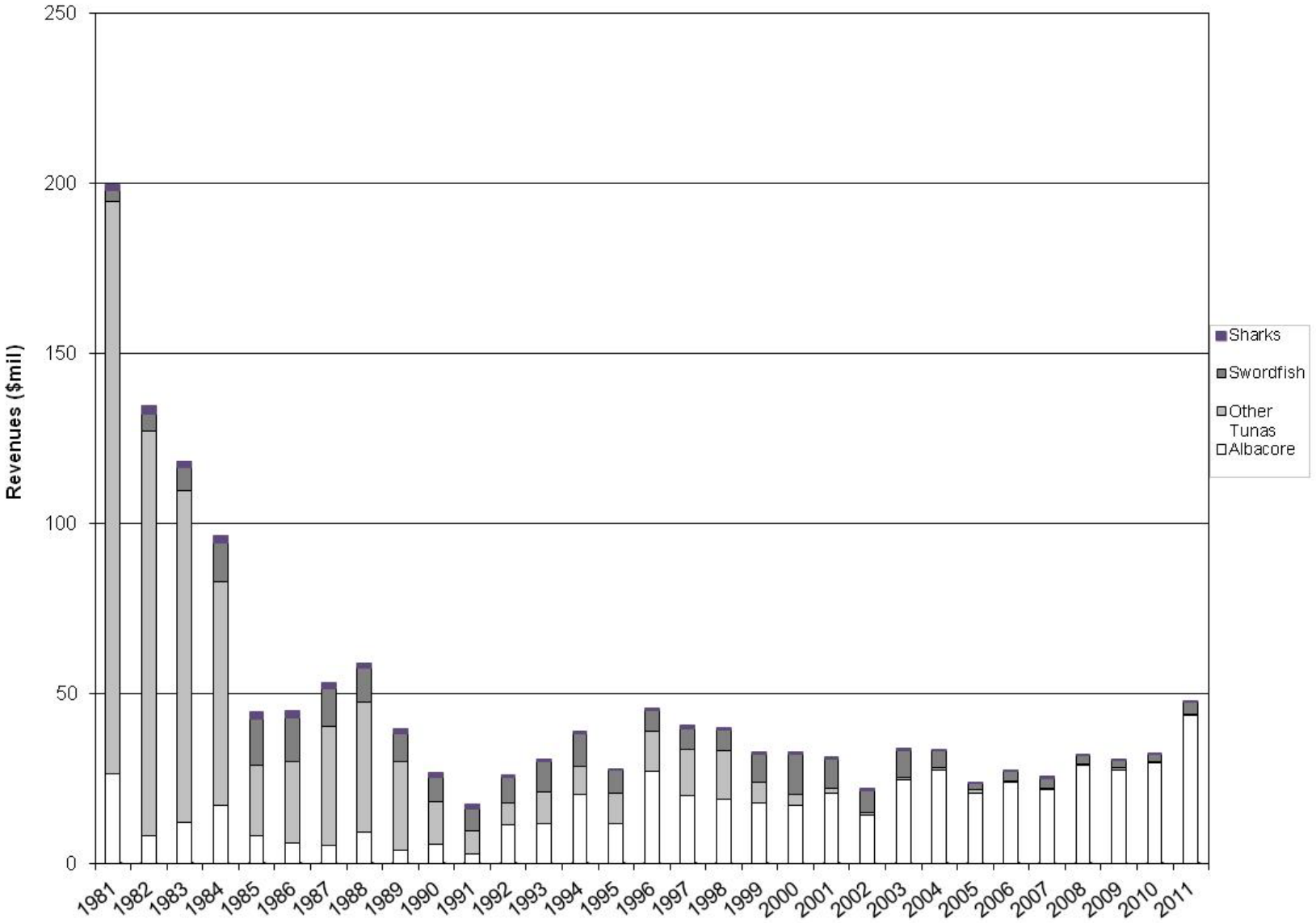

Figure 4-10. West Coast commercial revenues for albacore, other tunas, swordfish, and sharks, 1981-2011.

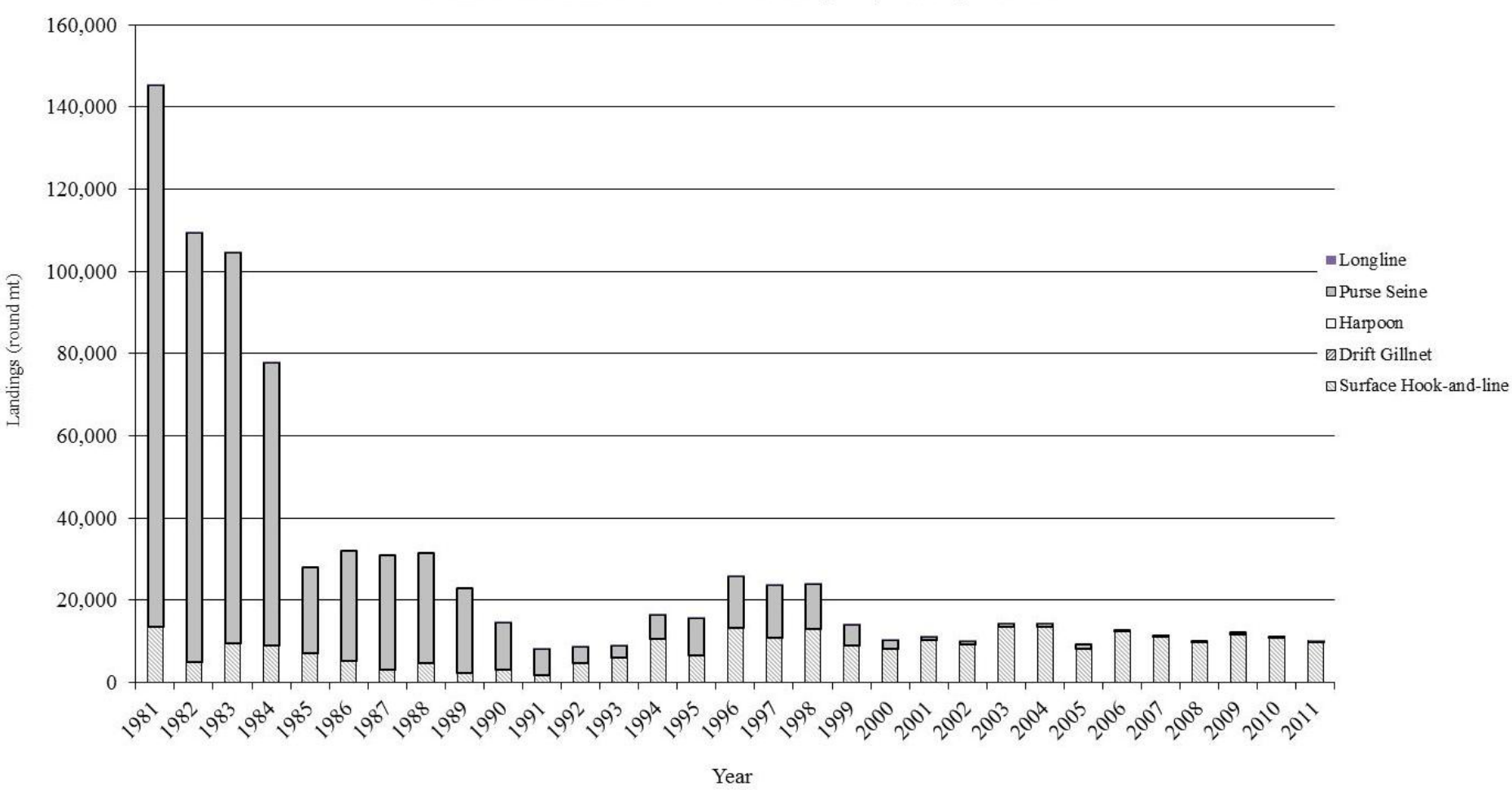

Figure 4-11. West Coast commercial tuna landings by fishery

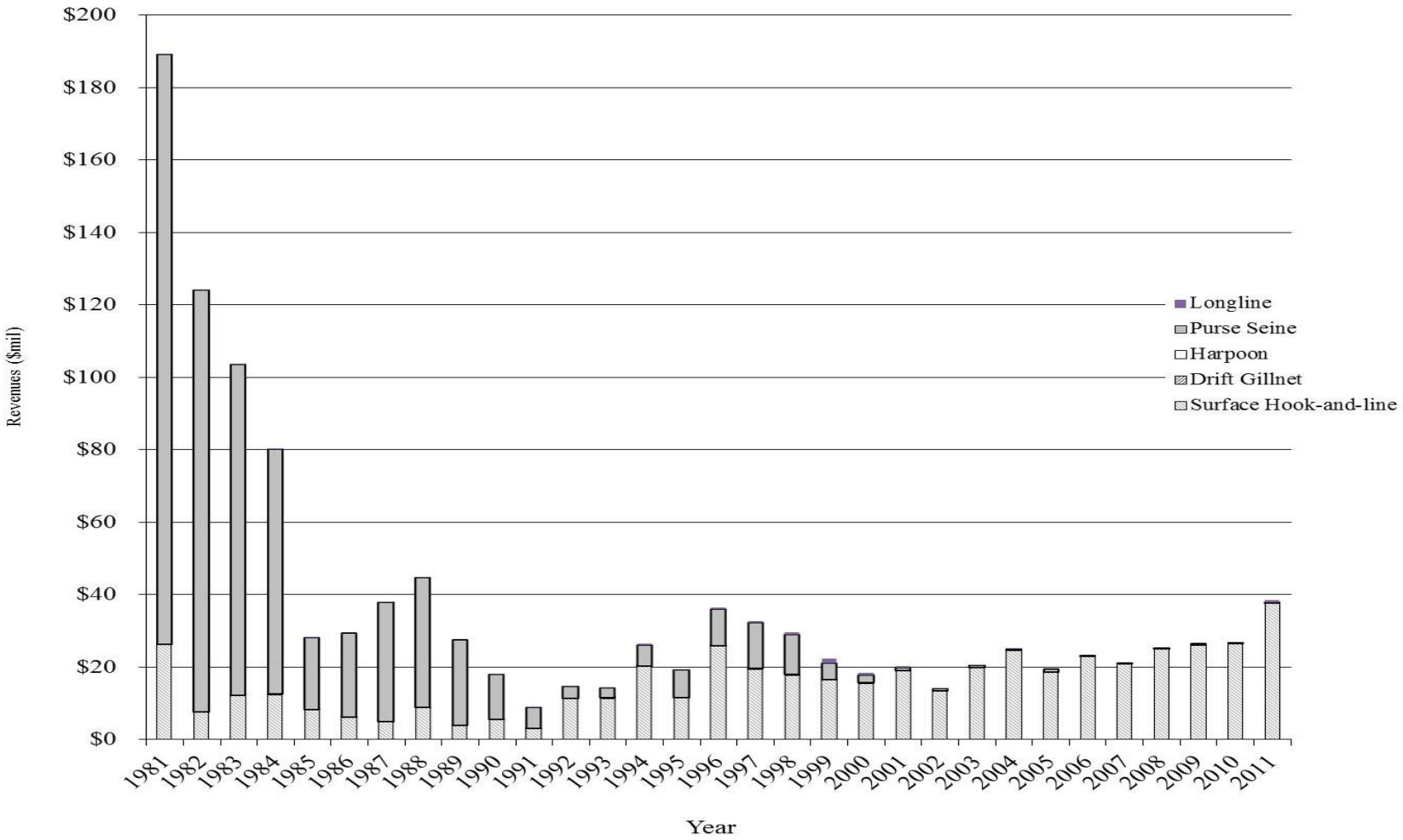

Figure 4-12. West Coast commercial tuna revenues by fishery.

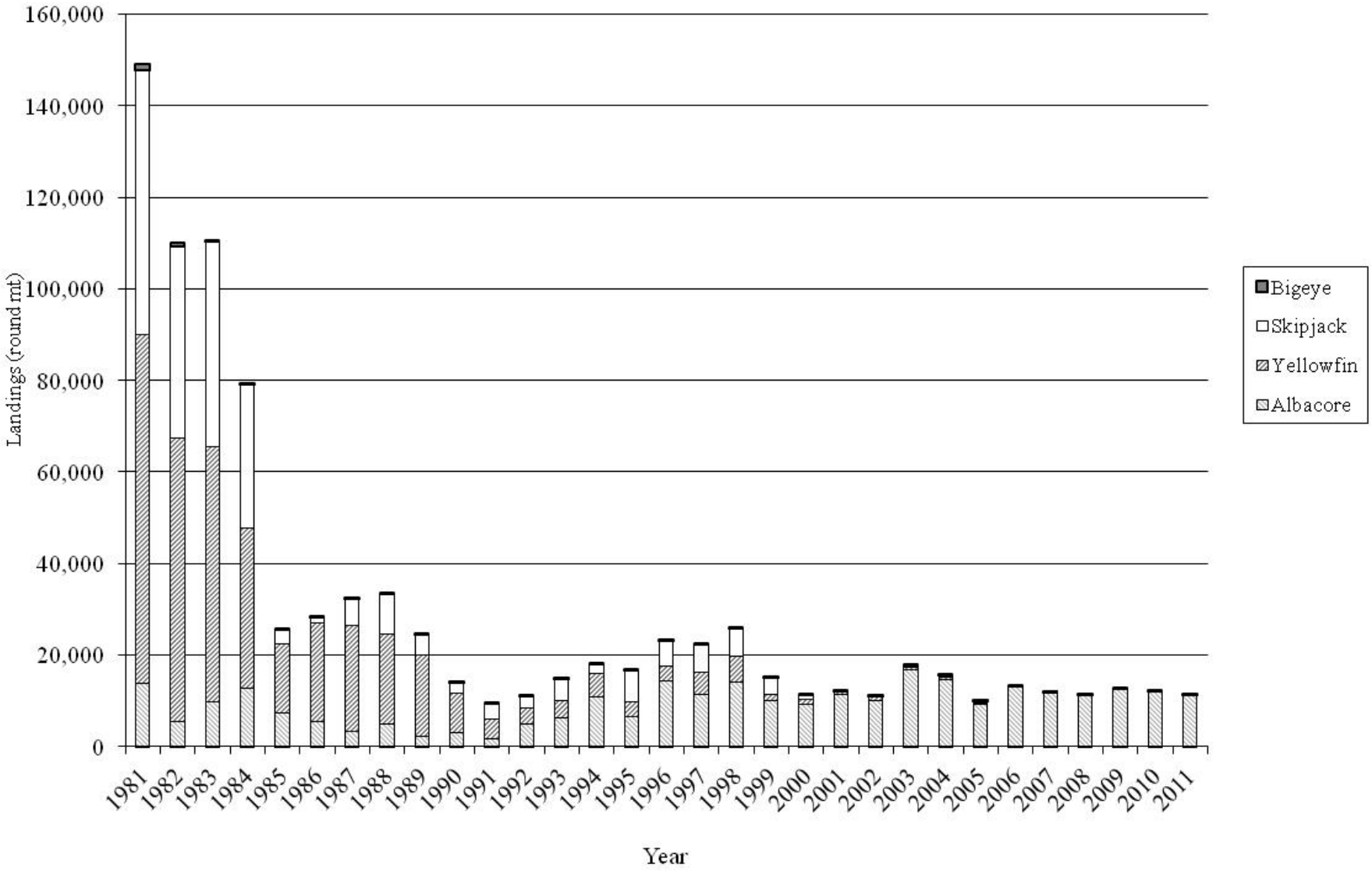

Figure 4-13. West Coast commercial tuna landings by species, 1981-2011.

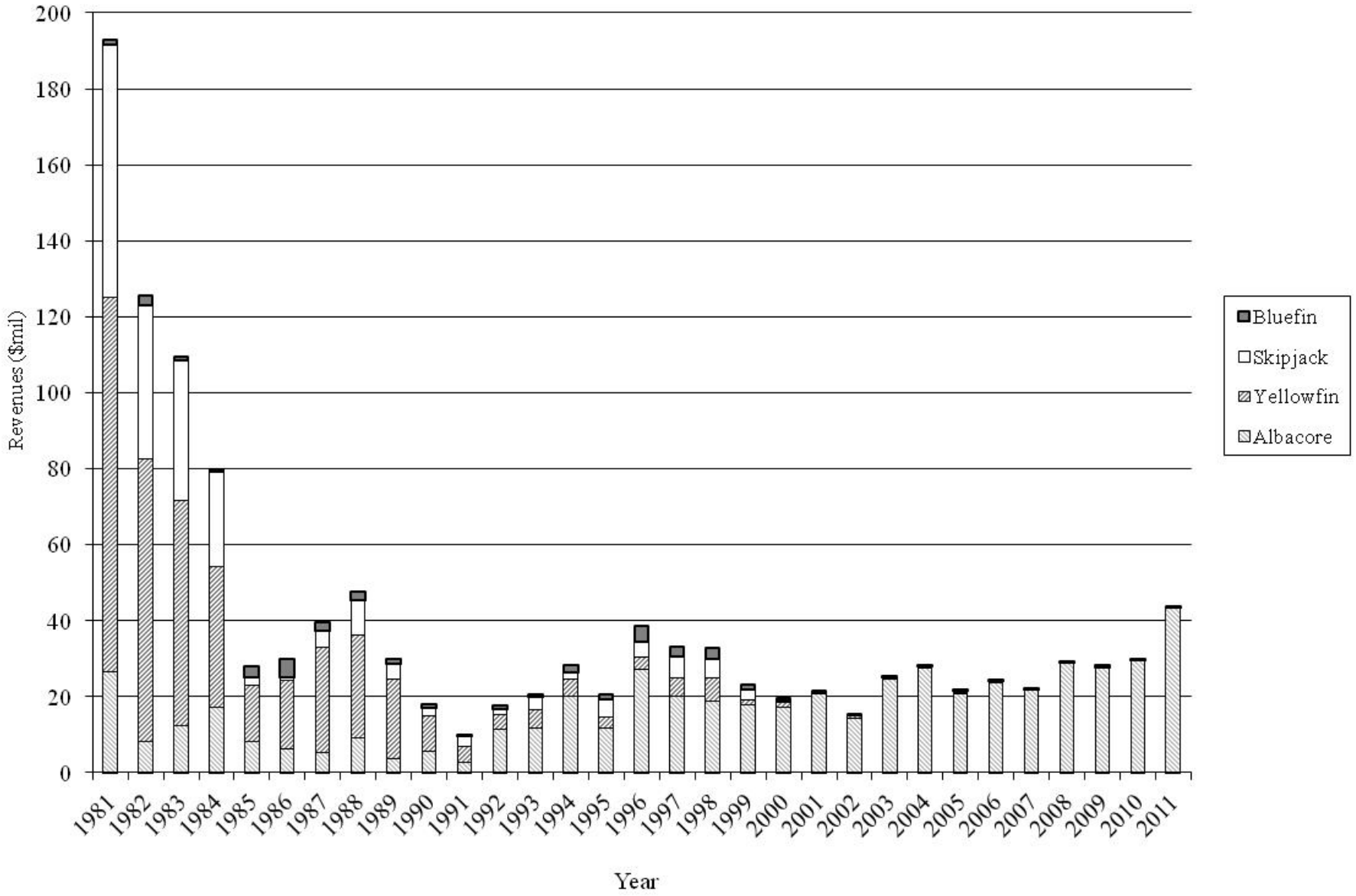

Figure 4-14. West Coast commercial tuna revenues by species, 1981-2011.

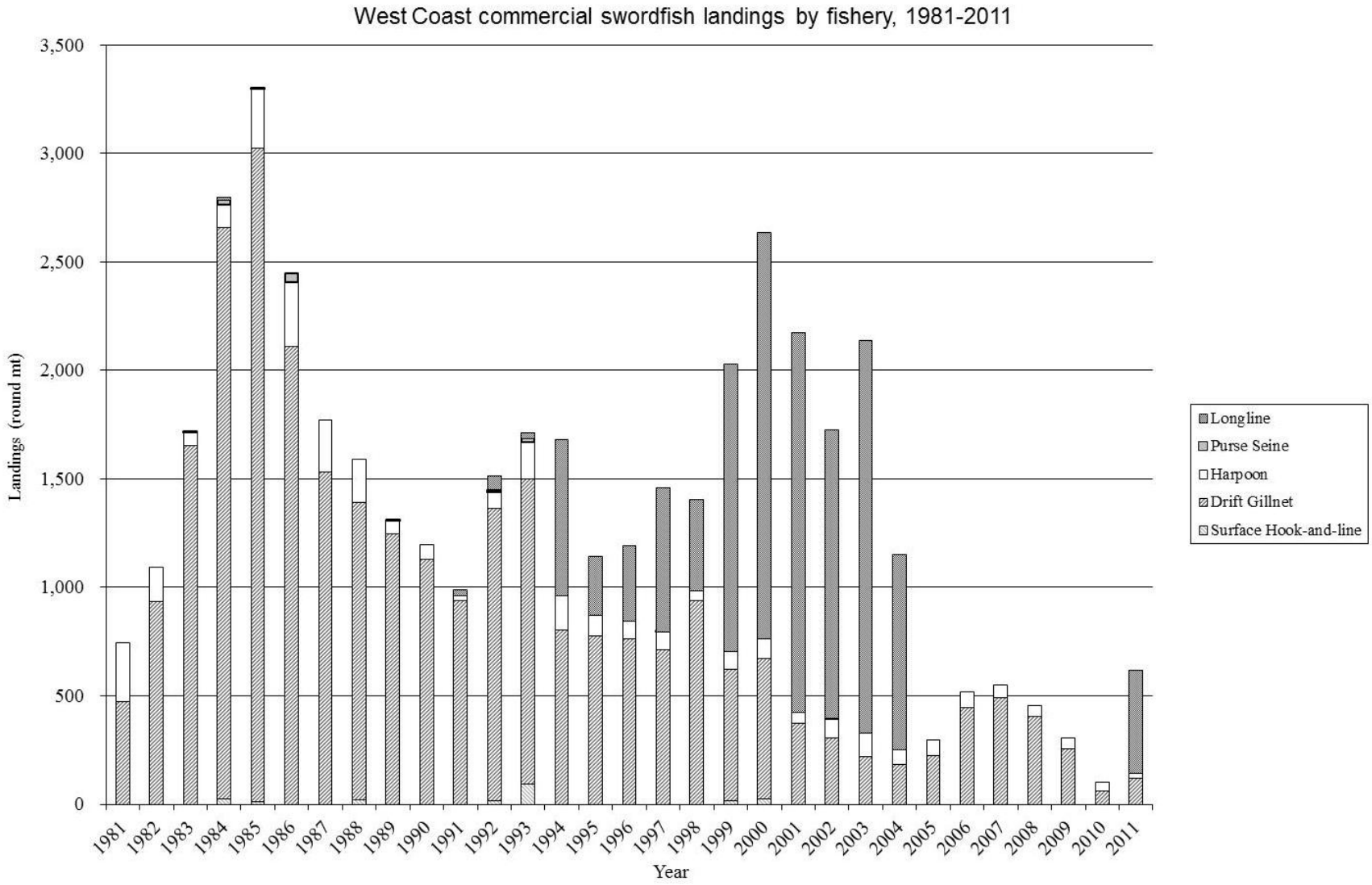

Figure 4-15. West Coast commercial swordfish landings by fishery.

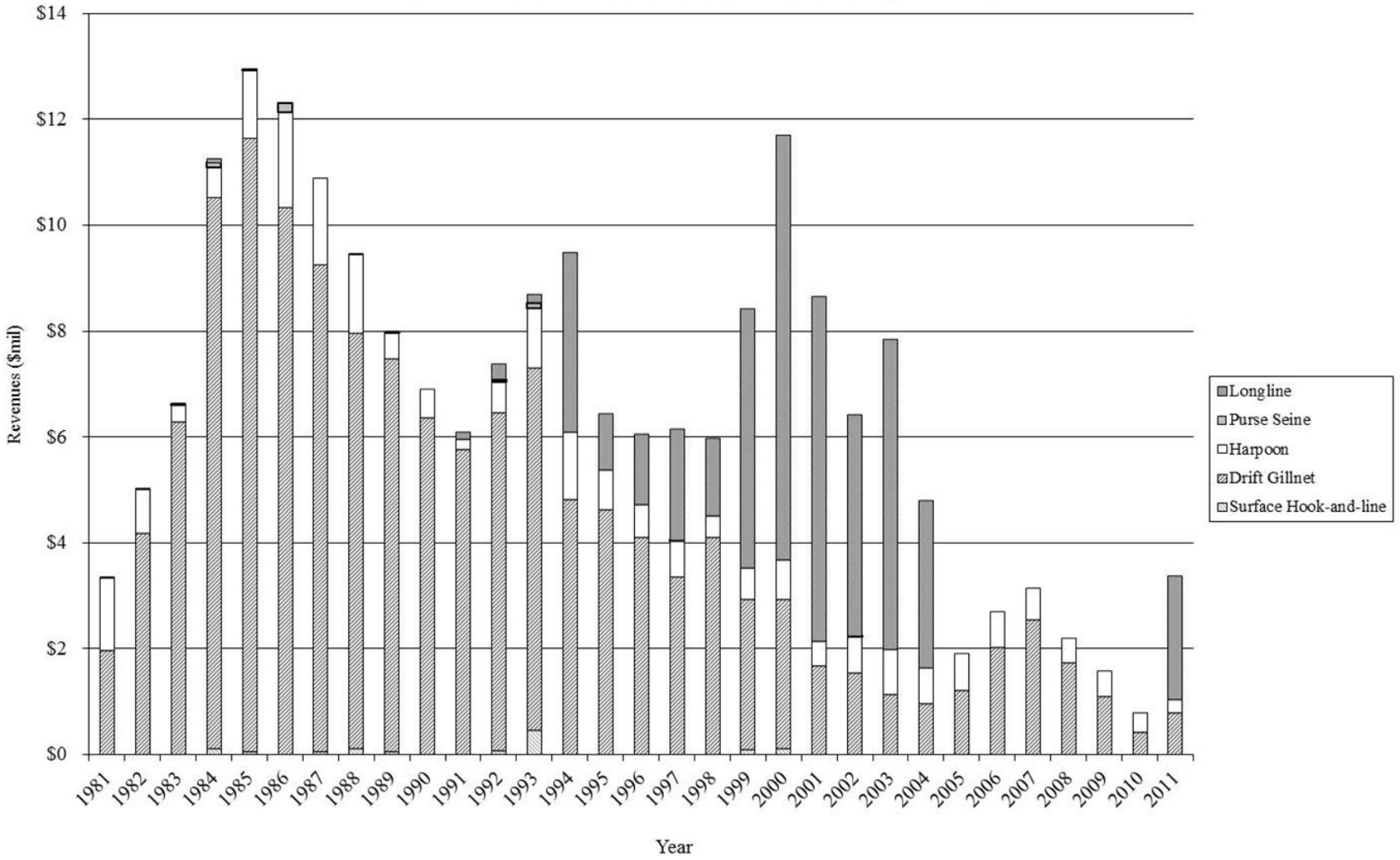

Figure 4-16. West Coast commercial swordfish revenues by fishery

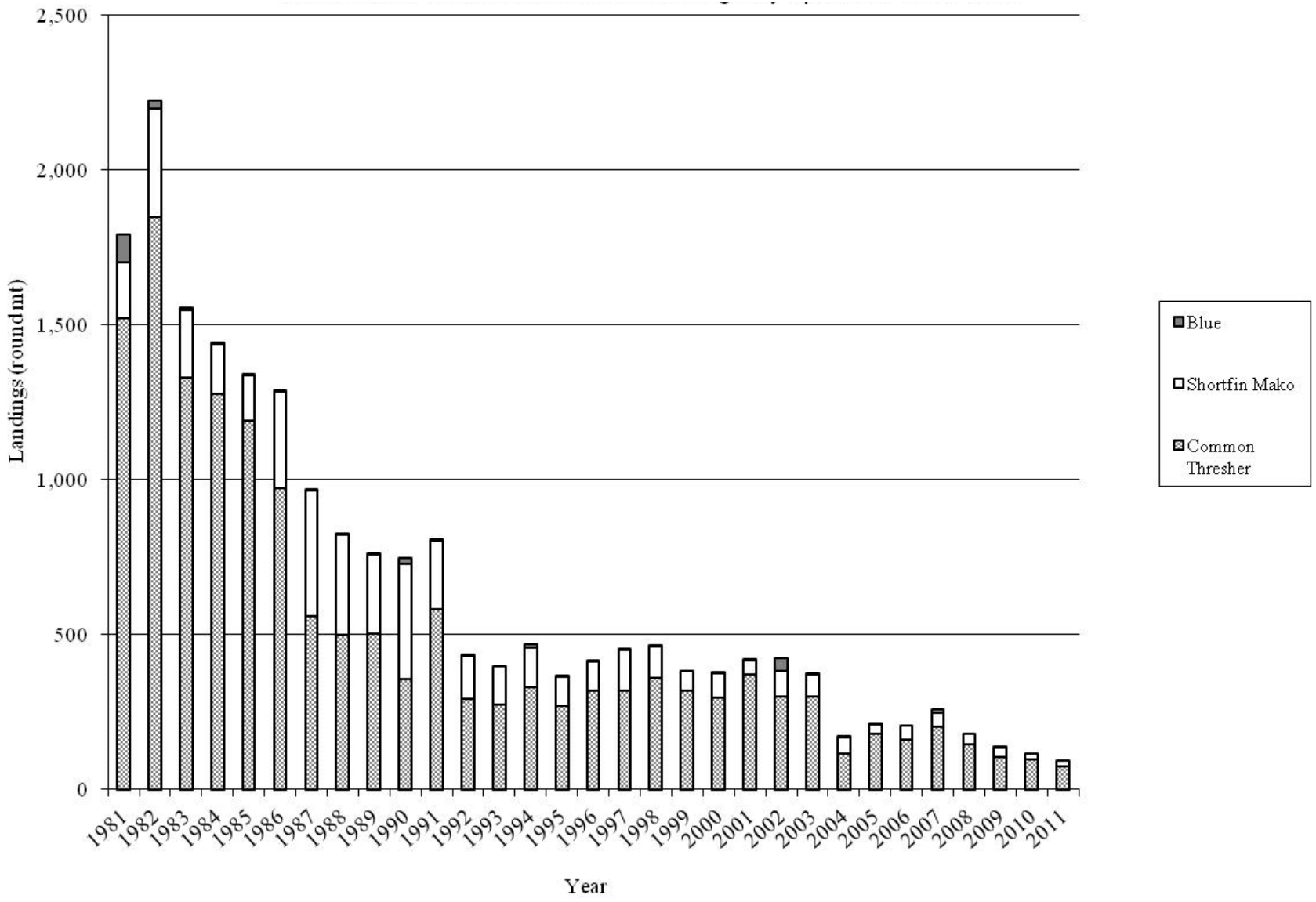

Figure 4-17. West Coast commercial shark landings by species, 1981-2011.

