

April 8, 2014

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

RE: Agenda Item H.1 – 2014/15 Pacific Sardine Management Measures

Dear Chair Lowman and Council Members,

We write with regard to the Pacific Fishery Management Council's (Council) determination of catch levels for the 2014/15 Pacific sardine fishing season, and management of the fishery in general. First, we request that the Council set the fishing rate for next season according to the best available science. We further request that the Council continue efforts to incorporate ecological considerations into the management process. Taking these actions will help ensure the long-term achievement of optimum yield (OY)¹ and sustainability of the fishery.

Specifically, we request that the Council:

- Establish a harvest guideline that corresponds to the new California Cooperative Oceanic and Fisheries Investigation (CalCOFI) temperature index and updated temperature-productivity relationship by setting the annual fishing rate (FRACTION) at 12.2 percent.
- Continue analysis and development of alternative control rules and management approaches for the coastal pelagic species fishery management plan (CPS FMP) that explicitly account for ecological considerations such as predator forage needs.

Below we provide greater detail on these requests.

Use CalCOFI temperature index to determine 2014/15 harvest guideline

The harvest control rule (HCR) for Pacific sardine sets fishing rates by using sea-surface temperature (SST) as a proxy for sardine productivity. Last year, scientists found that the annual CalCOFI SST index more accurately corresponds to sardine productivity than the previous index measured at Scripps Pier.² In March 2014, the Council adopted the new CalCOFI index for setting fishing rates for calculation of the annual overfishing limit (OFL) for Pacific sardine.

¹ 16 U.S.C. 1802 § 3(33)(B).

² Lindegren, M. and D. M. Checkley, Jr. 2013. Temperature dependence of Pacific sardine (*Sardinops sagax*) recruitment in the California Current Ecosystem revisited and revised. *Can. J. Fish. Aquat. Sci.* 70: 245- 252.

However, because a formal change to the actual HCR requires modifications to the CPS FMP and federal rulemaking, the Scripps Pier index will remain in place for now and be used to set the fishing rate for the upcoming season. The Council also requested an analysis of additional fishing rate alternatives for FRACTION for consideration prior to taking final action on modifying the HCR. In summary, the need for further Council action means that the *status quo* HCR could be used to set catches for next season despite broad agreement that it no longer represents the best available science. In terms of impact to the specifications process, this means that fishing rates could be set at 15 percent (based on Scripps Pier index) rather than 12.2 percent (based on CalCOFI index).

Despite these technical impediments, the Council should set FRACTION at 12.2 percent for the 2014/15 Pacific sardine fishing season to establish an annual harvest guideline that corresponds to the best available science. Regional fishery management councils are required to make decisions based on the best available science, and to set catch levels that account for all relevant ecological, social and economic factors.³ Councils also have clear authority to take action during the specifications process to respond to best available science, including modifications to HCR parameters such as FRACTION. We agree with and support the Council's policy of setting fishing rates for Pacific sardine based on using SST as a proxy for sardine productivity. According to the best available science regarding the relationship between SST and productivity, that fishing rate should be 12.2 percent.

Ensure proper accounting of predator needs

As we have noted before,⁴ the harvest control rule for Pacific sardine is innovative in that it adjusts fishing rates according to sardine productivity, includes a biomass reserve for rebuilding purposes, and buffers against international catch. However, this rule still determines catch levels from a single species perspective. The fundamental question that remains unanswered is where in the management process is there an accounting of predator needs and how is that going to be done? Accounting for ecological considerations such as the forage needs of dependent predators is required by law⁵, is an overarching goal of ecosystem-based fishery management, and is a specific goal of the CPS FMP.⁶

In our view there are two areas where the needs of predators can and should be incorporated into the management process. The first is through the CUTOFF parameter in the Pacific sardine harvest control rule. The second is through ecological considerations incorporated as part of the

³ 16 U.S.C. 1851 § 301(a)(1)

⁴ See Pew correspondence to PFMC. November 2013. [Agenda Item E.3.c.](#)

⁵ 16 U.S.C. 1851 § 301(a)(1)

⁶ PFMC. 2011. [Coastal Pelagic Species Fishery Management Plan](#). Page 12

determination of optimum yield. Below we briefly discuss how both of these approaches can help to maintain a sustainable fishery and a healthy ocean ecosystem.

