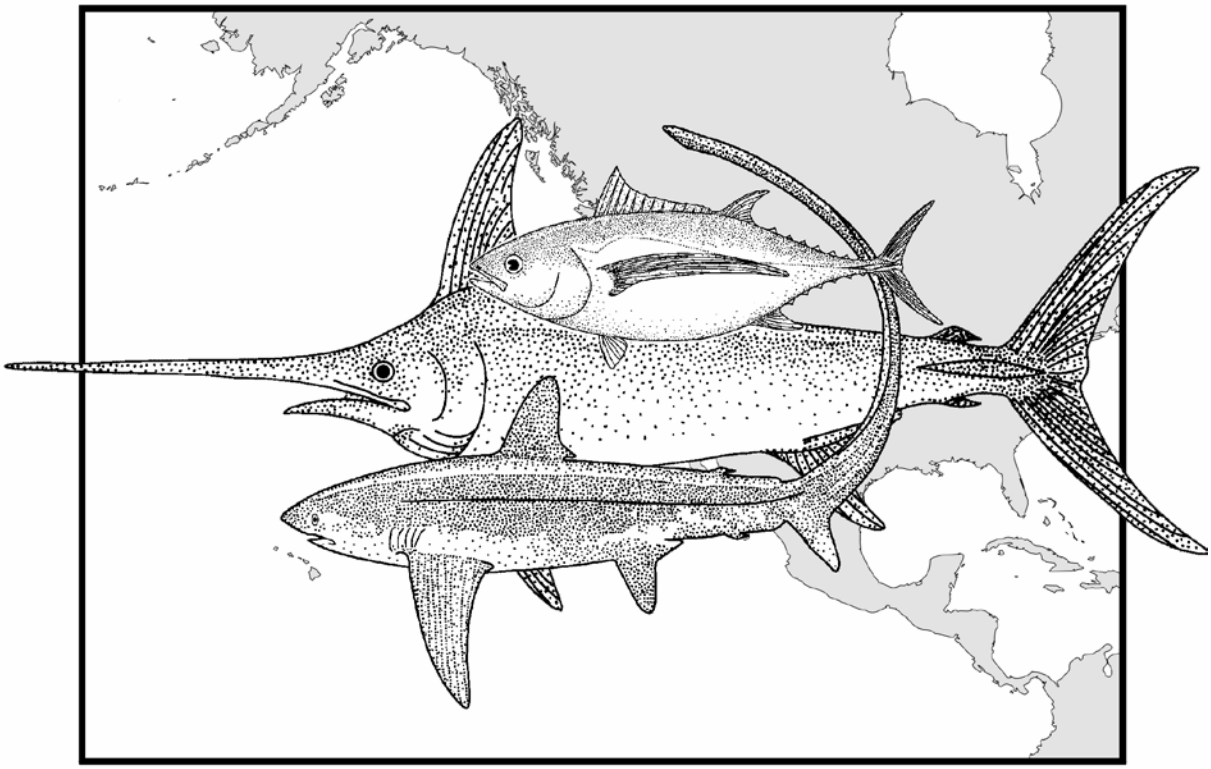
STATUS OF THE U.S. WEST COAST FISHERIES FOR HIGHLY MIGRATORY SPECIES THROUGH 2013



STOCK ASSESSMENT AND FISHERY EVALUATION

JANUARY 2015

PACIFIC FISHERY MANAGEMENT COUNCIL
7700 NE AMBASSADOR PLACE, SUITE 101
PORTLAND, OREGON 97220
WWW.PCOUNCIL.ORG

Cover illustration by Roy Allen, Southwest Fisheries Science Center, National Marine Fisheries Service, La Jolla, California

Printed: January 15, 2015

Prepared by the Pacific Fishery Management Council in conjunction with the National Marine Fisheries Service, Southwest Region under National Oceanic and Atmospheric Administration award number NA10NMF4410014.

Table of Contents

1. INTRODUCTION 7
   1.1. The Management Cycle 8
   1.2. Highly Migratory Species Management Team 8
2. COUNCIL HMS ACTIVITIES IN 2013 9
3. HMS REGULATIONS CURRENTLY IN PLACE 11
4. MONITORING AND ENFORCEMENT 13
   4.1. Status of HMS Permits 13
   4.2. HMS Fisheries Data Collections 13
5. PROTECTED RESOURCES REGULATIONS 15
   5.1. HMS FMP Endangered Species Act Consultations 15
   5.2. Sea Turtles Listed Under the ESA 16
   5.3. Marine Mammal Protection Act 16
   5.4. Marine Mammals of Concern for West Coast HMS Fisheries 18
6. INTERNATIONAL MANAGEMENT 19
   6.1. RFMOs 19
   6.2. IATTC and WCPFC Outcomes 19
7. REGULATIONS FOR INTERNATIONAL HMS FISHERIES AND RELATED ACTIVITIES IN THE PACIFIC 23
8. COMMERCIAL FISHERIES DESCRIPTIONS 27
   8.1. Surface Hook-and-Line Fishery for Albacore 27
   8.2. Drift Gillnet Fishery for Swordfish and Shark 28
   8.3. Harpoon Fishery for Swordfish 30
   8.4. High Seas Longline Fishery for Swordfish and Tuna 31
   8.5. Coastal Purse Seine Fishery for Yellowfin, Skipjack, and Bluefin Tunas 32
   8.6. Fishery Performance in 2013 33
      8.6.1. Landings by Species (See Table 1) 33
      8.6.2. Landings by Fishery (See Table 2) 34
9. RECREATIONAL FISHERIES 37
   9.1. Albacore 37
   9.2. Other HMS (Southern California) 37
10. PACIFIC-WIDE HMS CATCH 39
   10.1. Data Sources 39
   10.2. Catch of Tropical Tunas in the Pacific by Country and Region 39
   10.3. Catch of Target Tunas in Eastern Pacific by Gear Type 42
   10.4. Catch of Target Tunas in the Western Pacific by Gear Type 44
   10.5. Northern Stocks – Pacific Bluefin Tuna, North Pacific Albacore, and Swordfish in the North Pacific 45
11. STATUS OF HMS STOCKS 51
   11.1. Determining Stock Status 51
   11.2. Stock Assessments for Species Managed under the HMS FMP 51
      11.2.1. Tunas 51
      11.2.2. Billfishes 52
      11.2.3. Sharks 53
      11.2.4. Others 53
   11.3. Conclusions from 2013 Pacific HMS Stock Assessments 53

11.3.1. Tunas 54
11.3.2. Billfish 57
11.3.3. Sharks 58
12. COMMONLY-USED WEB LINKS IN HIGHLY MIGRATORY SPECIES MANAGEMENT AND RESEARCH 61

List of Tables

Table 4-1. Number of valid HMS permits recorded in each year, 2005-2013, by state. 13
Table 4-2. Summary of fisheries data collections. 14
Table 5-1. Biological opinions for west coast HMS fisheries 16
Table 5-2. Key population parameters for selected marine mammals occurring in the west coast EEZ. 18
Table 6-1. Global map of tuna RFMO jurisdictions. (Source: http://www.fao.org/fishery/topic/16917/en) 19

List of Figures

Figure 8-1. Number of vessels and commercial landings of North Pacific albacore (round mt) in the West Coast albacore surface hook-and-line (troll and baitboat) fishery, 1990-2013, Canadian vessels included. 28
Figure 8-2. Number of vessels and commercial landings (round mt) in the West Coast drift gillnet fishery, 1990-2013. 30
Figure 8-3. Number of vessels and commercial landings (round mt) in the West Coast harpoon fishery, 1990-2013. 31
Figure 8-4. Number of vessels and commercial landings (round mt) by Hawaii permitted longline vessels in West Coast ports, 1990-2013 (confidential landings data excluded). 32
Figure 8-5. Number of vessels and commercial landings (round mt) for HMS tunas in the West Coast purse seine fishery, 1990-2013 (confidential data excluded). 33
Figure 8-6. Landings (round weight mt) of HMS 2004-2013. Confidential data not included. 34
Figure 8-7. Distribution of HMS landings by fishery, 2013. Confidential data not included. 35
Figure 10-1. Capture fishery production of bigeye, skipjack, and yellowfin in the Pacific by flag, 2003-2012. 39
Figure 10-2. Average annual catch (mt) of bigeye, yellowfin, and skipjack, 2004-2013 by species and region. 40
Figure 10-3. Annual catch (mt) of skipjack, yellowfin, and bigeye tuna in the EPO and WCPO, 2004-2013. 41
Figure 10-4. Average annual catch of target tuna speceis in the EPO by gear type, 2004-2013. 42
Figure 10-5. Catch of target tuna species in the EPO by gear type and year, 2004-2013. 43
Figure 10-6. Annual average catch (mt) of tuna target species by gear type in the WCPO, 2004-2013. 44
Figure 10-7. Catch (mt) of tuna target species by gear and year in the WCPO, 2004-2013. 45
Figure 10-8. Average annual catch (mt) of Pacific bluefin tuna by country and gear type, 2004-2013. 45
Figure 10-9. Catch (mt) of Pacific bluefin by country, 2004-2013. 46
Figure 10-10. Average annual catch (mt) of North Pacific albacore by country and gear, 2004-2013. 46
Figure 10-11. Catch (mt) of North Pacific albacore by year and country, 2004-2013. 47
Figure 10-12. Annual average catch (mt) of swordfish in the North Pacific by country and gear, 2004-2013. 48
Figure 10-13. Catch (mt) of swordfish in the North Pacific by country, 2004-2013 48

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

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:

1. Two management unit species, bigeye thresher shark and pelagic thresher shark, are reclassified as ecosystem component (EC) species.
2. Of the current 34 species identified in the FMP for monitoring purposes, six are retained as EC species.
3. The international exception to setting allowable biological catches (ABCs) and ACLs are applied to the remaining 11 managed species.
4. 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.
5. 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.
6. 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.

1.1. 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. In 2012 the Council did not consider any regulatory changes for the April 1, 2013–March 31, 2015 biennium.

1.2. Highly Migratory Species Management Team

Current members of the HMSMT may be found in the Roster.

2. Council HMS Activities in 2013

March 2013

Swordfish Management Report on Potential Changes to the Turtle Conservation Area and Take Limits

The Council requested NMFS to:

- Evaluate the application of recent research on leatherback sea turtle habitat utilization to support an adaptive management strategy for changes in the Pacific Leatherback Conservation Area (PLCA) configuration that would minimize sea turtle – fishery interactions
- Continue research on alternative swordfish gears, including deep-set longline and buoy gear
- The Council directed the Highly Migratory Species Management Team (HMSMT) to:
- Evaluate a potential modification of the PLCA that would allow limited drift gillnet (DGN) fishing in a triangular area south of Pt. Sur between 12 and 100 miles from shore. Vessels would require 100% observer coverage and vessel monitoring system (VMS). The analysis would include an estimate of future fishing effort in this area under the specified conditions.
- Based on NMFS research on sea turtle habitat utilization, identify management tools consistent with the adaptive management strategy referred to above. This evaluation would include consideration of whether the current 20% observer coverage rate is sufficient and the feasibility of a VMS requirement for the DGN fishery.
- In cooperation with NMFS, continue analysis of the the use of sea turtle "hard caps" (interaction limits that when reached, close the fishery) for managing the DGN fishery.
- The Council asked NMFS and the HMSMT to report to the Council in early 2014 on progress on these assignments.

Recommendations for International Management Activities

WCPFC NC Precautionary Management Framework for North Pacific Albacore Tuna:

The Council directed the HMSMT to identify potential measures that should be implemented pursuant to the precautionary management framework for North Pacific albacore currently under development at the international level. This should include identification of appropriate biological reference point(s) and both effort-based and catch-based control rules, at the international level of applicability as opposed to domestic fishery specificity. This information is to be ready for the June Council meeting so the Council can develop recommendations to the US delegation to the Western and Central Pacific Fisheries Commission (WCPFC) Northern Committee meeting in September 2013. The HMSMT is to also provide comments on potential complementary initiatives that may be adopted by the Inter-American Tropical Tuna Commission (IATTC) for the Eastern Pacific Ocean (EPO).

Pacific Bluefin Tuna Stock Status:

1. The Council recommended that NMFS monitor the catch of US commercial fisheries that catch bluefin in order to ensure that the 500 mt commercial catch limit for the US in the EPO is not exceeded
2. The Council advised US delegations to the IATTC and WCPFC to advocate for reduce harvest rates down to 2002-04 levels for all nations.
3. The Council recommends that provisions for "artisanal" and Korean fisheries in the current WCPFC Pacific bluefin tuna conservation measure be replaced with stronger data reporting requirements and limits on effort and catch.

4. US-Canada Albacore Treaty:

Noting the applicability of points in the Council's November 20, 2012 letter, the Council informally recommended the State Department and the US delegation proceed with ongoing negotiations focusing on the possibility of a reciprocal fishing regime for 2013 only, and consider options for an orderly phase-out of reciprocal fishing arrangements.

June 2013

Response to Pacific Bluefin Tuna Overfished Status

The Council tasked the Executive Director with sending a letter recommending the U.S. government advocate for a higher level of protection in international fisheries, where 98 percent of the fishing mortality occurs, including catch curtailments in the Inter-American Tropical Tuna Commission and the Western and Central Pacific Fishery Commission (WCPFC) regional fishery management organizations. The Council also decided to evaluate current catch limits for Pacific bluefin in West Coast recreational fisheries as part of the biennial management process beginning in June 2014.

North Pacific Albacore Tuna Precautionary Management Framework

The Council directed staff to consolidate the content of the two Highly Migratory Species Management Team Reports and the Scientific and Statistical Committee (SSC) Report provided at this meeting with Council discussion, and present these to the U.S. delegation to the WCPFC Northern Committee. As a matter of emphasis, the Council recommends the adoption of spawning potential ratio (SPR) based biological reference points and a simple linear harvest control rule comparable to what is described in the Highly Migratory Species Fishery Management Plan as part of the precautionary management framework.

3. HMS Regulations Currently in Place

2013

Temporary regulations under the authority of Section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to: implement an immediate closure of the California thresher shark/swordfish drift gillnet (mesh size ≥14 inches) (DGN) fishery if one sperm whale is observed killed or seriously injured in DGN gear off California, and require all DGN fishing vessels to carry a NMFS-trained observer from August 15, 2013 to January 31, 2014 in a 100% observer coverage area (Zone). Citation: 78 FR 54547. Published: September 4, 2013. Effective: September 4, 2013. (Renewed/extended May 22, 2014

2012

Final rule under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to modify retention limits for swordfish harvested in the U.S. West Coast-based deep-set tuna longline (DSLL) fishery. Citation: 77 FR 15973. Published: March 19, 2012. Effective: April 18, 2012.

2011

Final rule under authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to implement Amendment 2 to the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP). Citation: 76 FR 56327. Published: September 13, 2011. Effective: October 13, 2011.

2009

Final rule to initiate collection of a permit fee for vessel owners participating in commercial and charter recreational fishing for highly migratory species (HMS) in the Exclusive Economic Zone (EEZ) off the West Coast of California, Oregon, and Washington. Citation:74 FR 37177. Published: July 28, 2009. Effective: August 29, 2009.

2007

Final rule to implement daily bag limits for sport-caught albacore tuna (*Thunnus alalunga*) and bluefin tuna (*Thunnus orientalis*) in the Exclusive Economic Zone (EEZ) off California under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP). Citation: 72 FR 58258. Published: October 15, 2007. Effective: November 14, 2007.

Final rule to amend vessel identification regulations of the Fishery Management Plan (FMP) for U.S. West Coast Fisheries for Highly Migratory Species (HMS). Citation: 72 FR 43563. Published: August 06, 2007. Effective: September 5, 2007

Final rule to amend text in the regulations governing closures of the drift gillnet fishery in the Pacific Loggerhead Conservation Area during El Nino events under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP). Citation: 72 FR 31756. Published: June 8, 2007. Effective: June 9, 2007.

Rule to revise the method for renewing and replacing permits issued under the Fishery Management Plan (FMP) for U.S. West Coast Fisheries for Highly Migratory Species (HMS). Citation: 72 FR 10935. Published: March 12, 2007. Effective: April 11, 2007.

2004

Final rule to implement the approved portions of the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (FMP), which was submitted by the Pacific Fishery Management Council (Pacific Council) for review and approval by the Secretary of Commerce and was partially approved on February 4, 2004, under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Citation: 69 FR 18444. Published: April 07, 2004. Effective: May 7, 2004

4. Monitoring and Enforcement

4.1. 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. The following table shows the number of valid HMS permits by year.

HMS permits recorded in the permit database for each year since the regulation became effective on February 10, 2005. 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 4-1. Number of valid HMS permits recorded in each year, 2005-2013, by state.

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
2012	826	625	348	113	1,912
2013	842	647	378	140	

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

4.2. HMS Fisheries Data Collections

Catch, effort, size composition, and landings data are critical for monitoring HMS fisheries and assessing the status of HMS stocks. The SWFSC monitors seven Pacific Ocean HMS fisheries. Logbook, observer, landing, and size composition data from these fisheries come from various sources, as shown in the table below.

Table 4-2. Summary of fisheries data collections.

Fishery	Logbooks	Observer	Landings	Size Composition
North Pacific Albacore Troll	F		P/S/I	D
Large Mesh Drift Gillnet	S	F	P	O
Harpoon	S		P	
EPO Purse Seine	I	I	C/P	D
California Longline	F	F	H	H
California HMS Sport	S			D (PBF)
Albacore Sport (OR/WA)	F			

LEGEND
Logbooks/Observer: F – federal; S – state; I – international
Landings monitored by: P – PacFIN; C – cannery; H – Hawaii
Size composition: O – observer; D – dock-side

All HMS permit holders, 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 fishing trip must be submitted to NMFS within 30 days of the end of each trip. Each form must be signed and dated by the fishing vessel operator.

The CDFW implemented a harpoon logbook and permit program in 1974. Logbooks are submitted to CDFW and forwarded to SWFSC for editing and keypunching.

The gillnet logbook program was implemented in 1980 by the CDFW. Logbooks are submitted to CDFW and forwarded to SWFSC for editing and keypunching.

Purse-seine vessels based on the west coast primarily target CPS but occasionally target HMS (albacorer bluefin tuna) when they are available and market conditions are favorable. Logbook data are required to be submitted to NMFS when these vessels target HMS.

Participants in the west-coast based longline fisheries submit logbook data to SWFSC. Logbook data are maintained at SWFSC and are combined with Hawaii longline data for international reporting. PacFIN data are not used in the estimation of total annual catch estimates for Pacific HMS pelagic longline fisheries.

CPFV vessel owners based in California submit logbook data to CDFW who in turn make the data available to SWFSC. SWFSC staff extracts and summarize the HMS component of the data for reporting purposes. CPFV fisheries in Washington and Oregon occasionally target albacore during the summer months when fish are close enough to shore. When targeting albacore, CPFV vessel owners complete a CPFV logbook and submit the data to SWFSC where the data are maintained and combined with summarized CPFV data from California.

5. Protected Resources Regulations

5.1. HMS FMP Endangered Species Act Consultations

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 HMS FMP fisheries on species listed under the Endangered Species Act (ESA) (including marine mammals and sea turtles) have been analyzed in section 7 consultations and biological opinions (BOs), which are listed below. BOs include an Incidental Take Statement with anticipated mortalities and entanglements of ESA-listed marine mammals and sea turtles that are likely to interact with vessels targeting HMS fish species.

The 2004 BO for the HMS FMP 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 when the FMP was implemented.

The US Fish and Wildlife Service also conducted a section 7 consultation on the HMS FMP for the endangered short-tailed albatross and brown pelican. (The brown pelican has subsequently been de-listed.)

More information on the ESA and endangered and threatened species under NMFS' jurisdiction may be found the NMFS website.

The table below lists BOs prepared for west coast HMS fisheries.

Table 5-1. Biological opinions for west coast HMS fisheries

Date	Title
2/4/04	Biological Opinion on Highly Migratory Species FMP (NMFS)
N/D	Biological Opinion on Highly Migratory Species FMP (USFWS)
10/23/06	Issuance of an Exempted Fishing Permit to allow the use of drift gillnet gear in an area and time that is currently prohibited under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species. Issuance of a Marine Mammal Protection Act section 101(a)(5)(E) permit, authorizing take of endangered fin, humpback, and sperm whales
11/28/07	Shallow-set Longline exempted fishing permit under the U.S. West Coast Highly Migratory Species Fisheries
7/29/08	Updated Shallow-set Longline exempted fishing permit under the FMP for West Coast Highly Migratory Species Fisheries
4/8/2011	Authorization of (1) the deep-set tuna longline fishery managed under the Fishery Management Plan for U.S. West Coast Highly Migratory Species, and (2) continued operation of Highly Migratory Species fishery vessels in the deep-set tuna longline fishery under permits pursuant to the High Seas Fishing Compliance Act
5/2/13	Re-initiation of ESA Section 7 Consultation on the Effects of the U.S. West Coast Highly Migratory Species Drift Gillnet Fishery on ESA Listed Species

5.2. Sea Turtles Listed Under the ESA

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 two leatherbacks have been observed taken (released alive) in the drift gillnet fishery, one in 2009 and another in October 2012.

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. After considering 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), in 2014 NMFS published a final rule (79 FR 39855) concluding "No marine areas meeting the definition of critical habitat were identified within the jurisdiction of the United States for the North Pacific Ocean DPS, and therefore we are not designating critical habitat for that DPS."

5.3. Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) establishes a general prohibition on the "take" of any marine mammal (note that the MMPA "take" definition is somewhat different from the ESA definition).

An exemption may be granted if the activity meets certain standards pursuant to MMPA Section 101(a)(5)(E). This section provides that NMFS shall allow, for a period of up to three years, the incidental taking of marine mammal species listed under the Endangered Species Act (ESA) by persons using vessels of the United States with valid fishing permits, if NMFS makes certain determinations. NMFS must first determine, after notice and opportunity for public comment, that: 1) the incidental mortality and serious injury from commercial fisheries will have a negligible impact on the affected species or stock; 2) a recovery plan has been developed or is being developed for such species or stock under the ESA; and 3) where required under section 118 of the MMPA, a monitoring program has been established, vessels engaged in such fisheries are registered in accordance with section 118 of the MMPA, and a take reduction plan has been developed or is being developed for such species or stock.

The Pacific Offshore Take Reduction Plan (satisfying requirement 2, above) was finalized in 1997; the Pacific Offshore Take Reduction Team meets periodically to develop recommendations for reducing marine mammal incidental serious injury and mortality in west coast HMS fisheries.

The MMPA mandates that each commercial fishery be classified by the level of mortality and serious injury of marine mammals occurring incidental to each fishery. The List of Fisheries classifies U.S. commercial fisheries into one of three categories according to the level of incidental mortality or serious injury of marine mammals. This classification is based on the rate, in numbers of animals per year, of incidental mortality and serious injury of marine mammals due to commercial fishing operations relative to a stock's Potential Biological Removal (PBR) level, defined (50 CFR 229.2) as the maximum number of animals, not including natural mortality, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. The DGN fishery is currently categorized as a Category I fishery (annual mortality and serious injury of a stock in a given fishery is greater than or equal to 50 percent of the PBR level) due to interactions with sperm whales in 2010.