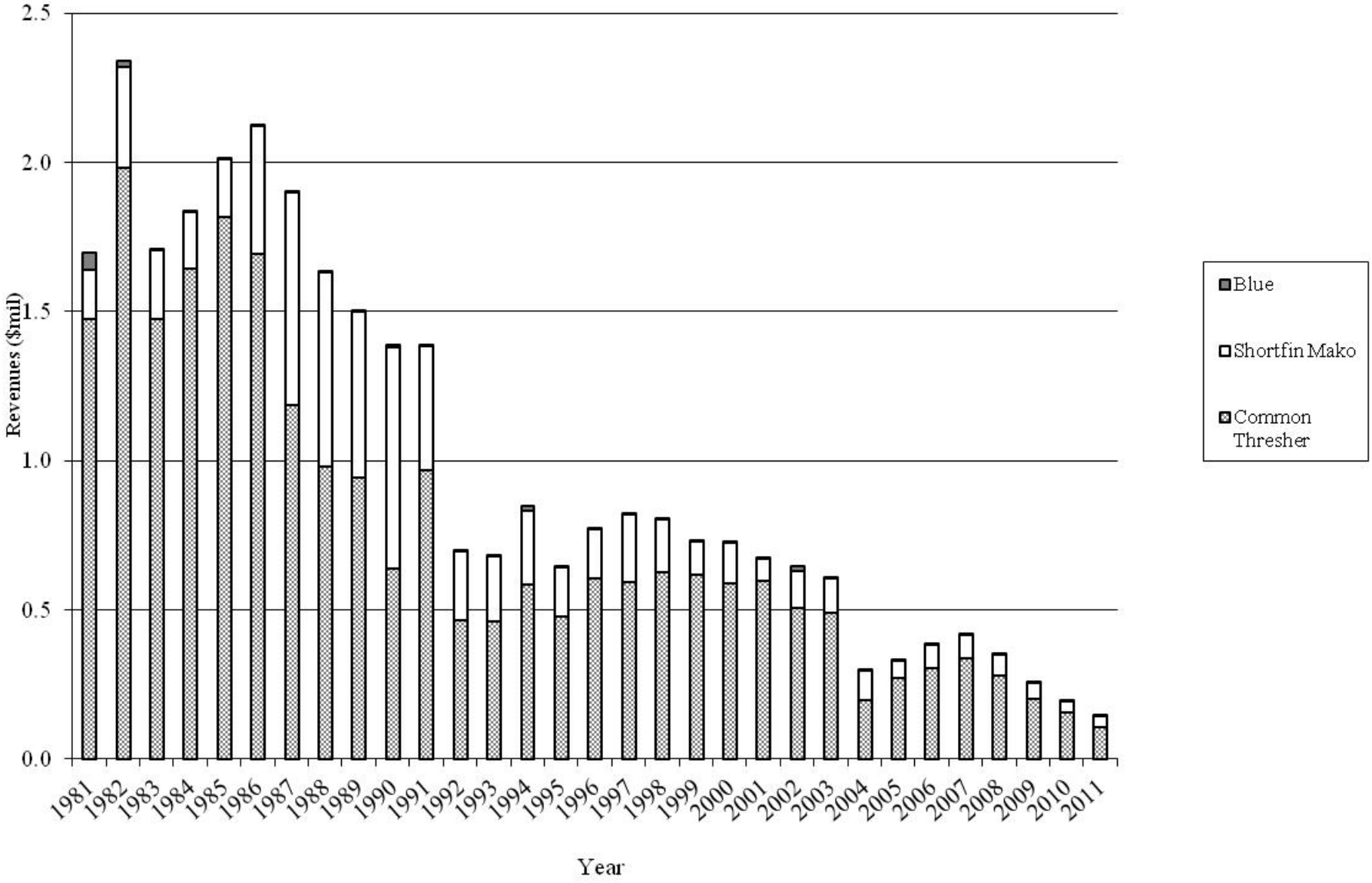

Figure 4-18. West Coast commercial shark revenues by species, 1981-2011.

4.3 Commercial Fisheries – Tables

Table 4-3. West Coast commercial HMS landings and revenues, 1981-2011.

Year	Landings (1000 round mt)	Revenue ($mil.)	Revenue (2011 $mil.)
1981	152	$200	$433
1982	116	$134	$275
1983	114	$118	$232
1984	85	$96	$182
1985	34	$44	$82
1986	37	$45	$81
1987	36	$53	$93
1988	37	$59	$100
1989	28	$40	$65
1990	17	$27	$42
1991	11	$17	$26
1992	14	$26	$39
1993	17	$31	$44
1994	21	$39	$55
1995	19	$28	$39
1996	29	$46	$62
1997	26	$41	$54
1998	29	$40	$53
1999	18	$33	$43
2000	14	$33	$42
2001	15	$31	$39
2002	13	$22	$27
2003	20	$34	$41
2004	17	$33	$39
2005	11	$24	$27
2006	14	$27	$30
2007	13	$26	$27
2008	12	$32	$33
2009	13	$30	$32
2010	12	$32	$33
2011	12	$47	$47

Table 4-4. West Coast commercial landings of HMS by all HMS and non-HMS gears, 1981-2011.

	Tunas							Sharks				
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified	Swordfish	Common Thresher	Shortfin Mako	Blue	Dorado	Total
1981	13,712	76,091	57,869	1,168	868	40	749	1,521	182	92	4	152,296
1982	5,410	61,769	41,904	968	2,404	51	1,112	1,848	351	27	1	115,845
1983	9,578	55,741	44,995	21	764	55	1,763	1,331	217	7	1	114,473
1984	12,654	35,063	31,251	126	635	1,014	2,890	1,279	160	2	4	85,078
1985	7,301	15,025	2,977	7	3,254	468	3,418	1,190	149	1	<0.5	33,790
1986	5,243	21,517	1,361	29	4,731	143	2,530	974	312	2	2	36,844
1987	3,160	23,201	5,724	50	823	129	1,803	562	403	2	<0.5	35,857
1988	4,912	19,520	8,863	6	804	11	1,636	500	322	3	<0.5	36,577
1989	2,214	17,615	4,505	1	1,019	77	1,358	504	255	6	<0.5	27,554
1990	3,028	8,509	2,256	2	925	46	1,236	357	373	20	1	16,753
1991	1,676	4,178	3,407	7	104	11	1,029	584	219	1	<0.5	11,216
1992	4,902	3,350	2,586	7	1,087	10	1,546	292	142	1	3	13,926
1993	6,166	3,795	4,539	26	559	16	1,767	275	122	<0.5	17	17,282
1994	10,751	5,056	2,111	47	916	33	1,700	330	128	12	41	21,125
1995	6,530	3,038	7,037	49	714	1	1,162	270	95	5	5	18,906
1996	14,173	3,347	5,455	62	4,688	3	1,198	319	96	1	10	29,352
1997	11,292	4,775	6,070	82	2,251	11	1,459	320	132	1	5	26,398
1998	13,915	5,799	5,846	53	1,949	12	1,408	361	100	3	3	29,449
1999	9,770	1,353	3,759	108	186	12	2,033	320	63	<0.5	17	17,621
2000	9,074	1,159	780	86	313	1	2,645	296	80	1	43	14,478
2001	11,191	655	58	53	196	1	2,195	373	46	2	16	14,786
2002	10,029	544	236	10	11	2	1,725	301	82	41	<0.5	12,981
2003	16,671	465	349	35	36	<0.5	2,135	301	70	1	6	20,069
2004	14,540	488	307	22	10	9	1,186	115	54	1	1	16,733
2005	9,055	285	523	10	207	<0.5	297	179	33	1	<0.5	10,590
2006	12,786	77	48	35	1	1	541	160	46	<0.5	3	13,698
2007	11,586	104	5	13	45	<0.5	550	204	45	10	2	12,564
2008	11,131	65	3	27	1	1	531	147	35	<0.5	2	11,943
2009	12,307	45	5	12	415		409	107	30	1	1	13,332
2010	11,856	1	1	31	1	1	370	96	21	<0.5	4	12,382
2011	11,041	4	1	46	118	<0.5	619	76	19	<0.5	3	11,927

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 5, 2012.
Additional processing info:
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-5. West Coast nominal commercial ex-vessel revenues from HMS landings by all HMS and non-HMS gears, 1981-2011.

	Revenues ($)											
	Tunas							Sharks				
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified	Swordfish	Common Thresher	Shortfin Mako	Blue	Dorado	Total
1981	26,524,145	98,722,280	66,331,030	1,569,755	1,239,005	72,694	3,355,010	1,475,634	162,347	59,064	2,801	199,513,765
1982	8,033,073	74,468,306	40,507,405	1,208,147	2,690,102	98,923	5,115,995	1,980,592	339,209	18,826	956	134,461,534
1983	12,242,167	59,475,802	36,652,119	45,946	1,062,909	95,490	6,800,233	1,474,213	229,826	4,645	695	118,084,045
1984	17,208,448	37,038,204	24,790,704	174,405	904,956	2,590,391	11,621,524	1,642,178	189,794	2,470	4,272	96,167,346
1985	8,292,769	14,690,108	2,118,170	17,693	2,819,048	1,028,867	13,415,105	1,817,135	192,917	2,132	377	44,394,321
1986	6,178,084	18,079,443	904,609	90,227	4,636,698	198,248	12,726,490	1,690,791	428,259	1,320	757	44,934,926
1987	5,127,832	27,878,667	4,426,717	176,504	2,057,402	448,231	11,115,940	1,184,091	715,138	1,853	357	53,132,732
1988	9,117,601	27,030,132	9,249,827	26,156	2,070,411	80,548	9,719,489	979,905	649,799	2,275	527	58,926,670
1989	3,785,613	20,824,242	3,944,894	2,415	1,271,718	127,320	8,259,204	944,161	552,576	3,465	485	39,716,093
1990	5,620,990	9,383,584	1,898,875	8,771	1,149,381	56,750	7,146,946	638,630	739,193	10,303	1,943	26,655,366
1991	2,823,937	3,996,935	2,692,345	42,810	116,371	21,161	6,342,361	968,877	415,168	894	1,167	17,422,026
1992	11,483,392	3,677,441	1,410,546	44,731	1,129,626	21,228	7,566,616	464,018	231,063	1,816	6,247	26,036,724
1993	11,697,562	4,821,735	3,282,778	211,513	752,369	72,678	8,953,927	458,513	221,401	622	42,223	30,515,321
1994	20,188,895	4,522,321	1,751,209	307,147	1,674,099	55,245	9,596,037	584,318	247,088	16,057	74,889	39,017,305
1995	11,572,603	3,044,670	4,752,641	258,727	1,057,948	5,136	6,569,451	477,901	165,215	2,796	5,479	27,912,567
1996	27,222,294	3,230,957	3,986,113	260,306	4,035,455	28,296	6,063,794	603,006	167,111	587	9,815	45,607,734
1997	19,924,121	4,991,131	5,504,526	359,780	2,773,705	21,895	6,147,707	591,268	227,426	327	10,858	40,552,744
1998	18,895,247	5,861,959	5,213,131	271,919	2,965,485	61,688	5,981,719	625,489	176,313	5,996	10,492	40,069,438
1999	17,771,262	1,468,209	2,748,208	657,121	1,061,233	60,572	8,445,728	617,691	111,119	73	47,854	32,989,070
2000	17,188,570	1,329,357	483,242	576,919	580,722	2,298	11,753,472	589,035	133,621	720	63,293	32,701,249
2001	20,680,501	465,558	33,633	320,855	473,557	3,069	8,696,689	595,548	75,799	1,294	19,397	31,365,900
2002	14,256,910	588,677	128,245	87,304	43,477	6,325	6,403,254	503,487	124,521	18,510	725	22,161,435
2003	24,435,697	451,273	159,961	262,768	76,106	21	7,851,693	487,796	115,728	390	10,370	33,851,803
2004	27,414,167	446,577	109,254	147,696	38,312	54,879	4,835,731	197,188	98,827	489	5,637	33,348,757
2005	20,823,045	315,699	292,193	60,141	136,847	913	1,899,245	271,767	57,788	426	1,290	23,859,354
2006	23,776,441	174,912	40,350	205,677	3,790	1,895	2,748,856	301,669	79,586	309	17,984	27,351,469
2007	21,633,438	149,568	4,361	94,734	58,106	46	3,131,178	337,770	78,569	1,984	10,092	25,499,846
2008	28,853,123	125,508	3,675	205,536	3,340	3,485	2,372,762	280,885	67,255	177	9,192	31,924,938
2009	27,584,153	166,620	5,332	97,103	443,095		1,937,017	198,627	54,663	2,361	4,183	30,493,154
2010	29,575,539	6,861	1,899	241,834	6,363	6,356	2,206,415	156,909	36,250	177	15,869	32,254,472
2011	43,353,846	13,767	1,749	326,604	246,987	1,362	3,353,194	104,989	37,539	105	11,339	47,451,481

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 5, 2012.
Additional processing info:
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-6. West Coast real commercial ex-vessel revenues (2011 $) from HMS landings by all HMS and non-HMS gears, 1981-2011.

	Revenues (2011 $)											
	Tunas							Sharks				
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified	Swordfish	Common Thresher	Shortfin Mako	Blue	Dorado	Total
1981	57,523,629	214,101,670	143,853,892	3,404,369	2,687,065	157,652	7,276,100	3,200,247	352,087	128,093	6,074	432,690,878
1982	16,420,837	152,224,666	82,803,363	2,469,637	5,498,983	202,214	10,457,880	4,048,635	693,396	38,482	1,954	274,860,047
1983	24,070,325	116,940,232	72,064,726	90,337	2,089,872	187,752	13,370,493	2,898,570	451,879	9,133	1,366	232,174,685
1984	32,610,287	70,187,994	46,978,783	330,500	1,714,907	4,908,833	22,022,975	3,111,953	359,662	4,682	8,095	182,238,671
1985	15,255,277	27,023,746	3,896,560	32,548	5,185,887	1,892,692	24,678,266	3,342,779	354,887	3,921	693	81,667,256
1986	11,117,661	32,534,538	1,627,873	162,366	8,343,887	356,754	22,901,728	3,042,633	770,665	2,376	1,362	80,861,843
1987	8,967,877	48,755,975	7,741,722	308,682	3,598,114	783,894	19,440,259	2,070,813	1,250,679	3,241	624	92,921,880
1988	15,416,979	45,705,330	15,640,560	44,228	3,500,864	136,198	16,434,713	1,656,925	1,098,746	3,846	890	99,639,279
1989	6,167,503	33,926,755	6,427,003	3,934	2,071,877	207,429	13,455,855	1,538,223	900,254	5,646	791	64,705,270
1990	8,817,240	14,719,347	2,978,627	13,759	1,802,950	89,019	11,210,895	1,001,773	1,159,519	16,162	3,047	41,812,338
1991	4,278,045	6,055,044	4,078,693	64,854	176,294	32,057	9,608,183	1,467,773	628,946	1,354	1,768	26,393,011
1992	16,994,808	5,442,417	2,087,533	66,200	1,671,786	31,416	11,198,189	686,722	341,961	2,687	9,245	38,532,964
1993	16,938,259	6,981,950	4,753,516	306,275	1,089,443	105,239	12,965,431	663,934	320,592	900	61,140	44,186,679
1994	28,628,609	6,412,820	2,483,279	435,545	2,373,935	78,339	13,607,539	828,585	350,380	22,769	106,195	55,327,995
1995	16,075,293	4,229,296	6,601,807	359,393	1,469,576	7,135	9,125,505	663,843	229,498	3,884	7,611	38,772,841
1996	37,107,817	4,404,249	5,433,633	354,834	5,500,893	38,571	8,265,804	821,982	227,796	800	13,380	62,169,759
1997	26,690,048	6,686,042	7,373,780	481,956	3,715,613	29,331	8,235,375	792,054	304,657	438	14,546	54,323,840
1998	25,026,817	7,764,184	6,904,810	360,158	3,927,794	81,705	7,922,807	828,462	233,527	7,942	13,896	53,072,102
1999	23,197,052	1,916,472	3,587,270	857,748	1,385,240	79,066	11,024,316	806,280	145,045	96	62,465	43,061,050
2000	21,960,611	1,698,425	617,404	737,089	741,947	2,936	15,016,573	752,567	170,718	920	80,865	41,780,055
2001	25,840,936	581,730	42,025	400,918	591,724	3,834	10,866,786	744,157	94,714	1,616	24,238	39,192,678
2002	17,529,706	723,813	157,685	107,345	53,458	7,778	7,873,176	619,067	153,106	22,759	891	27,248,784
2003	29,426,418	543,441	192,631	316,436	91,650	25	9,455,315	587,423	139,364	470	12,488	40,765,661
2004	32,108,417	523,047	127,962	172,986	44,873	64,276	5,663,775	230,953	115,749	573	6,602	39,059,213
2005	23,606,218	357,895	331,247	68,180	155,137	1,034	2,153,095	308,091	65,512	483	1,462	27,048,354
2006	26,110,741	192,084	44,312	225,870	4,163	2,080	3,018,730	331,286	87,399	339	19,750	30,036,754
2007	23,085,517	159,608	4,654	101,093	62,006	49	3,341,348	360,442	83,843	2,118	10,770	27,211,448
2008	30,124,372	131,038	3,837	214,592	3,487	3,639	2,477,305	293,260	70,218	185	9,597	33,331,530
2009	28,496,026	172,128	5,508	100,313	457,743		2,001,051	205,194	56,470	2,439	4,322	31,501,194
2010	30,206,862	7,007	1,940	246,996	6,498	6,492	2,253,513	160,258	37,024	180	16,208	32,942,978
2011	43,353,846	13,767	1,749	326,604	246,987	1,362	3,353,194	104,989	37,539	105	11,339	47,451,481

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 5, 2012.
Additional processing info:
Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-7. West Coast commercial landings of albacore, other tunas, swordfish, and sharks, 1981-2011.

	Landings (round mt)				
Year	Albacore	Other Tunas	Swordfish	Sharks	Total
1981	13,712	136,036	749	1,795	152,292
1982	5,410	107,096	1,112	2,226	115,844
1983	9,578	101,576	1,763	1,555	114,472
1984	12,654	68,089	2,890	1,441	85,074
1985	7,301	21,731	3,418	1,340	33,790
1986	5,243	27,781	2,530	1,288	36,842
1987	3,160	29,927	1,803	967	35,857
1988	4,912	29,204	1,636	825	36,577
1989	2,214	23,217	1,358	765	27,554
1990	3,028	11,738	1,236	750	16,752
1991	1,676	7,707	1,029	804	11,216
1992	4,902	7,040	1,546	435	13,923
1993	6,166	8,935	1,767	397	17,265
1994	10,751	8,163	1,700	470	21,084
1995	6,530	10,839	1,162	370	18,901
1996	14,173	13,555	1,198	416	29,342
1997	11,292	13,189	1,459	453	26,393
1998	13,915	13,659	1,408	464	29,446
1999	9,770	5,418	2,033	383	17,604
2000	9,074	2,339	2,645	377	14,435
2001	11,191	963	2,195	421	14,770
2002	10,029	803	1,725	424	12,981
2003	16,671	885	2,135	372	20,063
2004	14,540	836	1,186	170	16,732
2005	9,055	1,025	297	213	10,590
2006	12,786	162	541	206	13,695
2007	11,586	167	550	259	12,562
2008	11,131	97	531	182	11,941
2009	12,307	477	409	138	13,331
2010	11,856	35	370	117	12,378
2011	11,041	169	619	95	11,924

Table 4-8. West Coast commercial revenues for albacore, other tunas, swordfish, and sharks, 1981-2011.

Year	Revenues ($)				
	Albacore	Other Tunas	Swordfish	Sharks	Total
1981	26,524,145	167,934,764	3,355,010	1,697,045	199,510,964
1982	8,033,073	118,972,883	5,115,995	2,338,627	134,460,578
1983	12,242,167	97,332,266	6,800,233	1,708,684	118,083,350
1984	17,208,448	65,498,660	11,621,524	1,834,442	96,163,074
1985	8,292,769	20,673,886	13,415,105	2,012,184	44,393,944
1986	6,178,084	23,909,225	12,726,490	2,120,370	44,934,169
1987	5,127,832	34,987,521	11,115,940	1,901,082	53,132,375
1988	9,117,601	38,457,074	9,719,489	1,631,979	58,926,143
1989	3,785,613	26,170,589	8,259,204	1,500,202	39,715,608
1990	5,620,990	12,497,361	7,146,946	1,388,126	26,653,423
1991	2,823,937	6,869,622	6,342,361	1,384,939	17,420,859
1992	11,483,392	6,283,572	7,566,616	696,897	26,030,477
1993	11,697,562	9,141,073	8,953,927	680,536	30,473,098
1994	20,188,895	8,310,021	9,596,037	847,463	38,942,416
1995	11,572,603	9,119,122	6,569,451	645,912	27,907,088
1996	27,222,294	11,541,127	6,063,794	770,704	45,597,919
1997	19,924,121	13,651,037	6,147,707	819,021	40,541,886
1998	18,895,247	14,374,182	5,981,719	807,798	40,058,946
1999	17,771,262	5,995,343	8,445,728	728,883	32,941,216
2000	17,188,570	2,972,538	11,753,472	723,376	32,637,956
2001	20,680,501	1,296,672	8,696,689	672,641	31,346,503
2002	14,256,910	854,028	6,403,254	646,518	22,160,710
2003	24,435,697	950,129	7,851,693	603,914	33,841,433
2004	27,414,167	796,718	4,835,731	296,504	33,343,120
2005	20,823,045	805,793	1,899,245	329,981	23,858,064
2006	23,776,441	426,624	2,748,856	381,564	27,333,485
2007	21,633,438	306,815	3,131,178	418,323	25,489,754
2008	28,853,123	341,544	2,372,762	348,317	31,915,746
2009	27,584,153	712,150	1,937,017	255,651	30,488,971
2010	29,575,539	263,313	2,206,415	193,336	32,238,603
2011	43,353,846	590,469	3,353,194	142,633	47,440,142

Table 4-9. Commercial landings (round mt) in the West Coast albacore surface hook-and-line (troll and baitboat) fishery, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	13,493	14		<0.5	<0.5	4	2	37	1	13,551
1982	4,977	4	4	2	1	4	<0.5	3	<0.5	4,995
1983	9,309	16	3	1	<0.5	23	34	14	1	9,401
1984	8,909	13	25	4	<0.5	5	2	1	5	8,964
1985	7,010	2	11	3	<0.5	4	<0.5	2	3	7,035
1986	4,980	2	1	<0.5		20	<0.5	2	1	5,006
1987	2,891	<0.5	5	2		2	1	1	1	2,903
1988	4,629	<0.5	18	2		1	<0.5	2	1	4,653
1989	2,167	1	7	8	<0.5	10	<0.5	2	2	2,197
1990	2,926	<0.5	2	<0.5	<0.5	3	<0.5	1	1	2,933
1991	1,641	<0.5	2	<0.5		<0.5		1	1	1,645
1992	4,756	1	13	2	<0.5	7		1	<0.5	4,780
1993	5,778	18	90	4	9	4		3	3	5,909
1994	10,606	<0.5	1	<0.5	<0.5	1		<0.5	1	10,609
1995	6,407	1	1	<0.5	<0.5	<0.5	<0.5	8	1	6,418
1996	13,207	42	<0.5	<0.5		<0.5		10	1	13,260
1997	10,825	8	1	1	<0.5	5	<0.5	12	2	10,854
1998	12,724	116	4	3	<0.5	2	<0.5	5	2	12,856
1999	8,794	24	15	1	<0.5	1	<0.5	2	4	8,841
2000	8,098	2	22	<0.5	<0.5	1	<0.5	3	1	8,127
2001	10,220	10	<0.5	1	<0.5	3	<0.5	9	6	10,249
2002	9,293	2	2	<0.5	<0.5	<0.5	<0.5	7	4	9,308
2003	13,490	3		<0.5	<0.5	1	<0.5	4	2	13,500
2004	13,393	1		<0.5	<0.5	<0.5	<0.5	4	3	13,401
2005	8,217	<0.5		<0.5		1		3	1	8,222
2006	12,374	1		<0.5	<0.5	<0.5	<0.5	<0.5	1	12,376
2007	11,143	<0.5			<0.5	<0.5	<0.5	1	1	11,145
2008	9,768	6	<0.5		<0.5	<0.5	<0.5	<0.5	3	9,777
2009	11,612	7	<0.5	<0.5	<0.5	<0.5	<0.5	1	2	11,622
2010	10,866	<0.5		<0.5	<0.5	<0.5		3	<0.5	10,869
2011	9,832	<0.5			<0.5	<0.5		1	1	9,834

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Aug. 15, 2012.

Salmon landings may be over reported for Oregon and Washington due to inability to distinguish albacore troll from salmon troll gear.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-10Commercial landings (round mt) in the West Coast albacore surface hook-and-line (troll and baitboat) fishery, with Canadian vessels included, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	13,493	14		<0.5	<0.5	4	2	37	1	13,551
1982	4,988	4	4	2	1	4	<0.5	3	<0.5	5,006
1983	9,341	16	3	1	<0.5	23	34	14	1	9,433
1984	8,912	13	25	4	<0.5	5	2	1	5	8,967
1985	7,010	2	11	3	<0.5	4	<0.5	2	3	7,035
1986	4,980	2	1	<0.5		20	<0.5	2	1	5,006
1987	2,891	<0.5	5	2		2	1	1	1	2,903
1988	4,630	<0.5	18	2		1	<0.5	2	1	4,654
1989	2,167	1	7	8	<0.5	10	<0.5	2	2	2,197
1990	2,926	<0.5	2	<0.5	<0.5	3	<0.5	1	1	2,933
1991	1,641	<0.5	2	<0.5		<0.5		1	1	1,645
1992	4,815	1	13	2	<0.5	7		1	<0.5	4,839
1993	5,800	18	90	4	9	4		3	3	5,930
1994	10,629	<0.5	1	<0.5	<0.5	1		<0.5	1	10,632
1995	6,474	1	1	<0.5	<0.5	<0.5	<0.5	8	1	6,485
1996	14,075	42	<0.5	<0.5		<0.5		10	1	14,128
1997	11,223	8	1	1	<0.5	5	<0.5	12	3	11,253
1998	13,685	116	4	3	<0.5	2	<0.5	5	2	13,817
1999	9,506	24	15	1	<0.5	1	<0.5	2	5	9,554
2000	8,986	2	22	<0.5	<0.5	1	<0.5	3	2	9,016
2001	11,015	10	<0.5	1	<0.5	3	<0.5	9	6	11,044
2002	9,995	2	2	<0.5	<0.5	<0.5	<0.5	7	4	10,010
2003	16,608	3		<0.5	<0.5	1	<0.5	4	2	16,618
2004	14,523	1		<0.5	<0.5	<0.5	<0.5	4	3	14,531
2005	9,028	<0.5		<0.5		1		3	1	9,033
2006	12,772	1		<0.5	<0.5	<0.5	<0.5	<0.5	1	12,774
2007	11,500	<0.5			<0.5	<0.5	<0.5	1	1	11,502
2008	11,128	6	<0.5		<0.5	<0.5	<0.5	<0.5	3	11,137
2009	12,263	7	<0.5	<0.5	<0.5	<0.5	<0.5	1	2	12,273
2010	11,824	<0.5		<0.5	<0.5	<0.5		3	<0.5	11,827
2011	10,934	<0.5			<0.5	<0.5		1	1	10,937

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Aug. 15, 2012.

Salmon landings may be over reported for Oregon and Washington due to inability to distinguish albacore troll from salmon troll gear.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-11. Commercial landings (round mt) in the West Coast drift gillnet fishery, 1981-2011.

		Sharks			Tunas									
Year	Sword-fish	Common Thresher	Shortfin Mako	Blue	Albacore	Yellow-fin	Bigeye	Bluefin	Other	Dorado	Ground-fish	Coastal Pelagics	Other	Total
1981	469	1,438	154	14	1	3	1	<0.5	6		6	10	127	2,229
1982	929	1,711	325	4	6	5	2	1	16	<0.5	5	12	65	3,081
1983	1,651	1,223	201	2	69	17	9	1	32	<0.5	<0.5	17	198	3,420
1984	2,632	981	132	<0.5	140	11	2	4	8	<0.5	5	4	268	4,187
1985	3,010	857	129	<0.5	149	9	2	3	1	<0.5	1	2	247	4,410
1986	2,108	796	250	1	137	8	3	3	4		<0.5	7	123	3,440
1987	1,526	381	208	1	86	3	5	1	5	<0.5	2	9	65	2,292
1988	1,373	426	106	<0.5	54	3	5	2	2	<0.5	<0.5	1	48	2,020
1989	1,239	427	117		13	1	<0.5	3	8	<0.5		1	71	1,880
1990	1,126	266	229	<0.5	11	1	1	9	4	<0.5		8	86	1,741
1991	936	542	125	<0.5	15	1	3	4	6			3	71	1,706
1992	1,350	256	118	1	39	3	1	8	5			1	72	1,854
1993	1,409	243	87	<0.5	170	5	<0.5	28	10	<0.5	<0.5	3	106	2,061
1994	801	292	80	<0.5	53	<0.5	<0.5	24	2	<0.5	4	2	150	1,408
1995	772	229	79	<0.5	33	1	<0.5	18	13	<0.5	2	2	126	1,275
1996	762	294	85	<0.5	68	1	<0.5	39	2		1	6	160	1,418
1997	708	289	119	<0.5	46	3	5	52	2	<0.5	1	4	171	1,400
1998	931	332	88	1	64	1	4	38	4	<0.5	1	2	176	1,642
1999	605	221	52	<0.5	97	<0.5	1	16	1		1	<0.5	122	1,116
2000	650	207	64	<0.5	42	1	2	27	<0.5	<0.5	2	2	107	1,104
2001	371	320	31		54	3	<0.5	13	<0.5	<0.5	2	1	71	866
2002	301	271	69		15	1		3	<0.5		3	1	86	750
2003	217	280	57	<0.5	9	<0.5	6	11	7		1	1	75	664
2004	182	94	38		11	<0.5		10	<0.5		2	1	65	403
2005	220	167	25		8	1		5	<0.5	<0.5	1	<0.5	70	497
2006	443	132	38		3	<0.5		1	3	<0.5	1	2	117	740
2007	490	184	37	9	3	<0.5		2	<0.5		2	<0.5	148	875
2008	405	128	27		1	<0.5		1	<0.5	<0.5	3	4	125	694
2009	253	81	25	1	3	<0.5		3	<0.5		<0.5	<0.5	129	495
2010	61	69	17	<0.5	5			1		<0.5	<0.5	<0.5	88	241
2011	118	64	14		4			17	<0.5		<0.5	1	61	279

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Oct. 18, 2012.
Note: There is no drift gillnet gear for Washington.
Additional processing info:
Only fish tickets where at least 1 lb of swordfish or any HMS shark was landed for the drift gillnet fishery were used.
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-12. Commercial landings (round mt) in the West Coast harpoon fishery, 1981-2011.

