E-Portal Public Comments: March 2019

The following comments were received by the Advanced and Supplemental Briefing Book Deadlines.

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B.1: Comments on Non-Agenda Items

Janet Thew

none
02/18/2019 08:36 AM PST

There's a simple way to increase the number of salmon....increase the number of beavers. More and more professionals are finally acknowledging that beavers are not the enemy. They create habitat and therefore help salmon. Please share this info. Thanks. Janet Thew Loomis CA Beavers return to Elwha nearshore good for fish A recent increase in beaver activity along the Elwha nearshore is good news for the juvenile salmon population. In a video posted by the CWI in December, a beaver can be seen in the area nearshore, digging and chopping down a tree. The nearshore, where the Elwha River meets the Strait of Juan de Fuca, is critical to salmon spawning. Many young salmon spend time in the estuary acclimating to saltwater before they head out to the ocean. Beavers improve the habitat for the juvenile salmon populations in that area. “Beavers are ecological engineers,” said Anne Shaffer, lead scientist with the CWI. “They allow water to flow, to channelize. They increase the ecological productivity of the area.”

Pacific Fisheries Management Council

Public Comment

January 21, 2019

RE: Agenda Item D.2 Salmon Rebuilding Plans

Specifically Sacramento River Fall Chinook and

Klamath River Fall Chinook

Chairman and Council:

We stand united as the California delegation to the Salmon Advisory Subpanel in support of Alternative I of 4.2 Recommendation 2 in the Sacramento River Fall Chinook (SRFC) and Klamath River Fall Chinook (KRFC) salmon rebuilding plans.

4.2 Recommendation 2 Alternative 1: We believe the existing SRFC and KRFC models provide ample flexibility to manage prudently these ocean salmon fisheries. A recent example is 2018 when the SRFC California ocean salmon season was established with an escapement goal of 151,000 versus the 2018 escapement forecast which provided abundance of 122,000. The 2018 management action's stated goal was to assure enough adult spawners returned to the Sacramento River system so the required 3-year geometric mean abundance of 122,000 had a higher probability of being realized.

We note the existing control rules for both stocks were developed and adopted by the Council with the intent of managing the stocks throughout their entire range of abundance: higher impacts in times of abundance, and lower impacts in times of scarcity. The analysis supporting the adoption of these kinds of conservation measures demonstrated the effectiveness of abundance-based controls relative to the protection of the stocks, while maximizing the overall benefit to the direct user groups and general public.

We also note that while the expected rebuilding times are somewhat longer under alternative 1 (see figure 4.6.a in both rebuilding plans) the likelihood of achieving rebuilding within the mandated 10-year time period is essentially the same as for the two action alternatives for the Sacramento stock, and nearly the same for the Klamath stock. The 50% rebuilding probability is 3 years for the Sacramento stocks, and 4 years for the Klamath – both <u>well</u> within the 10-year maximum allowable.

However, the analysis in section 5 of both rebuilding plans indicates the potential economic loss associated with alternatives 2 and 3, would be significantly higher relative to alternative 1. At least $45.6 million would be lost per year to the fishing communities south of Cape Falcon under alternatives 2 and 3 relative to alternative 1.

Imposing such a draconian economic hardship on the fishing communities without a substantial improvement in the rebuilding times would be inconsistent with the legal requirements of the MSA.

4.3 Recommendation 3: (Fall fisheries) recommends consideration to eliminate or limit fall (September through December) fisheries. We believe considerations to adjust fall fisheries in order to promote an acceptable escapement falls within existing (status quo) fishery models and season structuring protocol. **We do not believe** this management tool needs to be singled out as an exclusive criterion when developing a salmon season.

4.4 Recommendation 4: (*de minimis* fisheries) We are most concerned with this recommendation which proposes to limit the scope of the control rule. This management tool is a major contributor to the fleet and supporting community's economic ability to survive in low abundance years. We fear a complete economic collapse of the commercial and recreational fleets as well as critical shore based infrastructure if this action is adopted. **Therefore, we strongly extend our opposition to this recommendation.**

4.5 Recommendation 4: Habitat Committee's engagement is welcome. The salmon rebuilding plans highlights that one of the major contributors to low abundance is in-river events and practices. We suggest the Habitat Committee explore water releases, hatchery practices, and interagency communications regarding water flows and hatchery releases. We strongly support a Council decision to direct the Habitat Committee's review.

4.6 Analysis of Alternatives: The SST outlines a model which "assesses the probability of a stock achieving rebuilt status." Generally, we agree that using most recent abundance estimates provides useful information in assessment of current and future stock. We recommend that a full review of KRFC and SRFC models to assure components of the models are representing current conditions. For example, in the mid-80's California issued 5,000 limited entry commercial salmon permits. Most vessels were 40 feet or greater in length. In 2017, of the remaining 1,408 permits, only 398 had lands. There was also a shift toward smaller vessels. The significance is smaller vessels have less production capability and range to operate. Today's fleet does not have the harvest impact that the original fleet had. Like examples can also be made of the size and composition of the charter boat fleet.

We believe further development of 4.6 has value, but is not ready for implementation. We recommend the Council direct the STT to continue its work, and consider updating the models to reflect current conditions and include the San Joaquin River system in the SRFC Harvest Model.

4.7 Further Recommendations:

We see the list of five topics as an extension of 4.6. Each topic, including 4.6, may be mutually exclusive. We believe the overall value of these works is to improve prediction and forecasting abundance by better understanding some of the causes and relationships which influence in-river salmon populations. We support any effort to better predict abundance. And we encourage STT to engage and include full participation of all user groups as work proceeds.

5.0 Socio-Economic Impact of Management Strategy Alternatives:

These rebuilding plans use a 10 year average, 2016 inflation adjusted, value to the personal income impact to commercial and recreational fisheries with 2008 and 2009 excluded due to closure. The average commercial value is $25M and recreation value is $19.9M. We believe that a more fully impacted value needs to be developed which includes first and second tier support structures. For example, the decision impact of restricted fisheries has led to less access to support facilities such as fuel, ice, and tackle vendors. Recreational impact has seen fewer choices in electronic and mechanical service and maintenance. A fuller impact value of these services, the jobs they represent, and the lives they touch need to be part of the economic equation when considering rebuilding plans. We feel the economic values stated are severally understated.

We acknowledge the SRFC and KRFC rebuilding plans are required by law since the three year geometric mean falls below minimum escapement. We stand ready to apply whatever reasonable and prudent actions are required to support and protect these stocks. The Council is required to consider economic impacts on coastal communities and businesses that rely on our respective fleets to survive during low abundance and restricted fishing. We believe that mandating a more restricted fishery for as much as ten years as found in 4.2 Recommendation 2's (Management Strategy Alternatives) Alternatives II and III is counterproductive to the season structuring process and further reduces the social and economic value of the ocean salmon fisheries.

We firmly believe the existing season structuring protocol and procedure allows us flexibility to structure CA and OR ocean salmon seasons and protect the salmon resource. We strongly encourage the Council to adopt Recommendation 4.2's Alternative I which calls for status quo of the control rule.

We appreciate your consideration.

John Atkinson
SAS CA Charter Boat Representative

Jim Yarnall
SAS CA Sport Fisheries Representative

James Stone
SAS CA Sport Fisheries Representative

John Koeppen
SAS CA Commercial Troll Representative

Humboldt Area Saltwater Anglers Inc.

P.O. Box 6191, Eureka, CA 95502
Email: hasa6191@gmail.com
FEIN #61-1575751

February 6, 2019

Pacific Fishery Management Council
Mr. Phil Anderson, Chairman
7700NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

RE: Input on Agenda Item D.2 Salmon Rebuilding Plans

Dear Chairman Anderson and Council Members:

The Humboldt Area Saltwater Anglers, Inc. (HASA) is a saltwater sportfishing organization with over 300 members representing northern California anglers since 2008. We have been actively engaged in saltwater sportfish management over the years, with the goal of providing a long-term sustainable saltwater fishing opportunities for our membership. We are encouraged by improvements in 2018 fall-run Chinook salmon escapement on the Klamath River and Sacramento River, yet are also cognizant of the need for a robust rebuilding plan for these important California stocks. We have also experienced the side effects of restricted salmon fishing on increasing sport fishing pressure on near-shore rockfish and flatfish species. Accordingly, we are seeking 2019 salmon season alternatives that balance the need for robust rebuilding while providing reasonable access to salmon in 2019.

We have reviewed the Sacramento River Fall Chinook (SRFC) and Klamath River Fall Chinook (KRFC) salmon rebuilding plans, and concur with the California delegation's recommendation to support Alternative I of 4.2 Recommendation 2 in the SRFC and KRFC salmon rebuilding plans.

Thank you for the opportunity to provide input on the 2019 SRFC and KRFC Chinook salmon rebuilding plan alternatives.

Respectfully,

Scott McBain, President
Humboldt Area Saltwater Anglers, Inc.

HOOPA VALLEY TRIBAL COUNCIL
Hoopa Valley Tribe
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PH (530) 625-4211 • FX (530) 625-4594
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Chairman Ryan Jackson

February 25, 2019

Via electronic submission
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Re: Comments of Hoopa Valley Tribe on 2019 Salmon Management Measures

The following comments are submitted by the Hoopa Valley Tribe in advance of the PFMC's March 6-12 meeting regarding 2019 salmon management measures. The Hoopa Valley Tribe, a sovereign federally-recognized Indian tribe, is located on the Hoopa Valley Reservation, which was set aside and reserved as a permanent homeland for the Tribe by the United States in 1864. The lower twelve miles of the Trinity River, as well as a stretch of the Klamath River near the confluence with the Trinity River flow through the Hoopa Valley Reservation. Since time immemorial, the fishery resources of the Klamath and Trinity Rivers have been the mainstay of the life and culture of the Hoopa Valley Tribe and other Klamath Basin tribes. When the Hoopa Valley Reservation was created, the fishery was "not much less necessary to the existence of the Indians than the atmosphere they breathed." *Blake v. Arnett*, 663 F.2d 906, 909 (9th Cir. 1981) (quoting *United States v. Winans*, 198 U.S. 371, 381 (1905)). Today, the salmon fishery holds significant cultural, commercial, and economic value for the Tribe. The Tribe holds federally-reserved fishing rights in the Klamath and Trinity Rivers, and a federal reserved water right to support the fishery. *Parravano v. Babbitt*, 70 F.3d 539 (9th Cir. 1995); *United States v. Adair*, 723 F.2d 1394, 1411 (9th Cir. 1984). Adverse impacts to ESA-listed SONCC Coho that result from excessive incidental take of coho in ocean fishing directly impair and injure the Tribe and its sovereign, legal, economic, and cultural interests.

On February 7, 2019, the Tribe submitted comments relating to Draft 9 of the Klamath River Fall Chinook (KRFC) Rebuilding Plan. In addition, on July 18, 2018, the Tribe sent you a 60-day notice letter providing notice of alleged violations of the Endangered Species Act regarding the 2018 salmon management measures and specifically the impacts that the PFMC-regulated ocean fishery has on threatened SONCC Coho. The Tribe subsequently filed litigation in the Northern District of California against the Secretary of Commerce and the National Marine Fisheries Service (NMFS) alleging unlawful failure to reinitiate consultation prior to promulgating the 2018 salmon management measures. The focus of that litigation, which remains pending, is on the change in methodology implemented for the first time by the Council and NMFS in 2018, without reinitation of formal consultation, regarding calculation of incidental take of SONCC Coho in the ocean Chinook fishery. The new methodology utilized in 2018 was first described in the *Salmon Technical Team Report on Tentative Adoption of 2018 Management Measures for Analysis: Investigation of Exploitation Rates on Rogue/Klamath Coho in Fisheries South of Cape Falcon* (April 2018) ("STT Report"). Due to the continued failure to reinitiate consultation, the Tribe is currently preparing a new 60-day notice letter that alleges PFMC, NMFS, and the

Secretary will be in violation of the ESA unless formal consultation is reinitiated prior to adoption of the 2019 management measures affecting SONCC Coho.

The comments in this letter focus on continuing impacts to SONCC Coho resulting from the PFMC-regulated ocean fishery and the continuing legal obligation to reinitiate formal consultation pursuant to Section 7 of the Endangered Species Act regarding the impacts of the ocean fishery on SONCC Coho. Specifically, the Tribe urges the Council to not utilize the methodology described in the April 2018 STT Report for the purpose of calculating incidental take of SONCC Coho in the 2019 Management Measures or in any subsequent years' management measures until the methodology is reviewed in a formal reinitiated consultation with NMFS. The revised methodology in the STT Report allows for more SONCC Coho to be incidentally taken than would be allowed under the prior methodology consistently used by PFMC and NMFS since at least 1999. Given the continued imperiled condition of SONCC Coho, as reflected in the most recent 5-year status review, there is no basis to permit additional SONCC Coho to be incidentally taken and certainly not prior to reinitiation of formal consultation with NMFS. Unless and until the new methodology contained in the April 2018 STT Report is reviewed and approved by NMFS in formal consultation, the Council should continue to calculate incidental take of SONCC Coho in the same manner that it did prior to 2018.

Adopting the change in methodology described in the STT Report makes it artificially appear that a lower percentage of SONCC Coho are being incidentally taken even though the lower rates of exploitation (as compared to exploitation rates in prior years) are arbitrarily driven down solely by the change in methodology. For example, the Review of 2018 Ocean Salmon Fisheries ("2018 Review") states that the projected exploitation rate for SONCC coho in all relevant fisheries was 5.7%, but it fails to mention that the projected exploitation rate was just under 13% when incidental take was calculated under the methodology consistently used prior to 2018 (See 2018 Preseason Report II). Upon receiving the change in methodology in the STT Report, the Council recommended increasing the permissible KRFC harvest in 2018 – a modification that would not have been legally permissible without the change in methodology. Specifically, in 2018, the Preseason Report II assumed that KRFC harvest rates of 7.9% to 9% would result in incidental coho take of 12.7% - 12.9%. But, after the change in methodology resulting from the April 2018 STT Report, the Council concluded that KRFC harvest rates of 11.5% would result in incidental coho take of 5.5%. Thus, the 2018 exploitation rates appear to be lower only because of the change in methodology. This is not explained in the 2018 Review.