In order to make a negligible impact determination, NMFS must consider the total human-related mortality and serious injury to the affected stock of marine mammals. This includes the known or estimated takes from all human sources, such as commercial fisheries and ship strikes. There are five criteria that NMFS adopted in 1999 to make negligible impact determinations for MMPA 101(a)(5)(E) permits (64 FR 28800; May 27, 1999). Criterion 1 is the starting point for analysis. If Criterion 1 is not satisfied, NMFS may use one of the other criteria as appropriate.

1. The threshold for initial determination will remain at 0.1 PBR. If total human-related serious injuries and mortalities are less than 0.1 PBR, all fisheries may be permitted.
2. If total human-related serious injuries and mortalities are greater than PBR, and fisheries-related mortality is less than 0.1 PBR, individual fisheries may be permitted if management measures are being taken to address non-fisheries-related serious injuries and mortalities. When fisheries-related mortality and serious injury is less than 10 percent of the total, the appropriate management action is to address components that account for the major portion of the total.
3. If total fisheries-related serious injuries and mortalities are greater than 0.1 PBR and less than PBR and the population is stable or increasing, fisheries may be permitted subject to individual review and certainty of data. Although the PBR level has been set up as a conservative standard that will allow recovery of a stock, there are reasons for individually reviewing fisheries if serious injuries and mortalities are above the threshold level. First, increases in permitted serious injuries and mortalities should be carefully considered. Second, as serious injuries and mortalities approach the PBR level, uncertainties in elements such as population size, reproductive rates, and fisheries-related mortalities become more important.

4. If the population abundance of a stock is declining, the threshold level of 0.1 PBR will continue to be used. If a population is declining despite limitations on human-related serious injuries and mortalities below the PBR level, a more conservative criterion is warranted.
5. If total fisheries-related serious injuries and mortalities are greater than PBR, permits may not be issued.

5.4. Marine Mammals of Concern for West Coast HMS Fisheries

As discussed above, PBR is an important threshold for making the negligible impact determination. PBR is calculated as 0.5 times the maximum potential population growth rate (Rmax) times the minimum estimate of abundance (Nmin) times a recovery factor (Fr). Marine mammal stocks may be defined as "strategic" if human-caused mortality exceeds PBR, the species is listed under the ESA, the population is estimated to be declining, or the stock is designated as "depleted" under the MMPA. The table below taken from the 2013 U.S. Marine Mammal Stock Assessment Report, shows estimates of these parameters for strategic stocks and other stocks of concern.

Table 5-2. Key population parameters for selected marine mammals occurring in the west coast EEZ.

Species	Stock Area	N est	CV N est	N min	Rmax	Fr	PBR
Guadalupe Fur Seal	Mex-CA	7,408	n/a	3,028	0.12	0.5	91
Short-finned pilot whale	W/O/C	760	0.64	465	0.04	0.4	4.6
Cuvier's beaked whale	W/O/C	6,590	0.55	4,481	0.04	0.5	45
Sperm whale	W/O/C	971	0.31	751	0.04	0.1	1.5
Humpback whale	W/O/C	1,918	0.03	1,855	0.08	0.3	11
Blue whale	ENP	1,647	0.07	1,551	0.04	0.3	2.3
Fin whale	W/O/C	3,051	0.18	2,598	0.04	0.3	16
Sei whale	ENP	126	0.53	83	0.04	0.1	0.17

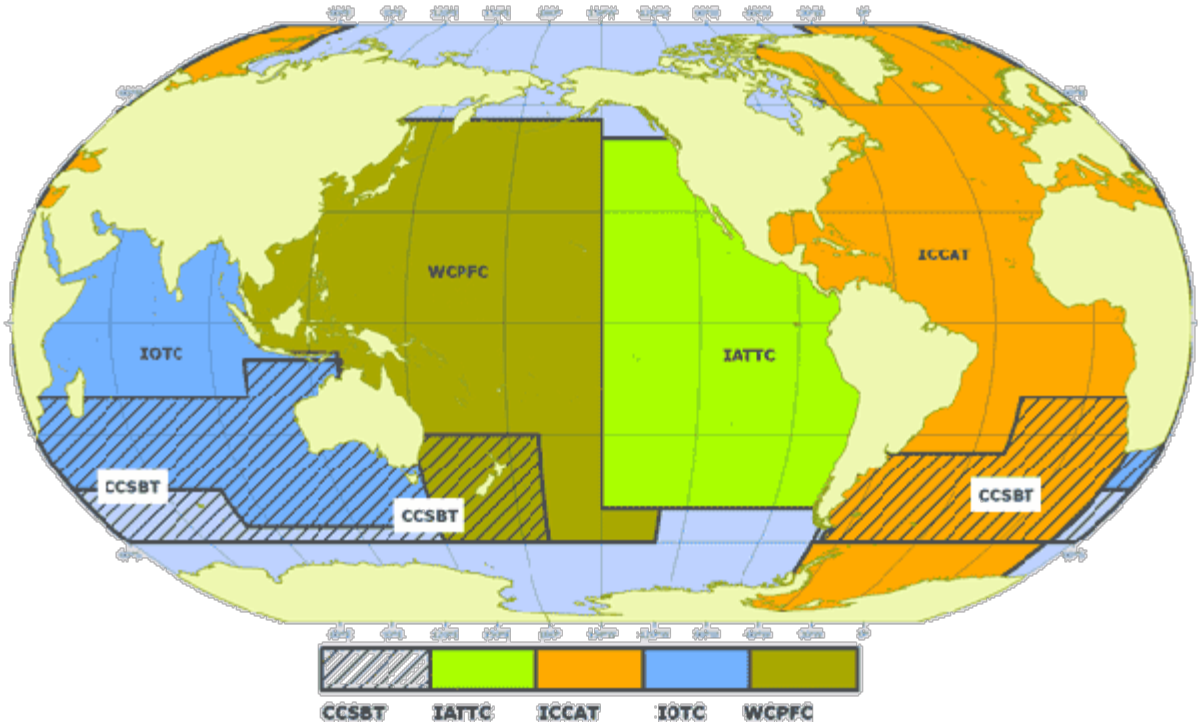
W/O/C: Washington, Oregon, California
ENP: Eastern North Pacific

6. International Management

6.1. RFMOs

Regional fishery management organizations (RFMOs) are responsible for the conservation and management of fisheries for tunas and other species taken by tuna-fishing vessels both outside and within areas of national jurisdiction. These organizations agree to measures, usually by consensus, which are implemented by member countries for their flag vessels. In the Pacific Ocean the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC) establish measures within their respective Convention Areas, as illustrated in the figure below. Notice that there is an area of overlap between the two Convention areas in the South Pacific.

Table 6-1. Global map of tuna RFMO jurisdictions. (Source: http://www.fao.org/fishery/topic/16917/en)



West Coast fisheries are more directly affected by IATTC measures since vessels mostly fish within that Convention Area. However, the WCPFC is especially active in managing northern stocks (those predominately occurring north of 20° North latitude). In the case of Pacific bluefin tuna and North Pacific albacore, tuna scientists recognize a single North Pacific stock occurring in both convention areas. Furthermore, under domestic law the Chair of the Pacific Council, or his or her designee, is allocated a spot as a Commissioner for the United States Section to the WCPFC. This provides a direct advisory role for the Pacific Council in policies and proposals that the U.S. may advocate in the WCPFC. The Council frequently provides advice to U.S. delegations to these RFMOs and Council staff attends their meetings.

6.2. IATTC and WCPFC Outcomes

2014

Report of the 87th IATTC meeting, held July 14-18, 2014 in Lima, Peru and Report of the Resumed 87th meeting, held October 27-29, 2014, in La Jolla, California

Resolutions adopted

- C-14-01 *Amends and replaces* C-11-06 Regional Vessel Register
- C-14-02 *Amends and replaces* C-04-06 Vessel Monitoring System
- C-14-03 *Amends and replaces* C-11-11 Capacity building
- C-14-04 Financing FY 2015
- C-14-05 *Amends and replaces* C-11-12 Capacity of Peru
- C-14-06 Conservation of bluefin 2015-2016
- C-14-07 Procedures for the Implementation of Article XII, paragraph 1, of the Antigua Convention
- C-14-08 Revision of the IATTC Rules of procedure
- C-14-09 Terms of reference for the review of the IATTC and AIDCP

Report of the 11th Regular Session of the WCPFC held December 1-5, 2014, at the Faleata Sports Complex, Apia, Samoa

Conservation Measures Adopted:

- CMM 2014-01 Conservation and Management Measure for bigeye, yellowfin and skipjack tuna in the Western and Central Pacific Ocean
- CMM 2014-02 Conservation and Management Measure for Commission VMS
- CMM 2014-03 Conservation and Management Measure on Standards, Specifications and Procedures for the WCPFC Record of Fishing Vessels
- CMM 2014-04 Conservation and Management Measure to establish a multi-annual rebuilding plan for Pacific bluefin tuna
- CMM 2014-05 Conservation and Management Measures for Sharks
- CMM 2014-06 Conservation and Management Measures to develop and implement a harvest strategy approach for key fisheries and stocks in the WCPO
- CMM 2014-07 Conservation and Management Measure on Compliance Monitoring Scheme

2013

Report of the 85th IATTC Meeting, held June 10-14, 2013, Veracruz, Mexico

Resolutions adopted

- C-13-01 Tuna conservation in the EPO 2014-2016
- C-13-02 Pacific bluefin tuna
- C-13-03 North Pacific albacore *supplements* C-05-02 Northern albacore tuna
- C-13-04 FADs
- C-13-05 Procedures for confidential data
- C-13-06 Financing FY 2014

Report of the 10th Regular Session of the WCPFC, held December 2-6, 2013, Cairns, Australia

Conservation Measures Adopted:

- CMM 2013-01 Conservation and Management Measure for bigeye, yellowfin and skipjack tuna in the Western and Central Pacific Ocean
- CMM 2013-02 Conservation and Management Measure for Compliance Monitoring Scheme

- CMM 2013-03 Standards, specifications and procedures for the Western and Central Pacific Fisheries Commission Record of Fishing Vessels
- CMM 2013-04 Conservation and Management Measure for WCPFC Implementation of a Unique Vessel Identifier (UVI)
- CMM 2013-05 Conservation and Management Measure on daily catch and effort reporting
- CMM 2013-06 Conservation and Management Measure on the criteria for the consideration of conservation and management proposals
- CMM 2013-07 Conservation and Management Measure on the special requirements of Small Island Developing States and Territories
- CMM 2013-08 Conservation and Management Measure for Silky Sharks
- CMM 2013-09 Conservation and Management Measure for Pacific Bluefin Tuna
- CMM 2013-10 WCPFC Record of Fishing Vessels and Authorization to Fish

7. Regulations for International HMS Fisheries and Related Activities in the Pacific

This page provide links to *Federal Register* Final Rule Notices modifying the Code of Federal Regulations, Title 50, Chapter III since 2004 when the HMS FMP was implemented.

2014

79 FR 77942. 12/29/2014 International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Restrictions on the Use of Fish Aggregating Devices in Purse Seine Fisheries for 2015; Correction

79 FR 71327. 12/2/2014 International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Restrictions on the Use of Fish Aggregating Devices in Purse Seine Fisheries for 2015

79 FR 68133. 11/14/2014. International Fisheries; Pacific Tuna Fisheries; 2014 Commercial Fishing for Pacific Bluefin Tuna in the Eastern Pacific Ocean; Commercial Retention Limit

79 FR 67359. 11/13/2014. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fishing Effort Limits in Purse Seine Fisheries for 2014

79 FR 64097. 10/28/2014. Western Pacific Pelagic Fisheries; U.S. Territorial Catch and Fishing Effort Limits

79 FR 63562. 10/24/2014. International Fisheries; Pacific Tuna Fisheries; 2014 Bigeye Tuna Longline Fishery Closure in the Eastern Pacific Ocean

79 FR 56017. 9/18/2014. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions in the Eastern Pacific Ocean, Whale Shark Conservation Measures

79 FR 53631. 9/10/2014. International Fisheries; Pacific Tuna Fisheries; 2014 Commercial Fishing for Pacific Bluefin Tuna Closed in the Eastern Pacific Ocean

79 FR 28448. 5/16/2014. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions for Pacific Bluefin Tuna in the Eastern Pacific Ocean

79 FR 28452. 5/16/2014. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions for Pacific Bluefin Tuna in the Eastern Pacific Ocean

79 FR 19487. 4/9/2014. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions in the Eastern Pacific Ocean

2013

78 FR 70002. 11/22/2013. International Fisheries; Pacific Tuna Fisheries; 2013 Bigeye Tuna Longline Fishery Closure in the Eastern Pacific Ocean; Correction

78 FR 65887. 11/4/2013. International Fisheries; Pacific Tuna Fisheries; 2013 Bigeye Tuna Longline Fishery Closure in the Eastern Pacific Ocean

78 FR 58240. 9/23/2013. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Bigeye Tuna Catch Limit in Longline Fisheries for 2013 and 2014

78 FR 33240. 6/4/2013. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions in the Eastern Pacific Ocean

78 FR 30773. 5/23/2013. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fishing Restrictions and Observer Requirements in Purse Seine Fisheries for 2013-2014

2012

77 FR 71501. 12/3/2012. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Transshipping, Bunkering, Reporting, and Purse Seine Discard Requirements

77 FR 52259. 8/29/2012. Atlantic Highly Migratory Species; Lifting Trade Restrictive Measures

77 FR 51709. 8/27/2012. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Bigeye Tuna Catch Limit in Longline Fisheries for 2012

2011

76 FR 82180. 12/30/2011. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fishing Restrictions for Bigeye Tuna and Yellowfin Tuna in Purse Seine Fisheries for 2012

76 FR 73517. 11/29/2011. Fisheries in the Eastern Pacific Ocean; Pelagic Fisheries; Vessel Identification Requirements

76 FR 68332. 11/4/2011. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions in the Eastern Pacific Ocean

76 FR 283. 1/4/2011. International Fisheries; Pacific Tuna Fisheries; Vessel Capacity Limit in the Purse Seine Fishery in the Eastern Pacific Ocean

2010

75 FR 74640. 12/1/2010. International Fisheries; South Pacific Tuna Fisheries; Procedures To Request Licenses and a System To Allocate Licenses

75 FR 59136. 9/27/2010. Implementation of Regional Fishery Management Organizations' Measures Pertaining to Vessels That Engaged in Illegal, Unreported, or Unregulated Fishing Activities

75 FR 27216. 5/14/2010. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fishing Restrictions and Observer Requirements in Purse Seine Fisheries for 2009-2011

75 FR 7361. 2/19/2010. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Initial Implementation of the Western and Central Pacific Fisheries Convention; Correction

75 FR 3335. 1/21/2010. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Initial Implementation of the Western and Central Pacific Fisheries Convention

2009

74 FR 66585. 12/16/2009. Atlantic Highly Migratory Species; North and South Atlantic Swordfish Quotas

74 FR 65460. 12/10/2009. International Fisheries Regulations; Fisheries in the Western Pacific; Pelagic Fisheries; Hawaii-based Shallow-set Longline Fishery

74 FR 63999. 12/7/2009. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Bigeye Tuna Catch Limits in Longline Fisheries in 2009, 2010, and 2011

74 FR 61046. 11/23/2009. International Fisheries; Pacific Tuna Fisheries; Fishing Restrictions in the Longline and Purse Seine Fisheries in the Eastern Pacific Ocean in 2009, 2010, and 2011

74 FR 44770. 8/31/2009. Fraser River Sockeye and Pink Salmon Fisheries; Notification of Inseason Orders; Correction

74 FR 38544. 8/4/2009. International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fishing Restrictions and Observer Requirements in Purse Seine Fisheries for 2009-2011 and Turtle Mitigation Requirements in Purse Seine Fisheries

74 FR 1607. 1/13/2009. International Fisheries; Pacific Tuna Fisheries; Revisions to Regulations for Vessels Authorized to Fish for Tuna and Tuna-like Species in the Eastern Tropical Pacific Ocean and to Requirements for the Submission of Fisheries Certificates of Origin

2008

73 FR 67805. 11/17/2008. General Provisions for Domestic Fisheries; Specifications for Boarding Ladders

73 FR 31380. 6/2/2008. International Fisheries; Atlantic Highly Migratory Species; International Trade Permit Program; Bluefin Tuna Catch Documentation Program

2007

72 FR 30711. 6/4/2007. International Fisheries; Pacific Tuna Fisheries; Restrictions for 2007 Purse Seine and Longline Fisheries in the Eastern Tropical Pacific Ocean

72 FR 19122. 4/17/2007. Pacific Albacore Tuna Fisheries; Vessel List to Establish Eligibility to Fish for Albacore Tuna in Canadian Waters Under the U.S. Canada Albacore Tuna Treaty

72 FR 6144. 2/9/2007. South Pacific Tuna Fisheries

2006

71 FR 58058. 10/2/2006. Atlantic Highly Migratory Species; Recreational Atlantic Blue and White Marlin Landings Limit; Amendments to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks and the Fishery Management Plan for Atlantic Billfish

71 FR 38297. 7/6/2006. International Fisheries; Pacific Tuna Fisheries; Restrictions for 2006 Longline Fisheries in the Eastern Tropical Pacific Ocean; Fishery Closure

2005

70 FR 70549. 11/22/2005. International Fisheries; Pacific Tuna Fisheries; Restrictions for 2005 and 2006 Purse Seine and Longline Fisheries in the Eastern Tropical Pacific Ocean

70 FR 52324. 9/2/2005. International Fisheries; Pacific Tuna Fisheries; Restrictions for 2005 Longline Fisheries in the Eastern Tropical Pacific Ocean

70 FR 19004. 4/12/2005. Taking of Marine Mammals Incidental to Commercial Fishing Operations; Tuna Purse Seine Vessels in the Eastern Tropical Pacific Ocean (ETP)

2004

69 FR 71731. 12/10/2004. International Fisheries; Pacific Tuna Fisheries; Restrictions for 2004 Purse Seine and Longline Fisheries in the Eastern Tropical Pacific Ocean

69 FR 67268. 11/17/2004. International Fisheries; Atlantic Highly Migratory Species

69 FR 65382. 11/12/2004. International Fisheries; Pacific Tuna Fisheries; Restrictions for 2004 Purse Seine and Longline Fisheries in the Eastern Tropical Pacific Ocean

69 FR 31531. 6/4/2004. International Fisheries Regulations; Pacific Tuna Fisheries

8. Commercial Fisheries Descriptions

8.1. Surface Hook-and-Line Fishery for Albacore

Albacore is an economically valuable fishery in all three West Coast states 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 West Coast fleet, and economics. A typical season runs July through October, with landings peaking in August-September. 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, from 3– 200 nautical miles from the West Coast) 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. Comparing the 1980s to the 2000s, participation in California (measured by the number of surface hook-and-line vessels annually landing albacore) declined by 64% while participation in Oregon and Washington increased by 62% and 130% respectively. Overall, the coastwide decline was 13% based on this metric.

These trends likely reflect a shift in fishing effort into waters off Oregon and Washington where albacore have been more available due to favorable oceanographic conditions. In recent years lower operating costs and better landing facilities in Oregon and Washington compared to California may also have contributed to this shift.

In 2013 705 surface hook-and-line vessels landed albacore in West Coast ports, generating $12.7 million in ex-vessel revenue. In 2013 albacore landings by weight fell by 9% compared to 2012. (See Table 5)

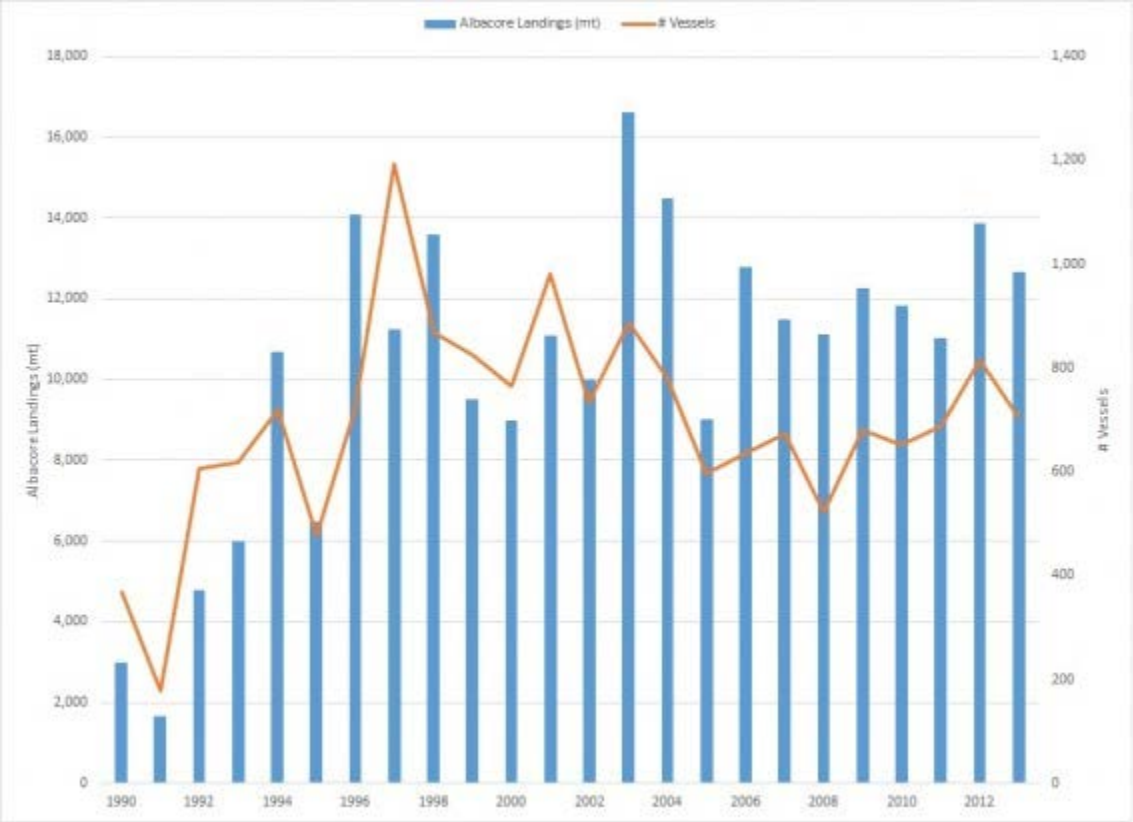


Figure 8-1. Number of vessels and commercial landings of North Pacific albacore (round mt) in the West Coast albacore surface hook-and-line (troll and baitboat) fishery, 1990-2013, Canadian vessels included.

8.2. Drift Gillnet Fishery for Swordfish and Shark

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. 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 which commanded a higher price-per-pound and possibly also due to the 1986 establishment of a shark conservation measure. 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.

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. In recent years the number of extant permits has declined below 50.

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. In addition some Oregon-based vessels participated in this 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.

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 in recent years has occurred from August 15 through January 31.

