THE PEW CHARITABLE TRUSTS

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Portland, OR 97202

October 9, 2013

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

RE: Data, Assessment and Management of Northern Anchovy

Dear Mrs. Lowman and Council Members,

We write to request that the Pacific Fishery Management Council (Council) act with precaution in establishing maximum sustainable yield (MSY) and corresponding status determination criteria (SDCs) for the northern subpopulation of northern anchovy. Additionally, we request that the Council and National Marine Fisheries Service (NMFS) conduct a full benchmark stock assessment for both the northern and central subpopulations of northern anchovy, and to shift northern anchovy from the "Monitored" to the "Actively Managed" category in the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP).

Northern anchovy is a keystone forage species in the California Current Ecosystem and is preyed upon by a wide variety of marine wildlife including commercially and recreationally valuable fish, mammals and sea birds.[1] Furthermore, while the northern subpopulation of northern anchovy is considered "lightly fished,[2]" catches of both subpopulations[3] have ranged roughly between 2000 – 20,000mt per year over the last 15 years (behind only market squid and Pacific sardine in catch in the CPS FMP), not including catches from Mexico.[4] As harvest guidelines for Pacific sardine have decreased and appear to be continuing to decrease, fishing effort is likely to shift toward northern anchovy. Unfortunately, information on the status of this stock is outdated and highly uncertain. For these reasons the Council should be proactive and begin to focus more attention on data collection, assessment, and management of northern anchovy.

Specifically, we request that the Council:

- Take action now to establish precautionary reference points for northern anchovy, starting with MSY for the northern subpopulation.
- Request NMFS collect all fishery dependent and independent data needed to conduct a stock assessment for both subpopulations and conduct such assessments.
- Reassign northern anchovy to the Actively Managed category within the CPS FMP.

Below we discuss these recommendations in more detail.

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[1] PFMC. February 2013. Pacific Coast Fishery Ecosystem Plan. Public Review Draft of Ecosystem Initiatives Appendix. Page A-10.
[2] PFMC. November 2010. Supplemental SSC Report. Agenda Item I.2.c
[3] There are two subpopulations of northern anchovy in U.S. waters. The northern subpopulation ranges from San Francisco to Southeast Alaska and the central subpopulations ranges from San Francisco to Baja, Mexico.
[4] PFMC. June 2011. Status of the Pacific Coast Coastal Pelagic Species Fishery and Recommended Acceptable Biological Catches; Stock Assessment and Fishery Evaluation 2011. SAFE Tables, Appendix A.

MSY for Northern Subpopulation of Northern Anchovy

At the November meeting, the Council must take action to establish MSY, or an MSY proxy, for the northern subpopulation of northern anchovy. While we support taking this action, we request that the Council act with a high level of precaution in doing so for the following reasons detailed below:

- Estimates of abundance for this stock are outdated and highly uncertain.
- Fmsy for this stock is based upon the qualitative assumption that northern anchovy is as productive as Pacific mackerel.
- Coastwide catches have fluctuated widely between 2000 – 20,000mt per year over the last 15 years.
- The portion of the northern subpopulation that resides in U.S. waters is unknown.[5]
- Northern anchovy are a critical forage species in the California Current.

In a supplemental report from November 2010, the Council's Scientific and Statistical Committee (SSC) states that the northern subpopulation of northern anchovy is "lightly fished" and, citing limited data on the species, recommends establishing a biomass estimate by averaging the only two available estimates of abundance. One estimate is from an egg and larval production survey conducted in the 1970's and the other is from a recent acoustic survey intended to assess Pacific sardine. The average of these two estimates is 130,000mt. From there, the SSC recommended that reference points be established using the Fmsy value for Pacific mackerel (.3) because northern anchovy can reasonably be expected to be as productive.[6] While this may be the case, the assumption should be scientifically verified and reconciled with the fact that recruitment for Pacific mackerel (like other CPS) is highly variable and unrelated to spawning biomass.[7] Under these two assumptions and the existing control rule for monitored species, the overfishing limit (OFL) for the northern subpopulation of northern anchovy would be 39,000mt. With the SSC established uncertainty buffer of 75%, the resulting annual acceptable biological catch (ABC) would be 9,750mt.

During the process of developing Amendment 13 to the CPS FMP, the Council chose not to establish the above biological reference points (BRPs) for the northern subpopulation of northern anchovy and instead added language to the FMP that deferred this action to the annual specification process for monitored CPS stocks.[8] However, due to a recent court order,[9] the Council and NMFS must now take action to establish MSY (a biological reference point) for this stock and finds itself in a position where it must rely on this outdated and uncertain information.

