

# White Seabass Fishery Management Plan 2019-2020 Annual Review



**White Seabass, *Atractoscion nobilis*.**

**(Photo Credit: Scott Aalbers, Pflieger Institute of Environmental Research (PIER).**

**Prepared by**

**California Department of Fish and Wildlife  
Marine Region  
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## Executive Summary

The California Fish and Game Commission (Commission) adopted the White Seabass Fishery Management Plan (WSFMP) in June 2002. The WSFMP includes a provision for annual monitoring and assessment of the white seabass fisheries. The White Seabass Scientific and Constituent Advisory Panel (WSSCAP) was established to assist the Department of Fish and Wildlife (Department) and the Commission with the review of the fishery assessments, management proposals, and plan amendments. Although the WSFMP designates the WSSCAP as having seven members representing the scientific community, recreational and commercial fishing industries, and environmental groups, the WSFMP does not identify specific members for the WSSCAP. Therefore, the Department invites stakeholders interested in white seabass management to participate in the annual review. The annual review includes fishery-dependent data (e.g., commercial and recreational landings and length frequencies), and fishery-independent data (e.g., recruitment information) if available, as well as documented changes within the social and economic structure of the recreational and commercial industries that utilize the white seabass resource within California. The review also includes information on the harvest of white seabass from Mexican waters and other relevant data. Based on the results of the annual review, in cooperation with the WSSCAP, the Department will provide management recommendations, if needed, to the Commission.

To assist the Commission in determining if management measures need to be modified or added, the WSFMP framework includes, and the Commission adopted, points of concern criteria to help determine when management measures are needed to address resource issues. The points of concern are:

1. Catch is expected to exceed the current harvest guideline or quota.
2. Any adverse or significant change in the biological characteristics of white seabass (age composition, size composition, age at maturity or recruitment) is discovered.
3. An overfishing condition exists or is imminent.
4. Any adverse or significant change in the availability of white seabass forage or in the status of a dependent species is discovered.
5. New information on the status of white seabass is discovered.
6. An error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.

The Department and WSSCAP met on May 19, 2021, to review the 2019-2020 fishery season (September 1 to August 31). After analyzing and discussing the available data, the WSSCAP agreed that none of the points of concern were met. Additional social and economic information along with the catch information from Mexico support this conclusion. As a result, the Department does not recommend any changes to the management of white Seabass or to the WSFMP at this time.

## Background

The Department and the WSSCAP annually reviews current information to evaluate the status of the white seabass resource based on points of concern adopted to implement the WSFMP, and to consider whether current management measures provide adequate protection for the resource. The annual review process is intended to foster a continuous review of white seabass stocks and fisheries to prevent overfishing or other resource damage. If a resource conservation issue is found, the WSSCAP will provide its recommendation, rationale, and analysis to the Department. The Department will evaluate the recommendation from the WSSCAP and all available information and will recommend to the Commission management measure(s) to address the issue(s).

## Results

Analysis of the points of concern (Table 1) showed that none of the criteria were met in 2019-2020.

Table 1. Analysis of the points of concern (2019-2020).

<b>Criteria</b>	<b>Analysis</b>	<b>Result</b>
Catch is expected to exceed the current harvest guideline or quota.	2019-2020 total catch = 205,463 pounds. Optimum Yield = 1.2 million pounds; Total catch is below optimum yield.	No action necessary
Any adverse or significant change in the biological characteristics of white seabass (age composition, size composition, age at maturity or recruitment) is discovered.	Recreational and commercial fishery length-frequencies showed no significant change that would indicate a problem in the fishery. No new published information on age composition, age at maturity, or age at recruitment.	No action necessary
An overfishing condition exists or is imminent.	See analysis in Table 2. No overall overfishing condition noted.	No action necessary
Any adverse or significant change in the availability of white seabass forage or in the status of a dependent species is discovered.	Of the four fisheries analyzed, landings increased slightly for two fisheries while landings declined for the other two, and one fishery remained closed in the 2019-20 season. Biomass estimates for both Pacific mackerel and Pacific sardine declined. White seabass, however, are opportunistic feeders and are known to feed on a variety of pelagic fish and invertebrate species when available.	No action necessary

<b>Criteria</b>	<b>Analysis</b>	<b>Result</b>
New information on the status of white seabass is discovered.	The Department is currently analyzing samples to investigate age/length at maturity.	No action necessary
An error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.	A stock assessment, which was completed in May 2016, determined that the stock was not overfished or depressed but the current OY may be too high.	No action necessary

*Point of Concern: Expectation of optimum yield being exceeded.*

The Commission established a fishing season of September 1 through August 31 of the following year. The Commission also adopted an optimum yield. The optimum yield is based on a maximum sustainable yield proxy of the unfished biomass and is currently set at 1.2 million pounds. In the 2019-2020 season, the total recreational and commercial harvest was 205,463 pounds, 17 percent of the allowable catch (Appendix A, Table 1).