The drift gillnet fishery has been subject to a number of seasonal closures over the years. Since 1982, the drift gillnet fishery has been closed inside the entire West Coast EEZ from February 1 to April 30. In 1986, a closure was established within 75 miles of California mainland from June 1 through Aug 14 to conserve common thresher sharks; this closure was extended to include May in 1990 and later years. 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 leatherback sea turtles. A smaller closure was implemented to protect Pacific loggerhead turtles from drift gillnet gear during a forecasted or concurrent 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 leatherback 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.

As indicated above, both participation and fishing effort (measured by the number of sets) have declined over the years. 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 2013 18 drift gillnet vessels landed 95 mt of swordfish and 48 mt of common thresher shark. (See Table 12.)

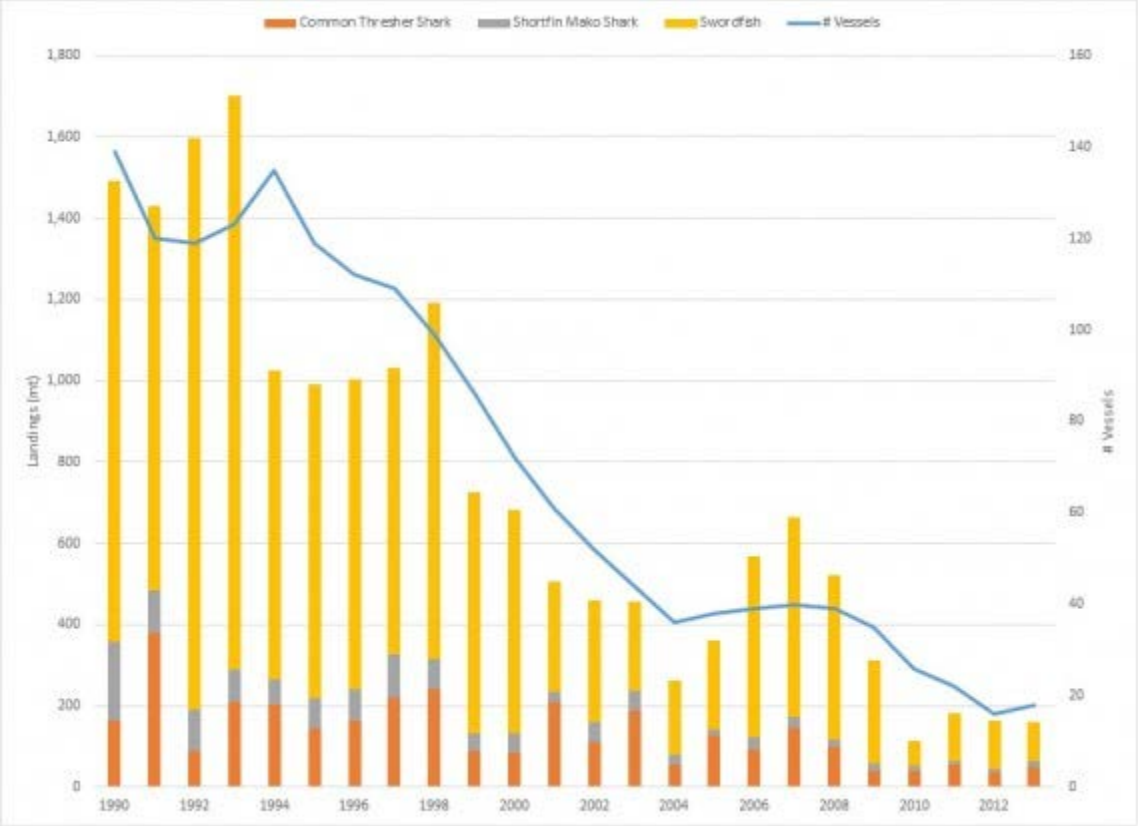


Figure 8-2. Number of vessels and commercial landings (round mt) in the West Coast drift gillnet fishery, 1990-2013.

8.3. Harpoon Fishery for Swordfish

California's modern 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. The number of harpoon permits subsequently decreased from a high of 1,223 in 1979 to a low of 25 in 2001. Fishing effort typically occurs in the Southern California Bight 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, but at higher operating cost.

A state permit and logbook are required to participate in the harpoon fishery 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 2013 six harpoon vessels landed 6 mt of swordfish. (See Table 16.)

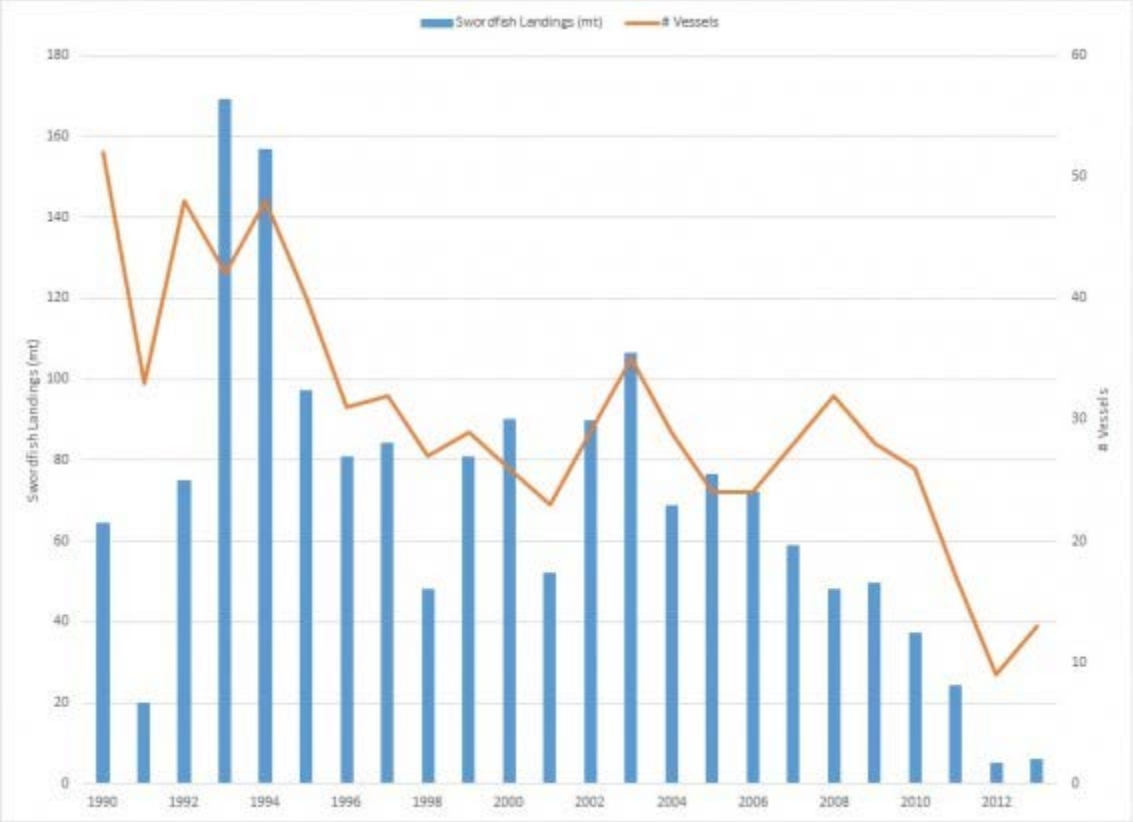


Figure 8-3. Number of vessels and commercial landings (round mt) in the West Coast harpoon fishery, 1990-2013.

8.4. High Seas Longline Fishery for Swordfish and Tuna

California prohibits pelagic longline fishing within the EEZ and the retention of striped marlin. Both these prohibitions are incorporated in the Council's HMS FMP. Longline vessels fishing outside the West Coast EEZ intermittently land swordfish and tuna in West Coast ports.

Vessels operating outside of the EEZ can land fish in West Coast ports if the operator has the necessary state and Federal permits. 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 West Coast-based 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 and may land their catch on the West Coast. West Coast swordfish landings by Hawaii-based vessels have trended upward since the fishery reopened in 2004. Landings have occurred almost exclusively in California ports.

Targeting tunas with deep-set longline gear is permitted outside the EEZ under the HMS FMP. Currently only one vessel on the west coast participates in the tuna longline fishery.

In 2013 seven Hawaii-permitted vessels landed swordfish in West Coast ports. The amount landed cannot be reported, because fewer than three dealers purchased these landings. (SeeTable 20.)

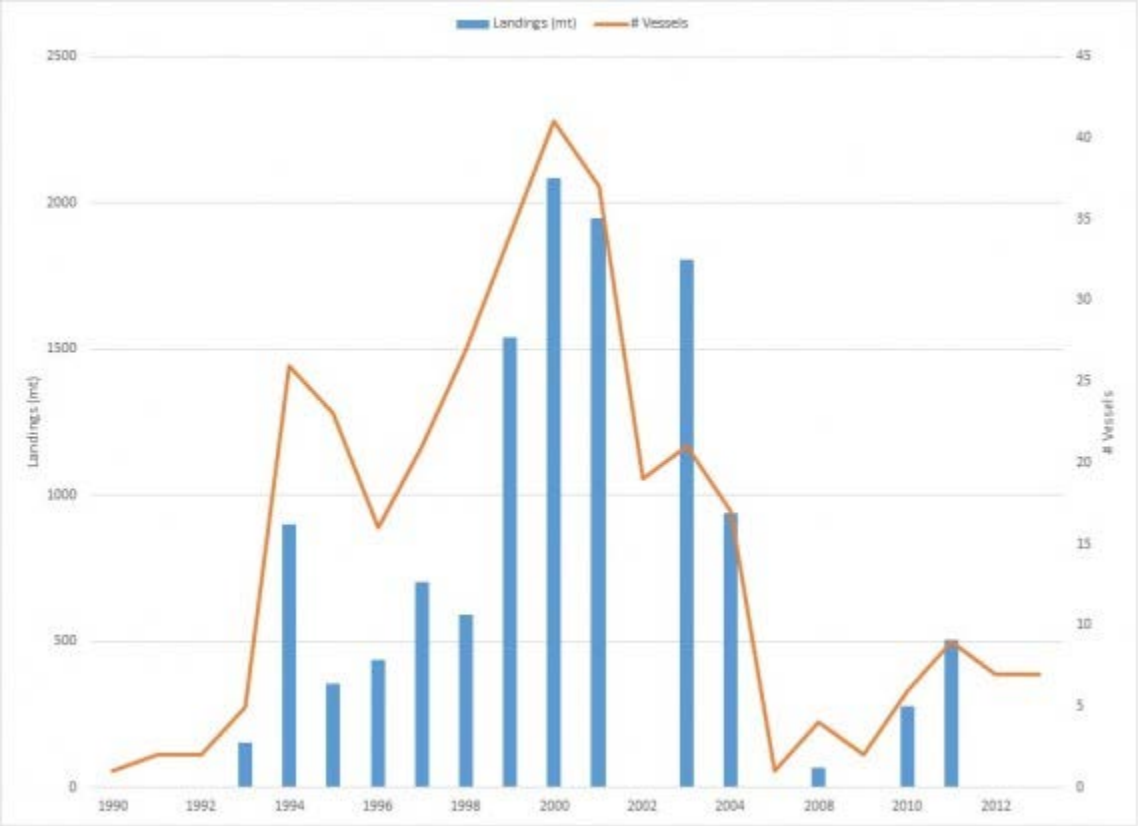


Figure 8-4. Number of vessels and commercial landings (round mt) by Hawaii permitted longline vessels in West Coast ports, 1990-2013 (confidential landings data excluded).

8.5. 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 eastern Pacific Ocean (EPO) tuna catch, on average equaling approximately less than 1% of EPO-wide landings. More than 90% of the catch for these species in the U.S. EEZ 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, typically during periodic El Niño episodes, 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 4 in the 2003-2012 period.

The decline in the number of domestic vessels is correlated with the relocation of large cannery operations. Increased labor costs for cannery operations 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.

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.

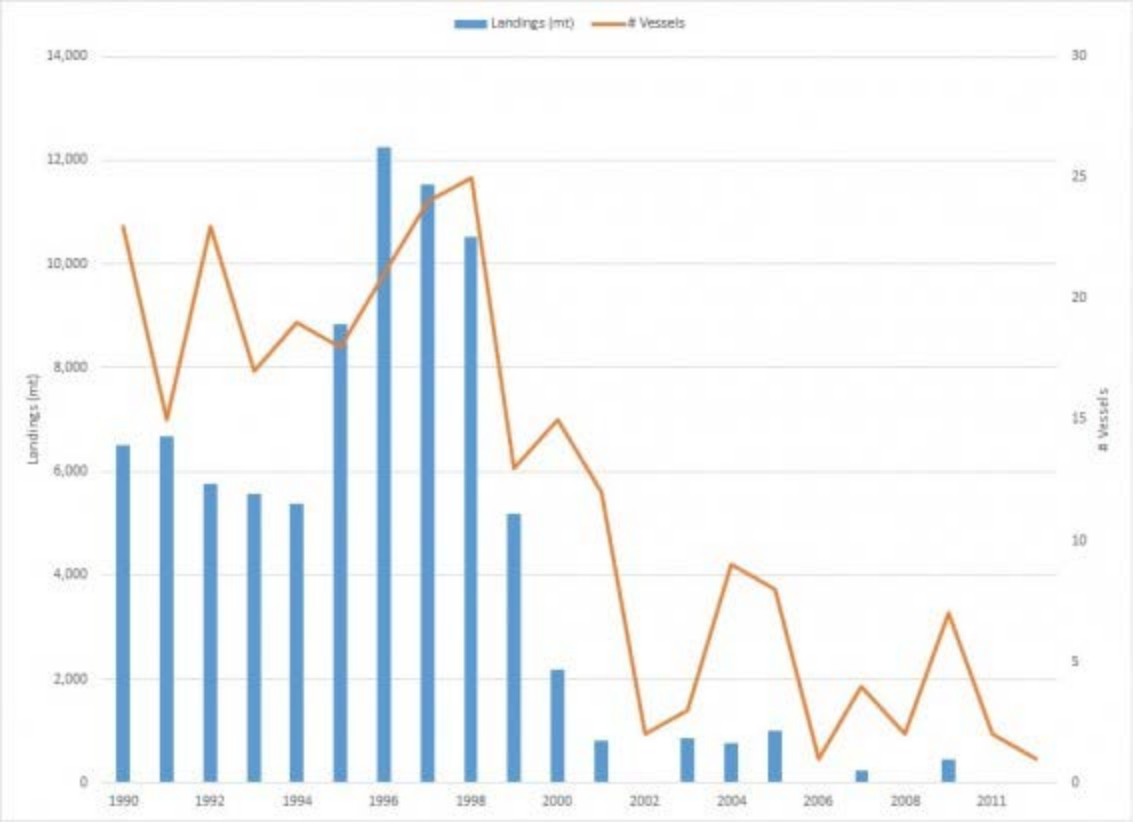


Figure 8-5. Number of vessels and commercial landings (round mt) for HMS tunas in the West Coast purse seine fishery, 1990-2013 (confidential data excluded).

8.6. Fishery Performance in 2013

8.6.1. Landings by Species (See Table 1)

- 12,938 mt of albacore tuna was landed in 2013 worth $41.9 million. This was a decline of 968 mt, or $3.8 million from 2012. Albacore accounted for 95% of HMS landings by weight and 93% by value.
- 42 mt of other HMS FMP tunas (bluefin, bigeye, yellowfin, skipjack, unspecified) were landed in 2013 worth $342,000. Bigeye tuna is typically the biggest component of these landings but the amount for that species landed in 2013 cannot be reported for confidentiality reasons.
- 533 mt of swordfish was landed in 2013 worth $2.7 million, an increase of 103 mt or $607,000 from 2012.
- 66 mt of common thresher shark and 30 mt of shortfin mako shark were landed in 2013 worth a combined $179,000.
- Dorado landings fell to 0.9 mt in 2013 from 10 mt in 2012.

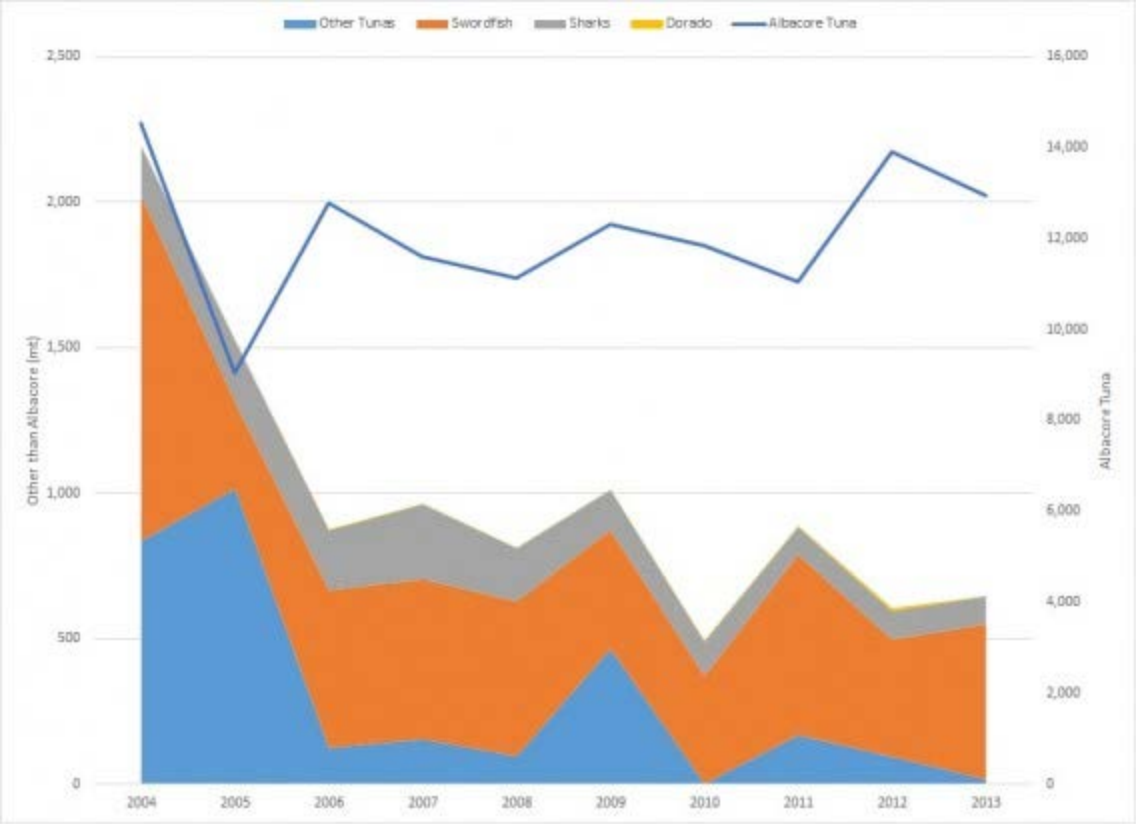


Figure 8-6. Landings (round weight mt) of HMS 2004-2013. Confidential data not included.

8.6.2. Landings by Fishery (See Table 2)

- 705 troll or baitboat (surface hook-and-line) vessels reported 12,669 mt of albacore landed in 2013, or 98% of all albacore landed (Table 5). Out of these landings 22 Canadian vessels accounted for 650 mt (Table 9).
- In 2013, 61% of troll or baitboat landings occurred in Washington state, followed by 36% in Oregon. Only 2% of these landings occurred in California.
- 18 California drift gillnet vessels reported landings in 2013, up from 16 in 2012. These vessels landed 95 mt of swordfish in 2013 worth $636,000. This was down from 117 mt landed in 2012. Landings of common thresher shark increased from 37 mt in 2012 to 48 mt in 2013. (Table 12 and Table 13)
- 13 harpoon vessels landed 6 mt of swordfish in 2013 compared to 5 mt in 2012. The landed value was $81,000. (Table 16 and Table 17)

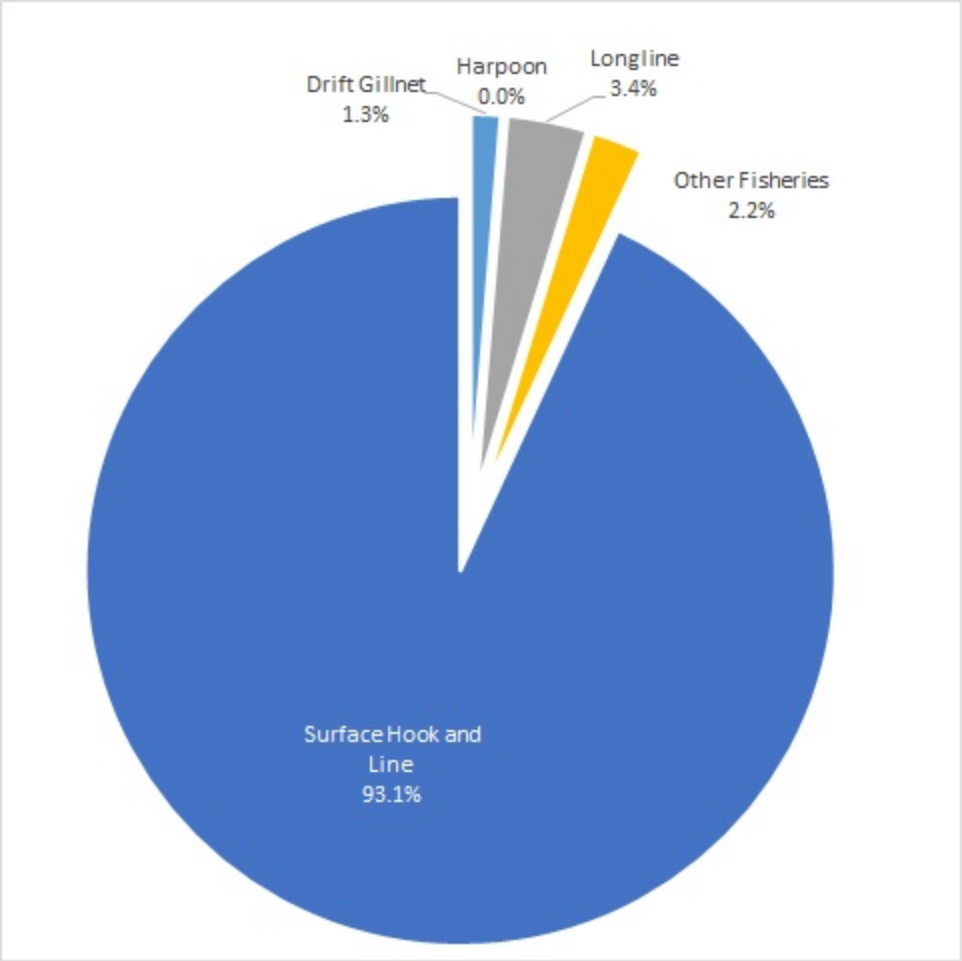


Figure 8-7. Distribution of HMS landings by fishery, 2013. Confidential data not included.

9. Recreational Fisheries

9.1. Albacore

Recreational anglers fishing from private vessels and from commercial passenger fishing vessels (CPFVs) target albacore in all three West Coast states. Albacore is targeted 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.

In recent years albacore have typically begin to show up within range of the recreational fishery in California in late spring, migrating northward and appearing off Oregon and Washington in mid to late June, and are available through late September or early October in most years.

9.2. Other HMS (Southern California)

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. In Oregon and Washington anglers only occasionally take HMS species other than albacore, such as blue sharks.

