

APPENDIX A: SAFE TABLES

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TABLE 2-1. HISTORY OF COUNCIL ACTIONS

For history of Council actions prior to June 2013, see prior SAFE documents

The Council initiated development of the FMP for northern anchovy in January of 1977. The FMP was submitted to the Secretary in June of 1978. Regulations implementing the FMP were published in the *Federal Register* on September 13, 1978 (43FR40868). This Table includes approximately the past five years of Council actions. Prior Council activities related to CPS management can be found in previous [SAFE documents](#).

- At the June 2013 meeting, the Council adopted Pacific mackerel management measures and harvest specifications for the 2013-2014 fishing year. These included an overfishing limit of 57,316 mt, a P* choice of 0.45, acceptable biological catch and annual catch limit (ACL) set equal to 52,358 mt, and an annual catch target (ACT) equal to 39,268 mt. The 13,089 mt difference between the ACL and ACT is an incidental catch buffer. The Council also approved a “check in” at the subsequent April meeting, to consider re-allocating some of the incidental catch to the directed fishery, in the case that landings are significantly up, and approaching the initial directed allocation.

The Council also voted to amend the management and assessment schedule for Pacific mackerel. The new schedule calls for full stock assessments every four years starting in 2015, alternating with catch-only projection estimates every four years, in off-science years. Biennial harvest specifications will be made for two years at a time.

Also at the June meeting, the Council voted to change the fishery start date for Pacific sardine to July 1, starting in 2014. A biomass projection estimate was to be used to set harvest specifications for the January 1-June 30 period during the 2014 transition year, and the Council anticipated a full stock assessment would be available to inform annual harvest specifications for the fishing year beginning July 1, 2014.

- At the November 2013 meeting, the Council adopted Pacific sardine management measures for the six-month period January 1-June 30, 2014. This includes approving a biomass estimate of 378,120 metric tons (mt) and an Overfishing Limit of 59,214 mt. Based on a P* choice of 0.4, the Acceptable Biological Catch and Annual Catch Limit were set at 54,052 mt. The annual Harvest Guideline was set at 29,770 mt, with an Annual Catch Target set at 19,846 mt. Accounting for a 1,000 mt Tribal allocation and a 500 mt incidental set-aside, the January 1-June 30 allocation was set at 5,446 mt. Other management measures were to be consistent with the 2012 fishery, with the exception of (1) the incidental landing allowance that was set at 45 percent for mixed loads, after the directed fishery closes, and (2) there would be no rollover of uncaught fish from the first six-month period into the following fishing period.

The Council considered a letter of intent from the Northwest Aerial Sardine Survey, LLC to conduct survey research during summer 2014. The Council adopted the request for public review and scheduled a final determination, including the final tonnage amount, at the April 2014 Council meeting. (The request for an EFP set-aside was subsequently withdrawn).

The Council established a Maximum Sustainable Yield (MSY) reference point for the northern subpopulation of northern anchovy. Based on information that northern anchovy are subject to large population fluctuations and have relatively high productivity, the Council selected annual fishing rate: $F_{msy} = 0.3$ as the appropriate MSY reference point.

The Council also endorsed methodology reviews of the California Department of Fish and Wildlife/California Wetfish Producers Association aerial survey methodology for the Southern California Bight, of the Northwest Aerial Sardine Survey, and the NMFS acoustic sardine survey. The methodology review was to be coordinated with the Southwest Fisheries Science Center to optimize logistical and financial contingencies. The Council also tasked the Coastal Pelagic Species (CPS) Management Team and CPS Advisory Subpanel with reviewing the draft Council Operating Procedure for a CPS methodology review process and with providing their recommendations at a future Council meeting.

- At the March 2014 meeting, the Council adopted the technical change of using the CalCOFI temperature index, rather than the Scripps Pier temperature recordings, in calculating the annual overfishing limit (OFL) for Pacific Sardine. The new temperature index and new temperature-productivity relationship was to be used for establishing the OFL starting with the April 2014 meeting, when the Council established annual harvest specifications and management measures for the fishing year beginning July 1, 2014. The Council directed the CPSMT and NMFS to further evaluate alternatives for applying the new temperature index and F_{msy} relationship to annual harvest specifications, and to report back to the Council at the September 2014 meeting.
- At the April 2014 meeting, the Council adopted harvest specifications and management measures for Pacific sardine, for the fishing year running July 1, 2014 through June 30, 2015. This included an OFL of 39,210 mt and an ABC of 35,792 mt, based on a P^* value of 0.40. The Council set the ACL and the ACT both to 23,293 mt, and adopted a 500 mt incidental set aside for each of the three fishing periods. Accounting for a Quinault Indian Nation allotment of 4,000 mt and a total of 1,500 mt incidental set aside, the period allocations were set to 7,218 mt in Period 1 (July 1 – September 14), 4,323 mt for Period 2 (September 15 – December 31), and 6,252 mt for Period 3 (January 1 – June 30, 2015). The Council approved rollovers from Periods 1 and 2 into the subsequent Period, with no rollover from Period 3 into the next fishing year. The Council also adopted a mixed load allowance of up to 45 percent sardines caught in other CPS fisheries, after directed Pacific sardine fishing closes.
- At the June 2014 meeting, the Council adopted harvest specifications and management measures for Pacific mackerel. Based on a catch-only projection estimate of 157,106 mt, the Council adopted an OFL of 32,992 mt, an ABC and ACL both equal to 30,138 mt, an HG of 29,170 mt, and an ACT of 24,170 mt. The difference between the HG and the ACT is a 5,000 mt incidental set aside. Should the directed fishery realize the ACT (24,170 mt), the directed fishery will close, and shift to an incidental only fishery, with a 45 percent incidental landing allowance when Pacific mackerel are landed with other CPS, with the exception that up to 1 (one) mt of Pacific mackerel may be landed without landing any other CPS. The Council also adopted a check in provision, to consider reallocating a portion of the set aside to the directed fishery, should the directed fishery attain the ACT.

- At the November 2014 meeting, the Council adopted the technical change of using the CalCOFI temperature index, rather than the Scripps Pier temperature recordings, in calculating annual harvest specifications for Pacific Sardine; and adopted an accompanying harvest FRACTION term ranging between five and 20 percent. This replaces the current range of five and fifteen percent. This change also incorporated a new temperature-productivity relationship.
- At its March 2015 meeting, the Council took final action to protect a suite of currently [unmanaged forage fish](#) species and prohibit the development of new directed commercial fisheries. Although incidental retention of these shared species is allowed, directed commercial take is not allowed. A Council process to develop an exempted fishing permit must be completed prior to allowing directed take on any of the shared EC species, which are: round herring, thread herring, mesopelagic fishes, Pacific sand lance, Pacific saury, silversides, smelts in the family *Osmeridae*, and pelagic squids (except Humboldt squid).
- At its April 2015 meeting, the Council adopted Pacific sardine harvest specifications and management measures for the 2015 – 2016 fishery. Because the estimated biomass fell below the Cutoff of 150,000 metric tons, a directed fishery was precluded. Therefore the Council adopted an HG of zero, with a 7,000 mt ACL to allow for tribal harvest, incidental landings, live bait, research, and other minor sources of mortality. For incidental catches, the Council adopted an incremental approach, with 40% mixed loads allowed until 1,500 mt are landed. Then the mixed load amount drops to 30% until 4,000 mt are landed, and dropped to 5% until the ACL is met.
- At that same meeting, the Council took emergency action to close the current (2014 – 2015) fishery as soon as possible, to stay within the remaining quota, and urged NMFS to immediately assess landings and catch rate, to determine a closure date associated with the remaining available quota.
- At its June 2015 meeting, the Council adopted the Pacific mackerel stock assessment for management in both the 2015-16 and the 2016-17 fishing years. A projection estimate of biomass was used to estimate the second year biomass, assuming the full HG would be taken. The Council adopted the following harvest specifications and management measures:

	2015-16 (mt)	2016-17 (mt)
Biomass	120,425	118,968
OFL	25,291	24,983
ABC_{0.45}	23,104	22,822
ACL	23,104	22,822
HG	21,469	21,161
ACT	20,469	20,161

The Council also adopted a 45 percent incidental landing allowance once the directed fishery is closed, and up to three mt of Pacific mackerel per landing to be allowed in non-CPS fisheries.

- At its April 2016 meeting, the Council adopted Pacific sardine harvest specifications and management measures for the 2016 – 2017 fishery. Because the 106,137 mt estimated biomass again fell below the Cutoff of 150,000 metric tons, a directed fishery was precluded. Therefore the Council adopted an HG of zero, with a 8,000 mt ACL to allow for tribal harvest, incidental

landings, live bait, research, and other minor sources of mortality. For incidental catches, the Council adopted an incremental approach, with 40% mixed loads allowed until 2,000 mt are landed. Then the mixed load amount drops to 20% until 5,000 mt are landed, and dropped to 10% until the ACL is met. The Council also adopted an OFL of 23,085 mt and an ABC of 19,236 mt.

- At its April 2017 meeting, the Council adopted Pacific sardine harvest specifications and management measures for the 2017 – 2018 fishery. The biomass estimate of again fell below the Cutoff value of 150,000 mt, thereby precluding a directed sardine fishery. The Council adopted an HG of zero and an ACL of 8,000 mt to allow for tribal harvest (up to 800 mt), incidental landings, live bait, small scale fishing, and other minor sources of mortality. For incidental catches, the Council adopted an incremental approach, with 40% mixed loads allowed until 2,000 mt are landed. Then the mixed load amount drops to 20% until 5,000 mt are landed, and dropped to 10% until the ACL is met. The Council also adopted an OFL of 16,957 mt and an ABC of 15,479 mt.
- Also at the April 2017 meeting, the Council adopted FMP Amendment 16, which allows for minor directed fishing on CPS stocks when the directed fishery is closed. A handful of operators along the west coast use beach seine nets, small purse seines, or hook and line gear to harvest small quantities of CPS, typically for bait or for the restaurant market. The landings in this sector are expected to be de minimis. The Council adopted a trip limit of one metric ton, and a limit of one trip per day.
- At its June 2017 meeting, the Council adopted Pacific mackerel harvest specifications and management measures, for two consecutive years. A projection estimate of biomass was used to estimate the second year biomass, assuming the full HG would be taken. The Council adopted the following harvest specifications and management measures:

	2017-18 (mt)	2018-19 (mt)
Biomass	143,403	131,724
OFL	30,115	27,662
ABC_{0.45}	27,510	25,269
ACL	27,510	25,269
HG	26,293	23,840
ACT	26,293	23,840
Incidental	1,000	1,000

- At its April 2018 meeting the Council adopted Pacific sardine harvest specifications and management measures for the 2018 – 2019 fishery. The biomass estimate (52,065 mt) again fell below the Cutoff value of 150,000 mt, thereby precluding a directed sardine fishery. The Council adopted an ACL of 7,000 mt to accommodate incidental landings, tribal harvest, and the live bait fishery. Further details can be found in the Council’s decision summary [document](#).
- At its November 2018 meeting the Council took final action on CPS FMP Amendment 17, which addresses live bait landings when a CPS stock is overfished. The amendment process was initiated in June 2018. Amendment 17 removes the pre-determined incidental landing limit of a maximum

15 percent in the live bait fishery. Live bait fishing will still be subject to annual catch limits and other management measures, and the Council may enact further restrictions once a stock falls below the overfished threshold.

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TABLE 2-2. REGULATORY ACTIONS SINCE 2008

For regulatory actions prior to January 31, 2008, see prior SAFE documents

January 31, 2008 NMFS issued the final rule to implement the annual HG for Pacific mackerel for the fishing season of July 1, 2007 through June 30, 2008. The HG for the 2007–2008 fishing season is 40,000 mt. If this total was reached, Pacific mackerel fishing would be closed to directed harvest and only incidental harvest would be allowed at a 45 percent by weight incidental catch rate when landed with other CPS, except that up to one mt of Pacific mackerel could be landed without landing any other CPS. (73 *FR* 5760).

August 20, 2008 NMFS proposed a regulation to implement the annual HG for Pacific mackerel in the EEZ off the Pacific coast for the fishing season of July 1, 2008 through June 30, 2009. (73 *FR* 49156).

