SAC SPORTFISHING ASSOCIATION OF CALIFORNIA

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March 30, 2016

Ms. Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

Dear Ms. Lowman and Council Members:

The Sportfishing Association of California (SAC) would like to comment on the review of the "Assessment of The Pacific Sardine Resource in 2016 For U.S.A. Management in 2016-17", conducted by the Coastal Pelagic Species Subcommittee of the Statistical and Scientific Committee at the March Council meeting. The SAC representative (Mr. Steve Crooke) on the Coastal Pelagic Species Advisory Subpanel (CPSAS) attended the meeting representing the southern California live bait fleet.

To start with, SAC would like to commend Dr. Hill and his group for their presentation of the 2016 sardine stock assessment. It was a through review but SAC is concerned that the assessment authors chose to ignore the results of the crucial stock-recruit relationship when determining the strength of the 2015 YC. They believed the paucity of data for the 2015 year class (YC) resulted in a high estimate of 0 age sardines and that using the average recruitment from 2012-14 was a better proxy for 2015 YC. SAC believes the strength of the 2015 YC should be determined by the data as it was collected, not an average of the three previous years because sardine recruitment can vary widely and speculation about specific YC strength should be based on the data. With this in mind, SAC believes the spawning biomass in 2015 should be 106,135 mt as presented by the stock assessment team using the actual 2015 YC strength. The figure of 64,422 mt of spawning biomass using the three year average recruitment should be rejected. At this time both figures are below the harvest guideline of 150,000 mt so no directed commercial fishery can take place. Live bait fishing can take place under each scenario but at the higher spawning biomass the impact is smaller. Even at the lower figure the live bait fishery take less than 2% of the spawning biomass. That assumes 100% of the take is spawning fish which is not true.

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While we do not know what the entire Statistical and Scientific Committee will do at the April Council meeting, our assumption is they will go along with the recommendation of the subcommittee review of the assessment. Dr. Andre Punt chaired the subcommittee and they felt the higher spawning mass figure should be used in the sardine stock assessment because it is more reflective of current spawning conditions. As pointed out above, SAC concurs with their conclusion.

Sincerely,

Ken Franke

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April 1, 2016

Ms. Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item H.1 – Final Action on Sardine Assessment, Specifications and Management Measures for 2016-17

Dear Chair Lowman and Members of the Council:

We commend the Council for taking action to close the directed sardine fishery in April 2015. Unfortunately, for the second consecutive year, the Pacific sardine stock off the U.S. West Coast remains well below the current 150,000 metric ton CUTOFF. The lack of high quality forage fish is causing reproductive failures and starvation in key indicator species including California sea lions and brown pelicans. Fishing exacerbated a natural decline in sardine productivity, amplifying the collapse of this fishery, primarily because the CUTOFF is currently set too low. A higher CUTOFF would make the fishery more resilient to ocean conditions, while allowing for greater long-term catch and a healthier food web. We ask that the Council keep the directed fishery closed, reduce the incidental catch allowance, initiate a Fishery Management Plan amendment to increase the CUTOFF in the Harvest Guideline, and request an independent scientific evaluation of Pacific sardine management.

Stock Assessment

According to the 2016 sardine assessment, the age 1+ biomass of the Northern subpopulation of Pacific sardine has declined by over 840,000 metric tons (mt) (1.8 billion pounds) since the 2007 peak at approximately 950,000 mt.[1] (Hill et al. 2016). This approximate 90% percent decline in abundance in the last decade is consistent with last year's National Marine Fisheries Service (NMFS) assessment that showed a similar drop.