Year	Swordfish	HMS Sharks	Tunas		Dorado	Other	Total
			Albacore	Other			
1981	272	10	2	<0.5		4	288
1982	156	2		<0.5		1	159
1983	58	1				44	103
1984	105	7	<0.5	<0.5		1	113
1985	275	1	<0.5	<0.5		1	277
1986	296	1	<0.5	<0.5		1	298
1987	237	3	1	1		40	282
1988	199	3	1			<0.5	203
1989	62	1	<0.5	<0.5		<0.5	63
1990	65	3		<0.5		<0.5	68
1991	20	1				<0.5	21
1992	75	3	<0.5	<0.5		1	79
1993	169	1	1			1	172
1994	157	1	<0.5			<0.5	158
1995	97	2				<0.5	99
1996	81	1	<0.5			1	83
1997	84	3	<0.5		<0.5	<0.5	87
1998	48	1				<0.5	49
1999	81	<0.5				2	83
2000	90	<0.5	<0.5			5	95
2001	52	1			<0.5	1	54
2002	90	1				1	92
2003	107	<0.5				<0.5	107
2004	69	1				<0.5	70
2005	76	1				1	78
2006	72	3				<0.5	75
2007	59	<0.5					59
2008	48	1					49
2009	50	1				<0.5	51
2010	37	1				<0.5	38
2011	24	1		1		<0.5	26

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Aug. 13, 2012.
Note 1: Only California has harpoon landings.
Note 2: Some of the non-swordfish species may have been taken by dual-gear permit holders, who may have fished with drift gillnets but landed under harpoon.
Additional processing info:
Landings in lbs are converted to round weight in mt by multiplying the landed weights

Table 4-13. Commercial landings (round mt) in the West Coast longline fishery, 1981-2011.

		Sharks			Tunas									
Year	Sword-fish	Common Thresher	Shortfin Mako	Blue	Albacore	Yellow-fin	Bigeye	Bluefin	Other	Dorado	Ground-fish	Coastal Pelagics	Other	Total
1981	<0.5		19	72	25	1					2	<0.5	1	120
1982	<0.5	1	6	18	42		1			<0.5	<0.5	<0.5	2	70
1983	<0.5	<0.5	1	2	6	2	1		<0.5	<0.5	<0.5	<0.5	7	19
1984	12	3	2		2	<0.5	<0.5	1	<0.5	3	2	<0.5	5	30
1985	<0.5	1	<0.5	<0.5	<0.5						10		1	12
1986		2	1	<0.5							6	<0.5	4	13
1987		<0.5	3	<0.5	<0.5						40		3	46
1988	<0.5	1	152	1				<0.5			25	<0.5	6	185
1989			5	1							<0.5			5
1990		<0.5	15	4	<0.5				1		<0.5	<0.5	<0.5	20
1991	27	<0.5	23	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	3		23	78
1992	63	2	2	<0.5	1			<0.5	<0.5		21	<0.5	2	91
1993	27	<0.5	1	<0.5	<0.5	2	3	<0.5		1	1	1	2	38
1994	722	19	20	12	49	4	40	6	5	32	4		19	932
1995	271	11	7	5	4	5	48	4		5	8	2	6	376
1996	346	2	5	<0.5	3	4	59	3	2	9	6	<0.5	5	444
1997	663	4	3	<0.5	6	2	77	2	2	1	32	<0.5	4	796
1998	418	3	4	<0.5	9	2	48	38	9	1	9	1	24	566
1999	1,325	5	7		66	4	103	44	11	17	1		3	1,586
2000	1,873	5	7	<0.5	23	<0.5	83	16		41	12		10	2,070
2001	1,749	20	7	2	22	16	52	5	<0.5	15	7	<0.5	55	1,950
2002	1,331	2	3	41	1	2	10	1		<0.5	12	<0.5	1	1,404
2003	1,810	<0.5	3		2	<0.5	29	<0.5	<0.5	1	4		4	1,853
2004	898	1	2		2	<0.5	22		9	1	13	<0.5	3	951
2005	**	**	**		**	**	**		**	**	**		**	**
2006	**	**	**		**	**	**	**	**	**	**	**	**	**
2007	**	**	**		**	**	**	**	**	**	**	**	**	**
2008	**	**	**		**	**	**		**	**	**		**	**
2009	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2010	**	**	**		**	**	**		**	**	**		**	**
2011	476	1	2		41	3	46		1	3	3	<0.5	35	611

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Oct. 24, 2012.

Additional processing info:

Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the longline fishery were used.

Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-14. Commercial landings (round mt) in the West Coast purse seine fishery, 1981-2011.

	Tunas						Sword-	HMS		Ground-	Coastal		
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified	fish	sharks	Dorado	fish	Pelagics	Other	Total
1981	181	75,063	54,338	1,156	854	28					203	2	131,825
1982	367	60,665	39,905	962	2,400	27					29		104,355
1983	11	52,217	42,191		754	12	1	<0.5			25	1	95,212
1984	3,552	33,326	29,941	117	624	1,011	23	1			268	2	68,865
1985	22	14,609	2,504	1	3,240	467	1	<0.5			308	<0.5	21,152
1986	54	21,018	977	8	4,698	136	41	2			65	1	27,000
1987	43	21,527	5,353	42	820	122		3			13	8	27,931
1988	151	18,470	7,391	<0.5	795	7					63		26,878
1989	24	16,118	3,565		1,007	70	1	<0.5	<0.5		29	<0.5	20,814
1990	71	8,354	2,244		876	39					137		11,721
1991		3,497	2,957		100	8					94	3	6,659
1992	8	1,721	1,159	1	1,064	3	10	2	1	<0.5	323	7	4,299
1993	1	951	1,619	2	497	<0.5	17	1	<0.5	<0.5	91	11	3,190
1994		3,566	1,283		880	8					66	123	5,926
1995		2,795	5,616		689						38	39	9,177
1996	11	2,683	5,049		4,639						244	53	12,679
1997	2	4,659	5,926		2,189	7	1	1	1		33	73	12,892
1998	136	3,753	5,310		1,739						256	159	11,353
1999	48	1,297	3,742		99						56	89	5,331
2000	4	1,152	775		255						218	<0.5	2,404
2001	51	631	55		149						42		928
2002	<0.5	541	236				1					<0.5	778
2003	44	463	337		19								862
2004	1	484	306										791
2005		283	522		201						19		1,026
2006		*	*										*
2007	77	99	5		42						140		364
2008	*	*	*								*		*
2009	39	15	4		410						474		943
2010	*												*
2011	41				99								140

* Not reported due to data confidentiality requirements (fewer than three vessels).
Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Oct. 24, 2012.
Note: There is no purse seine gear for Washington.
Additional processing info:
Only fish tickets where at least 1 lb of any HMS tuna was landed for the purse seine fishery were used.
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-15. Nominal commercial ex-vessel revenues ($) for the West Coast albacore surface hook-and-line (troll and baitboat) fishery, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	26,087,739	17,982		173	72	2,508	991	133,177	1,406	26,244,048
1982	7,349,782	5,500	13,219	2,771	557	5,676	13	13,834	535	7,391,887
1983	11,879,532	14,586	7,531	978	33	20,309	15,495	36,075	4,499	11,979,038
1984	12,146,877	20,053	96,217	5,816	706	6,947	928	6,422	4,542	12,288,508
1985	7,994,910	4,278	30,921	5,827	6	6,384	239	10,802	3,501	8,056,868
1986	5,867,829	7,248	6,427	180		19,050	160	9,451	659	5,911,004
1987	4,690,640	1,150	33,310	3,440		2,305	657	6,838	436	4,738,776
1988	8,547,233	952	96,331	2,924		766	614	11,362	1,180	8,661,362
1989	3,692,159	1,833	34,556	10,983	31	18,112	1	8,305	2,816	3,768,796
1990	5,414,995	79	13,332	560	74	6,163	85	2,792	1,529	5,439,609
1991	2,760,714	71	11,721	483		189		3,479	1,203	2,777,860
1992	11,078,583	2,195	55,452	2,361	281	6,144		6,120	670	11,151,806
1993	10,882,080	154,056	442,687	7,496	23,216	4,992		10,385	2,302	11,527,214
1994	19,936,113	603	6,797	302	180	590		537	345	19,945,467
1995	11,359,888	914	3,204	173	21	152	16	22,290	3,028	11,389,686
1996	25,487,600	38,596	2,608	295		440		26,524	998	25,557,061
1997	19,093,866	14,949	4,390	1,628	371	11,951	89	37,637	3,725	19,168,606
1998	17,503,716	138,138	17,122	5,018	525	4,788	279	16,340	5,264	17,691,190
1999	16,139,022	115,448	77,899	2,312	1,413	4,347	455	9,742	8,019	16,358,657
2000	15,344,331	4,497	97,814	223	298	1,889	522	9,445	5,233	15,464,252
2001	18,743,953	27,752	2,037	2,210	544	7,801	178	33,018	12,398	18,829,891
2002	13,168,361	6,838	9,996	664	170	904	1,241	21,797	7,789	13,217,760
2003	19,626,793	11,045		62	567	2,764	558	14,013	5,709	19,661,511
2004	24,324,409	2,513		520	655	1,834	1,241	22,741	3,332	24,357,245
2005	18,507,118	1,437		181		1,587		12,332	3,318	18,525,973
2006	22,832,059	1,575		252	167	985	124	3,480	991	22,839,633
2007	20,669,326	1,222			223	1,942	82	3,958	1,420	20,678,173
2008	24,847,705	49,130	1,200		479	1,308	3,193	5,091	6,629	24,914,735
2009	25,916,055	11,639	291	658	248	484	92	3,446	2,048	25,934,961
2010	26,398,098	531		52	531	270		34,462	534	26,434,478
2011	37,451,630	1,784			489	2,456		6,296	2,164	37,464,819

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Sep. 4, 2012.

Salmon revenues may be over reported for Oregon and Washington due to inability to distinguish albacore troll from salmon troll gea

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were us

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-16. Nominal commercial ex-vessel revenues ($) for the West Coast albacore surface hook-and-line (troll and baitboat) fishery, with Canadian vessels included, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	26,087,739	17,982		173	72	2,508	991	133,177	1,406	26,244,048
1982	7,364,640	5,500	13,219	2,771	557	5,676	13	13,834	535	7,406,745
1983	11,917,582	14,586	7,531	978	33	20,309	15,495	36,075	4,499	12,017,087
1984	12,150,161	20,053	96,217	5,816	706	6,947	928	6,422	4,542	12,291,792
1985	7,994,910	4,278	30,921	5,827	6	6,384	239	10,802	3,501	8,056,868
1986	5,867,829	7,248	6,427	180		19,050	160	9,451	659	5,911,004
1987	4,690,640	1,150	33,310	3,440		2,305	657	6,838	436	4,738,776
1988	8,550,083	952	96,331	2,924		766	614	11,362	1,180	8,664,212
1989	3,692,159	1,833	34,556	10,983	31	18,112	1	8,305	2,816	3,768,796
1990	5,414,995	79	13,332	560	74	6,163	85	2,792	1,529	5,439,609
1991	2,760,714	71	11,721	483		189		3,479	1,203	2,777,860
1992	11,218,614	2,195	55,452	2,361	281	6,144		6,120	670	11,291,837
1993	10,923,548	154,056	442,687	7,496	23,216	4,992		10,385	2,302	11,568,682
1994	19,977,732	603	6,797	302	180	590		537	345	19,987,086
1995	11,481,279	914	3,204	173	21	152	16	22,290	3,029	11,511,078
1996	27,080,019	38,596	2,608	295		440		26,524	998	27,149,479
1997	19,811,178	15,026	4,390	1,628	484	11,951	89	37,637	3,725	19,886,108
1998	18,604,129	138,138	17,122	5,018	525	4,788	279	16,340	5,264	18,791,602
1999	17,402,696	115,448	77,899	2,312	1,413	4,347	455	9,742	8,019	17,622,331
2000	17,040,770	4,497	97,814	223	298	1,889	522	9,445	5,233	17,160,691
2001	20,406,546	27,752	2,037	2,210	544	7,801	178	33,018	12,398	20,492,484
2002	14,210,280	6,838	9,996	664	170	904	1,241	21,797	7,789	14,259,679
2003	24,385,886	11,045		62	567	2,764	558	14,013	5,709	24,420,603
2004	27,375,701	2,513		520	655	1,834	1,241	22,741	3,332	27,408,537
2005	20,762,541	1,437		181		1,587		12,332	3,318	20,781,396
2006	23,731,153	1,575		252	167	985	124	3,480	991	23,738,727
2007	21,494,041	1,222			223	1,942	82	3,958	1,421	21,502,889
2008	28,847,990	49,130	1,200		479	1,308	3,193	5,091	6,630	28,915,021
2009	27,528,792	11,639	291	658	248	484	92	3,446	2,049	27,547,699
2010	29,496,458	531		52	531	270		34,462	535	29,532,839
2011	43,013,435	1,784			489	2,456		6,296	2,164	43,026,624

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Sep. 4, 2012.

Salmon revenues may be over reported for Oregon and Washington due to inability to distinguish albacore troll from salmon troll gea

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were us

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-17. Nominal commercial ex-vessel revenues ($) for the West Coast drift gillnet fishery, 1981-2011.

		Sharks			Tunas									
Year	Sword-fish	Common Thresher	Shortfin Mako	Blue	Albacore	Yellow-fin	Bigeye	Bluefin	Other	Dorado	Ground-fish	Coastal Pelagics	Other	Total
1981	1,935,740	1,397,440	135,780	7,866	1,632	6,013	1,504	838	10,544		6,569	6,074	214,718	3,724,718
1982	4,150,231	1,833,663	312,560	2,736	9,730	8,867	3,450	1,075	26,990	15	5,820	7,690	66,163	6,428,990
1983	6,261,486	1,354,821	210,367	1,805	97,448	32,805	18,383	2,883	44,343	83	714	15,854	182,668	8,223,660
1984	10,410,348	1,321,903	156,302	162	175,217	22,891	5,279	7,222	5,471	14	8,410	4,145	208,824	12,326,188
1985	11,607,897	1,322,133	161,122	17	138,260	17,150	4,074	4,397	1,674	82	1,118	1,824	223,588	13,483,336
1986	10,319,454	1,308,565	339,508	729	157,749	17,580	7,537	6,477	7,306		311	7,602	125,942	12,298,760
1987	9,208,592	737,666	358,961	624	142,542	7,451	13,730	3,357	15,704	357	4,792	6,444	86,126	10,586,346
1988	7,856,080	826,179	194,512	259	104,227	8,534	21,077	9,668	8,577	183	444	637	81,166	9,111,543
1989	7,421,923	803,558	231,074		26,967	2,708	861	6,120	15,256	14		1,331	100,280	8,610,092
1990	6,332,028	490,791	426,465	61	22,933	3,223	3,829	26,561	9,978	98		1,901	137,982	7,455,850
1991	5,743,814	895,223	228,320	55	29,978	4,540	12,897	15,768	11,733			1,721	88,077	7,032,126
1992	6,379,684	405,080	186,356	284	88,903	13,177	2,707	22,687	10,290			622	96,496	7,206,286
1993	6,847,488	400,698	156,082	51	273,240	23,373	510	102,556	29,420	174	1,019	3,554	119,914	7,958,079
1994	4,786,469	533,434	152,761	7	92,466	1,004	2,332	124,353	9,695	40	5,498	854	191,637	5,900,550
1995	4,603,642	398,639	138,274	105	53,287	2,781	2,794	75,886	10,479	13	1,655	1,698	171,046	5,460,299
1996	4,074,303	549,161	147,616	86	113,980	2,393	1,246	120,956	2,966		1,084	2,791	236,382	5,252,964
1997	3,332,497	520,647	200,740	36	73,282	11,445	25,983	233,377	2,233	514	2,268	3,666	233,224	4,639,912
1998	4,078,263	564,305	150,781	4,842	79,885	3,913	19,454	188,727	7,335	2,457	1,481	1,835	242,838	5,346,116
1999	2,829,832	407,576	91,295	23	106,119	909	9,899	74,525	1,674		1,304	278	217,131	3,740,565
2000	2,814,819	405,074	106,299	169	68,945	943	17,921	107,264	732	545	1,298	2,348	176,053	3,702,410
2001	1,645,877	519,998	49,066		88,962	4,040	673	33,657	516	336	1,273	399	129,186	2,473,983
2002	1,515,987	451,543	101,276		20,343	1,517		10,451	88		2,429	1,005	235,432	2,340,071
2003	1,120,260	445,617	93,556	11	15,945	517	36,417	35,691	3,862		825	604	175,378	1,928,683
2004	944,192	157,739	67,289		25,354	697		37,186	146		2,024	386	175,365	1,410,378
2005	1,184,545	248,291	41,695		17,819	4,188		16,488	105	90	1,182	9	243,766	1,758,178
2006	1,996,530	248,444	62,904		4,079	1,755		2,959	2,970	87	1,346	2,221	325,478	2,648,773
2007	2,528,886	294,164	60,640	1,174	7,465	102		11,636	79		2,349	349	445,704	3,352,548
2008	1,708,969	237,491	49,255		1,705	813		2,515	102	52	3,129	3,108	420,995	2,428,134
2009	1,083,669	142,810	42,164	2,309	8,434	137		8,740	29		241	316	305,396	1,594,245
2010	400,541	102,189	27,345	72	14,001			5,248		200	115	116	316,696	866,523
2011	771,874	82,672	27,280		14,717			77,110	5		107	1,149	224,155	1,199,069

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Oct. 22, 2012.
Note: There is no drift gillnet gear for Washington.
Additional processing info:
Only fish tickets where at least 1 lb of swordfish or any HMS shark was landed for the drift gillnet fishery were used.
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-18. Nominal commercial ex-vessel revenues ($) for the West Coast harpoon fishery, 1981-2011.

Year	Swordfish	HMS Sharks	Tunas		Dorado	Other	Total
			Albacore	Other			
1981	1,371,646	10,204	3,952	385		12,029	1,398,216
1982	839,886	1,988		146		1,233	843,253
1983	318,044	1,962				9,752	329,758
1984	583,079	8,473	330	150		2,026	594,058
1985	1,280,993	1,721	225	247		1,751	1,284,937
1986	1,796,277	2,281	53	337		1,355	1,800,303
1987	1,647,710	5,018	4,150	2,076		84,603	1,743,557
1988	1,477,860	6,429	8,552			882	1,493,723
1989	500,435	1,527	2,106	65		1,256	505,389
1990	539,322	5,869		108		811	546,110
1991	179,949	2,025				70	182,044
1992	586,740	6,126	1,236	133		1,336	595,571
1993	1,132,762	1,890	7,730			1,000	1,143,382
1994	1,273,087	1,613	2,490			2,888	1,280,078
1995	760,108	4,078				1,752	765,938
1996	633,027	3,217	216			652	637,112
1997	683,211	5,567	200		90	675	689,743
1998	402,914	1,475				894	405,283
1999	608,982	811				5,851	615,644
2000	750,533	798	302			8,381	760,014
2001	468,289	1,152			50	2,748	472,239
2002	678,934	1,259				1,141	681,334
2003	839,197	562				1,768	841,527
2004	670,001	2,457				1,643	674,101
2005	709,760	1,229				1,921	712,910
2006	680,036	5,013				709	685,758
2007	597,707	1,305					599,012
2008	458,482	1,436					459,918
2009	466,645	1,846				589	469,080
2010	366,666	1,419				349	368,434
2011	252,305	1,146		1,577		53	255,081

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Aug. 13, 2012.
Note 1: Only California has revenues from harpoon landings.
Note 2: Some of the non-swordfish species may have been taken by dual-gear permit holders, who may have fished with drift gillnets but landed under harpoon.
Additional processing info:
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-19. Nominal commercial ex-vessel revenues ($) for the West Coast longline fishery, 1981-2011.

		Sharks			Tunas									
Year	Sword-fish	Common Thresher	Shortfin Mako	Blue	Albacore	Yellow-fin	Bigeye	Bluefin	Other	Dorado	Ground-fish	Coastal Pelagics	Other	Total
1981	1,544		16,874	47,633	48,207	1,270					2,579	114	1,155	119,376
1982	306	1,422	5,442	12,083	73,415		1,957			314	24	21	231	95,215
1983	506	44	878	435	11,969	4,580	2,038		1,239	13	204	35	2,882	24,823
1984	62,804	3,979	3,325		2,831	1,533	1,872	3,625	537	2,693	1,855	3	5,586	90,643
1985	752	1,923	25	88	740						8,727		163	12,418
1986		3,843	1,634	104							5,549	33	10,317	21,480
1987		286	6,950	396	164						72,173		5,921	85,890
1988	1,601	2,322	321,911	542				395			44,957	25	5,539	377,292
1989			11,692	445							30			12,167
1990		534	31,154	2,330	45				4,018		194	5	196	38,476
1991	146,305	199	44,731	355	528	345	12,198	1,679	2,504	36	4,576		76,649	290,105
1992	298,852	3,302	3,348	184	1,790			5,191	13		29,917	2	3,125	345,724
1993	153,383	63	1,350	20	545	10,047	22,551	4,482		1,937	4,110	951	2,993	202,432
1994	3,401,896	14,328	31,969	15,812	81,097	23,125	243,157	54,001	19,126	57,737	11,820		22,154	3,976,222
1995	1,064,427	17,409	6,685	2,318	5,351	25,720	255,427	30,058		5,365	17,114	7,223	7,584	1,444,681
1996	1,319,868	4,255	6,349	44	3,702	12,414	247,126	25,364	25,850	9,077	12,759	88	5,709	1,672,605
1997	2,115,438	8,211	3,992	6	10,507	9,848	332,874	10,264	14,018	2,707	110,693	140	10,149	2,628,847
1998	1,454,529	5,286	9,372	116	21,315	5,870	247,283	233,639	53,410	3,995	24,087	1,010	62,470	2,122,382
1999	4,893,372	7,067	11,204		133,630	17,355	603,992	510,766	56,655	44,608	2,317		6,667	6,287,633
2000	8,028,596	8,318	9,751	73	38,081	551	550,115	125,444		53,566	52,192		14,386	8,881,073
2001	6,527,196	20,572	9,680	970	39,876	39,410	318,716	32,897	1,125	17,425	12,533	997	77,375	7,098,772
2002	4,190,669	3,024	5,068	18,250	1,882	9,169	87,304	4,694		555	43,730	24	9,072	4,373,441
2003	5,879,612	621	5,415		3,685	290	225,967	822	4	1,556	12,944		10,294	6,141,210
2004	3,160,052	2,263	4,816		4,363	1,226	147,696		53,958	3,224	53,520	360	7,143	3,438,621
2005	**	**	**		**	**	**		**	**	**		**	**
2006	**	**	**		**	**	**	**	**	**	**	**	**	**
2007	**	**	**		**	**	**	**	**	**	**	**	**	**
2008	**	**	**		**	**	**		**	**	**		**	**
2009	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2010	**	**	**		**	**	**		**	**	**		**	**
2011	2,325,826	1,127	4,151		133,926	13,269	326,510		982	10,371	20,791	36	97,880	2,934,869

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Oct. 24, 2012.

Additional processing info:

Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the longline fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-20. Nominal commercial ex-vessel revenues ($) for the West Coast purse seine fishery, 1981-2011.

	Tunas						Sword-	HMS		Ground-	Coastal		
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified	fish	Sharks	Dorado	fish	Pelagics	Other	Total
1981	362,636	97,391,144	62,318,736	1,552,545	1,219,984	54,643					119,029	1,456	163,020,173
1982	575,736	73,205,578	38,822,258	1,196,824	2,680,401	54,040					5,155		116,539,991
1983	15,349	55,980,011	34,377,044		1,042,089	24,989	1,796	261			6,638	587	91,448,764
1984	4,822,262	35,503,573	23,741,980	143,266	878,031	2,580,939	87,097	651			60,118	6,054	67,823,971
1985	28,953	14,191,940	1,713,118	810	2,797,571	1,026,024	7,080	460			50,191	956	19,817,103
1986	64,622	17,655,730	643,905	13,335	4,575,913	182,575	182,606	1,979			8,204	3,068	23,331,937
1987	69,499	26,028,704	4,116,606	150,602	2,049,722	427,505		900			2,005	8,980	32,854,523
1988	266,685	25,754,782	7,772,435	680	2,037,504	67,724					25,342		35,925,150
1989	45,978	19,139,726	3,113,729		1,231,363	112,194	6,955	270	128		6,300	138	23,656,781
1990	139,859	9,225,983	1,889,065		1,069,829	32,343					43,459		12,400,537
1991		3,399,732	2,298,693		98,226	7,985					36,458	3,315	5,844,409
1992	19,291	1,686,917	551,315	2,927	1,087,353	2,936	51,873	3,524	2,597	220	62,091	11,397	3,482,441
1993	1,202	1,051,265	1,047,039	4,229	569,367	880	98,722	1,599	175	14	16,833	10,658	2,801,983
1994		3,135,039	1,078,217		1,463,167	3,393					36,342	125,354	5,841,512
1995		2,811,700	3,801,888		943,602						15,670	20,463	7,593,323
1996	875	2,669,391	3,643,203		3,865,969						69,959	25,249	10,274,646
1997	3,654	4,795,089	5,326,959		2,504,396	4,195	6,666	1,909	1,425		17,321	51,754	12,713,368
1998	162,925	3,808,379	4,717,085		2,294,031						165,275	109,262	11,256,957
1999	33,416	1,397,578	2,732,409		360,132						5,340	59,908	4,588,783
2000	6,615	1,306,040	475,592		296,687						24,484	1	2,109,419
2001	62,841	411,133	28,595		336,831						5,092		844,492
2002	358	577,814	128,094				2,623					45	708,934
2003	16,153	442,370	152,188		14,874								625,584
2004	1,537	435,085	108,853										545,475
2005		304,037	291,183		119,162						1,708		716,090
2006		*	*										*
2007	119,394	119,395	3,958		45,267						55,587		343,600
2008	*	*	*								*		*
2009	41,701	14,185	3,655		426,987						334,695		821,222
2010	*												*
2011	130,874				161,621								292,495

* Not reported due to data confidentiality requirements (fewer than three vessels).

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Oct. 24, 2012.

Note: There is no purse seine gear for Washington.

Additional processing info:

Only fish tickets where at least 1 lb of any HMS tuna was landed for the purse seine fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-21. Real commercial ex-vessel revenues (2011 $) for the West Coast albacore surface hook-and-line (troll and baitboat) fishery, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	56,577,182	38,998		375	155	5,438	2,150	288,824	3,053	56,916,175
1982	15,024,084	11,242	27,022	5,663	1,139	11,603	26	28,279	1,095	15,110,153
1983	23,357,319	28,678	14,806	1,924	65	39,931	30,466	70,930	8,845	23,552,964
1984	23,018,527	38,001	182,334	11,022	1,339	13,164	1,758	12,171	8,605	23,286,921
1985	14,707,340	7,869	56,882	10,719	12	11,744	440	19,872	6,439	14,821,317
1986	10,559,346	13,042	11,565	324		34,282	289	17,008	1,186	10,637,042
1987	8,203,287	2,010	58,254	6,016		4,031	1,149	11,958	767	8,287,472
1988	14,452,541	1,609	162,886	4,944		1,296	1,037	19,213	1,996	14,645,522
1989	6,015,248	2,987	56,299	17,893	50	29,507	2	13,530	4,588	6,140,104
1990	8,494,109	124	20,913	878	116	9,667	134	4,379	2,400	8,532,720
1991	4,182,266	107	17,757	732		287		5,271	1,821	4,208,241
1992	16,395,713	3,249	82,066	3,494	416	9,093		9,058	990	16,504,079
1993	15,757,428	223,076	641,018	10,854	33,617	7,228		15,038	3,334	16,691,593
1994	28,270,155	855	9,639	428	255	837		762	488	28,283,419
1995	15,779,813	1,270	4,451	240	29	211	22	30,963	4,207	15,821,206
1996	34,743,185	52,612	3,554	402		599		36,156	1,361	34,837,869
1997	25,577,851	20,026	5,881	2,180	497	16,009	120	50,418	4,991	25,677,973
1998	23,183,730	182,964	22,678	6,647	695	6,342	370	21,642	6,971	23,432,039
1999	21,066,469	150,696	101,682	3,018	1,845	5,674	593	12,717	10,468	21,353,162
2000	19,604,358	5,745	124,970	285	381	2,414	667	12,067	6,685	19,757,572
2001	23,421,158	34,677	2,545	2,762	679	9,748	222	41,257	15,492	23,528,540
2002	16,191,271	8,408	12,291	816	208	1,111	1,526	26,801	9,578	16,252,010
2003	23,635,348	13,301		75	683	3,329	672	16,876	6,872	23,677,156
2004	28,489,586	2,944		609	767	2,148	1,454	26,635	3,902	28,528,045
2005	20,980,748	1,629		205		1,799		13,980	3,763	21,002,124
2006	25,073,643	1,730		277	183	1,081	136	3,822	1,089	25,081,961
2007	22,056,692	1,304			238	2,072	88	4,224	1,515	22,066,133
2008	25,942,478	51,295	1,253		500	1,365	3,334	5,316	6,920	26,012,461
2009	26,772,784	12,023	300	680	256	500	95	3,559	2,119	26,792,316
2010	26,961,595	543		53	542	276		35,197	546	26,998,752
2011	37,451,630	1,784			489	2,456		6,296	2,164	37,464,819

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Sep. 4, 2012.

Salmon revenues may be over reported for Oregon and Washington due to inability to distinguish albacore troll from salmon troll gear.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-22. Real commercial ex-vessel revenues (2011 $) for the West Coast albacore surface hook-and-line (troll and baitboat) fishery, with Canadian vessels included, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	56,577,182	38,998		375	155	5,438	2,150	288,824	3,053	56,916,175
1982	15,054,456	11,242	27,022	5,663	1,139	11,603	26	28,279	1,095	15,140,525
1983	23,432,131	28,678	14,806	1,924	65	39,931	30,466	70,930	8,846	23,627,777
1984	23,024,751	38,001	182,334	11,022	1,339	13,164	1,758	12,171	8,605	23,293,144
1985	14,707,340	7,869	56,882	10,719	12	11,744	440	19,872	6,439	14,821,317
1986	10,559,346	13,042	11,565	324		34,282	289	17,008	1,186	10,637,042
1987	8,203,287	2,010	58,254	6,016		4,031	1,149	11,958	767	8,287,472
1988	14,457,360	1,609	162,886	4,944		1,296	1,037	19,213	1,996	14,650,341
1989	6,015,248	2,987	56,299	17,893	50	29,507	2	13,530	4,588	6,140,104
1990	8,494,109	124	20,913	878	116	9,667	134	4,379	2,400	8,532,720
1991	4,182,266	107	17,757	732		287		5,271	1,821	4,208,241
1992	16,602,951	3,249	82,066	3,494	416	9,093		9,058	990	16,711,317
1993	15,817,475	223,076	641,018	10,854	33,617	7,228		15,038	3,334	16,751,639
1994	28,329,172	855	9,639	428	255	837		762	489	28,342,437
1995	15,948,436	1,270	4,451	240	29	211	22	30,963	4,207	15,989,829
1996	36,913,875	52,612	3,554	402		599		36,156	1,361	37,008,559
1997	26,538,752	20,129	5,881	2,180	648	16,009	120	50,418	4,991	26,639,126
1998	24,641,230	182,964	22,678	6,647	695	6,342	370	21,642	6,971	24,889,539
1999	22,715,959	150,696	101,682	3,018	1,845	5,674	593	12,717	10,468	23,002,652
2000	21,771,778	5,745	124,970	285	381	2,414	667	12,067	6,685	21,924,992
2001	25,498,620	34,677	2,545	2,762	679	9,748	222	41,257	15,493	25,606,003
2002	17,472,371	8,408	12,291	816	208	1,111	1,526	26,801	9,578	17,533,110
2003	29,366,433	13,301		75	683	3,329	672	16,876	6,872	29,408,241
2004	32,063,365	2,944		609	767	2,148	1,454	26,635	3,902	32,101,824
2005	23,537,627	1,629		205		1,799		13,980	3,763	23,559,002
2006	26,061,007	1,730		277	183	1,081	136	3,822	1,089	26,069,325
2007	22,936,764	1,304			238	2,072	88	4,224	1,515	22,946,205
2008	30,119,013	51,295	1,253		500	1,365	3,334	5,316	6,920	30,188,996
2009	28,438,835	12,023	300	680	256	500	95	3,559	2,119	28,458,367
2010	30,126,094	543		53	542	276		35,197	546	30,163,251
2011	43,013,435	1,784			489	2,456		6,296	2,164	43,026,624

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Sep. 4, 2012.