CPFVs also make trips from Southern California ports (primarily San Diego) into Mexican waters. Yellowfin, bluefin, and albacore tunas as well as dorado are the most commonly caught HMS species.

Coastwide fishery statistics are available from both PSMFC, through their Recreational Fisheries Information Network (RecFIN) website. The RecFIN provides estimates based on fieldsampling 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 a much higher overall percentage of highly migratory MUS catches are represented in logbook data than in CRFS samples 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. Statistics for the CPFV fishery are also available from the federal charter logbook program. In Oregon statistics for recreational fisheries, including private, CPFV, and tournament fisheries, are available from the ODFW Ocean Recreational Boat Survey Program. Beginning in 2005, a mandatory charter boat tuna logbook program was implemented in Washington to provide additional information on location and effort in the charter albacore fishery.

10. Pacific-Wide HMS Catch

10.1. Data Sources

To provide context for reported west coast HMS landings this page presents charts summarizing Pacific-wide tuna catch. HMS stocks are managed internationally, because fleets from many different countries fish on the same stock. Tabular data for these charts were taken from the following sources:

Food and Agriculture Organization of the United Nations. FIGIS. FishStat (Database). (Latest update: 31 Jan 2014).

Fishery Status Report No. 12; Tunas and Billfishes in the Eastern Pacific Ocean in 2013. IATTC, 2014.

Estimates of Annual Catches in the WCPFC Statistical Area. WCPFC-SC10-2014/ST IP-1 rev. 1. Paper prepared by Oceanic Fisheries Programme (OFP) Secretariat of the Pacific Community (SPC). Noumea, New Caledonia. 2014.

International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean annual catch dataset.

CatchFlagGear1918-2013.csv data file available from IATTC

10.2. Catch of Tropical Tunas in the Pacific by Country and Region

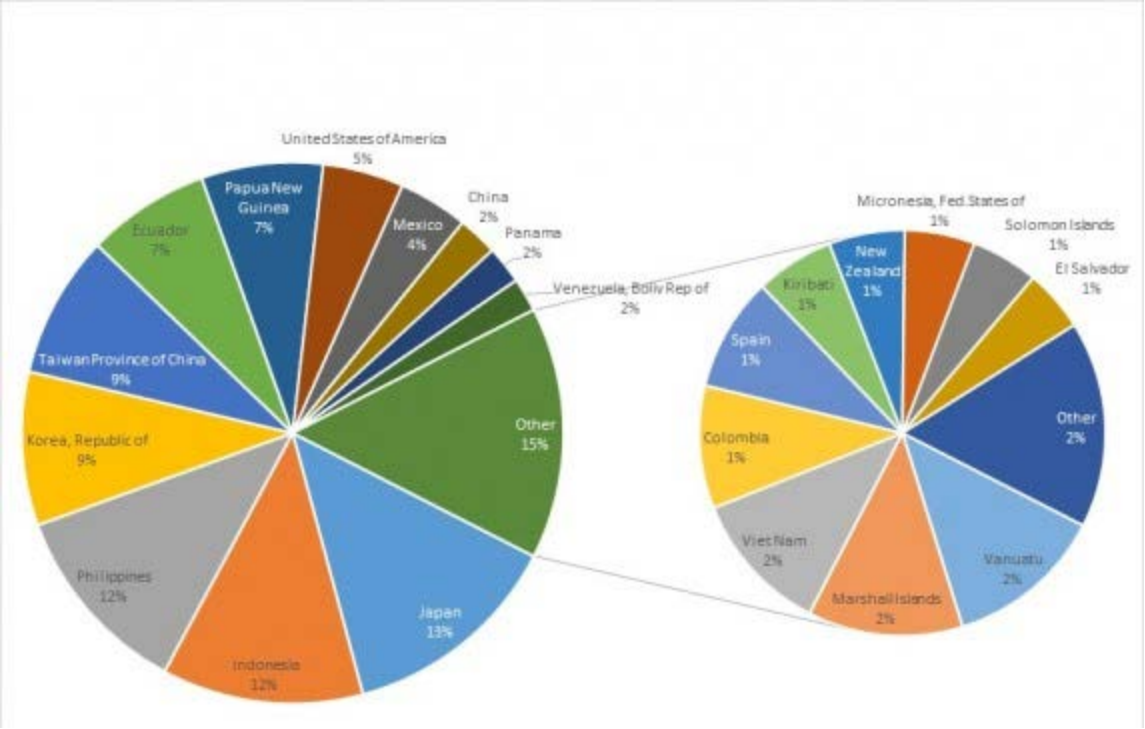


Figure 10-1. Capture fishery production of bigeye, skipjack, and yellowfin in the Pacific by flag, 2003-2012.

This figure shows capture bigeye, skipjack, and yellowfin tuna for the entire Pacific. Japan is the largest harvester in the Pacific. A substantial amount of the catch in Indonesia and the Philippines, ranked second and third respectively, comes from archipelagic waters but both are members of the WCPFC.

Ecuador accounts for the largest portion of catch among countries in the Americas, followed by the United States and Mexico. Most of the U.S. catch comes purse seine vessels fishing in the WCPO. (Source: Food and Agriculture Organization of the United Nations (FAO) Global Capture Production dataset.)

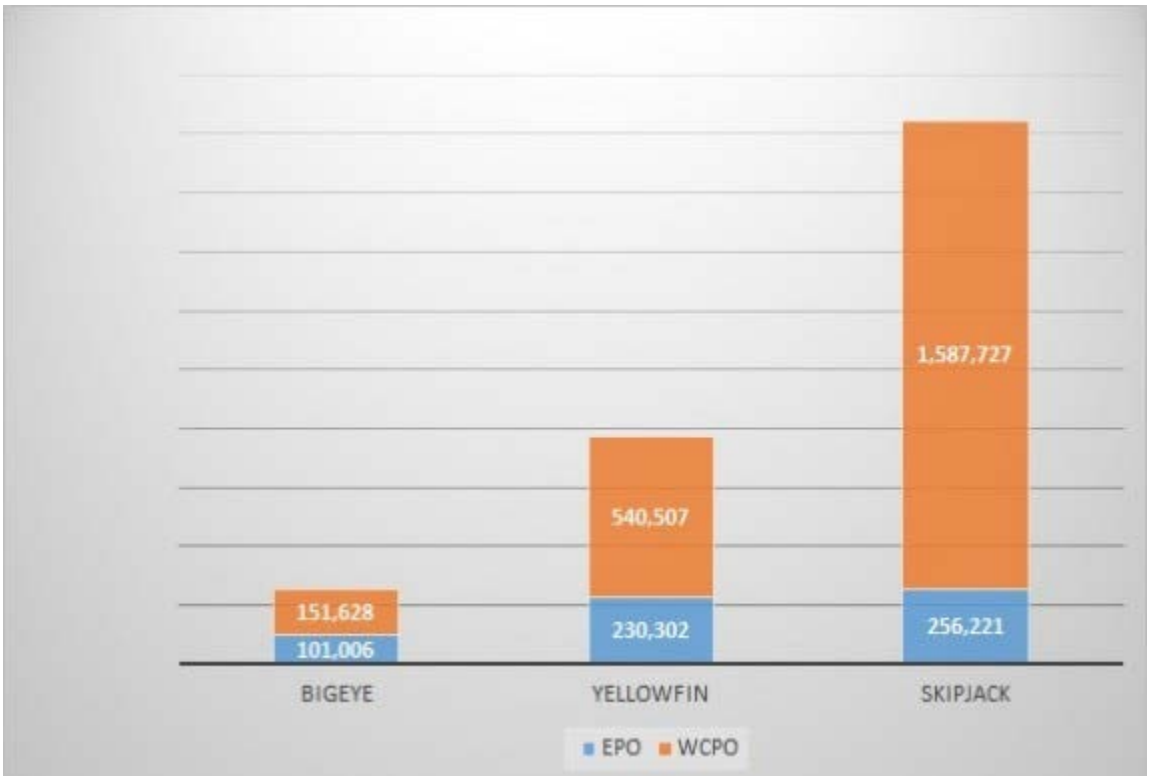


Figure 10-2. Average annual catch (mt) of bigeye, yellowfin, and skipjack, 2004-2013 by species and region.

WCPO skipjack alone accounts for 55% of the total catch. Partly because of this the WCPO accounts for 80% of Pacific-wide catch, but catches of all three species are greater in that region. (Source: IATTC and WCPFC reports.)

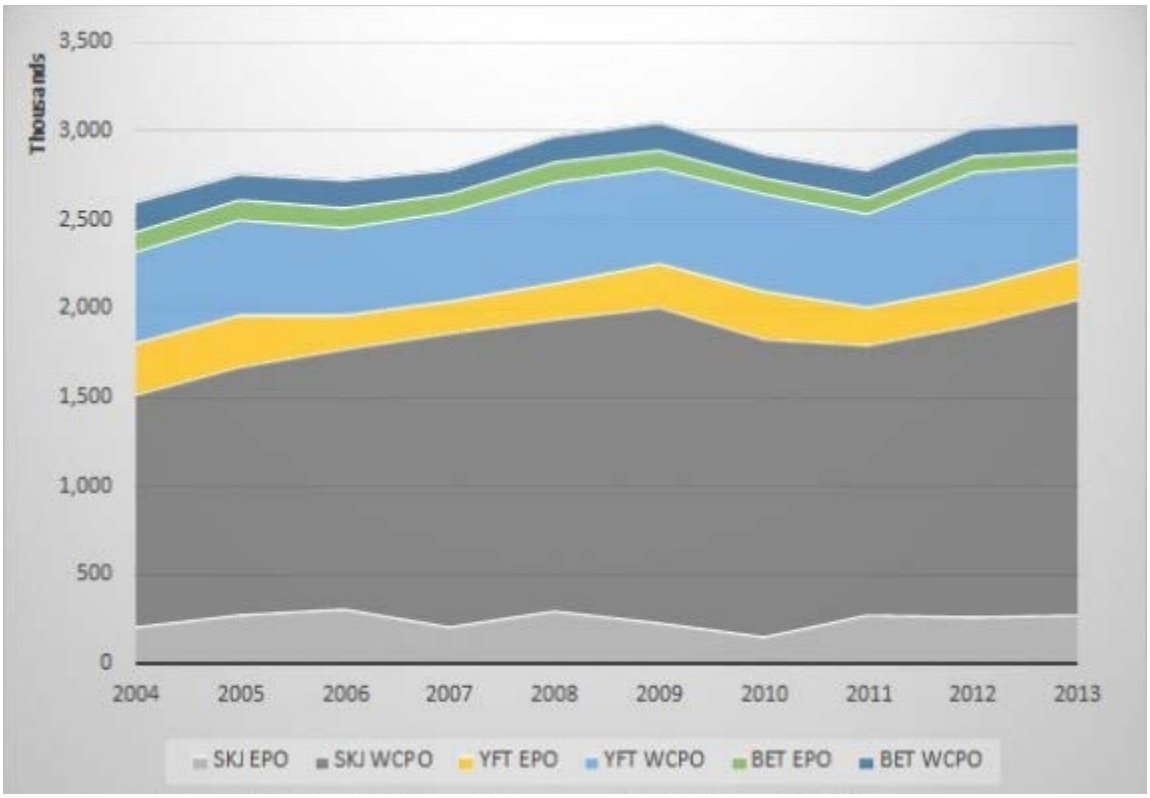


Figure 10-3. Annual catch (mt) of skipjack, yellowfin, and bigeye tuna in the EPO and WCPO, 2004-2013.

This figure presents the same data annually for the 10-year period 2004-2013. While total annual catch has increased by 17%, from 2.6 million metric tons to just over 3 million metric tons, catch of bigeye in both regions has fallen, as has catch of yellowfin in the EPO. These declines are at least partly due to a decline in the bigeye stock and resulting conversation measures intended to end overfishing. (Source: IATTC and WCPFC reports.)

10.3. Catch of Target Tunas in Eastern Pacific by Gear Type

Source: IATTC CatchFlagGear1918-2013.csv

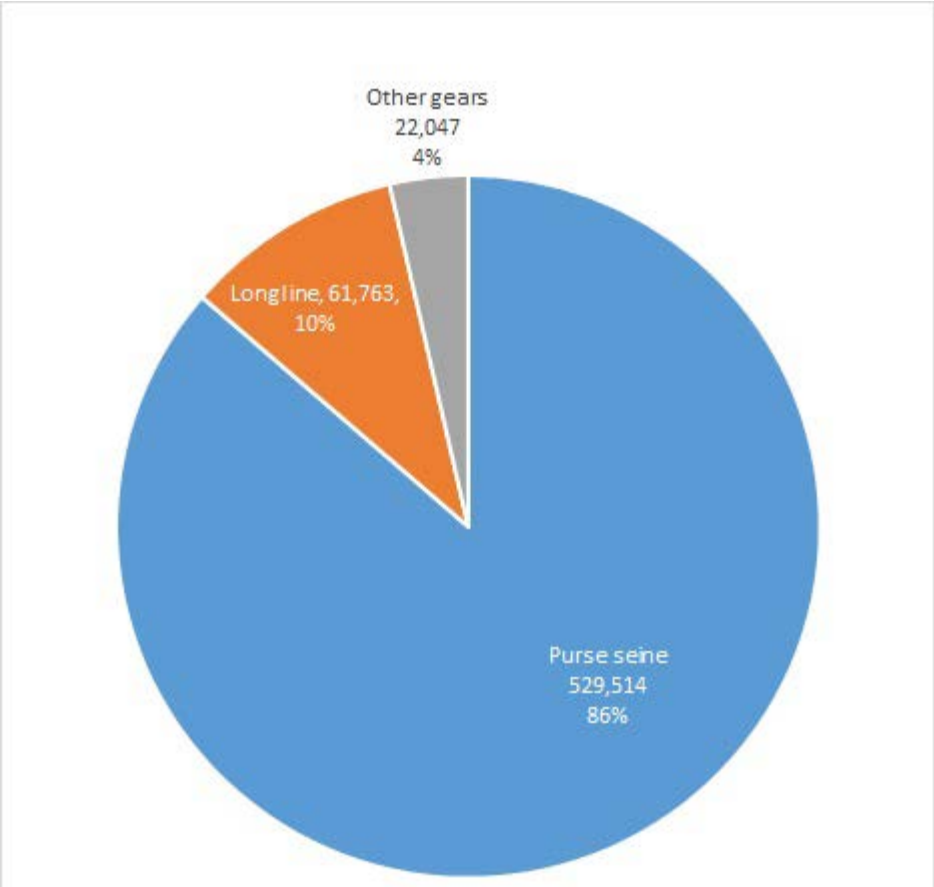


Figure 10-4. Average annual catch of target tuna speceis in the EPO by gear type, 2004-2013.

Catch of target tunas (albacore, bigeye, skipjack, yellowfin) in the EPO is dominated by purse seine with 91% of the catch, followed by longline.

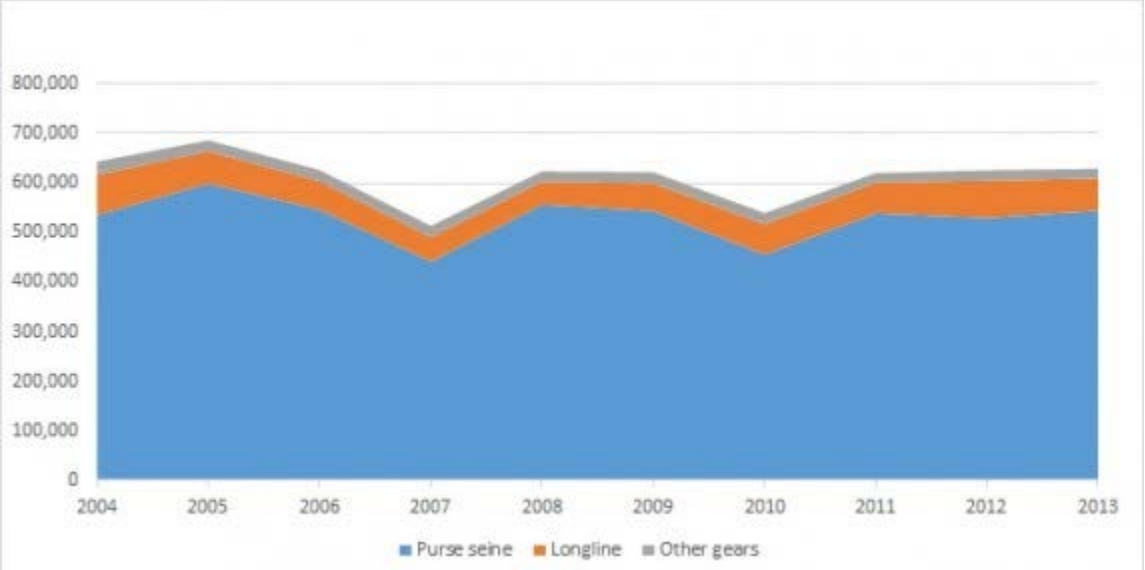


Figure 10-5. Catch of target tuna species in the EPO by gear type and year, 2004-2013.

Catch of target tunas in the EPO has remained relatively stable over the 10 years, 2004-2013. During that period catch varied from 514,141 mt in 2007 and 686,874 mt in 2005. Catch in 2013 was 98% of the 2004 catch and 93% of the maximum catch in 2005.

10.4. Catch of Target Tunas in the Western Pacific by Gear Type

Source: WCPFC-SC10-2014/ST IP-1 rev. 1

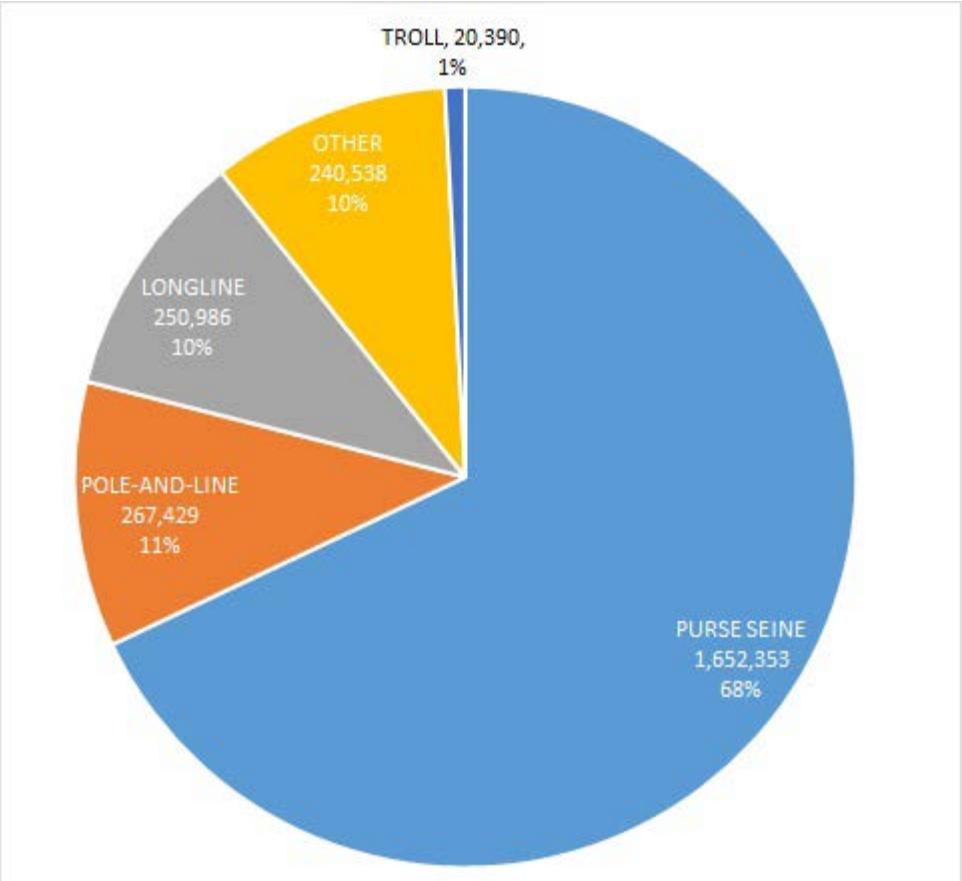


Figure 10-6. Annual average catch (mt) of tuna target species by gear type in the WCPO, 2004-2013.

Purse seine gear accounts for more than two-thirds of tuna catch in the WCPO, because it is the main gear type responsible for the large harvests of skipjack.

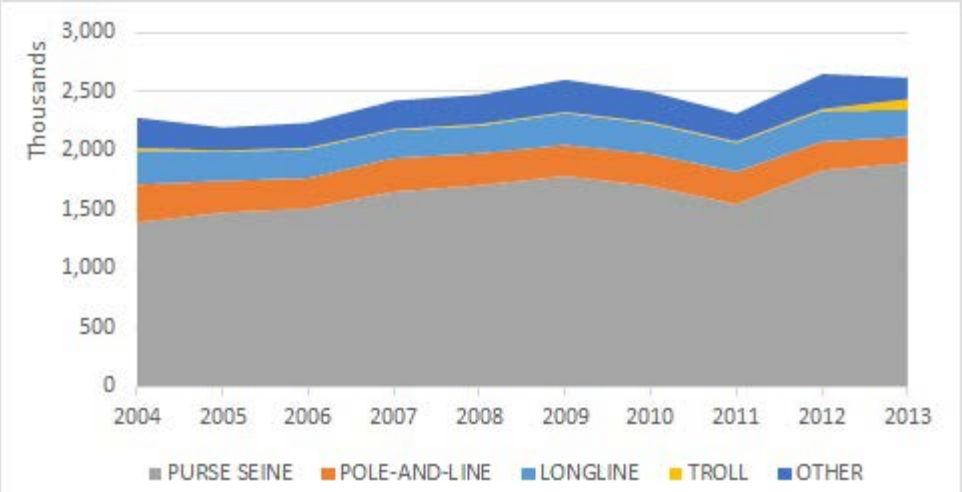


Figure 10-7. Catch (mt) of tuna target species by gear and year in the WCPO, 2004-2013.

While total catch of target tunas in the WCPO was 15% larger in 2013 compared to 2004, catch by individual gear types generally declined with the exception of purse seine, which increased by 36%. Troll catch was unusually high in 2013 at 88,870 mt; catch during the preceding nine years averaged 12,782 mt.