We ask the Council to adopt the stock assessment recommended estimate of 64,422 metric tons as the estimate for the 2016-17 season. As stated by the stock assessment authors in the preliminary 2016 assessment[2] (p. 9):

[1] The 2016 assessment estimates a July 2016 biomass between 64,422 and 106,137 mt.
[2] Preliminary Draft Sardine Assessment for SSC CPS Subcommittee Review, March 10, 2016, p. 9. ftp://ftp.pcouncil.org/pub/2016_Sardine_Assessment_Review/Microsoft Word - 2016_Sardine_Update_March_Review_FInal-Draft.pdf

> *"Given the low magnitude of biomass (DEPM and ATM) estimated from surveys conducted during 2015 and the fact that recent (terminal year) recruitments have been systematically over-estimated in the past several assessments, a stock biomass projection of 64,422 mt, based on recent (2012-2014) average recruitment strength for the 2015 year class, is recommended for setting 2016-17 harvest specifications."*

We recognize the Scientific and Statistical Committee's Coastal Pelagic Species (SSC CPS) Subcommittee recommended adopting a higher estimate of 106,137 mt. However, we note that such optimistic recruitment estimates inflated previous stock estimates and led to harvest rates in excess of Maximum Sustainable Yield levels in 2010-2014. The SSC corrected this problem last year by using recent average recruitment, and the current assessment indicates that the correction led to a more accurate biomass estimate. Until the population has experienced a successful recruitment event and recovered from the recent collapse, prudent management should be based on recent experience with this stock, which has shown exceptionally lower recruitment than expected.

2016-17 Harvest Specifications

Directed Fishery

Whether the Council adopts the population estimate recommended in the stock assessment of 64,422 metric tons (mt), or the more optimistic recommendation of the SSC CPS Subcommittee of 106,137 mt, the current population is well below the CUTOFF of 150,000 mt in the CPS Fishery Management Plan. Due to the stock's critically low level, we ask that the Council set an HG of zero, and keep the directed fishery for Pacific sardines closed for the duration of the 2016-2017 season. We are concerned that the new stock assessment uses a FRACTION value of 20% in the setting of the Harvest Guideline. The CPS FMP limits FRACTION to a maximum of 15%, and NMFS has not yet published a proposed rule to increase the FRACTION as recommended by the Council. We continue to have serious concerns about increasing the upper bound of FRACTION, as it would make the current management regime more aggressive than the status quo at a time when the stock is very low. The current assessment also raises questions about the accuracy of the CalCOFI temperature index as a basis for increasing maximum FRACTION (which predicts a highly productive stock with warmer temperatures). Until the Secretary of Commerce approves an FMP amendment and finalizes implementing regulations, the FRACTION used in the HG must not exceed 15%.

Incidental Catch

We believe last season's Annual Catch Limit of 7,000 metric tons was unnecessarily excessive, and request the Council lower incidental catch to minimal levels for the 2016-2017 season. When the stock is below the CUTOFF, the FMP directs the cessation of all directed fishing. As of the draft stock assessment, incidental catch in the 2015-16 season was 153 metric tons. Furthermore, according to the Management Strategy Evaluations originally conducted for Amendment 8 and recently updated by Hurtado-Ferro and Punt 2014, a catch of no more than 2,000 mt is allowed when stock is below CUTOFF. Allowing incidental catch greater than 2,000 mt when the stock is below CUTOFF is outside the bounds of all modeling efforts and risks serious impacts to the population. If the best case recruitment scenario is correct, the new recruitment event will be critical in the recovery of the stock. However, if the recruitment event does not come to fruition, it is very plausible that the sardine population could continue to drop to levels below 50,000 mt, with even more dramatic consequences for the fishery and the ocean ecosystem. Management decisions regarding incidental sardine catch should reflect that this stock is in crisis.

Broader Management Changes to Improve Fishery Resilience

The current 2016 assessment presents coast-wide (U.S., Mexico and Canada) and U.S. fishing rates, which significantly increased during the time the sardine population was crashing. In fact, U.S. and coast-wide fishing rates exceeded the fishing rates that produce maximum sustainable yield from 2010-2014 (over double the MSY rate in 2012-13 during the core period of the decline, and peaking at 34% in 2013). This is overfishing.