Salmon revenues may be over reported for Oregon and Washington due to inability to distinguish albacore troll from salmon troll gear.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-23. Real commercial ex-vessel revenues (2011 $) for the West Coast drift gillnet fishery, 1981-2011.

		Sharks			Tunas									
Year	Sword-fish	Common Thresher	Shortfin Mako	Blue	Albacore	Yellow-fin	Bigeye	Bluefin	Other	Dorado	Ground-fish	Coastal Pelagics	Other	Total
1981	4,198,092	3,030,665	294,471	17,060	3,540	13,040	3,262	1,817	22,868		14,247	13,173	465,662	8,077,897
1982	8,483,711	3,748,290	638,921	5,592	19,890	18,126	7,052	2,198	55,171	30	11,897	15,720	135,246	13,141,844
1983	12,311,218	2,663,824	413,620	3,549	191,601	64,500	36,144	5,669	87,186	162	1,403	31,173	359,161	16,169,210
1984	19,727,778	2,505,027	296,196	306	332,039	43,378	10,004	13,686	10,368	26	15,938	7,855	395,723	23,358,324
1985	21,353,748	2,432,180	296,398	31	254,342	31,548	7,495	8,089	3,079	151	2,057	3,356	411,309	24,803,783
1986	18,570,190	2,354,804	610,956	1,312	283,874	31,635	13,563	11,655	13,147		560	13,681	226,637	22,132,014
1987	16,104,569	1,290,077	627,774	1,091	249,287	13,031	24,013	5,870	27,465	624	8,381	11,269	150,620	18,514,071
1988	13,283,869	1,396,988	328,901	438	176,237	14,430	35,639	16,348	14,502	309	751	1,077	137,246	15,406,735
1989	12,091,762	1,309,153	376,464		43,935	4,411	1,403	9,971	24,855	23		2,169	163,375	14,027,521
1990	9,932,593	769,869	668,965	96	35,974	5,056	6,006	41,664	15,651	154		2,982	216,441	11,695,451
1991	8,701,429	1,356,194	345,887	83	45,414	6,878	19,537	23,887	17,774			2,607	133,433	10,653,123
1992	9,441,593	599,497	275,797	420	131,571	19,502	4,006	33,575	15,228			920	142,811	10,664,920
1993	9,915,273	580,218	226,009	73	395,657	33,844	738	148,503	42,601	251	1,475	5,146	173,639	11,523,427
1994	6,787,393	756,429	216,620	9	131,120	1,424	3,307	176,337	13,748	56	7,796	1,211	271,750	8,367,200
1995	6,394,835	553,742	192,074	146	74,020	3,863	3,881	105,413	14,557	18	2,299	2,359	237,595	7,584,802
1996	5,553,848	748,583	201,221	117	155,370	3,262	1,698	164,879	4,043		1,478	3,805	322,225	7,160,529
1997	4,464,163	697,451	268,909	48	98,167	15,332	34,807	312,628	2,992	688	3,038	4,911	312,421	6,215,555
1998	5,401,673	747,424	199,710	6,413	105,808	5,183	25,767	249,970	9,715	3,254	1,961	2,431	321,639	7,080,948
1999	3,693,815	532,015	119,168	29	138,518	1,186	12,922	97,279	2,185		1,702	363	283,424	4,882,606
2000	3,596,294	517,534	135,810	216	88,087	1,204	22,897	137,043	935	696	1,658	3,000	224,932	4,730,306
2001	2,056,576	649,753	61,310		111,160	5,048	841	42,056	644	420	1,591	498	161,423	3,091,320
2002	1,863,995	555,198	124,525		25,013	1,865		12,850	108		2,986	1,235	289,480	2,877,255
2003	1,349,060	536,629	112,664	13	19,202	623	43,855	42,981	4,650		994	727	211,197	2,322,595
2004	1,105,870	184,750	78,811		29,696	816		43,553	171		2,370	452	205,395	1,651,884
2005	1,342,870	281,477	47,268		20,201	4,747		18,691	118	102	1,340	10	276,349	1,993,173
2006	2,192,543	272,835	69,080		4,479	1,927		3,249	3,261	96	1,478	2,439	357,434	2,908,821
2007	2,698,630	313,909	64,710	1,253	7,966	109		12,417	84		2,506	372	475,621	3,577,577
2008	1,784,265	247,955	51,425		1,780	849		2,625	107	54	3,267	3,245	439,544	2,535,116
2009	1,119,492	147,531	43,558	2,385	8,713	141		9,029	29		249	326	315,494	1,646,947
2010	409,091	104,370	27,929	73	14,300			5,360		204	118	118	323,457	885,020
2011	771,874	82,672	27,280		14,717			77,110	5		107	1,149	224,155	1,199,069

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Oct. 22, 2012.
Note: There is no drift gillnet gear for Washington.
Additional processing info:
Only fish tickets where at least 1 lb of swordfish or any HMS shark was landed for the drift gillnet fishery were used.
Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-24. Real commercial ex-vessel revenues (2011 $) for the West Coast harpoon fishery, 1981-2011.

Year	Swordfish	HMS Sharks	Tunas		Dorado	Other	Total
			Albacore	Other			
1981	2,974,725	22,131	8,571	836		26,085	3,032,348
1982	1,716,856	4,063		299		2,521	1,723,739
1983	625,332	3,857				19,175	648,364
1984	1,104,944	16,056	625	284		3,840	1,125,749
1985	2,356,499	3,167	415	454		3,219	2,363,754
1986	3,232,458	4,104	95	606		2,440	3,239,703
1987	2,881,619	8,776	7,258	3,630		147,961	3,049,244
1988	2,498,918	10,871	14,460			1,491	2,525,740
1989	815,307	2,488	3,431	106		2,045	823,377
1990	845,995	9,206		169		1,273	856,643
1991	272,609	3,068				106	275,783
1992	868,344	9,067	1,830	197		1,975	881,413
1993	1,640,257	2,737	11,192			1,450	1,655,636
1994	1,805,284	2,287	3,531			4,096	1,815,198
1995	1,055,853	5,665				2,433	1,063,951
1996	862,905	4,385	294			890	868,474
1997	915,219	7,458	267		121	904	923,969
1998	533,662	1,953				1,183	536,798
1999	794,912	1,059				7,636	803,607
2000	958,903	1,019	386			10,707	971,015
2001	585,141	1,439			63	3,434	590,077
2002	834,789	1,548				1,403	837,740
2003	1,010,594	677				2,129	1,013,400
2004	784,728	2,877				1,926	789,531
2005	804,626	1,393				2,177	808,196
2006	746,800	5,505				779	753,084
2007	637,827	1,393					639,219
2008	478,683	1,499					480,182
2009	482,071	1,907				608	484,586
2010	374,492	1,449				357	376,298
2011	252,305	1,146		1,577		53	255,081

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Aug. 13, 2012.
Note 1: Only California has revenues from harpoon landings.
Note 2: Some of the non-swordfish species may have been taken by dual-gear permit holders, who may have fished with drift gillnets but landed under harpoon.
Additional processing info:
Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-25. Real commercial ex-vessel revenues (2011 $) for the West Coast longline fishery, 1981-2011.

		Sharks			Tunas									
Year	Sword-fish	Common Thresher	Shortfin Mako	Blue	Albacore	Yellow-fin	Bigeye	Bluefin	Other	Dorado	Ground-fish	Coastal Pelagics	Other	Total
1981	3,348		36,596	103,304	104,547	2,754					5,592	247	2,505	258,893
1982	626	2,908	11,123	24,699	150,071		4,000			641	48	42	477	194,635
1983	994	87	1,726	855	23,532	9,004	4,007		2,436	25	401	70	5,669	48,806
1984	119,014	7,541	6,301		5,366	2,905	3,547	6,870	1,017	5,103	3,515	5	10,586	171,770
1985	1,382	3,537	46	162	1,361						16,054		302	22,844
1986		6,916	2,940	187							9,985	60	18,566	38,654
1987		501	12,154	693	287						126,220		10,354	150,209
1988	2,708	3,926	544,321	916				668			76,019	42	9,363	637,963
1989			19,048	725							49			19,822
1990		838	48,870	3,654	71				6,302		305	8	307	60,355
1991	221,640	301	67,765	538	799	523	18,479	2,544	3,793	55	6,933		116,117	439,487
1992	442,285	4,886	4,954	272	2,650			7,683	18		44,276	3	4,626	511,653
1993	222,101	91	1,955	29	789	14,548	32,654	6,490		2,804	5,951	1,378	4,335	293,125
1994	4,824,016	20,317	45,333	22,422	114,999	32,792	344,806	76,575	27,122	81,873	16,762		31,415	5,638,432
1995	1,478,576	24,182	9,286	3,220	7,433	35,727	354,809	41,753		7,453	23,773	10,033	10,535	2,006,780
1996	1,799,165	5,799	8,655	59	5,046	16,922	336,868	34,575	35,237	12,373	17,393	120	7,783	2,279,995
1997	2,833,809	11,000	5,347	8	14,076	13,192	445,913	13,750	18,779	3,626	148,283	187	13,593	3,521,563
1998	1,926,528	7,002	12,414	154	28,232	7,775	327,527	309,456	70,741	5,291	31,904	1,338	82,740	2,811,102
1999	6,387,380	9,225	14,625		174,429	22,654	788,398	666,709	73,952	58,227	3,025		8,703	8,207,327
2000	10,257,565	10,627	12,459	93	48,653	705	702,843	160,270		68,438	66,682		18,379	11,346,714
2001	8,155,937	25,705	12,095	1,212	49,826	49,244	398,246	41,106	1,406	21,773	15,660	1,245	96,684	8,870,139
2002	5,152,673	3,718	6,232	22,439	2,314	11,273	107,345	5,772		682	53,768	29	11,156	5,377,401
2003	7,080,457	748	6,521		4,437	349	272,118	990	5	1,874	15,588		12,397	7,395,484
2004	3,701,162	2,651	5,640		5,110	1,436	172,986		63,197	3,775	62,685	422	8,367	4,027,431
2005	**	**	**		**	**	**		**	**	**		**	**
2006	**	**	**		**	**	**	**	**	**	**	**	**	**
2007	**	**	**		**	**	**	**	**	**	**	**	**	**
2008	**	**	**		**	**	**		**	**	**		**	**
2009	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2010	**	**	**		**	**	**		**	**	**		**	**
2011	2,325,826	1,127	4,151		133,926	13,269	326,510		982	10,371	20,791	36	97,880	2,934,869

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Oct. 24, 2012.

Additional processing info:

Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the longline fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-26. Real commercial ex-vessel revenues (2011 $) for the West Coast purse seine fishery, 1981-2011.

	Tunas						Sword-	HMS		Ground-	Coastal		
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified	fish	Sharks	Dorado	fish	Pelagics	Other	Total
1981	786,459	211,214,800	135,152,322	3,367,046	2,645,813	118,506					258,142	3,155	353,546,243
1982	1,176,893	149,643,455	79,358,663	2,446,493	5,479,151	110,465					10,537		238,225,657
1983	30,179	110,066,872	67,591,514		2,048,937	49,132	3,530	513			13,052	1,154	179,804,883
1984	9,138,265	67,279,843	44,991,435	271,492	1,663,883	4,890,921	165,050	1,233			113,924	11,472	128,527,518
1985	53,261	26,107,322	3,151,430	1,489	5,146,378	1,887,462	13,024	846			92,330	1,761	36,455,303
1986	116,288	31,772,054	1,158,728	23,997	8,234,503	328,549	328,605	3,560			14,763	5,523	41,986,570
1987	121,544	45,520,643	7,199,381	263,382	3,584,683	747,648		1,574			3,506	15,707	57,458,068
1988	450,938	43,548,837	13,142,433	1,149	3,445,221	114,515					42,850		60,745,943
1989	74,906	31,182,350	5,072,873		2,006,131	182,785	11,330	439	209		10,264	227	38,541,514
1990	219,386	14,472,130	2,963,238		1,678,163	50,733					68,171		19,451,823
1991		5,150,328	3,482,341		148,805	12,096					55,231	5,022	8,853,823
1992	28,549	2,496,548	815,917	4,332	1,609,224	4,345	76,769	5,215	3,843	326	91,891	16,868	5,153,827
1993	1,740	1,522,248	1,516,130	6,124	824,452	1,274	142,951	2,315	253	20	24,375	15,435	4,057,317
1994		4,445,602	1,528,951		2,074,826	4,812					51,534	177,758	8,283,483
1995		3,905,682	5,281,134		1,310,740						21,767	28,424	10,547,747
1996	1,193	3,638,755	4,966,198		5,269,860						95,364	34,418	14,005,788
1997	4,895	6,423,428	7,135,914		3,354,851	5,620	8,930	2,557	1,908		23,202	69,328	17,030,633
1998	215,794	5,044,210	6,247,795		3,038,451						218,907	144,720	14,909,877
1999	43,619	1,824,276	3,566,648		470,084						6,970	78,199	5,989,796
2000	8,452	1,668,634	607,630		379,056						31,282	1	2,695,054
2001	78,522	513,723	35,730		420,881						6,363		1,055,220
2002	440	710,457	157,499				3,225					54	871,675
2003	19,452	532,719	183,270		17,911								753,353
2004	1,800	509,587	127,492										638,879
2005		344,674	330,102		135,089						1,936		811,801
2006		*	*										*
2007	127,408	127,409	4,223		48,305						59,318		366,664
2008	*	*	*								*		*
2009	43,080	14,654	3,776		441,102						345,759		848,370
2010	*												*
2011	130,874				161,621								292,495

* Not reported due to data confidentiality requirements (fewer than three vessels).

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Oct. 24, 2012.

Note: There is no purse seine gear for Washington.

Additional processing info:

Only fish tickets where at least 1 lb of any HMS tuna was landed for the purse seine fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-27. West Coast commercial tuna landings by fishery, 1981-2011.

	Landings (round mt)					
Year	Surface Hook-and-line	Drift Gillnet	Harpoon	Longline	Purse Seine	Total
1981	13,507	11	2	26	131,620	145,166
1982	4,981	30	<0.5	43	104,326	109,380
1983	9,325	128		9	95,185	104,647
1984	8,922	165	<0.5	3	68,571	77,661
1985	7,012	164	<0.5		20,843	28,019
1986	4,982	155	<0.5		26,891	32,028
1987	2,891	100	2		27,907	30,900
1988	4,629	66	1	<0.5	26,814	31,510
1989	2,168	25	<0.5		20,784	22,977
1990	2,926	26	<0.5	1	11,584	14,537
1991	1,641	29		2	6,562	8,234
1992	4,757	56	<0.5	1	3,956	8,770
1993	5,796	213	1	5	3,070	9,085
1994	10,606	79	<0.5	104	5,737	16,526
1995	6,408	65		61	9,100	15,634
1996	13,249	110	<0.5	71	12,382	25,812
1997	10,833	108	<0.5	89	12,783	23,813
1998	12,840	111		106	10,938	23,995
1999	8,818	115		228	5,186	14,347
2000	8,100	72	<0.5	122	2,186	10,480
2001	10,230	70		95	886	11,281
2002	9,295	19		14	777	10,105
2003	13,493	33		31	863	14,420
2004	13,394	21		33	791	14,239
2005	8,217	14		**	1,006	9,237
2006	12,375	7		**	101	12,483
2007	11,143	5		**	223	11,371
2008	9,774	2		**	64	9,840
2009	11,619	6		**	468	12,093
2010	10,866	6		**	18	10,890
2011	9,832	21	1	91	140	10,085

* Not reported due to data confidentiality requirements (fewer than three vessels).

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted on various dates in July-October, 2012.

Table 4-28. West Coast commercial tuna revenues by fishery, 1981-2011.

Year	Revenues ($)					
	Surface Hook-and-line	Drift Gillnet	Harpoon	Longline	Purse Seine	Total
1981	26,105,721	20,531	4,337	49,477	162,899,688	189,079,754
1982	7,355,282	50,112	146	75,372	116,534,837	124,015,749
1983	11,894,118	195,862		19,826	91,439,482	103,549,288
1984	12,166,930	216,080	480	10,398	67,670,051	80,063,939
1985	7,999,188	165,555	472	740	19,758,416	27,924,371
1986	5,875,077	196,649	390		23,136,080	29,208,196
1987	4,691,790	182,784	6,226	164	32,842,638	37,723,602
1988	8,548,185	152,083	8,552	395	35,899,810	44,609,025
1989	3,693,992	51,912	2,171		23,642,990	27,391,065
1990	5,415,074	66,524	108	4,063	12,357,079	17,842,848
1991	2,760,785	74,916		17,254	5,804,636	8,657,591
1992	11,080,778	137,764	1,369	6,994	3,350,739	14,577,644
1993	11,036,136	429,099	7,730	37,625	2,673,982	14,184,572
1994	19,936,716	229,850	2,490	420,506	5,679,816	26,269,378
1995	11,360,802	145,227		316,556	7,557,190	19,379,775
1996	25,526,196	241,541	216	314,456	10,179,438	36,261,847
1997	19,108,815	346,320	200	377,511	12,634,293	32,467,139
1998	17,641,854	299,314		561,517	10,982,420	29,485,105
1999	16,254,470	193,126		1,322,398	4,523,535	22,293,529
2000	15,348,828	195,805	302	714,191	2,084,934	18,344,060
2001	18,771,705	127,848		432,024	839,400	20,170,977
2002	13,175,199	32,399		103,049	706,266	14,016,913
2003	19,637,838	92,432		230,768	625,585	20,586,623
2004	24,326,922	63,383		207,243	545,475	25,143,023
2005	18,508,555	38,600		**	714,382	19,342,987
2006	22,833,634	11,763		**	*	23,293,321
2007	20,670,548	19,282		**	288,014	20,977,844
2008	24,896,835	5,135		**	*	25,180,224
2009	25,927,694	17,340		**	486,528	26,431,562
2010	26,398,629	19,249		**	*	26,735,510
2011	37,453,414	91,832	1,577	474,687	292,495	38,314,005

* Not reported due to data confidentiality requirements (fewer than three vessels).

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted on various dates in July-October 2012.

Table 4-29. West Coast commercial tuna landings by species, 1981-2011.

	Landings (round mt)						
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified Tuna	Total
1981	13,712	76,091	57,869	1,168	868	40	149,748
1982	5,410	61,769	41,904	968	2,404	51	112,506
1983	9,578	55,741	44,995	21	764	55	111,154
1984	12,654	35,063	31,251	126	635	1,014	80,743
1985	7,301	15,025	2,977	7	3,254	468	29,032
1986	5,243	21,517	1,361	29	4,731	143	33,024
1987	3,160	23,201	5,724	50	823	129	33,087
1988	4,912	19,520	8,863	6	804	11	34,116
1989	2,214	17,615	4,505	1	1,019	77	25,431
1990	3,028	8,509	2,256	2	925	46	14,766
1991	1,676	4,178	3,407	7	104	11	9,383
1992	4,902	3,350	2,586	7	1,087	10	11,942
1993	6,166	3,795	4,539	26	559	16	15,101
1994	10,751	5,056	2,111	47	916	33	18,914
1995	6,530	3,038	7,037	49	714	1	17,369
1996	14,173	3,347	5,455	62	4,688	3	27,728
1997	11,292	4,775	6,070	82	2,251	11	24,481
1998	13,915	5,799	5,846	53	1,949	12	27,574
1999	9,770	1,353	3,759	108	186	12	15,188
2000	9,074	1,159	780	86	313	1	11,413
2001	11,191	655	58	53	196	1	12,154
2002	10,029	544	236	10	11	2	10,832
2003	16,671	465	349	35	36	<0.5	17,556
2004	14,540	488	307	22	10	9	15,376
2005	9,055	285	523	10	207	<0.5	10,080
2006	12,786	77	48	35	1	1	12,948
2007	11,586	104	5	13	45	<0.5	11,753
2008	11,131	65	3	27	1	1	11,228
2009	12,307	45	5	12	415		12,784
2010	11,856	1	1	31	1	1	11,891
2011	11,041	4	1	46	118	<0.5	11,210

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Jul. 5, 2012.

Table 4-30. West Coast commercial tuna revenues by species, 1981-2011.

	Revenues ($)						
Year	Albacore	Yellowfin	Skipjack	Bigeye	Bluefin	Unspecified Tuna	Total
1981	26,524,145	98,722,280	66,331,030	1,569,755	1,239,005	72,694	194,458,909
1982	8,033,073	74,468,306	40,507,405	1,208,147	2,690,102	98,923	127,005,956
1983	12,242,167	59,475,802	36,652,119	45,946	1,062,909	95,490	109,574,433
1984	17,208,448	37,038,204	24,790,704	174,405	904,956	2,590,391	82,707,108
1985	8,292,769	14,690,108	2,118,170	17,693	2,819,048	1,028,867	28,966,655
1986	6,178,084	18,079,443	904,609	90,227	4,636,698	198,248	30,087,309
1987	5,127,832	27,878,667	4,426,717	176,504	2,057,402	448,231	40,115,353
1988	9,117,601	27,030,132	9,249,827	26,156	2,070,411	80,548	47,574,675
1989	3,785,613	20,824,242	3,944,894	2,415	1,271,718	127,320	29,956,202
1990	5,620,990	9,383,584	1,898,875	8,771	1,149,381	56,750	18,118,351
1991	2,823,937	3,996,935	2,692,345	42,810	116,371	21,161	9,693,559
1992	11,483,392	3,677,441	1,410,546	44,731	1,129,626	21,228	17,766,964
1993	11,697,562	4,821,735	3,282,778	211,513	752,369	72,678	20,838,635
1994	20,188,895	4,522,321	1,751,209	307,147	1,674,099	55,245	28,498,916
1995	11,572,603	3,044,670	4,752,641	258,727	1,057,948	5,136	20,691,725
1996	27,222,294	3,230,957	3,986,113	260,306	4,035,455	28,296	38,763,421
1997	19,924,121	4,991,131	5,504,526	359,780	2,773,705	21,895	33,575,158
1998	18,895,247	5,861,959	5,213,131	271,919	2,965,485	61,688	33,269,429
1999	17,771,262	1,468,209	2,748,208	657,121	1,061,233	60,572	23,766,605
2000	17,188,570	1,329,357	483,242	576,919	580,722	2,298	20,161,108
2001	20,680,501	465,558	33,633	320,855	473,557	3,069	21,977,173
2002	14,256,910	588,677	128,245	87,304	43,477	6,325	15,110,938
2003	24,435,697	451,273	159,961	262,768	76,106	21	25,385,826
2004	27,414,167	446,577	109,254	147,696	38,312	54,879	28,210,885
2005	20,823,045	315,699	292,193	60,141	136,847	913	21,628,838
2006	23,776,441	174,912	40,350	205,677	3,790	1,895	24,203,065
2007	21,633,438	149,568	4,361	94,734	58,106	46	21,940,253
2008	28,853,123	125,508	3,675	205,536	3,340	3,485	29,194,667
2009	27,584,153	166,620	5,332	97,103	443,095		28,296,303
2010	29,575,539	6,861	1,899	241,834	6,363	6,356	29,838,852
2011	43,353,846	13,767	1,749	326,604	246,987	1,362	43,944,315

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 5, 2012.

Table 4-31. West Coast commercial swordfish landings by fishery, 1981-2011.

	Landings (round mt)					
Year	Surface Hook-and-line	Drift Gillnet	Harpoon	Longline	Purse Seine	Total
1981		469	272	<0.5		741
1982	4	929	156	<0.5		1,089
1983	3	1,651	58	<0.5	1	1,713
1984	25	2,632	105	12	23	2,797
1985	11	3,010	275	<0.5	1	3,297
1986	1	2,108	296		41	2,446
1987	5	1,526	237			1,768
1988	18	1,373	199	<0.5		1,590
1989	7	1,239	62		1	1,309
1990	2	1,126	65			1,193
1991	2	936	20	27		985
1992	13	1,350	75	63	10	1,511
1993	90	1,409	169	27	17	1,712
1994	1	801	157	722		1,681
1995	1	772	97	271		1,141
1996	<0.5	762	81	346		1,189
1997	1	708	84	663	1	1,457
1998	4	931	48	418		1,401
1999	15	605	81	1,325		2,026
2000	22	650	90	1,873		2,635
2001	<0.5	371	52	1,749		2,172
2002	2	301	90	1,331	1	1,725
2003		217	107	1,810		2,134
2004		182	69	898		1,149
2005		220	76	**		296
2006		443	72	**		515
2007		490	59	**		549
2008	<0.5	405	48	**		453
2009	<0.5	253	50	**		303
2010		61	37	**		98
2011		118	24	476		618

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted on various dates in July-October 2012.

Table 4-32. West Coast commercial swordfish revenues by fishery, 1981-2011.

Year	Revenues ($)					
	Surface Hook-and-line	Drift Gillnet	Harpoon	Longline	Purse Seine	Total
1981		1,935,740	1,371,646	1,544		3,308,930
1982	13,219	4,150,231	839,886	306		5,003,642
1983	7,531	6,261,486	318,044	506	1,796	6,589,363
1984	96,217	10,410,348	583,079	62,804	87,097	11,239,545
1985	30,921	11,607,897	1,280,993	752	7,080	12,927,643
1986	6,427	10,319,454	1,796,277		182,606	12,304,764
1987	33,310	9,208,592	1,647,710			10,889,612
1988	96,331	7,856,080	1,477,860	1,601		9,431,872
1989	34,556	7,421,923	500,435		6,955	7,963,869
1990	13,332	6,332,028	539,322			6,884,682
1991	11,721	5,743,814	179,949	146,305		6,081,789
1992	55,452	6,379,684	586,740	298,852	51,873	7,372,601
1993	442,687	6,847,488	1,132,762	153,383	98,722	8,675,042
1994	6,797	4,786,469	1,273,087	3,401,896		9,468,249
1995	3,204	4,603,642	760,108	1,064,427		6,431,381
1996	2,608	4,074,303	633,027	1,319,868		6,029,806
1997	4,390	3,332,497	683,211	2,115,438	6,666	6,142,202
1998	17,122	4,078,263	402,914	1,454,529		5,952,828
1999	77,899	2,829,832	608,982	4,893,372		8,410,085
2000	97,814	2,814,819	750,533	8,028,596		11,691,762
2001	2,037	1,645,877	468,289	6,527,196		8,643,399
2002	9,996	1,515,987	678,934	4,190,669	2,623	6,398,209
2003		1,120,260	839,197	5,879,612		7,839,069
2004		944,192	670,001	3,160,052		4,774,245
2005		1,184,545	709,760	**		1,894,305
2006		1,996,530	680,036	**		2,745,119
2007		2,528,886	597,707	**		3,126,593
2008	1,200	1,708,969	458,482	**		2,168,651
2009	291	1,083,669	466,645	**		1,550,605
2010		400,541	366,666	**		767,207
2011		771,874	252,305	2,325,826		3,350,005

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted on various dates in July-October 2012.

Table 4-33. West Coast commercial shark landings by species, 1981-2011.

Year	Landings (round mt)			
	Common Thresher	Shortfin Mako	Blue	Total
1981	1,521	182	92	1,795
1982	1,848	351	27	2,226
1983	1,331	217	7	1,555
1984	1,279	160	2	1,441
1985	1,190	149	1	1,340
1986	974	312	2	1,288
1987	562	403	2	967
1988	500	322	3	825
1989	504	255	6	765
1990	357	373	20	750
1991	584	219	1	804
1992	292	142	1	435
1993	275	122	<0.5	397
1994	330	128	12	470
1995	270	95	5	370
1996	319	96	1	416
1997	320	132	1	453
1998	361	100	3	464
1999	320	63	<0.5	383
2000	296	80	1	377
2001	373	46	2	421
2002	301	82	41	424
2003	301	70	1	372
2004	115	54	1	170
2005	179	33	1	213
2006	160	46	<0.5	206
2007	204	45	10	259
2008	147	35	<0.5	182
2009	107	30	1	138
2010	96	21	<0.5	117
2011	76	19	<0.5	95

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 5, 2012.

Table 4-34. West Coast commercial shark revenues by species, 1981-2011.

	Revenues ($)			
Year	Common Thresher	Shortfin Mako	Blue	Total
1981	1,475,634	162,347	59,064	1,697,045
1982	1,980,592	339,209	18,826	2,338,627
1983	1,474,213	229,826	4,645	1,708,684
1984	1,642,178	189,794	2,470	1,834,442
1985	1,817,135	192,917	2,132	2,012,184
1986	1,690,791	428,259	1,320	2,120,370
1987	1,184,091	715,138	1,853	1,901,082
1988	979,905	649,799	2,275	1,631,979
1989	944,161	552,576	3,465	1,500,202
1990	638,630	739,193	10,303	1,388,126
1991	968,877	415,168	894	1,384,939
1992	464,018	231,063	1,816	696,897
1993	458,513	221,401	622	680,536
1994	584,318	247,088	16,057	847,463
1995	477,901	165,215	2,796	645,912
1996	603,006	167,111	587	770,704
1997	591,268	227,426	327	819,021
1998	625,489	176,313	5,996	807,798
1999	617,691	111,119	73	728,883
2000	589,035	133,621	720	723,376
2001	595,548	75,799	1,294	672,641
2002	503,487	124,521	18,510	646,518
2003	487,796	115,728	390	603,914
2004	197,188	98,827	489	296,504
2005	271,767	57,788	426	329,981
2006	301,669	79,586	309	381,564
2007	337,770	78,569	1,984	418,323
2008	280,885	67,255	177	348,317
2009	198,627	54,663	2,361	255,651
2010	156,909	36,250	177	193,336
2011	104,989	37,539	105	142,633

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 5, 2012.