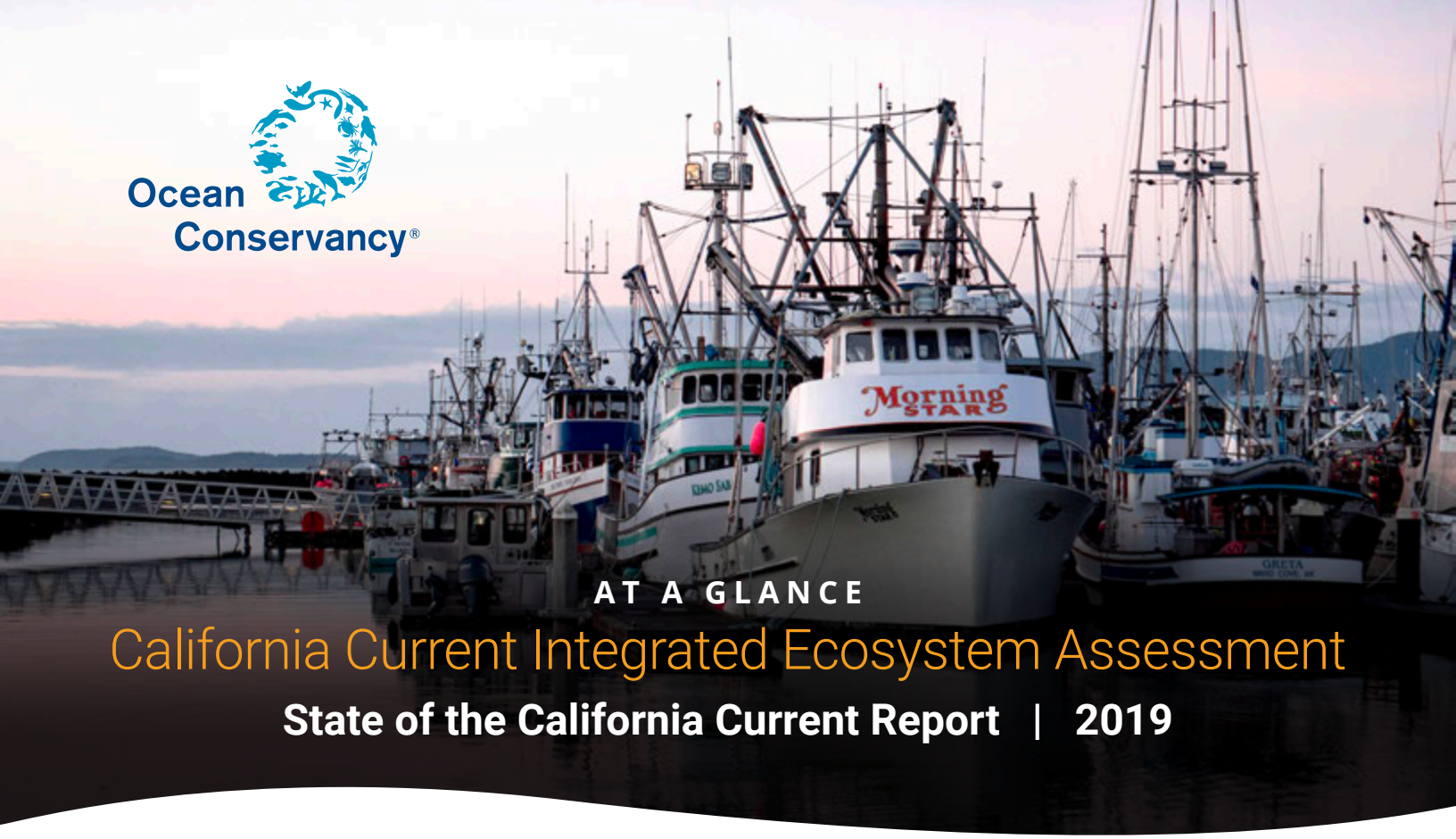
In addition to directly resulting in increased amounts of incidental take of SONCC Coho, changing the way that incidental take is measured during the implementation of the governing Incidental Take Statement makes it difficult and potentially impossible to meaningfully compare exploitation rates in current and future years to the exploitation rates that were predicted or reported in years prior to the April 2018 STT Report. For example, a 5.7% exploitation rate calculated under the new methodology is likely not the same (in terms of numbers of fish incidentally taken) as a 5.7% exploitation rate calculated under the prior methodology. More significantly, an exploitation rate calculated to be 12.9% under the new methodology likely would have exceeded 13% and been in violation of the Incidental Take Statement under the old methodology (assuming identical levels of Chinook harvest). This significant change in methodology is new information that requires reinitiation of formal consultation with NMFS prior to its implementation.

The Tribe urges the Council to not utilize the methodology described in the April 2018 STT Report when calculating the predicted levels of incidental take of SONCC Coho resulting from the 2019 ocean Chinook fishery. Instead, the Council should continue to calculate incidental take pursuant to the methodology used prior to 2018. If the Council desires to use the new methodology in future management years, it must first reinitiate formal consultation with NMFS to obtain the expert agency's views on the appropriateness of the new methodology.

Sincerely,

HOOPA VALLEY TRIBAL COUNCIL

Ryan Jackson, Chairman



Ocean Conservancy®

AT A GLANCE

California Current Integrated Ecosystem Assessment

State of the California Current Report | 2019

The return to more familiar waters

The recovery from the warm blob of 2014-2015 continued in 2018, with a return to more typical water temperatures and neutral ocean conditions that weren't La Niña or El Niño. That is changing now, because a transition to weak El Niño conditions began in early 2019. This weak El Niño, along with other basin scale indicators, suggests productivity may continue to be constrained in the system.

The cheeseburgers are back again

Lipid-rich "cheeseburger" copepods are rebounding in response to slowly improving conditions and are likely driving increases in juvenile salmon survival. Additionally, anchovy density, sea lion numbers, and seabird numbers are also up, which suggests a healthy availability of food for fish.

Are petrale sole and sablefish breaking up? It's complicated.

A new indicator in the report analyzes changes to the spatial distribution of sablefish and petrale sole and how those changes could affect their availability in specific ports. The results suggest that petrale sole and sablefish populations are shifting in opposite directions. A deeper dive shows that despite declines in total sablefish biomass, a southern shift of the stock may mitigate impacts to southern ports like Fort Bragg and Morro Bay. Alternately, while petrale sole is shifting north, its biomass has also grown, increasing its availability to northern and southern ports.

Cloudy with a chance of…hypoxia?

In addition to the most up-to-date information on the environment in the past year, the IEA report now includes a series of short term forecasts that provide a picture of what might be coming next for the ecosystem. One of these forecasting tools, called J-SCOPE, is predicting increased hypoxia and warmer sea surface temperatures off Washington and Oregon this summer.

2017 stuck the landing

Although trends vary by stock and fishery, overall coastwide commercial landings increased 27.4% from 2016 to 2017. Over the 2013-2017 period, total revenue across commercial fisheries was near the top of the historical range, driven primarily by hake, market squid, and crab. Revenue of groundfish (excluding hake) showed gradual increases, and revenue from commercial salmon and HMS were relatively unchanged and close to long-term averages. Recreational landings held steady too, staying within the range of recent historical landings.

PREPARED BY

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February 7, 2019

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

RE: Agenda Item E.2: Climate and Communities Initiative Update

Dear Chair Anderson and Council Members:

The Nature Conservancy (TNC) and the Ocean Conservancy thank the Pacific Fishery Management Council (Council) for its work implementing the Fishery Ecosystem Plan (FEP) and taking steps forward on the Climate and Communities Initiative, preparing West Coast fisheries for climate change. We are excited to see the Council lead the way for scenario planning on the West Coast., we offer the following input on scenario planning and the attached.

Scenario planning is a structured process to examine if our current decision-making processes will be suitable in an uncertain future. The collective "we" are grappling with the impacts of climate change on a world-wide scale. Climate change presents serious challenges as it has the potential to drive species distribution shifts, alter stock productivity and cause unexpected fishing behavior. The impacts will be both biological and socio-economic.

The US Fish and Wildlife Service and the National Park Service both have extensive scenario planning programs. In the *Summary of Scenario Planning Process* report (attached), we summarize scenario planning guidance development and tested by the National Parks Service. There has be great interest in this process, specifically, and we felt that a short summary of the work would help the Council in developing their own scenario planning process. Additionally, we highlight a successful process that was conducted on the East Coast. This is not a recommendation of an exact process to move forward with. Rather, it is intended to provide considerations and lessons learned from a finished process.

We are looking forward to providing recommendations in additional public comment and are happy to share some perspectives as we move forward.

Sincerely,

Gway Kirchner
The Nature Conservancy

Corey Ridings
Ocean Conservancy

Summary of a Scenario Planning Process

Rich Bell
Lead Fisheries Scientist
North America Program
The Nature Conservancy

The Nature Conservancy

OREGON

February 7, 2019

Introduction

Developing strategies to deal with an uncertain future is essential for natural resource management. The future is more than just a continuation of past trends as it exhibits unexpected shocks and non-linearities that are both unexpected and unpredictable (Shell 2008, NPS 2013, Meinert 2014). Regardless of the future situation that occurs, expected or unexpected, decisions need to be made to ensure the long-term sustainability of natural resources. Scenario planning is a means to develop effective strategies and actions for a range of potentially plausible futures (Rowland et al. 2014).

The Nature Conservancy has put together this document to aid the Pacific Fishery Management Council (Council) in moving forward with scenario planning in the Climate and Communities Initiative. The goal is to provide an overview of scenario planning, based on the broadly accepted guidance contained in *Using Scenarios to Explore Climate Change: A Handbook for Practitioners* by the National Parks Service (NPS 2013) combined with other resources. An example of the application of that guidance in also included in this report. It is important to note that the example is not a recommendation of a way forward with scenario planning on the West Coast, but a demonstration of successful scenario planning, which is very informative to the planning of the current initiative. The components of any process should be tailored to the needs of the group conducting the planning.

What is Scenario Planning?

Scenario planning is an iterative process used across a range of disciplines to plan for the future. It first became prominent as a military planning tool during World War II and has been used extensively in the business and financial sectors, most notably by the oil giant Royal Dutch Shell (Schoemaker 1995). In recent decades, scenario planning has been applied to natural resource management and programs exist within the US Fish and Wildlife Service (Rowland et al. 2014), and the National Park Service (NPS 2013). The process is well suited to fisheries and has already been used in several fishery applications (Badjeck et al. 2010, Davies et al. 2015, Schumann 2018b).

Planning for an uncertain future can be quite challenging. When thinking about the future, fishery drivers (i.e., the aspects that shape the fisheries landscapes) can be divided into two groups; things that are known with some amount of certainty (e.g., death and taxes) and things that are very uncertain (e.g., climate change, politics, the economy) (Schoemaker 1995, Meinert 2014). Scenario planning presents a structured process to evaluate fisheries through the lens of those drivers, e.g. climate change, and explore our underlying assumptions, ideas and perceptions as well as the range of uncertainty concerning the information we have about the future (Meinert 2014).

Scenario planning is a process for explicitly acknowledging and working with that uncertainty (Shell 2008). It does not try and predict the future, but simply examines the range of potential futures to determine effective ways to make decisions despite uncertainty. By working through the scenarios, participants are forced to identify and critically examine their own assumptions about the future and analyze the main factors driving potential outcomes, their connections and feedback loops (Rowland et al. 2014). Each scenario represents an narrative about the future that is plausible. It is not a forecast, but simply a visualization of one possible future. The process reduces two of the major problems when

planning: tunnel vision – a view of the future that's too narrow - and over confidence – belief that a single envisioned future is the most likely (Schoemaker 1995).

Scenario planning is well suited to situations in which the level of uncertainty around key drivers of future conditions is larger in scale than the one's ability to adjust or predict. Scenario planning is a particularly useful tool when considering situations where significant and dramatic changes have occurred in the past and are likely to occur again, and when such changes can have serious consequences on the resource and livelihoods. It can also help when effective long-term strategic planning is difficult due to limited planning resources and/or multi-institution governance complexity. Additionally, scenario planning can provide a collaborative context for airing and reconciling divergent views on the best way forward to achieve a common purpose (Schoemaker 1995).

Guiding principles

When developing scenarios there are a few guiding principles:

- Utilize a **time horizon** that is long enough that it considers the large-scale uncertainties that will shape the future. It should be of sufficient length to move beyond the day-to-day operational decisions, but short enough that it is still relevant and actionable.
- A popular term in the scenario planning process is "**Outside-in thinking**". In general, the participants should first consider how forces outside the Council (e.g. climate change, politics, economy, society) will impact the resource and the management process and then how the Council will navigate those changes.
- Always include **a diverse group of stakeholders** with multiple perspectives. The wider the array of views, attitudes, perspectives and experiences of the participants, the more fully the scenarios will be informed.
- As with all planning processes, establish **clear goals** to ensure everyone is striving for the same end, such as, "management actions to take in the face of climate change."
- Scenario planning is a process that should be **tailored to suit the needs** of the group conducting the planning. Within the framework, there is no single correct way to do things; implement it in a way that achieves the goals (NPS 2013).

Guidance for Scenario Planning

In general, the amount of time needed to conduct scenario planning can vary greatly. Ideally, the process would take no more than one year to complete. It involves a core team of individuals to lead the process, and participants (the number of participants should be tailored to the specific needs) to develop, shape and examine the scenarios over the course of one to three workshops.

There are a number of standard steps in the scenario planning process. Here we outline the five step procedure followed by the National Park Service (NPS 2013):

1. Orientation,
2. Exploration,

3. Synthesis,
4. Application, and
5. Monitoring.

The outline provides a general summary of the National Parks Service approach, but also includes information from other resources to provide a broad overview.

1. Orientation

Orientation is about getting the framework, the information and the people up and running. One of the first steps for the Council, were you to follow this process, is to bring on an experienced scenario planning facilitator.

A core team should be assembled; a small group of people that will lead all phases of the process. Core team responsibilities include inviting participants, setting the schedule, conducting interviews, organizing and facilitating workshops, and drafting scenarios and reports. The core team begins by developing the orientation materials such as defining critical challenges, key deliverables and the audience for the work.

The group should develop a clear goal such as, 'Developing an implementable strategy for managing fisheries in the face of climate change' and a time horizon. The time horizon represents the number of years into the future the process will explore.

As part of orientation, the core team plans a series of workshops that will be executed in future steps (i.e., step #3 Synthesis and step #4 Application). This includes the type and number of workshops, the identification of steering committees (if needed) to help with specific workshop planning, dates and locations, goals and objectives of workshops, facilitators, presenters, note takers, and participants from a range of backgrounds.

During this phase, the core team conducts one-on-one interviews with fishery interests who will be the participants in the workshops (i.e., commercial and recreational fishers, tribes, processors, supply chain experts, tourism staff, fishery related businesses, economists, local politicians, port authority, lawyers, natural and social scientists, town, state and federal managers and non-governmental organizations). The interviews are conducted with broad, open ended questions (e.g. What are the largest uncertainties that could impact fishing and fisheries management over the time-horizon?). The goal is to obtain background material from a range of perspectives on some of the major factors (physical, social, political, technological, or economic) that cause uncertainty in fisheries and to get a sense of the variation in assumptions and beliefs that are held across the industry. The interview results may help to reshape the initial goal, identify critical challenges, and hone the time-horizon.

2. Exploration

During the exploration phase the core team with input from the participants, additional background material, and literature review, identifies major factors shaping the future and their degree of uncertainty.

In parallel, the core team works with climate and fisheries experts to put together climate change projections for the physical and biological variables on the West Coast. This could include using the IPCC carbon dioxide emission scenarios and global earth system models to project factors such as changes in water temperature, storm frequency and sea level rise. Down-scaled regional climate models and species distribution models can also be used to get a sense of the factors driving change, the range of physical changes that could occur and the uncertainty associated with the changes.

The results of the exploration phase should be a list of factors that drive the future from a range of different disciplines and perspectives. A pragmatic approach is needed to ensure important factors are included, possibly in broad terms, but the list is not so long as to be impractical.

Communications by the core team can help ensure stakeholders are informed of the process and help bring everyone up to speed so that the workshops in steps #3 and #4 can move efficiently.

3. Synthesis

The synthesis phase involves creating different scenarios based on the factors identified in phase 2. A workshop format is recommended to engage participants in discussion and dialogue.

The first step is to review the list of factors as a group, combining or eliminating as many as possible and potentially adding any missing ones. Participants then sort the factors into two groups: 1) Factors that are considered reasonably well known and/or likely to follow their current patterns into the future (e.g. population growth, age of fishing captains), and 2) Factors that are considered largely unknown (e.g. frequency of oceanographic events, seafood market dynamics). When selecting factors, there are no single correct answers and the process is a product of the particular group of people in the room. That is one of the reasons it is so important to have a diversity of people and opinions at the workshop.

The second step is developing the critical uncertainties, which form the basis for building the scenarios. This is done by ranking the unknown factors, or groups of factors, to determine the top two to five. It may be that a bundle of related factors becomes one of the critical uncertainties. It is important that the number of critical uncertainties is limited, that they are significantly different, and that they could impact the future within the specified time horizon.

