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Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item C.5: Pacific Sardine Assessment, Specifications, and Management Measures

Dear Mr. Anderson and Council members:

The 2018 Pacific sardine assessment shows the northern subpopulation of Pacific sardine will have *declined by 97 percent* between 2006 and July 2018.[1] At a projected 52,065 metric tons (mt) at the start of the fishing year (July 1, 2018 – June 30, 2019), the sardine population remains below the 'cutoff' threshold and thus too low to allow for a directed fishery.

Key take-aways from the draft 2018 sardine assessment:

- The Pacific sardine population is not recovering and has declined even further compared with previous assessments.
- The summer 2017 acoustic trawl survey estimated the sardine biomass throughout the entire survey area at 36,644 mt – approximately 50% lower than estimates from 2016.
- Coastwide harvest rates exceeded maximum sustainable yield (MSY) harvest rates for five years leading up to the 2015 closure of the U.S. commercial sardine fishery.
- Survey results indicate the stock has been below the "overfished" threshold of 50,000 mt since early 2017. The July 2018 projected stock biomass is below more recent minimum stock size threshold (MSST) levels identified by the National Marine Fisheries Service (NMFS) Southwest Fisheries Science Center in its re-evaluation of sardine MSSTs.[2]

Recommendations:

- Keep the non-tribal directed fishery closed for the July 2018- June 2019 fishing year.
- For 2019, Change the start date of the fishery to January 1 and use the results of the acoustic trawl survey in a timelier fashion as recommended by the STAR panel, STAT team, and assessment authors.[3]

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[1] Hill, K.T., P.R. Crone, J.P. Zwolinski. 2018. Draft Assessment of the Pacific sardine resource in 2018 for U.S. management in 2018-19. Pacific Fishery Management Council, April 2018 Briefing Book, Agenda Item C.5. Attachment 1, Portland, Oregon. 113 p.

[2] NMFS SWFSC. 2016. Review and Re-evaluation of Minimum Stock Size Thresholds for Finfish in the Coastal Pelagic Species Fishery Management Plan for the U.S. West Coast. NOAA National Marine Fisheries Service Southwest Fisheries Science Center (August 22, 2016). Table 7, pg. 18. Available: http://www.pcouncil.org/wp-content/uploads/2016/09/E1a_Sup_NMFS_Rpt_MSSTs_SEPT2016BB.pdf

[3] Hill et al. 2018, *supra note* 1, at 7. "Both the STAT and STAR Panel agreed that the preferred survey-based assessment could be effectively implemented by shifting the fishery start date several months to minimize

- Reduce allowable catch levels for the live bait fishery, tribal fishery and bycatch in other fisheries commensurate with the decline in the sardine population.
- Update the MSST value for Pacific sardine to reflect the best available science as presented in the NMFS 2016 analysis.
- Consider modifications to the harvest control rule to prevent future overfishing and reduced impacts on sardine predators.

I. The Pacific sardine population remains too low to allow fishing

The Pacific sardine harvest control rule includes a cutoff parameter of 150,000 mt, below which directed fishing is prohibited.[4] The 2018 assessment estimates the population dropped below cutoff in early 2014 (see Table 12 in the assessment, age 1+ biomass). In April 2015, the Council took swift action to recommend that NMFS close the directed fishery, and it has remained closed since. Given this updated assessment, the Council must act to keep the non-tribal directed fishery closed during the 2018-19 fishing year, and should adjust incidental catch allowances and annual catch limits commensurate with the continued decline in the stock.

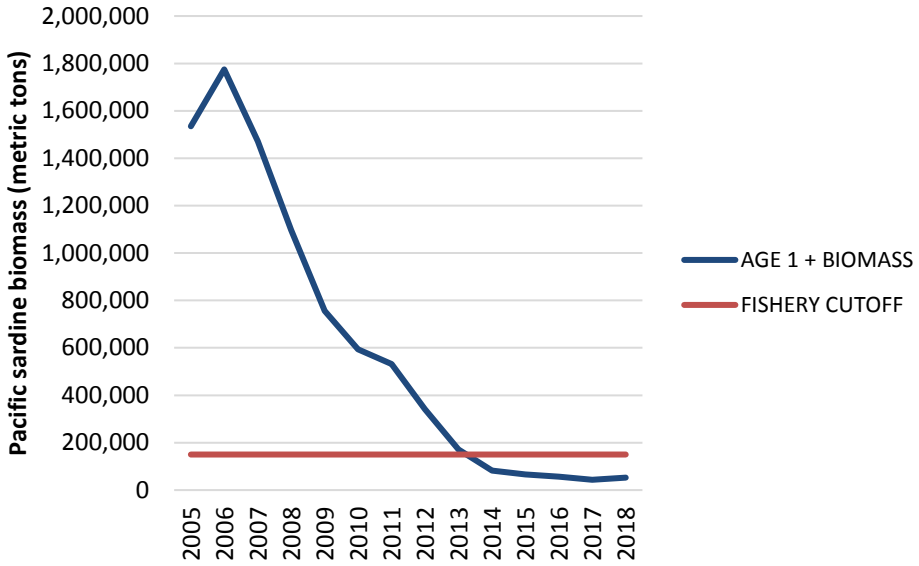

Figure 1. Pacific sardine biomass (age 1+) 2005 to 2018 in relation to cutoff.[5]

II. The MSST for Pacific sardine must updated and increased

The Coastal Pelagic Species Fishery Management Plan (CPS FMP) currently specifies that the MSST for Pacific sardine is 50,000 mt. This value is outdated and too low. In 2016 the NMFS SWFSC provided a report to the Council with updated MSST values for sardine based on the most recent data and accepted methods for setting MSST values.[6] Based on four separate

the time lag between the most recent survey and the official start date of the fishery, e.g., moving the start of the fishery from July 1st to January 1st would accomplish this goal."