10.5. Northern Stocks – Pacific Bluefin Tuna, North Pacific Albacore, and Swordfish in the North Pacific

Source: ISC dataset

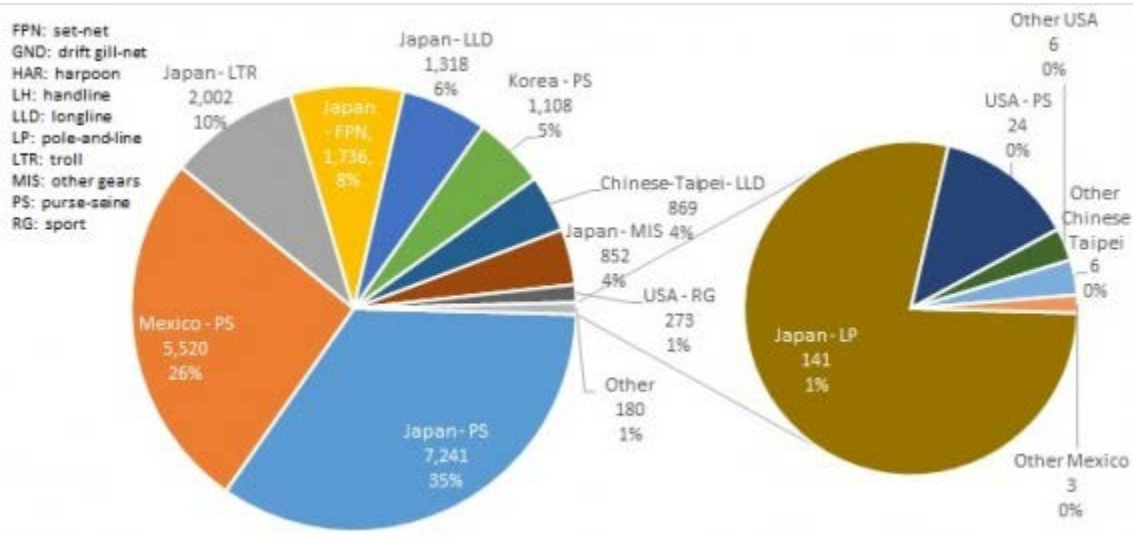


Figure 10-8. Average annual catch (mt) of Pacific bluefin tuna by country and gear type, 2004-2013.

Japan and Mexico purse seine fisheries accounted for 61% of Pacific bluefin tuna catch in the 10 years, 2004-2013. The U.S. accounted for slightly less than 1.5% of the catch; recreational catch accounted for most of this total. (Note that values of 0% in the figure represent fractions less than 0.5% but greater than zero.)

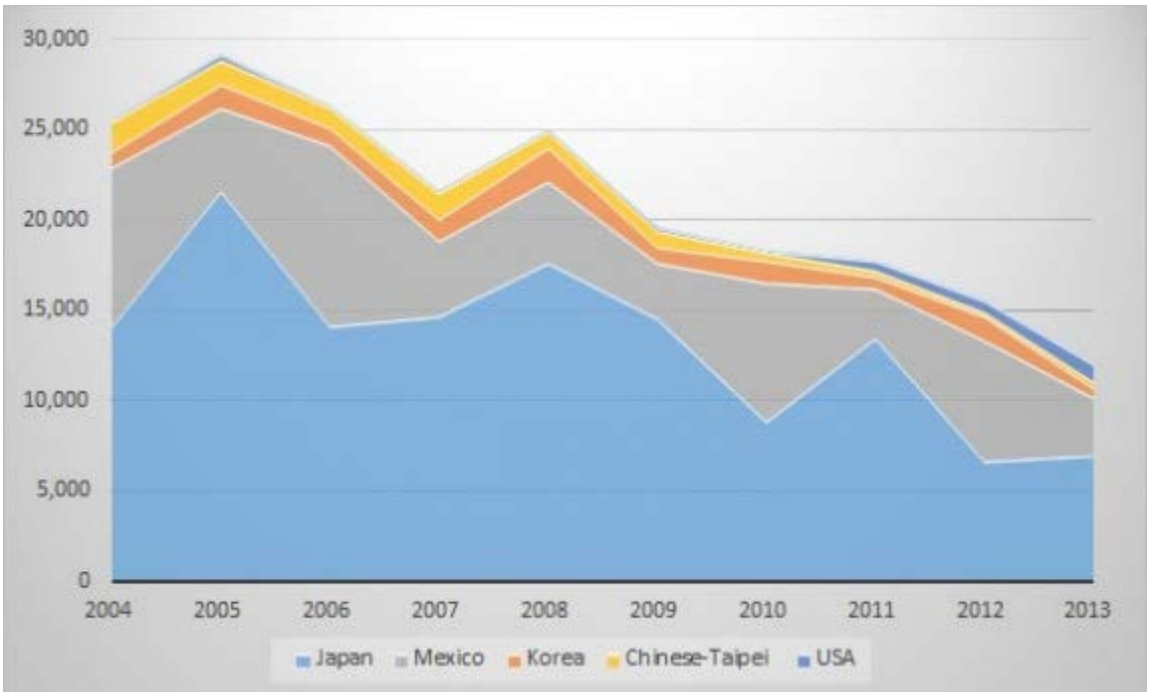


Figure 10-9. Catch (mt) of Pacific bluefin by country, 2004-2013.

Catch of Pacific bluefin fell dramatically in the 10 years, 2004-2013. During these 10 years total catch peaked at 29,171 mt in 2005 and declined to 12,100 mt in 2013. (Mexico's catch for 2013 is not reported in the ISC dataset; for these figures a preliminary estimate in IATTC Fishery Status Report No. 12 of 3,154 mt is used.)

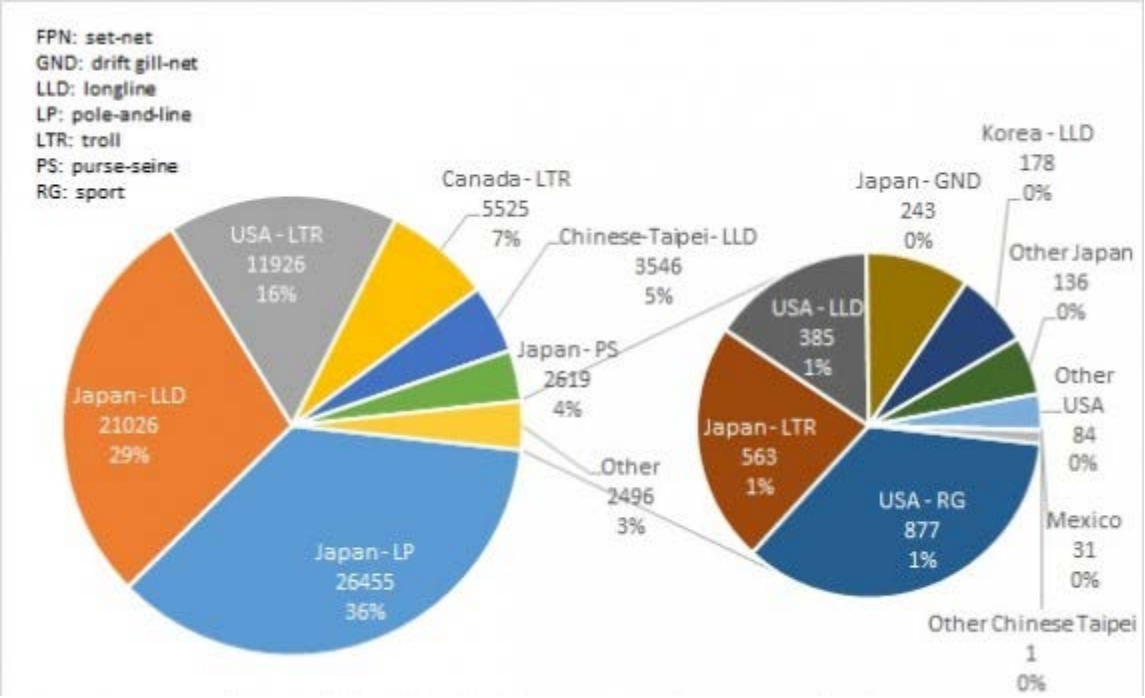


Figure 10-10. Average annual catch (mt) of North Pacific albacore by country and gear, 2004-2013.

Japanese pole-and-line and pelagic longline fisheries accounted for 65% of total North Pacific albacore catch during the 10-year period, 2004-2013, followed by U.S. and Canada troll fisheries at 16% and 7% respectively. All other fisheries accounted for 12% of total catch. (Note that values of 0% in the figure represent fractions less than 0.5% but greater than zero.)

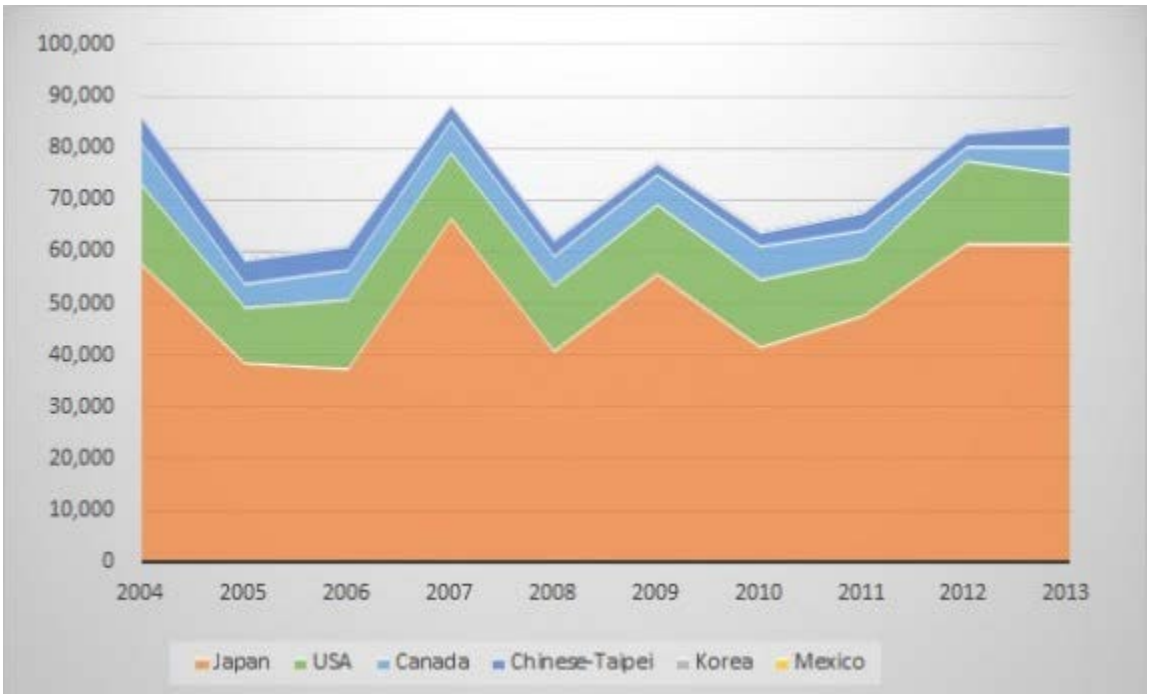


Figure 10-11. Catch (mt) of North Pacific albacore by year and country, 2004-2013.

North Pacific albacore catch has fluctuated between a high of 88,579 mt in 2007 and a low of 59,008 mt in 2005. Catch in 2013 was 84,864 mt, the third highest during this 10-year period. (Although catch by Mexico is reported, the amounts are too small to be visible in this chart.)

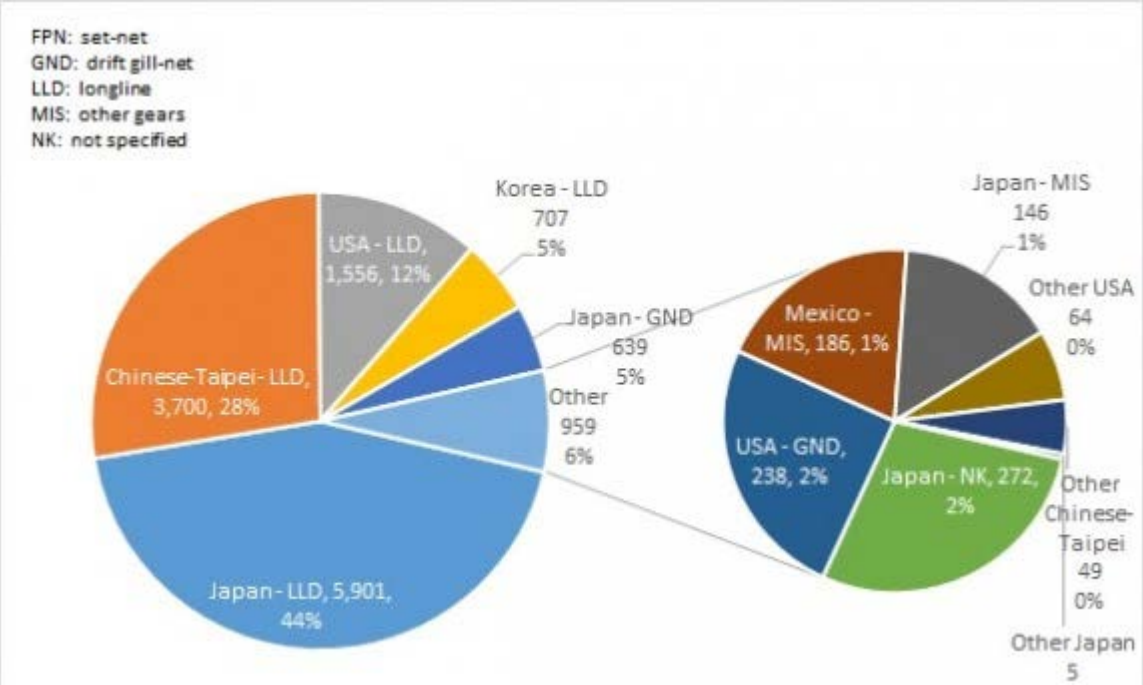


Figure 10-12. Annual average catch (mt) of swordfish in the North Pacific by country and gear, 2004-2013.

In the North Pacific swordfish are mainly caught with longline gear. In the 10 years, 2004-2013, the U.S. longline fishery (operating out of Hawaii) ranked third in catch, averaging 1,556 mt. The west coast large mesh gillnet fishery accounted for 2% of total catch during this period.

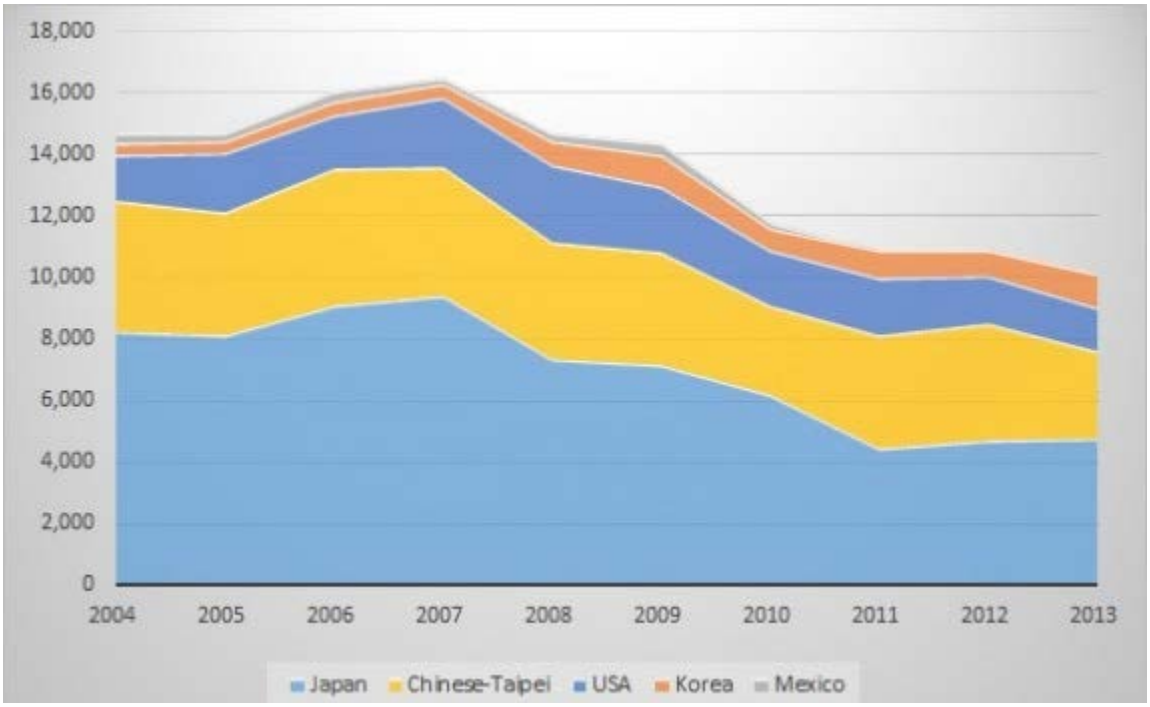


Figure 10-13. Catch (mt) of swordfish in the North Pacific by country, 2004-2013

Although the Western North Pacific swordfish stock is healthy, catch has declined in the 10-year period, 2004-2013, from a peak of 16,486 mt in 2007 to 10,096 mt in 2013. This is mainly due to the drop in Japanese catch; although U.S. catch was at its lowest for the period in 2013, a declining trend is not as clear.

11. Status of HMS Stocks

11.1. Determining Stock Status

Stock status is most reliably determined from stock assessments that integrate fishery and life history information across the range 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 2013 summarizes fisheries and stock status.
- In the Western and Central Pacific Ocean (WCPO), the Secretariat of the Pacific Community Oceanic Fisheries Program (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 by visiting theWCPFC stock assessment webpage.
- 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 a maximum fishing mortality threshold) or the stock is overfished (biomass is less than a 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 HMS stocks, either due to stock dynamics or the lack of sufficient information to conduct a stock assessment. In those cases, proxy values may be determined for MSY and related status determination criteria. In general, the Council considers the biological reference points, or proxies approved by regional fishery management organizations to be the 'best available science.

11.2. Stock Assessments for Species Managed under the HMS FMP

The most current assessment and the publication year are listed below.

11.2.1. Tunas

- **North Pacific Albacore Tuna (2014):** Stock Assessment of Albacore Tuna in the North Pacific Ocean in 2014. Report of the Albacore Working Group. International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean 16-21 July 2014, Taipei, Taiwan.

- **Pacific Bluefin Tuna (2014):** Stock Assessment of Pacific Bluefin Tuna in the Pacific Ocean in 2014. Report of the Pacific Bluefin Tuna Working Group. International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean.
- **Bigeye Tuna (EPO) (2014):** Status of Bigeye Tuna in the Eastern Pacific Ocean in 2013 and Outlook for the Future. Alexandre Aires-da-Silva and Mark N. Maunder. Inter-American Tropical Tuna Commission, Scientific Advisory Committee Fifth Meeting. May 12-16, 2014.
- **Bigeye Tuna (WCPO) (2014):** Stock assessment of bigeye tuna in the western and central Pacific Ocean Rev 1 (25 July 2014). Harley, S., N. Davies, J. Hampton and S. McKechnie.Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.
- **Skipjack (EPO) (2014):** Updated Indicators of Stock Status for Skipjack Tuna in the Eastern Pacific Ocean. Mark N. Maunder. Inter-American Tropical Tuna Commission, Scientific Advisory Committee Fifth Meeting. May 12-16, 2014.
- **Skipjack (WCPO) (2014):** Stock assessment of skipjack tuna in the western and central Pacific Ocean. (Rev 1 25 July 2014). Rice, J. S. Harley, N. Davies and J. Hampton. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.
- **Yellowfin (EPO) (2014):** Status of Yellowfin Tuna in the Eastern Pacific Ocean in 2013 and Outlook for the Future. Carolina V. Minte-Vera, Alexandre Aires-da-Silva and Mark N. Maunder Inter-American Tropical Tuna Commission, Scientific Advisory Committee Fifth Meeting. May 12-16, 2014.
- **Yellowfin (WCPO) (2014):** Stock assessment of yellowfin tuna in the western and central Pacific Ocean Rev 1 (25 July 2014). Davies, N. S. Harley, J. Hampton and S. McKechnie. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

11.2.2. Billfishes

- **Striped marlin (WCPO) (2014):** Stock Assessment of Striped Marlin in the Western and Central North Pacific Ocean in 2011. Report of the Billfish Working Group Stock Assessment Workshop. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. Document prepared by Hui-Hua Lee, Kevin R. Piner, Robert Humphreys, and Jon Brodziak. July 2012. Sapporo, Japan.
- **Striped marlin (EPO) (2009)**: Assessment of Striped Marlin in the Eastern Pacific Ocean in 2008 and Outlook for the Future. Michael G. Hinton. Inter-American Tropical Tuna Commission. Stock Assessment Report 10. An update with data through October 30, 2010, is reported in Fishery Status Report No. 12, Tunas and Billfishes in the Eastern Pacific Ocean in 2013.
- **Swordfish (NPO) (2014):** North Pacific Swordfish (*Xiphiaus Gladius*) Stock Assessment in 2014. Report of the Billfish Working Group. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. 16-22 July 2014. Taipei, Chinese-Taipei.
- **Swordfish (EPO) (2011):** Status of Swordfish in the Eastern Pacific Ocean in 2010 and Outlook for the Future. Michael G. Hinton and Mark N. Maunder. Inter-American Tropical Tuna Commission Scientific Advisory Committee 2nd Meeting. La Jolla, California (USA), 9-12 May 2011.
- **Swordfish (SWPO) (2013)**: Stock assessment of swordfish (*Xiphias gladius*) in the southwest Pacific Ocean. Davies, N., G. Pilling, S. Harley, and J. Hampton Secretariat of the Pacific Community (SPC), Ocean Fisheries Programme (OFP), Noumea, New Caledonia (July 17, 2013).

11.2.3. Sharks

- **Blue shark (NPO) (2014):** Stock Assessment and Future Projections of Blue Shark in the North Pacific Ocean. Report of the Shark Working Group. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. 16-21 July 2014, Taipei, Chinese-Taipei.
- **Common Thresher Shark (EPO):** Not fully assessed. U.S. West Coast EEZ regional catch and CPUE demonstrates the population increasing from estimated low levels in the early 1990s. Recent (2005-2009) West Coast total landings averaged 194 mt, which is less than 0.75 X MSY proxy (MSY proxy = LMSY from the Population Growth Rate method).
- **Shortfin Mako Shark (NPO):** Not assessed; ISC assessment planned for 2015.

11.2.4. Others

Dorado: Not assessed

The International Seafood Sustainability Foundation maintains a webpage summarizing the status of global tuna stocks. While the ISSF website is a centralized source for tuna stock assessment information, it is important to note that ISSF does not conduct the assessments they summarize. The ISSF was founded by several tuna processing companies and the World Wildlife Foundation. According to the ISSF website, the objective of ISSF is to "improve the sustainability of global tuna stocks by developing and implementing verifiable, science-based practices, commitments and international management measures that result in tuna fisheries meeting the MSC certification standard1 without conditions, and becoming the industry standard for vessel owners, traders, processors and marketers."

11.3. Conclusions from 2013 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 2012 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.

A tabular summary of the current stock status of the management unit species with respect to overfishing and overfished criteria is included at the end of this section. The conclusions presented in the table should be reasonably accurate, but should also be treated with caution.

Throughout the summaries below quoted text is taken directly from the referenced assessment document.

11.3.1. Tunas

Pacific Bluefin Tuna (*Thunnus orientalis*) – NPO (2013 Assessment Report)

An assessment of Pacific bluefin tuna in the NPO was completed by the ISC Pacific Bluefin Tuna Working Group (PBFWG or WG) in February 2014 and accepted at an inter-sessional meeting of the ISC Plenary in March 2014. An integrated statistical age-structured stock assessment model (Stock Synthesis Version 3.23b) was used to fit catch, size composition and catch-per-unit of effort (CPUE) data from 1952 to 2012, with life history parameters including a length-at-age relationship from otolith-derived ages and natural mortality estimates from a tag-recapture study.