August 20, 2008 NMFS issued a final rule that noticed effectiveness of reporting requirements of interactions that may occur between a CPS vessel and/or fishing gear and sea otters originally published on May 30, 2007 (see above). The May 30th final rule contained information collection requirements that at the time of publication had not yet been approved by OMB. The final rule stated that NMFS would publish a subsequent Federal Register notice announcing the effectiveness of those requirements. Therefore NMFS announces that OMB approved the collection of information requirements contained in the May 30, 2007, final rule under Control Number 0648-0566 with an expiration date of August 31, 2010. (73 *FR* 60191).

October 10, 2008 NMFS issued a final rule that notices effectiveness of reporting requirements of interactions that may occur between a CPS vessel and/or fishing gear and sea otters originally published on May 30, 2007 (see above). The May 30th final rule contained information collection requirements that at the time of publication had not yet been approved by OMB. The final rule stated that NMFS would publish a subsequent Federal Register notice announcing the effectiveness of those requirements. Therefore NMFS announces that OMB approved the collection of information requirements contained in the May 30, 2007, final rule under Control Number 0648-0566 with an expiration date of August 31, 2010. (73 *FR* 60191).

November 18, 2008 NMFS issued a final rule to implement the annual HG for Pacific mackerel in the EEZ off the Pacific coast for the fishing season of July 1, 2008, through June 30, 2009. The HG for the 2008–2009 fishing season is 40,000 mt. If this total is reached, Pacific mackerel fishing will be closed to directed harvest and only incidental harvest will be allowed at a 45 percent by weight incidental catch rate when landed with other CPS, except that up to one mt of Pacific mackerel can be landed without landing any other CPS. (73 *FR* 68362).

January 5, 2009. NMFS proposed a regulation to implement the annual harvest guideline (HG) for Pacific sardine in the U.S. exclusive economic zone (EEZ) off the Pacific coast for the fishing season of January 1, 2009, through December 31, 2009. This HG was proposed according to the regulations implementing the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) and established allowable harvest levels for Pacific sardine off the Pacific coast. The proposed initial HG for the 2009 fishing year was 65,732 mt and was proposed to be divided across the seasonal allocation periods in the following way: January 1-June 30, 22,006 mt was allocated for directed harvest with an incidental set-aside of 1,000 mt; July 1-September 14, 25,293 mt was allocated for directed harvest with an incidental set-aside of 1,000 mt; September 15-December 31, 11,933 mt was to be allocated for directed harvest with an incidental set-aside of 4,500 mt. If during any of

the seasonal allocation periods the applicable adjusted directed harvest allocation was projected to be taken, fishing would be closed to directed harvest and only incidental harvest would be allowed. (74 FR 252).

May 6, 2009. NMFS proposed a regulation to adjust the harvest specifications for Pacific sardine in the U.S. exclusive economic zone (EEZ) off the Pacific coast for the fishing season of January 1, 2009, through December 31, 2009. The proposed action increased the tonnage of Pacific sardine allocated for industry conducted research from 1200 metric tons (mt) to 2400 mt and decreases the second and third period directed harvest allocations by 750 mt and 450 mt, respectively. (74 FR 20897).

June 30, 2009. NMFS issued a final rule to adjust the harvest specifications for Pacific sardine in the U.S. exclusive economic zone (EEZ) off the Pacific coast for the fishing season of January 1, 2009, through December 31, 2009. This final rule increased the tonnage of Pacific sardine allocated for industry-conducted research from 1200 metric tons (mt) to 2400 mt and decreases the second and third period directed harvest allocations by 750 mt and 450 mt, respectively. (74 FR 31199).

July 13, 2009. NMFS issued a final rule to implement Amendment 12 to the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) which would provide protection for all species of krill off the West Coast (i.e., California, Oregon and Washington). This rule would prohibit the harvest of all species of krill by any fishing vessel operating in the Exclusive Economic Zone (EEZ) off the West Coast, and would also deny the use of exempted fishing permits to allow krill fishing (74 FR 33372).

July 17, 2009. NMFS prohibited directed fishing for Pacific sardine off the coast of Washington, Oregon and California. This action was necessary because the directed harvest allocation total for the second seasonal period (July 1– September 14) was projected to be reached by the effective date of the rule. From the effective date of the rule until September 15, 2009, Pacific sardine could only be harvested as part of the live bait fishery or incidental to other fisheries; the incidental harvest of Pacific sardine is limited to 20–percent by weight of all fish per trip. Fishing vessels had to be at shore and in the process of offloading at 12:01 am Pacific Daylight Time on date of closure. (74 FR 34700).

September 23, 2009. NMFS issued a temporary rule prohibiting directed fishing for Pacific sardine off the coasts of Washington, Oregon and California. This action was necessary because the directed harvest allocation total for the third seasonal period (September 15–December 31) was projected to be reached by the effective date of the rule. From the effective date of this rule until December 31, 2009, Pacific sardine could only be harvested as part of the live bait fishery or incidental to other fisheries; the incidental harvest of Pacific sardine was limited to 20–percent by weight of all fish per trip. Fishing vessels had to be at shore and in the process of offloading at 12:01 am Pacific Daylight Time on date of closure. (74 FR 48421)

September 29, 2009. NMFS issued a proposed regulation to implement the annual harvest guideline (HG) for Pacific mackerel in the U.S. exclusive economic zone (EEZ) off the Pacific coast. This HG is proposed according to the regulations implementing the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) and establishes allowable harvest levels for Pacific mackerel off the Pacific coast. The proposed total HG for the 2009–2010 fishing year was 10,000 metric tons (mt) and was proposed to be divided into a directed fishery HG of 8,000 mt and an incidental fishery of 2,000 mt. (74 FR 49845).

December 22, 2009. NMFS issued a temporary rule prohibiting the incidental harvest of Pacific sardine off the coasts of Washington, Oregon and California. This action was necessary because the incidental set aside for the third allocation period of the 2009 Pacific sardine season was reached. From the effective date of this rule until January 1, 2010, Pacific sardine can only be harvested as part of the live bait fishery. (FR 74 67986).

January 13, 2010. NMFS issued a proposed rule to implement annual harvest specifications for the 2010 sardine fishery off the U.S. West Coast. NMFS proposed a regulation to implement the annual harvest guideline (HG) and seasonal allocations for Pacific sardine in the U.S. exclusive economic zone (EEZ) off the Pacific coast for the fishing season of January 1, 2010, through December 31, 2010. This rule is proposed according to the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP). The proposed 2010 acceptable biological catch (ABC) or maximum HG is 72,039 mt. 5,000 mt of this 72,039 mt would initially be set aside for use under an Exempted Fishing Permit (EFP), if issued, leaving the remaining 65,732 mt as the initial commercial fishing HG. That HG would be divided across the seasonal allocation periods in the following way: January 1–June 30, 22,463 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; July 1–September 14, 25,861 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; September 15–December 31, 11,760 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt with an additional 4,000 mt set aside to buffer against reaching the ABC. (75 FR 1744).

March 10, 2010. NMFS issued the sardine Final Rule to implement the annual harvest specifications for the 2010 sardine fishery off the U.S. West Coast. The proposed allocation of the overall HG over three fishing periods, were identical to those proposed on January 13, 2010 (above). (75 FR 11068).

June 15, 2010. NMFS issued a temporary rule announcing the closure of the first period sardine fishery, effective at 12:01am Pacific Daylight Time June 12. From 12:01 am on the date of closure through June 30, 2010, Pacific sardine may be harvested only as part of the live bait fishery or incidental to other fisheries, with the incidental harvest of Pacific sardine limited to 30 percent by weight of all fish caught during a trip. (75 FR 33733).

July 22, 2010. NMFS issued a temporary rule announcing the closure of the second period sardine fishery, effective at 12:01am Pacific Daylight Time July 22. From 12:01 am on the date of closure through September 14, 2010, Pacific sardine may be harvested only as part of the live bait fishery or incidental to other fisheries, with the incidental harvest of Pacific sardine limited to 30 percent by weight of all fish caught during a trip. (75 FR 42610).

September 27, 2010. NMFS issued a temporary rule announcing the closure of the third period sardine fishery, effective at 12:01am Pacific Daylight Time September 24. From 12:01 am on the date of closure through December 31, 2010, Pacific sardine may be harvested only as part of the live bait fishery or incidental to other fisheries, with the incidental harvest of Pacific sardine limited to 30 percent by weight of all fish caught during a trip. (75 FR 59156).

January 27, 2011. NMFS issued a proposed rule on annual specifications and management measures for Pacific sardine, under the CPS FMP. The proposed 2011 maximum HG for Pacific sardine was 50,526 metric tons (mt), of which 4,200 mt was initially set aside for potential use under an Exempted Fishing Permit (EFP). The remaining 46,326 mt, constituting the initial commercial fishing HG, would be divided across the seasonal allocation periods in the following way: January 1–June 30: 16,214 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; July 1–September 14: 18,530 mt would be allocated for directed harvest with an

incidental set-aside of 1,000 mt; September 15– December 31: 11,582 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt, plus an additional 2,000 mt set aside to buffer against reaching the total HG. (76 FR 4854).

March 4, 2011. NMFS issued a temporary emergency rule to close first period directed sardine fishery, anticipating that the first period allocation of 15,214 metric tons would have been harvested by then. Under this rule, Pacific sardine could have been harvested only as part of the live bait fishery or incidental to other fisheries; and the incidental harvest of Pacific sardine was limited to 30-percent by weight of all fish caught per trip. The effective date was 12:01 a.m. March 5, 2011. (76 FR 11969).

May 25, 2011. The Final Rule implementing the closure of the first period directed sardine fishery (see above) was issued. (76 FR 30276).

June 28, 2011. NMFS issued a Proposed Rule to implement parts of proposed Amendment 13 to the CPS FMP, which is intended to ensure the FMP is consistent with advisory guidelines published in Federal regulations. NMFS also issued a request for comments, which were due by July 28, 2011. Amendment 13 revises the framework process that was in place to set and adjust fishery specifications and management measures and modifies this framework to include the specification new reference points such as annual catch limit (ACL).

November 14, 2011. NMFS issued a final rule to implement parts of Amendment 13 to the CPS FMP, which is intended to ensure the FMP is consistent with advisory guidelines published in Federal regulations. Amendment 13 revised the framework process that was in place to set and adjust fishery specifications and management measures and modified this framework to include the specification new reference points such as annual catch limit (ACL). (76 FR 70362).

April 3, 2012. NMFS issued a proposed rule on annual specifications and management measures for Pacific sardine, under the CPS FMP. The proposed 2012 maximum HG for Pacific sardine was 109,409 metric tons (mt), of which 3,000 mt was initially set aside for potential use under an Exempted Fishing Permit (EFP) and 9,000 mt for potential harvest by the Quinault Indian Nation. The remaining 97,409 mt, constituting the initial commercial fishing HG, would be divided across the seasonal allocation periods in the following way: January 1–June 30: 34,093 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; July 1–September 14: 38,964 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; September 15–December 31: 24,352 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt. (77 FR 19991).

April 12, 2012. NMFS issued a proposed rule on annual specifications and management measures for Pacific mackerel, under the CPS FMP. The proposed 2011-2012 maximum HG for Pacific mackerel was 40,514 metric tons (mt), and the ACT was 30,386 mt. If the ACT was attained, the directed fishery would close, and the difference between the ACL and the ACT (10,128 mt) would be reserved as a set aside for incidental landings in other CPS fisheries and other sources of mortalities. (77 FR 21958).

August 8, 2012. NMFS issued a final rule on annual specifications and management measures for Pacific sardine, under the CPS FMP. The final 2012 maximum HG for Pacific sardine was 109,409 metric tons (mt), of which 3,000 mt was initially set aside for potential use under an Exempted Fishing Permit (EFP) and 9,000 mt for potential harvest by the Quinault Indian Nation. The remaining 97,409 mt, constituting the initial commercial fishing HG, would be divided across the seasonal allocation periods in the following way: January 1–June 30: 34,093 mt would be allocated

for directed harvest with an incidental set-aside of 1,000 mt; July 1–September 14: 38,964 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; September 15– December 31: 24,352 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt. (77 FR 47318).