CUTOFF

In the harvest control rule for actively managed coastal pelagic species, the CUTOFF parameter is the biomass level below which directed harvest 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 should the stock become overfished.⁷ For Pacific sardine, the CUTOFF value is fixed at 150,000mt and is subtracted off the top from the overall biomass available to the fishery. Accordingly, harvest levels determined by the rule will decline as overall biomass declines until it reaches the CUTOFF, at which point the harvest guideline would be zero.

The CUTOFF parameter can and should both adequately account for rebuilding needs and provide sufficient forage for dependent predators by maintaining Pacific sardine's relative contribution to the California Current forage base. New information is coming online that can inform an ecosystem-based CUTOFF, including quantitative data on predator diet dependency and availability of alternate but functionally similar forage species such as Northern anchovy.⁸ As ongoing data collection, research and modeling efforts continue, the Council should respond by developing a CUTOFF that accomplishes the CPS FMP's goal of maintaining adequate forage for dependent predators.

Optimum Yield determination

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandates that fishery management plans (FMPs) seek to achieve OY in order to provide the greatest overall benefit to the nation, particularly with respect to food production, recreational opportunities and protecting marine ecosystems.⁹ Under the MSA, OY is defined as Maximum Sustainable Yield as reduced by relevant social, economic and ecological factors.¹⁰ The incorporation of these factors is thus a requirement of FMPs.¹¹ As stated above, both the CPS FMP and the National Standard 1 (NS1) Guidelines also recognize the need for fishery managers to provide adequate forage for dependent predators.^{12, 13}

As the Council undertakes the annual process of setting catch levels for the Pacific sardine fishery, ecosystem science and information relevant to the issue of providing adequate forage

⁷ *Idib.* Page 38.

⁸ PFMC. November 2013. NMFS Report on Coastal Pelagic Species Management. [Agenda Item E.1.c](#)

⁹ 16 U.S.C. 1851 § 301(a)(1).

¹⁰ 16 U.S.C. 1802 § 3(33)(B).

¹¹ 50 C.F.R. § 600.310(e)(3)(iv)(C).

¹² PFMC. 2011. [Coastal Pelagic Species Fishery Management Plan](#). Page 12.

¹³ 50 C.F.R. § 600.310(e)(3)(iii)(C).

must be considered. Occasionally, that information will arise from recent scientific developments, survey results, or other empirical data that are not accounted for in the normal suite of control rules for the fishery. For example, information may be presented through the Annual State of the Ecosystem Report, and/or survey results from CalCOFI or NOAA Fisheries cruises may be available that are relevant to the management of the Pacific sardine fishery. In these situations the Council has an obligation to respond to that information through management actions such as reductions in catch or other measures to ensure that negative ecological impacts from the fishery are minimized and/or avoided. As new ecosystem information becomes available – through ecosystem modeling, survey and/or assessment results, or data collection and research - to inform the Council’s determination of OY, that information must be incorporated into the decision making process, in particular if it is not directly accounted for in the HCR through CUTOFF.

Conclusion

As we’ve seen in the last two assessments, the Pacific sardine stock is currently in a state of low abundance and low productivity relative to the last 20 years of the fishery. An appropriate degree of precaution is necessary now more than ever to ensure that the stock is able to rebound rapidly once ocean conditions become favorable, and that dependent predators are able to forage successfully, whether on Pacific sardine, Northern anchovy, or other functionally similar species. As a first step, the Council can act today to adopt fishing rates that correspond to the best available science to maintain ecosystem health. Moving forward, the Council should embrace new scientific information to ensure it remains a leader in the transition to ecosystem-based fishery management by managing forage fisheries in a way that both prevents overfishing and maintains adequate forage for the larger marine ecosystem.

We appreciate the Council undertaking this endeavor and look forward to working with all stakeholders to maintain healthy oceans and sustainable fisheries.

Thank you in advance for your time and consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Steve Marx", written in a cursive style.

Steve Marx

The Pew Charitable Trusts

smarx@pewtrusts.org