"Using the updated stock assessment, the 2012 SSB was 26,234 t and slightly higher than that estimated for 2010 (25,476t).

Across sensitivity runs in the updated stock assessment, estimates of recruitment were considered robust. The recruitment level in 2012 was estimated to be relatively low (the 8thlowest in 61 years), and the average recruitment level for the last five years may have been below the historical average level. Estimated age-specific fishing mortalities on the stock in the period 2009-2011 relative to the 2002-2004 (the base period for the WCPFC Conservation and Management Measure 2010-2014) increased by 19%, 4%, 12%, 31%, 60%, 51% and 21% for ages 0-6, respectively, and decreased by 35% for age 7+.

Although no target or limit reference points have been established for the PBF stock under the auspices of the WCPFC and IATTC, the current F average over 2009-2011 exceeds all target and limit biological reference points (PBRs) commonly used by fisheries managers except for F_{loss}, and the ratio of SSB in 2012 relative to unfished SSB (depletion ratio) is less than 6%. In summary, based on reference point ratios, overfishing is occurring and the stock is overfished"

Based on ISC data, recent (2008-2012) catch of Pacific bluefin tuna by U.S. West Coast fisheries constitutes approximately 2% of the North Pacific-wide catch.

Pacific Bigeye Tuna (*Thunnus obesus*) – EPO (2013 Assessment Report)

An assessment of bigeye tuna in the EPO was completed by the IATTC and presented at the Scientific Advisory Committee (SAC) in May 2013. An integrated statistical age-structured stock assessment model (Stock Synthesis Version 3) was used to fit catch, size composition and catch-per-unit of effort (CPUE) data from 1975 to 2012.

"According to the base case results, the most recent estimate indicates that the bigeye stock in the EPO is likely not overfished (*S*>*S*MSY) and that overfishing is not taking place (*F*< *FMSY). In fact, the current exploitation is very close to the MSY target reference points. Likewise, interim limit reference points (0.5 S*MSY and 1.3 *F*MSY) have not been exceeded under the current base case model. These interpretations, however, are subject to uncertainty, as indicated by the approximate confidence intervals around the most recent estimate in the phase plots. Also, they are strongly dependent on the assumptions made about the steepness parameter of the stock-recruitment relationship, the assumed levels of adult natural mortality, and the weighting assigned to the size-composition data.

Key Results

1. The results of this assessment indicate a recent recovery trend for bigeye tuna in the EPO (2005-2010), subsequent to IATTC tuna conservation resolutions initiated in 2004. However, a decline

of the spawning biomass began at the start of 2011, persisted through 2012 and reduced both summary and spawning biomasses to their lowest historic levels at the start of 2013. This recent decline may be related to a series of recent below-average recruitments which coincide with a series of strong la Niña events. However, at current levels of fishing mortality, and if recent levels of effort and catchability continue and average recruitment levels persist, the SBR is predicted to stabilize at about 0.21, very close to the level corresponding to MSY.

2. There is uncertainty about recent and future recruitment and biomass levels.
3. The recent fishing mortality rates are estimated to be slightly below the level corresponding to MSY, and the recent levels of spawning biomass are estimated to slightly above that level. These interpretations are uncertain and highly sensitive to the assumptions made about the steepness parameter of the stock-recruitment relationship, the assumed rates of natural mortality for adult bigeye, and the weighting assigned to the size-composition data, in particular to the longline size-composition data. The results are more pessimistic if a stock-recruitment relationship is assumed, if lower rates of natural mortality are assumed for adult bigeye, and if a greater weight is assigned to the size-composition data, in particular the longline fisheries."

Based on IATTC and HMS SAFE data, recent (2008-2011) catch of bigeye tuna in the EPO by U.S. West Coast fisheries constitutes approximately 0.03% of the stock wide catch.

Pacific Yellowfin Tuna (*Thunnus albacares*) – EPO (2013 Assessment Report)

An assessment of yellowfin tuna in the EPO was completed by the IATTC and presented at the Scientific Advisory Committee (SAC) in May 2013. An integrated statistical age-structured stock assessment model (Stock Synthesis Version 3.23b) was used to fit catch, size composition and catch-per-unit of effort (CPUE) data from 1975 to 2012.

"The spawning biomass ratio (the ratio of the spawning biomass to that of the unfished population; SBR) of yellowfin in the EPO was below the level corresponding to the maximum sustainable yield (MSY) during 1977-1983, coinciding with the low productivity regime, but above that level during most of the following years, except for the recent period (2005-2007 and 2010-2012). The 1984 increase in the SBR is attributed to the regime change, and the recent decrease may be a reversion to an intermediate productivity regime. The different productivity regimes may support different MSY levels and associated SBR levels. The SBR at the start of 2013 was estimated to be 0.22, below the MSY level (0.26). The recent SBR levels (2011-2012) estimated by the current assessment are more pessimistic than those produced by the previous assessment, which indicated a sharp decline in the levels of spawning biomass since 2009 followed by an increase in 2011 (IATTC Stock Assessment Report 13). In the current assessment, the recent SBR levels off. This result is due to an increase in the fishing mortality levels for middle-age yellowfin tuna since 2009, which is estimated by the current assessment. The effort is estimated to be at the level that would support the MSY (based on the current distribution of effort among the different fisheries), and recent catches are at that level.

Key Results:

1. There is uncertainty about recent and future levels of recruitment and biomass. There have been two, and possibly three, different productivity regimes, and the MSY levels and the biomasses corresponding to the MSY may differ among the regimes. The population may have recently switched from a high to an intermediate productivity regime.
2. The recent fishing mortality rates are at the MSY level, and the recent levels of spawning biomass are estimated to be below that level. As described in IATTC Stock Assessment Report 13 and

previous assessments, these interpretations are uncertain, and highly sensitive to the assumptions made about the steepness parameter of the stock-recruitment relationship, the average size of the older fish, and the assumed levels of natural mortality. The results are more pessimistic if a stock-recruitment relationship is assumed, if a higher value is assumed for the average size of the older fish, and if lower rates of natural mortality are assumed for adult yellowfin.

3. The recent levels of spawning biomass predicted by the current assessment are more pessimistic than those from the previous assessment (IATTC Stock Assessment Report 13). This result is due to a recent increase in the fishing mortality levels for middle-age yellowfin tuna since 2008 which is estimated by the current assessment.
4. Increasing the average weight of the yellowfin caught could increase the MSY."

Based on IATTC and HMS SAFE data, recent (2007-2011) catch of yellowfin tuna in the EPO by U.S. West Coast fisheries constitutes approximately 0.01% of the stock wide catch.

Pacific Skipjack Tuna (*Katsuwonus pelamis*) – EPO (2013 Assessment Report)

An assessment of skipjack tuna in the EPO was completed by the IATTC and presented at the Scientific Advisory Committee (SAC) in May 2013. An integrated statistical age-structured stock assessment model (Stock Synthesis Version 3.23b) was used to fit catch, and catch-per-unit of effort (CPUE) data from 1975 to 2012, and included analysis of average size through time as well.

"Skipjack tuna is a notoriously difficult species to assess. Due to skipjack's high and variable productivity (*i.e.* annual recruitment is a large proportion of total biomass), it is difficult to detect the effect of fishing on the population with standard fisheries data and stock assessment methods. This is particularly true for the stock of the EPO, due to the lack of age-composition data and the limited tagging data. The continuous recruitment and rapid growth of skipjack mean that the temporal stratification needed to observe modes in length-frequency data make the current sample sizes inadequate. Previous assessments have had difficulty in estimating the absolute levels of biomass and exploitation rates, due to the possibility of a dome-shaped selectivity curve, which would mean that there is a cryptic biomass of large skipjack that cannot be estimated.

Since the stock assessments and reference points for skipjack in the EPO are so uncertain, developing alternative methods to assess and manage the species that are robust to these uncertainties would be beneficial. Full management strategy evaluation (MSE) for skipjack would be the most comprehensive method to develop and test alternative assessment methods and management strategies.

The main concern with the skipjack stock is the constantly increasing exploitation rate. However, this appears to have leveled off in recent years, and the effort has declined. The data- and model-based indicators have yet to detect any adverse consequence of this increase. The average weight was below its lower reference level in 2009, which can be a consequence of overexploitation, but can also be caused by recent recruitments being greater than past recruitments or expansion of the fishery into areas occupied by smaller skipjack. Any 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."

Based on IATTC and HMS SAFE data, recent (2007-2011) catch of skipjack tuna in the EPO by U.S. West Coast fisheries constitutes approximately 0.001% of the stock wide catch.

11.3.2. Billfish

Swordfish (*Xiphias gladius*) – EPO (2011 Assessment Report)

An assessment of swordfish in the EPO was completed by the IATTC. Catch and catch-per-unit of effort (CPUE) data from 1952 to 2011 were fit in a Surplus Production Model and Stock Synthesis.

"The best available scientific information from genetic and fishery data indicate that the swordfish of the northeastern Pacific Ocean (NEPO) and the southeastern Pacific Ocean (SEPO: south of about 5°S) constitute two distinct stocks. Also, there may be occasional movement of a northwestern Pacific stock of swordfish into the EPO at various times. Though assessments of eastern Pacific stocks did not include parameters for movements among these or other stocks, there may be limited exchange of fish among them.

The results of an assessment of a North Pacific swordfish stock in the area north of 10°N and west of 140°W indicate that the biomass level has been stable and well above 50% of the unexploited levels of stock biomass, indicating that these swordfish are not overexploited at current levels of fishing effort. A more recent analysis for the Pacific Ocean north of the equator, using a sex-specific age-structured assessment method, indicated that, at the current level of fishing effort, there is negligible risk of the spawning biomass decreasing to less than 40% of its unfished level.

The standardized catches per unit of effort of the longline fisheries in the northern region of the EPO and trends in relative abundance obtained from them do not indicate declining abundances. Attempts to fit production models to the data failed to produce estimates of management parameters, such as maximum sustainable yield (MSY), under reasonable assumptions of natural mortality rates, due to lack of contrast in the trends. This lack of contrast suggests that the fisheries in this region have not been of magnitudes sufficient to cause significant responses in the populations. Based on these considerations, and the long period of relatively stable catches, it appears that swordfish are not overfished in the northern EPO.

An assessment of the stock of swordfish in the southwestern EPO was conducted with Stock Synthesis, using data that were updated as of 22 April 2011. Key results from that assessment were (1) that the swordfish stock in the southeast Pacific Ocean is not experiencing overfishing and is not overfished; (2) that the spawning biomass ratio is about 1.45, indicating that the spawning biomass is about 50 percent above the carrying capacity, and substantially above the level which is expected to produce catch at the MSY level; (3) that the recent catch levels were significantly below the estimated MSY (~25,000 t); and (4) that there has been a recent series of high recruitments to the swordfish stock. There is no indication of a significant impact of fishing on this stock. The results of the assessment did suggest an expansion of the fishery onto components of the stock that were previously not, or were only lightly, exploited."

Swordfish (*Xiphias gladius*) – SWPO (2013 Assessment Report)

An assessment of swordfish in the SWPO was completed by the SPC and presented at the WCPFC-SC in August 2013. Two integrated statistical age-structured stock assessment model (MULTIFAN-CL and CASAL) was used to fit catch, catch-per-unit of effort (CPUE) and size data from 1952 to 2011.

Below is a summary of key assessment conclusions

1. The relatively steep decline in biomass over the period 1997 to 2011 over all key model runs, despite the no concurrent temporal change in recruitment, is a notable feature of the current assessment. It is concurrent with large increases in catch particularly in region 2, and declines in CPUE and median fish sizes in the main fisheries.

2. The key source of uncertainty in this assessment is the assumed growth/maturity/mortality at age schedule. Estimates of equilibrium yield, the associated reference points and therefore stock status are highly sensitive to this assumption. Whereas relatively optimistic stock status is predicted under the assumption using the Hawai'ian schedule, the Australian schedule led to notably more pessimistic results, with lower recent spawning biomass levels and estimates of fishing mortality greater than FMSY. Estimates of stock status are therefore highly uncertain with respect to this assumption. Across the uncertainty grid, where the Hawai'ian schedule was assumed, the probability of $F_{Current}/F_{MSY}$ being less than 1 was less than 2%, while where the slower Australian scheduleas assumed, this increased to 51%.
3. Recent catches are between 82% of the *MSY* level and 102% above the *MSY* level of between 5299 and 12,730 mt (range of key model runs). Within this range,
   - assuming the Hawai'ian schedule produces estimates between 82% of the *MSY* level and 24% above the *MSY* level, while,
   - assuming the Australian schedule produces estimates that are between 53 and 102% above the MSY level.

Based on these results, we conclude that under the Hawai'ian schedule current catches are around the MSY level, while under the Australian schedule current levels of catch are above the MSY level.

Based on these results above, and the recent trend in fishing mortality, we conclude that under the Hawai'ian schedule overfishing is not occurring, but under the Australian schedule, overfishing is occurring, the stock is not in an overfished state.

Based on ISC data, recent (2007-2011) catch of North Pacific swordfish (area overlapping the EPO and SWPO stocks) by U.S. West Coast fisheries constitutes approximately 8% of the North Pacific-wide catch.

11.3.3. Sharks

Pacific Blue Shark (*Prionace glauca*) – NPO (2013 Assessment Report)

An assessment of blue shark in the NPO was completed by the ISC Shark Working Group (Shark WG or WG) and accepted at the 2013 ISC Plenary. A Bayesian Surplus Production Model (BSPM) was used to fit catch and catch-per-unit effort data from 1971-2011.

"Based on the trajectory of the base case model, median stock biomass of blue shark in 2011 (B2011) was estimated to be 456,000 mt. Median annual fishing mortality in 2011 (F2011) was 7.14% of B2011. Catch in 2011 (C2011) was estimated to be 75% of replacement yield (REPY). Stock status is reported in relation to maximum sustainable yield (MSY). Stock biomass in 2011 was approximately 60% higher than Bmsy and F2011 was estimated to be well below Fmsy.

While the results varied depending upon the input assumptions, there was general agreement in nearly all scenarios in terms of the key model results: stock biomass was near a time-series high in 1971, fell to its lowest level in the late 1980s, and subsequently increased gradually and has leveled off at a biomass similar to that at the beginning of the time-series. A single scenario using CPUE data for the Hawaii-based deep longline fleet for 1995-2011 in place of the Japan shallow longline index for 1994-2010, showed a continual decline in stock biomass from 1971 to 2011. However, the Hawaii index was not considered to be representative of the stock due to the relatively small amount of catch and spatial coverage and the potential impact of regulatory changes in the fishery.

In summary, based on the base case and plausible model scenarios, the stock is not overfished and overfishing is not occurring."

An alternative assessment, using the same catch and catch-per-unit effort data from 1971-2011, and also including size and sex data was conducted by the SPC using an integrated statistical age-structured stock assessment model. Results from that approach were more uncertain than the BSPM, and were sensitive to abundance indices and the Stock Recruitment Relationship (SSR).

Both assessments were presented to the 2013 Western Central Pacific Fisheries Commission Scientific Committee (SC). Because of the uncertainties resulting from the two assessments, the SC requested the assessment be rerun in 2014. Updates outcomes will be presented to the SC in August 2014.

Based on ISC data, recent (2007-2011) catch of North Pacific blue shark by U.S. West Coast fisheries constitutes approximately 0.5% of the North Pacific-wide catch.

Stock status indicators from assessments conducted in 2013

Species (stock)	F_{Recent}/F_{MSY}	Overfishing? ($F/F_{MSY} > 1.0$)	B_{Recent}/B_{MSY}	B_{MSST}/B_{MSY}	Overfished? ($B_{Recent}<B_{MSST}$)	Assessment
Tunas						
Albacore (NPO)*	0.71	N	Unknown	0.7	Unlikely	ISC 2011
Bluefin (NPO)*	2.13	Y	0.36	0.75	Y	ISC 2012
Bigeye (EPO)	1.05 [1]	N	1.02 [2]	0.75-0.90	N	IATTC, Aires-da-Silva and Maunder 2013
Bigeye (WCPO)*	1.46	Y	1.25	0.6	N	WCPFC, Davies et al 2011
Skipjack (EPO)	Unknown	Unlikely	Unknown	0.5 [3]	Unlikely	IATTC, Maunder 2013
Skipjack (WCPO)*	0.37	N	2.68	0.5	N	WCPFC, Hoyle et al 2011
Yellowfin (EPO)	1.01 [1]	N	0.83 [2]	0.5 [3]	Y	IATTC, Minte-Vera et al 2013
Yellowfin (WCPO)*	0.77	Y	1.33	0.5	N	WCPFC, Langley et al 2011
Billfishes						
Striped marlin (NEPO)*	0.16	N	≥1	0.5	N	IATTC, Hinton and Maunder 2011
Striped marlin (WCNPO)*	1.24	Y	0.35	0.62	Y	ISC, Lee et al 2012
Swordfish (NEPO)*	0.59	N	2.1	0.61-0.8	N	ISC, Brodiak 2010
Swordfish (NWPO)*	0.54	N	1.31	0.61-0.8	N	ISC 2009
Swordfish (SWPO)	0.4-1.77 [4]	Unknown	1.15-1.58 [4]	0.5 [3]	N	WCPFC, Davies et al 2013
Swordfish (EPO)	Unknown	N	Unknown	0.5 [3]	N	IATTC, Fishery Status Report 12
Sharks						
Blue shark (NPO)*	0.35 [5]	N	1.59 [6]	0.5 [3]	N	ISC 2013
Shortfin mako (NPO)*	<1.0	N	>1.0	0.71	N	NMFS, PFMC HMS plan and development team 2002
Common thresher (EPO)*	<1.0	N	~1.10	0.77	N	NMFS, PFMC HMS plan and development team 2002
Other						
Dorado*	Unknown	Unknown	Unknown	0.5	Unknown	

* Most recent information pre-dates 2013 assessment cycle, indicators were extracted from Table 5-2 of 2012 SAFE report

[1] Based on F multiplier. The F multiplier indicates how many times effort would have to be effectively increased to achieve the MSY in relation to the average fishing mortality during 2010-2012

[2] Brecent and BMSY are defined as the biomass of fish 3+ quarters old (in metric tons) at the beginning of 2013 and at MSY, respectively

[3] Carried over from previous report, if available. However, natural mortality is considered unknown.

[4] Current period defined as 2008-2011. Due to high uncertainty about growth, maturity and mortality at age schedules, uncertainty was characterized by two alternatives, one derived from Hawai'ian and the other derived from Australian growth estimates

[5] Based on F2011/FMSY

[6] Based on B2011/BMSY

12. 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

Appendix 1: Summaries of Commercial Fishery Catch, Revenue, and Effort (PacFIN data)

Table 1. West Coast commercial HMS landings (round mt), nominal revenue ($1,000s), and average prices ($/lb) by species and year.

Time run: 8/22/2014 10:47:00 AM

		2012			2013		
		Landings (mt)	Revenue ($1,000)	Average Price ($/lb)	Landings (mt)	Revenue ($1,000)	Average Price ($/lb)
Tunas	Albacore Tuna	13,904	45,745	$1.49	12,936	41,898	$1.47
	Bigeye Tuna	49	367	$3.39			
	Bluefin Tuna	43	96	$1.02	10	68	$3.11
	Skipjack Tuna	1.0	2		1.0	3	
	Unspecified Tuna						
	Yellowfin Tuna	2	13		6	41	$3.14
Swordfish	Swordfish	403	2,092	$2.36	533	2,699	$2.30
Sharks	Blue Shark	0.2	0.1		0.1	0.1	
	Common Thresher Shark	70	115	$0.74	66	118	$0.81
	Shortfin Mako Shark	27	53	$0.89	30	61	$0.91
Dorado	Dorado/Dolphinfish	10	36	$1.60	0.9	6	
Total HMS		**14,509**	**48,518**		**13,583**	**44,894**	

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.
Average price per pound not reported for cells highlighted in orange because landings less than 5 mt.
Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.
Revenues are not adjusted for inflation.
Average prices are estimated as revenue divided by round pounds
Totals do not include suppressed confidential data.

Table 2. West Coast commercial HMS landings (round mt), nominal revenue ($1,000s), and average prices by fishery, 2012-2013.

Time run: 8/22/2014 10:47:22 AM

	2012			2013		
	Landings (mt)	Revenue ($1,000)	Average Price ($/lb)	Landings (mt)	Revenue ($1,000)	Average Price ($/lb)
Fishery						
Drift Gillnet	176	939	$2.42	171	803	$2.13
Harpoon	5	60	$5.26	6	81	$5.88
Longline	370	1,739	$2.13	465	2,230	$2.18
Other Fisheries	58	154	$1.20	297	1,234	$1.88
Purse Seine						
Surface Hook and Line	13,861	45,559	$1.49	12,670	40,775	$1.46
Grand Total	**14,471**	**48,451**		**13,609**	**45,123**	

Confidential values (less than 3 vessels or dealers) are not reported, and the cells are highlighted yellow

If landings less than 5 mt average price per pound not reported and cell highlighted orange.

Revenues are not adjusted for inflation.

Average prices are estimated as revenue divided by round pounds.

Data for Canadian surface hook-and-line vessels fishing in the U.S. EEZ are excluded from the table.

Totals do not include suppressed confidential data.

Table 3. West Coast commercial landings (round mt) of HMS by all HMS and non-HMS gears, 1981-2013.

Time run: 8/22/2014 10:48:29 AM

	Tunas						Swordfish	Sharks			Dorado	
	Albacore Tuna	Bigeye Tuna	Bluefin Tuna	Skipjack Tuna	Unspecified Tuna	Yellowfin Tuna	Swordfish	Blue Shark	Common Thresher Shark	Shortfin Mako Shark	Dorado/ Dolphinfish	**Total**
Year												
1981	13,712	1,168	868	57,869	40	76,090	749	92	1,521	182	4	**152,296**
1982	5,410	968	2,404	41,904	51	61,769	1,112	27	1,848	351	1	**115,845**
1983	9,578	21	764	44,995	55	55,740	1,763	7	1,331	217	0.6	**114,472**
1984	12,654	126	635	31,251	1,014	35,062	2,889	2	1,279	160	4	**85,077**
1985	7,301	7	3,254	2,977	468	15,024	3,418	1	1,190	149	0.2	**33,789**
1986	5,243	29	4,731	1,361	143	21,517	2,530	2	974	312		**36,841**
1987	3,159	50	823	5,724	129	23,201	1,803	2	562	403		**35,855**
1988	4,912	6	804	8,863	11	19,520	1,636	3	500	322	0.2	**36,577**
1989	2,214	0.6	1,019	4,505	77	17,615	1,358	6	504	255	0.4	**27,555**
1990	3,028	2	925	2,256	46	8,509	1,236	20	357	373	0.7	**16,752**
1991	1,676	7	104	3,407	11	4,177	1,029	0.7	584	219	0.3	**11,216**
1992	4,902	7	1,087	2,586	10	3,350	1,546	1	292	142	3	**13,926**
1993	6,166	26	559	4,539	16	3,795	1,767	0.5	275	122	17	**17,281**
1994	10,751	47	916	2,111	33	5,056	1,700	12	330	128	41	**21,124**
1995	6,530	49	714	7,037	1	3,038	1,162	5	270	95	5	**18,906**
1996	14,173	62	4,688	5,455	3	3,347	1,198	0.9	319	96	10	**29,352**
1997	11,292	82	2,251	6,070	11	4,775	1,459	0.6	320	132	5	**26,397**
1998	13,915	53	1,949	5,846	12	5,799	1,408	3	361	100	3	**29,449**
1999	9,770	108	186	3,758	12	1,353	2,033	0.3	320	63	17	**17,622**
2000	9,073	86	313	780	0.9	1,159	2,645	0.8	296	80	43	**14,477**
2001	11,191	53	196	58	0.6	655	2,195	2	373	46	16	**14,785**
2002	10,029	10	11	236	2	544	1,725	41	301	82	0.3	**12,981**
2003	16,671	35	36	349		465	2,135	0.8	301	70	6	**20,069**
2004	14,540	22	10	307	9	488	1,186	0.5	115	54	1	**16,733**
2005	9,055		207	523		285	297	0.9	179	33	0.2	**10,580**
2006	12,786		0.8	48		77	541	0.4	160	46	3	**13,662**
2007	11,586		45	5		104	550	10	204	45	2	**12,551**
2008	11,131	27	0.8	3	0.6	65	531	0.2	147	35	2	**11,944**
2009	12,307		415	5		45	409	1	107	30	0.7	**13,320**
2010	11,856		1			0.8	370	0.2	96	21	4	**12,350**
2011	11,050	46	118	1		4	620	0.2	77	19	3	**11,938**
2012	13,904	49	43	1.0		2	403	0.2	70	27	10	**14,509**
2013	12,936		10	1.0		6	533	0.1	66	30	0.9	**13,583**

Blank cells indicate null value (no data exist for that stratum).
Weight rounded to the nearest mt. If less than 1 mt was landed, weight rounded to nearest 0.1 mt
If a record is confidential (fewer than 3 vessels or dealers) data is suppressed and it is highlighted yellow
Totals do not include suppressed confidential data.