Finally, the scenarios are built. There are a range of methods for building scenarios, we review two methods:

a) Matrix method

In the matrix method, small break out groups cross two of the critical uncertainties. It is best to select critical uncertainties from two different disciplines (e.g. an economic factor and an environmental factor as opposed to two environmental factors). As each critical uncertainty has two end members, crossing two critical uncertainties perpendicularly creates four quadrants and thus four potential scenarios. The break out group then reviews each quadrant, first determining if a scenario based on that quadrant is plausible (e.g. can sea level rise be maximum and port infrastructure be unaffected?) and then determining if a useful, compelling narrative could be developed. The goal is to find plausible scenarios that challenge participants, forcing

them to examine the main drivers in the system, the underlying causal relationships, considering the range of possible futures while focusing on the challenges that fisheries management might face. At this initial stage, the small groups create short bulleted lists about how the future might unfold in each of the different quadrants and then mix and match the different critical uncertainties, creating new matrices to develop abridged story lines for each quadrant. After working through several different crosses with different critical uncertainties, the small group should select their top two to four plausible scenarios that express the range of potential challenges in fisheries and fishery management in the face of climate change.

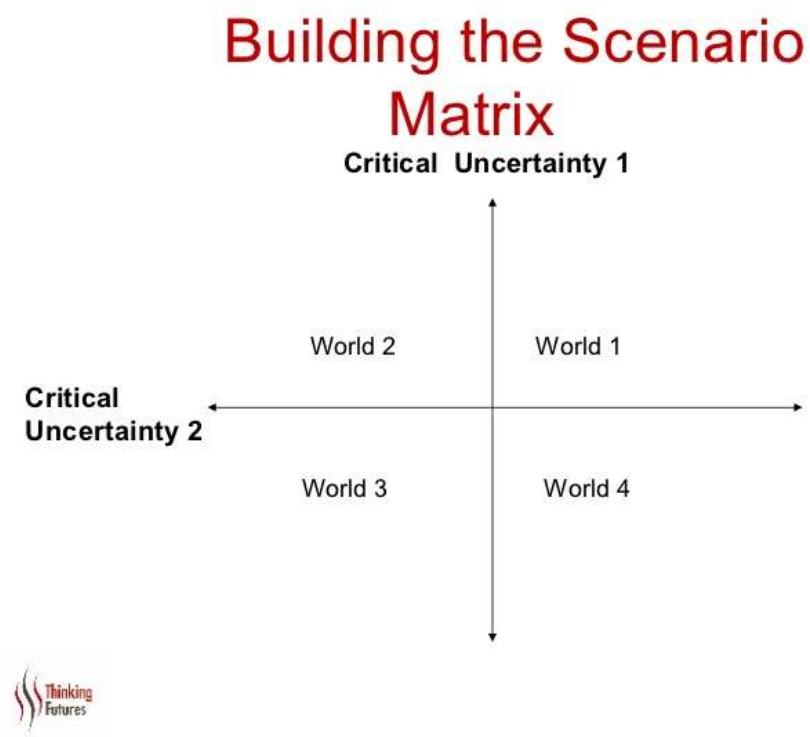

Figure 1. Schematic of a scenario matrix (from (Conway 2007)).

b) Incremental approach

The incremental approach begins with the same two to five critical uncertainties established by the participants. The critical uncertainties are written down on separate cards with one side of the card indicating one extreme value or lowest level of change for the critical uncertainty and the other side, the maximum level of change. In break out groups, the cards are laid down such that each critical uncertainty is at the lowest level of change. The small group determines if that combination of critical uncertainties is plausible and then puts together a bulleted narrative of what might occur in the future given those realities. The small group then turns over two or more cards and works through an abbreviated story line based on the new value of the critical uncertainty. The goal is the same as in the matrix method above to determine the major factors shaping the future, the different possible realities they could take, and how they could impact

fisheries. Again, the small group works through several different iterations and eventually selects the top two to four scenarios.

In both methods it is important to explore and document first order impacts for each scenario (e.g. if the warm blob persists for ten years then…). While scenarios that are implausible should be removed, unlikely scenarios should not necessarily be eliminated. Examination of low probability, unexpected scenarios can often reveal major insights.

After selecting the top scenarios in each small group, the large group reconvenes, works through the scenarios together to ensure they are internally consistent, have a broad perspective and enable the creation of real actions or strategies. The group combines and eliminates some and then selects the overall top three to five scenarios. **The goal is not to select the correct future, or to predict the most likely future, but to select scenarios representing futures that are relevant, challenging, divergent, and cover the concerns facing fisheries management.** Finally, working with the core team, the participants fully flesh out the story in each scenario, working through the narrative development, the causal chain of events, the interconnections and outcomes for the different aspects (e.g. biological, economic). Creating a story around each scenario is often considered crucial as it one of the main ways humans understand and connect with abstract concepts such as future uncertainty.

4. Application

During the application phase, participants work through the scenario narratives from phase 3 to develop actions and strategies to ensure successful fisheries given the manner in which the scenarios unfold. Often in small groups, in a workshop setting (one or more, depending on the needs of the group), the participants work through the scenario narratives attempting to understand second and third order impacts, how the scenarios would impact specific areas and what the scenario would imply for specific stakeholders.

During this exploration, the participants develop draft actions and evaluate their implications. Questions such as, “If we knew this was the actual future, what actions would we take now? Are there actions we should stop taking? What is needed to meet our objectives under this set of conditions?” can help shape the process. Participants can trial run different ideas and strategies and work through the thought experiment of how they might play out under the different scenarios. The participants explore whether different ideas will work or not and determine the conditions under which certain concept will be effective. The goal is to develop ideas for what actions the stakeholders and the Council could or should take to be successful under the future scenario.

One of the key components of scenario planning is that the process is not trying to predict the actual future and plan for that single outcome. It is not trying to build a single consensus. The goal is to develop a range of scenarios that specify a broad array of potential futures forcing the participants to plan for all of them. **The actions developed across the full set of scenarios can then be evaluated to determine what strategies could work across a broad array of potential futures and thus be prepared regardless of which future actually happens.**

Working as a large group, the participants and core team review the actions and strategies developed for the different scenarios. The group is looking for patterns or suites of actions that cut across scenarios. This can include actions to take and actions to stop taking. It is also important to determine if the recommended actions diverge widely across the different scenarios indicating that different course of action are needed for the different realizations of the future. Different actions for different futures suggest an adaptive strategy is needed. Based on the potential actions, the participants can determine if there are certain actions that make sense across all scenarios (e.g. maintain healthy spawning stock biomass) or if there are sets of actions that are useful within certain reoccurring situations. The participants must then determine if the recommended actions represent gaps in the current strategy and if additional resources/data would be needed to execute them.

Monitoring

Monitoring is essential to know what actions to take when to maintain natural marine resources. Within the scenario planning process, it is important to determine what indicators can be used to determine if certain scenarios are becoming a reality, if there are bifurcation points and how the critical uncertainties are tracking. There is already a robust data collection program for fisheries on the West Coast. The program covers a wide range of indicators from physical and biological data to aspects of social and economic status. Many of the indicators are provided to managers by the NOAA IEA team in various formats, including the Annual Ecosystem Report given the PFMC. It is likely that most of the raw data, particularly for the physical and biological factors, are already collected, but may need to be processed in additional ways to track changes. Within the scenario planning process, the group should have a conversation about the desired indicators, current data streams and their ability to track the needed indicators as well as the allocation of time and resources for collecting and processing data.

5. Outputs

Scenario planning should have four products:

1) A series of bulleted scenario narratives
2) A list of actions to be taken to meet Council objectives within each scenario.
3) A list of strategy/action that cut across all scenarios that are the recommendations from the scenario planning process, and
4) A monitoring plan.

The core team is responsible for compiling all the information and producing the final report. The bulleted scenarios should be turned into written stories to ensure that they are accessible to those outside the workshops and so they can promote critical and creative strategic planning across the Council. The recommended actions or strategies will largely be derived from the workshop discussion surrounding actions developed for each individual scenario. Additional discussion with participants after the workshop as well as discussion with other stakeholders can also be used to develop additional strategies in the future.

The process can be completed in three to twelve months if the core team has dedicated time for the exercise. It may be possible to complete most of the work in one workshop, but two or three workshops

are frequently seen. It is best if the same participants are part of all phases of the process and it is highly recommended to hire a facilitator with experience in scenario planning.

A Scenario Planning Example: Rhode Island Commercial Fisheries

A good example of using this process to develop scenarios and responses in fisheries can be found in Rhode Island (Schumann 2018b). It is important to note that this is not a recommendation to follow this exact process. Rather, it is a demonstrative example of the successful use of scenario planning in fisheries.

In 2015, 12 Rhode Island fishermen were awarded a NOAA Saltonstall Kennedy grant to develop collective thinking on future environmental change, known as the Resilient Fisheries RI Project. They developed a Project Oversight Team and hired a Project Coordinator. They contracted with the Future Strategy Group to facilitate scenario development and undertook a process to develop scenarios that evaluated four different climate scenarios, combined with four difference socio-political scenarios (Schumann 2017):

- A period of high climate variability ("Global Weirding") and a "Do It Yourself" governance structure;
- A period of global cooling and increased eutrophication (greater anoxic events and acidification) and period of new technological innovation (i.e., artificial intelligence, micromanufacturing, and robotics) with a growing U.S. economy;
- An "Anthropogenic Warming" period, with increased temperatures, lower salinity and dissolved oxygen levels, and increasing ocean acidification, combined with a sluggish economy and tough protectionism and government programs; and
- A "Natural Warming" period with the same results to the environment as the previous scenario, but the drivers are natural, rather than human caused. This is combined with a new economy based on cheap renewable energy, creating profound economic uncertainty globally.

These scenarios were developed and evaluated through a multi-phase process that consisted of one-on-one interviews with fishery participants, and a series of facilitated workshops to determine the critical uncertainties that would form the basis of the scenarios and develop goals, strategies, and opportunities for Rhode Island's commercial fisheries in a changing climate.

During the first phase, the project coordinator conducted one-on-one interviews with fishery participants. The interviews were developed to solicit an understanding of how the environment is changing and how fishery participants are adapting to these changes, and to understand barriers that limit fishery participants' adaptive capacity and resilience. Discussions were not limited to environmental changes, rather they were open to all factors that affect fisheries.

The information collected in the interviews formed the basis for a series of workshops in the second phase that evaluated several topics that were identified as areas of uncertainty for fisheries in the future, including: ecosystem-based fisheries management and warming waters, ocean acidification, ecological changes and water chemistry in Narragansett Bay, changes in the seaweed community, squid

in a variable climate, socio-ecological community vulnerability, the expansion of black sea bass, the pros and cons of diversified versus specialized business portfolios, and models for combating the low level of new entry into Rhode Island's fishing industry. Political climate and climate change uncertainty were identified as the critical uncertainties and formed the four scenarios that would be evaluated in the next phase.

In the final interactive phase, a full day facilitated workshop was held with the focus on strategies that would achieve a thriving fishing industry in 2025-2030, under four distinct scenarios developed from the critical uncertainties identified above. Strategies that held promise in multiple scenarios were identified as the most winning strategies to attain future goals. This information was compiled in the *Rhode Island Commercial Fisheries Blueprint for Resilience* (Schumann 2018b).

This process was based on that developed by the National Parks Service (described previously;(NPS 2013)), and follows the five-step procedure of orientation, exploration, synthesis, application, and monitoring. The results of this process include a well-constructed vision for the future, an exploration of the challenges fishermen face (e.g., mounting regulatory strain, regulatory discards, time lags in data, regulatory fragmentation, business specialization, withering of the waterfront, rising business expenses, market stagnation and volatility, public apathy, shortened planning horizons, graying of the fleet, individual isolation, environmental variability and change, habitat degradation, and competing ocean uses) and an identification of future opportunities (e.g., Rhode Island's local foods commitment, collaborative marketing, new attitudes in management, emerging species, and new ecosystem models for managing fisheries). Through the workshops and planning exercised, fishermen identified core strategies and goals that can inform their own business practices or future fishery management actions.

The group developed their own "how-to" guide that could be very informative to the work currently being undertaken by the Council in the Climate and Communities Initiative (Schumann 2018a).

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February 26, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, #101
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RE: Agenda Item E.2: FEP Climate and Communities Initiative Update

Dear Chair Anderson and Council Members:

Ocean Conservancy, the Nature Conservancy (TNC), Natural Resources Defense Council, and Wild Oceans thank the Pacific Fishery Management Council (Council) for its work implementing the Fishery Ecosystem Plan (FEP) Climate and Communities Initiative and its commitment to preparing West Coast fisheries for climate change. As the Council considers next steps to implement the initiative, **we recommend the following process to execute the scenario planning portion and suggest which topics to concentrate the scenario planning on.**

Scenario planning process

The Council has already completed several important components of scenario planning, including gathering initial stakeholder input, deliberating about goals, and obtaining and discussing background material. As the Council moves into a more formalized stage of scenario planning, we recommend that the Council do a four-step approach. Based on our review of existing scenario planning processes (details in our "Summary of a Scenario Planning Process" report, public comment for this agenda item) and the feedback from the TNC workshop and Council proceedings, we think this will provide an efficient and timely process that will produce rigorous and useful results.

Before moving forward, we recommend developing a "core team" to guide the official scenario planning process. One way to do this could be tasking the Ad-hoc Ecosystem Workgroup (EWG) to serve as the Council liaison, complemented with an external expert consulting group. Such an expert consulting group could come from NOAA or the private sector. In addition, including a facilitator with experience in scenario planning is a key component of ensuring success.

Step I – Core Team Planning Meeting
A scenario planning "kick-off" meeting or workshop will be held with the goal of fully defining the process to develop and evaluate scenarios. This will be an opportunity for the core team, the expert consulting group, and the experienced facilitator to flesh out the specific path forward, starting with Council-selected scenario planning topics (agendized for selection at the March 2019 meeting)[1]. Attendees will develop the approach for topic growth, identify important components that should be integrated into the stakeholder workshops (Steps II and III), and provide a clear scenario planning

[1] CSI Report, November 2018.

process with relevant questions to address during subsequent workshops. This is an important first step to ensure we have the subsequent steps well thought out, a deliberate and transparent process, and the right people at the table.

Step II – Science/Stakeholder Workshop 1
This is the first of two workshops that will develop and evaluate scenarios. In this workshop, scientists and stakeholders will come together to review the available science and observations informing the topics selected by the Council. Scenarios are developed that consider ecological and socio-economic factors. These scenarios are drafted into a report to be used in the second Science/Stakeholder Workshop.

Step III – Science/Stakeholder Workshop 2
Using the results and recommendations of the Science Workshop (Step II), a two-day facilitated stakeholder workshop can dig deeper and explore the topics through expert-guided scenario planning. Stakeholders, including managers, industry members, conservation community members, and scientists can work together to examine the impacts of climate change on West Coast fisheries through a guided process. A report is produced and provided to the Council and the public that contains the results of the scenario planning exercises and recommendations for next steps.

Step IV – Council Management Team (MT) and Advisory Body (AB) Input
Based on the results of the workshops, each AB and MT would attend specific, facilitated "mini" workshop prior to or during a regular meeting of the committee. Such "mini" workshops would be shorter in time and smaller in scope, but designed to elicit the same information as the larger Stakeholder workshop. They can then report-out to the Council as part of a regular Council meeting. This ensures that every member of an advisory body can be included in the process, and that the wider Council family is included too.

The Council will then have an organized and scientifically relevant body of knowledge and recommendations from which to take action and plan for the future, and an engaged and participatory stakeholder group.

We have provided two potential timelines for this work. The first completes the process in 12 months. The Council will be connected throughout the process through the EWG and continued work of the Climate Scenario Investigation Working Group (CSI). Well thought out scenario planning processes can be completed in relatively short order.

Possible Timeline	2019						2020
	Mar	April	June	July	Sept	Nov	Mar
Scenario Planning topics identified							
Core Planning Team Meeting							
Science/Stakeholder Workshop 1							
Science/Stakeholder Workshop 2							
Stakeholder Workshop Report presented to Council							
Council MT/AB "mini workshops"							
Council consideration of scenario planning report and results							

A second timeline is provided that incorporates Council check-ins throughout the process. This timeline is elongated, accommodating Council meeting schedules and briefing book deadlines. This provides the full Council an opportunity to provide input along the path of the scenario planning analysis.