June 18, 2012. NMFS issued a final rule on annual specifications and management measures for Pacific mackerel, under the CPS FMP. The final 2011-2012 maximum HG for Pacific mackerel was 40,514 metric tons (mt), and the ACT was 30,386 mt. If the ACT is attained, the directed fishery would close, and the difference between the ACL and the ACT (10,128 mt) would be reserved as a set aside for incidental landings in other CPS fisheries and other sources of mortalities. (77 FR 36192).

August 20, 2012. NMFS issued a temporary rule announcing the closure of the second period sardine fishery, effective at 12:01 am Pacific Daylight Time August 22. From 12:01 am on the date of closure through September 14, 2012, Pacific sardine may be harvested only as part of the live bait fishery or incidental to other fisheries, with the incidental harvest of Pacific sardine limited to 40 percent by weight of all fish caught during a trip. (78 FR 51097).

August 23, 2012. NMFS issued a temporary rule announcing the closure of the second period sardine fishery, effective at 12:01 am Pacific Daylight Time August 23. From 12:01 am on the date of closure through September 14, 2012, Pacific sardine may be harvested only as part of the live bait fishery or incidental to other fisheries, with the incidental harvest of Pacific sardine limited to 30 percent by weight of all fish caught during a trip. (77 FR 50952).

December 7, 2012. NMFS issued a proposed rule on annual specifications and management measures for Pacific mackerel, under the CPS FMP. The proposed 2012-2013 maximum HG for Pacific mackerel was 40,514 metric tons (mt), and the ACT was 30,386 mt. If the ACT was attained, the directed fishery would close, and the difference between the ACL and the ACT (10,128 mt) would be reserved as a set aside for incidental landings in other CPS fisheries and other sources of mortalities. (77 FR 73005).

January 31, 2013. NMFS issued a proposed rule on annual specifications and management measures for Pacific sardine, under the CPS FMP. The proposed 2013 maximum HG for Pacific sardine was 66,495 metric tons (mt), of which 3,000 mt was initially set aside for potential use under an Exempted Fishing Permit (EFP) and 6,000 mt for potential harvest by the Quinault Indian Nation. The remaining 57,495 mt, constituting the initial commercial fishing HG, would be divided across the seasonal allocation periods in the following way: January 1–June 30: 19,123 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; July 1–September 14: 22,998 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; September 15– December 31: 12,374 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt. (78 FR 6794).

March 26, 2013. NMFS issued a final rule on annual specifications and management measures for Pacific mackerel, under the CPS FMP. The final 2012-2013 maximum HG for Pacific mackerel was 40,514 metric tons (mt), and the ACT was 30,386 mt. If the ACT was attained, the directed fishery would close, and the difference between the ACL and the ACT (10,128 mt) would be reserved as a set aside for incidental landings in other CPS fisheries and other sources of mortalities. (78 FR 18249).

June 17, 2013. NMFS issued a final rule on annual specifications and management measures for Pacific sardine, under the CPS FMP. The final 2013 maximum HG for Pacific sardine was

66,495 metric tons (mt), of which 3,000 mt was initially set aside for potential use under an Exempted Fishing Permit (EFP) and 6,000 mt for potential harvest by the Quinault Indian Nation. The remaining 57,495 mt, constituting the initial commercial fishing HG, would be divided across the seasonal allocation periods in the following way: January 1–June 30: 19,123 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; July 1–September 14: 22,998 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt; September 15–December 31: 12,374 mt would be allocated for directed harvest with an incidental set-aside of 1,000 mt. (78 FR 36117).

December 23, 2013. NMFS issued a proposed rule to change the starting date of the annual Pacific sardine fishery from January 1 to July 1. This would change the fishing season from one based on the calendar year to one based on a July 1 through the following June 30th schedule. No other changes to the annual allocation structure are proposed and the existing seasonal allocation percentages would remain as specified in the FMP; as would the current quota roll-over provisions. (78 FR 77413).

February 28, 2014. NMFS issued a final rule to change the starting date of the annual Pacific sardine fishery from January 1 to July 1. This changed the fishing season from one based on the calendar year to one based on a July 1 through the following June 30th schedule. No other changes to the annual allocation structure were made and the existing seasonal allocation percentages remain as specified in the FMP; as do the current quota roll-over provisions. (78 FR 11343).

February 6, 2015. NMFS issued a final rule on annual specifications and management measures for Pacific mackerel, under the CPS FMP. The final 2014-2015 HG for Pacific mackerel was 29,170 mt, with an ACT of 24,170 mt. The directed fishery would be closed if the ACT was attained, with the remaining 5,000 mt representing a set aside for incidental landings in other CPS fisheries and other sources of mortality. (80 FR 6662).

March 23, 2015. NMFS announced the approval of Amendment 14 to the CPS FMP, specifying an estimate of MSY for the NSNA. At its November 2013 meeting, the Council adopted an FMSY of 0.3 as the best MSY estimate for NSNA, and voted to include this reference point as part of Amendment 14 to the CPS FMP. This action was based on data compiled by the CPSMT and recommended by the Council's SSC.

June 29, 2015. NMFS issued a final rule to implement annual management measures and harvest specifications to establish the allowable catch levels of Pacific sardine in waters off the U.S. West Coast. The annual biomass estimate of 96,688 mt fell below the Cutoff value of 150,000, thereby precluding directed non-tribal harvest. NMFS set an ACL of 7,000 mt and an ACT of 4,000, to account for incidental harvest, tribal harvest, live bait, and other minor sources of mortality. NMFS implemented an OFL of 13,227 mt, and ABC of 12,074 mt, and the following conservation measures: incidental catch shall not exceed 40 percent by weight, until 1,500 mt of sardine are harvested, at which time the incidental allowance will become 30 percent. When 4000 mt has been harvested, the percent allowance will be reduced to five percent for the remainder of the fishing year. The Council also adopted a two mt incidental per landing allowance in non-CPS fisheries.

June 23, 2016. NMFS issued a proposed rule on annual specifications and management measures for Pacific mackerel under the CPS FMP. The proposed 2016-2017 HG for Pacific mackerel was 21,161 mt, with an ACT of 20,161 mt. The directed fishery would be closed if the ACT was attained, with the remaining 1,000 mt representing a set aside for incidental landings in other CPS fisheries and other sources of mortality (81FR40844).

June 24, 2016. NMFS issued a final rule to implement annual harvest specifications and management measures to establish the allowable catch levels of Pacific sardine in waters off the U.S. West Coast for the 2016-2017 fishing year. The annual biomass estimate of 106,137 mt fell below the Cutoff value of 150,000mt, thereby precluding directed non-tribal harvest. NMFS set an ACL of 8,000 mt to account for incidental harvest, tribal harvest, live bait, and other minor sources of mortality. NMFS implemented an OFL of 23,085 mt, an ABC of 19,236 mt and the following conservation measures: incidental catch shall not exceed 40 percent by weight until 2,000 mt of sardine are harvested, at which time the incidental allowance will become 30 percent. When 5,000 mt has been harvested, the percent allowance will be reduced to 10 percent for the remainder of the fishing year (81FR41251).

August 25, 2016. NMFS issued a final rule to implement annual specifications and management measures for Pacific mackerel under the CPS FMP. The 2016-2017 HG for Pacific mackerel was 21,161 mt, with an ACT was 20,161 mt. The directed fishery would be closed if the ACT was attained, with the remaining 1,000 mt representing a set aside for incidental landings in other CPS fisheries and other sources of mortality (81FR57489).

June 30, 2017. NMFS issued a final rule to implement annual harvest specifications and management measures to establish the allowable catch levels of Pacific sardine in waters off the U.S. West Coast for the 2017-2018 fishing year. The annual biomass estimate of 86,586 mt fell below the Cutoff value of 150,000mt, thereby precluding directed non-tribal harvest. NMFS set an ACL of 8,000 mt to account for incidental harvest, tribal harvest, live bait, and other minor sources of mortality. NMFS implemented an OFL of 16,957 mt, an ABC of 15,497 mt and the following conservation measures: incidental catch shall not exceed 40 percent by weight until 2,000 mt of sardine are harvested, at which time the incidental allowance will become 20 percent. When 5,000 mt has been harvested, the percent allowance will be reduced to 10 percent for the remainder of the fishing year (82FR29777).

August 1, 2017. NMFS issued a final rule changing the management framework for Pacific mackerel so harvest specifications are set biennially instead of on an annual basis (82FR35687).

November 28, 2017. NMFS issued a proposed rule on annual specifications and management measures for Pacific mackerel under the CPS FMP. The proposed 2017-2018 HG for Pacific mackerel was 26,923 mt, with an ACT of 25,293 mt. The proposed 2018-2019 HG for Pacific mackerel was 23,840 mt with an ACT of 22,840 mt. The directed fishery would be closed if the ACT was attained in either fishing year, with the remaining 1,000 mt representing a set aside for incidental landings in other CPS fisheries and other sources of mortality (82FR56204).

January 9, 2018. NMFS issued a proposed rule to amend the regulations governing the fisheries for CPS off the West coast to include ACLs for certain monitored finfish stocks (jack mackerel, central population of northern anchovy, northern subpopulation of northern anchovy) under the CPS FMP. A final rule published October 26, 2016, established these ACLs for the 2017 fishing year only; the purpose of this proposed rule was to codify these ACLs so they would remain effective until revised through some future rulemaking (83FR1009).

February 14, 2018. NMFS published a final rule implementing Amendment 16, which allows for very small amounts of directed, non-live bait fishing (referred to as “minor directed fishing”) on CPS finfish to occur when a fishery is otherwise closed to directed fishing. Prior to this amendment, when directed fishing was closed, a small sector of the CPS fishery that is not part of the primary commercial directed fishery was precluded from landing even minor amounts because this activity does not fall under the existing exemptions for incidental harvest or for harvesting CPS to be sold

as live bait. This rule allows this sector to continue directed fishing after other directed fisheries are closed, unless otherwise specified in a closure notice published by NMFS or if an applicable ACL is anticipated to be exceeded. To prevent exploitation of this rule to make large aggregate harvests, “minor directed fishing” is not allowed to exceed landings of 1 mt per day per vessel or person or one fishing trip per day by any vessel. The purpose of this rule is to provide greater flexibility to small fishing operations, while continuing to conserve the target CPS fish stocks. The Notice of Availability for Amendment 16 (82FR29777) was published on November 6, 2018, and the proposed rule to implement Amendment 16 (82FR55551) was published on November 22, 2018.

June 21, 2018. NMFS issued a final rule to implement biennial specifications and management measures for Pacific mackerel under the CPS FMP. The 2017-2018 HG for Pacific mackerel was 26,293 mt, with an ACT was 25,293 mt. The 2018-2019 HG for Pacific mackerel was 23,840 mt with an ACT of 22,840 mt. The directed fishery would be closed if the ACT was attained in either fishing year, with the remaining 1,000 mt representing a set aside for incidental landings in other CPS fisheries and other sources of mortality (83FR28783).

June 25, 2018. NMFS issued a final rule to implement annual harvest specifications and management measures to establish the allowable catch levels of Pacific sardine in waters off the U.S. West Coast for the 2018-2019 fishing year. The annual biomass estimate of 52,065 mt fell below the Cutoff value of 150,000mt, thereby precluding directed non-tribal harvest. NMFS set an ACL of 7,000 mt to account for incidental harvest, tribal harvest, live bait, and other minor sources of mortality. NMFS implemented an OFL of 11,324 mt, an ABC of 9,436 mt and the following conservation measures: incidental catch shall not exceed 40 percent by weight until 2,500 mt of sardine are harvested, at which time the incidental allowance will become 20 percent for the remainder of the fishing year (83FR29461).