Table 4. West Coast real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) from HMS landings by all HMS and non-HMS gears, 1981-2013.

Time run: 8/22/2014 10:49:48 AM

	Tunas						Swordfish	Sharks			Dorado	
	Albacore Tuna	Bigeye Tuna	Bluefin Tuna	Skipjack Tuna	Unspecified Tuna	Yellowfin Tuna	Swordfish	Blue Shark	Common Thresher Shark	Shortfin Mako Shark	Dorado/ Dolphinfish	**Total**
Year												
1981	58,194	3,444	2,718	145,530	159	216,597	7,361	130	3,238	356	6	**437,733**
1982	16,596	2,496	5,558	83,688	204	153,852	10,570	39	4,092	701	2	**277,798**
1983	24,337	91	2,113	72,864	190	118,238	13,519	9	2,931	457	1	**234,751**
1984	33,040	335	1,738	47,598	4,974	71,113	22,313	5	3,153	364	8	**184,641**
1985	15,425	33	5,243	3,940	1,914	27,324	24,952	4	3,380	359	0.7	**82,573**
1986	11,263	164	8,453	1,649	361	32,959	23,200	2	3,082	781		**81,915**
1987	9,117	314	3,658	7,871	797	49,568	19,764	3	2,105	1,272		**94,469**
1988	15,664	45	3,557	15,891	138	46,438	16,698	4	1,683	1,116	0.9	**101,236**
1989	6,261	4	2,103	6,525	211	34,443	13,661	6	1,562	914	0.8	**65,690**
1990	8,965	14	1,833	3,029	91	14,967	11,399	16	1,019	1,179	3	**42,515**
1991	4,357	66	180	4,154	33	6,167	9,786	1	1,495	641	2	**26,882**
1992	17,328	67	1,705	2,129	32	5,549	11,418	3	700	349	9	**39,289**
1993	17,242	312	1,109	4,839	107	7,107	13,198	0.9	676	326	62	**44,980**
1994	29,133	443	2,416	2,527	80	6,526	13,847	23	843	357	108	**56,302**
1995	16,364	366	1,496	6,720	7	4,305	9,289	4	676	234	8	**39,468**
1996	37,785	361	5,601	5,533	39	4,485	8,417	0.8	837	232	14	**63,304**
1997	27,196	491	3,786	7,514	30	6,813	8,392	0.4	807	310	15	**55,354**
1998	25,509	367	4,003	7,038	83	7,914	8,075	8	844	238	14	**54,094**
1999	23,654	875	1,413	3,658	81	1,954	11,241	0.1	822	148	64	**43,908**
2000	22,380	751	756	629	3	1,731	15,303	0.9	767	174	82	**42,577**
2001	26,306	408	602	43	4	592	11,062	2	758	96	25	**39,897**
2002	17,864	109	54	161	8	738	8,023	23	631	156	0.9	**27,768**
2003	30,031	323	94	197		555	9,650	0.5	600	142	13	**41,604**
2004	32,787	177	46	131	66	534	5,784	0.6	236	118	7	**39,885**
2005	24,134		159	339		366	2,201	0.5	315	67	1	**27,582**
2006	26,725		4	45		197	3,090	0.3	339	89	20	**30,510**
2007	23,689		64	5		164	3,429	2	370	86	11	**27,819**
2008	30,988	221	4	4	4	135	2,548	0.2	302	72	10	**34,287**
2009	29,405		472	6		178	2,065	3	212	58	4	**32,403**
2010	31,143		7			7	2,323	0.2	165	38	17	**33,701**
2011	44,822	337	255	2		14	3,467	0.1	110	40	12	**49,058**
2012	46,431	373	98	2		13	2,123	0.1	116	53	36	**49,246**
2013	41,898		68	3		41	2,699	0.1	118	61	6	**44,894**

Blank cells indicate null value (no data exist for that stratum).

Ex-vessel revenues rounded to the nearest $1,000. If less than $1,000 was landed Ex-vessel revenue rounded to nearest 0.1

If a record is confidential (fewer than 3 vessels or dealers) data is suppressed and it is highlighted yellow

Totals do not include suppressed confidential data.

Table 5. Number of vessels and commercial landings (round mt) in the West Coast albacore surface hook-and-line (troll and baitboat) fishery, 1990-2013, Canadian vessels included.

Time run: 8/22/2014 10:50:48 AM

		Albacore	Other HMS	**Total**
		Landings (mt)	Landings (mt)	
Year	# Vessels			
1990	369	2,976		**2,976**
1991	179	1,654		**1,654**
1992	607	4,780	0.2	**4,781**
1993	618	5,975	0.1	**5,975**
1994	718	10,671		**10,671**
1995	476	6,474	0.6	**6,475**
1996	724	14,077	0.2	**14,077**
1997	1,192	11,229	1	**11,231**
1998	867	13,588	0.4	**13,589**
1999	824	9,522	0.8	**9,523**
2000	764	8,974	0.9	**8,975**
2001	980	11,069	2	**11,071**
2002	734	10,000	0.6	**10,001**
2003	887	16,609	0.2	**16,609**
2004	779	14,497	0.3	**14,498**
2005	597	9,028	0.1	**9,028**
2006	634	12,772	0.2	**12,772**
2007	673	11,500	0.0	**11,500**
2008	523	11,127	0.2	**11,128**
2009	681	12,271	0.2	**12,271**
2010	651	11,829		**11,829**
2011	687	11,019	0.4	**11,019**
2012	816	13,861	0.1	**13,861**
2013	705	12,669	0.1	**12,670**

Blank cells indicate null value (no data exist for that stratum).
Landed Weight rounded to nearest mt. If landed weight is less than 1 mt weight is rounded to nearest 0.1 mt.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Totals do not include suppressed confidential data.

Table 6. Real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) for the West Coast albacore surface hook-and-line (troll and baitboat) fishery, 1990–2013, Canadian vessels included.

Time run: 8/22/2014 10:51:39 AM

	Albacore	Other HMS	**Total**
	Adj. Revenue ($1,000)	Adj. Revenue ($1,000)	
Year			
1990	8,795		**8,795**
1991	4,295		**4,295**
1992	16,794	0.5	**16,794**
1993	16,783	0.3	**16,783**
1994	28,932		**28,932**
1995	16,235	0.9	**16,235**
1996	37,593	0.7	**37,593**
1997	27,055	3	**27,058**
1998	24,673	1	**24,675**
1999	23,205	3	**23,207**
2000	22,177	3	**22,179**
2001	26,073	6	**26,079**
2002	17,816	2	**17,818**
2003	29,974	0.9	**29,975**
2004	32,696	1	**32,697**
2005	24,064	0.2	**24,064**
2006	26,674	0.4	**26,674**
2007	23,537	0.2	**23,537**
2008	30,983	0.5	**30,983**
2009	29,366	0.4	**29,366**
2010	31,073		**31,073**
2011	44,719	2	**44,720**
2012	46,242	0.7	**46,243**
2013	40,774	0.6	**40,775**

Blank cells indicate null value (no data exist for that stratum).
Revenue rounded to nearest $1,000. If revenue is less than $1,000 revenue rounded to nearest 0.1
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow

Totals do not include suppressed confidential data.

Table 7. Monthly commercial landings (number, weight in round mt) and real commercial ex-vessel revenue (inflation adjusted, 2013, $1,000s) for albacore by the surface hook-and-line (troll and baitboat) fishery, by state, 2011-2013, Canadian vessels included.

Time run: 8/22/2014 2:04:25 PM

2011

	California			Oregon			Washington			Coastwide		
	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Month												
Jun										0	0.0	0.0
Jul	14	11	35	376	726	2,799	106	636	2,411	496	1,373	5,245
Aug	63	57	200	638	1,464	6,174	263	1,393	5,450	964	2,915	11,824
Sep	102	194	828	326	1,065	4,829	177	1,501	5,490	605	2,760	11,148
Oct	74	301	1,093	255	1,052	5,141	229	2,459	9,485	558	3,812	15,720
Nov	8	48	185	14	82	437				22	130	621
Dec										0	0.0	0.0
Grand Total	**261**	**612**	**2,341**	**1,609**	**4,390**	**19,380**	**775**	**5,988**	**22,838**	**2,645**	**10,991**	**44,559**

2012

	California			Oregon			Washington			Coastwide		
	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Month												
Jun				22	4	16				22	4	16
Jul	4	10	41	502	801	2,697	216	862	2,853	722	1,673	5,591
Aug	199	86	324	681	1,986	6,399	497	3,041	9,698	1,377	5,113	16,420
Sep	112	46	185	288	1,068	3,813	379	3,361	11,026	779	4,475	15,025
Oct	137	404	1,329	113	611	2,327	141	1,505	5,285	391	2,520	8,941
Nov	15	61	196							15	61	196
Dec										0	0.0	0.0
Grand Total	**467**	**608**	**2,076**	**1,606**	**4,470**	**15,252**	**1,233**	**8,769**	**28,862**	**3,306**	**13,847**	**46,190**

2013

	California			Oregon			Washington			Coastwide		
	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Month												
Jan-May										0	0.0	0.0
Jun										0	0.0	0.0
Jul				206	641	2,372	148	738	2,305	354	1,379	4,676
Aug	127	48	183	602	2,081	7,066	364	2,988	9,689	1,093	5,117	16,938
Sep	104	106	380	350	1,365	4,763	337	3,479	9,898	791	4,950	15,041
Oct	89	147	468	121	480	1,698	134	551	1,803	344	1,179	3,969
Nov	10	9	29							10	9	29
Dec										0	0.0	0.0
Grand Total	**330**	**310**	**1,060**	**1,279**	**4,568**	**15,899**	**983**	**7,755**	**23,694**	**2,592**	**12,633**	**40,653**

Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow
The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.
Totals do not include suppressed confidential data.
Totals do not include suppressed confidential data.

Table 8. Annual commercial landings (number, weight in round mt) and real ex-vessel revenue (inflation adjusted, 2013, $1,000s) for albacore by the surface hook-and-line (troll and baitboat) fishery, by port group, 2011-2013, Canadian vessels included.

Time run: 8/22/2014 10:52:27 AM

	2011			2012			2013		
	# Landing	Landings (mt)	Adj. Revenue ($1,000)	# Landing	Landings (mt)	Adj. Revenue ($1,000)	# Landing	Landings (mt)	Adj. Revenue ($1,000)
Puget Sound	37	281	1,280	68	331	1,076	64	316	978
Washington Coast	745	5,734	21,710	1,169	8,436	27,778	925	7,455	22,743
Other									
Washington Total	**781**	**6,015**	**22,992**	**1,233**	**8,769**	**28,862**	**987**	**7,786**	**23,785**
Astoria-Tillamook	404	1,499	7,405	452	1,041	3,637	393	1,238	4,542
Newport	669	1,657	6,851	738	2,284	7,812	568	2,236	7,612
Coos Bay	494	1,189	4,931	387	1,109	3,690	291	974	3,382
Brookings	47	46	198	31	51	165	31	124	386
Oregon Total	**1,614**	**4,392**	**19,385**	**1,607**	**4,484**	**15,303**	**1,282**	**4,572**	**15,923**
Crescent City	43	111	361	14	7	23	26	59	164
Eureka	43	55	213	39	52	194	70	44	153
Fort Brag	33	11	52	27	16	63	38	24	94
Bodega Bay				23	9	39	20	8	36
San Francisco	37	204	896	82	35	174	83	47	203
Monterey	49	81	280	189	101	347	59	43	171
Morro Bay	40	16	76	68	20	82	19	8	39
Santa Barbara	4	13	56	9	13	44	7	23	92
Los Angeles				19	350	1,093			
San Diego									
California Total	**262**	**612**	**2,342**	**470**	**608**	**2,077**	**333**	**311**	**1,067**
Grand Total	**2,657**	**11,019**	**44,719**	**3,310**	**13,861**	**46,242**	**2,602**	**12,669**	**40,774**

Blank cells indicate null value (no data exist for that stratum).

Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow

The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.

Totals do not include suppressed confidential data.

Table 9. Number of vessels, commercial landings (round mt), and ex-vessel revenue (current $) of albacore and in the West Coast albacore surface hook-and-line (troll and baitboat) fishery (in U.S. west coast ports), Canadian and US vessels compared.

Time run: 8/22/2014 11:08:56 AM

	Canadian Vessels			U.S. Vessels		
	# Vessels	Landings (mt)	Adj. Revenue ($1,000)	# Vessels	Landings (mt)	Adj. Revenue ($1,000)
Year						
1990				369	2,976	8,795
1991				179	1,654	4,295
1992	8	75	263	600	4,706	16,531
1993				617	5,953	16,722
1994				716	10,649	28,872
1995				472	6,407	16,063
1996	66	868	2,210	658	13,209	35,382
1997	32	399	979	1,160	10,831	26,076
1998	29	961	1,486	838	12,628	23,188
1999	52	713	1,682	772	8,809	21,523
2000	57	889	2,209	707	8,086	19,968
2001	52	806	2,145	929	10,263	23,929
2002	38	702	1,306	696	9,298	16,510
2003	105	3,118	5,849	782	13,491	24,125
2004	52	1,130	3,649	727	13,367	29,047
2005	45	811	2,614	552	8,217	21,450
2006	19	397	1,011	615	12,374	25,663
2007	22	357	903	651	11,143	22,634
2008	46	1,359	4,296	477	9,768	26,686
2009	26	650	1,719	655	11,621	27,647
2010	42	958	3,263	609	10,871	27,810
2011	47	1,179	6,142	640	9,840	38,577
2012				816	13,861	46,242
2013	22	650	2,735	684	12,019	38,039

Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow
Totals do not include suppressed confidential data.

Table 10. Number of vessels, commercial landings (round mt), and ex-vessel revenue (inflation adjusted, 2013, $1,000s) of albacore in the West Coast albacore surface hook-and-line (troll and baitboat) fishery by state, 1990-2013, Canadian vessels included.

Time run: 8/22/2014 2:08:59 PM

	California			Oregon			Washington		
	# Vessels	Landings (mt)	Adj. Revenue ($1,000)	# Vessels	Landings (mt)	Adj. Revenue ($1,000)	# Vessels	Landings (mt)	Adj. Revenue ($1,000)
Year									
1990	108	808	2,483	211	943	2,813	102	1,225	3,499
1991	83	656	1,715	71	571	1,511	42	428	1,068
1992	139	1,149	4,225	352	1,767	5,989	225	1,864	6,580
1993	216	1,635	4,961	367	2,157	5,723	206	2,183	6,100
1994	276	3,097	9,361	328	2,131	5,411	262	5,443	14,160
1995	137	777	2,006	230	2,283	5,727	206	3,414	8,502
1996	290	5,049	14,701	385	4,059	10,312	213	4,968	12,579
1997	611	3,296	7,763	498	4,158	10,021	241	3,775	9,270
1998	386	2,338	4,346	371	4,718	8,524	219	6,532	11,803
1999	445	5,438	13,454	309	2,045	4,988	186	2,039	4,763
2000	354	1,805	4,816	375	3,972	9,750	177	3,197	7,610
2001	476	2,850	6,372	473	4,064	9,615	204	4,156	10,087
2002	321	2,664	4,849	269	1,978	3,698	239	5,357	9,268
2003	327	1,698	3,163	385	4,118	7,569	323	10,793	19,242
2004	191	1,339	2,891	450	4,878	10,937	300	8,280	18,868
2005	97	455	1,228	383	3,668	10,217	223	4,904	12,619
2006	80	201	567	368	3,864	9,046	312	8,707	17,061
2007	156	772	1,726	413	4,748	10,367	214	5,980	11,444
2008	67	376	1,027	337	4,026	11,455	225	6,725	18,500
2009	131	358	992	417	4,574	10,863	272	7,339	17,510
2010	136	729	1,847	423	4,841	13,053	241	6,259	16,172
2011	143	612	2,342	442	4,392	19,385	231	6,015	22,992
2012	190	608	2,077	447	4,484	15,303	331	8,769	28,862
2013	138	311	1,067	396	4,572	15,923	285	7,786	23,785

Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow
Totals do not include suppressed confidential data.

Table 11. Average nominal price-per-pound ($/lb) for albacore by month and by state, 2011-2013, Canadian vessels included.

Time run: 8/22/2014 11:09:40 AM

	2011			2012			2013		
	California	Oregon	Washington	California	Oregon	Washington	California	Oregon	Washington
Month									
Jan - May									
Jun					$1.83				
Jul	$1.34	$1.69	$1.67	$1.79	$1.50	$1.48		$1.68	$1.42
Aug	$1.53	$1.85	$1.72	$1.68	$1.44	$1.43	$1.75	$1.54	$1.47
Sep	$1.88	$1.99	$1.61	$1.81	$1.60	$1.47	$1.62	$1.58	$1.29
Oct	$1.59	$2.15	$1.69	$1.47	$1.70	$1.57	$1.44	$1.61	$1.48
Nov	$1.70	$2.32		$1.43			$1.48		
Dec									

Blank cells indicate null value (no data exist for that stratum).

If a record is confidential (fewer than 3 vessels or dealers) data is suppressed and highlighted yellow.

Totals do not include suppressed confidential data.

Table 12. Number of vessels and commercial landings (round mt) in the West Coast drift gillnet fishery, 1990-2013.

Time run: 8/22/2014 11:10:12 AM

		Blue Shark	Common Thresher Shark	Non-HMS FMP Sharks	Shortfin Mako Shark	Swordfish	Tunas	**Landings (mt)**
Year	# Vessels							
1990	139		163	2	196	1,132	28	**1,520**
1991	120		379	2	107	945	31	**1,463**
1992	119		89	2	102	1,406	69	**1,668**
1993	123		210	9	80	1,413	233	**1,944**
1994	135		203	1	61	762	89	**1,115**
1995	119		144	11	74	773	88	**1,091**
1996	112	0	162	1	78	764	123	**1,129**
1997	109		218	1	109	704	115	**1,147**
1998	99		239	4	76	878	124	**1,321**
1999	86		90	2	41	594	143	**872**
2000	72		84	1	47	550	71	**754**
2001	61		211	0	24	270	99	**604**
2002	52		110	1	49	301	26	**486**
2003	44		188	1	50	217	32	**488**
2004	36		53		26	182	22	**283**
2005	38		125	1	15	220	27	**388**
2006	39		91	1	32	444	7	**575**
2007	40		144	0	28	490	7	**670**
2008	39		98		19	406	2	**524**
2009	35		38		21	253	7	**319**
2010	26		41	2	10	62	6	**120**
2011	22		55		8	119	24	**206**
2012	16		37	2	9	117	13	**178**
2013	18		48		16	95	12	**171**

Number of drift gillnet vessels (see Table 27) landing swordfish, common thresher shark, mako shark, or blue shark.
Values not reported for cells highlighted in yellow due to confidentiality requirements (less than three vessels or dealers)
Blank cells indicate null value (no data exist for that stratum).
Totals do not include suppressed confidential data.

Table 13. Real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) for the West Coast drift gillnet fishery, 1990-2013.

Time run: 8/22/2014 11:10:30 AM

		Blue Shark	Common Thresher Shark	Non-HMS FMP Sharks	Shortfin Mako Shark	Swordfish	Tunas	**Adj. Revenue ($1,000)**
Year	# Vessels							
1990	139		494	5	584	10,159	114	**11,356**
1991	120		986	4	298	8,942	121	**10,351**
1992	119		243	3	245	9,966	253	**10,710**
1993	123		491	16	214	10,118	688	**11,526**
1994	135		510	3	168	6,549	376	**7,606**
1995	119		318	23	185	6,523	264	**7,312**
1996	112	0	421	2	188	5,671	386	**6,667**
1997	109		523	5	249	4,522	468	**5,767**
1998	99		546	8	177	5,212	429	**6,372**
1999	86		208	4	96	3,710	343	**4,360**
2000	72		201	1	102	3,172	224	**3,700**
2001	61		463	0	50	1,633	211	**2,357**
2002	52		258	1	90	1,899	67	**2,316**
2003	44		380	1	101	1,378	88	**1,947**
2004	36		109		57	1,130	77	**1,372**
2005	38		210	2	27	1,377	77	**1,694**
2006	39		196	2	57	2,249	13	**2,517**
2007	40		239	0	50	2,768	25	**3,084**
2008	39		189		35	1,841	7	**2,071**
2009	35		73		37	1,155	23	**1,289**
2010	26		57	4	17	429	21	**528**
2011	22		68		15	802	106	**991**
2012	16		66	4	18	815	54	**957**
2013	18		80		27	636	61	**803**

Values not reported for cells highlighted in yellow due to confidentiality requirements (less than three vessels or dealers)
Blank cells indicate null value (no data exist for that stratum).
Totals do not include suppressed confidential data.

Table 14a. Monthly commercial landings (number, weight in round mt) and real ex-vessel revenue (inflation adjusted, 2013, $1,000s) of common thresher shark in the drift gillnet fishery, 2011-2013.

Time run: 8/22/2014 11:10:55 AM

Common Thresher Shark

	2011			2012			2013		
	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)
Month									
JAN-AUG	12	3	6	24	21	27	24	19	37
SEP	9			5	0.9	2	1		
OCT	9	0.8	2	10	1	3	5	0.6	2
NOV	32	14	22	23	6	15	32	14	19
DEC	27	35	34	19	8	20	27	15	23

Table 14b. Monthly commercial landings (number, weight in round mt) and real ex-vessel revenue (inflation adjusted, 2013, $1,000s) of swordfish in the drift gillnet fishery, 2011-2013.