Possible Timeline	2019						2020	
	Mar	April	June	July	Sept	Dec	Mar	June
Scenario Planning topics identified								
Core Planning Team Meeting								
Report to the Council								
Science/Stakeholder Workshop 1								
Report to the Council								
Science/Stakeholder Workshop 2								
Council MT/AB "mini workshops"								
Council consideration of scenario planning report and results								

Scenario Planning Topics

The topics proposed by the EWG provide relevant climate-specific issues facing the council. We endorse these topics, but we note climate forcing will have impacts across all of our FMPs and encourage a wider lens when selecting topics. For example, the drivers of changing whiting and CPS distributions are likely to be linked through similar climate drivers. As such, we believe the Council should consider an environmental driver approach as opposed to an impacted stock approach. Below are three overarching climate drivers that are likely to impact our stocks and fishing communities into the future and could be useful frames for scenario planning. Some preliminary science that could support scenario planning efforts is also highlighted.

While scenarios should not be considered as simulations, existing science does exist that could help develop simple scenarios that could be expected to occur over the next 20-30 years. Climate change is expected to impact fisheries the California Current Ecosystem through two main mechanisms: ocean acidification and warming waters. The biological impacts of these two drivers to fisheries within the California Current have been explored in the literature and are ripe for utilization in a scenario planning process.

1. Ocean Acidification and hypoxia

Hodgson et al. 2018[2] simulates the expected impacts of ocean acidification through an ecosystem model forced by oceanographic projections and coupled to an economic input-output model. They quantify biological responses to ocean acidification in six coastal regions from Vancouver Island, Canada to Baja California, Mexico and economic responses at 17 ports on the U.S. West Coast. They determine that species biomass tends to be larger in the southern region of the model, but the largest economic impacts on revenue, income, and employment occur from northern California to northern Washington State – driven by declines in Dungeness crab from loss of prey.

[2] Hodgson, E.E., Kaplan, I.C., Marshall, K.N., Leonard, J., Essington, T.E., Busch, D.S., Fulton, E.A., Harvey, C.J., Hermann, A. and McElhany, P., 2018. Consequences of spatially variable ocean acidification in the California Current: Lower pH drives strongest declines in benthic species in southern regions while greatest economic impacts occur in northern regions. *Ecological Modelling*, *383*, pp.106-117.

2. Shifting stocks /changing temperature
Morley et al. 2018[3] and Gaines et al. 2018[4] projected the range shifts in stock associated with climate change using IPCC scenarios. These scenarios predict large shifts in the centroids (224km on average) and ranges of stocks on the U.S. West Coast. These detailed results can be used to identify a handful commercially important stocks that are expected to shift and assess their impact on community fishing portfolios.

3. Changes to productivity
The expected impacts of climate change on upwelling and changes to system productivity are still unclear. However, changes in upwelling are expected to have bifurcated impacts in the northern and southern regions of the California Current system[5]. Given the uncertainty around the expected impacts, especially to fish species, Council should consider using the conceptual models developed by the IEA program[6], in conjunction with their management teams, to develop plausible scenarios resulting from changes in plankton availability (i.e. what happens if we have more hamburger or celery plankton).

Conclusion
We greatly appreciate the efforts of the Council, especially the CSI Committee and the EWG, to further develop and refine this initiative. Preparing for climate change is essential and it should be done so strategically, with a targeted set of actions, an adaptive approach, and with a commitment to climate-ready fishery management that maintains ecosystem integrity.

Sincerely,

Corey Ridings
Ocean Conservancy

Gway Kirchner
The Nature Conservancy

Theresa Labriola
Wild Oceans

Seth Atkinson
NRDC

[3] Morley, J.W., Selden, R.L., Latour, R.J., Frölicher, T.L., Seagraves, R.J. and Pinsky, M.L., 2018. Projecting shifts in thermal habitat for 686 species on the North American continental shelf. *PloS one*, *13*(5), p.e0196127.
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[5] Snyder, M.A., Sloan, L.C., Diffenbaugh, N.S. and Bell, J.L., 2003. Future climate change and upwelling in the California Current. *Geophysical Research Letters*, *30*(15).
[6] https://www.integratedecosystemassessment.noaa.gov/regions/california-current/cc-salmon#ecologicalinteractions

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February 25, 2019

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And Members of the Pacific Fishery Management Council
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RE: Agenda Item E.3 ECOSYSTEM WORKGROUP (EWG) REPORT ON THE FISHERY ECOSYSTEM PLAN UPDATE

Dear Mr. Anderson and Council Members,

On behalf of the California Wetfish Producers Association (CWPA), representing the majority of coastal pelagic species (CPS) 'wetfish' fishermen and processors in California, I offer the following comments after reviewing Agenda Item E.3.a. EWG Report 1 on the Fishery Ecosystem Plan (FEP) Update. Before beginning, I thank the EWG for their thoughtful approach, and also thank the Council in advance for considering our recommendations.

Under Item 2 – Options and Process for Revising the FEP, the EWG raises the question of priorities: how in-depth should the FEP Update be, considering that time spent on this project will siphon off time from work on the Climate and Communities Initiative. The EWG offers three options:

- Appendix only (status quo)
- Vision Update
- Full Update

We suggest a modified option that would encompass both a Vision update and additions to content in Chapters 3 and 4. We note the EWG Draft FEP Vision Statement, Purpose Statement, Goals and Objectives provide a good baseline, with some suggested additions that I enumerate below.

We call attention to statements in the EWG Report: Under the heading "Assessing Ecosystem Information Needs (FEP Needs and Objectives), the EWG highlights the relative dearth of CCE food habits data and analyses. Both the 2013 and 2018 Research and Data Needs documents emphasize the need for this information. The Supplemental CPSAS Report (G.2.a September 2018) also pointed out the relative lack of specific information in the FEP related to predator – prey interactions. The CPSAS report stated:

"Recent highly complicated ecosystem models have addressed the relationship between forage fishes and the population abundance of protected predator species. However, these analyses do not consider the ecosystem effects – the top down effects -- of predator species on forage fishes. To date none of the recent California Current ecosystem models have been focused on a top-down analysis.

Food habit studies taken in one era will not accurately describe food habits in another. The expected wide variation in food habits is both a problem in the determination of the relative importance of sardine or anchovy to a predator and in evaluation of ecosystem function. Prey switching appears to be much easier for the predators than for modelers and fishermen.

Both bottom up and top down ecosystem analyses need to be carried out before any ecosystem-based management is attempted. It is important that the FEP acknowledge that during the present environmental regime, competition between protected species is far more important than competition between protected species and the U.S. fishery for forage fishes. Information documenting this competition, and analyses calculating the trade-offs between competing predators and fisheries, which are needed to achieve true ecosystem-based management, should be included in the Fishery Ecosystem Plan."

We encourage the Council to support this addition as a high priority in updating the FEP, to reflect recent science that has improved understanding of predator-prey interactions, and including the finding that under current fishery management policy, fisheries harvest only two percent of key forage species, compared to the take by protected predators, many populations of which are approaching carrying capacity, i.e. California sea lions. (R.Parrish Public Comment, Agenda Item G.2.b September 2018)

This information is critically important to advance ecosystem-based fishery management and achieve the goals of the FEP, including the EWG's suggested Goal 2: Build toward fuller assessment of the greatest long-term benefits from the conservation and management of marine fisheries, of optimum yield, and of the **tradeoffs needed to achieve those benefits…**

Regarding specific wordsmith suggestions on the EWG Draft FEP Vision Statement, please consider the following (*additions in bold italics):*
Chapter 1 Introduction ~ 1.2 Purpose of the FEP
… Additionally, an FEP should identify and prioritize research needs and provide recommendations to address gaps in ecosystem knowledge and FMP policies, particularly with respect to the cumulative effects of ***marine species on ecosystem function, i.e. predator-prey interactions, as well as*** effects of fisheries management on marine ecosystems and fishing communities.

1.3 Goals and Objectives
Goal 1, Objective 1b: Identifying measures and indicators ***where available***, and informing reference points…
(this highlights the EWG comment: Re: making goals for EBM "more specific and measurable" -- we note EWG experience with FEP 2nd initiative:
"*That initiative identified no obvious new areas where goals and objectives could be mapped to indicators, reference points, and thresholds based on current science.*" *The only clear place in the Council process where goal-to-process mapping happens now is with the highest tier single species stock assessments.*
Objective 1c: Identifying and addressing gaps in ecosystem knowledge, particularly with respect to the cumulative ***effects of predator-prey interactions*** and longer-term effects of fishing on marine ecosystems.
Goal 2, Objective 2a: Assessing trophic energy flows and other ecological interactions within the CCE, i***ncluding predator-prey interactions.***
Goal 3, Objective 3a: Providing adequate buffers against the uncertainties of environmental and human-induced impacts to the marine environment by developing safeguards in fisheries management measures ***that achieve balance between conserving ecosystem function and sustainable fishing communities.***

Thank you very much for your consideration.

Best regards,

Diane Pleschner-Steele
Executive Director

February 26, 2019

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RE: Agenda Item E.3: Fishery Ecosystem Plan 5-Year Review

Dear Chair Anderson and Council Members:

Ocean Conservancy, Wild Oceans, and the Nature Conservancy thank the Pacific Council for its work to develop and implement the Pacific Fishery Ecosystem Plan (FEP). Since 2013, the FEP has served as a valuable platform and guiding document for implementing ecosystem based-fishery management (EBFM). In just a 5-year period, it has advanced two Council selected ecosystem initiatives, with a third initiative currently in progress. Additionally, under the auspices of the FEP, the Council receives valuable annual state-of-the-ecosystem reports like the one presented at this meeting under Agenda item E.1. Lastly, through engagement with NOAA Fisheries Integrated Ecosystem Assessment program, and through enhanced discussions with the Council's advisory bodies and the broader public, the FEP has helped foster a greater understanding and promotion of ecosystem considerations in general. In short, we appreciate the Council's commitment to improve upon the current FEP to further advance EBFM.

We recommend that the Council move forward with a full update of the FEP, as described by the EWG Report 1 (agenda item E.3.a, page 2) for this agenda item, with a concentrated focus on the following:

1. **Add ecosystem-level goals and objectives**
2. **Update with new science and Council actions since 2013**

As discussed above, the FEP has been successful at promoting ecosystem-based thinking at the Council. With adjustments based on new science and best practices, the FEP can even better meet its purpose and needs and help the Council better meet its mandates to manage and protect West Coast fisheries and the broader marine ecosystem.

Recommendations

1. **Add ecosystem-level goals and objectives**

The FEP currently contains an objectives section,[1] however this section only includes *process* objectives to improve the flow of information through the Council process and provide an administrative structure for incorporating and coordinating ecosystem science. While the FEP process objectives are excellent and have served an important purpose, they are functionally different than ecosystem goals and

[1] Pacific Fishery Management Council, Pacific Coast Fishery Ecosystem Plan (Public Review Draft), February 2013. Page 4.

objectives that describe the Council's long-term wishes for our fisheries and the ecosystem inclusive of ecological, economic, and social outcomes. The FEP would be greatly improved by explicitly identifying Council goals and objectives for the ecosystem in terms of the on-the-water outcomes it wishes to achieve. Similar to the goals and objectives stated as part of each FMP, ecosystem goals and objectives can describe what the Council envisions as an ideal scenario across fisheries. Ecosystem-level objectives that are both strategic and operational are needed to help realize the Council's vision for fisheries.

The value of ecosystem goals and objectives in support of EBFM is reinforced in NOAA policy documents. As the NOAA EBFM Road Map states under Guiding Principle 1b, "FEPs are policy planning documents that the Councils or NOAA Fisheries may use to describe ecosystem objectives and priorities for fishery science and management…By exploring fishery management options that simultaneously address multiple objectives, they may help Councils, NOAA Fisheries, and other agencies better address the cumulative effects of our actions on the environment."[2] The EBFM Road Map Regional Implementation Plan also supports the use of FEPs to implement EBFM policy goals by describing and integrating ecosystem goals and objectives.[3]

Perhaps most important, as cited by the NOAA EBMF Policy and EBFM literature more broadly, is that developing goals and objectives need not imply achievement. Instead, it is a mechanism to develop a shared vision for managed resources and facilitate movement towards multiple and sometimes-competing goals. The North Pacific Fishery Management Council recently finalized an FEP for the Bering Sea. As part of this process, they held a workshop to explore options and elicit stakeholder input. Goals and objectives were articulated as an important component and included in their draft.[4] The workshop report states, "Participants recognized the importance of establishing a shared understanding of the outcomes the Council is trying to achieve—and avoid—under changing environmental conditions. Goals, objectives, and metrics for success provide the guidance needed to consider tradeoffs and evaluate potential management options."[5]

In addition to goals and objectives, indicators that measure progress for a given objective are critical for understanding if and how goals and objectives are being met. The Council's second FEP initiative explored this concept in depth,[6] and the IEA's Annual Ecosystem Report (Annual Report) continues to compile key indicators for the California Current. In addition to the Annual Report the IEA program maintains a larger catalog of indicators on-line. Linking these indicators to our goals and objectives will provide the Council with a way to measure progress towards these goals and objectives.

Development of ecosystem-level goals and objectives could be completed by building upon existing Council documents that represent Council (and vis-à-vis stakeholder) policy and intent over time. The four Fishery Management Plans contain common goals and objectives, as collated in Chapter 3 of the FEP.[7] We recommend this groundwork laid in the FEP as a starting place to clarify cross-FMP goals and objectives and identify potential ecosystem-level goals and objectives. We have provided a list of potential ecosystem-level goals and objectives and corresponding example indicators in appendix 1.

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[2] *Ibid.* page 11.
[3] June 2018 Public Review Draft – NOAA Fisheries EBFM Western Road Map Implementation Plan
[4] NPFMC Bering Sea FMP < https://www.npfmc.org/bsfep/>
[5] NPFMC Bering Sea FEP Draft for NPFMC Ecosystem Committee. Available at: https://www.npfmc.org/wp-content/PDFdocuments/membership/EcosystemCommittee/Meetings2018/BS_FEP_7_11_18.pdf
[6] Coordinated Ecosystem Indicator Review Initiative < https://www.pcouncil.org/ecosystem-based-management/fishery-ecosystem-plan-initiatives/coordinated-ecosystem-indicator-review-initiative/>
[7] Pacific Fishery Management Council, *Pacific Coast Fishery Ecosystem Plan* (Public Review Draft), February 2013. Page 4.

These pull directly from existing FMP goals and objectives, national-level law and policy including the Magnuson-Stevens Act and its National Standards, as well as other statutes.

2. Update the FEP with new science and Council actions since 2013

Since adoption of the FEP in 2013, the Council has taken new action on a variety of issues. Additionally, new science and data have emerged and issues have changed in their relevancy. To ensure the longevity and relevance of the FEP as a guiding and educational document, updating its existing content is necessary. Areas that could benefit include updating the data and science, summarizing new policies, outlining emerging ecosystem and cross-fishery issues, and improving the formatting of the document.

Conclusion
We greatly appreciate the ongoing efforts of the Council to execute a thoughtful and effective FEP. While there are many actions that could improve the FEP, we hope that above represents a useful proposition of what is most beneficial and feasible at this juncture. We look forward to future updates to continue to refine and improve the FEP.

Sincerely,

Corey Ridings
Ocean Conservancy

Gway Kirchner
The Nature Conservancy

Theresa Labriola
Wild Oceans

P.L.