*Point of Concern: Changes in the biological characteristics of white seabass.*

The commercial fishery continues to harvest white seabass across a wide size range (Appendix A, Figure 1). In 2019-2020, 287 fish were measured from the commercial fishery. One hundred percent of the fish sampled were larger than the minimum size limit of 28 inches and 37 percent of the fish sampled were larger than 45 inches. Based on previous age-at-length information from reading otoliths and from a previously calculated weight/length relationship, those fish larger than 45 inches are likely more than 11 years old and weigh more than 30 pounds.

Sampled length frequency data for the recreational fishery are presented in Appendix A, Figure 2. Before the start of the 2009-2010 season the Department prepared and distributed a brochure targeting recreational anglers to improve compliance with the recreational minimum size limit for white seabass. In the seasons immediately after this brochure was distributed (2009-2010 to 2013-2014), less than 10 percent of the fish measured were smaller than the minimum size limit of 28 inches. This is a significant improvement from the previous seasons, in which 17-19 percent of all fish measured were less than minimum legal size. However, in 2014-2015 and 2017-2018, greater than 10 percent of the sampled catch was sub-legal. Last season the percent of sub-legal fish decreased to 4 percent and remained at 4 percent this season. Overall, 55 legal-sized fish were measured from the recreational fishery, and 24 percent were larger than 40 inches total length. Based on the previously calculated weight/length relationship, those fish larger than 40 inches are likely more than 9 years old and weigh more than 24 pounds.

*Point of Concern: An overfishing condition exists or is imminent.*

Three criteria (Table 2), all of which must be met to establish a point of concern, determine if an overfishing condition exists or is imminent. For the commercial fishery, there must be a 20 percent decline in landings in each of two consecutive seasons compared to the prior 5-season running average. In the previous 2018-2019 season, commercial landings totaled 168,077 pounds; this is a 27 percent decrease compared to the prior 5-season running average (247,921 pounds). Commercial landings of white seabass (Appendix A, Table 2) totaled 138,610 pounds in the 2019-2020 season; this is a 34 percent decrease when compared to the prior 5-season running average (229,196 pounds). The WSSCAP and the Department agreed that the overfishing criterion for the commercial fishery was met.

For the recreational fishery, the overfishing criterion is defined as a 20 percent decline in each of two consecutive seasons for both the number of fish and the average weight (Appendix A, Table 3). In the recreational fishery, the number of fish caught in the 2019-

2020 season decreased by 30 percent when compared to the previous season. The estimated average weight of fish caught in the 2017-2018 season did not change compared to the previous season. However, it decreased by 13 percent in the 2018-2019 season and continued to decline by 5 percent in the 2019-2020 season. The WSSCAP and the Department agreed that the overfishing criterion for the recreational fishery was not met.

The final criterion for determining if an overfishing condition exists is a 30 percent decline in the recruitment index for juvenile white seabass compared to the prior 5-season running average of recruitment. The Ocean Resources Enhancement and Hatchery Program (OREHP) previously conducted standardized field studies four times a year (August, October, April and June) for juvenile recruitment. However, reductions in funding curtailed survey effort, and the Ocean Enhancement Stamp fund was insufficient to cover all the OREHP activities as well as the gill net recruitment surveys. Consequently, there was no gill net sampling between 2009 and 2011. In October 2012, gill net sampling, similar to previous surveys, was reinstated. The objective of the sampling design resumed the prior gill net sampling plan but included more embayment sites and less coastal sites than previously sampled. Gill net sampling continued through the 2018-2019 season, but because of administrative and operational changes with the OREHP, no white seabass recruitment surveys occurred in the 2019-2020 season. Thus, this criterion could not be addressed in this report.

Based on the analysis of all three overfishing criteria, the WSSCAP and the Department agreed that the overfishing point of concern for the fishery was not met. However, the Department and the WSSCAP have concerns regarding these analyses and will continue to proactively manage the white seabass fishery and to evaluate the criteria outlined in the WSFMP. Should any of the points of concern be passed and additional management measures are required, the Department may consider using the stock assessment and updating the WSFMP to evaluate alternative management actions.

