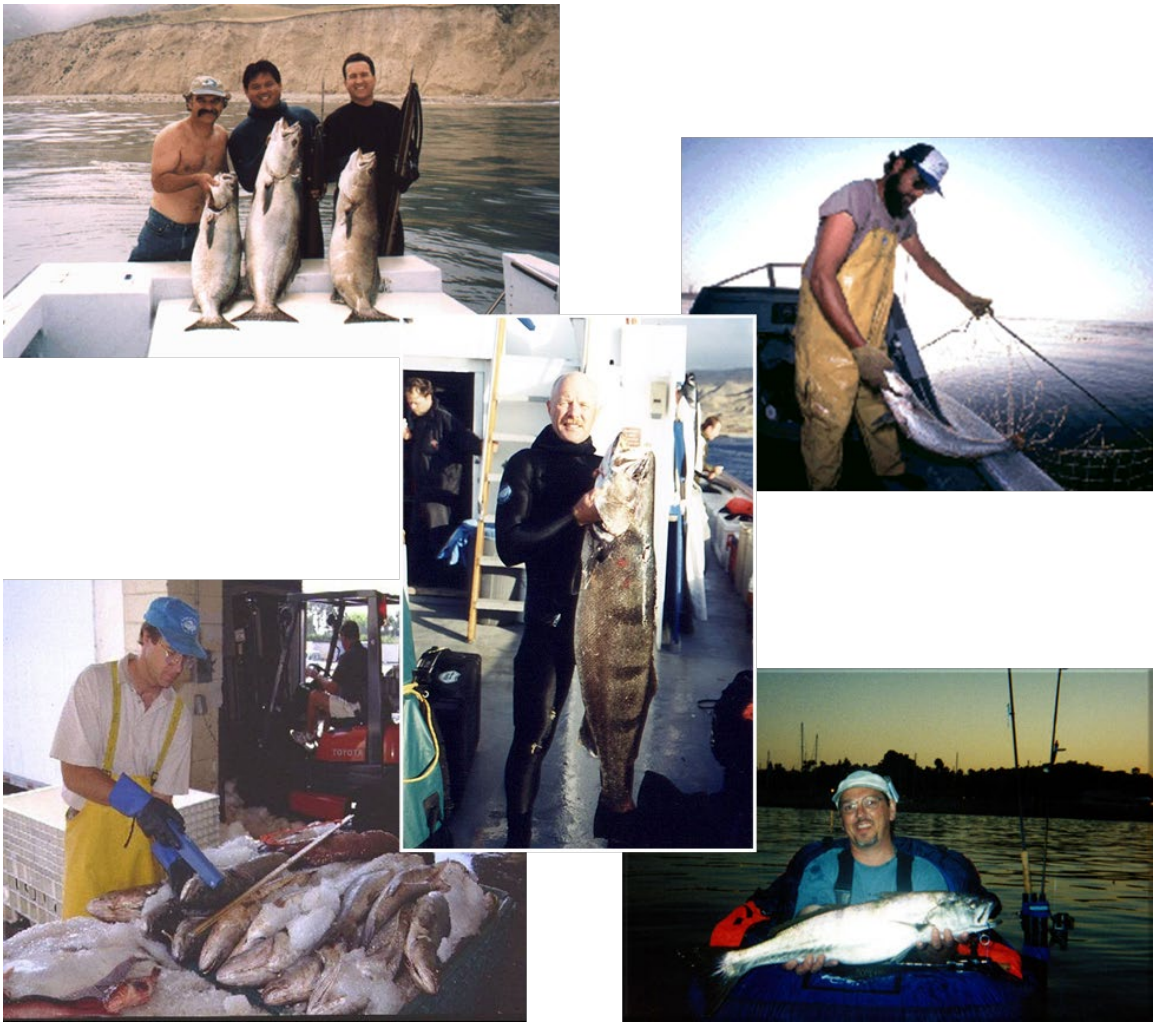
White Seabass Fishery Management Plan
2017-2018 Annual Review



Prepared by

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. 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 April 11, 2019, to review the 2017-2018 fishery season (September 1 to August 31), and together 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 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. 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 2017-2018.

Table 1. Analysis of the points of concern.