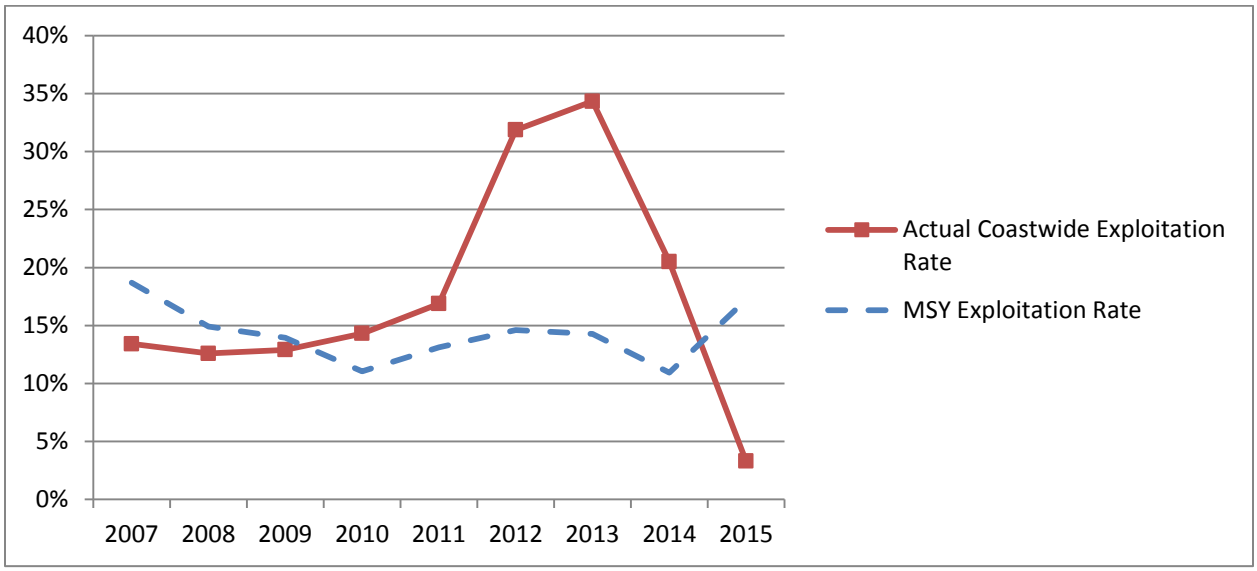


Figure 1. Evidence of overfishing during sardine collapse. Coastwide (Mexico, U.S. and Canada) sardine exploitation rates (Northern subpopulation) exceeded maximum sustainable yield (MSY) exploitation rates five out of the past nine years during the sardine decline. The U.S. sardine fishery was closed in April 2015. Exploitation rates from Hill et al. 2016 and MSY Exploitation Rates based on 3-year average CalCOFI index as presented in Hill et al. 2016.

We believe this overfishing amplified the natural decline, causing the population to drop to lower levels than it would have otherwise reached, exacerbating an ecosystem-wide shortage in available forage species and putting future recovery of the sardine population at risk. In particular, we note the recent McClatchie et al. 2016 study which determined that the California sea lion unusual mortality event was caused primarily by the lack of high quality forage fish, specifically including Pacific sardines and anchovy.[3]

There is growing evidence that the current CUTOFF set at ~10% of unfished biomass is insufficient (too low) to effectively prevent overfishing and fishery collapse in light of the inherent scientific uncertainty, rapid population fluctuations, and the lag time in detecting natural stock declines. Specifically, the Lenfest Forage Fish Task Force recommended a CUTOFF of approximately 40% of mean unfished biomass for stocks like sardine where intermediate levels of information are available on stock status, environmental drivers and dependent predator relationships.[4] According to Pacific sardine scientist Juan Zwolinski, "if managers raise the [CUTOFF] limit to about 750,000 tons, then the sardine stock will be much more resilient to fishing pressure".[5] Furthermore, Cury et al. 2013 in their seminal "one third for the birds" study identified a population threshold of one third of maximum biomass for forage fish under which seabirds experience impacts due to lack of prey.[6] Lindegren et al. 2013 also modeled the Pacific sardine fishery, finding that higher levels of fishing during stock declines worsen stock collapse and delay subsequent recovery.[7]