Table 2. Analysis to determine if the white seabass resource is overfished (Criteria taken from Section 51.01 (b), Title 14, California Code of Regulations).

<b>Criteria</b>	<b>Analysis</b>	<b>Result</b>
A 20 percent decline in the total annual commercial landings of white seabass for the past two consecutive seasons compared to the prior 5-season running average of landings, based on landing receipt data.	2019-2020: 138,610 pounds = 34% decrease. 5-season average = 210,079 pounds. 2018-2019: 168,077 pounds = 27% decrease. 5-season average = 229,196 pounds.	Criterion met
A 20 percent decline in both the number of fish and the average weight of white seabass caught in the recreational fishery for the same two consecutive seasons, as determined by the best available data.	2019-2020: 4,421 fish = 30% decrease. 19.0 pound average = 5% decrease. 2018-2019: 6,349 fish = 30% increase. 20.1 pound average = 13% decrease.	Criterion not met
A 30 percent decline in recruitment indices for juvenile white seabass compared to prior 5-season running average of recruitment, as determined by the best available data.	2019-2020: Criterion not analyzed	N/A

*Point of Concern: Any adverse or significant change in the availability of white seabass forage or in the status of a dependent species is discovered.*

Prey species (northern anchovy (*Engraulis mordax*), jack mackerel (*Trachurus symmetricus*), market squid (*Doryteuthis opalescens*), Pacific mackerel (*Scomber japonicus*), and Pacific sardine (*Sardinops sagax*)) are highly mobile and their distributions are affected by oceanographic conditions. A review of white seabass forage species (Appendix A, Figures 3, 4, and 5) revealed some changes in availability.

Both Pacific mackerel and Pacific sardine have stock assessments conducted by the National Marine Fisheries Service (NMFS). These stock assessments include biomass estimates. Since 2008, Pacific mackerel biomass estimates have been conducted every two years. Pacific sardine biomass estimates are conducted every year. The biomass estimates for Pacific mackerel remained steady over the last five seasons but declined sharply for the 2019-2020 season. The Pacific sardine fishery has been closed since near the end of the 2014-2015 season.

Since there are currently no biomass estimates or stock assessments for market squid, commercial fishery landings were used as a proxy for their availability. Market squid landings decreased during the 2018-2019 season and continued to decline during the 2019-2020 season.

Relative indices of abundance are being collected by NMFS for jack mackerel, although comparisons from year to year would need to account for differences in the geographic

area covered by the sampling design. Jack mackerel landings increased slightly in 2020 after decreasing the previous three years.

Relative abundance of northern anchovy was estimated by NMFS in 2018 and found to be greater than a prior estimate in 2016. However, landings for northern anchovy continued to decline in 2020.

Based on the analysis of all the prey species, the WSSCAP and the Department agreed that this point of concern was not met because of the opportunistic nature of white seabass foraging.

*Other Points of Concern:*

The remaining two points of concern (Table 1) consider any new information on the status of white seabass and if any errors in data or stock assessment were found.

Currently, the Department, in collaboration with the Pflieger Institute of Environmental Research, is analyzing otoliths (for ageing studies) and maturity data; however the study is ongoing and there is no new information on age at maturity at this time.

No errors in the current stock assessment have been found.

**Additional Information**

The Department has used one indicator each of some basic socioeconomic information to characterize the commercial fishery and provided those summaries to the WSSCAP (Appendix A, Table 4). As a social information indicator, the number of commercial vessels landing white seabass has been tracked over time. In the 2019-2020 season, the number of vessels fishing for white seabass decreased by 6 percent (11 vessels). This decrease in the number of vessels occurred mostly in the hook-and-line fishery in southern California. An economic information indicator of the most frequent ex-vessel price per pound has also been tracked over time. The most common ex-vessel price per pound has shown a steady increase over time and is presently at \$6.00 per pound for all gears combined. No similar social or economic data are available for the recreational fleet.

Information about the take of white seabass in Mexican waters was considered by the WSSCAP. California commercial fishermen are prohibited by Mexican law to fish in the territorial seas of Mexico, and no landings of white seabass from Mexico by California commercial fishermen were reported in 2019-2020. Recreational anglers may fish in Mexico under the authority of a Mexican sport fishing license. During the 2019-2020 season, Commercial Passenger Fishing Vessel logbook data reported 10 white seabass taken in Mexico and landed in California, a decrease of 170 fish from the 180 reported taken during the prior season. No additional information about either the recreational or commercial catch of white seabass in Mexico is available.