Criteria	Analysis	Result
Catch is expected to exceed the current harvest guideline or quota.	2017-2018 total catch = 351,104 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 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.	Two out of five forage species decreased, and one fishery remained closed in the 17/18 season. However, White Seabass are opportunistic feeders and the Department and WSSCAP feel that there are other prey items for them to feed on.	No action necessary
New information on the status of White Seabass is discovered.	The Department is currently collecting 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.	Stock assessment was completed in May 2016.	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 2017-2018 season, the total recreational and commercial harvest was 351,104 pounds, 29 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 2017-2018, 112 fish were sampled from the commercial fishery. One hundred percent of the fish sampled were larger than the minimum size limit of 28 inches and approximately two thirds 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 recent seasons, 2014-2015 and again in 2017-2018, greater than 10 percent of the sampled catch was sub-legal. This season 217 legal-sized fish were measured from the recreational fishery and approximately one half of these fish 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 2016-2017 season, commercial landings totaled 217,915 pounds; this is a 24 percent decrease compared to the prior 5-season running average (285,687 pounds). Commercial landings of White Seabass (Appendix A, Table 2) totaled 221,909 pounds in the 2017-2018 season; this is a 10 percent decrease when compared to the prior 5-season running average (247,921 pounds). The WSSCAP and the Department agreed that the overfishing criterion for the commercial fishery was not met, so no action is recommended at this time.

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 2017-2018 season decreased 14 percent when compared to the previous season. The average weight of fish caught in the 2017-2018 season did not change compared to the previous 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. The Ocean Enhancement Stamp fund was insufficient to cover all of the OREHP activities as well as the gill net recruitment surveys, and 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 current sampling design seeks to resume the prior gill net sampling plan but includes more embayment sites and less coastal sites than previously sampled.

Previously, the number of fish caught per set across the entire sampling year was used as an index to evaluate juvenile White Seabass recruitment. There was an increasing trend in number of juvenile White Seabass caught per set from 2012 to 2015. However, this trend decreased during the 2016 survey and again in 2017 (Appendix A, Figure 3). The number of fish caught per gill net set was averaged from the years 2012 to 2016, and was compared to 2017. The catch per unit effort for juvenile White Seabass recruits for 2017 decreased by 17 percent from the previous 5-year average (Appendix A, Table 4). Due to contracting delays, we were unable to include data from the 2018 sampling period. Consequently, we were unable to evaluate this criterion for the 2017-2018 season.

Based on the analysis of all three overfishing criteria, the WSSCAP and the Department agreed that the overall overfishing point of concern for the fishery was not met.

Table 2. Analysis to determine if the White Seabass resource is overfished (Criteria taken from Section 510001 (B), Title 14, California Code of Regulations).

Criteria	Analysis	Result
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.	2017-2018 221,909 pounds = 10% decrease 5-season average = 247,921 pounds 2016-2017 217,915 pounds = 24% decrease 5-season average = 285,687 pounds	Criterion not 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.	2017-2018 4,874 fish = 14% decrease 23.1 pound average = no change 2016-2017 5,675 fish = 50% increase 22.9 pound average = 1% 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.	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) and 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 have been steady for the last five seasons. 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 availability increased from the previous year.

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 have decreased for the past three years.

Relative abundance of Northern Anchovy was estimated by NMFS in 2018 and found to be greater than a prior estimate in 2016. In addition, landings for Northern Anchovy in 2018 have increased from those in 2016 and 2017.

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 is collecting White Seabass samples to assess length/age at maturity. The Pfleger Institute of Environmental Research (PIER) is also collecting this information and collaborative efforts are being discussed.

No errors in the current stock assessment have been found.

Additional Information

The Department has used one indicator each of some basic social and economic 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 2017-2018 season the number of vessels fishing for White Seabass increased by 41% (57 vessels). This increase in the number of vessels occurred mostly in the hook-and-line fishery. 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 2017-2018. Recreational anglers may fish in Mexico under the authority of a Mexican sport fishing license. During the 2017-2018 season, Commercial Passenger Fishing Vessel log book data reported six White Seabass taken in Mexico, a decrease of 27 fish from the reported 33 taken in the prior season. No additional information about either the recreational or commercial catch of White Seabass in Mexico is available.

Appendix A – Data Analyses

Table1. Total catch (pounds) of White Seabass, 2008-2009 to 2017-2018. Source: California Recreational Fisheries Survey extracted from the RecFIN database at https://www.recfin.org, and commercial landings data extracted from California Department of Fish and Wildlife's Marine Landings Data System.