More recently, Essington et al. 2015[8] argue that there are essentially two management tools to protect dependent forage fish predators by avoiding or dampening stock collapses. The first tool is to develop early warning indicators of changing stock productivity and incorporate that knowledge into management systems so that fishing rates can be adjusted. The other is to establish "cutoff" limits. To demonstrate the value of the cutoff limits, they conducted an analysis across forage fish stocks applying a rule containing a cutoff limit at 50% of unfished biomass. As stated in the paper:

[3] McClatchie, S., J.F. Field, A.R. Thompson, T. Gerrodette, M. Lowry, P.C. Fiedlerr, K.M. Nieto, R.D. Vetter. 2016. Food limitation of sea lion pups and the decline of forage off central and southern California. Royal Society. DOI: 10.1098/rsos.150628 Available at: http://rsos.royalsocietypublishing.org/content/3/3/150628

[4] Pikitch, E., Boersma, P.D., Boyd, I.L., Conover, D.O., Cury, P., Essington, T., Heppell, S.S., Houde, E.D., Mangel, M., Pauly, D., Plagányi, É., Sainsbury, K., and Steneck, R.S. 2012. Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. 108 pp.

[5] As quoted in Monterey Herald March 10, 2016 article "Fishery management council to gauge sardine abundance; season in jeopardy" http://www.montereyherald.com/article/NF/20160310/NEWS/160319993

[6] Cury et al. 2011. Global seabird response to forage fish depletion – One third for the birds. Science 334, 1703.

[7] Lindegren et al. 2013. Climate, fishing, and fluctuations of sardine and anchovy in the California Current. Proceedings of the National Academy of Sciences 110(33):13672-13677.

[8] Essington et al. 2015. *Fishing amplifies forge fish population collapses*, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf.

> *"The application of this rule to time series of stock biomass and fishing catches led to a nearly 80% increase in minimum biomass levels and a 64% reduction in the number of collapsed stocks. In contrast, average catches were reduced very little (1.7%), because fishing closures allowed stocks to recover to higher abundance more quickly and catches were already low during these periods."*

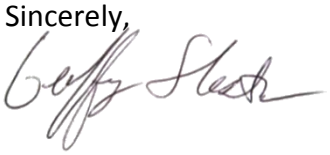
Based on this emerging scientific consensus as well as Oceana's own independent analysis of the Hurtado-Ferro & Punt 2014 updated Pacific sardine simulation model, Oceana has repeatedly requested since 2013 that the Council increase the cutoff limit to 640,000 metric tons, which is approximately 40% of the mean unfished biomass for this stock.[9] Simply put, the current CUTOFF of 10% mean unfished biomass is not set high enough to realize its purported conservation benefits while preventing overfishing, particularly as the early warning indicators of stock collapse did not trigger a management response. Furthermore, a higher CUTOFF will make Pacific sardine population more resilient in the face of unprecedented changes in ocean conditions.

Request for Independent Review of Pacific Sardine Management

It is not easy, but given the persistent sardine collapse and lack of forage for dependent predators, now is the right time to review the sardine harvest control rule and fix significant problems in CUTOFF, DISTRIBUTION and minimum stock size threshold (MSST) so that the sardine fishery can be sustainably managed into the future and account for greatest overall benefit to the Nation. Given the continued challenges with assessing this population and managing the fishery during a population collapse, we recommend NMFS and the Council request an independent scientific review, such as by the Center for Independent Experts, to help identify current problems and solutions for improved management. We believe such an independent review could be useful in identifying systemic changes that would improve fishery management while providing for the needs of dependent marine life and a healthy ocean ecosystem.

Thank you for your time and attention to these comments.