Phil Levin
University of Washington

Seth Atkinson
NRDC

Appendix: Ecosystem-level Goals, Objectives, and Indicators

* denotes indicator already reported by NOAA IEA

Policy		Science
Where we want to be	*How we get there*	*The ruler to measure progress*
Ecosystem Goal	**Ecosystem Objective**	**Indicator Examples**
1) Prevent overfishing and ecosystem overfishing	a. Maintain target biomass levels for managed species	B/B_{target}*, recruitment is unimpaired
	b. Maintain guild biomass above target level(s)	Mean trophic level of catch*, B_{guild}/B_{target}*
	c. Ensure fishing mortality across FMPs is commensurate with total productivity	Total Removals < OY cap
	d. Minimize annual variability in catch	Difference in harvest yields between years, shifts in species overlap/availability*
Origin: MSA National Standard 1, MSA Sec 303(a)(1), 303(a)(3), 303(a)(15); CPS FMP; Groundfish FMP Goal 1, HMS FMP Objectives 5 and 10		
2) Preserve the structure and function of the marine food web	a. Maintain forage assemblage/guild biomass above target level to provide adequate forage for dependent species	$F \leq 0.5(F_{msy})$*, $B \geq 0.75(B_o)$*, B_{guild}/B_{target}, $B_{guild}/B_{threshold}$
	b. Maintain key predator-prey relationships	Multispecies size spectrum, diversity of catch*, diversity of surveys, mean tropic level of catch*
	d. Avoid localized depletion of important forage species	Stock availability*, regional catch limits/thresholds
Origins: CPS FMP Goals and Objectives; NOAA EBFM Policy Guiding Principle 6		
3) Minimize and/or avoid impacts to non-target species, including seabirds, marine mammals, and protected	a. Avoid localized depletion of forage species important to seabirds and marine mammals	Extent to which spatial distribution of fishing effort

species		and removals overlap with known foraging areas
	b. Minimize/avoid the catch and mortality of seabirds and marine mammals	# of seabird and marine mammal interactions
	c. Minimize/avoid the catch and mortality of non-target species	Bycatch rates from observer program, non-target species mortality/directed catch
	d. Minimize risk of crossing ecosystem tipping points where fishing activity is a significant factor	Ecosystem indicator above/below reference point
Origin: MSA National Standard 9; CPS FMP Goals and Objectives; Groundfish FMP Objective 11, HMS FMP Objectives 9 and 17; Salmon FMP Objective 4; MMPA Section 2; MBTA; ESA		
4) Protect and restore species diversity, richness and age structure	a. Avoid age and size truncation of managed species	# of stocks with known age truncation, SPR targets*
	b. Reduce fishing mortality at northern and southern extent of species range where appropriate	Latitudinal distribution of effort
Origin: NS1, EBFM Policy Guiding Principle 6		
5) Protect and restore marine habitat diversity and integrity	a. Identify and minimize adverse impacts on EFH	% of coral habitat protected, % of benthic EFH protected, % of each representative habitat category protected
	b. Minimize impacts to ecologically sensitive habitat	Total trawl gear contact*, coral bycatch data
	c. Minimize carbon and greenhouse gas emissions associated with fisheries	Fleet efficiency
	d. Minimize adverse impacts to habitat, fish and other wildlife associated with tourism, development, etc.	
	e. Minimize adverse impacts to habitat, fish, and other wildlife from pollution and contaminants.	

Origin: MSA Secs 2(a)(6), 2(a)(9), 2(b)(7), 303(a)(7), 305(b); Groundfish FMP Objective 5; HMS FMP Objective 14; NOAA EBFM Road Map		
6) Sustained participation of fishing communities	a. Provide for the achievement of optimum yield in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities	Total ex-vessel revenue/pounds landed, downstream economic contribution with multipliers, CCEIEA Personal Use Index*
	b. Promote efficiency and profitability in the fishery, including stability of catch	Total removals*, removals per FMP, Optimum Economic Yield/Total Removals, ex-vessel revenue, net revenue estimates
	c. Promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures	CCEIEA Coastal Community Vulnerability Index*, # of latent permits, # of permits not renewed
	d. Avoid consolidation of fishing and processing capacity	Processor and/or co-op share of market, market power index, permit ownership
	e. Promote increased safety at sea	% of management measures provided to USCG for review in early stages of scoping process
	f. Promote diversity of commercial and recreational industry participants	Average age of fishery participant, median age of fishery participant, % women, % racial or ethnic minority, permit banks, ownership by local association(s), number of new permits
Origin: MSA National Standards 1, 8 and 10, MSA Secs 303(a)(6)&(9); CPS FMP; Groundfish FMP Objectives 7 and 16, HMS FMP Management Objectives 3, 4, and 16; Salmon FMP Objective 7		

7) Equitable use of fishery resources	a. Provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources	CCEIEA Fleet Diversity Index*, Spatial distribution of landings and processing, # of open access vessels, # of permits, # of tribal fishing vessels
	b. Promote fair and equitable allocation of resources in a manner such that no particular sector, group or entity acquires an excessive share of the privileges	Processor and/or co-op share of market, market power index
Origin: MSA National Standard 4, MSA Secs 303(a)(14), Groundfish FMP Objective 12, HMS FMP Objective 18; Salmon FMP Objective 3		

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February 26, 2019

Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

RE: G.2 Groundfish Amendment 28, EFH-RCA Final Implementation

Dear Chair Anderson and Council members:

Once again, Oceana commends the Pacific Fishery Management Council and National Marine Fisheries Service (NMFS) for its thorough and deliberate essential fish habitat (EFH) review and final actions taken in April 2018 on Pacific Coast Groundfish Fishery Management Plan Amendment 28. All combined, the Council's final preferred alternatives for EFH conservation areas, trawl rockfish conservation areas, and establishment of the deep-water conservation area off California, significantly advance the conservation and enhancement of EFH and deep-sea ecosystems while simultaneously increasing bottom trawl fishing opportunities (see Oceana analysis, science poster, attached).

The ultimate success of the Council's EFH review and amendment process is a testament to the hard work and contributions by many people involved, including conservation NGOs, scientists, the fishing industry, members of the public, West Coast Sanctuaries, States, Tribes, NMFS and Council staff. This hard work resulted in a successful, unanimous decision heralded as a "grand bargain" and a "win-win" for habitat conservation and sustainable fisheries.[1] With this action, "*the PFMC hit a home run.*"[2]

We appreciate the work of NMFS and Council staff in moving the final Council action toward implementation. With respect to the proposed Fishery Management Plan (FMP) amendment, Groundfish FMP Appendices, NMFS report on Amendment 28 regulation development, and draft Council Operating Procedure 22, we offer the following comments.

A. Proposed FMP Amendment Language

The text for the proposed FMP Amendment provided in the March 2019 briefing book is the same as that provided in September 2018. It does not yet reflect input from the Council or public, or address identified errors and omissions. Instead, there is the Project Team Report, which describes how the

[1] E.g. Seattle Times (April 14, 2018). Conservationists, West Coast bottom fishermen embrace 'grand bargain'. Available: https://www.seattletimes.com/seattle-news/conservationists-west-coast-bottom-fishermen-embrace-grand-bargain/

[2] Mossler, M. 2018. New California protected areas are excellent fishery management (April 25, 2018). Sustainable Fisheries, University of Washington. Available: https://sustainablefisheries-uw.org/new-california-protected-areas-are-excellent-displays-of-fishery-management/

Team is considering responding to the input received last year. Therefore, consistent with our September 2018 letter, and in response to the Project Team's report, we request the Council adopt the proposed FMP Amendment language with the following modifications and considerations:

1. The Project Team report[3] notes that the *West of Sobranes Point* EFHCA is intended to be a 'stand-alone' conservation area, as opposed to modification of an existing EFHCA. However, this EFHCA then needs to be identified as a new EFHCA in *section 6.8.5 of the FMP amendment*.[4] It is currently missing in the draft amendment text.

2. We recommend section 6.8.5 or 6.8.6 of the FMP include a map of the ecologically important habitat closed areas and the bottom trawl footprint closure.

3. Section 6.8.6, Bottom Trawl Footprint Closure,[5] of the FMP Amendment states "In Amendment 28, the boundary line that approximates the 700 fm isobath had small changes to the latitude and longitude coordinates *offshore of Monterey Bay, CA [emphasis added].*" This is an error and it is noted in the Project Team report. The change was made as part of the "*Spanish Canyon Line*" adjustments (opening and closures) west of Pt. Delgada off Northern California and this should be corrected in the FMP amendment text.

4. We remain concerned by the proposed deletion of Section 7.3.2 in the FMP; "Process for Modifying Existing or Designating New HAPCs [habitat areas of particular concern]." This section provided a process for modifying and proposing HAPCs based on new information. We understand the intent is to streamline the FMP and reference the EFH review process outlined in Council Operating Procedure 22. In doing so, however, useful information, public engagement opportunities and input into the process, may be lost, especially since the proposed draft COP 22 document no longer describes the HAPC process with any detail. The Council should retain section 7.3.2 in the FMP, plus a process for modifying or designating new HAPCs in future 5-year reviews in COP 22, as described further in section D of this letter.

5. We support the Project Team's recommendation to retain the phrase "at least every 5 years" instead of replacing it with "periodically" in FMP section 7.6 (see page 27) to be consistent with EFH regulations stating that "a complete review of all EFH information should be conducted…at least once every 5 years."[6]

B. Groundfish FMP Appendices

As part of the Amendment 28 final action, the Council adopted the administrative alternatives described in Table 2 of the April 2018 Supplemental Project Team Report (Alts. 5b to 10b).[7] This includes updates to Groundfish FMP Appendices B, C and D.

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[3] Agenda Item G.2.a Project Team Report 1. Available: https://www.pcouncil.org/wp-content/uploads/2019/02/G2a_Project_Team_Rpt1_MAR2019BB.pdf
[4] Agenda Item G.2.a, Attachment 1 (March 2019). https://www.pcouncil.org/wp-content/uploads/2019/02/G2_Att1_FMP_Text_Changes_E-ONLY_MAR2019BB.pdf at 13-14.
[5] Id at 15
[6] 50 C.F.R. § 600.815(a)(10).
[7] Available: https://www.pcouncil.org/wp-content/uploads/2018/04/F3a_Supp_Project_Team_Report2_Apr2018BB.pdf

At the time of this Council briefing book publication, five of the ten scheduled FMP appendix updates have not been published for review. These are all listed as "pending" on the cover sheet under Agenda Item G.2, attachment 2. What is more, the document in the briefing book indicates the updated map of EFH conservation areas for Appendix C, part 4 is complete. The link provided in the briefing book,[8] however, is to the old set of maps, not the new EFH conservation areas. Due to the pending nature of these materials, we request at this meeting the Council clarify the process and timeline for these FMP appendix updates, including publication of draft documents for public review in the June 2019 advanced briefing book, and scheduling them for approval at the June 2019 meeting.

Specifically, Alternative 5b calls for an update to the "information in Groundfish FMP Appendix B of the FMP to reflect new information on Pacific Coast Groundfish life history descriptions, text descriptions of groundfish EFH, and major prey items."[9] Oceana submitted a request to identify the major prey species for groundfish as part of our original 2013 proposal based on a major prey index using new quantitative and species-specific prey information, which was vetted and recommended for Council adoption by the EFH Review Committee in 2013. Since then, this new methodology is now published by NOAA scientists as a major prey index.[10] This peer reviewed index identifies new species of major prey not currently identified in the Groundfish FMP, and improves the taxonomic resolution of major prey species based on science that was compiled during the EFH review process. We would like to see this new information included, as adopted under administrative alternative 5b, since major prey are a component of groundfish EFH. We would like the opportunity to review and provide comment on the updated appendix.

C. NMFS Report (Arago Reef and EFHCA coordinates)

In the NMFS report under this agenda item,[11] the agency provides a definition of the Arago Reef EFHCA for Council consideration that closes small portions of federal waters adjacent to the Oregon Territorial Sea that would have been left open under the April 2018 Council action. *Oceana supports this recommendation.*

The NMFS report also provides a link to preliminary draft latitude and longitude coordinates for all revised and new EFHCAs under Amendment 28, and the agency has requested public comment by March 12, 2019. Oceana has already provided initial comment directly to NMFS. We identified technical errors in the data file the agency provided, and we offered solutions to remedy those errors. Oceana plans to conduct a more thorough review by the agency's March 12, 2019 deadline, and we would be willing to assist with any additional technical review between now and final rulemaking.

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[8] Appendix C Part 4: Map of EFH conservation areas, at: https://www.pcouncil.org/wp-content/uploads/EFH_Cons_Areas.pdf
[9] PFMC (April 2018). Agenda Item F.3a, Available: https://www.pcouncil.org/wp-content/uploads/2018/04/F3a_Supp_Project_Team_Report2_Apr2018BB.pdf at 3.
[10] Bizzarro, JJ, MM Yoklavich, & WW Wakefield (2017). Diet composition and foraging ecology of U.S. Pacific Coast groundfishes with applications for fisheries management. Environ Biol Fish 100: 375. https://doi.org/10.1007/s10641-016-0529-2
[11] Agenda Item G.2.a NMFS Report 1 (March 2019). Available: https://www.pcouncil.org/wp-content/uploads/2019/02/G2a_NMFS_Rpt1_MAR2019BB.pdf

D. Council Operating Procedure 22

We reviewed the draft Council operating procedure for EFH review and modification.[12] The draft, which is being considered for adoption for public review, is significantly different and far less specific than current operating procedure 22 (COP 22). The proposed changes would eliminate several key elements of the process that helped enable the Council's widely applauded final action. While the most recent EFH review was lengthy, its success, in part, was because of the significant investment made by members of the fishing industry, NGOs, West Coast Sanctuaries, States, and others. We encourage the Council to amend draft COP 22 to continue to allow for the public engagement that helped make this current process a success.

The Council should amend the draft COP 22 language to maintain the following four elements which we believe were critical to the success of Amendment 28;

1) issuance of a data call and compilation of all newly available data since the last review;
2) a synthesis of new essential fish habitat science, data and information,
3) a request for proposals to all interested parties for changes to HAPCs, EFH designation, or management, based on the new information, and
4) if the Council then decides to adopt changes to EFH or HAPCs, a process to identify relevant issues, develop and analyze alternatives in a NEPA document, and action to amend the FMP as appropriate.

While the Council decided not to modify or designate new HAPCs in the recent 5-year review process, it is critical that this element be maintained for future reviews. HAPCs are an important tool that NMFS established in the regulatory guidance for prioritizing across EFH designations and for protecting rare or particularly at-risk habitat types. The Council made extensive use of the HAPC designation tool in Amendment 19 by identifying seamounts, kelp forests, rocky reefs, unique geological features, estuaries, eelgrass, and seagrass as HAPCs, which has already paid dividends for addressing threats from non-fishing impacts. Given the importance of HAPCs as an additional tool for the Council in achieving EFH conservation, the Council should maintain a process that includes public input and solicitation of public proposals for modifying or designating HAPCs as part of future EFH 5-year reviews.

[12] Agenda Item G.2 Attachment 3. Available: https://www.pcouncil.org/wp-content/uploads/2019/02/G2_Att3_New-COP-22_MAR2019BB.pdf

In conclusion Oceana greatly appreciates the Council's hard work to advance the conservation and enhancement of groundfish EFH and the protection of deep-sea ecosystems. Groundfish Amendment 28 will benefit the biodiversity of the deep-sea, preserve ancient groves of corals and sponges, and enhance the productivity of the many species of groundfish that use seafloor habitats, ensuring vibrant groundfish fisheries, and fishing communities throughout the U.S. West Coast into the future.

Thank you for your commitment to public engagement, science, conservation, and sustainable fisheries.

Sincerely,

Ben Enticknap
Pacific Campaign Mgr. and Sr. Scientist

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

Attachment: "Protecting the Deep Sea; Geospatial Analysis of West Coast Essential Fish Habitat and Rockfish Conservation Area Changes." Oceana (September 2018). Scientific poster presented at the 15th Deep-Sea Biology Society Symposium, September 9-14, 2018, Monterey, CA.