Season	Recreational	Commercial	Total
2008/09	152,799	414,459	567,258
2009/10	215,071	502,021	717,092
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	96,244	247,195	343,439
2016/17	177,582	217,915	395,497
2017/18	129,195	221,909	351,104

Table 2. Commercial White Seabass landings in pounds, 2008-2009 to 2017-2018. Source: California Department of Fish and Wildlife's Marine Landings Data System (includes commercial landing receipt data).

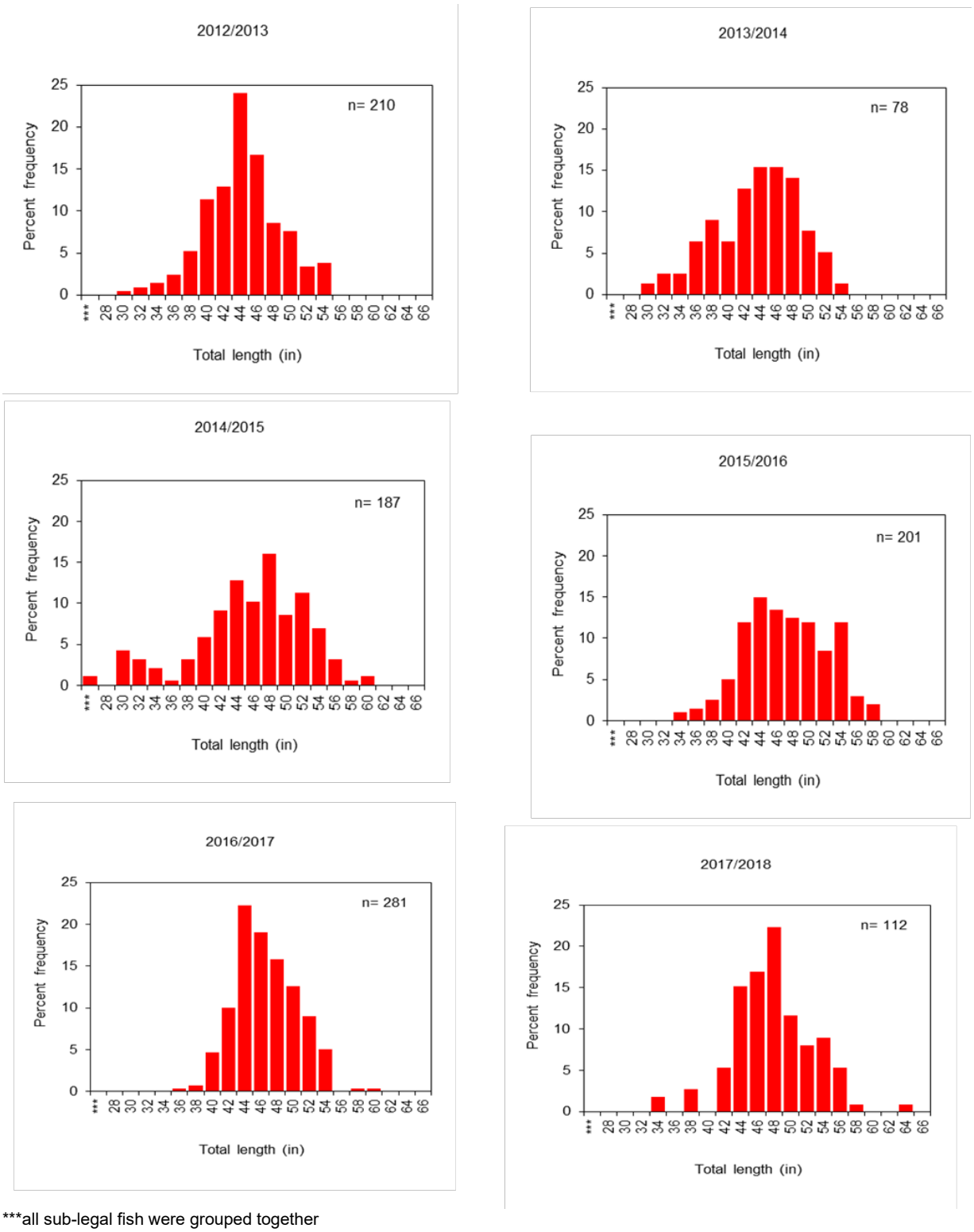
Season	Pounds Landed	Prior 5-season average	Percent change from previous 5-season average
2008/09	414,459	411,867	1
2009/10	502,021	433,621	16
2010/11	520,605	476,487	9
2011/12	406,746	502,347	-19
2012/13	315,533	499,419	-37
2013/14	262,441	431,873	-39
2014/15	196,521	401,469	-51
2015/16	247,195	340,369	-27
2016/17	217,915	285,687	-24
2017/18	221,909	247,921	-10

Table 3. Recreational White Seabass catch, 2008-2009 to 2017-2018. Source: California Recreational Fisheries Survey extracted from the RecFIN database at https://www.recfin.org, California Department of Fish and Wildlife's Marine Logs System (includes CPFV log data).