TABLE 2-3. Coastal pelagic species 2017 federal limited entry permit vessel listing⁴ with calculated gross tonnage (GT) values for each vessel. (Page 1 of 2)

Vessel Name	Permit No.	Coast Guard Number/ Vessel ID	Calculated Vessel GT/1	Permit GT Endorsement	Permit Transfer Allowance/2
PROVIDER	1	572344	70.1	63.8	70.2
MERVA W	2	532023	82.9	43.5	47.9
SHEYMA	3	1104597	92.6	98.4	108.2
BARBARA H	4	643518	121.1	121.1	133.2
KAREN MARIE	5	593871	64.8	82.0	90.2
CACHALOT	6	654091	106.8	98.1	107.9
SAN PEDRO PRIDE	7	549506	182.5	160.7	176.8
FERRIGNO BOY	8	602455	139.3	139.3	153.2
KING PHILIP	9	1061827	156.9	156.9	172.6
SEA WAVE	10	951443	115.0	206.9	227.6
UNASSOCIATED	11	---	---	56.2	61.8
OPTIMU	12	1244552	99.0	114.8	126.3
OCEAN ANGEL iii	13	OR108ADL	82.0	141.9	156.1
TRITON	14	CF7218UH	92.2	89.3	98.2
SAINT JOSEPH	15	633570	84.4	84.4	92.8
----	16	---	---	137.5	151.3
RISING SPIRIT	17	WN0416RK	60.2	61.9	68.1
ST KATHERINE	18	542513	59.9	63.8	70.2
SEA PEARL	19	CF7336UH	97.3	124.6	137.1
UNASSOCIATED	20	---	---	111.9	123.1
SPERANZA MARIE	21	643138	77.0	77.0	84.7
OCEAN ANGEL IV	22	OR868ADK	74.1	63.5	69.9
MONA LISA	23	28853288532	34.3	97.7	107.5
OCEAN ANGEL I	24	584336	63.8	63.8	70.2
SEA DIAMOND	25	509632	68.1	68.1	74.9
MANANA	26	253321	26.7	23.8	26.2
INVINCIBLE	27	1244073	101.4	55.5	61.1
MINEO BROS. ^{/3}	28	CF0163TF	104.0	73.4	80.7
INVINCIBLE	29	1244073	101.4	42.0	46.2
MINEO BROS. ^{/3}	30	CF0163TF	104.0	40.8	44.9
SEA VENTURE	31	WN4232NW	118.2	340.2	374.2
ELDORADO	32	690849	79.1	54.9	60.4
SEA PRINCESS	33	630024	81.1	194.0	213.4
KAREN SUE	34	1211776	116.3	125.6	138.2
ENDURANCE	35	613302	42.0	42.0	46.2
EL DORADO	36	690849	79.1	27.0	29.7
CALOGERA A	37	984694	85.7	85.3	93.8
EILEEN	38	252749	119.9	119.9	131.9
PAMELA ROSE	39	693271	61.9	61.9	68.1
NEW STELLA	40	598813	71.8	71.8	79.0
TRAVELER	41	661936	44.0	44.0	48.4
LUCKY STAR	42	295673	46.2	41.5	45.7
OCEAN ANGEL II	43	622522	176.6	149.5	164.5
CRYSTAL SEA	44	1061917	142.1	137.0	151.7
TRIONFO	45	625449	96.8	79.2	87.1
RELENTLESS	46	CF2009TK	78.3	85.0	93.5
HEAVY DUTY	47	655523	84.4	84.4	92.8
NATALIE ROSE	48	685870	107.2	107.2	117.9
LADY J	49	647528	60.2	40.7	44.8
SYDNEY MORGAN	50	1225596	50.1	50.2	55.2
BUENA VENTURA	51	CF159VH	55.6	72.3	79.5

TABLE 2-3. Coastal pelagic species 2017 federal limited entry permit vessel listing⁴ with calculated gross tonnage (GT) values for each vessel. (Page 2 of 2)

Vessel Name	Permit No.	Coast Guard Number/ Vessel ID	Calculated Vessel GT ¹	Permit GT Endorsement	Permit Transfer Allowance ²
ANTOINETTE W	52	606156	37.0	37.0	40.7
CAPE BLANCO	53	648720	158.2	158.2	174.0
ERIN CARROLL	54	WN8521SF	123.7	126.5	139.2
UNASSOCIATED	55	---	---	40.4	44.4
KATHY JEANNE	56	507798	86.3	86.3	95
MERVA W	57	532023	82.9	54.4	59.8
ALICE ANNE	58	WN3306SF	75.5	91.1	100.2
UNASSOCIATED	59		10.6		
PACIFIC KNIGHT	60	OR155ABZ	63.1	63.4	69.7
ALEUTIAN SPIRIT	61	621542	63.8	59.9	65.9
UNASSOCIATED	62	---	---	39.7	43.7
EMERALD SEA	63	626289	86.7	86.3	94.9
ANGEL'S GATE	64	CF1927VH	53.7	54.5	60.0
BOUNTY	65	629721	26.4	26.4	29.0

¹ Vessel Gross Tonnage $GT=0.67(\text{Length}*\text{Breadth}*\text{Depth})/100$. See 46 CFR 69.209.

² Maximum transfer allowance is based on permit GT + 10%.

³ Vessel Mineo Bros is associated with permits 28 and 30

⁴ Several CPS permit transfers occurred in 2013. The above list includes vessels with permits at the end of December 2013 that received renewal permit applications. Vessels that had permits earlier in the year but transferred their permit to other vessels were not included

TABLE 2-4. Vessel age and calculated gross tonnage (GT) for the initial and current Federal limited entry fleet.

	Initial Fleet	Current Fleet
Number of Vessels	65	55
Average Vessel Age	35 years	34 years
Range of Ages	12 to 66 years	4 to 71 years
Average GT	71.3	86.2
Range of GT	12.8 to 206.9	10.6 to 182.5
Sum of Fleet GT	4,635.9	5,105.4
Capacity Goal (GT) ^{1/}	---	5,650.9
Transferability Trigger	---	5,933.5

^{1/} Established in Amendment 10 to the CPS FMP.

TABLE 2-5. Oregon state limited entry sardine permit vessels landing sardine.
The directed sardine fishery has been closed since 2015. A table of Oregon LE permits will be included when the directed sardine fishery reopens.

TABLE 2-6. Washington state limited entry sardine licenses.
The directed sardine fishery has been closed since 2015. A table of Washington LE permits will be included when the directed sardine fishery reopens.

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Table 4-1. Preliminary catch summary for vessels targeting Pacific sardine from NMFS-SWR coastal pelagic species pilot observer program, 2004-2008.

Target species - Pacific sardine					
Species	Target Catch	Incidental Catch	Bycatch Returned		
			Alive	Dead	Unknown
Sardine	1495 mt		80 mt	100 lbs	100 lbs
Anchovy		9 mt	82	1300 lbs	
Bat Ray		1	143	14	1
Bat Star			5		
CA Barracuda		2	1	3	
CA Halibut		9		4	
Giant Sea Bass			2		
Jacksmelt		1			
Jack Mackerel		2 mt			
Midshipman			1	13	1
Moon Jelly		1			
Pacific Bonito		10 lbs			
Pacific Butterfish		3			
Pacific Electric Ray			2		
Pacific Mackerel		1 mt	100 lbs		
Pacific Tomcod		1			
Pompano		167			
Queenfish		49			
Sanddab			25 lbs	10 lbs	
Scorpionfish		1			1
Sculpin				1	3
Shovelnose Guitarfish			1		
Spanish Mackerel		100 lbs			
Squid		1 mt	2 mt		
Starry Flounder			2		
Stingray		2			
Thornback Ray			2		
Unid. Crab			1		1
Unid. Croaker		40			
Unid. Flatfish		78	8	130	12
Unid. Jellyfish		3	3		
Unid. Mackerel		8 mt	12 mt		
Unid. Octopus					2
Unid. Ray					2
Unid. Rockfish		2	1		
Unid. Seastar			41	135	1
Unid. Scorpionfish/Sculpin					1
Unid. Shark				2	
Unid. Skate				3	
Unid. Smelt		2			
Unid. Surf Perch		1			
Unid. Turbot				60	

TABLE 4-1 (continued). Preliminary catch summary for vessels targeting Pacific sardine from NMFS-SWR coastal pelagic species pilot observer program, 2004-2008.

Species	Target Catch	Incidental Catch	Bycatch Returned		
			Alive	Dead	Unknown
White Croaker		31 lbs	50 lbs		
Yellowfin Croaker		10 lbs			
CA Sea Lion			49		
Harbor Seal			1		
Unid. Gull			3	2	4

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TABLE 4-2. Preliminary catch summary for vessels targeting market squid from NMFS-SWR coastal pelagic species pilot observer program, 2004-2008.

Target species - Squid					
Species	Target Catch	Incidental Catch	Bycatch Returned		
			Alive	Dead	Unknown
Squid	1274 mt		28 mt	350 lbs	2 mt
Anchovy		100 lbs	120 lbs		
Jack Mackerel		2 mt	18 lbs	2 lbs	
Pacific Mackerel		20 mt	20 mt	180 lbs	1 lb
Sardine		12 mt	13 mt	1077 lbs	3 lbs
Spanish Mackerel		20 lbs			
Bat Ray			53		1
Bat Star			1		
Blue Shark			2		
Common Mola			1		
Pelagic Stingray			60		
Pacific Butterfish		19			1
Sunstar		30	4		
Squid Eggs					505 lbs
Lobster			3		
Brittle Star				3000	
Unid. Batfish				2 lbs	
Unid. Crab		1	1		93
Unid. Croaker		3	2	16 lbs	
Unid. Flatfish		1	1	6	2
Unid. Jellyfish		4			
Unid. Mackerel		2 lbs	102 lbs		
Unid. Octopus		1			
Unid. Rockfish		1	1	4	
Unid. Ray			4		1
Unid. Sanddab		4	3		4
Unid. Seastar		1			
Unid. Seaslug					21
Unid. Scorpionfish		1			
Unid. Surfperch				3	
Unid. Skate		3		1	
Unid. Smelt		49			
Unid. Stingray		9	17		
Unid. Shark					1
Thresher Shark		1			
CA Sea Lion			98		
Harbor Seal			3		
Common Dolphin				1	
Unid. Gull			16	1	

TABLE 4-3. Preliminary catch summary for vessels targeting Pacific mackerel from NMFS-SWR coastal pelagic species pilot observer program, 2004-2008.

Target species - Pacific mackerel					
Species	Target Catch	Incidental Catch	Bycatch Returned		
			Alive	Dead	Unknown
Pacific Mackerel	40 mt	16 mt			
Bat Ray			2		
CA Yellowtail			1		
Midshipman			1		
Sardine					
Sea Cucumber			5		
Unid. Crab			1		
Unid. Flatfish					3
Unid. Jellyfish					3
Unid. Shark					1

TABLE 4-4. Preliminary catch summary for vessels targeting northern anchovy and northern anchovy/Pacific sardine from NMFS-SWR coastal pelagic species pilot observer program, 2004-2008.

Target species - Anchovy and Anchovy/Sardine								
Species	Target Catch	Incidental Catch	Bycatch Returned					
			Alive	Dead	Unknown			
Anchovy	373 mt	21 mt	2 mt	1 mt	5			
Sardine			2 mt					
Bat Ray			4					
CA Lizardfish			4					
Kelp Bass			1					
Midshipman								
Pacific Bonito			20 lbs					
Pacific Mackerel			2					
Queenfish			50 lbs			11 lbs		
Round Stingray						1		
Sculpin			2					
Spiny Dogfish						1		
Unid. Croaker			20			45		
Unid. Flatfish			10					
Unid. Hake			4					
Unid. Seastar						1		
Unid. Smelt			2					
Unid. Turbot						1	1	20
White Croaker			50 lbs			35 lbs		
Yellowfin Croaker			50 lbs			10 lbs		
CA Sea Lion						5		
Sea Otter						1		

Table 4-5. Percent frequency by occurrence of incidental catch in sampled Pacific sardine, Pacific mackerel, and Northern anchovy landings, by California ports, 2013-2017. Table values represent proportion of each incidental species out of total incidental observed each year. (Collection of Northern anchovy samples began in 2014).