Sincerely,



Geoffrey G. Shester, Ph.D.
California Campaign Director

[9] Hurtado-Ferro and Punt. 2014. Revised analyses related to Pacific sardine harvest parameters. March 2013 PFMC Meeting Agenda Item I.1.b. Table 3. Mean unfished biomass (B0) = 1,572 thousand metric tons based on simulation model. http://www.pcouncil.org/wp-content/uploads/I1b_ATT1_REVISED_ANALYSIS_SARDINE_HRVST_PARMTRS_MAR2014BB.pdf

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April 3, 2016

Dorothy Lowman, Chair
Pacific Fishery Management Council
1100 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item H.1 – Final Action on Sardine Assessment, Specifications, and Management Measures for 2016-2017

Dear Chair Lowman and Council Members:

We write with regard to the Pacific Fishery Management Council's (Council) adoption of final harvest specifications and management measures for the 2016-2017 Pacific sardine fishery. In response to estimates of low biomass[1] and in keeping with the Pacific sardine harvest control rule,[2] we request that the Council take action at its April 2016 meeting to adopt a harvest guideline of 0 metric tons (mt) for the 2016-2017 season. We also recommend that as part of this agenda item, the Council establish a precautionary incidental catch allowance that seeks to avoid negative impacts to the sardine population and to dependent predators. By taking these actions, the Council will ensure that it is both adhering to its sardine harvest control rule and fulfilling the goals and objectives of its Coastal Pelagic Species (CPS) Fishery Management Plan (FMP), including achieving optimum yield, preventing overfishing, and maintaining adequate forage for marine wildlife.[3]

Additionally, we wish to express our appreciation that the National Oceanic and Atmospheric Administration's Fisheries Service (NOAA Fisheries) plans to conduct a full stock assessment for the northern and central subpopulations of northern anchovy, and that the Council intends to consider and adopt active management measures for northern anchovy prior to the end of 2016. In doing so, the Council will advance its understanding of the current status of another crucial forage species, northern anchovy, which has experienced increased fishing effort in the wake of last year's sardine closure – a dynamic that is likely to continue if the sardine fishery remains closed for the 2016-2017 season.

Below, we discuss these requests in greater detail.

[1] Hill, K.T., P.R. Crone, E. Dorval, and B.J. Macewicz. 2016. Assessment of the Pacific Sardine Resource in 2016 for U.S.A. Management in 2016-17. Preliminary Draft for SSC CPS Subcommittee Review on 10 March 2016.
[2] Pacific Fishery Management Council, Coastal Pelagic Species Fishery Management Plan as amended through Amendment 13, September 2011, page 39
[3] *Ibid*., page 12

Adopt a Pacific sardine harvest guideline of 0 mt for the 2016-2017 season

In the harvest control rule for actively managed coastal pelagic species, the CUTOFF parameter is the biomass level below which directed fishing is not permitted. CUTOFF is intended to set aside a buffer of spawning stock that is protected from fishing and available for use in rebuilding efforts should the stock become overfished.[4] For Pacific sardine, the CUTOFF value is fixed at 150,000 mt and is subtracted off the top from the overall biomass available to the fishery. Accordingly, harvest levels determined by this rule will decline as overall biomass declines until it reaches the CUTOFF, at which point the harvest guideline would be zero.

As part of Agenda Item H.1 at the April meeting, the Council will consider a stock assessment update for Pacific sardine that projects stock biomass to be either 106,137 mt or 64,422 mt (depending on how biomass is derived) in July 2016.[5] Because both of these projections are well below the CUTOFF value of 150,000 mt, the Pacific sardine harvest control rule calls for a harvest guideline of zero, thereby closing the fishery for the 2016-2017 season. We support the Council adopting this closure in compliance with its sardine harvest protocols. Doing so will allow the Council to meet the objective of CUTOFF (to protect the stock when biomass is low) and its obligations under the CPS FMP.