We find this scenario to be highly problematic. Because of the critical ecological role that northern anchovy plays in the California Current Ecosystem, and the varying levels of regulation

[5] PFMC. September 2011. Coastal Pelagic Species Fishery Management Plan as amended through Amendment 13. P. 41
[6] PFMC. November 2010. Supplemental SSC Report. Agenda Item I.2.c
[7] Parrish, R.H. 1974. Exploitation and recruitment of Pacific Mackerel, *Scomber japonicas*, in the northeastern Pacific. Calif. Coop. Oceanic Fish. Invest. Rep. 17:136-140-101.
[8] PFMC. September 2011. Coastal Pelagic Species Fishery Management Plan as amended through Amendment 13. P. 41
[9] See Oceana, Inc. v. Bryson, No. C-11-6257 (N.D. Cal. Apr. 12, 2013) (summary judgment order).

for commercial catch throughout the coast,[10] it is essential that the Council begin to focus more attention on northern anchovy. Having current and reliable information on northern anchovy is necessary to establishing SDCs with certainty and consequently to ensuring the sustainability of the fishery, maintaining its role in the ecosystem and achieving the CPS FMP's objective of maintaining adequate forage for dependent predators.[11]

Stock Assessment

In order to manage CPS such as northern anchovy with a higher degree of certainty and a reduced level of precaution, the Council must obtain sufficient information on stock status and ecosystem role. As discussed above, there is no reliable information on the abundance of either subpopulation of northern anchovy. The biomass estimate for the northern subpopulation is based on outdated and uncertain information. The central subpopulation was last assessed in 1995 and according to recent Council documents is currently assumed to be roughly 333,000mt.[12]

According to the most recent CPS Stock Assessment and Fishery Evaluation document, landings of northern anchovy have fluctuated between roughly 2000 – 20,000mt per year over the last 15 years, with coastwide catch exceeding 15,000mt as recently as 2008.[13] Compounding current uncertainty due to lack of recent data is the fact that while productivity is assumed to be similar to that of Pacific mackerel (a higher trophic-level species), northern anchovy experiences high natural mortality, with between 45 – 55% of the stock dying of natural causes (including predation) each year.[14] As stated above, this assumption should be scientifically verified.

Perhaps most alarming is the fact that the most recent survey cruise conducted by the Southwest Fishery Science Center (SWFSC) detected a complete absence of northern anchovy eggs in the spring of 2013.[15] The area surveyed by the SWFSC cruise comprises much of the range of the central subpopulation, which the Council assumes to be the larger of the two and thus assigns it a larger ABC. The fact that there were no northern anchovy eggs found in the survey of the central subpopulation – the larger supposed population – reinforces the critical need to set precautionary catch levels for the northern subpopulation.

For a fishery with a combined ABC of 34,750mt (should the Council adopt the proposed BRPs for the northern subpopulation), much more reliable assessment data is needed. This includes not just acoustic-trawl survey data, but fishery dependent data such as length-age compositions. In this regard, we agree with and support the following CPS Management Team statement from April 2011:

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[10] For example, Washington restricts the catch of northern anchovy to 5mt daily/10mt weekly for bait purposes only, while Oregon maintains an open access commercial fishery for northern anchovy.
[11] PFMC. September 2011. Coastal Pelagic Species Fishery Management Plan as amended through Amendment 13. P. 12
[12] PFMC. June 2011. Status of the Pacific Coast Coastal Pelagic Species Fishery and Recommended Acceptable Biological Catches; Stock Assessment and Fishery Evaluation 2011. P. 58
[13] PFMC. June 2011. Status of the Pacific Coast Coastal Pelagic Species Fishery and Recommended Acceptable Biological Catches; Stock Assessment and Fishery Evaluation 2011. SAFE Tables, Appendix A.
[14] NOAA/NMFS. June 2013. Fishwatch. U.S. Seafood Facts: Northern Anchovy.
[15] NOAA/NMFS. August 2013. Southwest Fishery Science Center. Egg Distribution Maps for Sardine, Anchovy and Jack Mackerel.

> *Biomass estimates for northern anchovy cannot be derived from the acoustic-trawl surveys conducted to date. However, the Panel concluded that acoustic-trawl methods could provide biomass estimates for northern anchovy if surveys were designed for that purpose. The CPSMT believes that acoustic-trawl surveys that provide biomass estimates for the northern and central subpopulation stocks would be valuable because the most recent biomass estimates for these stocks date from the mid-1970s and mid-1990s, respectively.*[16]

In sum, having newer and better information on northern anchovy, as described above, will allow the Council to set BRPs and catch levels for this stock with a much higher degree of certainty, to better understand the cyclical nature of this stock and its relationship to Pacific sardine, to better manage the entire CPS assemblage, to maintain the role of northern anchovy in the ecosystem and ultimately to manage all the Council's FMPs with an ecosystem-based approach.