Common Name	All Ports Combined					Monterey/Moss Landing					Ventura/Port Hueneme/Terminal Island/San Pedro				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Finfish															
Anchovy, northern	0.9	7.9	0.2			3.6	12.1	0.3			0.4	1.1		0.5	
Barracuda, California		0.6	0.7	0.3	2.4		0.2	0.9				1.1		1.1	3.1
Bass, barred sand	0.3	0.1	0.2	0.6							0.4	0.4	0.9	0.5	
Bass, kelp	4.4	1.9	0.2	0.3	2.4						5.3	4.9	0.9		3.1
Bass, striped														0.5	
Blacksmith	0.3	0.1		0.3							0.4	0.4		1.6	
Bonito, Pacific	3.8	0.4	1.3	1			0.5	0.3			4.6	0.4	4.3	4.4	3.1
Butterfish	1.5	3.2	6.7	4.3		3.6	4.8	8.2	4.3		1.1	0.8	2.6		
Cabezon															
Combfish, longspine														0.5	
Corbina, California				0.3											
Croaker, unspecified	0.3										0.4			2.7	
Croaker, white	0.9	1.2	0.4	2.3		5.4	1.4	0.3	1.7			0.8	0.9	2.2	
Croaker, yellowfin		0.4	0.2	1.3			0.5					0.4	0.9	1.1	
Cusk eel, basketweave		0.3	0.4	0.6				0.3				0.8	0.9		
Cusk-eel, spotted															
Eel, unspecified			0.2					0.3							
Eel, wolf (wolf-eel)															
Eel, yellow snake															
Fish, unspecified															
Flatfish, unspecified	0.6	0.6	0.4		2.4		1	0.6			0.7			0.5	3.1
Flounder, starry		0.1		0.3			0.2								
Flounder, unspecified															
Flyingfish	0.3	0.1									0.4	0.4			
Greenling, kelp		0.1										0.4			
Grunion, California															
Hagfish															
Halfmoon			0.4					0.3					0.9	3.8	
Halibut, California	1.8	0.4	0.9	3		1.8		0.3	1.7		1.8	1.1	2.6		
Herring, Pacific				1.3					3.4					3.8	
Jacksmelt	0.9	0.1	0.7	3.3	4.9	5.4	0.2	0.9	2.6						
Kelpfish, giant	0.6	0.1									0.7	0.4		0.5	
Lingcod				1					1.7					4.4	
Lizardfish, California	1.2	2.3	2.2	3.6		5.4	3.3	2.4	2.6		0.4	0.8	1.7	0.5	
Mackerel, jack	13.5	4.5	9.4	2			0.2	12.7	4.3		16.1	11.3		6.6	6.3
Midshipman, plainfin	0.6	0.6	2.5	13			1	2.1	23.3		0.7		3.5		
Midshipman, specklefin	1.8	0.7	0.7	0.6					1.7		2.1	1.9	2.6	1.1	
Midshipman, unspecified				0.6											
Opaleye															

Perch-like, unspecified			0.2					0.3						
Pipefish, bay													0.5	
Pipefish, kelp		0.1		0.3							0.4			
Poacher, unspecified														
Queenfish			0.7					0.6				0.9		
Rockfish, chilipepper		0.4	0.2				0.7	0.3					0.5	
Rockfish, unspecified		0.1		0.3			0.2							
Salema														
Salmon, Chinook														
Sanddab, longfin		0.1		0.3					0.9		0.4			
Sanddab, Pacific	5	6.1	8.1	2		7.1	6.4	9.7	5.2		4.6	5.7	3.5	
Sanddab, speckled	0.3	0.9				1.8	1.4							
Sanddab, unspecified			0.4					0.6						6
Scorpionfish, California	2.6	3.2	1.8	9.7					15.5		3.2	8.3	7	1.1
Sculpin, pithead				0.6										
Sculpin, roughback														
Sculpin, staghorn	0.6		0.9			3.6		1.2						
Sculpin, unidentified		0.1					0.2							
Sculpin, yellowchin														
Seabass, giant (black)														
Shad, American			0.2					0.3						
Sheephead, California		0.1									0.4			
Silversides														
Smelt, surf		0.3									0.8			
Smelt, true					2.4									3.1
Snapper, Mexican														
Sole, C-O	0.9	0.7	0.2								1.1	1.9	0.9	
Sole, English		0.1	0.2				0.2	0.3						
Sole, fantail	1.8	0.4	0.2	0.3					0.9		2.1	1.1	0.9	1.1
Sole, petrale	0.3		0.2	0.6				0.3			0.4			
Sole, rock														
Sole, sand	1.5	0.4				8.9	0.7							
Sole, slender														
Sole, unspecified														
Sunfish, ocean		0.1					0.2							
Surfperch, barred				0.3					0.9					
Surfperch, black	0.6			0.3					0.9		0.7			
Surfperch, kelp														
Surfperch, pink														
Surfperch, rainbow														
Surfperch, rubberlip	0.3	0.1									0.4	0.4		
Surfperch, shiner	0.9	0.4	0.4				0.2	0.3			1.1	0.8	0.9	
Surfperch, unspecified	0.6	0.1	0.2	0.3	2.4		0.2		0.9		0.7		0.9	3.1
Surfperch, walleye				0.6					1.7					
Tonguefish		0.3	0.2				0.5	0.3						3.3

Topsmelt				2.6					1.7					2.2	
Turbot, curlfin	0.3	0.9	0.2	1.3		1.8	1.4	0.3							
Turbot, diamond				0.6					1.7					1.6	
Turbot, hornyhead	4.4	2.2	1.3	1		1.8	0.2	0.3			4.9	5.3	4.3	2.2	
Turbot, spotted	0.6			2					1.7		0.7			2.2	
Turbot, unspecified	0.6	0.3	0.2	1.3			0.5	0.3			0.7				
Whiting, Pacific		0.7						1.2							
Total % Freq. Incidents	54.5	44.8	54.9	65.9	16.9	50	40	57.5	79.3		55.4	52.5	46.4	57.4	24.9
Elasmobranchs															
Guitarfish, shovelnose				0.3										0.5	
Ratfish, spotted															
Ray, bat	1.2	0.1	1.8	4.6		1.8	0.2	1.2	3.4		1.1		3.5	5.5	
Ray, California butterfly	0.3		0.4	1							0.4		1.7	1.6	
Ray, Pacific electric	1.5	4.2	4.9	1.3		3.6	6.7	6.4	3.4		1.1	0.4	0.9		
Ray, unspecified		0.1	0.2				0.2	0.3							
Shark, brown smoothhound															
Shark, gray smoothhound															
Shark, horn	0.3	0.7	0.2	0.6	2.4						0.4	1.9	0.9	1.1	3.1
Shark, leopard		0.3		0.3			0.2					0.4		0.5	
Shark, Pacific angel	1.5	0.6	0.7		2.4						1.8	1.5	2.6		3.1
Shark, pelagic thresher															
Shark, smooth hammerhead															
Shark, spiny dogfish															
Shark, unspecified															
Skate, big	0.3					1.8									
Skate, California	0.9	0.1	0.4					0.3			1.1	0.4	0.9		
Skate, long-nosed				0.3										0.5	
Skate, thornback	2.1	0.9	1.1	2	2.4	5.4		0.6	0.9		1.4	2.3	2.6	2.7	3.1
Skate, unspecified		0.1	0.2	0.3				0.2					0.9	0.5	
Stingray, round		0.3	0.4	2								0.8	1.7	3.3	
Total % Freq. Incidents	7.9	7.6	8.5	13	7.2	7	7.6	6.8	7.6		7	7.5	14.4	16.2	59.1
Invertebrates & Plants															
Algae, marine			1.6					0.5	2.1						
Bryozoan															
Crab shells	0.6		0.7	0.3		1.8		0.9	0.9		0.4				
Crab, box															
Crab, decorator		3.5		0.6										1.1	
Crab, Dungeness	1.2		1.3	0.3		7.1	5.5	1.8	0.9			0.4			
Crab, globe	0.6										0.7				
Crab, rock unspecified	0.3	0.3		0.3		1.8								0.5	
Crab, sheep	2.3			1					0.9		2.8	0.8		1.1	
Crab, slender															
Crab, spider		1.9													
Crab, swimming	1.2	0.6	1.1	4	2.4		0.2				1.4	4.5	4.3	6.6	3.1
Crab, unspecified	0.9	1	2.2	0.3				1.2	0.9		1.1	1.5	5.2		

Eelgrass			1.6		2.4		1	0.3				1.1	5.2		3.1
Gorgonians (sea fans)			0.4										1.7		
Invertebrate, unspecified		6.4													
Jellyfish	0.6	11.8	1.6	0.3		3.6	10.5	2.1	0.9						
Kelp	11.4	0.6	16	5		5.4	9.3	15.2	0.9		12.6	15.8	18.3	7.7	12.5
Kelp, feather boa		0.4	0.9	0.3			1	1.2	0.9						
Lobster, California spiny	1.2			0.3							1.4	1.1		0.5	
Nudibranch		1													
Octopus, unspecified	3.8		0.4	1		8.9	0.7	0.3			2.8	1.5	0.9	1.6	
Pleurobranch		0.3													
Prawn, ridgeback		0.4		2.6			0.5		0.9					3.8	
Prawn, spot		1.6					0.5					0.4			
Salps		1.5	0.7					0.9				4.2			
Sea cucumber	0.6		0.4				1.7				0.7	1.1	1.7		
Sea pansy															
Sea stars	1.2		0.2	0.3		3.6		0.3			0.7			0.5	
Shrimp, black-spotted bay		0.1	0.2	0.3				0.3	0.9						
Shrimp, unspecified	0.3		3.1	0.3				2.7			0.4	0.4	4.3	0.5	
Snail, top															
Snail, unspecified		0.3													
Sponge, unspecified							0.5								
Squid, jumbo		15													
Squid, market	11.4		11.2	3	7.3	5.4	20	14.8	5.2		12.6	7.2	0.9	1.6	9.4
Squid, market (Egg Cases)															
Surfgrass		0.4													
Tunicates			1.3	0.3			0.7	1.8						0.55	
Turkish Towel															
Total % Freq. Incidents	37.5	47.6	36.4	21.1	12.1	37.5	53.4	35.7	12.9	0	37.5	40	39.2	26.2	28.1
Total All Incidents	56	685	551	299	41	285	420	426	116	9	341	265	125	183	32
Total Observed Landings	7	100	162	72	47	110	24	108	25	23	118	76	54	47	24

Table 4-6. Incidental catch reported on California landing receipts with greater than fifty percent market squid (by tonnage per landing) from the 2013-2014 through 2017-2018 season for round haul gear.

Common Name	2013 - 2014		2014 - 2015		2015 - 2016		2016 - 2017		2017-2018	
	Number of Landings	Metric Tons	Number of Landings	Metric Tons	Number of Landings	Metric Tons	Number of Landings	Metric Tons	Number of Landings	Metric Tons
Anchovy, northern	4	5	1	0	5	136	5	2	11	16
Bonito, Pacific	0	0	0	0	1	5	1	0	2	1
Mackerel, jack	29	27	33	21	45	61	43	58	35	21

Mackerel, Pacific	66	274	154	359	126	348	140	512	195	230
Sardine, Pacific	71	403	46	50	27	23	102	89	130	152

TABLE 4-7. Percent frequency by occurrence of bycatch in observed loads of California market squid by California port, 2013-2017. Table values represent proportion of each incidental species out of total incidental observed each year.