Table 4-35. Commercial landings (round mt) of the albacore surface hook-and-line (troll and baitboat) fishery in California, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	9,113	14		<0.5	<0.5	1	2	3	1	9,135
1982	3,859	3	4	2	1	4	<0.5	2	<0.5	3,875
1983	7,270	16	3	1	<0.5	20	34	4	1	7,349
1984	8,109	13	25	4	<0.5	5	2	<0.5	5	8,163
1985	6,147	2	11	3	<0.5	4	<0.5	2	2	6,171
1986	3,019	2	1	<0.5		20	<0.5	2	1	3,044
1987	1,324	<0.5	5	2		2	1	1	<0.5	1,335
1988	931	<0.5	17	2		<0.5		<0.5	1	951
1989	823	1	7	8	<0.5	10	<0.5	2	2	852
1990	758	<0.5	2	<0.5	<0.5	3	<0.5	<0.5	1	765
1991	642	<0.5	2	<0.5		<0.5			1	646
1992	1,184	<0.5	13	2	<0.5	6		<0.5	<0.5	1,207
1993	1,461	18	89	4	9	3			2	1,586
1994	3,055	<0.5	1	<0.5	<0.5	1		<0.5	<0.5	3,057
1995	777	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	1	780
1996	5,038	42	<0.5	<0.5		<0.5		<0.5	1	5,082
1997	3,288	7	1	1	<0.5	5	<0.5	3	2	3,307
1998	2,232	116	4	3	<0.5	1	<0.5	1	2	2,359
1999	5,339	6	15	1	<0.5	1	<0.5	<0.5	4	5,367
2000	1,798	2	22	<0.5	<0.5	1	<0.5	1	1	1,826
2001	2,796	8	<0.5	1	<0.5	2	<0.5	3	6	2,816
2002	2,659	2	2	<0.5	<0.5	<0.5	<0.5	3	3	2,669
2003	1,696	3		<0.5	<0.5	1	<0.5	2	2	1,705
2004	1,336	1		<0.5	<0.5	<0.5	<0.5	2	2	1,341
2005	455	<0.5				1		<0.5	1	457
2006	201	1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	202
2007	772	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	772
2008	376	1			<0.5	<0.5	<0.5		1	378
2009	349	7	<0.5	<0.5	<0.5	<0.5	<0.5		2	358
2010	711	<0.5		<0.5	<0.5	<0.5			<0.5	711
2011	568	<0.5			<0.5	<0.5		<0.5	1	569

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of less than half of the unit shown.summarized data to

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-36. Commercial landings (round mt) of the albacore surface hook-and-line (troll and baitboat) fishery in California, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	9,113	14		<0.5	<0.5	1	2	3	1	9,135
1982	3,859	3	4	2	1	4	<0.5	2	<0.5	3,875
1983	7,270	16	3	1	<0.5	20	34	4	1	7,349
1984	8,109	13	25	4	<0.5	5	2	<0.5	5	8,163
1985	6,147	2	11	3	<0.5	4	<0.5	2	2	6,171
1986	3,019	2	1	<0.5		20	<0.5	2	1	3,044
1987	1,324	<0.5	5	2		2	1	1	<0.5	1,335
1988	931	<0.5	17	2		<0.5		<0.5	1	951
1989	823	1	7	8	<0.5	10	<0.5	2	2	852
1990	758	<0.5	2	<0.5	<0.5	3	<0.5	<0.5	1	765
1991	642	<0.5	2	<0.5		<0.5			1	646
1992	1,184	<0.5	13	2	<0.5	6		<0.5	<0.5	1,207
1993	1,461	18	89	4	9	3			2	1,586
1994	3,055	<0.5	1	<0.5	<0.5	1		<0.5	<0.5	3,057
1995	777	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	1	780
1996	5,047	42	<0.5	<0.5		<0.5		<0.5	1	5,091
1997	3,290	7	1	1	<0.5	5	<0.5	3	2	3,308
1998	2,232	116	4	3	<0.5	1	<0.5	1	2	2,359
1999	5,360	6	15	1	<0.5	1	<0.5	<0.5	5	5,388
2000	1,798	2	22	<0.5	<0.5	1	<0.5	1	1	1,826
2001	2,796	8	<0.5	1	<0.5	2	<0.5	3	6	2,816
2002	2,659	2	2	<0.5	<0.5	<0.5	<0.5	3	3	2,669
2003	1,696	3		<0.5	<0.5	1	<0.5	2	2	1,705
2004	1,336	1		<0.5	<0.5	<0.5	<0.5	2	2	1,341
2005	455	<0.5				1		<0.5	1	457
2006	201	1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	202
2007	772	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	772
2008	376	1			<0.5	<0.5	<0.5		1	378
2009	349	7	<0.5	<0.5	<0.5	<0.5	<0.5		2	358
2010	711	<0.5		<0.5	<0.5	<0.5			<0.5	711
2011	568	<0.5			<0.5	<0.5		<0.5	1	569

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Feb. 12, 2013.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-37. Commercial landings (round mt) of the albacore surface hook-and-line (troll and baitboat) fishery in Oregon, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	3,505					1		25	<0.5	3,531
1982	853	<0.5				<0.5		1	<0.5	854
1983	1,509	<0.5				3	<0.5	5	<0.5	1,517
1984	733	<0.5				<0.5		1	<0.5	734
1985	692					<0.5		<0.5	<0.5	692
1986	1,116	<0.5				<0.5		1		1,117
1987	1,038							1		1,038
1988	1,794					<0.5		2	<0.5	1,796
1989	490					<0.5		<0.5		490
1990	943					<0.5	<0.5	1		944
1991	571							1	<0.5	572
1992	1,719			<0.5		<0.5		1		1,720
1993	2,147					1		3		2,151
1994	2,131			<0.5				<0.5	<0.5	2,131
1995	2,283	1			<0.5	<0.5		6		2,290
1996	3,595	<0.5				<0.5		10		3,606
1997	3,867	<0.5			<0.5	1		9		3,877
1998	4,292			<0.5		1		4	<0.5	4,296
1999	1,632	6		<0.5		<0.5		2		1,640
2000	3,282	<0.5		<0.5		<0.5		2		3,284
2001	3,572	<0.5		<0.5		<0.5		6		3,579
2002	1,924							3		1,927
2003	3,807	<0.5						1		3,809
2004	4,632	<0.5		<0.5		<0.5	<0.5	2		4,635
2005	3,258			<0.5		<0.5		1		3,260
2006	3,680	<0.5		<0.5		<0.5	<0.5		<0.5	3,681
2007	4,469				<0.5	<0.5	<0.5	<0.5	1	4,470
2008	3,196	5	<0.5		<0.5	<0.5			1	3,202
2009	4,416	<0.5		<0.5		<0.5		<0.5	1	4,417
2010	4,308					<0.5		2	<0.5	4,310
2011	3,498	<0.5			<0.5	<0.5		<0.5	<0.5	3,499

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-38. Commercial landings (round mt) of the albacore surface hook-and-line (troll and baitboat) fishery in Oregon, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	3,505					1		25	<0.5	3,531
1982	863	<0.5				<0.5		1	1	865
1983	1,540	<0.5				3	<0.5	5	1	1,549
1984	736	<0.5				<0.5		1	<0.5	737
1985	692					<0.5		<0.5	<0.5	692
1986	1,116	<0.5				<0.5		1		1,117
1987	1,038							1		1,038
1988	1,795					<0.5		2	<0.5	1,797
1989	490					<0.5		<0.5		490
1990	943					<0.5	<0.5	1		944
1991	571							1	<0.5	572
1992	1,767			<0.5		<0.5		1		1,768
1993	2,157					1		3		2,160
1994	2,131			<0.5				<0.5	<0.5	2,131
1995	2,283	1			<0.5	<0.5		6		2,290
1996	4,059	<0.5				<0.5		10		4,069
1997	4,158	<0.5			<0.5	1		9		4,169
1998	4,810			<0.5		1		4	<0.5	4,814
1999	2,065	6		<0.5		<0.5		2		2,073
2000	3,972	<0.5		<0.5		<0.5		2		3,974
2001	4,064	<0.5		<0.5		<0.5		6		4,070
2002	1,978							3		1,982
2003	4,118	<0.5						1		4,120
2004	4,878	<0.5		<0.5		<0.5	<0.5	2		4,880
2005	3,668			<0.5		<0.5		1		3,670
2006	3,864	<0.5		<0.5		<0.5	<0.5		<0.5	3,864
2007	4,748				<0.5	<0.5	<0.5	<0.5	1	4,749
2008	4,026	5	<0.5		<0.5	<0.5			2	4,033
2009	4,574	<0.5		<0.5		<0.5		<0.5	1	4,575
2010	4,855					<0.5		2	<0.5	4,857
2011	4,388	<0.5			<0.5	<0.5		<0.5	<0.5	4,388

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Feb. 12, 2013.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-39. Commercial landings (round mt) of the albacore surface hook-and-line (troll and baitboat) fishery in Washington, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	875				N.A.	1		9	<0.5	885
1982	266				N.A.					266
1983	530				N.A.	1		4		535
1984	67				N.A.					67
1985	172				N.A.					172
1986	845				N.A.					845
1987	529				N.A.				<0.5	529
1988	1,904		1		N.A.	<0.5	<0.5	<0.5	1	1,906
1989	855				N.A.	<0.5				855
1990	1,225				N.A.					1,225
1991	428	<0.5			N.A.	<0.5		<0.5		428
1992	1,852	<0.5			N.A.	<0.5			<0.5	1,853
1993	2,171		1	<0.5	N.A.	<0.5		<0.5	<0.5	2,172
1994	5,420				N.A.					5,420
1995	3,347		<0.5		N.A.			1	<0.5	3,348
1996	4,573				N.A.					4,573
1997	3,670				N.A.	<0.5				3,670
1998	6,201				N.A.					6,201
1999	1,822	12			N.A.				<0.5	1,834
2000	3,017				N.A.					3,017
2001	3,852	1			N.A.	1		<0.5		3,853
2002	4,710				N.A.	<0.5		1	<0.5	4,712
2003	7,986				N.A.					7,986
2004	7,425				N.A.				<0.5	7,425
2005	4,504				N.A.			1	<0.5	4,505
2006	8,493				N.A.					8,493
2007	5,902				N.A.			<0.5	1	5,903
2008	6,197				N.A.	<0.5		<0.5		6,197
2009	6,847				N.A.			1		6,848
2010	5,847				N.A.			1		5,848
2011	5,766				N.A.	<0.5		<0.5		5,767

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Feb. 11, 2013.
Note: There is no species code for dorado in Washington.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-40. Commercial landings (round mt) of the albacore surface hook-and-line (troll and baitboat) fishery in Washington, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	875				N.A.	1		9	<0.5	885
1982	266				N.A.					266
1983	530				N.A.	1		4		535
1984	67				N.A.					67
1985	172				N.A.					172
1986	845				N.A.					845
1987	529				N.A.				<0.5	529
1988	1,904		1		N.A.	<0.5	<0.5	<0.5	1	1,906
1989	855				N.A.	<0.5				855
1990	1,225				N.A.					1,225
1991	428	<0.5			N.A.	<0.5		<0.5		428
1992	1,864	<0.5			N.A.	<0.5			<0.5	1,864
1993	2,183		1	<0.5	N.A.	<0.5		<0.5	<0.5	2,184
1994	5,443				N.A.					5,443
1995	3,414		<0.5		N.A.			1	<0.5	3,415
1996	4,969				N.A.					4,969
1997	3,775				N.A.	<0.5				3,775
1998	6,644				N.A.					6,644
1999	2,081	12			N.A.				<0.5	2,093
2000	3,216				N.A.					3,216
2001	4,156	1			N.A.	1		<0.5		4,157
2002	5,358				N.A.	<0.5		1	<0.5	5,359
2003	10,793				N.A.			<0.5		10,793
2004	8,310				N.A.				<0.5	8,310
2005	4,904				N.A.			1	<0.5	4,905
2006	8,707				N.A.					8,707
2007	5,980				N.A.			<0.5	1	5,981
2008	6,725				N.A.	<0.5		<0.5		6,726
2009	7,340				N.A.			1		7,340
2010	6,258				N.A.			1		6,259
2011	5,979				N.A.	<0.5		<0.5		5,979

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Feb. 12, 2013.
Note: There is no species code for dorado in Washington.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Landings in lbs are converted to round weight in mt by multiplying the landed weights by the conversion factors in each fish ticket line and then dividing by 2204.6.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-41. Nominal commercial ex-vessel revenues ($) of the albacore surface hook-and-line (troll and baitboat) fishery in California, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	17,731,395	17,982		173	72	1,444	991	16,689	1,091	17,769,837
1982	5,735,370	5,258	13,219	2,771	557	5,671	13	10,001	332	5,773,192
1983	9,394,970	14,511	7,531	978	33	18,504	15,429	14,994	4,332	9,471,282
1984	11,157,988	19,870	96,217	5,816	706	6,854	928	2,154	3,823	11,294,356
1985	6,973,498	4,278	30,921	5,827	6	6,375	239	10,104	3,166	7,034,414
1986	3,598,008	7,124	6,427	180		18,967	160	6,309	659	3,637,835
1987	2,173,044	1,150	33,310	3,440		2,305	657	3,089	402	2,217,397
1988	1,728,315	952	89,636	2,924		664		1,860	1,063	1,825,414
1989	1,455,484	1,833	34,556	10,983	31	18,058	1	7,412	2,816	1,531,174
1990	1,457,546	79	13,332	560	74	6,059	83	39	1,529	1,479,301
1991	1,089,097	56	11,721	483		185			893	1,102,435
1992	2,889,632	2,124	55,452	2,321	281	6,004		1,259	614	2,957,687
1993	2,902,857	154,056	437,415	6,648	23,216	3,917			2,237	3,530,346
1994	6,415,286	603	6,797	275	180	590		529	326	6,424,586
1995	1,418,582	592	2,953	173		47	16	710	2,992	1,426,065
1996	10,571,220	38,548	2,608	295		60		1,567	998	10,615,294
1997	5,675,955	14,095	4,390	1,628	266	11,221	89	8,581	3,725	5,719,951
1998	3,097,075	138,138	17,122	5,018	525	3,979	279	4,144	5,215	3,271,495
1999	9,931,533	53,721	77,899	2,246	1,413	4,033	455	1,603	7,865	10,080,769
2000	3,682,725	3,841	97,814	223	298	1,887	522	2,501	5,233	3,795,044
2001	4,917,834	25,961	2,037	2,002	544	6,140	178	10,462	12,398	4,977,555
2002	3,861,585	6,838	9,996	664	170	827	1,241	9,544	6,168	3,897,033
2003	2,570,926	10,929		62	567	2,764	558	9,127	5,709	2,600,640
2004	2,407,735	2,383		319	655	1,783	1,059	12,366	3,101	2,429,401
2005	1,059,355	1,437				1,557		1,337	2,614	1,066,300
2006	504,401	1,569		42	167	221	124	3,480	927	510,931
2007	1,575,242	1,222			208	6	60	1,178	702	1,578,618
2008	956,535	2,834			371	53	3,193		1,290	964,276
2009	912,138	11,570	291	568	248	232	92		1,652	926,791
2010	1,715,001	531		52	531	176			307	1,716,598
2011	2,124,935	1,630			116	4		595	2,085	2,129,365

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-42. Nominal commercial ex-vessel revenues ($) of the albacore surface hook-and-line (troll and baitboat) fishery in California, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	17,731,395	17,982		173	72	1,444	991	16,689	1,091	17,769,837
1982	5,735,370	5,258	13,219	2,771	557	5,671	13	10,001	332	5,773,192
1983	9,394,970	14,511	7,531	978	33	18,504	15,429	14,994	4,332	9,471,282
1984	11,157,988	19,870	96,217	5,816	706	6,854	928	2,154	3,823	11,294,356
1985	6,973,498	4,278	30,921	5,827	6	6,375	239	10,104	3,166	7,034,414
1986	3,598,008	7,124	6,427	180		18,967	160	6,309	659	3,637,835
1987	2,173,044	1,150	33,310	3,440		2,305	657	3,089	402	2,217,397
1988	1,728,315	952	89,636	2,924		664		1,860	1,063	1,825,414
1989	1,455,484	1,833	34,556	10,983	31	18,058	1	7,412	2,816	1,531,174
1990	1,457,546	79	13,332	560	74	6,059	83	39	1,529	1,479,301
1991	1,089,097	56	11,721	483		185			893	1,102,435
1992	2,889,632	2,124	55,452	2,321	281	6,004		1,259	614	2,957,687
1993	2,902,857	154,056	437,415	6,648	23,216	3,917			2,237	3,530,346
1994	6,415,286	603	6,797	275	180	590		529	326	6,424,586
1995	1,418,582	592	2,953	173		47	16	710	2,992	1,426,065
1996	10,587,510	38,548	2,608	295		60		1,567	998	10,631,585
1997	5,678,124	14,095	4,390	1,628	266	11,221	89	8,581	3,725	5,722,120
1998	3,097,075	138,138	17,122	5,018	525	3,979	279	4,144	5,215	3,271,495
1999	9,968,024	53,721	77,899	2,246	1,413	4,033	455	1,603	7,865	10,117,259
2000	3,682,725	3,841	97,814	223	298	1,887	522	2,501	5,233	3,795,044
2001	4,917,834	25,961	2,037	2,002	544	6,140	178	10,462	12,398	4,977,555
2002	3,861,585	6,838	9,996	664	170	827	1,241	9,544	6,168	3,897,033
2003	2,570,926	10,929		62	567	2,764	558	9,127	5,709	2,600,640
2004	2,407,735	2,383		319	655	1,783	1,059	12,366	3,101	2,429,401
2005	1,059,355	1,437				1,557		1,337	2,614	1,066,300
2006	504,401	1,569		42	167	221	124	3,480	927	510,931
2007	1,575,242	1,222			208	6	60	1,178	702	1,578,618
2008	956,535	2,834			371	53	3,193		1,290	964,276
2009	912,138	11,570	291	568	248	232	92		1,652	926,791
2010	1,715,001	531		52	531	176			307	1,716,598
2011	2,124,935	1,630			116	4		595	2,085	2,129,365

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 12, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-43. Nominal commercial ex-vessel revenues ($) of the albacore surface hook-and-line (troll and baitboat) fishery in Oregon, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	6,686,230					748		87,410	298	6,774,686
1982	1,250,455	242				5		3,833	202	1,254,737
1983	1,845,205	75				1,426	65	16,699	166	1,863,637
1984	898,066	183				92		4,269	720	903,330
1985	822,379					8		698	336	823,421
1986	1,324,977	124				83		3,142		1,328,326
1987	1,679,449							3,749		1,683,198
1988	3,318,399					73		9,451	66	3,327,989
1989	886,505					39		893		887,437
1990	1,763,611					104	2	2,753		1,766,471
1991	979,262							2,604	311	982,177
1992	3,856,956			40		133		4,862		3,861,991
1993	3,864,366					908		10,358		3,875,632
1994	3,749,780			27				8	19	3,749,834
1995	4,049,908	323			21	105		19,802		4,070,158
1996	6,572,323	49				380		24,958		6,597,709
1997	6,815,587	854			105	717		29,056		6,846,319
1998	5,936,402			<0.5		809		12,196	48	5,949,455
1999	3,008,900	35,377		67		314		8,140		3,052,796
2000	6,171,331	656		<0.5		3		6,943		6,178,933
2001	6,509,649	1,036		208		528		22,477		6,533,898
2002	2,871,875							10,002		2,881,877
2003	5,694,424	116						4,887		5,699,427
2004	8,484,606	130		200		51	182	10,375		8,495,544
2005	7,674,185			181		30		6,939		7,681,335
2006	7,602,928	6		210		764	<0.5		64	7,603,972
2007	8,818,890				15	1,936	22	204	408	8,821,475
2008	8,250,123	46,296	1,200		108	1,211			5,340	8,304,278
2009	9,782,752	69		90		252		842	397	9,784,402
2010	10,647,321					95		27,952	226	10,675,594
2011	14,296,633	154			373	2,452		1,424	79	14,301,115

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-44. Nominal commercial ex-vessel revenues ($) of the albacore surface hook-and-line (troll and baitboat) fishery in Oregon, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	6,686,230					748		87,410	298	6,774,686
1982	1,265,313	242				5		3,833	202	1,269,595
1983	1,883,255	75				1,426	65	16,699	166	1,901,686
1984	901,350	183				92		4,269	720	906,614
1985	822,379					8		698	336	823,421
1986	1,324,977	124				83		3,142		1,328,326
1987	1,679,449							3,749		1,683,198
1988	3,321,249					73		9,451	66	3,330,839
1989	886,505					39		893		887,437
1990	1,763,611					104	2	2,753		1,766,471
1991	979,262							2,604	311	982,177
1992	3,968,734			40		133		4,862		3,973,769
1993	3,882,548					908		10,358		3,893,814
1994	3,749,780			27				8	19	3,749,834
1995	4,049,908	323			21	105		19,802		4,070,158
1996	7,429,668	49				380		24,958		7,455,054
1997	7,341,599	931			218	717		29,056		7,372,520
1998	6,540,414			<0.5		809		12,196	48	6,553,467
1999	3,783,515	35,377		67		314		8,140		3,827,411
2000	7,488,665	656		<0.5		3		6,943		7,496,267
2001	7,558,629	1,036		208		528		22,477		7,582,878
2002	2,951,707							10,002		2,961,709
2003	6,158,462	116						4,887		6,163,464
2004	9,144,548	130		200		51	182	10,375		9,155,486
2005	8,815,478			181		30		6,939		8,822,628
2006	8,048,157	6		210		764	<0.5		64	8,049,201
2007	9,467,854				15	1,936	22	204	408	9,470,439
2008	10,666,183	46,296	1,200		108	1,211			5,341	10,720,338
2009	10,190,661	69		90		252		842	398	10,192,312
2010	12,425,488					95		27,952	227	12,453,761
2011	18,747,739	154			373	2,452		1,424	79	18,752,221

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 12, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-45. Nominal commercial ex-vessel revenues ($) of the albacore surface hook-and-line (troll and baitboat) fishery in Washington, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	1,670,113				N.A.	315		29,078	20	1,699,526
1982	363,957				N.A.					363,957
1983	639,357				N.A.	379		4,382		644,119
1984	90,823				N.A.					90,823
1985	199,032				N.A.					199,032
1986	944,843				N.A.					944,843
1987	838,147				N.A.				35	838,182
1988	3,500,519		6,695		N.A.	29	614	51	51	3,507,959
1989	1,350,170				N.A.	15				1,350,185
1990	2,193,837				N.A.					2,193,837
1991	692,354	15			N.A.	4		875		693,248
1992	4,331,995	72			N.A.	6			55	4,332,128
1993	4,114,857		5,272	848	N.A.	167		28	64	4,121,236
1994	9,771,047				N.A.					9,771,047
1995	5,891,398		251		N.A.			1,779	34	5,893,463
1996	8,344,058				N.A.					8,344,058
1997	6,602,324				N.A.	13				6,602,336
1998	8,470,240				N.A.					8,470,240
1999	3,198,589	26,351			N.A.				152	3,225,092
2000	5,490,275				N.A.					5,490,275
2001	7,316,469	755			N.A.	1,133		80		7,318,437
2002	6,434,901				N.A.	77		2,251	1,621	6,438,850
2003	11,361,444				N.A.					11,361,444
2004	13,432,068				N.A.				232	13,432,300
2005	9,773,578				N.A.			4,057	703	9,778,339
2006	14,724,730				N.A.					14,724,730
2007	10,275,193				N.A.			2,576	310	10,278,080
2008	15,641,047				N.A.	44		5,091		15,646,182
2009	15,221,165				N.A.			2,603		15,223,768
2010	14,035,776				N.A.			6,510		14,042,286
2011	21,026,701				N.A.	<0.5		4,276		21,030,977

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Note: There is no species code for dorado in Washington.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Table 4-46. Nominal commercial ex-vessel revenues ($) of the albacore surface hook-and-line (troll and baitboat) fishery in Washington, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	1,670,113				N.A.	315		29,078	20	1,699,526
1982	363,957				N.A.					363,957
1983	639,357				N.A.	379		4,382		644,119
1984	90,823				N.A.					90,823
1985	199,032				N.A.					199,032
1986	944,843				N.A.					944,843
1987	838,147				N.A.				35	838,182
1988	3,500,519		6,695		N.A.	29	614	51	51	3,507,959
1989	1,350,170				N.A.	15				1,350,185
1990	2,193,837				N.A.					2,193,837
1991	692,354	15			N.A.	4		875		693,248
1992	4,360,248	72			N.A.	6			55	4,360,381
1993	4,138,143		5,272	848	N.A.	167		28	64	4,144,522
1994	9,812,666				N.A.					9,812,666
1995	6,012,790		251		N.A.			1,779	35	6,014,854
1996	9,062,840				N.A.					9,062,840
1997	6,791,456				N.A.	13				6,791,468
1998	8,966,640				N.A.					8,966,640
1999	3,651,158	26,351			N.A.				152	3,677,661
2000	5,869,381				N.A.					5,869,381
2001	7,930,083	755			N.A.	1,133		80		7,932,051
2002	7,396,988				N.A.	77		2,251	1,621	7,400,937
2003	15,656,498				N.A.			<0.5		15,656,498
2004	15,823,418				N.A.				232	15,823,650
2005	10,887,708				N.A.			4,057	703	10,892,468
2006	15,178,595				N.A.					15,178,595
2007	10,450,945				N.A.			2,576	311	10,453,831
2008	17,225,272				N.A.	44		5,091		17,230,407
2009	16,425,993				N.A.			2,603		16,428,596
2010	15,355,970				N.A.			6,510		15,362,480
2011	22,137,399				N.A.	<0.5		4,276		22,141,675

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 12, 2013.

Note: There is no species code for dorado in Washington.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-47. Real commercial ex-vessel revenues (2011 $) of the albacore surface hook-and-line (troll and baitboat) fishery in California, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	38,454,555	38,998		375	155	3,133	2,150	36,194	2,364	38,537,924
1982	11,723,978	10,747	27,022	5,663	1,139	11,593	26	20,444	681	11,801,293
1983	18,472,218	28,531	14,806	1,924	65	36,383	30,337	29,481	8,517	18,622,262
1984	21,144,568	37,654	182,334	11,022	1,339	12,989	1,758	4,081	7,241	21,402,986
1985	12,828,364	7,869	56,882	10,719	12	11,728	440	18,588	5,821	12,940,423
1986	6,474,732	12,819	11,565	324		34,132	289	11,354	1,186	6,546,401
1987	3,800,356	2,010	58,254	6,016		4,031	1,149	5,403	705	3,877,924
1988	2,922,413	1,609	151,566	4,944		1,123		3,145	1,797	3,086,597
1989	2,371,268	2,987	56,299	17,893	50	29,419	2	12,076	4,588	2,494,581
1990	2,286,347	124	20,913	878	116	9,504	131	60	2,400	2,320,472
1991	1,649,898	85	17,757	732		281			1,350	1,670,103
1992	4,276,501	3,143	82,066	3,435	416	8,886		1,863	909	4,377,219
1993	4,203,384	223,076	633,384	9,626	33,617	5,672			3,239	5,111,998
1994	9,097,115	855	9,639	390	255	837		750	462	9,110,303
1995	1,970,526	822	4,102	240		65	22	986	4,158	1,980,921
1996	14,410,060	52,546	3,554	402		82		2,136	1,361	14,470,139
1997	7,603,423	18,882	5,881	2,180	357	15,032	120	11,495	4,991	7,662,359
1998	4,102,086	182,964	22,678	6,646	695	5,271	370	5,488	6,908	4,333,106
1999	12,963,756	70,122	101,682	2,931	1,845	5,264	593	2,092	10,270	13,158,555
2000	4,705,155	4,907	124,970	285	381	2,411	667	3,196	6,685	4,848,657
2001	6,144,988	32,439	2,545	2,502	679	7,672	222	13,072	15,492	6,219,612
2002	4,748,045	8,408	12,291	816	208	1,017	1,526	11,735	7,585	4,791,631
2003	3,096,009	13,161		75	683	3,329	672	10,991	6,872	3,131,792
2004	2,820,022	2,791		374	767	2,089	1,240	14,483	3,632	2,845,398
2005	1,200,946	1,629				1,765		1,516	2,964	1,208,820
2006	553,922	1,723		46	183	242	136	3,822	1,019	561,093
2007	1,680,976	1,304			222	6	64	1,257	749	1,684,578
2008	998,680	2,959			387	55	3,334		1,346	1,006,761
2009	942,291	11,952	300	587	256	240	95		1,708	957,429
2010	1,751,609	543		53	542	179			315	1,753,241
2011	2,124,935	1,630			116	4		595	2,085	2,129,365

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Table 4-48. Real commercial ex-vessel revenues (2011 $) of the albacore surface hook-and-line (troll and baitboat) fishery in California, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	38,454,555	38,998		375	155	3,133	2,150	36,194	2,364	38,537,924
1982	11,723,978	10,747	27,022	5,663	1,139	11,593	26	20,444	681	11,801,293
1983	18,472,218	28,531	14,806	1,924	65	36,383	30,337	29,481	8,517	18,622,262
1984	21,144,568	37,654	182,334	11,022	1,339	12,989	1,758	4,081	7,241	21,402,986
1985	12,828,364	7,869	56,882	10,719	12	11,728	440	18,588	5,821	12,940,423
1986	6,474,732	12,819	11,565	324		34,132	289	11,354	1,186	6,546,401
1987	3,800,356	2,010	58,254	6,016		4,031	1,149	5,403	705	3,877,924
1988	2,922,413	1,609	151,566	4,944		1,123		3,145	1,797	3,086,597
1989	2,371,268	2,987	56,299	17,893	50	29,419	2	12,076	4,588	2,494,581
1990	2,286,347	124	20,913	878	116	9,504	131	60	2,400	2,320,472
1991	1,649,898	85	17,757	732		281			1,350	1,670,103
1992	4,276,501	3,143	82,066	3,435	416	8,886		1,863	909	4,377,219
1993	4,203,384	223,076	633,384	9,626	33,617	5,672			3,239	5,111,998
1994	9,097,115	855	9,639	390	255	837		750	462	9,110,303
1995	1,970,526	822	4,102	240		65	22	986	4,158	1,980,921
1996	14,432,266	52,546	3,554	402		82		2,136	1,361	14,492,346
1997	7,606,328	18,882	5,881	2,180	357	15,032	120	11,495	4,991	7,665,264
1998	4,102,086	182,964	22,678	6,646	695	5,271	370	5,488	6,908	4,333,106
1999	13,011,387	70,122	101,682	2,931	1,845	5,264	593	2,092	10,270	13,206,186
2000	4,705,155	4,907	124,970	285	381	2,411	667	3,196	6,685	4,848,657
2001	6,144,988	32,439	2,545	2,502	679	7,672	222	13,072	15,493	6,219,612
2002	4,748,045	8,408	12,291	816	208	1,017	1,526	11,735	7,585	4,791,631
2003	3,096,009	13,161		75	683	3,329	672	10,991	6,872	3,131,792
2004	2,820,022	2,791		374	767	2,089	1,240	14,483	3,632	2,845,398
2005	1,200,946	1,629				1,765		1,516	2,964	1,208,820
2006	553,922	1,723		46	183	242	136	3,822	1,019	561,093
2007	1,680,976	1,304			222	6	64	1,257	749	1,684,578
2008	998,680	2,959			387	55	3,334		1,346	1,006,761
2009	942,291	11,952	300	587	256	240	95		1,708	957,429
2010	1,751,609	543		53	542	179			315	1,753,241
2011	2,124,935	1,630			116	4		595	2,085	2,129,365