Season	Total number of fish caught	Percent change in number of fish from prior season	Average weight in pounds	Percent change in weight from prior season
2008/09	6,751	-11	19.8	3
2009/10	8,788	30	24.3	23
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

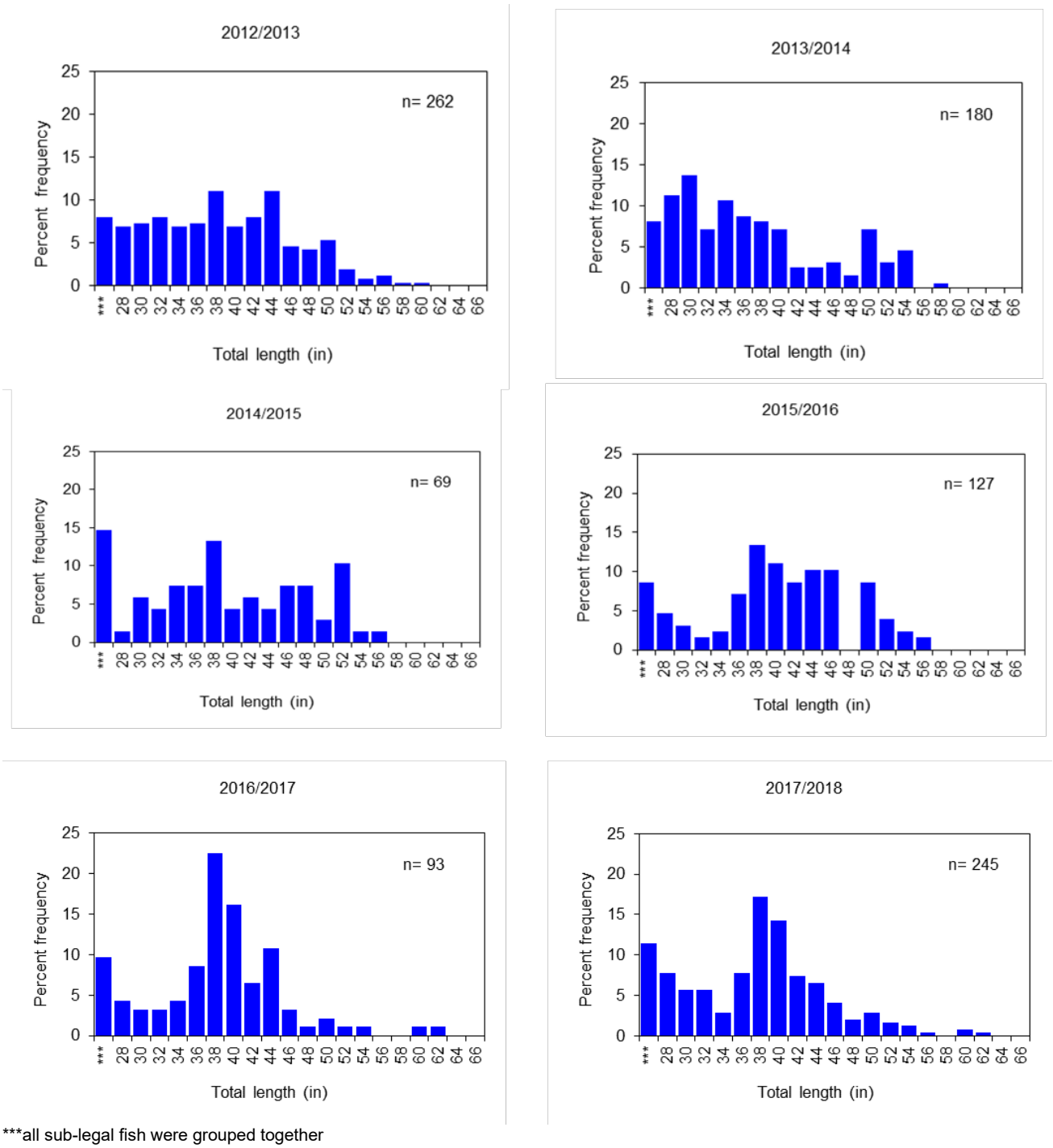
Table 4. Sociological and Economic Factors. Source: California Department of Fish and Wildlife's Marine Landings Data System and Marine Logs System (includes commercial landing receipt data and CPFV log data).