Appendix A – Data Analyses

Table 1. Total catch (pounds) of white seabass, 2010-2011 to 2019-2020. Source: Department’s MLDS (commercial landing receipts) and MLS (CPFV logbook data), and CRFS data extracted from the RecFIN database at <http://www.recfin.org>. In 2020, COVID-19 pandemic health safety guidelines resulted in a reduction in recreational effort and prevented CRFS sampling from April – June, and from July through August restricted observing and collecting biological data on anglers’ catch.

<b>Season</b>	<b>Recreational</b>	<b>Commercial</b>	<b>Total</b>
2010/11	306,491	520,605	827,096
2011/12	259,028	406,746	665,774
2012/13	265,816	315,533	581,349
2013/14	219,116	262,441	481,557
2014/15	63,125	196,521	259,646
2015/16	100,406	247,195	347,601
2016/17	177,582	217,915	395,497
2017/18	129,195	220,687	349,882
2018/19	93,747	168,077	261,824
2019/20	66,853	138,610	205,463

Table 2. Commercial white seabass landings in pounds, 2010-2011 to 2019-2020. Source: Department’s MLDS (commercial landing receipts).

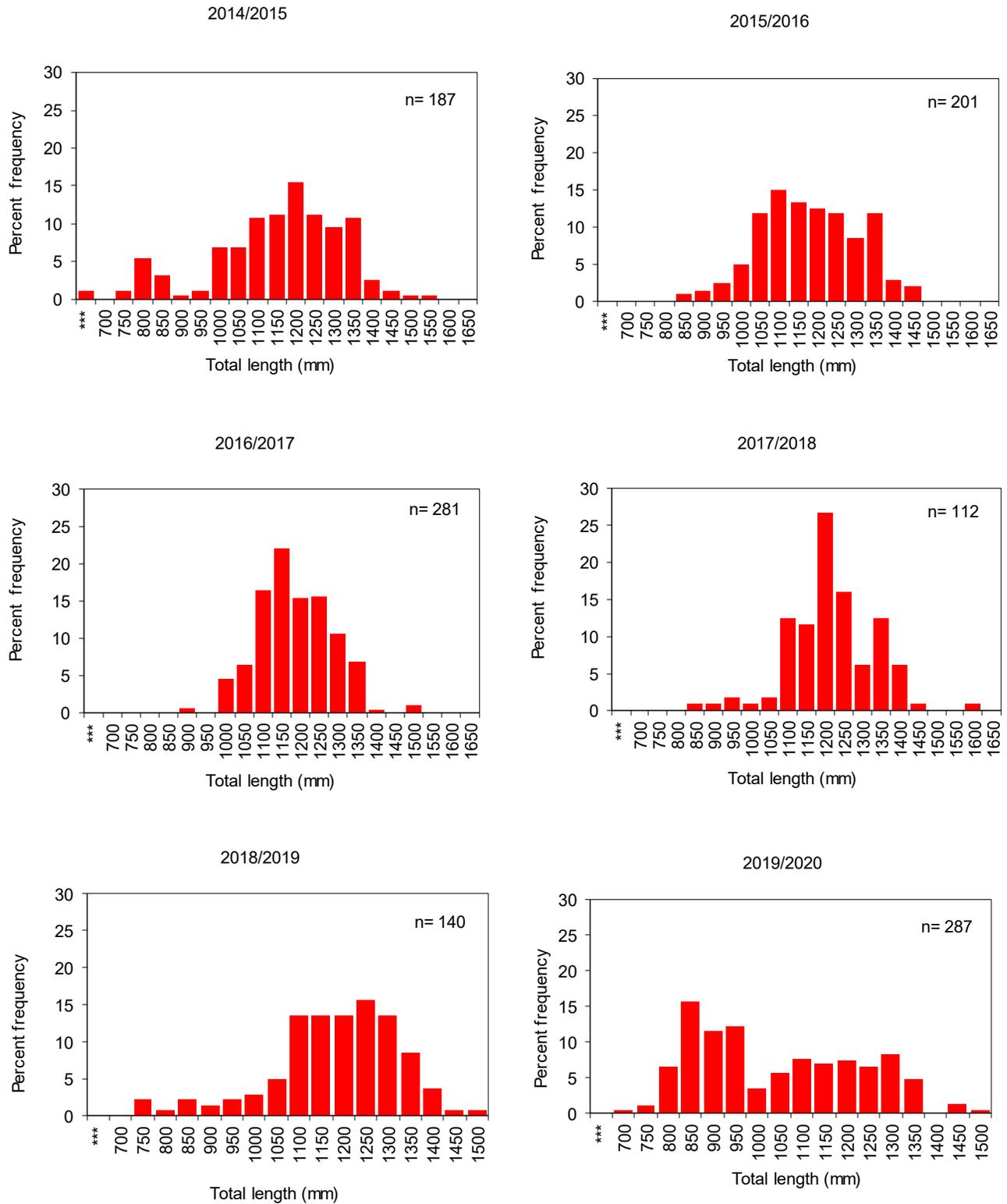
<b>Season</b>	<b>Pounds Landed</b>	<b>Prior 5-season average</b>	<b>Percent change from previous 5-season average</b>
2010/11	520,605	476,487	9
2011/12	406,746	502,347	-19
2012/13	315,533	499,419	-37
2013/14	262,441	431,873	-39
2014/15	196,521	401,469	-51
2015/16	247,195	340,369	-27
2016/17	217,915	285,687	-24
2017/18	220,687	247,921	-11
2018/19	168,077	229,196	-27
2019/20	138,610	210,079	-34