With respect to Pacific sardine caught incidentally in other CPS and non-CPS fisheries during the 2016-2017 season, we request that the Council ensure incidental catch is set conservatively at levels that avoid adverse impacts to the sardine population as well as to dependent predators. An appropriately high degree of precaution is necessary now more than ever to assure that this stock is able to rebound quickly once ocean conditions become more favorable. Further, we note that of the 7,000 mt Annual Catch Limit adopted for the 2015-2016 season,[6] less than 200 mt in landings have been reported as of early March 2016,[7] suggesting that a more conservative incidental catch allowance (or Annual Catch Target) for the upcoming season is unlikely to constrain other fisheries.

We recommend that the Council consider an incidental catch allowance for the 2016-2017 season that is no greater than 1,500 mt, which was the level adopted by the Council for the 2014-2015 sardine fishery.[8] We suggest that an incidental catch allowance at or below 1,500 mt can help meet several shared objectives: to set the level conservatively in order to avoid negative impacts to the resource and the larger ecosystem, to not unduly constrain CPS and other fisheries, and to discourage both the targeting of sardine and the possibility of increased waste or discard at sea of sardines caught in other fisheries.

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[4] *Ibid*, page 38

[5] Hill, K.T., P.R. Crone, E. Dorval, and B.J. Macewicz. 2016. Assessment of the Pacific Sardine Resource in 2016 for U.S.A. Management in 2016-17. Preliminary Draft for SSC CPS Subcommittee Review on 10 March 2016, page 9

[6] Pacific Fishery Management Council, April 2015 Council Meeting Decision Summary Document, April 2015, page 6

[7] Hill, K.T., P.R. Crone, E. Dorval, and B.J. Macewicz. 2016. Assessment of the Pacific Sardine Resource in 2016 for U.S.A. Management in 2016-17. Preliminary Draft for SSC CPS Subcommittee Review on 10 March 2016, page 13

[8] Pacific Fishery Management Council, April 2014 Council Meeting Decision Summary Document, April 2014, page 4

Focusing increased management attention on northern anchovy

We thank the Council for its discussion and decision at the November 2015 meeting to request that NOAA Fisheries initiate a full stock assessment for northern anchovy and to consider active management alternatives, including a new harvest control rule, for this keystone forage species by the end of 2016.[9] We encourage the Council to ensure that this important work remains a priority during the remainder of the year.

Having current and reliable information on northern anchovy will allow the Council to act with greater certainty when setting catch levels that provide for sustainable fishing activity and an adequate prey base for marine wildlife. This information will also advance the transition to ecosystem-based fishery management by providing resource managers with a clearer picture on coastal pelagic species abundance, forage availability, food web dynamics, and ultimately how our West Coast fisheries impact and are impacted by marine ecosystems. As the Council moves toward an assemblage approach to managing CPS, up-to-date information on both sardine and anchovy – the two most important finfish forage species off the West Coast that are the subject of coastwide federally managed fisheries[10] – is critical to ensuring its stewardship of sustainable fishing and a healthy forage base for all marine predators.

In conclusion, we support the Council taking action at its April meeting to establish a 2016-2017 harvest guideline of 0 mt for Pacific sardine in response to projections of low biomass; we also request that an incidental catch allowance be set conservatively and with a high degree of precaution so as to avoid additional harm to the sardine population and to dependent predators. Finally, we thank the Council for its commitment to utilizing the results of an upcoming stock assessment for northern anchovy to better address the management needs of this vital prey species.

Thank you for your consideration, and for your work to ensure sustainable fishing and healthy ocean ecosystems.

Sincerely,

Paul Shively
Project Director, U.S. Oceans, Pacific
The Pew Charitable Trusts

Gilly Lyons
Officer, U.S. Oceans, Pacific
The Pew Charitable Trusts

[9] Pacific Fishery Management Council, November 2015 Council Meeting Decision Summary Document, November 2015, page 4
[10] Pacific Fishery Management Council, Ecosystem Initiatives Appendix to the Pacific Coast Fishery Ecosystem Plan, July 2013, page A-11