Active Management

Consistent with the need to conduct a stock assessment for northern anchovy discussed above is our request that the stock be reassigned to the Actively Managed category. According to the CPS FMP, this action is necessary for the stock to be given the priority attention it deserves:

> *The purpose of Active and Monitored management is to use available agency resources in the most efficient and effective manner while satisfying goals and objectives of the FMP. The distinction enables managers and scientists to concentrate efforts on stocks and segments of the CPS fishery that need the greatest attention or where the most significant benefits might be expected.*[17]

Both Actively Managed and Monitored species require SDCs and ACLs. However, data collection, stock assessments and other scientific products are prioritized for those species that are Actively Managed relative to those that are Monitored. This prioritization and the science that comes with it would allow the Council to act with more certainty and better manage northern anchovy.

We also note that Pacific mackerel remains in the Actively Managed category, and northern anchovy in the Monitored category, despite the fact that landings of northern anchovy have on average far exceeded those of Pacific mackerel since 2001 in terms of both tonnage and ex-vessel revenue.[18] This scenario appears to be inconsistent with the intended distinctions between the two categories, which are meant to assign greater scientific and management resources to those stocks with greater importance to the broader CPS fishery

[16] PFMC. April 2011. Supplemental CPSMT Report. Agenda Item C.3.b
[17] PFMC. September 2011. Coastal Pelagic Species Fishery Management Plan as amended through Amendment 13. P. 8
[18] PFMC. June 2011. Status of the Pacific Coast Coastal Pelagic Species Fishery and Recommended Acceptable Biological Catches; Stock Assessment and Fishery Evaluation 2011. SAFE Tables, Appendix A.

Last, we'd like to point out that this request would not require an FMP amendment and all the associated workload concerns. According to the CPS FMP:

> *Changes to the appropriate management category for each species can be made annually by the Council based on all available data, including ABC levels and MSY control rules, and the goals and objectives of this FMP. . .In addition, CPS in the Monitored management category can be reassigned to Active management on short notice under the point-of-concern framework.*[19]

An Ecosystem-Based Approach to Management

Focusing increased attention on northern anchovy is also essential to managing the CPS assemblage with an ecosystem-based approach. As noted by the Ecosystem Plan Development Team in November 2011:

> *…the greatest proportion of energy flow in the California Current Ecosystem appears to be through krill, market squid, northern anchovy, Pacific sardine and Pacific herring.*[20]

This means that the most important finfish forage species off of our West Coast are Pacific sardine, northern anchovy and Pacific herring. Of these three species, only Pacific sardine and northern anchovy are the subject of coastwide federally managed fisheries. From an ecosystem perspective, the Council cannot truly accomplish the CPS FMP objective of maintaining adequate forage for dependent predators without having sufficient knowledge on the abundance and status of both of these keystone forage species. This is also consistent with the Council's Research and Data Needs for northern anchovy which state:

> *Reasonable estimates of their (northern anchovy and jack mackerel) current biomass are needed for sound ecosystem management, particularly before ecosystem models can be used to accurately forecast dynamics of planktivorous organisms in the food web.*[21]

Ecosystem and multi-species models are currently being developed and refined to inform the fishery decision-making process and to help usher in the transition to ecosystem-based fishery management. One of the key questions these models seek to answer regards food availability and forage abundance for managed and other species of concern. The importance of northern anchovy in the marine food web, as well as its importance as a commercial stock, requires that we know more about its status and role in the ecosystem.

[19] PFMC. September 2011. Coastal Pelagic Species Fishery Management Plan as amended through Amendment 13. P. 9
[20] PFMC. February 2013. Pacific Coast Fishery Ecosystem Plan. Public Review Draft of Ecosystem Initiatives Appendix. Page A-10.
[21] PFMC. July 2013. Research and Data Needs. P.48

Conclusion

In many regards, the CPS FMP utilizes innovative approaches to managing fisheries with an ecosystem-based approach. The FMP itself recognizes that its managed stocks are important to the broader ecosystem as forage. Additionally it contains an explicit objective to maintain adequate forage for dependent predators. It also manages some stocks in the fishery by using environmental indices as a proxy for productivity, establishes a cutoff for rebuilding purposes, and reduces catch as abundance declines. In short, the CPS FMP can serve as a model for ecosystem-based management of forage stocks.

Having current and reliable information on northern anchovy will allow the Council to act with more certainty in setting catch levels that provide for sustainable fishing activity as well as adequate forage for marine wildlife. Having this information will also further advance the transition to ecosystem-based fishery management by giving resource managers a clearer picture on ocean conditions, forage availability, food web dynamics and ultimately how our fisheries impact and are impacted by the ecosystem. In the absence of this kind of information, an ecosystem-based approach calls for managers to act with a high level of precaution, as we are requesting here. Once sufficient information is available and utilized, the Council will be able to manage with a higher degree of certainty and reduce the level of precaution needed to ensure achievement of its ecosystem goals and objectives. In closing, it is for these reasons we are requesting that the Council and the NMFS NW Region begin to shift additional attention and resources to data collection, scientific research, assessment, and management of northern anchovy.

Thank you in advance for your time and consideration. We look forward to continuing to work with the Council to ensure a healthy ocean and sustainable fisheries.

Sincerely,

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