Table 3. Recreational white seabass catch, 2010-2011 to 2019-2020. Source: Department's MLS (CPFV logbook data) and CRFS data extracted from the RecFIN database at <http://www.recfin.org>. In 2020, COVID-19 pandemic health safety guidelines prevented CRFS sampling from April - June and from July through August restricted observing and collecting biological data on anglers' catch.

<b>Season</b>	<b>Total number of fish caught</b>	<b>Percent change in number of fish from prior season</b>	<b>Average weight in pounds</b>	<b>Percent in weight from prior season</b>
2010/11	12,672	44	29.1	20
2011/12	9,876	-22	26.9	-8
2012/13	10,634	8	19.3	-28
2013/14	9,567	-10	22.4	16
2014/15	3,136	-67	18.9	-15
2015/16	3,793	21	23.1	22
2016/17	5,675	50	22.9	-1
2017/18	4,874	-14	23.0	0
2018/19	6,349	30	20.1	-12
2019/20	4,421	-30	19.0	-5

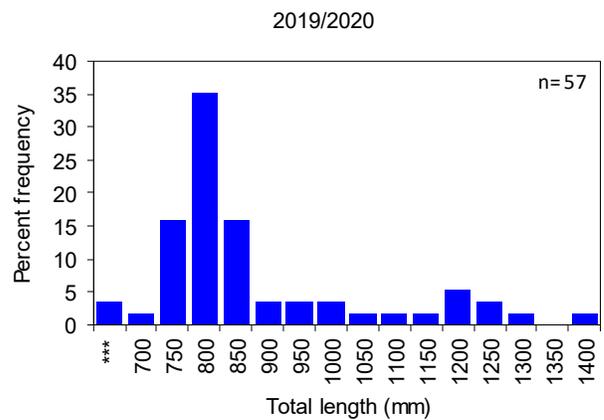
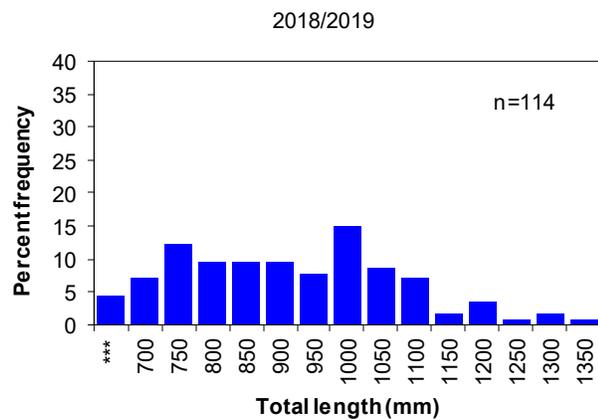
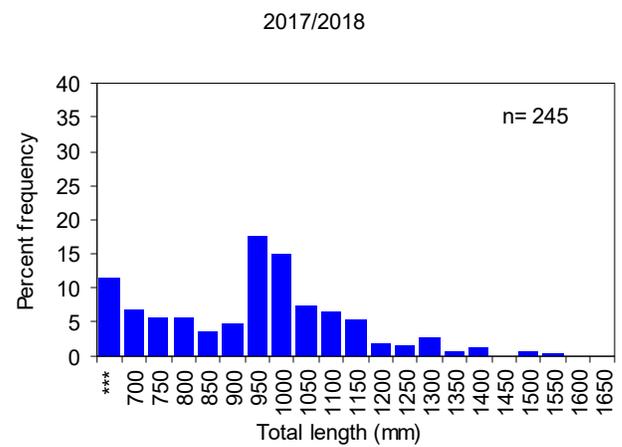
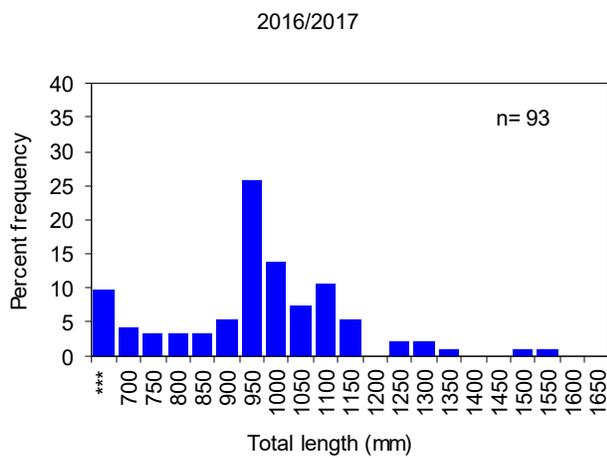
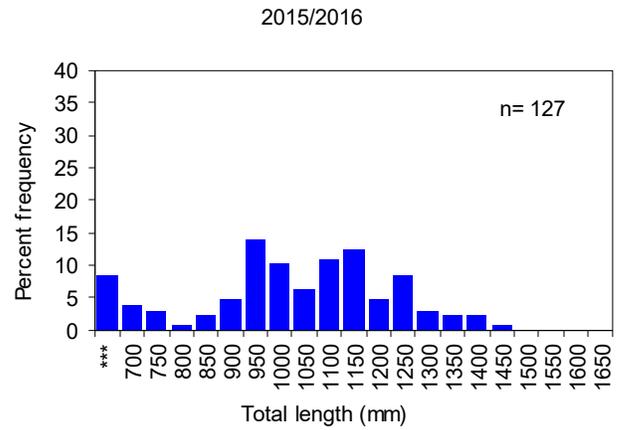
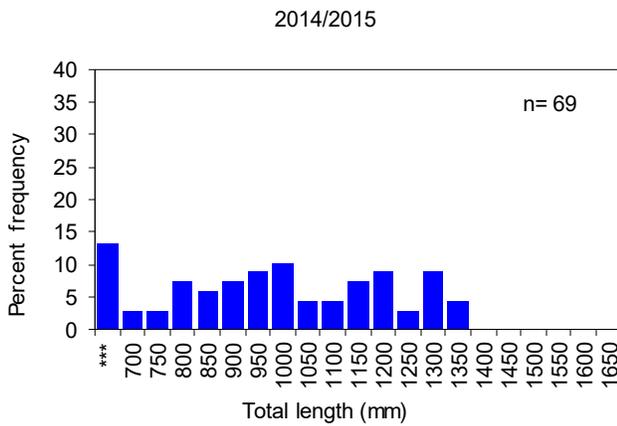
Table 4. Socioeconomic Factors, 2010-2011 to 2019-2020. Source: Department's MLDS (commercial landing receipts).

<b>Season</b>	<b>Total number of vessels landing white seabass</b>	<b>Most common ex-vessel price per pound</b>
2010/11	248	\$4.00
2011/12	270	\$4.00
2012/13	248	\$5.00
2013/14	222	\$5.50
2014/15	218	\$4.00
2015/16	181	\$6.00
2016/17	135	\$4.00
2017/18	185	\$6.00
2018/19	183	\$5.00
2019/20	172	\$6.00



\*\*\*all sub-legal fish were grouped together

Figure 1. Commercial white seabass sampled length frequencies, 2014-2015 to 2019-2020. Source: California Department of Fish and Wildlife



\*\*\*all sub-legal fish were grouped together

Figure 2. Recreational white seabass sampled length frequencies, 2014-2015 to 2019-2020. Source: CRFS data extracted from the RecFIN database at <http://www.recfin.org>. In 2020, COVID-19 pandemic health safety guidelines resulted in a reduction in recreational effort and prevented CRFS sampling from April – June, and from July through August restricted observing and collecting biological data on anglers' catch.