Season	Total number of vessels landing White Seabass	Most common ex-vessel price per pound
2004/05	77	$2.50
2005/06	95	$3.00
2006/07	97	$3.00
2007/08	96	$3.50
2008/09	93	$3.50
2009/10	183	$3.50
2010/11	254	$4.00
2011/12	276	$4.00
2012/13	257	$5.00
2013/14	238	$5.50
2014/15	177	$4.00
2015/16	190	$6.00
2016/17	139	$4.00
2017/18	196	$6.00



***all sub-legal fish were grouped together

Figure 1. Commercial White Seabass sampled length frequencies, 2012-2013 to 2017-2018. Source: Department of Fish and Wildlife Market Sampling Program



***all sub-legal fish were grouped together

Figure 2. Recreational White Seabass sampled length frequencies, 2012-2013 to 2017-2018. Source: Sampler examined landed catch data from California Recreational Fisheries Survey extracted from the RecFIN database at https://www.recfin.org.

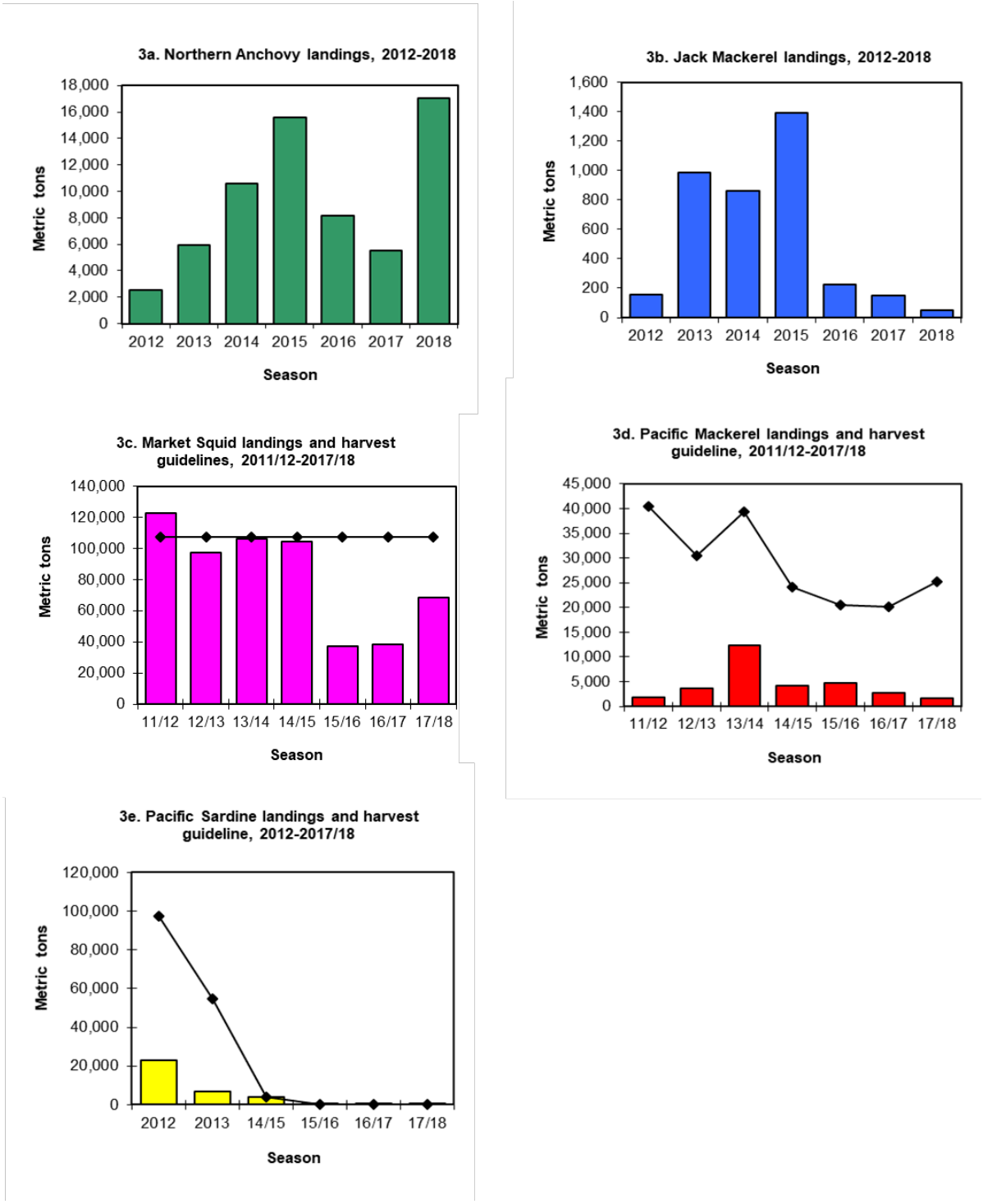