Protecting the Deep-Sea

378

Geospatial Analysis of U.S. West Coast Pacific Essential Fish Habitat and Rockfish Conservation Area Changes

B. Enticknap, B. Mecum, G. Shester, E. Kincaid, A. Blacow, M. Combs and S. Murray

Introduction

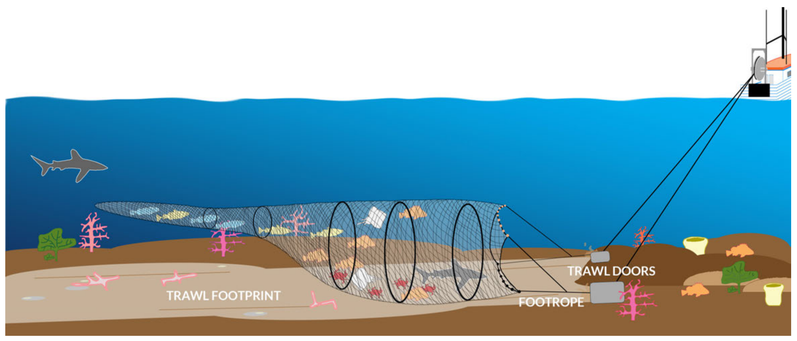
In April 2018, the U.S. West Coast federal Pacific Fishery Management Council took final action on a range of alternatives to protect over 140,000 square miles of marine habitats in federal ocean waters (3 – 200 nautical miles) off the U.S. West Coast from bottom trawling and other bottom contact fishing gears. The fishery council's unanimous decision followed an intensive review of existing essential fish habitat (EFH) conservation areas closed to bottom trawling, bottom trawl fishing effort, and new science on the location and extent of priority habitat features like deep-sea corals, sponges, submarine canyons and rocky substrates. The decision reflects public proposals for new and modified conservation areas, including a comprehensive coastwide conservation proposal developed by the international marine conservation organization, Oceana.

Here we present results of our Geographic Information Systems (GIS) analysis of the fishery council's final combined deep-sea conservation area, EFH conservation area, and rockfish conservation area recommendations, compared with current, status quo management. Once implemented by the National Marine Fisheries Service, 90% of all federal and state ocean waters off the U.S. West Coast will be closed to bottom trawling and significant bottom trawl fishing opportunity will be maintained and restored.

The Oceana Approach to Protecting Seafloor Habitats

The overall goal of Oceana's Pacific seafloor habitat campaign is to protect vulnerable marine ecosystems from the primary threat of bottom trawl fishing gear while supporting and maintaining vibrant fishing opportunities and coastal communities. We designed and advocated for a comprehensive coastwide conservation proposal to prohibit the geographic expansion of bottom trawling, protect areas with known sensitive and diverse seafloor habitats, and minimize fishing effort displacement.

We used publicly available spatial data compiled for the fishery council's EFH review to identify areas that warrant protection from bottom trawling. With GIS data and analysis, we identified areas known to contain priority habitat features sensitive to bottom trawl impacts, including hard substrate, biogenic habitats, submarine canyons, ridges, banks and escarpments. We identified areas with high regional coral and/or sponge bycatch, priority habitats within National Marine Sanctuaries, and areas currently subject to very low or no trawl effort that may contain sensitive habitats, but where little or no habitat data are available. We analyzed bottom trawl fishing effort data to avoid areas of high importance to the fishery and to assess potential economic costs in terms of potential fishing effort displacement. We mapped and analyzed our proposal at coastwide and biogeographic scales, analyzed and compared other alternatives under consideration, and presented our comparative analyses to decision makers to inform the fishery council's final decision.



Commercial bottom trawl vessels targeting rockfish, California halibut, dover sole, Pacific cod and lingcod off the U.S. West Coast drag large, heavy doors and footropes across important coral and sponge habitats, destroying nearly everything in their path. The distance between the heavy trawl doors can be from 110 to 650 feet wide and the doors can weigh up to 1300 pounds. * *Illustration is representative of gear used, not set to actual scale.*

Colorful species of gorgonian corals including this purple *Eugorgia rubens* and orange *Adelogorgia phyllosclera* in the new Southern California Bight EFH conservation area.

A rockfish finds shelter under a sponge adorned with a basket star and fern stars offshore Southern California.

Results: Pacific Fishery Management Council Final Action

The fishery council's final action in April 2018:

1. Designates 53 new and modified EFH conservation areas closed to bottom trawling adding 17,422 mi² and removing 246 mi² of currently designated conservation areas with a net increase of 17,176 mi²;

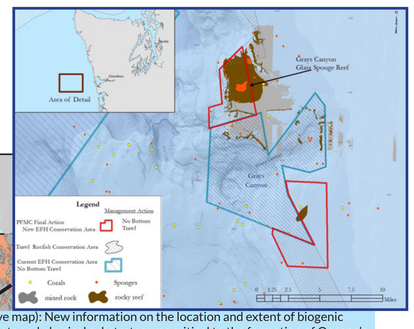
2. Removes 2,092 mi² of the trawl rockfish conservation area off Oregon and California, while keeping 1,482 mi² of the rockfish conservation area closed in the area off Washington and in certain places off Oregon and California where the rockfish conservation area overlaps new and existing EFH conservation areas or state-waters closed to trawling;

3. Protects the deep-sea ecosystem off California (>3,500 m) from all bottom contact fishing gears in an area totaling 123,172 mi².

Since there is overlap between some EFH conservation areas and rockfish conservation areas, we evaluated the total area and the proportion of priority habitats inside all year-round bottom trawl closures in the baseline (current suite of state and federal regulations) and what will be protected under the council's final action.

Overall, the council action significantly increases the total area and proportion of priority habitats protected from bottom trawling throughout the U.S. West Coast EEZ (Figures 1-2). In some biogeographic regions and depth zones, such as the northern upper slope, the council's action resulted in a net loss in the protection of area and a loss in protection for some priority habitat features (Fig. 3). The council action increases coral and sponge protection in all five National Marine Sanctuaries (Fig. 4). Even with the overall increase in habitat protections, the fishery council's action results in a net increase in bottom trawl fishing opportunities by reopening certain historic fishing grounds where bottom trawling has been prohibited in recent years to recover overfished rockfish populations (Figure 5). Considering both the new openings and closures, the net sum of the action will restore approximately 25% of the historic fishing effort that was previously displaced.

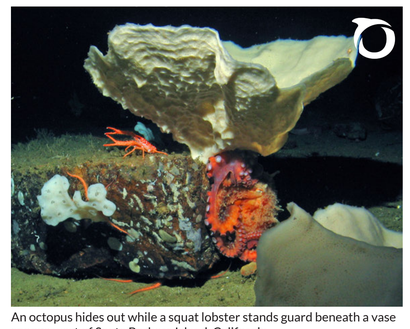
Habitat Conservation Areas	Area (mi²)
New EFH conservation areas (no bottom trawling)	17,422
Deep-sea conservation area (no bottom contact fishing gear)	123,172
EFH conservation area openings	246
Net change	140,348



(above map): New information on the location and extent of biogenic habitats and physical substrates was critical to the formation of Oceana's conservation proposal, including the discovery of a large glass sponge reef on the north side of Gray's Canyon off the Washington coast. This area will be protected from bottom trawling as an EFH conservation area.

(below map): The fishery council's final action will designate a new Southern California Bight EFH conservation area (16,184 mi²) that prevents the expansion of bottom trawling into pristine offshore areas. While much of this area has yet to be explored, there are over 21,600 records of deep-sea corals and sponge here.

Offshore Southern California, a greenspotted rockfish (*S. chlorostictus*) hides behind yellow gorgonian coral (*Acanthogorgia sp.*).



An octopus hides out while a squat lobster stands guard beneath a vase sponge west of Santa Barbara Island, California.

Figure 1

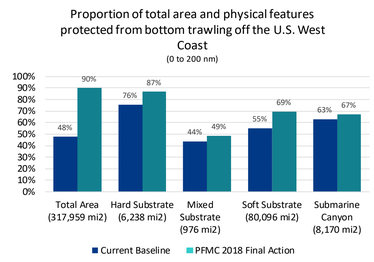


Figure 2

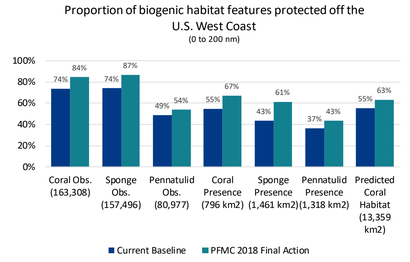


Figure 3

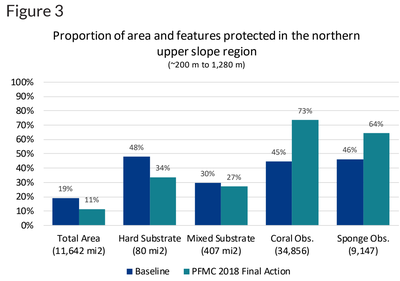
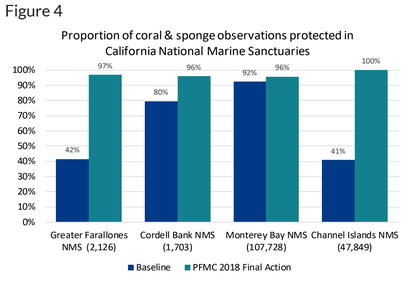
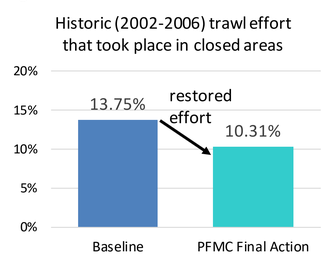


Figure 4



Figures 1 to 4. Proportion of total area, substrate and/or biogenic habitat features in the U.S. West Coast EEZ, northern upper slope (Cape Mendocino, CA to U.S./ Canada border) and California National Marine Sanctuaries protected from bottom trawling under current management (baseline) compared with the final action alternatives adopted by the Pacific Fishery Management Council (PFMC). Numbers in parenthesis represent the total amount of each feature represented in the study area.

Figure 5



Study Area: U.S. West Coast (0 to 200 nm)	Total in Study Area	Closed to Bottom Trawling	
		Baseline	PFMC Final Action
Total Area (mi²)	317,959	152,021	285,497
Hard Substrate (mi²)	6,238	4,710	5,409
Mixed Substrate (mi²)	976	428	475
Soft Substrate (mi²)	80,096	44,261	55,610
Submarine Canyon (mi²)	8,197	5,153	5,498
Coral Observations (#)	163,308	120,388	137,815
Sponge Observations (#)	157,496	116,605	136,530
Pennatulid Observations (#)	80,977	39,524	43,373
Coral Presence (1x1 km²)	796	436	536
Sponge Presence (1x1 km²)	1,461	634	898
Pennatulid Presence (1x1 km²)	1,318	481	572
Predicted Coral Habitat (km² of high suitability, all taxa)	13,359	7,399	8,466

Figure 5. Proportion of total coastwide bottom trawl effort (2002-2006) contained within areas closed to bottom trawling under the baseline set of closed areas and under the PFMC final action. Publicly available trawl tow data is based on an aggregate line density analysis provided in the NOAA, OSU EFH Data Catalog. Aggregated data likely overestimates displaced effort due to buffers around trawl tows overlapping closed areas.

Conclusion

GIS analysis played an important role in the Pacific Fishery Management Council's process to protect seafloor habitats from bottom trawling. Oceana submitted a comprehensive coastwide proposal and provided comparative GIS analyses to help the council select among various proposed open and closed areas and to achieve win-win outcomes that increase fishing opportunities and habitat protections at coastwide and regional scales. These increases in habitat protections will benefit the biodiversity of the deep-sea, preserve ancient groves of corals and sponges, and enhance the productivity of the many species of groundfish that use seafloor habitats. In a few specific areas, however, particularly the upper-slope depth zone off northern California and Oregon, the council's final action will result in a loss of protection for some priority habitat features. This is because of the simultaneous opening of the trawl rockfish conservation area and the opening of some existing EFH conservation areas. The fishery council's recommendations are now before the National Marine Fisheries Service for rulemaking.

Spatial Data Sources

NOAA, Oregon State University. Consolidated EFH Geographic Information Data Catalog. Available: http://efh-catalog.coas.oregonstate.edu/overview/

Biogenic Habitat Data from: NOAA Deep Sea Coral and Sponge Database (observations). Available: https://deepseacoraldata.noaa.gov/ Database version December 14, 2017 & NOAA NWFSC FRAM Database Warehouse (coral, sponge and pennatulid presence).

Areas of high predicated coral habitat: Guinnotte, J. M. and A. J. Davies (2012). Predicted deep-sea coral habitat suitability for the U.S. West Coast. Report to NOAA-NMFS. 85 pp.

OCEANA Protecting the World's Oceans

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G4: Omnibus Process Planning and Project Prioritization

Bill James

Port San Luis Commercial Fishermen's Association
2/7/19 1:57pm PST

Mr. Chairman and Members of the Council: My name is Bill James. I am the fisheries consultant for PSLCFA an a commercial nearshore fisherman. I request that the Open Access Nearshore and Directed Groundfish vessels and fishermen in the area of 40:10 to 34:27 given a much greater access to the healthy Shelf Rockfish species in the Omnibus Process Planning and Project Prioritization process. This should be given the highest priority because other user groups have enjoyed access to healthy fish stocks while we have been denied access for over 17 years. There are presently 3 EFP's gathering data to show that Shelf Rockfish species can be caught while at the same time having little impact on Yelloweye Rockfish. This data should be analysed as soon as available so that the open access bi-monthly trip limits can be greatly increased. There are National Standards and Grounfish Management Plan Goals and Objectives that support this request. I have reviewed The Council's Safe Documents "Status of Pacific Coast Groundfish Fishery and Recommendations for Management" for the years 1985 thru 2000. Many of those years the Sebastes monthly trip limits for Open Access in the area from 40:10 to 34:27 were 40,000 pounds. Presently 400 pounds.per 2 months. This is one percent or less of what what was allowed before the year 2000. Please give my request the highest priority. Thank you, Bill James

Mothership Sector Utilization Proposals

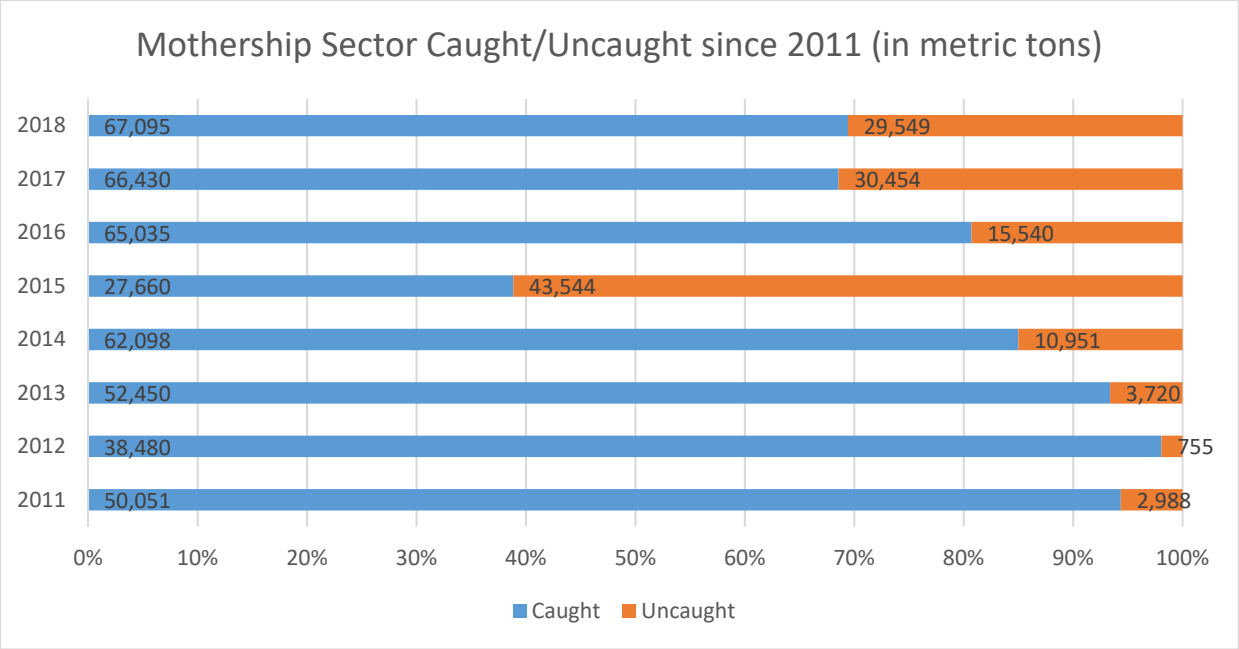
Background

At the September and November 2018 Pacific Fishery Management Council Meetings, members of the mothership sector brought forward proposals to improve utilization and flexibility in the fishery. Mothership catcher vessels and mothership processors met in Portland, Oregon on October 29th, 2018 to discuss the issues facing our sector and how we could work together to improve them. The Midwater Trawlers Cooperative and United Catcher Boats Association submitted a summary of that meeting to the November briefing book (Agenda Item G.4.b, Supplemental Public Comment 2, November 2018), the proposed solutions from which the Council moved forward to become the basis of the Mothership Sector Utilization omnibus item #15 (Agenda Item G.4.a, GMT Report 1, March 2019).