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 12, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-49. Real commercial ex-vessel revenues (2011 $) of the albacore surface hook-and-line (troll and baitboat) fishery in Oregon, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	14,500,607					1,623		189,568	646	14,692,444
1982	2,556,121	495				10		7,835	415	2,564,876
1983	3,628,008	147				2,803	128	32,833	329	3,664,248
1984	1,701,849	347				175		8,090	1,363	1,711,825
1985	1,512,839					15		1,284	618	1,514,756
1986	2,384,339	223				149		5,654		2,390,365
1987	2,937,127							6,556		2,943,683
1988	5,611,091					124		15,981	110	5,627,306
1989	1,444,290					64		1,454		1,445,808
1990	2,766,449					163	3	4,319		2,770,935
1991	1,483,506							3,945	470	1,487,921
1992	5,708,090			59		197		7,195		5,715,541
1993	5,595,665					1,315		14,998		5,611,978
1994	5,317,329			38				11	27	5,317,405
1995	5,625,654	448			29	146		27,506		5,653,783
1996	8,959,001	66				518		34,021		8,993,605
1997	9,130,057	1,144			141	961		38,923		9,171,225
1998	7,862,784			<0.5		1,071		16,154	64	7,880,073
1999	3,927,555	46,177		87		410		10,625		3,984,853
2000	7,884,670	838		<0.5		3		8,871		7,894,383
2001	8,134,011	1,295		260		660		28,085		8,164,311
2002	3,531,139							12,298		3,543,436
2003	6,857,447	140						5,885		6,863,471
2004	9,937,463	152		235		59	214	12,151		9,950,274
2005	8,699,904			205		34		7,866		8,708,009
2006	8,349,361	7		231		839	<0.5		69	8,350,507
2007	9,410,831				16	2,066	23	218	436	9,413,590
2008	8,613,617	48,336	1,253		113	1,264			5,575	8,670,158
2009	10,106,149	71		93		260		870	410	10,107,854
2010	10,874,600					97		28,548	231	10,903,476
2011	14,296,633	154			373	2,452		1,424	79	14,301,115

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 11, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-50. Real commercial ex-vessel revenues (2011 $) of the albacore surface hook-and-line (troll and baitboat) fishery in Oregon, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	14,500,607					1,623		189,568	646	14,692,444
1982	2,586,493	495				10		7,835	415	2,595,248
1983	3,702,821	147				2,803	128	32,833	330	3,739,061
1984	1,708,073	347				175		8,090	1,363	1,718,048
1985	1,512,839					15		1,284	618	1,514,756
1986	2,384,339	223				149		5,654		2,390,365
1987	2,937,127							6,556		2,943,683
1988	5,615,910					124		15,981	110	5,632,125
1989	1,444,290					64		1,454		1,445,808
1990	2,766,449					163	3	4,319		2,770,935
1991	1,483,506							3,945	470	1,487,921
1992	5,873,515			59		197		7,195		5,880,966
1993	5,621,992					1,315		14,998		5,638,306
1994	5,317,329			38				11	27	5,317,405
1995	5,625,654	448			29	146		27,506		5,653,783
1996	10,127,683	66				518		34,021		10,162,288
1997	9,834,694	1,246			291	961		38,923		9,876,115
1998	8,662,799			<0.5		1,071		16,154	64	8,680,088
1999	4,938,670	46,177		87		410		10,625		4,995,968
2000	9,567,733	838		<0.5		3		8,871		9,577,445
2001	9,444,744	1,295		260		660		28,085		9,475,044
2002	3,629,297							12,298		3,641,594
2003	7,416,259	140						5,885		7,422,284
2004	10,710,410	152		235		59	214	12,151		10,723,221
2005	9,993,740			205		34		7,866		10,001,845
2006	8,838,301	7		231		839	<0.5		69	8,839,447
2007	10,103,355				16	2,066	23	218	436	10,106,114
2008	11,136,127	48,336	1,253		113	1,264			5,575	11,192,668
2009	10,527,543	71		93		260		870	410	10,529,247
2010	12,690,724					97		28,548	231	12,719,600
2011	18,747,739	154			373	2,452		1,424	79	18,752,221

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 12, 2013.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Table 4-51. Real commercial ex-vessel revenues (2011 $) of the albacore surface hook-and-line (troll and baitboat) fishery in Washington, with Canadian vessels excluded, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	3,622,020				N.A.	683		63,062	43	3,685,808
1982	743,984				N.A.					743,984
1983	1,257,093				N.A.	746		8,616		1,266,454
1984	172,110				N.A.					172,110
1985	366,138				N.A.					366,138
1986	1,700,276				N.A.					1,700,276
1987	1,465,804				N.A.				61	1,465,865
1988	5,919,038		11,321		N.A.	48	1,037	86	88	5,931,618
1989	2,199,691				N.A.	24				2,199,715
1990	3,441,313				N.A.					3,441,313
1991	1,048,862	22			N.A.	6		1,326		1,050,216
1992	6,411,122	106			N.A.	9			81	6,411,318
1993	5,958,379		7,634	1,227	N.A.	241		40	96	5,967,617
1994	13,855,711				N.A.					13,855,711
1995	8,183,634		348		N.A.			2,471	48	8,186,502
1996	11,374,124				N.A.					11,374,124
1997	8,844,372				N.A.	17				8,844,389
1998	11,218,861				N.A.					11,218,861
1999	4,175,159	34,396			N.A.				199	4,209,754
2000	7,014,532				N.A.					7,014,532
2001	9,142,158	943			N.A.	1,416		100		9,144,617
2002	7,912,087				N.A.	95		2,768	1,992	7,916,943
2003	13,681,893				N.A.					13,681,893
2004	15,732,101				N.A.				272	15,732,373
2005	11,079,898				N.A.			4,599	798	11,085,295
2006	16,170,360				N.A.					16,170,360
2007	10,964,884				N.A.			2,749	331	10,967,965
2008	16,330,181				N.A.	46		5,316		16,335,542
2009	15,724,344				N.A.			2,689		15,727,033
2010	14,335,386				N.A.			6,649		14,342,035
2011	21,026,701				N.A.	<0.5		4,276		21,030,977

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Feb. 11, 2013.
Note: There is no species code for dorado in Washington.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.
Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.
Canadian vessels were excluded by outer joining the fish ticket tables with the state vessel table and checking the "idtype."
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-52. Real commercial ex-vessel revenues (2011 $) of the albacore surface hook-and-line (troll and baitboat) fishery in Washington, 1981-2011.

Year	Albacore	Other Tunas	Swordfish	HMS Sharks	Dorado	Groundfish	Coastal Pelagics	Salmon	Other	Total
1981	3,622,020				N.A.	683		63,062	43	3,685,808
1982	743,984				N.A.					743,984
1983	1,257,093				N.A.	746		8,616		1,266,454
1984	172,110				N.A.					172,110
1985	366,138				N.A.					366,138
1986	1,700,276				N.A.					1,700,276
1987	1,465,804				N.A.				61	1,465,865
1988	5,919,038		11,321		N.A.	48	1,037	86	88	5,931,618
1989	2,199,691				N.A.	24				2,199,715
1990	3,441,313				N.A.					3,441,313
1991	1,048,862	22			N.A.	6		1,326		1,050,216
1992	6,452,935	106			N.A.	9			82	6,453,132
1993	5,992,098		7,634	1,227	N.A.	241		40	96	6,001,336
1994	13,914,728				N.A.					13,914,728
1995	8,352,257		348		N.A.			2,471	48	8,355,124
1996	12,353,926				N.A.					12,353,926
1997	9,097,730				N.A.	17				9,097,747
1998	11,876,345				N.A.					11,876,345
1999	4,765,902	34,396			N.A.				199	4,800,497
2000	7,498,890				N.A.					7,498,890
2001	9,908,888	943			N.A.	1,416		100		9,911,347
2002	9,095,030				N.A.	95		2,768	1,992	9,099,885
2003	18,854,165				N.A.			<0.5		18,854,165
2004	18,532,932				N.A.				272	18,533,204
2005	12,342,940				N.A.			4,599	798	12,348,337
2006	16,668,784				N.A.					16,668,784
2007	11,152,433				N.A.			2,749	331	11,155,513
2008	17,984,205				N.A.	46		5,316		17,989,567
2009	16,969,001				N.A.			2,689		16,971,690
2010	15,683,761				N.A.			6,649		15,690,410
2011	22,137,399				N.A.	<0.5		4,276		22,141,675

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Feb. 12, 2013.

Note: There is no species code for dorado in Washington.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Real values are calculated to eliminate the effects of inflation by dividing current nominal values by the current year GDP implicit price deflator, with a base year of 2011.

Landed weights in lbs are multiplied by the prices per pound in each fish ticket line and then divided by the corresponding deflator.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-53. Commercial catch and effort fishery statistics for the U.S. South Pacific albacore troll fishery, 1986-2011.

Fishing Season	No. Trips	Catch (mt)	No. Days	No. Vessels
1986-1987	16	751	565	7
1987-1988	91	3,558	3,163	43
1988-1989	80	3,239	3,742	43
1989-1990	76	3,995	3,537	39
1990-1991	78	5,221	6,997	56
1991-1992	65	3,097	6,867	55
1992-1993	45	1,036	4,687	44
1993-1994	17	2,236	3,848	14
1994-1995	29	1,953	1,894	21
1995-1996	55	1,964	4,152	53
1996-1997	26	1,617	3,189	26
1997-1998	38	1,701	5,384	36
1998-1999	24	1,241	2,505	21
1999-2000	39	2,562	4,958	36
2000-2001	39	2,128	6,377	33
2001-2002	12	1,218	3,602	12
2002-2003	14	1,678	2,289	14
2003-2004	12	995	1,488	11
2004-2005	8	725	1,491	8
2005-2006	10	601	1,310	8
2006-2007	6	271	881	6
2007-2008	4	150	255	3
2008-2009	4	237	199	4
2009-2010	6	307	413	6
2010-2011	6	402	324	6

Data reported for the most recent year is preliminary.

Source: Childers, SWFSC, August 31, 2012.

Note 1: Total catches for the U.S. South Pacific albacore troll fishery may include catch from November and December of the previous year.

Note 2: Total catches for seasons before 1996-97 may contain catch from non-U.S. vessels.

Table 4-54. Percentages of commercial catch and effort by fishing areas for U.S. albacore surface hook-and-line (troll and baitboat) vessels, 1995-2011.

	Catch			Effort		
Year	U.S. EEZ	Canada EEZ	High-Seas	U.S. EEZ	Canada EEZ	High-Seas
1995	5	6	89	16	10	73
1996	14	0	86	27	0	73
1997	17	4	80	30	4	66
1998	15	0	85	26	0	74
1999	65	1	34	62	1	37
2000	70	0	30	69	1	31
2001	57	0	43	67	1	33
2002	64	2	34	73	2	25
2003	86	1	13	87	1	12
2004	93	1	6	89	2	9
2005	92	2	6	89	3	8
2006	83	1	16	90	1	9
2007	99	1	0	97	1	2
2008	79	6	15	86	4	11
2009	93	3	4	93	2	5
2010	72	2	26	83	3	15
2011	95	0	4	93	1	6

Source: Childers, SWFSC, August 31, 2012.

Note 1: Data for 2011 is preliminary.

Note 2: Data prior to 2005 are from voluntary logbooks.

Note 3: Zeros mean no catch or effort.

Note 4: Percentages in some years do not add up to 100 due to rounding error.

Table 4-55. Number of vessels with West Coast commercial HMS landings by fishery (HMS gear & species), 1981-2011.

Year	Albacore Surface Hook-and-Line	Swordfish & HMS Shark Drift Gillnet[1]	Any Species Harpoon[2]	HMS Species Longline	HMS Tuna Purse Seine[3]	Any HMS Fishery
1981	1,837	181	190	27	135	2,206
1982	761	212	162	28	124	1,168
1983	1,629	237	93	19	111	1,971
1984	1,126	284	114	14	78	1,405
1985	792	296	101	12	53	1,119
1986	419	266	114	6	51	761
1987	486	258	101	8	47	818
1988	533	220	84	14	43	825
1989	338	194	45	4	38	569
1990	368	196	52	5	33	607
1991	172	172	33	13	18	377
1992	610	154	48	20	29	800
1993	610	149	42	12	26	781
1994	718	163	51	43	25	915
1995	477	138	43	36	22	660
1996	726	141	31	29	23	877
1997	1,200	136	32	52	34	1,359
1998	866	127	30	70	33	1,031
1999	827	119	33	53	14	943
2000	763	104	36	70	16	905
2001	981	96	25	56	15	1,085
2002	736	80	32	36	4	842
2003	888	72	35	40	3	990
2004	780	63	29	40	11	894
2005	599	56	25	**	8	674
2006	635	61	24	**	*	722
2007	679	60	28	**	4	757
2008	523	62	32	**	*	610
2009	680	61	28	**	8	772
2010	651	53	26	**	*	728
2011	687	49	18	26	3	764

* Not reported due to data confidentiality requirements (fewer than three vessels).

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Jul. 12, 2012.

[1]There is no drift gillnet gear for Washington.

[2]Only California has harpoon landings. Some of the non-swordfish species may have been taken by dual-gear permit holders, who may have fished with drift gillnets but landed under harpoon.

[3]There is no purse seine gear for Washington.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Only fish tickets where at least 1 lb of swordfish or any HMS shark was landed for the drift gillnet fishery were used.

Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the longline fishery were used.

Only fish tickets where at least 1 lb of any HMS tuna was landed for the purse seine fishery were used.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-56. Number of vessels with commercial HMS landings in California by fishery (HMS gear & species), 1981-2011.

Year	Albacore Surface Hook-and-Line	Swordfish & HMS Shark Drift Gillnet	Any Species Harpoon[1]	HMS Species Longline	HMS Tuna Purse Seine	Any HMS Fishery
1981	1,310	181	190	27	135	1,682
1982	602	212	162	28	124	1,009
1983	1,243	237	93	19	111	1,585
1984	993	284	114	14	78	1,273
1985	724	*	101	6	53	1,045
1986	344	265	114	*	51	685
1987	289	257	101	*	47	622
1988	149	220	84	*	43	453
1989	180	194	45	4	38	415
1990	103	196	52	5	33	348
1991	76	172	33	*	18	280
1992	139	154	48	*	29	337
1993	202	149	42	12	26	377
1994	271	163	51	43	25	475
1995	137	138	43	36	22	334
1996	290	141	31	*	23	446
1997	612	136	32	52	34	780
1998	382	126	30	*	33	561
1999	446	117	33	53	14	564
2000	349	*	36	*	16	493
2001	474	96	25	*	15	581
2002	321	80	32	*	4	429
2003	325	*	35	40	*	432
2004	191	*	29	*	11	308
2005	97	56	25	**	8	179
2006	80	61	24	**	*	174
2007	155	60	28	**	4	239
2008	67	62	32	**	*	160
2009	129	61	28	**	8	226
2010	135	53	26	**	*	214
2011	141	49	18	22	3	219

* Not reported due to data confidentiality requirements (fewer than three vessels or information for two or fewer vessels could otherwise be deduced).

** Not reported due to data confidentiality requirements based on non-PacFIN data sources (mandatory logbooks, permits, etc.)

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.

Data reported for the most recent year is preliminary.

Source: PacFIN, extracted Jul. 29, 2012.

[1]Some of the non-swordfish species may have been taken by dual-gear permit holders, who may have fished with drift gillnets but landed under harpoon.

Additional processing info:

Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.

Only fish tickets where at least 1 lb of swordfish or any HMS shark was landed for the drift gillnet fishery were used.

Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the longline fishery were used.

Only fish tickets where at least 1 lb of any HMS tuna was landed for the purse seine fishery were used.

Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-57. Number of vessels with commercial HMS landings in Oregon by fishery (HMS gear & species), 1981-2011.

Year	Albacore Surface Hook-and-Line	Swordfish & HMS Shark Drift Gillnet	HMS Species Pelagic Longline	HMS Tuna Purse Seine	Any HMS Fishery
1981	681				681
1982	192				192
1983	407				407
1984	177				177
1985	89	*			*
1986	90	33			122
1987	170	20	*		187
1988	262	5			266
1989	134				134
1990	211				211
1991	71				71
1992	352				352
1993	367				367
1994	328				328
1995	230	3			231
1996	385	3			385
1997	498	4			499
1998	373	6			374
1999	309	4			309
2000	375	*			*
2001	473		*		*
2002	269				269
2003	385	*		*	*
2004	450	*			*
2005	383				383
2006	368				368
2007	413				413
2008	337				337
2009	417				417
2010	423				423
2011	442				442

* Not reported due to data confidentiality requirements (fewer than three vessels or information for two or fewer vessels could otherwise be deduced).
Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data t less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 29, 2012.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Only fish tickets where at least 1 lb of swordfish or any HMS shark was landed for the drift gillnet fishery were used.
Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the pelagic longline fishery were used.
Only fish tickets where at least 1 lb of any HMS tuna was landed for the purse seine fishery were used.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-58. Number of vessels with commercial HMS landings in Washington by fishery (HMS gear & species), 1981-2011.

Year	Albacore Surface Hook-and-Line	HMS Species Longline	Any HMS Fishery
1981	251		251
1982	61		61
1983	157		157
1984	45		45
1985	32	6	38
1986	47	*	*
1987	89	*	*
1988	223	*	*
1989	77		77
1990	103		103
1991	42	*	*
1992	229	*	*
1993	208		208
1994	265		265
1995	207		207
1996	215	*	*
1997	247		247
1998	220	*	*
1999	187		187
2000	179	*	*
2001	205	*	*
2002	241	*	*
2003	325		325
2004	301	*	*
2005	225		225
2006	313		313
2007	221		221
2008	225		225
2009	272		272
2010	241		241
2011	230	4	232

* Not reported due to data confidentiality requirements (fewer than three vessels or information for two or fewer vessels could otherwise be deduced).
Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data reported for the most recent year is preliminary.
Source: PacFIN, extracted Jul. 29, 2012.
Additional processing info:
Only fish tickets where at least 1 lb of albacore was landed for the albacore surface hook-and-line (troll and baitboat) fishery were used.
Only fish tickets where at least 1 lb of any highly migratory species (except striped marlin) was landed for the longline fishery were used.
Aquaculture fish ticket/fish ticket line info is excluded.

Table 4-59. PacFIN species codes used to extract commercial fisheries data for this HMS SAFE report.

AGID	CATEGORY	SPID	MGRP[1]	DESCRIPTION
C	5	ALBC	HMSP	TUNA, ALBACORE
O	375	ALBC	HMSP	TUNA, ALBACORE
W	101	ALBC	HMSP	ALBACORE TUNA THUNNUS ALALUNGA
C	1	YTNA	HMSP	TUNA, YELLOWFIN
O	376	YTNA	HMSP	TUNA, YELLOWFIN
C	2	STNA	HMSP	TUNA, SKIPJACK
O	372	STNA	HMSP	TUNA, SKIPJACK
W	104	STNA	HMSP	SKIPJACK TUNA
C	8	ETNA	HMSP	TUNA, BIGEYE
O	377	ETNA	HMSP	TUNA, BIGEYE
C	4	BTNA	HMSP	TUNA, BLUEFIN
O	378	BTNA	HMSP	TUNA, BLUEFIN
W	102	BTNA	HMSP	BLUEFIN TUNA (THUNNUS THYNNUS)
C	6	UTNA	HMSP	TUNA, UNSPECIFIED
C	91	SWRD	HMSP	SWORDFISH
O	385	SWRD	HMSP	SWORDFISH
W	106	SWRD	HMSP	SWORDFISH XIPHIAS GLADIUS
C	155	TSRK	HMSP	SHARK, COMMON THRESHER
O	023	TSRK	HMSP	SHARK, THRESHER
W	287	TSRK	HMSP	THRESHER SHARK ALOPIUS VULPINUS
W	387	TSRK	HMSP	THRESHER SHARK (REDUCTION) ALOPIUS VULPINUS
W	487	TSRK	HMSP	THRESHER SHARK (ANIMAL FOOD) ALOPIUS VULPINUS
C	151	MAKO	HMSP	SHARK, BONITO (MAKO)
O	026	MAKO	HMSP	SHARK, SHORTFIN MAKO
C	167	BSRK	HMSP	SHARK, BLUE
O	031	BSRK	HMSP	SHARK, BLUE
W	282	BSRK	HMSP	BLUE SHARK PRIONACE GLAUCA
W	382	BSRK	HMSP	BLUE SHARK (REDUCTION) PRIONACE GLAUCA
W	482	BSRK	HMSP	BLUE SHARK (ANIMAL FOOD) PRIONACE GLAUCA
C	481	DRDO	HMSP	DOLPHINFISH
O	292	DRDO	HMSP	DOLPHINFISH

AGID = agency id (C=CDFG, O=ODFW, W=WDFW)
CATEGORY = state species character code
SPID = PacFIN species ID
MGRP = PacFIN species management group
DESCRIPTION = state species description

[1]PacFIN species codes in the HMSP management group that are not used include:

C	92	MRLN	HMSP	MARLIN, STRIPED
O	388	MRLN	HMSP	MARLIN, STRIPED

Table 4-60. PacFIN gear codes used to extract commercial fisheries data for this HMS SAFE report.

AGID	GEAR	GRID	GRGROUP	DESCRIPTION
SURFACE HOOK AND LINE (ALBACORE)				
C	001	POL	HKL	HOOK AND LINE
C	002	POL	HKL	LIVE BAIT
C	006	POL	HKL	JIG (ALBACORE)
C	007	TRL	TLS	TROLL (ALBACORE)
C	009	TRL	TLS	TROLL, (SALMON)
O	120	TRL	TLS	OCEAN TROLL
O	170	POL	HKL	TUNA BAITBOAT
W	41	TRL	TLS	TROLL (SALMON)
DRIFT GILLNET (SWORDFISH & SHARK)				
C	065	DGN	NET	GILL NET, DRIFT
O	140	GLN	NET	OCEAN GILLNET
HARPOON				
C	012	OTH	MSC	HARPOON/SPEAR
LONGLINE (HMS)				
C	005	LGL	HKL	LONG LINE, SET
O	150	LGL	HKL	PELAGIC LONGLINE
W	43	LGL	HKL	SET LINE/LONG LINE
PURSE SEINE (TUNA)				
C	070	SEN	NET	ENCIRCLING NETS
C	071	SEN	NET	PURSE SEINE
C	073	SEN	NET	DRUM PURSE SEINE
C	075	SEN	NET	LAMPARA NET
O	160	SEN	NET	TUNA SEINE

AGID = agency id (C=CDFG, O=ODFW, W=WDFW)
GEAR = state gear character code
GRID = PacFIN gear ID
GRGROUP = PacFIN gear group
DESCRIPTION = state gear description

4.4 Recreational Fisheries

Table 4-61. Catches by species (thousands of fish) for the West Coast recreational private sport fishing fleet, 1981-2011.

Year	Yellowfin	Skipjack	Bluefin	Albacore	Bigeye	Swordfish	Striped Marlin	Mako Shark	Thresher Shark	Blue Shark	Dorado
1981				1.7				13.0		2.4	
1982				7.6	2.5		0.8	1.5	2.2	1.1	
1983	51.3	65.0	0.6	5.7	0.6		0.4	1.1	2.4	4.2	4.7
1984	0.3	4.4	0.6	123.0	0.6		1.2	2.6	0.8	8.8	4.5
1985				57.9			0.7	9.3	0.4	17.6	
1986				26.7				4.8	1.4	3.0	
1987		0.5		2.3			0.9	21.6	4.8	13.9	
1988				1.0			0.8	14.3	0.9	30.3	
1989	7.0	5.0		4.7				5.8	0.8	2.6	
1990											
1991											
1992											
1993	6.9	16.0		0.0			0.3	3.6	2.6	2.9	6.2
1994	1.7	7.7		4.8			0.4	13.3	3.6	1.8	1.0
1995	23.7	45.2		5.5			0.3	5.3	2.7	1.9	
1996	3.2	1.0		1.0				1.9	0.7	0.8	2.7
1997	9.2	4.3		90.5			0.4	4.8	0.5	3.9	19.8
1998	6.7	1.5	1.6	97.5				1.7	0.6	0.4	11.1
1999				106.9				1.1	1.3	0.5	1.1
2000	36.8	0.4		57.9	0.4			2.3	1.7	0.0	61.0
2001		2.5	1.0	90.1				5.1	2.2	0.1	
2002			0.9	70.9				5.6	1.6	0.1	0.2
2003	6.8	12.4		133.5	0.2			3.9	2.0	0.2	0.2
2004	2.9	14.5	0.1	44.6	0.0		0.0	3.0	4.5	0.3	3.2
2005	0.1	0.0	0.1	10.8			0.0	1.3	0.3	0.1	0.2
2006	1.3	0.3	0.2	20.6			0.0	1.5	0.5	0.1	12.9
2007	0.8	0.1	0.0	83.8		0.0		0.7	0.7	0.3	0.3
2008	6.7	0.3	0.4	29.6				0.4	0.8	0.1	16.9
2009	6.6	0.5	0.2	55.7			0.0	0.6	1.1	0.1	2.4
2010	0.2		0.0	53.4			0.0	0.4	0.7	0.0	0.0
2011			0.1	29.7				0.3	1.0	0.0	

Data were extracted from RecFin by going to the link entitled "Tabulate Historical Estimates (1980-2003)."
Blank cells indicate no data exists. Data include catch that was examined or reported dead (A + B1).
Extracted June 4, 2012. Data for the most recent year is preliminary.
Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
No private recreational vessel catch data were available for the years 1990 to 1992.

Table 4-62. Albacore fishing hours for the California CPFV fleet, 1981-2011.

Year	Albacore Hours
1981	219,274
1982	284,584
1983	94,051
1984	675,921
1985	614,060
1986	219,414
1987	108,287
1988	14,775
1989	227,960
1990	102,966
1991	26,487
1992	2,248
1993	1,458
1994	891
1995	10,464
1996	27,148
1997	429,092
1998	590,152
1999	872,207
2000	596,074
2001	835,089
2002	943,300
2003	740,230
2004	612,312
2005	370,636
2006	192,692
2007	533,560
2008	388,011
2009	296,411
2010	180,632
2011	26,658

Source: CPFV Logbook Database.
Extracted August 29, 2012.

Table 4-63 Numbers of CPFV vessels targeting HMS in California waters, 1981-2011.

Year	Vessels
1981	73
1982	93
1983	169
1984	119
1985	82
1986	87
1987	77
1988	66
1989	78
1990	96
1991	62
1992	123
1993	91
1994	76
1995	140
1996	119
1997	200
1998	190
1999	181
2000	184
2001	206
2002	160
2003	191
2004	154
2005	134
2006	151
2007	160
2008	122
2009	145
2010	115
2011	112

Source: CPFV Logbook Database.
Extracted August 29, 2012.

Table 4-64. Numbers of angler hours for the California CPFV fleet, 1981-2011.

Year	Angler Hours
1981	412,920
1982	400,785
1983	1,238,990
1984	1,347,175
1985	1,013,408
1986	473,075
1987	439,443
1988	288,953
1989	989,066
1990	1,166,386
1991	349,538
1992	1,068,767
1993	740,222
1994	646,909
1995	1,115,514
1996	950,955
1997	1,981,244
1998	1,821,462
1999	1,707,549
2000	1,704,851
2001	1,694,902
2002	1,651,586
2003	1,590,705
2004	1,489,255
2005	1,179,063
2006	1,465,685
2007	949,031
2008	1,594,578
2009	1,495,118
2010	600,222
2011	718,828

Source: CPFV Logbook Database.
Extracted August 29, 2012.

Table 4-65. Catch in numbers of fish by species for the California Commercial Passenger Fishing Vessel fleet in California waters, 1981–2011.

Year	Yellowfin	Skipjack	Bluefin	Albacore	Bigeye	Swordfish	Striped Marlin	Mako Shark	Common Thresher Shark	Blue Shark	Dorado
1981	81	17	419	2,127	25		37	34	7	100	35
1982	129	8	392	7,352	9		13	18	36	83	
1983	37,725	48,126	443	7,833	176		28	28	136	22	1,258
1984	421	3,993	1,765	15,527	26	2	9	49	16	35	527
1985	43	40	850	13,309	10		7	18	29	19	5
1986			443	14,706	37		13	58	13	217	11
1987	1	167	5	3,580	7		8	295	15	645	
1988	9	2	147	547	2	2	2	115	15	882	1
1989	17	165	88	367	2		7	302	45	4,469	1
1990	216	1,008	198	275	5		7	231	51	2,675	7,147
1991	60	18		741			1	128	50	5,802	
1992	15,457	26,326	3,325	379	7		12	130	29	1,109	1,912
1993	73	4,743	316	393		3	1	297	163	694	707
1994	2,285	1,797	10	171			5	269	30	497	64
1995	55,205	34,368	12,062	1,554	11	1	21	161	59	521	1,354
1996	4,203	1,199	439	1,826			5	237	31	439	646
1997	20,838	9,694	1,354	31,685	33		12	356	47	500	5,715
1998	6,339	3,162	2,828	55,065	27		6	150	28	94	378
1999	230	171	1,623	49,954	14		1	70	47	150	392
2000	12,828	190	1,569	22,708	60		2	83	40	149	4,367
2001	1,387	4,083	3,835	92,639	2	1		193	14	140	755
2002	509	1,817	13,246	125,140	2	2	2	189	11	15	298
2003	2,788	10,363	2,858	56,004				79	26	47	74
2004	8,330	735	485	20,197	63	2	1	250	18	6	671
2005	5,634	2,224	723	16,426	2		4	121	23	26	668
2006	5,407	1,765	1,349	3,402	4	3	2	178	27	18	11,329
2007	1,171	67	187	38,304			93	108	40	19	72
2008	5,600	824	3,159	4,705		2	1	77	45	17	5,674
2009	7,259	1,888	2,788	4,777			4	43	39	11	1,828
2010	1,033	7	306	5,712				32	68	140	3
2011	1,236	222	2,743	609				52	133	6	166

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data include retained catch but not discards. Source: CPFV Logbook Database, extracted August 29, 2012.

Table 4-66. Catch in numbers of fish by species for the California Commercial Passenger Fishing Vessel fleet in Mexico waters, 1981–2011.