Figure 3. Harvest guidelines and commercial catch of white seabass forage species. Northern anchovy and jack mackerel season is January 1 through December 31. Market squid season is April 1 through March 31 of the following year. Pacific mackerel and Pacific sardine season is July 1 through June 30 of the following year. Source: California Department of Fish and Wildlife Marine Landings Data System (includes commercial landing receipts).

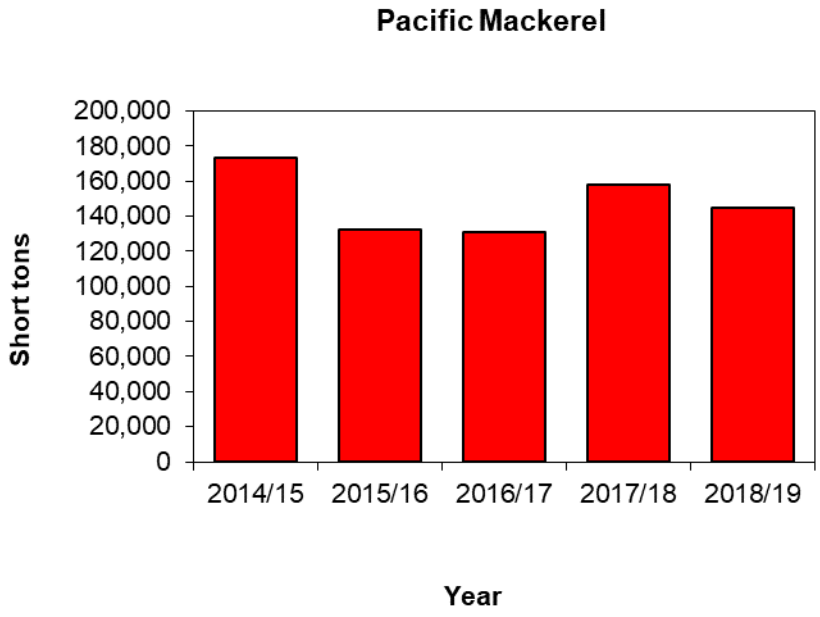


Figure 4. Biomass estimates for Pacific Mackerel in short tons, 2014-2015 to 2018-2019 seasons. Source: Pacific Fishery Management Council. 2017 CPS SAFE document and PFMC proceedings.

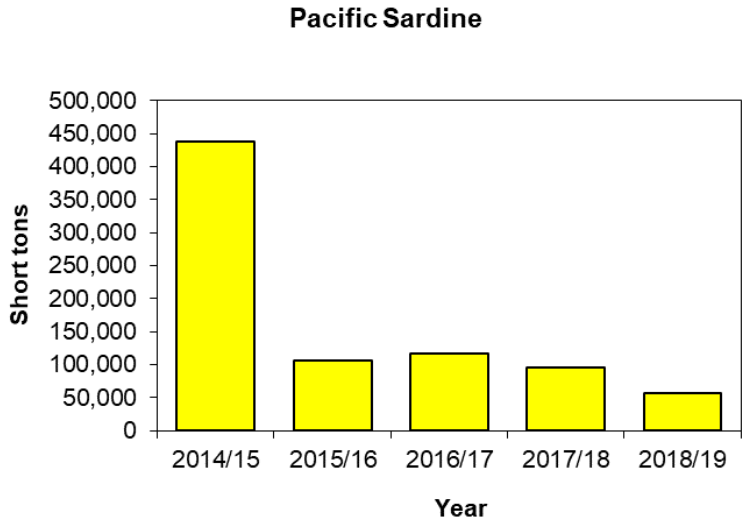


Figure 5. Biomass estimates for Pacific Sardine in short tons, 2014-2015 to 2018-2019 seasons. Source: Pacific Fishery Management Council. 2018 CPS SAFE document and PFMC proceedings.