



September 6, 2016

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

RE: Agenda Item E.1: Minimum Stock Size Threshold Report

Dear Chair Pollard and Council Members:

We write with respect to the Minimum Stock Size Threshold (MSST) report agenda item that the Pacific Fishery Management Council (Council) will consider at its September 2016 meeting. This report is a condition to which the National Marine Fisheries Service (NMFS) agreed in order to resolve litigation over the deficiencies in Amendment 13 to the Coastal Pelagic Species Fishery Management Plan. Those deficiencies include the failure to specify adequate MSSTs for all stocks in the fishery, despite clear requirements to do so under the Magnuson Stevens Fishery Conservation and Management Act (MSA) and its regulatory guidelines. Under the settlement agreement, NMFS is obligated to consider revising (for stocks with existing MSSTs) or establishing (for those that lack specified MSSTs) MSSTs for Pacific sardine, Pacific mackerel, the central subpopulation of northern anchovy, the northern subpopulation of northern anchovy, and jack mackerel based on available scientific information. NMFS is obligated to present a report on its evaluation of revising and establishing MSSTs and make recommendations that reflect that evaluation at or before the September Council meeting.

NMFS's failure to provide this report in the Council's Advance September Briefing Book is highly disappointing. NMFS signed the agreement nearly a year and a half ago, and has had ample time to develop the report. NMFS's tardiness deprives the public of the opportunity to offer timely and informed written comments for the Council's consideration. While we are unable to comment on the contents of the report since it is not available as of the date of this letter, we offer the following comments regarding the need for the Council to take swift action to revise outdated MSSTs for Pacific sardine, Pacific mackerel, and the central subpopulation of northern anchovy and to establish MSSTs for the northern subpopulation of northern anchovy and jack mackerel.

MSSTs are a crucial part of the MSA's framework for preventing and ending overfishing. The MSA requires that FMPs prevent overfishing¹ of stocks in the fishery and include objective and measurable criteria for identifying when any of those stocks are overfished, as well as an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks in that fishery.² Those criteria, known as status determination criteria, include MSSTs, maximum fishing mortality thresholds, and overfishing levels to guide overfished and overfishing determinations.³ NMFS's 2009 National Standard 1 (NS1) guidelines directed Councils to amend their FMPs to bring them into compliance with the MSA's NS1 requirements to prevent overfishing, including establishing MSSTs. The guidelines listed MSSTs among the measures that FMPs "must" include in order to provide clear measures for determining when a stock is overfished, experiencing overfishing, or approaching an

¹ 16 U.S.C. 1851 § 301(a)(1).

² 16 U.S.C. 1853 § 303(a)(10).

³ 50 C.F.R. § 600.310(b)(1)(i-iv), (c) and (e).

overfished condition.⁴ These changes should have been made by 2011. Failing to have overfished thresholds for species that are in the fishery poses a serious conservation risk in that managers have no benchmark for determining when a population is overfished, rebuilding plans will not be developed for depleted species, and adequate management attention will not be given to those species.

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.⁵ Neither the MSA nor the NS1 guidelines provide for exemptions for any species regardless of how widely their populations fluctuate. Since the first criteria of “one-half the MSY stock size” is equivalent to one half the biomass at MSY (commonly denoted as B_{MSY}), such information is clearly available for all species for which the B_{MSY} reference point is available in a management context. Therefore, if a B_{MSY} estimate is available in scientific literature that is currently used as a basis for management, the $\frac{1}{2} B_{MSY}$ reference point exists. Unless there is data suggesting a *greater* MSST based on the second criteria (rebuilding to MSY within 10 years), the MSST must be equal to the best available estimate of $\frac{1}{2} B_{MSY}$.

The CPS FMP currently specifies an MSST of 50,000 mt for Pacific sardines and 18,200 mt for Pacific mackerel. The Environmental Assessment for Amendment 13 lists a MSST value of 50,000 mt for the central subpopulation of northern anchovy (this value is not specified in the FMP itself). None of these overfished thresholds are established in accordance with the NS1 guidelines. MSY is a measure of long-term average yield or catch. F_{MSY} is the fishing mortality rate that if applied over the long-term, would result in MSY, and B_{MSY} is the long-term average size of the stock that is achieved when fishing at F_{MSY} . For Pacific sardine, based on the science used in Amendments 8 and 13 to the CPS FMP, one-half the MSY stock size as determined in CPS FMP Amendment 8 is 704,000 metric tons.⁶ This is based on the constant harvest strategy of $F_{MSY} = 12\%$ (stochastic F_{MSY}), resulting in a long-term mean biomass of 1,408,000 metric tons of age 1+ sardine. Therefore 1,408,000 metric tons of age 1+ sardine is equal to the biomass level that produces MSY over the long-term, or B_{MSY} and the MSST should equal 704,000 metric tons.

More recently, Hurtado-Ferro & Punt 2014⁷ produced an updated simulation model for Pacific sardine, which served as the basis for the PFMC’s November 2014 action to modify the temperature-based FRACTION parameter.⁸ They calculated a new deterministic MSY harvest rate for Pacific sardine of 19%, resulting in a mean B1+ biomass of 571,700 mt (Table 4, Scenario M, Mean B1+), which is equivalent to B_{MSY} . One half of this value equals 285,850 mt. Absent new information, this appears to be the best, most recent available estimate of B_{MSY} , and should therefore be the lower bound of MSST for Pacific sardine.