Year	Yellowfin	Skipjack	Bluefin	Albacore	Bigeye	Swordfish	Striped Marlin	Mako Shark	Common Thresher Shark	Blue Shark	Dorado
1981	4,478	417	123	24,521	217	1	30	3		1	1,246
1982	1,906	24	273	29,338	129		20	8		2	1,099
1983	78,482	54,786	1,469	9,328	2,077		37	1		6	3,734
1984	8,227	26,364	1,069	195,758	511		278	13			6,005
1985	3,882	317	4,298	161,194	659		64	8		1	1,357
1986	5,505	2,249	250	12,616	1,476		30	8		2	1,855
1987	14,796	8,038	1,946	3,466	628		160	8		6	3,518
1988	20,056	1,896	183	12	426		132	17		62	3,348
1989	19,059	19,571	6,431	29,361	42		33	8	1	6	2,340
1990	49,524	15,523	3,557	3,567	2,191		101	12		2	24,574
1991	11,702	6,788	5,330	272	256		11	10			1,301
1992	58,282	25,976	5,261	1	42		13	6	1	1	20,815
1993	37,069	19,080	10,219		46		29	11		1	8,245
1994	43,999	13,513	2,233		15		37	17		4	5,151
1995	41,182	10,904	3,963	1	27		18	17		10	3,971
1996	76,511	5,791	2,300	364	132		16	53	1	55	24,284
1997	73,326	10,804	6,984	59,529	253		12	19	2	32	24,162
1998	72,952	11,298	17,638	111,233	1,939	3	11	34		88	6,372
1999	22,418	2,632	35,174	211,947	1,092	1	2	27		72	3,745
2000	75,767	2,834	19,100	104,400	503		1	36		68	11,301
2001	31,134	4,649	18,078	148,994	9			49		72	3,448
2002	18,085	1,113	20,153	194,089	6		1	24			2,409
2003	27,267	22,189	19,433	194,550	66	2	4	37			3,143
2004	60,348	3,934	2,906	165,570	400		3	54			7,669
2005	51,314	3,682	5,034	84,657	37		14	41			6,033
2006	42,027	2,969	6,124	18,145	7		13	66		7	35,363
2007	18,136	375	841	67,025			1	27			6,653
2008	47,491	3,472	7,028	31,421	1		4	52			23,879
2009	76,308	6,745	9,350	31,535	4		3	8			17,231
2010	30,798	374	8,147	15,317				12	2		1,994
2011	34,656	482	28,279	254			3	12			8,056

Blank cells indicate no data exists. Any calculated or derived zeros are due to rounding of summarized data to less than half of the unit shown.
Data include retained catch but not discards. Source: CPFV Logbook Database, extracted August 29, 2012.

5 UPDATED STATUS OF THE HIGHLY MIGRATORY SPECIES MANAGEMENT UNIT SPECIES

This chapter contains a brief review of the stock status for each managed species with respect to the Council-adopted Control Rules. Stock structure is not fully understood for many of the species that range throughout the Pacific, thus some assessments for WCPO and SEPO populations are also included, although those populations and their fisheries are not specifically managed under the HMS FMP.

5.1 Determining Stock Status

Stock status is most reliably determined from stock assessments that integrate fishery and life history information across the rage of the stock. In the case of HMS in the Pacific, most stock assessments are conducted by several international organizations.

- In the Eastern Pacific Ocean (EPO) scientific staff employed by the Inter-American Tropical Tuna Commission (IATTC) conduct stock assessments mainly for tropical tunas (bigeye, yellowfin, and skipjack) and some billfish (striped marlin, swordfish). Their report Tuna and Billfishes in the Eastern Pacific Ocean in 2011 summarizes fisheries and stock status.
- In the Western and Central Pacific Ocean (WCPO), the South Pacific Commission Oceanic Fisheries Programme (SPC-OFP) conducts stock assessments as the science provider to the Western and Central Pacific Fisheries Commission (WCPFC). Like the IATTC, they tend to focus on the tropical tunas, but have also completed stock assessments for South Pacific albacore tuna and striped marlin. Their stock assessments may be accessed here.
- In the North Pacific Ocean (NPO) the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) conducts stock assessments, also as a science provider for the WCPFC, and specifically that organization's Northern Committee. The ISC has formed working groups for North Pacific albacore, Pacific bluefin tuna, billfish (marlins and swordfish), and sharks. The shark working group was formed in 2010 and has just begun to work on stock assessments. Shark species of interest include blue, shortfin, mako, bigeye thresher, pelagic thresher, silky, oceanic whitetip, and hammerhead species. ISC annual Plenary Reports provide stock status updates and conservation recommendations.

Under the Magnuson-Stevens Act, Councils must identify *status determination criteria* which can be used to decide whether overfishing is occurring (fishing mortality is above the maximum fishing mortality threshold) or the stock is overfished (biomass is less than the minimum stock size threshold). Chapter 4 in the HMS FMP describes how these status determination criteria may be determined. They are derived from an estimate of maximum sustainable yield (MSY), "the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets." Frequently MSY is difficult to estimate for many HMS stocks, either due to stock dynamics or the lack of sufficient information to conduct a stock assessment. In those cases, a proxy value may be determined for MSY and related status determination criteria. In general, the Council would defer to the regional fishery management organizations and their science providers, described above, for the identification of these proxies or biological reference points.

5.2 Recent and Projected Assessment Schedule

Table 5-1. Schedule of recent and next anticipated assessments for FMP MUS and the organizations responsible for the assessments as of December 31, 2011.

Species (Stock)	Date (Next Anticipated)	Organization Responsible for the Assessment
TUNAS		
Albacore (NPO)	2011 (2014)	ISC (ISC)
Bluefin (NPO)	2010 (2012)	ISC (ISC)
Bigeye (EPO)	2011 (2012)	IATTC (IATTC)
Bigeye (WCPO)	2011 (2013)	WCPFC (WCPFC)
Skipjack (EPO)	2011 (2012)	IATTC (IATTC)
Skipjack (WCPO)	2011 (2013)	WCPFC (WCPFC)
Yellowfin (EPO)	2011 (2012)	IATTC (IATTC)
Yellowfin (WCPO)	2011 (2013)	WCPFC (WCPFC)
BILLFISHES		
Striped Marlin (EPO)	2010	IATTC
Striped Marlin (NPO)	2007 (2012)	ISC (ISC)
Swordfish (SEPO)	2011	IATTC
Swordfish (NPO)	2009 (2014)	ISC (ISC)
SHARKS		
Common Thresher (WA/OR/CA EEZ)	2001 (2012)	NMFS (NMFS and CICESE)
Shortfin Mako	(2014)	(ISC)
Blue (NPO)	2009 (2013)	NMFS and NRIFSF Japan (ISC)
OTHER		
Dorado (EPO)		

Note: Text in parentheses indicates the year the next assessment is anticipated and the organization expected to conduct the assessment. The acronyms listed in this table are defined near the front of this document.

5.3 Conclusions from 2011 Pacific HMS Stock Assessments

The summaries provided below are derived from the assessments or reports of working group meetings associated with the assessments and do not necessarily represent the conclusions of the Council's HMSMT or NMFS. In many cases there has been minimal outside review of the assessment. Nevertheless, they represent the best available information for those species in 2011 to compare to past and future work.

Assessments of stock status always involve assumptions, uncertainty, and particular interpretations of fishery statistics. There are no universally-accepted standards by which to determine confidence for particular assessments, and "ground-truthing" (i.e., comparing assessment estimates to actual population counts) will never be possible over the broad range occupied by highly migratory species. Furthermore, for many of these species, the fishery management organizations have not agreed upon appropriate biological reference points for use in the context of managing fisheries. Therefore, explicit definitions for both overfished and sustainable exploitation levels are not currently available. Table 5-2 summarizes the current stock status of the management unit species with respect to overfishing and overfished criteria. The conclusions presented in the table should be reasonably accurate, but should also be treated with caution.

5.3.1 Albacore

5.3.1.1 Albacore (NPO) (Assessment Report)

An assessment of albacore in the NPO was completed by the ISC Albacore Working Group (ALBWG or WG) in June 2011 and accepted by the ISC Plenary in July 2011 (ISC 2011). The assessment was conducted using fishery data through 2009 and assumes that there is a single, well-mixed stock of albacore in the NPO. Important changes to the modeling structure and data were implemented for the base case model of this assessment to better reflect the best available scientific information, including the use of the Stock Synthesis (v3.11b) modeling platform (instead of VPA used in previous assessments), a new growth curve estimated within the model, and conditional age-at-length (otolith) data not previously available. Overall, the ALBWG concluded that the north Pacific albacore stock was in a healthy condition at current levels of recruitment and fishing mortality – overfishing was not occurring and the stock was not likely in an overfished condition. The results were presented with respect to a suite of reference points including the one adopted by the WCPFC's Northern Committee, FSSB-ATHL, the fishing mortality rate associated with the average ten historical lowest spawning stock biomasses. A summary of the key results excerpted from the ISC's 11th Plenary Report (ISC 2011) is shown below.

"The North Pacific albacore stock is considered to be healthy at the average historical recruitment and current fishing mortality (F2006-2008). The sustainability of the stock is not threatened by overfishing as current F2006-2008 is about 71% of FSSB-ATHL and the stock is expected to fluctuate around the long-term median SSB (~400,000 t) in the short- and long-term future. However, recruitment is a key driver of the dynamics in this stock and a more pessimistic recruitment scenario (25% below average historical recruitment) increases the probability that the stock will not achieve the management objective of remaining above SSB-ATHL threshold in the 25-year projection period to 54%. The impact of F2006-2008 on the stock is unlikely to be sustainable with this lower recruitment. Therefore, the WG recommends maintaining the present management measure (no increase in effort beyond "current" levels (2002-2004)."

Recent (2005-2009) catch of north Pacific albacore by U.S. West Coast fisheries constitutes approximately 16% of the North Pacific-wide catch.

5.3.2 Bigeye Tuna

5.3.2.1 Bigeye Tuna (EPO) (Assessment Report)

Stock status of bigeye tuna in the Eastern Pacific is assessed every 1–2 years by the IATTC. A new assessment was conducted using Stock Synthesis 3 in May 2011 (Aires-da-Silva and Maunder 2012) and is based on the assumption that there is a single stock of bigeye tuna in the EPO, although it is likely that there is a continuous stock throughout the Pacific Ocean with exchange of individuals at a local level. Fishing is concentrated in the east and west, making separate consideration of the EPO stock relevant for management purposes. The results are summarized below. These results are based on the base case assessment for which steepness of the stock-recruitment relationship was fixed at 1 (i.e. recruitment is independent of stock size).

The assessment indicated that the stock is not overfished (Scurrent is greater than SMSY) but that overfishing is occurring (Fcurrent is greater than FMSY). There has been an increasing trend in the spawning biomass since 2005. The base case model predicts that spawner levels will decline and in the long term will stabilize at a level slightly lower than that corresponding to MSY. The 2010 biomass of 3+

quarter fish was at historical low levels but the spawning biomass was above SMSY. When a spawner-recruit relationship (h=0.75) is assumed, the results are more pessimistic, i.e. the stock may be overfished (Scurrent is less than SMSY) and overfishing is occurring (Fcurrent is greater than FMSY). MSY is greatly influenced by the more recent (1993) development of the floating object fisheries. Prior to 1993, F was below FMSY.

- Current biomass level is low compared to average unexploited conditions.
- There are signs of a recent recovery trend in biomass from a historic low in 2004.
- The recent fishing mortality rates are estimated to be slightly above the level corresponding to MSY (Frecent > FMSY).
- The recent levels of spawning biomass are estimated to be above the level corresponding to MSY (Srecent > SMSY).

Recent (2005-2009) catch of bigeye tuna by U.S. West Coast fisheries constitutes less than 1% of the Eastern Pacific-wide catch.

5.3.2.2 Bigeye Tuna (WCPO) (Assessment Report)

An assessment of bigeye tuna in the WCPO was conducted by the WCPFC's Scientific Committee (SC) in August 2011 (Davies et al. 2011). The assessment was conducted using MULTIFAN-CL. The base case model selected to determine stock status was model 3j for which steepness of the stock recruitment relationship was assumed to be 0.8. In general, the results are slightly more pessimistic in comparison to the 2010 assessment. Below is a summary of the results excerpted from the Summary Report of the Seventh Scientific Committee (SC7) meeting (WCPFC 2011).

"Fcurrent/FMSY is estimated at 1.46 (base case; range 1.16 – 2.10) indicating that overfishing is occurring for the WCPO bigeye tuna stock. The base case indicates that the current total and spawning biomass are higher than the associated MSY levels (Bcurrent/BMSY = 1.25 and SBcurrent/SB = 1.19). However, two of the alternate models found that SBcurrent/SBMSY < 1.0 with a range across the six models considered of 0.86 – 1.49. Therefore, there is a possibility that bigeye tuna is currently in an overfished state.

SC7 recommends a minimum of 32% reduction in fishing mortality from the average levels for 2006–2009 to return the fishing mortality rate to FMSY. This recommended level of reduction is equivalent to a minimum 39% reduction of the 2004 level in fishing mortality, and a 28% reduction of the average 2001–2004 levels."

5.3.3 Skipjack Tuna

5.3.3.1 Skipjack Tuna (EPO) (Assessment Report)

Skipjack tuna is a difficult species to assess due to uncertainties about stock structure, the vulnerabilities of all age classes, and how well fishery CPUE data tracks abundance. Thus, in 2007 the IATTC developed methods to evaluate indicators of skipjack biomass, recruitment, and exploitation rate and used simple indicators of stock status based on relative values of fishery data, such as, CPUE, average weight of fish caught, and effort (Maunder and Deriso 2007). In 2011, the IATTC updated the indicators of stock status for EPO skipjack with data through 2010 (Maunder 2012). The key conclusions are provided below.

- The main concern with the skipjack tuna stock is the constantly increasing exploitation rate.

- The average weight was below its lower reference level in 2009, which can be a consequence of overexploitation, but it can also be caused by recent recruitments being greater than past recruitments.
- The continued decline in average length is a concern and, combined with leveling off of catch and CPUE, may indicate that the exploitation rate is approaching or above the level associated with MSY.
- The indicators have yet to detect any adverse consequence of the increase in exploitation rate.
- The trend in many of the indicators changed in 2010, but it is uncertain what this implies.

Recent (2005-2009) catch of skipjack tuna by U.S. West Coast fisheries constitutes less than 1% of the Eastern Pacific-wide catch.

5.3.3.2 Skipjack Tuna (WCPO) (Assessment Report)

An assessment of skipjack tuna in the WCPO was conducted by the WCPFC's Scientific Committee in August 2011 (Hoyle et al. 2011). The assessment was conducted using MULTIFAN-CL. The model is age and spatially structured with catch, effort, size composition, and tagging data grouped into 18 fisheries and quarterly time periods from 1972 through 2010. Results from the base case run and associated sensitivities indicate that the exploitation is below that which would produce maximum sustainable yield and the stock size is roughly 65% of its unfished level. Below is a summary of the results excerpted from the Report of the Seventh Scientific Committee meeting (WCPFC 2011).

"Fishing mortality rates tended to be higher during the last decade than for the preceding period, and fishing mortality and biomass indicators relative to MSY started to move towards 1.0, although they remained substantially below the FMSY level (Fcurrent/FMSY = 0.37). The stock is not in an overfished state as biomass is above the BMSY (Bcurrent/BMSY = 2.68).

Catches in 2010 were roughly 1.556 million mt, the second highest recorded and below the record high catch of 1.608 million mt in 2009. Equilibrium yield at the current F is about 1.14 million mt. This is about 76% of the MSY level. The assessment continues to show that the stock is currently only moderately exploited (Fcurrent/FMSY = 0.37) and fishing mortality levels are sustainable. However, there is concern that high catches in the equatorial region could result in range contractions of the stock, thus reducing skipjack availability to higher latitude (e.g. Japan, Australia, New Zealand, and Hawaii) fisheries.

If recent fishing patterns continue, catch rate levels are likely to decline and catch should decrease as stock levels are fished down to MSY levels. Due to the rapid change of the fishing mortality and biomass indicators relative to MSY in recent years, increases of fishing effort should be monitored. The Commission should consider developing limits on fishing for skipjack to limit the declines in catch rate associated with further declines in biomass."

5.3.4 Yellowfin Tuna

5.3.4.1 Yellowfin Tuna (EPO) (Assessment Report)

Stock status of yellowfin tuna in the Eastern Pacific is assessed every 1-2 years by the IATTC. An assessment was conducted in May 2011 using the Stock Synthesis 3 model (Aires-da-Silva and Maunder 2012). The assessment is based on the assumption that there is a single stock of yellowfin tuna in the EPO, although it is likely that there is a continuous stock throughout the Pacific Ocean with exchange of individuals at a local level. Fishing is concentrated in the east and west, making separate consideration of

the EPO stock relevant for management purposes. Below are the key results of the base-case assessment (which assumes that there is no stock-recruitment relationship).

- The recent fishing mortality rates are estimated to be lower than those corresponding to FMSY.
- The recent levels of spawning biomass are estimated to be below those corresponding to that at MSY (Srecent<SMSY).
- Theoretically at least, catches could be increased if the fishing effort were directed toward longlining and purse-seine sets on yellowfin associated with dolphins which catch larger fish.
- The results are more pessimistic if a stock-recruitment relationship is assumed.

Recent (2005-2009) catch of yellowfin tuna by U.S. West Coast fisheries constitutes less than 1% of the Eastern Pacific-wide catch.

5.3.4.2 Yellowfin Tuna (WCPO) (Assessment Report)

An assessment of yellowfin tuna in the WCPO was conducted by the WCPFC's Scientific Committee in August 2011 (Langley et al. 2011). The assessment was conducted using MULTIFAN-CL. The model is age and spatially structured with catch, effort, size composition, and tagging data grouped into 24 fisheries and quarterly time periods from 1952 through 2010. The base case model selected to determine stock status was model H80-pttp which had an assumed steepness of 0.8 and included recent yellowfin tagging data. In general, the results are slightly more pessimistic in comparison to the 2009 assessment. Below is a summary of the results excerpted from the Report of the Seventh Scientific Committee (SC7) meeting (WCPFC 2011).

"For the base case, Fcurrent/FMSY is estimated at 0.77 indicating that overfishing is not occurring for the WCPO yellowfin tuna. However, one of the alternate models found that Fcurrent/FMSY > 1.0, with a range across the six models considered of 0.54 -1.15. Therefore, there is a possibility that overfishing is occurring for yellowfin tuna.

The base case indicates that the current total and spawning biomass are higher than the associated MSY levels (Bcurrent/BMSY = 1.33 and SBcurrent/SBMSY = 1.47). None of the alternate models found that SBcurrent/SBMSY <1.0 with a range across the six models considered of 1.14 – 1.92. Therefore, yellowfin tuna is not considered to be in an overfished state. However, while the exploitation rates differ between regions, they continue to be highest in the western equatorial region.

SC7 determined that the WCPO yellowfin appears to be capable of producing MSY. The stock is not experiencing overfishing and is not in an overfished state. Projections to 2021 indicate that fishing mortality is projected to remain below FMSY and the spawning biomass will remain above SBMSY. The SC recommended that there be no increase in fishing mortality in the western equatorial region."

5.3.5 Swordfish

5.3.5.1 Swordfish (SEPO) (Assessment Report)

The IATTC conducted a stock assessment of southeastern Pacific swordfish in May 2011 (Hinton and Maunder 2012) based on genetic and fishery data that suggest that swordfish of the northeastern and southeastern Pacific Ocean (separated at about 5°S) constitute two distinct stocks. The assessment was conducted with Stock Synthesis, using reported total landings, catch rates from longline fisheries of Japan, and length measurements of fish taken by fisheries of Chile, Japan and Spain. Data on growth, and

age- and weight-at-length were also used to convert lengths of fish to estimates of weight and age. The assessment model was quite unstable, with convergence issues due to local minima, thus a better solution may be possible. Testing alternative starting points and phases of optimization, however, minimized the chance that the final run was a local minimum. The results indicate no significant impact of fishing on the stock. Below are the key results of the assessment.

- The swordfish stock in the southeast Pacific Ocean is not experiencing overfishing and is not overfished.
- The spawning biomass ratio is about 1.45, indicating that the spawning biomass is about 50% above the carrying capacity, and substantially above the level which is expected to produce catch at the MSY level.
- Recent annual catch levels are significantly below the estimated MSY.
- There has been a recent series of high recruitments to the swordfish stock.

Recent (2005-2009) catch of swordfish by U.S. West Coast fisheries constitutes about 5.8% of the Eastern Pacific-wide catch.

Links to Information on Most Recent Pacific HMS Stock Assessments through August 2012. Species (Stock) and Organization Responsible for Assessment:

Bigeye (EPO), IATTC
Skipjack (EPO), IATTC
Yellowfin (EPO), IATTC
Striped Marlin (NWCPO), ISC

Table 5-2. Recent stock status with respect to management criteria.

Recent stock status with respect to management criteria.

Note that for most of these species, the scientific bodies developing the assessments do not have a consensus biological reference point for use in the context of managing the fisheries. Levels with respect to *F* and *B* are provided based on the most recent analyses, but in many cases the analyses have not been updated for several years. Thus, those findings should be viewed cautiously for management purposes.

Species (stock)	F_{Recent}/F_{MSY}[1]	Overfishing? ($F/F_{MSY}>1.0$)	B_{Recent}/B_{MSY}[1]	B_{MSST}/B_{MSY}	Overfished? ($B_{Recent}<B_{MSST}$)	B_{FLAG}[2] ($1.25B_{MSST}/B_{MSY}$)	Assessment
TUNAS							
Albacore (NPO)	0.71[3]	N[3]	Unknown[3]	0.7	Unlikely[3]		ISC 2011
Bluefin (NPO)	1.46[4]	Y[4]	0.88	0.75	N	0.94	ISC 2009
Bigeye (EPO)	1.08[5]	Y	1.11[5]	0.6	N		IATTC, Aires-da-Silva and Maunder 2012
Bigeye (WCPO)	1.46[6]	Y	1.25[6]	0.6	N		WCPFC, Davies et al. 2011
Skipjack (EPO)	Unknown[7]	Unkown[7]	Unknown[7]	0.5	Unknown[7]		IATTC, Maunder 2012
Skipjack (WCPO)	0.37[8]	N	2.68[8]	0.5	N		WCPFC, Hoyle et al. 2011
Yellowfin (EPO)	0.88[5]	N	0.96[5]	0.5	Y		IATTC, Aires-da-Silva and Maunder 2012
Yellowfin (WCPO)	0.77[9]	Y	1.33[9]	0.5	N		WCPFC, Langley et al. 2011
BILLFISHES							
Striped Marlin (NPO)	Unknown[10]	Unknown[10]	Unknown	0.5	Unknown		ISC 2007b
Striped Marlin (NEPO)	0.16[11]	N	≥1.0[11]	0.5	N	0.63	IATTC, Hinton and Maunder 2011
Swordfish (NEPO)	0.59[12]	N	2.10[12]	0.61-0.8	N		ISC, Brodziak 2010
Swordfish (NWPO)	0.54[12]	N	1.31[12]	0.61-0.8	N		ISC 2009
Swordfish (SEPO)	<0.5[13]	N	≥5.0[13]	0.61-0.8	N		IATTC, Hinton and Maunder 2012
SHARKS							
C. Thresher (CA,OR,WA)	<1.0[14]	N	~1.10	0.77	N	0.96	NMFS, PFMC HMS plan development team 2002
Shortfin Mako	<1.0[15]	N	>1.0	0.71	N	0.89	NMFS, PFMC HMS plan development team 2002
Blue	0.86[16]	N	1.11[16]	0.78	N	0.97	NMFS and NRIFSF Japan, Kleiber et al. 2009
OTHER							
Dorado	Unknown[17]	Unknown	Unknown	0.5	Unknown		

Notes on next page.

Table 5-2 (cont.)

Notes:

1 Measures of F_{MSY} and B_{MSY} are not available for all species. Various proxies for these values have been used in preparing this table. However, PFMC has not adopted the use of a particular proxy; hence the designation of Overfishing and Overfished should be considered preliminary.

2 For vulnerable species managed under the OY control rule only: bluefin tuna, striped marlin, and pelagic sharks.

3 Albacore results are based on the reference point for F selected by the Northern Committee, $F_{SSB\text{-}ATLH}$. Although biomass-based reference points have not been established for north Pacific albacore, SSB is currently around the long-term median of the stock and is expected to fluctuate around the historical median SSB in the future, assuming average recruitment levels continue and fishing mortality remains at $F_{2006\text{-}2008}$ levels.

4 ISC considers F_{MSY} as roughly equivalent to F_{MAX}, given the model assumptions, and used an instantaneous annual F averaged across years (2002-2004) by age.

5 EPO bigeye and EPO yellowfin results are based on base-case assessments assuming no stock-recruitment relationships and estimated recent (2008-2010) fishing mortality.

6 WCPO bigeye results are based on model 3j for which steepness of the stock recruitment relationship was fixed at 0.8.

7 Because of uncertainties in the estimates of growth and natural mortality, MSY-proxy reference points could not be calculated for EPO skipjack; however, based on methods examining non-MSY based stock condition indicators, the IATTC does not consider there to be a need for management.

8 WCPO skipjack results are from the reference assessment which included tagging data and a fixed steepness of 0.8.

9 WCPO yellowfin results are based on the 2011 base-case model, *H80-pttp*, which had an assumed steepness of 0.8 and included recent yellowfin tagging data.

10. MSY-proxy reference points were not calculated for NP striped marlin; however, the declining biomass trend and the level of recent fishing effort relative to many commonly used MSY proxy reference points indicates overfishing may be occurring. The ISC recommended that a plan be developed to reduce F and until that plan is adopted that F not be increased.

11 The area covered by the assessment was the EPO north of 5° N latitude and east of 145° W longitude. The base case Stock Synthesis model demonstrates that the NEPO striped marlin population is in good condition with the estimated ratio of spawning biomass in 2009 to that at MSY equal to 1.19, but a B_{recent}/B_{MSY} estimate was not provided.

12 Results from Bayesian Surplus Production analysis of two substocks of swordfish: one in the northwestern Pacific Ocean and the second in the northeast Pacific Ocean provided status updates relative to MSY for each region separately.

13. Approximate values are provided because; the assessment model was quite unstable, with convergence issues due to local minima. The estimated F/F_{MSY} ratio was very low and B/B_{MSY} ratio very high indicating a healthy stock.

14 U.S. West Coast EEZ regional catch and CPUE demonstrated the population increasing from estimated low levels in the early 1990s. Recent (2005-2009) West Coast total landings average 194 mt, which is less than 0.75 × MSY proxy (MSY proxy = LMSY from the Population Growth Rate method)

15 Tentative results based on commercial landings and CPUE calculations. Recent (2005–2009) West Coast total landings average 53 mt, which is less than 0.75 × MSY proxy (MSY proxy = average landings 1981–1999).

16 Results for North Pacific blue shark are based on the base-case integrated model conducted with MULTIFAN-CL; $F_{current}$ is the average F for the period 1998-2001.

17 Status unknown, but dorado are highly productive and widely distributed throughout tropical/subtropical Pacific. Recent (2005-2009) West Coast total landings average 120 mt.

6 RESEARCH AND DATA NEEDS

This section is intended to explicitly link HMS research and data needs to the Council's current management priorities. These priorities should be considered in light of two central characteristics of HMS research and data needs. First, the two regional fishery management organizations (RFMOs) involved with management of HMS FMP stocks—the Inter-American Tropical Tuna Commission (IATTC) and Western and Central Pacific Fisheries Commission (WCPFC)—coordinate and conduct their own stock assessments. In addition, a third scientific organization—the International Scientific Committee (ISC) on Tuna and Tuna-like Species in the North Pacific Ocean—provides scientific advice on the status of North Pacific HMS stocks that straddle the 150^{o} W longitude boundary between the RFMOs. Although research and stock assessment of the tunas, billfishes, and pelagic sharks in HMS FMP would ideally consider stocks throughout their entire range, the reality is that not all species in the HMS FMP benefit from international scientific coordination.

Second, there is substantial uncertainty on the status of stocks and/or estimates of MSY for many HMS species. Basic biological and life history data are unknown for some species, and understanding of distribution, abundance, and reproductive behaviors of most HMS species is poor. There is insufficient understanding of stock structures relative to the extent of fisheries, on the interchange between stocks, and on survival and fecundity schedules for investigating exploitation effects and species' resiliency to exploitation. There is also a lack of fishery independent indexes of abundance. These data gaps will likely need to be considered closely during implementation of the MSA revised National Standard 1 guidelines.

6.1 Highest Priority Issues

6.1.1 North Pacific Albacore

Fisheries Statistics: Timely submission of national fishery data to the ISC Albacore WG data manager is critical for producing timely and up-to-date stock assessments. Additional resources are needed to monitor the submission of these data, to provide adequate database management, and to adequately document the entire database system, including metadata catalogs. Electronic reporting systems increase data entry convenience for industry participants, reduce processing time and costs for data managers, and significantly improve the quality of data being collected through validation checks. Following examples set in Alaska and on the east coast, the implementation of an electronic fish ticket system on the West Coast would greatly improve the availability, timeliness and accuracy of fishery landings data. The development of a coastwide, multi-fisheries electronic logbook system would provide similar results for logbook data.

Biological Studies: Biological information is a critical building block for stock assessments and should be reviewed and updated regularly to capture changes in population parameters as they occur. Unfortunately, these updates have not been accomplished for North Pacific albacore because of limited resources for biological studies. Consequently, the stock assessment models used by the ISC Albacore WG still rely on some biological information that was developed largely in the 1950s and 1960s,although updated length-weight schedules have been applied and a recent age and growth study has provided new information.

There is a critical need to reassess the biological information and to conduct contemporary research studies to update this information. More specifically, there is a critical need to conduct and/or continue studies on:

- age and growth with the goal of updating growth rates and identifying regional differences in growth rates;
- reproductive biology with the goal of updating the maturity schedule and identifying regional differences;
- migration and habitat utilization, with the goal of determining migration and habitat use patterns, improving fishery catch-effort standardization and fishery selectivity/catchability estimates;
- stock structure with the goal of identifying possible sub-stocks in the EPO;
- natural mortality with the goal of estimating natural mortality rates using well-designed tagging experiments;
- influence of environmental conditions on albacore biological parameters, including recruitment, growth, migration, habitat use, and catchability of albacore; and
- albacore age and length data through port and biological sampling.

Stock Assessment and Management Studies: Demand for more frequent and more precise information on the status of the stock and the sustainability of albacore fisheries is likely to increase. With this in mind, the albacore stock assessment needs improvement in several areas:

- evaluate effects of changes to assessment model structure and assumptions, by challenging the assessment model with data generated by a simulation model tuned to albacore biology;
- develop simulations to assist fishery managers in selecting appropriate biological reference points for albacore;
- development and improvement of abundance indices from commercial and recreational fisheries;
- stock-recruitment relationship, with the goal of improving current assumptions of the stock-recruitment relationship;
- development of models that include tagging data from a variety of tags, e.g., conventional, electronic, and biological tags; and
- development of environmental indices that strongly influence albacore population dynamics and evaluate effects of including these environmental indices in assessment models.

6.1.2 Swordfish

Fisheries Statistics: The timeliness of data reporting, as outlined above for albacore, is equally important for swordfish.