Comm on Name	Total All Ports					San Pedro/Terminal Island					Ventura/Port Hueneme					Monterey/Moss Landing				
	20 13	20 14	20 15	20 16	20 17	20 13	20 14	20 15	20 16	20 17	20 13	20 14	20 15	20 16	20 17	20 13	20 14	20 15	20 16	20 17
Finfish																				
Anchovy, northern	3.5	3.2	4	4.3	4.4	2.9	3.6		4.1	1.8	4.3	4	1.8	7.3	2.7	2.8	5.4	3	7.7	
Barracuda, California	0.4	0.4	0.6	1.9	0.74		1		3.1	1.8	0.8		2.3				0.9			
Bass, kelp	0.3	0.5			0.19	1	1.5			0.44	0.3									
Blacksmith	0.1	0.2		0.5	0.19		0.5		1		0.3			1.1						
Bonito, Pacific	0.1	0.2	0.9	1.4	0.37	1		4.2	3.1	0.88		2	1.8							
Butterfish (Pacific pompano)	10	4.6	5.2	3.4	3	10.7	1.5	4.2		1.3	11.6	2	1.8	4.7	7.7	6.7	6.3	7.6	5.9	
Combfish, longspine	0.1	0.2									0.3					0.3				
Croaker, white (kingfish)	1	0.4	0.6	1.4	0.93		0.5				0.5				2	0.3	0.9	4.5	2.3	
Eel, wolf (wolf-eel)	0.5	0.2													1.3	0.3				
Fish, unspecified																				
Flatfish, unspecified	0.3	0.9	1.5		2.6	1		2.1		4.4		2			0.3	1.2	1.8		1.8	
Flounder, starry	0.1	0.4		0.5											0.3	0.6		1.5		

Flyingfish	0.6	0.2		0.5	0.56	1	0.5		1	1.3		1.1									
Halibut, California	0.1	0.2			0.74	1				0.44							0.3			1.4	
Herring, Pacific	1.3	0.5			0.19					0.44						3.4	0.9				
Jacksmelt	2.5	3	4.3	4.3	4.8	1	0.5	2.1	1			0.3		2.3	1.1	5.7	4.9	5.8	10.6	11.3	
Lizardfish, California	2.8	2.3	0.6	1	0.74	3.9		2.1		1.3		3					2.3	4	0.4	3	0.45
Mackerel, jack	2.6	4.9	12.5	11.1	8.3	2.9	10.3	10.4	15.3	10.5		3	6	10.5	9.3	7.7	2	1.5	13.5	6.1	6.33
Mackerel, Pacific	4.3	8.4	14.9	14.5	15.2	3.9	12.9	14.6	17.3	19.3		5.4	16	33.3	18.6	30.8	3	4.6	10.3	7.6	4.5
Mackerel, unspecified																					
Midshipman, plainfin	1.7	1.8	1.2	0.5	1.1	1				0.88		1.9			2.2		1.7	3.1	1.8	1.5	0.9
Midshipman, specklefin	0.8	0.2	0.6			2.9	0.5	2.1				0.8							0.4		
Midshipman, unspecified		0.2					0.5														
Poacher, unspecified																					
Rockfish, Blue	0.6	0.4	0.3														1.7	0.6	0.4		
Rockfish, chilipepper	0.9	0.9															2.3	1.5			
Rockfish, unspecified	0.5	0.2	0.3			1											1	0.3	0.4		
Salmon, Chinook	0.5				0.19												1.3				0.45
Sanddab, longfin	0.1	0.2			0.56	1	0.5			1.3											
Sanddab, Pacific	2.7	5.3	6.4	2.4	2	5.8	4.1	4.2					2		1.1		5	6.4	8.5	7.6	4.5
Sanddab,	0.9	2.5	0.6	1.4	0.37							8	3.5	7	1.1		2.3	3.1			0.45

Lobster, California spiny	0.1			1	0.19		1		2	0.44										
Salps	4.4	3.2			0.19		5.2			0.44	9.1	16								
Sea cucumber	0.4				0.19					0.44	0.8									
Sea Cucumber, warty				0.5					1											
Sea Hare	0.5		0.9		0.56			2.1		0.88	1.1	3.5		1.1						
Sea Slug																				
Sea stars	2.5	1.2	1.2		0.56		0.5	2.1		0.88	3.5	3.5		1.1	2	1.8	0.4			
Squid, jumbo																				
Squid, market (Egg Cases)	6.7	8.4	3.7	7.7	3.7	18.4	16.5	8.3	6.1	3.94	6.7	6	5.3	9.3	5.5	2.7	4	2.2	9.1	2.7
Surfgrasses	1	4.7	3.7	1.9	2.4						1.1					1.3	8.3	5.4	6.1	5.8
Tunicates	0.1				0.19									1.1	0.3					
Urchin, Purple																				
Total % Freq. Incidents	36.6	47.1	30.5	27.1	33.6	35.9	53.1	37.5	26.5	29.8	37.6	48	29.8	20.9	35.2	35.6	43.4	29.1	31.8	39.3
Total All Incidents	773	571	328	207	540	103	194	48	98	228	372	50	57	43	91	298	327	223	66	221
Total Observed Landings	196	135	103	95	181	92	72	8	40	71	64	22	58	41	59	40	41	37	14	51

TABLE 4-8. Expanded salmonid bycatch in Pacific sardine fisheries in Oregon and Washington, 2006-2017/2018⁴

	Oregon ¹							Washington ²												
	Chinook		Coho		Total		Grand Total	Chinook		Coho		Total								
	(live)	(dead)	(live)	(dead)	(live)	(dead)		(live)	(dead)	(live)	(dead)	(live)	(dead)							
2015-2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2014/15					17	7	24	44	146	27	166	71								
2014 ³					0	0	0	6	21	4	24	10								

2013					117	81	198	207	683	125	779	332	
2012					61	64	125	244	806	148	919	392	1
2011					35	37	72	56	186	34	212	90	3
2010					110	76	186	87	288	53	328	140	6
2009					126	115	241	56	186	34	212	90	
2008					123	75	198	45	149	27	170	72	
2007					349	170	519	33	108	20	124	53	
2006					164	93	257	31	101	19	116	50	

1 Oregon salmon bycatch data for 2000-2001 are expanded from a bycatch rate of salmon/trip based on vessel observation program.

Oregon salmon bycatch data for 2002-2015 are from logbooks. No sardine fishery landings were made in Oregon during January 1-June 30, 2014.

2 Washington totals calculated from observed 2000-2004 observed bycatch rates.

3 January 1, 2014 – June 30, 2014.

4 The directed sardine fishery has been closed since June 30, 2015.

TABLE 4-9. Reported logbook catches of non-target species caught in Oregon sardine fishery since 2007. There were no sardine fishery landings in Oregon during the 2014 Interim Fishery, January 1-June 30, 2014. The directed fishery for sardines has been closed since June 30, 2015.

Species	2007	2008	2009	2010	2011	2012	2013	2014 Interim Fishery
Blue Shark	0	1	0	0	0	0	0	0
Thresher Shark	3 (2 released alive)	0	0	0	0	0	0	0
Unknown Shark	5	0	0	0	0	0	0	0
Salmonids	519 67% alive; 33% dead	198 62% alive; 38% dead	248 53% alive; 47% dead	186 59% alive; 41% dead	72 49% alive; 51% dead	125 49% alive; 51% dead	198 59% alive; 41% dead	0
Mackerel	473,441 lbs	59,205 lbs	30,872 lbs	15,280 lbs	20 lbs	947,200 lbs	569,650 lbs	0
Anchovy	500 lbs	8,300 lbs	12,045 lbs	20,450 lbs	0	0	15,000 lbs	0
Herring	0	52,200 lbs	2,000 lbs	0	0	6,000 lbs	3,000 lbs	0
Hake	0	525 lbs	0	0	0	0	0	0
Squid	0	225 lbs	0	30 lbs	0	0	0	0
Jellyfish	0	0	0	0	0	0	0	0
Dogfish	-	-	200 lbs	0	0	0	0	0
Shad	0	0	0	0	0	0	2 lbs	0

TABLE 4-10. Recorded incidental catch (mt) in Oregon sardine fishery since 2010 (from fish ticket data). Excludes species landed under an Exempted Fishery Permit. There were no sardine fishery landings in Oregon

during the 2014 Interim Fishery, January 1-June 30, 2014. The directed fishery for sardines has been closed since June 30, 2015.

Species	2010	2011	2012	2013	2014 Interim Fishery	2014-2015	2015-2016	2016-2017	2017-2018
Pacific mackerel	39.2	5.2	1,585.8	435.6	0	1,008.1	-	-	-
Jack mackerel	<0.01	0	70.9	60.1	0	245.0	-	-	-
Pacific herring	0	0	0.35	0	0	0	-	-	-
Northern anchovy	1.2	21.2	0	12.5	0	0	-	-	-
American shad	0	0	0.005	0.02	0	0.001	-	-	-
Sablefish	0	0	0	0.01	0	0	-	-	-

Table 4-11. Species noted as encountered on CDFW Live Bait Logs, 2007-2017, in units of day-encounters.

Year	Days Fished	Jack Mackerel	Pacific Mackerel	Barracuda	Herring	Grunion	Smelts (Atherinids)	Shiner Surfperch	White Croaker	Queenfish	Market Squid
2017	586	1	35				1				3
2016	630	10	48								1
2015	833	20	99				4				3
2014	794	15	98			1	4				1
2013	752	2	43				1				4
2012	762	1	27	7							4
2011	896	4	34	2			1				3
2010	673	1	69								9
2009	965	2	77	6						1	
2008	957		92	9							2
2007	954	2	88	27							6

TABLE 4-12. Estimates of Pacific sardine and Northern anchovy live bait harvest in California, 2007 - 2017. Data from CDFW live bait logs. Values are in metric tons with the assumption that 1 scoop =12.5 lbs. Beginning in 2016, revised log forms include reported estimated catch in lbs.

Year	Anchovy	Sardine
2007	708	3,395
2008	723	2,989
2009	833	2,820
2010	704	2,249
2011	1,045	2,057
2012	350	2,497
2013	745	1,849
2014	1,142	1,562
2015	723	1,996
2016	266	1,208

2017	155	1465
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Table 4-13. Ratio of anchovy to sardine in reported live bait catch in California, 2007-2017. Values are in metric tons with the assumption that 1 scoop =12.5 lbs. Beginning in 2016, revised log forms include reported estimated catch in lbs.

Year	Anchovy	Sardine	Total	Proportion Anchovy	Proportion Sardine
2017	155	1,465	1,620	0.10	0.90
2016	266	1,208	1,475	0.18	0.82
2015	723	1,996	2,719	0.27	0.73
2014	1,157	1,567	2,742	0.42	0.58
2013	739	1,847	2,586	0.29	0.71
2012	356	2,594	2,950	0.12	0.88
2011	1,053	2,073	3,126	0.34	0.66
2010	504	1,860	2,364	0.21	0.79
2009	774	2,702	3,476	0.22	0.78
2008	719	2,968	3,687	0.20	0.80
2007	699	3,352	4,051	0.17	0.83

TABLE 4-14. Directed Sardine Fishery Incidental Catch (metric tons) from fish tickets in Washington.

	2007	2008	2009	2010	2011	2012	2013	2014 Interim	2014- 2015	2015- 2016	2016- 2017	2017- 2018
Arrowtooth Flounder							0.02			Fishery closed	Fishery closed	Fishery closed
American Shad		<0.01				0.01	0.02					
Chinook						0.03	0.12		<0.01			
Chum						<0.01						
Coho						0.29	0.08		0.01			
Mackerel	35.73	6.32	4.45	2.09	0.43	636.17	195.95					
Misc			2.34				0.01					
Northern Anchovy				5.44								
Pacific Herring		4.69				<0.01	<0.01					
Pink Salmon						<0.01	<0.01					
General Shark			0.01									
Sole Rex							<0.01					
Spiny Dogfish		<0.01				<0.01	<0.01					
Starry Flounder												

Table 6.1. West coast landings (mt) and real¹ exvessel revenues (2017 \$) for Pacific sardine, Pacific mackerel², jack mackerel, anchovy and market squid, 2008-2017³.