For the central subpopulation of northern anchovy, the current default harvest control rule uses an MSY proxy of 123,000 mt derived from a bioeconomic model by Conrad 1991 (Conrad 1991 actually

⁴ 50 C.F.R. § 600.310(c). Despite the use of ‘must’ here, it is interesting to note that the national standards in the MSA are treated as ‘statutory principles that must be followed in any FMP,’ while NMFS characterizes guidelines as ‘summariz[ing] Secretarial interpretations’ and ‘intended as aids to decisionmaking; FMPs formulated according to the guidelines will have a better chance’ for approval. 50 C.F.R. § 600.305(a)(3).

⁵ 50 C.F.R. § 600.310(e)(2)(ii)(B).

⁶ PFMC and NMFS 2011. Amendment 13 to the Coastal Pelagic Species Fishery Management Plan. Draft Environmental Assessment and Regulatory Impact Review, at 57 (Option L, Stochastic F_{msy} .)

⁷ Hurtado-Ferro and Punt. 2014. Revised analyses related to Pacific sardine harvest parameters. March 2014 PFMC Meeting Agenda Item I.1.b. http://www.pcouncil.org/wp-content/uploads/11b_ATT1_REVISIED_ANALYSIS_SARDINE_HRVST_PARMTRS_MAR2014BB.pdf

⁸ PFMC and NMFS. 2014. Draft Environmental Assessment. Incorporating the use of a new temperature index into the calculation of the Pacific sardine harvest guideline formula. Agenda Item E.2.a Att.1, November 2014. http://www.pcouncil.org/wp-content/uploads/E2a_Att1_Draft_EA_SardineHarvestFraction_NOV2014BB.pdf

produced an MSY of 123,336 mt).⁹ The associated B_{MSY} value from that bioeconomic model (termed X_{MSY} in Conrad 1991) is 733,410 mt. One half of this value equals 366,705 mt. We recognize and assert elsewhere that this bioeconomic model and reference points based on it are out of date, and the reference points should be updated based on more recent information. However, at the present time, this model is currently being used as the basis for the OFL, ABC, and ACL for this stock, and unequivocally provides an associated B_{MSY} level. Therefore, until the Council and NMFS use current scientific information to update the OFL, ABC, ACL, and other anchovy management measures to reflect the current status of the population, the lower bound of MSST for the central subpopulation of northern anchovy is 366,705 mt.

For Pacific mackerel, there does not currently appear to be scientific support for the current MSST of 18,200 mt offered in the CPS FMP or elsewhere. In fact, the rationale in the CPS FMP for this MSST appears to be inconsistent with the NS1 guidelines. Specifically, CPS FMP Amendment 8 states: "An overfished stock is defined to be one whose estimated or projected biomass is 18,200 mt or less.... The recommended definition of overfishing for Pacific (chub) mackerel (18,200 mt) is lower than for sardine, because mackerel are not important as forage and there is little need to maintain a forage reserve."¹⁰ Furthermore, the CPS FMP (Amendment 8, Appendix B, p. B-102) cites MacCall (1985) as the simulation model for which Pacific mackerel management is currently based. That simulation model produced a maximum sustainable yield at FRACTION = 0.30, associated with an average total (age 1+) biomass (B_{MSY}) of 115,000 metric tons.¹¹ Using these numbers, $\frac{1}{2} B_{MSY} = 57,500$ metric tons, which should be the lower bound of MSST for Pacific mackerel. We recommend the Council use the best available estimate of $\frac{1}{2} B_{MSY}$ as the MSST for Pacific mackerel.

We look forward to working with the Council to improve the management of Coastal Pelagic Species to better reflect current information, an updated understanding of the dynamics and vulnerability of these species, and the need specify Optimum Yield. We also look forward to NMFS's recommendations on MSSTs for these stocks, which are not publicly available at the time of this letter. Based on NS1 guidelines, and absent additional information, the MSST for Pacific sardine should be no less than 285,850 mt, the MSST for the central subpopulation of Northern anchovy should be no less than 366,705 mt and the MSST for Pacific mackerel should be no less than 57,500 mt. We request the Council establish MSSTs for all CPS stocks as required by the MSA and NS1 guidelines.

Sincerely,



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⁹ Conrad, J.M. 1991. A Bioeconomic Analysis of the Northern Anchovy. Working Papers in Agricultural Economics. September 1991. 91-10. 34pp. Available at <http://ageconsearch.umn.edu/bitstream/7266/2/wp910010.pdf>. Note: Amendment 8 to the CPS FMP (p. B-104) states "MSY for northern anchovy in the central subpopulation is estimated to be 123,000 mt per year at a total biomass level of about 733,000 mt (Conrad 1991)."

¹⁰ PFMC. 1998. Coastal Pelagic Species Fishery Management Plan Amendment 8, Appendix B. Options and analyses for the Coastal Pelagic Species Fishery Management Plan. p. B-102.

¹¹ MacCall, A.D., Klingbeil, R.A., and Methot, R.D. 1985. Recent Increased Abundance and Potential Productivity of Pacific Mackerel (*Scomber japonicus*). CalCOFI Rep., Vol. XXVI. Table 5: Yield and Biomass Statistics for Various Fractions, Given a Cutoff of 18,144 MT (20,000 short tons), Based on Simulations Using the Best Fitting Ricker Stock-Recruitment Model. Note: Average Yield peaks at 29,000 MT at a Fraction of 0.30 where average total biomass is 115,000 MT.