Together as a sector, we urge the Council and NMFS to prioritize the Mothership Sector Utilization omnibus item (#15) at the March 2019 meeting, and take action to move two sector-wide consensus solutions forward for analysis: 1) change the processor obligation deadline, and 2) increase the mothership processing cap (currently 45%). This document is intended to provide more background and detail to facilitate that process.

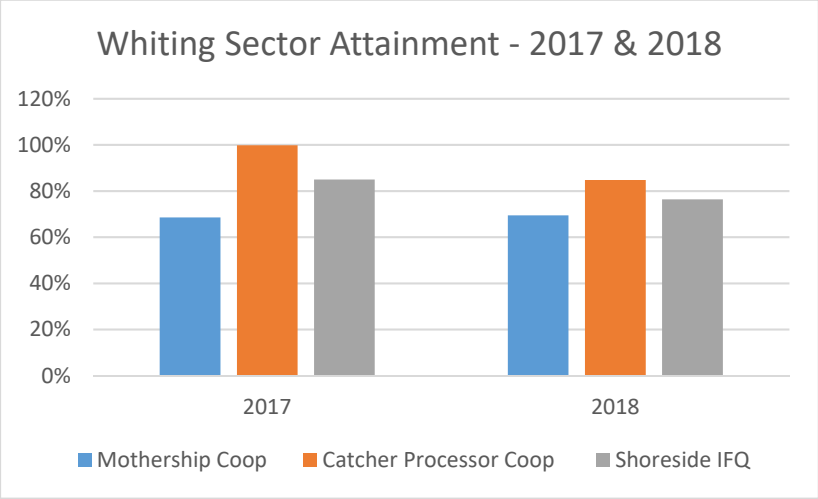
Problem

The mothership sector left a lot of fish unharvested over the past several years, particularly in more recent years.



(Data from PacFIN Whiting Report: https://reports.psmfc.org/pacfin/f?p=501:202:16879616424532::NO:::)

With the high total allowable catch for whiting at an all-time high in 2017 and 2018, the other whiting sectors were able to achieve higher attainment than the mothership sector. The mothership sector caught 69% of our allocation in 2017 and 2018, while the catcher processor and shoreside whiting sectors averaged 92% and 81% attainment of their respective allocations across the same years.



(Data from PacFIN Whiting Report: https://reports.psmfc.org/pacfin/f?p=501:202:16879616424532::NO:::)

The negative impacts of low attainment were not evenly distributed among all mothership catcher vessels or mothership processors. While some catcher vessels delivered record amounts of their mothership sector quota to their processor(s), others harvested none.

Beyond bycatch access, not all members of the mothership sector agree about why we have been struggling to achieve higher attainment in recent years, but we all agree that a higher proportion of our allocation must come out of the water.

Proposed Regulatory Solutions with Sector-Wide Support

Members of the mothership sector acknowledge that the mothership coop program established by the Council and NMFS under trawl rationalization achieved a delicate balance of interests between stakeholders. We also acknowledge that the work the Council has conducted in recent years to improve at-sea access to bycatch is an enormous step forward. At this time it is not our intent to fundamentally change the program that we collaborated to design, but rather to request that the Council and NMFS analyze and implement specific regulatory updates to reflect changes in the fishery after eight years of the program.

At great effort we have come together as a sector to discuss and scrutinize a variety of problems and solutions. Some solutions fall within the scope of the current cooperative program, and we can - and in many cases already have - taken action as individuals, companies, or collectively as a coop to address these (i.e. recent access to more bycatch, improving sector communication,

improving harvester/processor relationships, companies putting out additional processing platforms or taking additional trips, increasing competition for catcher boat deliveries). Other consensus solutions we have come up with require minor regulatory changes, and these must of course be brought before the Council and NMFS to address, which is the purpose of this document. We arrived at two consensus proposals after continuing discussions on how to improve utilization for our sector while continuing to balance the interests between stakeholders in the mothership sector.

Consensus Solution 1: Change the Processor Obligation Deadline for MSCV Permit Owners

Mothership catcher vessel permit owners currently obligate their mothership sector quota (called "catch history assignment" in regulations) to a mothership processor permit annually through their limited entry permit renewal. Limited entry permit renewals are due by November 30 each year, so catcher vessel owners are currently obligating to a mothership processor five and a half months prior to the start of the whiting season on May 15. While some mothership processors have stated that this early deadline helps them plan their year and the number of trips they can take, often balancing their whiting operations with pollock operations, some catcher vessel owners have expressed frustration that they are locked in too early to have the lay of the land for the following year. Changing the obligation deadline could afford the catcher vessel with more flexibility and timely information to be able to choose a mothership processor who is going to be able to accommodate more of their catch, ultimately improving utilization.

> Proposed Change[1]: At §660.150(b),
> (7) Processor obligation and mutual agreement exceptions—(i) Processor obligation. Through the annual MS/CV-endorsed limited entry permit renewal process, the MS/CV-endorsed permit owner must identify to NMFS if they intend to participate in the MS coop or non-coop fishery. T~~,t~~he MS/CV-endorsed permit owner must identify to NMFS through the MS coop permit application[2] ~~to~~ which MS permit the MS/CV permit owner intends to obligate the catch history assignment associated with that permit if they are participating in the MS coop fishery. Only one MS permit may be designated for each MS/CV endorsement and associated catch history assignment.

Consensus Solution 2: Analyze an Increase to the MS Processor Cap

The mothership program currently includes a processing cap of 45% of the sector allocation for mothership processors, called an "MS permit usage limit" in regulations, which was meant to assure that at least three motherships would participate in the fishery. However, the cap does not necessarily have the effect of assuring participation. The mothership sector is the only trawl

[1] This proposed change is not meant to be prescriptive for the purposes of analysis or regulation writing, but rather to highlight the specific regulations at hand and the type of change that we are seeking.
[2] Due March 31 annually.

sector (whiting or nonwhiting) with a processing limit, and the application of the limit is confusing and could actually inhibit attainment at times. There are a very limited number of processor vessels in the United States with the capacity and expertise to process and sell whiting products. If a vessel breaks down for a season or a year, another mothership permit owner/vessel with capacity cannot take deliveries from catcher vessels above the processing cap, limiting the sector's attainment. And if the whiting TAC were to fall to a low level for one or more years such that it became inefficient for some mothership processors to take whiting trips or as many whiting trips, the processors who were operating would not be able to take deliveries above the processing cap, potentially creating a situation where it would become impossible to harvest the full sector allocation even with full catcher vessel harvesting capacity.

For these reasons the mothership sector came to consensus support for an analysis of a range of alternatives from the status quo (45%) to removal of the mothership processing cap.

> Proposed Changes: Increase the highlighted number in the following sections, or remove the following sections if the processing cap is removed.
>
> At §660.111,
> (2) MS Coop Program. (i) MS permit usage limit means the maximum amount of the annual mothership sector Pacific whiting allocation that a person owning an MS permit may cumulatively process, no more than 45 percent, as described at §660.150(f)(3)(i).
>
> At §660.112(d),
> (7) Process more than 45 percent of the annual mothership sector's Pacific whiting allocation.
>
> At §660.150(f)(3),
> (i) MS permit usage limit. No person who owns an MS permit(s) may register the MS permit(s) to vessels that cumulatively process more than 45 percent of the annual mothership sector Pacific whiting allocation. For purposes of determining accumulation limits, NMFS requires that permit owners submit a complete trawl ownership interest form for the permit owner as part of annual renewal for the MS permit. An ownership interest form will also be required whenever a new permit owner obtains an MS permit as part of a request for a change in permit ownership. Accumulation limits will be determined by calculating the percentage of ownership interest a person has in any MS permit. Determination of ownership interest will subject to the individual and collective rule:
>
> (ii) Ownership—individual and collective rule. The ownership that counts toward a person's accumulation limit will include:
>
> (A) Any MS permit owned by that person, and

(B) A portion of any MS permit owned by an entity in which that person has an interest, where the person's share of interest in that entity will determine the portion of that entity's ownership that counts toward the person's limit.

Proposed Regulatory Solutions without Sector-Wide Support

After the October 29th, 2018 sector-wide meeting in Portland, the sector put forward a solution that would relax the mothership/catcher-processor permit transfer rules. The proposal would allow vessels registered to a catcher processor permit to be registered to a mothership permit in the same calendar year, and vice versa, which is not currently allowed under program rules[3]. This could provide suitable options for relief should any processor vessels be unable to operate in a given year, while still maintaining separate sectors and continuing to safeguard the mothership processor class.

While this appeared to be a consensus proposal to move forward for analysis during the sector-wide meeting and upon sector-wide review of the meeting summary document, two mothership processor companies (representing three of the six mothership permits) and some catcher vessel companies have since expressed that they do not support this solution moving forward for action or analysis. This proposed solution therefore is no longer a consensus item, but still merited discussion here so that the Council could track updates from our November document.

[3] See 50 CFR §660.150(f)(2)(i) and §660.160(e)(2)(i) for rules on declaring vessel as either a mothership processor or catcher processor for the entire calendar year. See §660.25 (b)(4)(vii)(C) for limit on transfers.

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San Diego, CA 92129

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Ste 501
Alexandria, VA 22314

P.O. Box 5501
San Mateo, CA 94402

February 7, 2019

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

Re: Agenda Item G.5, In-season Adjustments

Dear Chair Anderson,

The Coastal Conservation Association of California (CCA CAL), American Sportfishing Association and Coastside Fishing Club request that the Council consider whether in-season action on groundfish bag limits and sub-bag limits may be appropriate for California recreational anglers. In 2018, the Council specified season dates, depths and bag limits for 2019 and 2020 based on the best information then available. The bag limit for lingcod was set at one fish (south of 40°10') and sub-bag limits for canary rockfish and black rockfish were set at two and three fish, respectively.

In-season action may be appropriate to increase these limits. Under the current limits, the California recreational sector is expected fall far short of attaining the harvest guideline for each of these species. Even though reduced limits may be necessary at times to avoid conservation or allocation concerns, unnecessarily low limits complicate regulatory compliance without serving a corresponding benefit. Moreover, needlessly low limits frustrate efforts to attain optimum yield.

We ask that the following revised limits be analyzed for subsequent in-season action:

- Lingcod – increase bag limit to two fish
- Canary rockfish – increase sub-bag limit to three or four fish
- Black rockfish – increase sub-bag limit to four or five fish

Whether increases in limits are appropriate should be driven by the best scientific information available, which necessarily includes updated harvest forecasts and stock assessments, if available. If the Council's analysis demonstrates that increased limits are not likely to compromise conservation or allocation objectives, then the increased opportunity should be made available without delay through an in-season action.

CCA CAL is a statewide, non-profit marine conservation organization working to protect the state's marine resources and interests of coastal recreational anglers. CCA CAL's objective is to conserve, promote, and enhance the present and future availability of the coastal resources for the benefit and enjoyment of the general public. CCA has proven time and again that anglers are the best stewards of the marine environment. We work to protect not only the health, habitat and sustainability of our marine resources, but also the interests of recreational anglers and their access to the resources they cherish.

The Coastside Fishing Club is an all-volunteer, 10,000-member recreational fishing organization in Central and Northern California founded in 2002. Coastside actively engages at the local, state and national levels to represent the interests of recreational anglers. Coastside advocates for the protection and enhancement of marine resources and for the public's right to sustainably access those resources.

The American Sportfishing Association (ASA) isthe nation's recreational fishing trade association, ASA supports the interests of hundreds of businesses, agencies and organizations and is the champion for the sportfishing industry. ASA's members include sportfishing and boating manufacturers and their representatives, allied manufacturers, independent and chain outdoor retail stores, state fish and wildlife agencies, conservation organizations, federal land and water management agencies, angler advocacy groups, outdoor media groups and journalists.

Sincerely,

Coastal Conservation Association
American Sportfishing Association
Coastside Fishing Club

G.5: Final Inseason Management

Bill James Fisheries Consultant

Port San Luis Commercial fishermen's Association / MBCFA
02/26/2019 12:34 PM PST

Mr. Chairman members of the Counsel : My name is Bill James. I am the fisheries consultant for PSLCFA.. I request the following changes for inseason management: 1). Open Access s. of 40:10 minor shelf rockfish 40:10 to 34:27 600 lbs. / 2 months (closed march-april): 2). Deeper Nearshore s of 40:10: in addition to present deeper neashore trip limits of 1000 lbs. / 2 months (closed mar-apr). add 200 lbs./ 2 months Black or Blue Rockfish (closed Mar-Apr) as a separate listing... As a separate issue a request for the following changes for the Open Access area from 42:00 to 40:10: 1).Rockfish Conservation area 40:10 to 42:00 40 fathom line to 100 fathom line 2).Minor Nearshore Rockfish: 42:00 to 40:10 7,000 lbs. / 2 months , no more than 2,000 lbs.of which may be species other than Black Rock Rockfish. Thank you for the opportunity to speak: Sincerely, Bill James

G.5: Final Inseason Management

John Law
Southcoast Nearshore Fisherman
02/21/2019 12:55 PM PST

REQUEST TO ALLOW THE TAKE OF CALIFORNIA SCORPIONFISH BY SOUTHCOAST NEARSHORE PERMIT HOLDERS DURING THE MARCH/APRIL TRIP PERIOD. California recently reversed its opinion of the health of the South Coast Nearshore Fishery (SCNSF). The original fishery management plan requiring a 2 to 1 permit buy down and the eventual downsizing to 18 participants was eliminated. Currently there are 50 permits, 39 of which are transferrable on a 1 to 1 basis. 28 of these 39 permits have an additional authorization for the use of traps. Sheephead is the primary fish taken in the trap fishery. California Scorpionfish are barely harvested by the SCNSF fleet because methods of take differ greatly from the trap fishery for Sheephead. California Scorpionfish are primarily taken with hook and line and often live in areas not directly associated with other types of fish. Trip limits for California Scorpionfish have increased, yet landings have not. Only 3450 lbs were landed by all participants during 2017. Current trip limits allow 1500 lbs each trip period per permit holder. Opening the take of California Scorpionfish during the March/ April trip period, when the take of other Nearshore Fish is closed would allow some participants to switch gear type and access the underutilized stock of California Scorpionfish. John Law

J.1: NMFS Report

David Haworth
02/26/2019 04:34 PM PST

I ask that you consider the linked article under this Agenda Item.
https://www.washingtonpost.com/us-policy/2019/02/04/big-sea-bigger-data-how-analytical-biologists-are-making-peace-between-fishermen-turtles/

Monterey Fish Company, Inc.