[4] PFMC 2016. CPS FMP, at 37: Harvest Guideline = (BIOMASS-CUTOFF) x FRACTION x DISTRIBUTION.

[5] Data from Hill et al. 2018, *supra note* 1.

[6] NMFS SWFSC. 2016, *supra note* 2.

methods, the NMFS SWFSC calculated MSST values for Pacific sardine, arriving at a range from 61,074 mt to 121,697 mt. Figure 2 compares Pacific sardine biomass with the current MSST value in the FMP and the four alternate MSST values calculated in the NMFS SWFSC report. Consequently, the current MSST does not follow national standard one guidance[7] or use the best available science for setting MSSTs.

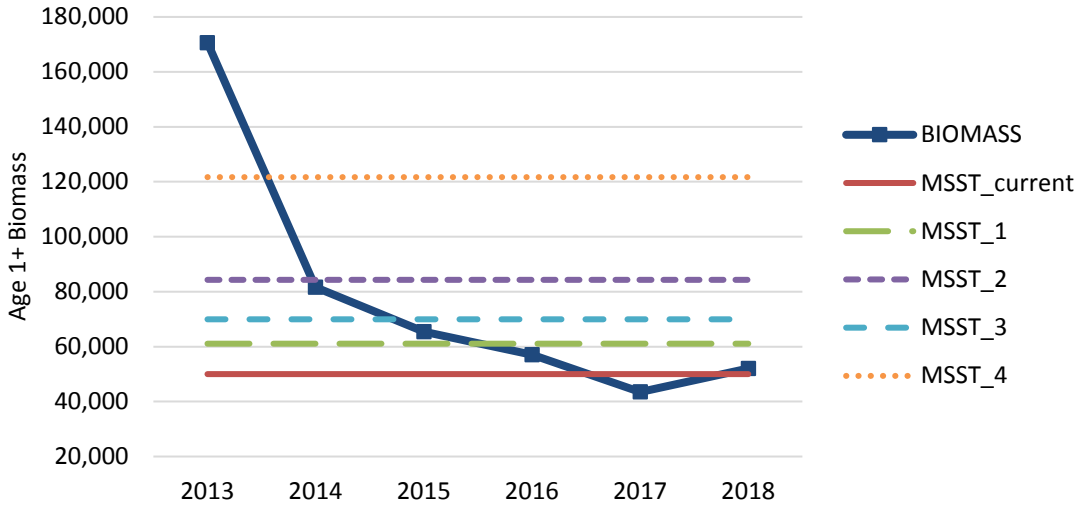

Figure 2. Sardine biomass (age 1 +) estimates from 2018 stock assessment compared with the current MSST value and four alternative MSST values using a range of stock-recruitment relationships and methods as presented by the NMFS SWFSC in 2016.[8] MSST_1 = (1-M)*SSBMSY (for M<=0.5). MSST_2 = 0.2*SSB0 MSST_3 = 0.2*SSB0current (1 gen), MSST_4 = 0.2*SSB0current (2 gen)

III. Management reforms are needed

Many scientific studies and reports recommend precautionary harvest strategies with higher cutoffs for important forage fish like sardine. Based on these studies, Oceana has requested the PFMC and NMFS revise the Pacific sardine harvest control rule by increasing the cutoff value to leave more fish in the water during periods of decline or low abundance to allow sardine to successfully reproduce, recover, and support ocean wildlife. Unless the current management framework is improved, the pattern of excessive fishing pressure on a declining stock, extended periods with low sardine abundance, and rippling ecosystem impacts are likely to continue. Now is the right time to develop an alternative, risk-based management framework. Furthermore, we highlight the need for better international cooperation and consistency in sardine management.

[7] 50 C.F.R. § 600.310(e)(2)(ii)(B). MSSTs must be expressed in terms of spawning biomass or other measure of reproductive potential and should equal whichever is *greater*: one-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years.
[8] Id.

An improved management framework for Pacific sardine would:

- Move to more real-time management: Change the start date of the fishery from July 1 to January 1 and use the acoustic trawl survey estimates as the basis for annual specifications rather than forecasting stock biomass one full year after the last survey observation.
- Limit the fishing 'fraction' to scale from 5% -15% (instead of the proposed 5%-20%).
- Examine increases to the cutoff parameter to reduce long-term impacts on sardine population dynamics, while considering ways the industry can adjust to a widely fluctuating sardine population.
- Adopt an alternative MSST value consistent with the national standard one guidelines and the analysis in the NMFS SWFSC report.
- Revise the distribution parameter to prevent coastwide overfishing and achieve target coastwide harvest rates.[9]
- Expand cooperative scientific efforts with Mexico and Canada to conduct consistent acoustic trawl surveys throughout the full range of the northern subpopulation of Pacific sardines.

We believe these changes will ultimately benefit West Coast fishing communities and ocean wildlife, while providing for more resilient CPS stocks in light of changing ocean conditions. Thank you for your consideration of these comments.

Sincerely,

Ben Enticknap
Pacific Campaign MGR & Sr. Scientist

Geoffrey Shester, Ph.D.
California Campaign Director & Sr. Scientist

[9] David A. Demer & Juan P. Zwolinski. 2017. A Method to Consistently Approach the Target Total Fishing Fraction of Pacific Sardine and Other Internationally Exploited Fish Stocks, North American Journal of Fisheries Management, 37:2, 284-293.