Swordfish

	2011			2012			2013		
	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)
Month									
JAN-AUG	6	0.7	8	24	18	151	9	5	44
SEP	12	4	30	7	13	79			
OCT	26	37	241	15	19	112	8	9	60
NOV	32	41	250	30	38	256	34	51	308
DEC	26	37	273	21	29	218	23	30	225

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.

Blank cells indicate null value (no data exist for that stratum).

The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.

Table 15a. Annual commercial landings (number, weight in round mt) and ex-vessel revenue (inflation adjusted, 2013, $1,000s) for common thresher shark landings in California port groups in the drift gillnet fishery, 2011-2013.

Time run: 8/22/2014 11:11:14 AM

Common Thresher Shark

	2011			2012			2013		
	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Port									
Morro North	25	20	20	17	4	7	6	8	11
Santa Barbara-Los Angeles Areas	22	8	11	8	3	5	11	6	9
San Diego Areas	42	27	36	57	30	54	72	34	60

Table 15b. Annual commercial landings (number, weight in round mt) and ex-vessel revenue (inflation adjusted, 2013, $1,000s) for swordfish landings in California port groups in the drift gillnet fishery, 2011-2013.

Swordfish

	2011			2012			2013		
	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Port									
Morro North	45	70	451	36	73	460	5	36	202
Santa Barbara-Los Angeles-San Diego Areas	58	49	350	61	45	356	69	59	434

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.
Port areas are grouped together to maintain data confidentiality requirements.
Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.
The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.

Table 16. Number of vessels and commercial landings (round mt) in the West Coast harpoon fishery, 1990-2013.

Time run: 8/22/2014 11:11:52 AM

		Swordfish	Other HMS	**Total**
Year	# Vessels			
1990	52	65	3	**67**
1991	33	20	1.0	**21**
1992	48	75	3	**78**
1993	42	169	0.8	**170**
1994	48	157	0.7	**158**
1995	40	97	2	**99**
1996	31	81	1	**82**
1997	32	84	3	**87**
1998	27	48	0.8	**49**
1999	29	81	0.4	**81**
2000	26	90	0.4	**90**
2001	23	52	0.6	**53**
2002	29	90	0.7	**91**
2003	35	107	0.3	**107**
2004	29	69	0.9	**70**
2005	24	76	0.6	**77**
2006	24	72	3	**75**
2007	28	59	0.5	**59**
2008	32	48	0.5	**49**
2009	28	50	0.8	**51**
2010	26	37	0.5	**38**
2011	17	24	0.7	**25**
2012	9	5		**5**
2013	13	6		**6**

Count of vessels landing HMS (excluding striped marlin, pelagic thresher shark, and
Blank cells indicate null value (no data exist for that stratum).
Landed Weight rounded to nearest mt. If landed weight is less than 1 mt weight is rounded to nearest 0.1 mt.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.
Totals do not include suppressed confidential data.

Table 17. Real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) for the West Coast harpoon fishery, 1990-2013.

Time run: 8/22/2014 11:12:08 AM

		Swordfish	Other HMS	**Total**
Year	# Vessels			
1990	52	860	9	**870**
1991	33	278	3	**281**
1992	48	885	9	**895**
1993	42	1,670	3	**1,672**
1994	48	1,837	2	**1,839**
1995	40	1,075	6	**1,081**
1996	31	879	4	**883**
1997	32	933	8	**940**
1998	27	544	2	**546**
1999	29	811	1	**812**
2000	26	977	1	**978**
2001	23	596	1	**597**
2002	29	851	2	**852**
2003	35	1,031	0.7	**1,032**
2004	29	801	3	**804**
2005	24	823	1	**824**
2006	24	764	6	**770**
2007	28	654	1	**656**
2008	32	492	2	**494**
2009	28	497	2	**499**
2010	26	386	1	**388**
2011	17	261	1	**262**
2012	9	60		**60**
2013	13	81		**81**

Count of vessels landing HMS (excluding striped marlin, pelagic thresher shark, and
Blank cells indicate null value (no data exist for that stratum).
Revenue rounded to nearest $1,000. If revenue is less than $1,000 it is rounded to nearest 0.1.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Totals do not include suppressed confidential data.

Table 18. Monthly commercial landings (number, weight in round mt) and real commercial ex-vessel revenue (inflation adjusted, 2013, $1,000s) for swordfish by the harpoon fishery, by state, 2011-2013.

Time run: 8/22/2014 11:12:35 AM

2011

	California	California	California
	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Jan-May			
Jun			
Jul	25	5	68
Aug	41	12	135
Sep	10	2	20
Oct			
Nov			
Dec			
Total	**76**	**19**	**223**

2012

	California	California	California
	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Jul	3	0.4	5
Aug	9	2	31
Sep			
Oct			
Nov	6	1.0	7
Total	**18**	**4**	**43**

2013

	California	California	California
	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Jun			
Jul	17	3	44
Aug	6	1	15
Sep	3	0.6	8
Oct			
Total	**26**	**5**	**67**

Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow
The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.
Totals do not include suppressed confidential data.

Table 19. Annual commercial landings (number and weight in round mt) and ex-vessel revenue (inflation adjusted, 2013, $1,000s) of swordfish by port group in the harpoon fishery, 2011-2013.

Time run: 8/22/2014 11:13:02 AM

	2011			2012			2013		
	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)	# Landings	Landings (mt)	Adj. Revenue ($1,000)
Santa Barbara									
Los Angeles	61	15	182	8	3	35	9	2	24
San Diego	24	6	65	11	2	21	20	4	52
Grand Total	**86**	**21**	**247**	**23**	**4**	**55**	**30**	**6**	**76**

Blank cells indicate null value (no data exist for that stratum).

Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow

The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.

Totals do not include suppressed confidential data.

Table 20. Number of vessels and commercial landings (round mt) by Hawaii permitted longline vessels in West Coast ports, 1990-2013.

Time run: 8/22/2014 11:13:17 AM

		Landings (mt)
Year	# Vessels	
1990	1	
1991	2	
1992	2	
1993	5	155
1994	26	902
1995	23	355
1996	16	438
1997	21	702
1998	27	591
1999	34	1,539
2000	41	2,083
2001	37	1,947
2002	19	
2003	21	1,804
2004	17	939
2006	1	
2008	4	68
2009	2	
2010	6	277
2011	9	505
2012	7	
2013	7	

Count of Hawaii permited vessels landing HMS (excluding striped marlin, pelagic thresher shark, and
Blank cells indicate null value (no data exist for that stratum).
Landed Weight rounded to nearest mt. If landed weight is less than 1 mt weight is rounded to nearest
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Table 21. Real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) by Hawaii permitted longline vessels in West Coast ports, 1990-2013.

Time run: 8/22/2014 11:13:17 AM

		Adj. Revenue ($1,000)
Year	# Vessels	
1990	1	
1991	2	
1992	2	
1993	5	1,268
1994	26	5,939
1995	23	2,046
1996	16	2,315
1997	21	3,160
1998	27	3,149
1999	34	8,378
2000	41	11,622
2001	37	9,052
2002	19	
2003	21	7,165
2004	17	3,868
2006	1	
2008	4	203
2009	2	
2010	6	1,529
2011	9	2,535
2012	7	
2013	7	

Count of Hawaii permited vessels landing HMS (excluding striped marlin, pelagic thresher shark, and bigeye thresher shark) with longline
Blank cells indicate null value (no data exist for that stratum).
Revenue rounded to nearest $1,000. If revenue is less than $1,000 it is rounded to nearest 0.1.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Table 22. Number of vessels and commercial landings (round mt) for HMS tunas in the West Coast purse seine fishery, 1990-2013.

Time run: 8/22/2014 11:13:59 AM

		Tuna
		Landings (mt)
Year	# Vessels	
1990	23	6,517
1991	15	6,671
1992	23	5,762
1993	17	5,577
1994	19	5,369
1995	18	8,840
1996	21	12,238
1997	24	11,539
1998	25	10,519
1999	13	5,178
2000	15	2,173
2001	12	805
2002	2	
2003	3	862
2004	9	770
2005	8	1,006
2006	1	
2007	4	223
2008	2	
2009	7	460
2011	2	
2012	1	

Count of vessels landing HMS (excluding striped marlin, pelagic thresher shark, and bigeye thresher shark) with purse seine gear.
Blank cells indicate null value (no data exist for that stratum).

Landed Weight rounded to nearest mt. If landed weight is less than 1 mt weight is rounded to nearest 0.1 mt.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Table 23. Real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) from HMS tunas in the West Coast purse seine fishery, 1990-2013.

Time run: 8/22/2014 11:14:14 AM

		Tuna
		Adj. Revenue ($1,000)
Year	# Vessels	
1990.00	23	10,728
1991.00	15	9,107
1992.00	23	6,840
1993.00	17	6,887
1994.00	19	7,716
1995.00	18	10,415
1996.00	21	13,969
1997.00	24	15,586
1998.00	25	14,275
1999.00	13	5,952
2000.00	15	2,707
2001.00	12	889
2002.00	2	
2003.00	3	769
2004.00	9	640
2005.00	8	828
2006.00	1	
2007.00	4	315
2008.00	2	
2009.00	7	499
2011.00	2	
2012.00	1	

Count of vessels landing HMS (excluding striped marlin, pelagic thresher shark, and bigeye thresher shark) with purse seine gear.
Blank cells indicate null value (no data exist for that stratum).

Revenue rounded to nearest $1,000. If revenue is less than $1,000 it is rounded to nearest 0.1.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Table 24. Number of vessels in HMS fisheries other than the West Coast albacore surface hook-and-line (troll and baitboat) fishery by state, 1990-2013. (See fishery code list below table.)

Time run: 11:14:32 AM

	California						Oregon				Washington	Coastwide						California Total	Oregon Total	Washington Total	Coastwide Total
	DGNLM	HAR	LL	LL-FMP	LX	PS-HMS-EPO	DGNLM	LL	LX	PS-HMS-EPO	LX	DGNLM	HAR	LL	LL-FMP	LX	PS-HMS-EPO				
Year																					
1990	139	52	1		192	23			1			139	52	1		193	23	**362**	**1**		**363**
1991	120	33	2		115	15						120	33	2		115	15	**254**			**254**
1992	119	48	2		188	23						119	48	2		188	23	**342**			**342**
1993	123	42	5		162	17			2		2	123	42	5		166	17	**313**	**2**	**2**	**317**
1994	129	48	26		123	19						129	48	26		123	19	**303**			**303**
1995	117	40	23		131	18	2		3		1	119	40	23		135	18	**294**	**5**	**1**	**300**
1996	112	31	16		95	21	3		3			115	31	16		98	21	**250**	**6**		**256**
1997	109	32	21		131	24	4		1			113	32	21		132	24	**289**	**5**		**294**
1998	98	27	27		133	25	6		3			104	27	27		136	25	**280**	**9**		**289**
1999	84	29	34		85	13	4		5		4	88	29	34		94	13	**221**	**6**	**4**	**231**
2000	72	26	41	1	100	15	1		2			73	26	41	1	102	15	**232**	**3**		**235**
2001	61	23	36	1	83	12		1	3			61	23	37	1	86	12	**199**	**4**		**203**
2002	52	29	19	1	77	2	1		1			53	29	19	1	78	2	**162**	**2**		**164**
2003	44	35	21	1	68	3	1		1	1		45	35	21	1	69	4	**155**	**3**		**158**
2004	36	29	17	1	61	9	1		4			37	29	17	1	65	9	**141**	**5**		**146**
2005	38	24		1	34	8			7			38	24		1	41	8	**99**	**7**		**106**
2006	39	24	1	1	51	1						39	24	1	1	51	1	**109**			**109**
2007	40	28		1	45	4			1			40	28		1	46	4	**110**	**1**		**111**
2008	39	32	3	1	57	2		1	2			39	32	4	1	59	2	**121**	**3**		**124**
2009	35	28	2	1	59	7						35	28	2	1	59	7	**123**			**123**
2010	26	26	6	1	33							26	26	6	1	33		**84**			**84**
2011	22	17	9	1	30	2						22	17	9	1	30	2	**76**			**76**
2012	16	9	7	1	41	1			1			16	9	7	1	42	1	**65**	**1**		**66**
2013	18	13	7	1	41				1			18	13	7	1	42		**70**	**1**		**71**

Blank cells indicate null value (no data exist for that stratum).
State values may not sum to coastwide total because of vessels making landings in more than one state.
Vessel may make landings in more than one fishery, so the number of vessels participating in individual fisheries may not total the number of vessels fishing in the state.

HMS Codes
HAR....HMS Harpoon
MIS....HMS species miscellaneous or unknown fishery
PS-HMS-EPO....HMS Purse Seine in Eastern Pacific Ocean
LL....HMS Longline not permitted under HMS FMP
LTL-ALB-NP...Albacore troll North Pacific
LTL-ALB-CN...Albacore troll Canadian Treaty Vessel
LTL-ALB-SP....Albacore troll South Pacific
LX.....HMS Hook and Line fishery
LL-FMP...Longline HMS FMP
DGNLM....HMS large mesh drift gillnet

Table 25a. Landings (number and weight) and revenue (nominal dollars) of HMS Species with non-HMS gears by state, 2011-2013 (data grouped for 3 years).

Time run: 8/22/2014 11:15:40 AM

	California			Oregon			Washington		
	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)
Species Group									
Other HMS	28	2	12	1			13	2	5
Sharks	1,269	84	156	28	5	0.0	5		
Grand Total	**1,297**	**86**	**168**	**29**	**5**	**0**	**18**	**2**	**5**

Table 25b. Landings (number and weight) and revenue (nominal dollars) of HMS Species with non-HMS gears by gear type, 2011-2013 (data grouped for 3 years).

Time run: 8/22/2014 11:15:58 AM

	Non-HMS Net Gear			Other Non-HMS Gear		
	# Landings	Landings (mt)	Revenue ($1,000)	# Landings	Landings (mt)	Revenue ($1,000)
Other HMS	11	0.7	6	31	4	12
Sharks	1,209	82	152	93	7	5
Total	**1,220**	**82**	**157**	**124**	**11**	**17**

Blank cells indicate null value (no data exist for that stratum).
Revenue and weight rounded to nearest whole unit. If revenue or weight was < 1 it was rounded to nearest 0.1 of a unit.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow
The number of landings was calculated as the number of distinct vessels making landings in a state on a landing day.
Totals do not include suppressed confidential data.

Table 27. Shows the number of vessels and commercial landings (round mt) in the West Coast South Pacific albacore surface hook-and-line (troll and baitboat) fishery, 1990-2013.

Time run: 8/22/2014 11:16:11 AM

		Albacore
		Landings (mt)
	No. Vessels	
1992	3	
1998	6	203
1999	4	63
2000	2	
2004	1	
2010	1	
2012	1	
2013	4	254

Blank cells indicate null value (no data exist for that stratum).

Landed Weight rounded to nearest mt. If landed weight is less than 1 mt weight is rounded to nearest 0.1 mt.

Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Table 28. Shows the real commercial ex-vessel revenues (inflation adjusted, 2013, $1,000s) for the West Coast South Pacific albacore surface hook-and-line (troll and baitboat) fishery, 1990–2013.

Time run: 8/22/2014 11:16:28 AM

	Albacore
	Adj. Revenue ($1,000)
Year	
1992	
1998	608
1999	145
2000	
2004	
2010	
2012	
2013	1,085

Blank cells indicate null value (no data exist for that stratum).
Revenue rounded to nearest $1,000. If Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow

Table 29. The number of vessels, commercial landings (round mt), and ex-vessel revenue (inflation adjusted, 2013, $1,000) for HMS Ecosystem component species, 1990-2013.

Time run: 9/8/2014 12:07:28 PM

		Pelagic Thresher Shark		Bigeye Thresher Shark	
		Landings (mt)	Adj. Revenue ($1,000)	Landings (mt)	Adj. Revenue ($1,000)
Year	# Vessels				
1,982	35			28	31
1,983	112	9	17	96	182
1,984	114	9	15	57	90
1,985	136	0.5	1	95	179
1,986	118			48	121
1,987	79	2	3	20	39
1,988	43			9	17
1,989	62			17	41
1,990	74	1	3	31	55
1,991	59			32	39
1,992	54	0.5	0.9	22	22
1,993	74	0.5	0.7	44	42
1,994	81			37	48
1,995	71	5	12	31	35
1,996	43	1	2	20	25
1,997	67	35	85	32	47
1,998	38	2	3	11	13
1,999	28	10	25	5	8
2,000	33	3	4	5	6
2,001	16	2	4	2	11
2,002	9				
2,003	19	4	3	6	5
2,004	19	2	3	5	5
2,005	21	0.5	0.7	10	7
2,006	16	0.2	0.3	4	5
2,007	19	2	3	5	5
2,008	19			6	6
2,009	18			7	6
2,010	8				
2,011	6				
2,012	2				
2,013	5			0.6	0.7
2,014	2				

Count of vessels landing HMS ecosystem component species (pelagic thresher shark and bigeye thresher shark)
Blank cells indicate null value (no data exist for that stratum).
Landed Weight rounded to nearest mt. If landed weight is less than 1 mt weight is rounded to nearest 0.1 mt.
Revenue rounded to nearest $1,000. If revenue is less than $1,000 it is rounded to nearest 0.1.
Confidential data (less than 3 vessels or dealers) is suppressed and highlighted yellow.

Table 30. Inflation adjustment derived from Bureau of Economic Analysis Table 1.1.9 (Implicit Price Deflators for Gross Domestic Product)

Time run: 8/22/2014 11:31:11 AM

Year	Inflation Adjuster	Price Deflator
1981	2.194	48.572
1982	2.066	51.586
1983	1.988	53.623
1984	1.920	55.525
1985	1.860	57.302
1986	1.823	58.458
1987	1.778	59.949
1988	1.718	62.048
1989	1.654	64.460
1990	1.595	66.845
1991	1.543	69.069
1992	1.509	70.644
1993	1.474	72.325
1994	1.443	73.865
1995	1.414	75.406
1996	1.388	76.783
1997	1.365	78.096
1998	1.350	78.944
1999	1.331	80.071
2000	1.302	81.891
2001	1.272	83.766
2002	1.253	85.054
2003	1.229	86.754
2004	1.196	89.132
2005	1.159	91.991
2006	1.124	94.818
2007	1.095	97.335
2008	1.074	99.236
2009	1.066	100.000
2010	1.053	101.211
2011	1.033	103.199
2012	1.015	105.002
2013	1.000	106.588

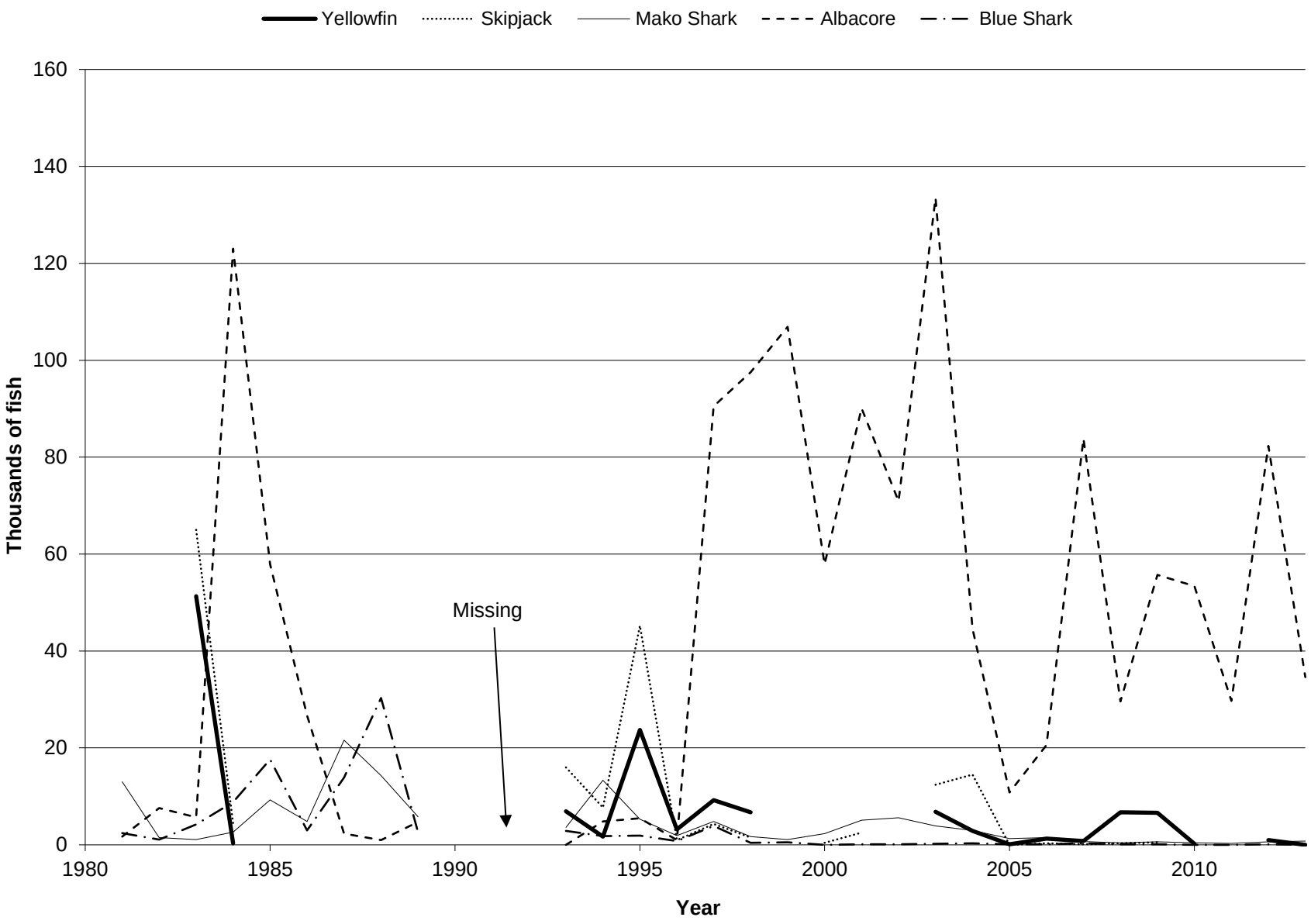
Data downloaded from Bureau of Economic Analysis Table 1.1.9 (Implicit Price Deflators for Gross Domestic Product) on 04/09/2014

Appendix 2: Summaries of Recreational Fishery Catch and Effort (RecFIN data)

Catches by species (thousands of fish) for the West Coast recreational private sport fishing fleet, 1981-2013.

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	
2012	1.0		0.0	82.3				0.6	0.4	0.1	8.8
2013	0.0	0.0	0.2	34.6				0.8	0.2	0.0	1.0

Data were extracted from RecFin by going to the link entitled "Tabulate Historical Estimates (1980-2003)."
Blank cells indicate no data exists.
Extracted September 8, 2014. 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.


Yellowfin
Skipjack
Mako Shark
Albacore
Blue Shark
160
140
120
100
80
60
40
20
0
Thousands of fish
Missing
1980
1985
1990
1995
2000
2005
2010
Year