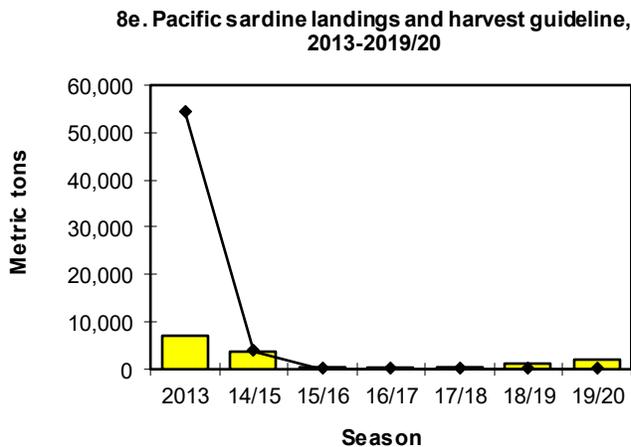
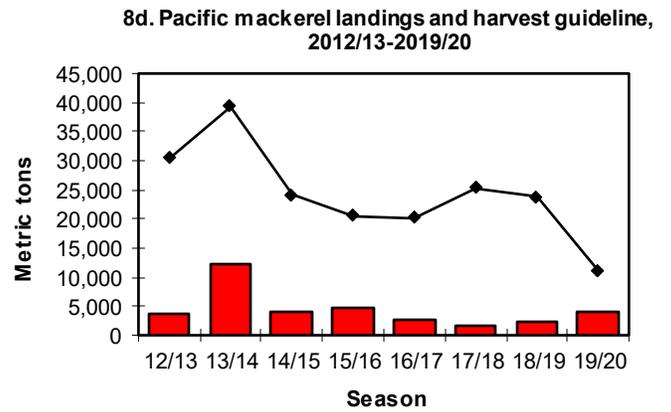
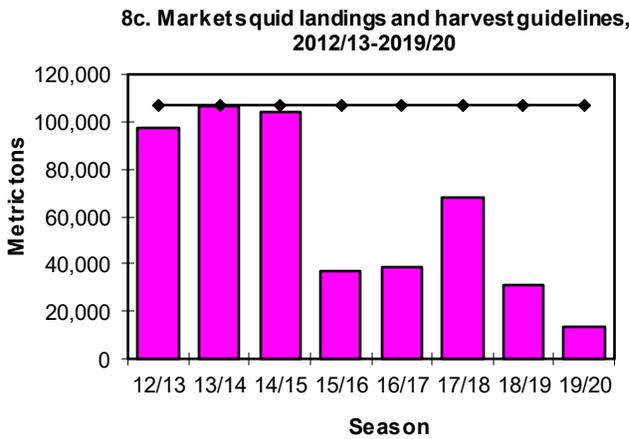
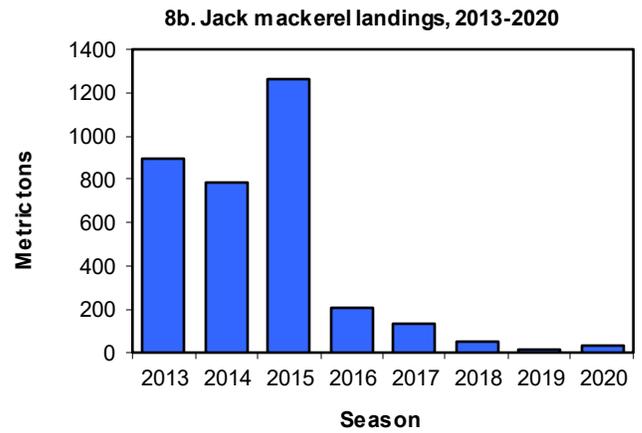
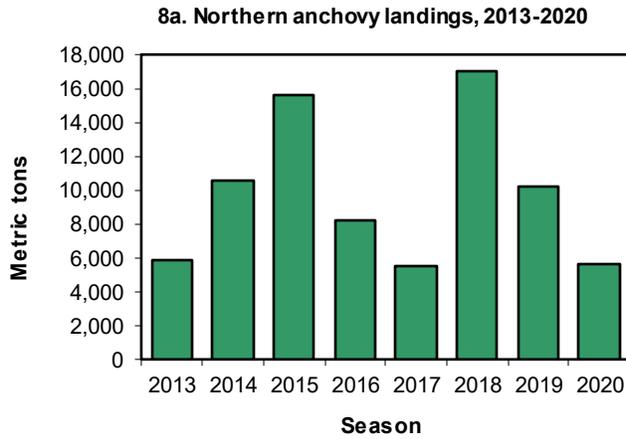


Figure 3. Harvest guidelines and commercial catch of white seabass forage species. Northern anchovy and jack mackerel season is January 1 through December 31. Market squid season is April 1 through March 31 of the following year. Pacific mackerel and Pacific sardine season is July 1 through June 30 of the following year. Source: Department's MLDS (commercial landing receipts).