Biological Studies: All biological studies listed above for albacore are needed for swordfish as well. In addition, age and growth data from locally caught fish should be examined, and the distribution of swordfish by season and age within the outer portions of the EEZ and high seas should be evaluated.

Stock Assessment and Management Studies: All stock assessment and management studies listed above for albacore are also needed for swordfish. In particular, there is a need for additional work on effort standardization. In addition, complementary studies using tools ranging from otolith microchemistry to electronic tagging are needed to characterize the stock dynamics of swordfish in the California Current region.

Economic Studies: Explore economic viability of harpoon and longline gear as an alternative to DGN gear for swordfish. Research the best options to promote developing and testing novel gear (e.g., deep-set buoy gear or deep-set daytime longlining) to reduce protected species interactions and increase swordfish catch. Gauge the impact on global swordfish production and trade of unilateral measures to limit West Coast fishing effort.

6.1.3 Sharks

Most of the tunas covered in the HMS FMP are being assessed on a regular basis, with varying degrees of completeness and sophistication. Some of the billfishes—particularly striped marlin and swordfish—are either being assessed or have assessments planned in the near future. On the other hand, stock assessments for sharks have been preliminary at best, and few and far between. This situation should not be taken to imply that sharks are unimportant. Nor should it be inferred that sharks are less vulnerable to the effects of fishing than are the tunas and billfishes. In fact, because of the key vital rates of most sharks (especially reproductive rates that are lower than those for tunas and billfishes), many HMS shark species are likely to be more vulnerable to overfishing than other HMS. The Pacific RFMOs have begun to prioritize shark stock assessments. The WCPFC, IATTC and ISC have each developed plans to assess some shark stocks over the next several years, but given the fact that many species are not targeted and fishery data are scant, there will be many challenges.

As with the other trans boundary species covered by the HMS FMP, most shark species cannot be assessed or managed unilaterally by the Council. Some species are highly oceanic with ranges similar to that of tunas (e.g., blue shark and shortfin mako shark). Others are more coastal—with a substantial portion of their habitat shoreward of the U.S. EEZ—but exhibit north-south migrations with significant catches in Mexican waters (e.g., common thresher shark). The net effect is that accounting for the total catch of sharks over their entire period (several decades) and areas of exploitation is not possible. Furthermore, there is a paucity of the biological samples needed to characterize the size of animals taken from the fisheries that account for most of the catch. Active biological studies (age, growth, maturity, food habits, etc.) are ongoing (NMFS, State, non-profit, and academic researchers) and understanding of the biological characteristics for at least some shark species is probably sufficient for stock assessment purposes. However, without an accurate history of total catch, effort, and the corresponding size samples, stock assessment efforts and concomitant management by the Council will be problematic.

The following specific research priorities have been identified for the two sharks species of greatest priority to the Council with respect to their importance in U.S. West Coast commercial and recreational fisheries:

Common thresher shark:

- stock structure and boundaries of the species and relationships to other populations;
- the pattern of seasonal migrations for feeding and reproduction, and where and when life stages may be vulnerable;
- improved recreational catch estimates which adaptively sample the pulse nature of fishing effort;
- improved commercial fishery monitoring in Mexican waters;
- age and growth rates, including comparisons of growth rates in other areas; and
- maturity and reproductive schedules.

Shortfin mako shark:

- distribution, abundance, and size in areas to the south and west of the West Coast EEZ;
- stock structure and boundaries of the species and relationships to other populations; and
- age and growth rates (current growth estimates differ widely).

6.1.4 Interactions with Protected Species and Prohibited Species

More complete catch information and data on interactions with protected and prohibited species are needed for most HMS fisheries. There is inadequate understanding of the fisheries on some HMS stocks

that are shared with Mexico (e.g., species composition of shark catches in Mexican fisheries), and inadequate data exchange with Mexico. These fisheries are likely affecting both protected species and prohibited species of fish.

More work is needed to better understand possible impacts of the HMS fisheries on protected species of sea turtles, birds, and marine mammals. For example, there is a need to investigate the post-release survivorship of protected species, such as turtles and seabirds that are caught as bycatch in the HMS fisheries. In addition, fisheries-independent research is required to better understand distribution and habitat use by turtles and to determine the linkages to ecosystem parameters (oceanographic and biological). This includes data on turtle migration seasonality and routes, genetic stock composition of populations by species, and habitat use in order to better understand turtle life histories and likely periods of interaction with fisheries. Predictive models that integrate oceanography, ecosystem parameters (e.g., prey distribution), and habitat use of turtles are needed. More work on the sizes and structures of turtle populations by species would also enable improved application of the ESA and other laws and regulations to HMS fisheries. Continued research on the abundance and distribution of marine mammals is also critical, particularly for HMS fisheries operating within the West Coast EEZ.

Some specific research priorities include:

- Research habitat use of leatherback turtles and other species of concern, including target species, to better understand the potential for reducing bycatch;
- Explore whether hotspots or temperature bands can be identified in near-real-time in order to provide information to fishermen regarding places with potentially high interaction risks;
- Explore how regulating the U.S. West Coast Pacific swordfish fishery affects international trade in swordfish and the potential unintended consequences for protected species interactions in foreign fisheries;
- Compare bycatch rates of DGN vs. shallow set longline gear for swordfish, both by mining observer data and conducting gear comparison studies in the fishery areas; and
- Develop probability-based estimates of unobserved bycatch for observer programs with less than 100% observer coverage.

6.2 High Priority Issues

6.2.1 Blue shark

As noted above, relatively little assessment and research activity is focused on shark species compared to the existing work being done on other HMS such as tunas. Blue shark catch was relatively high in the California CPFV fishery of the late 1980s, but has steeply declined. Blue sharks are encountered in relatively small numbers coastwide in commercial and recreational fisheries. Three specific research needs identified for blue sharks are to: 1) monitor sex and size composition of catches; 2) determine the migratory movements of juvenile and maturing fish from the EEZ to high seas; and 3) examine the Pacific-wide stock structure and interactions among populations using genetics and other techniques.

6.2.2 Striped Marlin

Fisheries Statistics: The timeliness of data reporting, as outlined for albacore, is equally important for striped marlin. Additionally, the official striped marlin catch statistics are considerably less well developed than those for albacore, and significant effort is needed to ensure that the total catch from all nations is well estimated.

Biological Studies: All biological studies listed above for albacore are also needed for striped marlin. In addition,

- Stock structure for striped marlin in the Pacific Ocean is more uncertain than for other HMS species and several stock structure hypotheses are credible. A synoptic, critical review of all available information (fisheries data, icthyoplankton data, and genetic studies) is needed to either resolve the issue or at least to reduce the number of credible hypotheses; and
- Age and growth data from locally caught fish should be examined.

Stock Assessment and Management Studies: All stock assessment and management studies listed above for albacore are also needed for striped marlin. Specific to striped marlin, there is a need for additional work on effort standardization.

6.2.3 Pacific Bluefin Tuna

Fisheries Statistics: The timeliness of data reporting, as outlined for albacore above, is equally important for bluefin tuna. Additionally increased port sampling of commercial bluefin length frequencies is needed in the EPO, particularly of the fish destined for the pens in farming operations.
Biological Studies: All biological studies listed above for albacore are also needed for bluefin tuna.
Additionally, there is a need to:

- develop seasonal and perhaps area-based weight-length relationships as the bluefin condition factor appears to vary both seasonally and regionally;
- estimate natural mortality rates since previous assessment results were highly sensitive to the assumed mortality rates; and
- estimate age-specific migration rates of bluefin tuna from the WCPO to the EPO and understand the factors that influences those rates, since this in turn strongly influences the availability of bluefin in the EPO.

Stock Assessment and Management Studies: All of stock assessment and management studies listed above for albacore are also needed for bluefin tuna. In
addition:

- there is a need for improvements to standardization of abundance indices;
- development of an abundance index from spotter plane data from the EPO; and
- incorporating tagging data and environmental indices into the assessment model.

6.3 Other Priority Stocks and Issues

6.3.1 Management Unit Species Catch Data

Total catch data are likely inaccurate for most HMS stocks due to an inadequate at-sea data collection programs, logbook programs, and shoreside sampling programs for commercial West Coast fisheries and unreported catch by international fisheries. Commercial catch data needs include:

- Total catch information (including incidental and bycatch) and protected species interactions for surface hook-and-line, purse seine, and additional at-sea sampling of drift gillnet fisheries;
- Catch composition data for harpoon gear;
- Size composition of bycatch in drift gillnet fisheries; and
- Condition (e.g., live, dead, good, poor) of discarded catch in all HMS fisheries.

Additional work needs to be done to develop ways to adequately sample recreational fisheries, particularly shore-based anglers and private vessels. There is a need to develop methods for sampling private marinas and boat ramps to determine catch, and the level of bycatch and protected species interactions, as well as sample the catch for length and weight of fish caught to convert catches reported in numbers to catches by weight. Better catch and effort estimates are also needed for HMS recreational fishing tournaments, in particular those tournaments focusing on common thresher and shortfin mako sharks.

6.3.2 Archival PacFIN Data Cleanup

Some progress has been made to address coding issues with the gear codes for drift gillnet records in the PacFIN data base. The results of the recoding are reflected in drift gillnet landings and revenues summaries provided in Chapters 2 and 4 of this HMS SAFE Report; however, issues remain for PacFIN archived longline records.

Review and subsequent revision of archival PacFIN data is needed to improve the accuracy of historical commercial landings and revenues for longline landings.

6.3.3 Survivability of Released Fish

Little is known of the long-term survivorship of hooked fishes after release, the effectiveness of recreational catch-and-release methods on big game fishes (pelagic sharks, tunas, and billfishes) and of methods to reduce bycatch mortality in commercial fisheries. Controlled studies of the survivability of caught and released pelagic sharks and billfishes are needed to determine the physiological responses to different fishing gears, and the effects of time on the line, handling, methods of release, and other factors. Appropriate discard mortality rates, by species, need to be identified in order to quantify total catch (including released catch).Alternative gears and methods to increase survivability of recreationally and commercially caught fish and to minimize unwanted bycatch in fisheries should be identified.

6.3.4 Essential Fish Habitat (EFH)

There is very little specific information on the migratory corridors and habitat dependencies of these large mobile fish, how they are distributed by season and age throughout the Pacific and within the West Coast EEZ, and how oceanographic changes within the pelagic environment affect production, recruitment, and migration. Research is needed to better define EFH and to identify specific habitat areas of particular concern (HAPCs), such as pupping grounds, key migratory routes, feeding areas, and where adults aggregate for reproduction. A particularly important need is to identify the pupping areas of thresher and mako sharks, which are presumed to be within the southern portion of the West Coast EEZ, judging from the occurrence of post-partum and young pups in the areas (e.g., NMFS driftnet observer data). Areas where pregnant females congregate may be sensitive to perturbation, and the aggregated females and pups there may be more vulnerable to fishing pressure.

6.3.5 Stock Assessment Review

Pacific HMS stock assessments are carried out by the RFMOs and by the ISC. The processes used to conduct the assessments and to have them critically reviewed varies considerably across the organizations and the species being assessed. In none of these cases, however, does the level of critical peer review approach that of the Council's STAR process. This may become an issue for the Council if international management regulations begin to affect U.S. coastal fisheries to a greater extent than they do at present. The Council may want to consider having some member(s) of its SSC participate in these international

processes. This will provide the Council with a better perspective on the stock assessments and the ensuing international management advice.

6.3.6 Tropical Tuna Species and Dorado

The commercially important tropical tuna species, namely yellowfin, bigeye, and skipjack tuna, are principally harvested in the EPO by vessels from the Central and Latin American fishing fleets. Although a small West Coast based U.S. flag purse seine fishery opportunistically harvests these tunas, the U.S. does not have a fleet active in the main EPO fishery at present. The tropical yellowfin, bigeye and skipjack tunas are no longer taken in large numbers by West Coast based commercial fisheries.

The California commercial passenger fishing vessel (CPFV) fleet is the principal U.S. West Coast fishery for dorado which are often taken in the Mexican EEZ. Dorado can be a significant portion of the total CPFV annual catch and was the leading species in 2006, followed by yellowfin tuna and albacore tuna. Specific recommendations on dorado research include:

- Determine the stock structure of dorado in the eastern Pacific, and
- Investigate the significance of floating objects and other-species associations relative to life history.

6.3.6.1 Pelagic and Bigeye Thresher Sharks

These species occur in far lower frequency than common thresher sharks in U.S. West Coast fisheries. Nevertheless, they are taken in Council-managed fisheries and studies of their life history and ecology, and temporal and spatial catch monitoring will help inform management along the West Coast and in other areas.

7 RESEARCH UPDATES

The following sections summarize some, but not all, of the research projects conducted during 2011 at the NMFS Southwest Fisheries Science Center (SWFSC) and Southwest Regional Office (SWR) to study HMS MUS, fisheries, and fishery-related species. Research on other MUS not reported here is ongoing at a number of U.S. West Coast research institutions. See chapter 1 for a list of links to websites of research institutions conducting research on HMS.

7.1 Albacore

The commercial surface albacore fishery is the most important fishery, in terms of participation and landings revenue, for HMS on the U.S. West Coast. In June 2011, SWFSC researchers led an assessment of the status and trends in the North Pacific albacore stock, as members of the ISC Albacore Working Group (ALBWG), at a meeting in Shimizu, Japan. The assessment was conducted using fishery data through 2009 and a seasonal, length-based, age-structured Stock Synthesis (SS3) model. Based on this assessment, the North Pacific albacore stock is considered not to be overfished and overfishing is not occurring.

SWFSC scientists are working with the American Fishermen's Research Foundation (AFRF) and other commercial and recreational albacore fisheries constituents on monitoring programs and other research efforts to improve knowledge of the biology and migration of North Pacific albacore in the waters off the U.S. Pacific coast. The cooperative research includes:

Port and onboard sampling: Since 1961, a biological data collection program, or port sampling program, has been in place for collecting size data from albacore landings made by the U.S. and Canadian troll fleets at ports along the U.S. Pacific coast. State fishery personnel collect the biological data following a sampling protocol provided by the SWFSC, where the data are maintained. During 2011, 69,121 albacore were measured by port samplers. In recent years, with industry support, fishermen have collected biological data during selected fishing trips. These data are collected to augment data collected through the port sampling program. Following procedures established by SWFSC scientists, fishermen on five vessels measured 1,010 albacore during the 2010 season. During 2011, two vessels measured 1,939 fish. The sample information provided by the fishermen helped to fill in gaps missed by the port sampling program. Overall, the sizes were found to be generally similar to those collected through the port sampling program.

Logbook Program: The logbook sampling program has been in place since the late 1950's. Fishermen have been voluntarily submitting their fishing records to the SWFSC for decades prior to implementation of the HMS FMP. These data are primarily used to develop relative indices of abundance, which subsequently provide valuable information for fine-tuning stock assessment models. Logbook data are also maintained at the SWFSC. An electronic logbook application is available to facilitate logbook submission and data entry for albacore troll fishermen. Logbook data collection is discussed further in section 3.2.3 of this HMS SAFE report.

Archival Tagging: The SWFSC and AFRF initiated an archival tagging program in 2001 to study the migration patterns and stock structure of juvenile albacore in the North Pacific. Since 2001, a total of 720 archival tags and 43 dummy tags have been deployed. Two tagging trips were conducted during 2011, both off northern Oregon aboard the chartered F/V *Royal Dawn*: August 1-6, during which 39 tags were deployed and October 5-9 with an additional 51 tags deployed. This is the greatest tagging effort since 2006 and plans are being made to similarly deploy over 100 tags during the 2012 season. During 2011, no additional tag recaptures were reported. A manuscript describing the migratory movements of juvenile

albacore based on the first 20 archival tag returns was published in *Fisheries Oceanography*: Migration and behavior of juvenile North Pacific albacore (*Thunnus alalunga*) by Childers et al. (2011).

Other Research: In addition to the stock assessment, SWFSC scientists are also involved in several studies that will improve our understanding of the population dynamics and biology of North Pacific albacore. In collaboration with PIFSC and Canada's Department of Fisheries and Oceans (DFO) scientists, SWFSC scientists have also recently received funding from NOAA's Fisheries and the Environment (FATE) program, to study the "Influence of the North Pacific Current on the spatial distribution and availability of North Pacific albacore in the northeast Pacific Ocean". Expected outcomes include 1) developing an environmental time series that indicates albacore availability to U.S. surface fisheries and 2) integrating the time series into future stock assessment models. Other ongoing studies include studies of albacore feeding habits, age and growth, genetics, and using otolith microchemistry to examine albacore stock structure in the EPO.

7.2 Common Thresher Shark

Nursery Survey and Pup Abundance Index: A common thresher shark pre-recruit index and nursery ground annual survey, which was initiated in 2003, provides a fisheries-independent index of pre-recruit abundance. In 2011, the SWFSC team conducted the survey aboard the *F/V Outer Banks*. Forty-seven longline sets were made in relatively shallow, nearshore waters and a total of 4,800 hooks were fished during the 18-day cruise. A total of 556 fish including a range of species were sampled during the survey. Three hundred and ninety one (391) common thresher sharks were tagged with conventional tags for movement and stock structure data and 409 DNA samples were collected.

The preliminary survey data indicate that the average nominal catch rate by set was 5.57 per 100 hook-hours for common thresher sharks. This is the highest catch rate since the inception of the survey. The distribution of common threshers is very patchy and areas of high abundance are not consistent across years. In all years, a large percentage of the catch has been neonates, which were found in all areas surveyed. In addition to providing important information on abundance and distributions, the thresher shark pre-recruit survey enhances other ongoing research at SWFSC, including age and growth, feeding, and habitat utilization studies.

Post-release Survival in the Recreational Fishery: The SWFSC, SWR, and Pfleger Institute of Environmental Research are conducting a study to assess the post-release survival of thresher sharks caught by recreational anglers. During the first phase of the study, sharks were released after tail hooking and results demonstrated that survivorship is low for sharks greater than 185 cm FL or enduring fight times exceeding 85 minutes. Those results were published in *Fisheries Research* in 2010 (Heberer et al. 2010). The goal of the second phase of the study is to determine whether sharks that are released with trailing fishing gear survive. Survivorship is being determined using popoff satellite archival tags (PSATs) deployed on sub-adult and adult common thresher sharks. To date, PSATs have been deployed on eight common thresher sharks (132 to 175 cm FL, median 141 cm) captured using fishery standard techniques and released with trailing gear. Of the eight sharks, five died within 24 hours, two sharks survived with the trailing gear, and one of the PSATs did not report. The remaining tags will be deployed during spring 2012.

7.3 Shortfin Mako and Blue Sharks

Shortfin Mako Shark Genetics Studies: The shortfin mako is a commonly encountered shark in temperate marine fisheries but little is known about regional connectivity. Amber Michaud's recent master's thesis completed in collaboration with the University of San Diego and SWFSC provided evidence of regional stock structure within the Pacific. Her study, using mitochondrial haplotype data,

showed a strong subdivision between northern and southern hemisphere populations, with additional subdivision between southeast and southwest Pacific populations; however, no subdivision was found in the North Pacific using this marker. The results of this study have been updated with additional samples collected in the western Pacific and are being prepared for publication. As part of his Ph.D. work at UC Davis and San Diego State University in collaboration with the SWFSC, Dovi Kacev has been developing a suite of nuclear microsatellite markers to further refine the spatial and temporal resolution of shortfin mako stocks within the Pacific. In addition to studies of stock structure, these markers will be used to develop estimates of effective population size within the California Current region. Currently data generation and analyses are underway for the Pacific studies. These markers have also been shared with international collaborators and are currently being applied to global studies of shortfin makos.

***Juvenile Mako and Blue Shark Abundance Survey*:** In 2011, the SWFSC conducted its eighteenth juvenile shark survey for mako and blue sharks since 1994. The annual abundance survey was completed between June 24 and July 13, 2011. Working aboard *F/V Ventura II*, a team of scientists and volunteers fished a total of 5,493 hooks during 27 daytime sets inside seven focal areas within the SCB. Survey catch totaled 61 shortfin makos, 49 blue sharks, 5 pelagic rays (*Pteroplatytrygon violacea*), 4 opah, and 1 common mola (*Mola mola*). The preliminary data indicate that the nominal survey catch rate was 0.28 per 100 hook-hours for shortfin mako and 0.22 per 100 hook-hours for blue sharks. The nominal CPUE for both blue and shortfin mako sharks were slightly higher than the previous year.

Survival of Blue Sharks Released From the Drift Gillnet Fishery: The California drift gillnet (CADGN) fishery targets swordfish in the California Current. With the exception of ocean sunfish, blue sharks are caught in greater numbers than any other finfish species taken in this fishery. Nearly all blue shark are discarded at sea due to lack of market value. A 2009 analysis of the 1990-2008 observer data reveals that 32% of blue sharks captured were released alive, and an additional 5% were discarded with their disposition unknown. The remaining 63% were discarded dead.

In 2007, the SWFSC and the SWR began deploying PSAT tags on sharks released from the CADGN fishery to assess survivorship. The tags were programmed to pop-off after 30 days. The goal was to tag sharks such that the sex ratio, range of sizes, and condition at release were comparable to those released from the fishery. As a part of the study, a set of criteria was developed to document the condition of all blue sharks released: good, fair or poor.

Since initiating the study in 2007, 12 blue sharks (100 to 200 cm FL, median 149 cm) have been tagged by fishery observers. Nine of these animals were male, one was female, and the sex of 2 animals was unknown. Three of the 12 sharks were released in "good" condition while the remaining 9 were released in "fair" condition. Satellite tag records suggest that all animals survived the acute effects of capture in the CADGN fishery. Temperature, depth, and movement data demonstrated behavior of blue sharks that was similar to that reported in other studies. One tag appeared to have been ingested after 17 days and regurgitated 3 days later.

To meet the goal of matching the general composition of the catch, additional tag deployments are necessary. In the fishery the sex ratio is roughly 60% male and 40% female and from 2007-2010, 29% of blue sharks were released in poor condition. Of the sharks tagged to date, none have been in poor condition, the average size is larger than that observed in the fishery and few females have been tagged. Thus, tagging efforts during the 2010-2011 and 2011-2012 seasons were focused on smaller sharks, females, and animals released in poor condition. Tags were distributed among observers as widely as possible in an attempt to ensure deployment. However, due to the decreased effort and the small numbers of blue sharks caught overall, particularly of the desired size, sex and conditions, only one blue shark was tagged for this study during the 2011-2012 CADGN season. This shark was in fair condition and survived after release. The objectives for the 2012-2013 season will be to deploy more tags. Results to date

suggest a 100% survival rate for male blue sharks released in fair or better condition.

Tagging: Since 1999, NOAA has been using satellite technology to study the movements and behaviors primarily of blue, shortfin mako, and common thresher sharks, while other species are tagged opportunistically. In recent years, tag deployments have been carried out in collaboration with the Tagging of Pacific Pelagics (TOPP) program (www.topp.org), Mexican colleagues at CICESE (Centro de Investigación Cientifica y de Educatión Superior de Ensenada), and colleagues at the DFO (Department of Fisheries and Oceans) Pacific Biological Station in Nanaimo, British Columbia. The goals of the projects are to document and compare the movements and behaviors of these species in the California Current and to link these data to physical and biological oceanography. This approach will allow for characterization of the essential habitats of sharks and how populations might shift in response to changes in environmental conditions on short or long time scales. In 2011, 2 shortfin mako sharks, 5 blue sharks and 2 basking sharks were tagged with either SPOT tags or towed GPS tags. In addition, 1 swordfish and 2 opah were tagged. Since 1999, a total of 97 makos, 90 blue sharks, 28 common threshers, 11 silky sharks, 2 hammerheads, 5 ocean sunfish, 3 basking sharks, 2 opah and 4 swordfish have been satellite-tagged through these collaborative projects to study habitat use patterns.

7.4 Swordfish

Deep-set Buoy Gear Performance Trials: Deep-set buoy gear (DSBG) performance trials targeting swordfish were conducted in 2011 and 2012 by the Pfleger Institute of Environmental Research (PIER) and NOAA Fisheries (SWR). Research to date has entailed the development and design of the deep-set gear configuration as well as experimental deployments by both researchers and cooperative fishers in the Southern California Bight (SCB). (Funding sources: NOAA - Saltonstall Kennedy Grant; NOAA – Bycatch Reduction and Engineering Program.) To date, a total of 15 swordfish have been captured in the SCB using the DSBG configuration. To increase gear specificity and augment ongoing habitat modeling work, swordfish suitable for tagging were released with electronic tags. The initial trials have successfully avoided interactions with any bycatch species of concern (e.g., turtles, mammals). Experiments to increase gear deployment efficiency and reduce the potential for lost-gear are scheduled for the 2013 field season. (Funding sources: NOAA – National Cooperative Research Program.) Additional studies that investigate swordfish movements and deep-set targeting within the Pacific Leatherback Closure Area (PLCA) are underway. (Funding sources: NOAA – National Cooperative Research Program; Collaborative Fisheries Research West Program.)

7.5 Cooperative Research with Billfish Anglers

The SWFSC and billfish angling community have been working together since 1963 to study various aspects of billfish biology and to obtain an index of angler success in the Pacific Ocean. This collaboration has resulted in one of the longest time-series available for recreational billfishing, charting trends in catch-per-unit-effort for key species. The research has also included recreational and commercial fishery monitoring, stock assessments efforts, biological research into the life history and ecology of specific billfish species, and determining the economic importance of billfish resources. Two major components of the cooperative research that were the focus in 2011 were the International Billfish Angler Survey and the Billfish Tagging Program.

International Billfish Angler Survey: In 2011, SWFSC researchers summarized the results from the 2010 Billfish Angler Survey. Initiated in 1969, the survey now provides a 42-year time series of billfish angling effort and catch in the Pacific Ocean. The time series of angler success provides a measure of relative abundance and is the only fisheries-independent survey in the Pacific. CPUE, measured in number of billfish caught per angler fishing day across all reporting areas in the Pacific was 0.44 in 2010. This CPUE is slightly lower than that reported in 2009 (0.46) and well below the most recent 5 year average

(2005-2009; 0.66).

Recreational Billfish Tagging Program: The SWFSC's Billfish Tagging Program has provided tagging supplies to recreational billfish anglers for 49 consecutive years. Tag release and recapture data are used to determine movement and migration patterns, species distribution, and age and growth patterns. This volunteer tagging program depends on the participation and cooperation of recreational anglers, sportfishing organizations, and commercial fishers. Since its inception, over 62,000 fish of 75 different species have been tagged and released. Emphasis continues to be on the skillful tag and release of billfish. A total of 416 tags were released on billfish in 2010 through the efforts of over 300 anglers and 95 captains. Unfortunately, the 2010 tag release total is down from recent years and may reflect a decrease in fishing effort by our constituents. Indeed, 2010 had the highest percentage of anglers reporting "no fishing" in the International Billfish Angler Survey. Preliminary reports indicate the tagging effort increased substantially in 2011.

7.6 Opah Research in the Eastern Pacific Ocean

The opah is a large, mid-water pelagic fish that occurs seasonally in the SCB. While they are not targeted, they are taken incidentally in both local recreational fisheries for tuna and the CADGN fishery targeting swordfish. In recent years opah has become increasingly popular in seafood markets. Despite their value to commercial and recreational fishermen, little research on the basic biology and ecology of opah has been conducted, especially in the SCB. For example, there is little data on foraging ecology, size composition in fisheries, essential habitat and stock structure. To begin to fill some of the data gaps, in 2009 the SWFSC began collecting biological samples from opah caught and initiated an electronic tagging program in 2011.

7.7 Sea Turtles

NMFS, in cooperation with researchers around the world, continues to conduct sea turtle research in the Pacific. Due in part to this work, the understanding of Pacific sea turtles has increased substantially over the past several years.

A number of research projects have been planned based on priorities identified at the 2008 Swordfish and Leatherback Use of Temperate Habitat (SLUTH) workshop, including measuring the economic viability of harpoon as a substitute for other gears used to target swordfish based on the cost and earnings study mentioned above, characterizing the environmental conditions associated with fishing, swordfish and leatherback catch, assessing the rates of blue shark and other non-target catch in drift gillnet and longline fisheries, and deploying additional electronic tags to quantify the movements and habitat of swordfish.

Deep-set Longline Survey to Investigate Swordfish-Sea Turtle Habitat Separation: An experimental fishing trip was conducted from October 21-30, 2011 to assess the ability of deep-set longline gear to catch swordfish during the day, which is when the habitat separation between swordfish and sea turtles is the greatest. Swordfish were also tagged to study their movements in areas of greatest geographic overlap with sea turtle habitat. A total of 11 sets were deployed off the California coast, with an average of 266 hooks per set. Data collected from this research trip and another one planned for later in 2012 are expected to help inform the Council's decision process on potential future changes to the West Coast swordfish fishery.

8 COMMONLY-USED WEB LINKS IN HIGHLY MIGRATORY SPECIES MANAGEMENT AND RESEARCH

International Regional Fishery Management Organizations and Scientific Bodies

Inter-American Tropical Tuna Commission	http://iattc.org/
Western and Central Pacific Fisheries Commission	http://www.wcpfc.int/
International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean	http://isc.ac.affrc.go.jp/

Regional Fishery Management Councils with HMS Plans

Pacific Fishery Management Council	http://www.pcouncil.org/
Western Pacific Regional Fishery Management Council	http://www.wpcouncil.org/

State and Interstate Fisheries Commissions

California Department of Fish and Game	http://www.dfg.ca.gov/
Oregon Department of Fish and Wildlife	http://www.dfw.state.or.us/
Pacific States Marine Fisheries Commission	http://www.psmfc.org
Washington Department of Fish and Wildlife	http://wdfw.wa.gov/

Institutions Conducting HMS Research

American Fishermen's Research Foundation	http://www.afrf.org/
California State University, Long Beach	http://www.csulb.edu
Centro de Investigación Científica y Educación Superior de Ensenada	http://www.cicese.mx/
Inter-American Tropical Tuna Commission	http://www.iattc.org
Monterey Bay Aquarium	http://www.mbayaq.org/
Monterey Bay Aquarium Tuna Research and Conservation Center	http://www.tunaresearch.org
Moss Landing Marine Lab	http://www.mlml.calstate.edu/
NOAA Pacific Islands Fisheries Science Center	http://www.pifsc.noaa.gov
NOAA Southwest Fisheries Science Center	http://swfsc.noaa.gov
NOAA Southwest Regional Office	http://swr.nmfs.noaa.gov
Pfleger Institute of Environmental Research	http://www.pier.org
Scripps Institute of Oceanography	http://www-sio.ucsd.edu
Tagging of Pacific Pelagics	http://www.toppcensus.org

Sport and Commercial Fishing Industry Related Associations

American Albacore Fishing Association	http://www.americanalbacore.com
Oregon Albacore Commission	http://www.oregonalbacore.org/
Sportfishing Association of California	http://californiasportfishing.org/
United Anglers of Southern California	http://www.unitedanglers.com
Western Fishboat Owner's Association	http://www.wfoa-tuna.org