Year	Pacific Sardine mt	Pacific Sardine Rev	Pacific Mackerel mt	Pacific Mackerel Rev	Jack Mackerel mt	Jack Mackerel Rev	Anchovy mt	Anchovy Rev	Squid mt	Squid Rev
2008	87,190	\$16,691,633	3,597	\$797,988	322	\$61,395	14,654	\$1,897,261	38,101	\$30,291,099
2009	67,084	\$14,202,144	5,138	\$1,253,971	121	\$21,855	3,480 *	\$575,304 *	93,107	\$64,622,825
2010	66,892	\$13,816,975	2,107 *	\$465,993 *	314 *	\$70,372 *	1,284	\$631,897	130,864	\$79,924,954
2011	46,746	\$10,709,240	1,364 *	\$359,745 *	104	\$20,604	2,792 *	\$754,480 *	121,557	\$73,236,574
2012	101,555	\$22,859,803	6,070	\$1,343,477	271	\$42,107	2,705	\$491,463	97,734	\$69,113,387
2013	63,895	\$15,729,326	8,704 *	\$1,744,235 *	1,095	\$222,155	6,049 *	\$1,163,192 *	104,405	\$78,221,680
2014	23,344	\$9,230,393	7,157	\$1,786,050	1,837	\$370,965	10,625	\$1,747,626	104,093 *	\$75,906,562 *
2015	3,864	\$1,203,905	5,731	\$1,266,064	1,538	\$258,598	17,398 *	\$2,146,507 *	36,807	\$25,204,637
2016	522	\$107,311	1,830	\$492,514	374	\$63,556	13,959	\$2,441,611	38,350	\$41,005,612
2017	433	\$61,465	2,299	\$658,803	468	\$52,054	5,613	\$857,229	62,364	\$68,634,882

Source: PacFIN. Extraction dates: 2008-11, 10/22/2013; 2012, 3/2/2015; 2013-14, 10/20/2017; 2015-17, 9/17/2018.

* Denotes that the reported figure in this cell is underreported due to confidentiality guidance.

¹ Revenue is reported in real dollars to account for inflation using the GDP implicit price deflator with a 2017 base year.

² Pacific mackerel landings and revenues also include landings and revenues of unspecified mackerel.

³ 2017 data are 90% complete at time of data extraction.

Table 6.2. West coast landings (mt) and real¹ exvessel revenues (2017 \$) for Pacific sardine, Pacific mackerel², jack mackerel, anchovy and market squid by fishery sector, 2008-2017^{3,4}.

Year	Landings (mt)					Exvessel Revenues (2017 \$)				
	Sardine	P. Mackerel	J. Mackerel	Anchovy	Squid	Sardine	P. Mackerel	J. Mackerel	Anchovy	Squid
Southern California										
2008	31,094	3,324	214	2,069	38,035	\$3,978,923	\$747,699	\$48,508	\$296,559	\$30,239,644
2009	12,565	5,066	119	1,690	91,924	\$2,031,231	\$1,244,327	\$21,855	\$298,342	\$63,587,948
2010	29,353	2,056	310	308	110,719	\$4,260,788	\$462,060	\$70,359	\$151,689	\$67,509,020
2011	17,642	1,343	80	779	107,070	\$2,644,308	\$357,739	\$11,315	\$361,248	\$64,492,378
2012	18,803	3,499	145	214	80,871	\$3,565,988	\$956,575	\$30,452	\$76,833	\$57,071,319
2013	6,250	8,072	892	384	83,441	\$1,421,414	\$1,613,278	\$189,485	\$243,557	\$62,292,332
2014	1,537	5,195	704	133	49,848	\$347,737	\$1,206,882	\$140,098	\$105,950	\$35,449,510
2015	966	5,140	387	106	16,995	\$213,042	\$1,154,364	\$75,363	\$77,855	\$11,509,563
2016	186	1,798	204	4,546	24,601	\$32,086	\$480,900	\$49,408	\$561,379	\$27,269,179
2017	262	2,248	110	242	53,782	\$32,701	\$653,990	\$29,595	\$103,702	\$59,214,794
Northern California										
2008	26,712	207	59	12,216	66	\$4,694,507	\$38,678	\$12,413	\$1,495,422	\$51,454
2009	25,012	14	0	978	1,183	\$4,267,659	\$2,577	\$0	\$122,545	\$1,034,878
2010	4,305	Conf	Conf	718	20,137	\$643,091	Conf	Conf	\$367,959	\$12,415,934
2011	10,072	15	0	1,822	14,487	\$2,194,731	\$1,597	\$0	\$318,277	\$8,744,195
2012	4,241	100	0	2,274	16,862	\$1,020,436	\$29,955	\$0	\$325,567	\$12,042,069
2013	896	Conf	0	5,549	20,964	\$188,134	Conf	\$0	\$869,309	\$15,929,348
2014	6,234	243	89	10,379	54,246	\$1,739,225	\$79,203	\$16,609	\$1,582,283	\$40,457,051
2015	736	545	897	17,149	19,812	\$140,321	\$98,905	\$146,462	\$1,984,435	\$13,695,074
2016	246	3	3	3,822	12,489	\$65,389	\$7,088	\$5,117	\$549,126	\$12,593,881
2017	170	2	4	5,208	8,582	\$28,752	\$4,232	\$11,988	\$677,083	\$9,420,088

Table 6.2 continues next page.

Table 6.2. (Continued). West coast landings (mt) and real¹ exvessel revenues (2017 \$) for Pacific sardine, Pacific mackerel², jack mackerel, anchovy and market squid by fishery sector, 2008-2017^{3,4}.

Year	Landings (mt)					Exvessel Revenues (2017 \$)				
	Sardine	P. Mackerel	J. Mackerel	Anchovy	Squid	Sardine	P. Mackerel	J. Mackerel	Anchovy	Squid
Pacific Northwest										
2008	29,384	67	48	369	<1	\$8,018,202	\$11,611	\$475	\$105,280	<\$1
2009	29,507	58	2	812 *	<1	\$7,903,253	\$7,067	\$0	154417 *	\$0
2010	33,233	51	4	258	8	\$8,913,097	\$3,933	\$13	\$112,249	\$0
2011	19,032	7 *	24	191 *	<1	\$5,870,201	409 *	\$9,289	74954 *	\$1
2012	78,511	2,471	126	217	<1	\$18,273,378	\$356,947	\$11,655	\$89,063	\$0
2013	56,750	632	203	116 *	<1	\$14,119,778	\$130,956	\$32,670	50326 *	\$0
2014	15,573	1,718	1,043	112	Conf	\$7,143,432	\$499,965	\$214,259	\$59,393	Conf
2015	2,162	46	253	144 *	0	\$850,542	\$12,794	\$36,773	84217 *	\$0
2016	89	30	167	5,590	1,260	\$9,837	\$4,526	\$9,031	\$1,331,106	\$1,142,552
2017	<1	50	355	164	<1	\$12	\$580	\$10,471	\$76,445	\$0

Source: PacFIN. Extraction dates: 2008-11, 10/22/2013; 2012, 3/2/2015; 2013-14, 10/20/2017; 2015-17, 9/17/2018.

"Conf" denotes that the cell figures are not reported due to 2 or fewer vessels.

* Denotes that the reported figure in this cell is underreported due to confidentiality guidance.

"0" indicates no landings/revenues were reported.

"<1" indicates that non-zero and less than 1 metric ton of landings and/or \$1 of revenues were reported.

¹Revenue is reported in real dollars to account for inflation using the GDP implicit price deflator with a 2017 base year.

²Pacific mackerel landings and revenues also include landings and revenues of unspecified mackerel.

³2017 data are 90% complete at time of data extraction.

⁴Previous versions included reporting for an Other sector; landings and revenues are now fully assigned.

Table 6.3. Average annual real¹ exvessel prices (2017 \$) for Pacific sardine, Pacific mackerel², jack mackerel, anchovy and market squid, 2008-2017³.

Year	Pacific Sardine \$/lb	Pacific Mackerel \$/lb	Jack Mackerel \$/lb	Anchovy \$/lb	Squid \$/lb
2008	\$0.09	\$0.10	\$0.09	\$0.06	\$0.36
2009	\$0.10	\$0.11	\$0.08	\$0.07 *	\$0.31
2010	\$0.09	\$0.10 *	\$0.10 *	\$0.22	\$0.28
2011	\$0.10	\$0.12 *	\$0.09	\$0.12 *	\$0.27
2012	\$0.10	\$0.10	\$0.07	\$0.08	\$0.32
2013	\$0.11	\$0.09 *	\$0.09	\$0.09 *	\$0.34
2014	\$0.18	\$0.11	\$0.09	\$0.07	\$0.33 *
2015	\$0.14	\$0.10	\$0.08	\$0.06 *	\$0.31
2016	\$0.09	\$0.12	\$0.08	\$0.08	\$0.49
2017	\$0.06	\$0.13	\$0.05	\$0.07	\$0.50

Source: PacFIN. Extraction dates: 2008-11, 10/22/2013; 2012, 3/2/2015; 2013-14, 10/20/2017; 2015-17, 9/17/2018.

* Denotes that the reported figure in this cell is underreported due to confidentiality guidance.

¹ Revenue is reported in real dollars to account for inflation using the GDP implicit price deflator with a 2017 base year.

² Pacific mackerel landings and revenues also include landings and revenues of unspecified mackerel.

³ 2017 data are 90% complete at time of data extraction.

Table 6.4. West coast landings (mt) and real¹ exvessel revenues (2017 \$) for Pacific sardine, Pacific mackerel², jack mackerel, anchovy and market squid by state, 2008-2017³.

Year	Pacific Sardine mt	Pacific Sardine Rev	Pacific Mackerel mt	Pacific Mackerel Rev	Jack Mackerel mt	Jack Mackerel Rev	Anchovy mt	Anchovy Rev	Squid mt	Squid Rev
California										
2008	57,806	\$8,673,430	3,531	\$786,377	274	\$60,921	14,285	\$1,791,981	38,101	\$30,291,099
2009	37,577	\$6,298,890	5,080	\$1,246,904	119	\$21,855	2,668	\$420,887	93,107	\$64,622,825
2010	33,659	\$4,903,878	2,056 *	\$462,060 *	310 *	\$70,359 *	1,026	\$519,649	130,857	\$79,924,954
2011	27,714	\$4,839,039	1,357	\$359,336	80	\$11,315	2,601	\$679,525	121,557	\$73,236,573
2012	23,044	\$4,586,425	3,599	\$986,530	145	\$30,452	2,488	\$402,400	97,733	\$69,113,387
2013	7,146	\$1,609,548	8,072 *	\$1,613,278 *	892	\$189,485	5,933	\$1,112,866	104,405	\$78,221,680
2014	7,771	\$2,086,961	5,439	\$1,286,085	794	\$156,707	10,512	\$1,688,233	104,093	\$75,906,562
2015	1,701	\$353,363	5,685	\$1,253,269	1,284	\$221,825	17,255	\$2,062,290	36,807	\$25,204,637
2016	433	\$97,475	1,801	\$487,988	207	\$54,525	8,368	\$1,110,505	37,090	\$39,863,060
2017	432	\$61,453	2,249	\$658,223	114	\$41,583	5,450	\$780,785	62,364	\$68,634,882
Oregon										
2008	22,949	\$6,486,283	58	\$8,942	46	\$475	260	\$64,887	<1	<\$1
2009	21,481	\$6,011,461	53	\$5,415	2	\$0	Conf	Conf	<1	\$0
2010	20,852	\$5,899,225	49	\$3,226	3	\$0	138	\$32,425	8	\$0
2011	11,023	\$3,511,340	7	\$409	14	\$3,122	Conf	Conf	<1	\$1
2012	42,619	\$9,690,311	1,779	\$184,783	95	\$5,810	0	\$0	<1	\$0
2013	26,289	\$6,682,727	439	\$84,690	123	\$13,110	Conf	Conf	<1	\$0
2014	7,789	\$3,666,738	1,172	\$337,988	800	\$152,611	0	\$0	Conf	Conf
2015	2,131	\$837,025	45	\$12,562	117	\$4,826	Conf	Conf	0	\$0
2016	4	\$263	8	\$1,520	116	\$2,049	5,313	\$1,174,677	1,260	\$1,142,552
2017	<1	\$8	45	\$390	303	\$7,801	<1	\$0	<1	\$0

Table 6.4 continues next page.

Table 6.4 (continued). West coast landings (mt) and real¹ exvessel revenues (2017 \$) for Pacific sardine, Pacific mackerel², jack mackerel, anchovy and market squid by state, 2008-2017³.