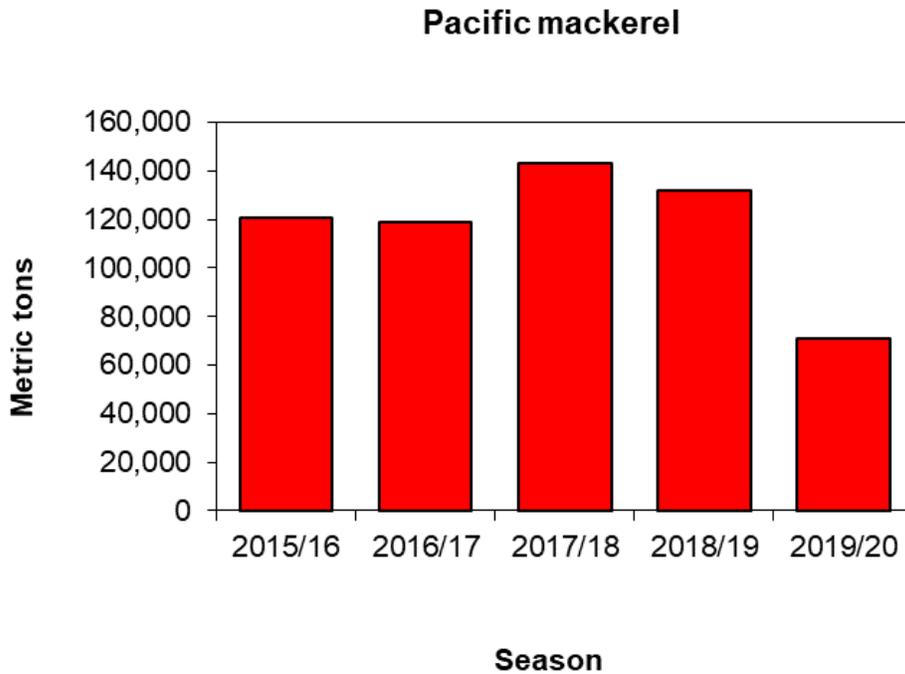


Figure 4. Biomass estimates for Pacific mackerel in short tons, 2014-2015 to 2018-2019 seasons. Source: Pacific Fishery Management Council CPS SAFE documents and PFMC proceedings.

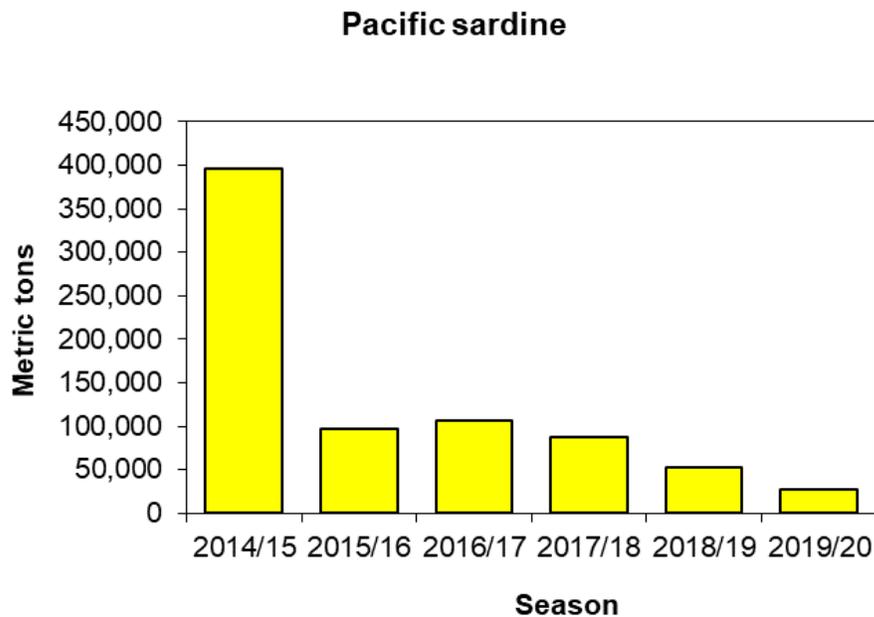


Figure 5. Biomass estimates for Pacific sardine in short tons, 2014-2015 to 2019-2020 seasons. Source: Pacific Fishery Management Council CPS SAFE documents and PFMC proceedings.