	Pacific	Pacific	Pacific	Pacific	Jack	Jack	Anchovy	Anchovy	Squid	Squid
Year	Sardine	Sardine	Mackerel	Mackerel	Mackerel	Mackerel	mt	Rev	mt	Rev
	Washington									
2008	6,435	\$1,531,920	9	\$2,669	3	\$0	109	\$40,393	0	\$0
2009	8,026	\$1,891,792	4	\$1,651	<1	\$0	812	\$154,417	0	\$0
2010	12,381	\$3,013,872	2	\$707	1	\$13	120	\$79,823	0	\$0
2011	8,009	\$2,358,861	Conf	Conf	10	\$6,167	191	\$74,954	0	\$0
2012	35,892	\$8,583,067	692	\$172,164	31	\$5,844	217	\$89,063	0	\$0
2013	30,461	\$7,437,050	193	\$46,266	80	\$19,560	116	\$50,326	0	\$0
2014	7,784	\$3,476,694	545	\$161,977	243	\$61,648	112	\$59,393	0	\$0
2015	31	\$13,518	1	\$233	136	\$31,947	144	\$84,217	0	\$0
2016	85	\$9,574	22	\$3,006	51	\$6,982	277	\$156,430	0	\$0
2017	<1	\$3	4	\$190	52	\$2,670	164	\$76,444	0	\$0

Source: PacFIN. Extraction dates: 2008-11, 10/22/2013; 2012, 3/2/2015; 2013-14, 10/20/2017; 2015-17, 9/17/2018.

"Conf" denotes that the cell figures are not reported due to 2 or fewer vessels.

* Denotes that the reported figure in this cell is underreported due to confidentiality guidance.

"0" indicates no landings/revenues were reported.

"<1" indicates that non-zero and less than 1 metric ton of landings and/or \$1 of revenues were reported.

¹ Revenue is reported in real dollars to account for inflation using the GDP implicit price deflator with a 2017 base year.

² Pacific mackerel landings and revenues also include landings and revenues of unspecified mackerel.

³ 2017 data are 90% complete at time of data extraction.

Table 6.5. West coast CPS landings and real¹ exvessel revenues (2017 \$) by gear group², 2008-2017³.

Year	Roundhaul or Lampara	Dip Net	Pot or Trap	Trawl	Hook and Line	Gillnet
Landings (metric tons)						
2008	143,364	444	Conf	51	3	<1
2009	167,133 *	1,831	Conf	2	3	<1
2010	198,085	3,304	Conf	12	2 *	2
2011	168,258 *	4,301	0	25 *	<1	Conf
2012	202,889	5,318	<1	47	7	<1
2013	180,745 *	3,223	43	126 *	22	<1
2014	146,339 *	303	<1	316 *	56	Conf
2015	65,329 *	70	<1	257	5	Conf
2016	54,122	671	<1	173	65	<1
2017	69,798	943	1	407	15	<1
Revenues (2017 \$)						
2008	\$49,382,896	\$339,061	Conf	\$1,934	\$12,248	\$44
2009	\$79,472,744 *	\$1,188,458	Conf	\$536	\$20,785	\$208
2010	\$92,841,996	\$2,017,209	Conf	\$1,090	\$13,275 *	\$1,176
2011	\$82,113,612 *	\$2,961,140	\$0	\$9,970 *	\$34	Conf
2012	\$89,824,294	\$3,941,373	\$260	\$6,397	\$20,825	\$3,712
2013	\$94,579,330 *	\$2,430,205	\$32,317	\$20,325 *	\$18,549	\$409
2014	\$88,685,902 *	\$231,646	\$688	\$43,939 *	\$42,392	Conf
2015	\$30,014,641 *	\$63,309	\$1,019	\$38,036	\$5,263	Conf
2016	\$43,285,752	\$744,845	\$114	\$12,559	\$55,623	\$310
2017	\$69,167,512	\$1,021,033	\$2,456	\$14,840	\$28,554	\$1,683

Source: PacFIN. Extraction dates: 2008-11, 10/22/2013; 2012, 3/2/2015; 2013-14, 10/20/2017; 2015-17, 9/17/2018.

"Conf" denotes that the cell figures are not reported due to 2 or fewer vessels.

* Denotes that the reported figure in this cell is underreported due to confidentiality guidance.

"0" indicates no landings/revenues were reported.

"<1" indicates that non-zero and less than 1 metric ton of landings and/or \$1 of revenues were reported.

¹ Revenue is reported in real dollars to account for inflation using the GDP implicit price deflator with a 2017 base year.

² A column for other or unknown gears is not included.

³ 2017 data are 90% complete at time of data extraction.

TABLE 8-1. Commercial landings (metric tons) of CPS in Ensenada, Baja California, Mexico since 2008^{1/2}. Sardine landings include both southern and northern subpopulations.

Year	Pacific sardine	Northern anchovy	Pacific mackerel	Jack mackerel	Market squid
2008	66,866	991	180	0	5,378
2009	55,911	2,444	8	0	3,685
2010	56,821	3,139	85	0	10,991
2011	70,336	1,760	2,601	0	15,091
2012	59,069	1,809	186	0	4,802
2013	51,413	2,428	327	0	16,707
2014	90,396	539	975	0	2,978
2015	37,468	26,143	1,418	0	63
2016	66,069	5,008	9,880	0	294
2017	130,463	15,725	902	0	55

1/ Data for 2005-2014 from CONAPESCA

(http://www.conapesca.sagarpa.gob.mx/wb/cona/cona_anuario_estadistico_de_pesca).

2/ Landings for 2015 and 2016 from Concepcion Enciso-Enciso (pers. comm.)

TABLE 8-2. Pacific sardine northern subpopulation biomass-at-age and summary biomass since 2008 (Hill et al. 2018).

Model year (July-1)	POPULATION BIOMASS-AT-AGE (metric tons)									SUMMARY BIOMASS	
	0	1	2	3	4	5	6	7	8+	Ages 0+	Ages 1+
2008	25,428	166,867	148,263	345,660	237,398	181,671	11,973	2,597	3,307	1,123,165	1,097,736
2009	48,678	81,411	125,221	95,495	214,409	133,375	96,305	6,190	2,966	804,049	755,371
2010	54,360	155,308	61,344	82,235	58,661	116,802	67,856	47,737	4,398	648,703	594,343
2011	4,283	179,048	124,429	41,047	49,535	29,729	54,644	30,795	23,000	536,509	532,226
2012	1,000	14,010	139,616	80,221	24,078	23,892	13,155	23,445	22,457	341,875	340,875
2013	1,322	3,123	10,361	92,177	38,667	7,132	5,778	3,050	10,346	171,955	170,633
2014	7,186	4,051	2,218	6,750	47,369	13,673	2,134	1,668	3,785	88,834	81,648
2015	3,024	24,193	3,316	1,438	3,999	23,067	6,153	930	2,308	68,429	65,405
2016	3,523	10,345	21,518	2,467	964	2,508	13,852	3,593	1,818	60,590	57,067
2017	8,856	9,776	6,122	13,662	1,524	576	1,394	7,589	2,841	52,339	43,483
2018	5,165	25,697	6,266	3,959	8,564	919	326	776	5,558	57,230	52,065

TABLE 8-3. U.S. Pacific sardine landings (PacFIN) and harvest guidelines (HG) in metric tons since 2008 under the federal CPS-FMP. Landings include both the southern and northern subpopulations. The fishery year was January 1 – December 31, until 2014 when it was changed to a July 1 – June 30 fishing year.

Management year	HARVEST LIMITS						
	CA	OR	WA	U.S. Total	OFL	ABC	HG/ACL
2008	57,805	22,949	6,435	87,189	n/a	n/a	89,093
2009	37,577	21,482	8,026	67,085	n/a	n/a	66,932
2010	33,658	20,853	12,392	66,903	n/a	n/a	72,039
2011	27,715	11,023	8,009	46,747	92,767	84,681	50,526
2012	23,044	42,666	35,739	101,448	154,781	141,289	109,409
2013	7,146	26,288	30,461	63,895	103,284	94,281	66,495
2014 (Jan-Jun)	5,647	0	908	6,555	59,214	54,052	6,966
2014-15	3,754	9,920	6,907	20,581	39,210	35,792	23,293
2015-16	164	1	0	165	13,227	12,074	7,000
2016-17	514	3	85	602	23,085	19,236	8,000
2017-18	275	3	0	279	16,957	15,479	8,000
2018-19	---	---	---	---	11,324	9,436	7,000

TABLE 8-4. West Coast Pacific sardine landings (metric tons) by country. Landings include both the southern and northern subpopulations, since 2008.

Year	Ensenada	United	B.C.	Total
	México	States	Canada	
2008	66,866	87,186	10,425	164,477
2009	55,911	67,083	15,334	138,328
2010	56,821	66,892	22,223	145,936
2011	70,336	46,746	20,719	137,802
2012	59,069	101,148	19,172	179,389
2013	51,413	63,892	0	115,304
2014	90,396	22,744	0	113,140
2015	37,468	3,833	0	41,301
2016	66,069	522	0	66,591
2017	130,463	433	0	130,896

TABLE 8-5. RecFIN estimated recreational harvest of Pacific (chub) mackerel by state (type ‘A+B1’ estimate in metric tons), 2008-2017.

Calendar year	CA	OR	WA	Total
2008	312.40	0.01	0	312.41
2009	237.41	0.04	0	237.45
2010	233.56	0.00	0	233.56
2011	163.81	0.00	0	163.81

2012	138.11	0.21	0	138.32
2013	108.49	0.27	0	108.76
2014	170.92	0.14	0	171.05
2015	302.65	0.59	0	303.24
2016	175.92	0.10	0	176.02
2017	93.85	0.03	0	93.89

TABLE 8-6. RecFIN estimated recreational harvest of Pacific (chub) mackerel by fishing mode (type 'A+B1' estimate in metric tons), 2008-2017.

Calendar year	Shore Modes	Party/ Charter	Private/ Rental	Total
2008	272.19	19.68	20.53	312.41
2009	183.92	13.35	40.18	237.45
2010	199.78	9.08	24.70	233.56
2011	139.02	6.51	18.28	163.81
2012	119.41	7.07	11.83	138.32
2013	79.31	16.53	12.92	108.76
2014	101.23	35.98	33.84	171.05
2015	208.65	32.37	62.21	303.24
2016	138.56	13.30	24.17	176.02
2017	85.27	2.04	6.61	93.92

TABLE 8-7. Pacific mackerel harvest specifications and commercial and recreational landings in the U.S. (metric tons) by July-June management years since 2008.

Mgmt year	HARVEST LIMITS				U.S. Landings
	OFL	ABC	HG/ACL	Directed/ACT	
2008-09	n/a	n/a	51,772	40,000	4,567
2009-10	n/a	n/a	55,408	8,000	3,281
2010-11	n/a	n/a	55,408	11,000	2,304
2011-12	44,336	42,375	40,514	30,386	2,003
2012-13	44,336	42,375	40,514	30,386	5,514
2013-14	57,316	52,358	52,538	39,269	12,007
2014-15	32,992	30,138	29,170	24,170	5,579
2015-16	25,291	23,104	21,469	20,469	4,675
2016-17	24,983	22,822	21,161	20,161	2,495
2017-18	30,115	27,510	26,293	25,293	1,270
2018-19	27,662	25,269	23,840	22,840	---

Table 9-1. Total landings (mt) of sardines and other species, and number of vessels and processors that participated under Exempted Fishery Permits in the Pacific Northwest during 2009-2018. (Source: ODFW and WDFW fish ticket records). No EFPs were issued during 2014 – 2018.

Species	2009	2010	2011	2012	2013	5-Year Total
Sardines	1,178.0	2,013.9	2,699.7	2,914.4	1,526.9	10,333.0
Pacific Mackerel	3.8	9.3	1.2	200.6	13.6	228.4
Jack Mackerel	0.0	0.0	0.0	1.5	0.0	1.5
Jellyfish	2.0	0.0	0.0	0.0	0.0	2.0
Number Vessels	2	3	4	5	2	7
Number Processors	1	1	1	3	1	3

Table 9-2. EFP landings in California. Total landings (mt) of sardines and other species, and number of vessels and processors that participated under Exempted Fishing Permits during 2009-2012. (Sources: Northwest Aerial Sardine Survey, LLC; * NMFS WCR; **CWPA).

Species	2009	2010
Sardines	1685mt*	1,218.2mt
Pacific Mackerel	756.0mt	9.8mt
Jacksmelt	40.00mt	
Kingfish	412.0mt	
Other spp		0.0
Number Vessels **	2	3
Number Processors **	2	2