Family Owned and Operated Since 1941

Mr. Phil Anderson, Chair
And Members of the
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

RE: Agenda Item K.1.b ~ Anchovy Harvest

Dear Mr. Anderson and Council members:

Monterey Fish Company, Inc. (MFC) has been in business since 1941, harvesting and packing a complex of five main coastal pelagic "wetfish" species. Our products are caught and marketed for both Export (human consumption, bait, and feed) and Domestic (human consumption) Sales.

Our main species is California Market Squid, although the squid season runs on average 3 months up north in the Monterey Bay (June through August) and 3 months in Southern California (October through December). The remaining 6 months of the year we harvest tail fish, which are comprised of Herring, Mackerel, Sardines and Anchovies. As you know, the Herring and Sardine fisheries have been closed for several years now. This leaves us to harvest Mackerel and Anchovies; and with Mackerel being scarce, it leaves us with only Anchovies.

The wetfish industry historically relied on a complex of fisheries, each harvested during their time of seasonal abundance, and until recent years this industry has produced as much as 80 percent of the total volume of commercial fishery landings statewide. The closure of the sardine fishery, along with the closure of the herring fishery to seine fishing, has already had a devastating impact on this company, and the fishing community.

The impact of curtaiing the last tail fish species, i.e. anchovy, would be catastrophic both financially and economically both to MFC and to Monterey.

Monterey Fish Company, Inc. employs 100 – 150(+/-) packers and 26 crew members who fish on the boats that fish for us, all of which we staff year-round. If the anchovy fishery is curtailed, 200 people would be out of work in this plant alone. Curtailing the anchovy fishery would put at least a 1,000 people out of a job in Monterey, considering the other fishermen and processors in this area who also rely on anchovy, not to mention the loss of a great and economical food source.

Monterey Fish Company, Inc. has been a staple in Monterey Bay as well as well-known and respected nationally. Throughout the years, MFC has established a legacy of honesty and integrity due to the way they treat their employees and customers – like family. MFC treats their customers with old family values and great respect. The owners live humbly to keep money in the business during the slack season so their employees can stay employed year-round. These family values have made a strong healthy business that is being squashed little by little by the impacts of Government, inadequate science, and overly precautionary management of the fishing industry.

SeaWave® Bono® SurfKing®
Packer and Exporter of Fresh and Frozen Seafoods
960 S. Sanborn Rd. / Salinas, CA 93901 / 831-775-0522 / Sales Fax: 831-775 0156 / Acct. Fax: 831-422-8956

Monterey Fish Company, Inc.

Family Owned and Operated Since 1941

We strongly request that you acknowledge the observations of fishermen, and consider all available data in recommending management measures for California's anchovy fishery. Anchovies are a very

bountiful resource and are being seen in massive schools up and down California. Anchovies are a very sustainable species to harvest. Reducing or curtailing the anchovy catch rule now to satisfy a Court order that failed to consider all the facts could precipitate the end of a Legacy: Monterey Fish Company, Inc.

Respectfully,

Jenn Cabotage
GM

MONTEREY FISH COMPANY INC
SINCE
1941

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PACKERS OF:
OCEAN ANGEL

TELEPHONE: (831) 763-3000
FAX: (831) 763-2444

DEL MAR SEAFOODS, INC. 331 Ford Street Watsonville, CA 95076

Processors and Distributors of Monterey Bay Squid

February 10, 2019 Agenda item: K.1.b

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Our company has been processing and marketing Monterey Bay Anchovies for decades here in Monterey California. Our main business was squid and sardines, but due to the absence of a sardine quota available to us, we've come to greatly rely on anchovies to maintain our workforce and fishing vessels working when squid are not in season.

We've worked diligently to expand our export markets for Monterey anchovies over the years and we are now in a position to capitalize on our efforts in 2019 and beyond. We currently operate 4-6 vessels for anchovies which employ 5 crew members each and our factory will work a crew of 80 full time workers for anchovy production which will start in February and continue throughout the summer. Our direct workforce of 100 people does not include the trucking companies, ice vendors, box manufacturers, and other local businesses that would be greatly impacted if this opportunity would not be available to us.

We urge you and the council to please consider the economic consequences of our industry if we were to lose this opportunity that a struggling California industry desperately needs.

Thank you,

Joe Cappuccio
President, Del Mar Seafoods

E-Portal Public Comments: March 2019

The following comments were received by the Advanced Briefing Book Deadline.

Click on the Agenda Item below to be taken to the corresponding comment(s), or utilize the Bookmarks feature to the left to jump to comment(s).

Pacific Fisheries Management Council

Public Comment

January 21, 2019

RE: Agenda Item D.2 Salmon Rebuilding Plans

Specifically Sacramento River Fall Chinook and

Klamath River Fall Chinook

Chairman and Council:

We stand united as the California delegation to the Salmon Advisory Subpanel in support of Alternative I of 4.2 Recommendation 2 in the Sacramento River Fall Chinook (SRFC) and Klamath River Fall Chinook (KRFC) salmon rebuilding plans.

4.2 Recommendation 2 Alternative 1: We believe the existing SRFC and KRFC models provide ample flexibility to manage prudently these ocean salmon fisheries. A recent example is 2018 when the SRFC California ocean salmon season was established with an escapement goal of 151,000 versus the 2018 escapement forecast which provided abundance of 122,000. The 2018 management action's stated goal was to assure enough adult spawners returned to the Sacramento River system so the required 3-year geometric mean abundance of 122,000 had a higher probability of being realized.

We note the existing control rules for both stocks were developed and adopted by the Council with the intent of managing the stocks throughout their entire range of abundance: higher impacts in times of abundance, and lower impacts in times of scarcity. The analysis supporting the adoption of these kinds of conservation measures demonstrated the effectiveness of abundance-based controls relative to the protection of the stocks, while maximizing the overall benefit to the direct user groups and general public.

We also note that while the expected rebuilding times are somewhat longer under alternative 1 (see figure 4.6.a in both rebuilding plans) the likelihood of achieving rebuilding within the mandated 10-year time period is essentially the same as for the two action alternatives for the Sacramento stock, and nearly the same for the Klamath stock. The 50% rebuilding probability is 3 years for the Sacramento stocks, and 4 years for the Klamath – both <u>well</u> within the 10-year maximum allowable.

However, the analysis in section 5 of both rebuilding plans indicates the potential economic loss associated with alternatives 2 and 3, would be significantly higher relative to alternative 1. At least $45.6 million would be lost per year to the fishing communities south of Cape Falcon under alternatives 2 and 3 relative to alternative 1.

Imposing such a draconian economic hardship on the fishing communities without a substantial improvement in the rebuilding times would be inconsistent with the legal requirements of the MSA.

4.3 Recommendation 3: (Fall fisheries) recommends consideration to eliminate or limit fall (September through December) fisheries. We believe considerations to adjust fall fisheries in order to promote an acceptable escapement falls within existing (status quo) fishery models and season structuring protocol. **We do not believe** this management tool needs to be singled out as an exclusive criterion when developing a salmon season.

4.4 Recommendation 4: (*de minimis* fisheries) We are most concerned with this recommendation which proposes to limit the scope of the control rule. This management tool is a major contributor to the fleet and supporting community's economic ability to survive in low abundance years. We fear a complete economic collapse of the commercial and recreational fleets as well as critical shore based infrastructure if this action is adopted. **Therefore, we strongly extend our opposition to this recommendation.**

4.5 Recommendation 4: Habitat Committee's engagement is welcome. The salmon rebuilding plans highlights that one of the major contributors to low abundance is in-river events and practices. We suggest the Habitat Committee explore water releases, hatchery practices, and interagency communications regarding water flows and hatchery releases. We strongly support a Council decision to direct the Habitat Committee's review.

4.6 Analysis of Alternatives: The SST outlines a model which "assesses the probability of a stock achieving rebuilt status." Generally, we agree that using most recent abundance estimates provides useful information in assessment of current and future stock. We recommend that a full review of KRFC and SRFC models to assure components of the models are representing current conditions. For example, in the mid-80's California issued 5,000 limited entry commercial salmon permits. Most vessels were 40 feet or greater in length. In 2017, of the remaining 1,408 permits, only 398 had lands. There was also a shift toward smaller vessels. The significance is smaller vessels have less production capability and range to operate. Today's fleet does not have the harvest impact that the original fleet had. Like examples can also be made of the size and composition of the charter boat fleet.

We believe further development of 4.6 has value, but is not ready for implementation. We recommend the Council direct the STT to continue its work, and consider updating the models to reflect current conditions and include the San Joaquin River system in the SRFC Harvest Model.

4.7 Further Recommendations:

We see the list of five topics as an extension of 4.6. Each topic, including 4.6, may be mutually exclusive. We believe the overall value of these works is to improve prediction and forecasting abundance by better understanding some of the causes and relationships which influence in-river salmon populations. We support any effort to better predict abundance. And we encourage STT to engage and include full participation of all user groups as work proceeds.

5.0 Socio-Economic Impact of Management Strategy Alternatives:

These rebuilding plans use a 10 year average, 2016 inflation adjusted, value to the personal income impact to commercial and recreational fisheries with 2008 and 2009 excluded due to closure. The average commercial value is $25M and recreation value is $19.9M. We believe that a more fully impacted value needs to be developed which includes first and second tier support structures. For example, the decision impact of restricted fisheries has led to less access to support facilities such as fuel, ice, and tackle vendors. Recreational impact has seen fewer choices in electronic and mechanical service and maintenance. A fuller impact value of these services, the jobs they represent, and the lives they touch need to be part of the economic equation when considering rebuilding plans. We feel the economic values stated are severally understated.

We acknowledge the SRFC and KRFC rebuilding plans are required by law since the three year geometric mean falls below minimum escapement. We stand ready to apply whatever reasonable and prudent actions are required to support and protect these stocks. The Council is required to consider economic impacts on coastal communities and businesses that rely on our respective fleets to survive during low abundance and restricted fishing. We believe that mandating a more restricted fishery for as much as ten years as found in 4.2 Recommendation 2's (Management Strategy Alternatives) Alternatives II and III is counterproductive to the season structuring process and further reduces the social and economic value of the ocean salmon fisheries.

We firmly believe the existing season structuring protocol and procedure allows us flexibility to structure CA and OR ocean salmon seasons and protect the salmon resource. We strongly encourage the Council to adopt Recommendation 4.2's Alternative I which calls for status quo of the control rule.

We appreciate your consideration.

John Atkinson
SAS CA Charter Boat Representative

Jim Yarnall
SAS CA Sport Fisheries Representative

James Stone
SAS CA Sport Fisheries Representative

John Koeppen
SAS CA Commercial Troll Representative

Humboldt Area Saltwater Anglers Inc.

P.O. Box 6191, Eureka, CA 95502
Email: hasa6191@gmail.com
FEIN #61-1575751

February 6, 2019

Pacific Fishery Management Council
Mr. Phil Anderson, Chairman
7700NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

RE: Input on Agenda Item D.2 Salmon Rebuilding Plans

Dear Chairman Anderson and Council Members:

The Humboldt Area Saltwater Anglers, Inc. (HASA) is a saltwater sportfishing organization with over 300 members representing northern California anglers since 2008. We have been actively engaged in saltwater sportfish management over the years, with the goal of providing a long-term sustainable saltwater fishing opportunities for our membership. We are encouraged by improvements in 2018 fall-run Chinook salmon escapement on the Klamath River and Sacramento River, yet are also cognizant of the need for a robust rebuilding plan for these important California stocks. We have also experienced the side effects of restricted salmon fishing on increasing sport fishing pressure on near-shore rockfish and flatfish species. Accordingly, we are seeking 2019 salmon season alternatives that balance the need for robust rebuilding while providing reasonable access to salmon in 2019.

We have reviewed the Sacramento River Fall Chinook (SRFC) and Klamath River Fall Chinook (KRFC) salmon rebuilding plans, and concur with the California delegation's recommendation to support Alternative I of 4.2 Recommendation 2 in the SRFC and KRFC salmon rebuilding plans.

Thank you for the opportunity to provide input on the 2019 SRFC and KRFC Chinook salmon rebuilding plan alternatives.

Respectfully,

Scott McBain, President
Humboldt Area Saltwater Anglers, Inc.

February 7, 2019

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

RE: Agenda Item E.2: Climate and Communities Initiative Update

Dear Chair Anderson and Council Members:

The Nature Conservancy (TNC) and the Ocean Conservancy thank the Pacific Fishery Management Council (Council) for its work implementing the Fishery Ecosystem Plan (FEP) and taking steps forward on the Climate and Communities Initiative, preparing West Coast fisheries for climate change. We are excited to see the Council lead the way for scenario planning on the West Coast., we offer the following input on scenario planning and the attached.

Scenario planning is a structured process to examine if our current decision-making processes will be suitable in an uncertain future. The collective "we" are grappling with the impacts of climate change on a world-wide scale. Climate change presents serious challenges as it has the potential to drive species distribution shifts, alter stock productivity and cause unexpected fishing behavior. The impacts will be both biological and socio-economic.

The US Fish and Wildlife Service and the National Park Service both have extensive scenario planning programs. In the *Summary of Scenario Planning Process* report (attached), we summarize scenario planning guidance development and tested by the National Parks Service. There has be great interest in this process, specifically, and we felt that a short summary of the work would help the Council in developing their own scenario planning process. Additionally, we highlight a successful process that was conducted on the East Coast. This is not a recommendation of an exact process to move forward with. Rather, it is intended to provide considerations and lessons learned from a finished process.

We are looking forward to providing recommendations in additional public comment and are happy to share some perspectives as we move forward.

Sincerely,

Gway Kirchner
The Nature Conservancy

Corey Ridings
Ocean Conservancy

Summary of a Scenario Planning Process

Rich Bell
Lead Fisheries Scientist
North America Program
The Nature Conservancy

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OREGON

February 7, 2019

Introduction

Developing strategies to deal with an uncertain future is essential for natural resource management. The future is more than just a continuation of past trends as it exhibits unexpected shocks and non-linearities that are both unexpected and unpredictable (Shell 2008, NPS 2013, Meinert 2014). Regardless of the future situation that occurs, expected or unexpected, decisions need to be made to ensure the long-term sustainability of natural resources. Scenario planning is a means to develop effective strategies and actions for a range of potentially plausible futures (Rowland et al. 2014).

The Nature Conservancy has put together this document to aid the Pacific Fishery Management Council (Council) in moving forward with scenario planning in the Climate and Communities Initiative. The goal is to provide an overview of scenario planning, based on the broadly accepted guidance contained in *Using Scenarios to Explore Climate Change: A Handbook for Practitioners* by the National Parks Service (NPS 2013) combined with other resources. An example of the application of that guidance in also included in this report. It is important to note that the example is not a recommendation of a way forward with scenario planning on the West Coast, but a demonstration of successful scenario planning, which is very informative to the planning of the current initiative. The components of any process should be tailored to the needs of the group conducting the planning.

What is Scenario Planning?

Scenario planning is an iterative process used across a range of disciplines to plan for the future. It first became prominent as a military planning tool during World War II and has been used extensively in the business and financial sectors, most notably by the oil giant Royal Dutch Shell (Schoemaker 1995). In recent decades, scenario planning has been applied to natural resource management and programs exist within the US Fish and Wildlife Service (Rowland et al. 2014), and the National Park Service (NPS 2013). The process is well suited to fisheries and has already been used in several fishery applications (Badjeck et al. 2010, Davies et al. 2015, Schumann 2018b).

Planning for an uncertain future can be quite challenging. When thinking about the future, fishery drivers (i.e., the aspects that shape the fisheries landscapes) can be divided into two groups; things that are known with some amount of certainty (e.g., death and taxes) and things that are very uncertain (e.g., climate change, politics, the economy) (Schoemaker 1995, Meinert 2014). Scenario planning presents a structured process to evaluate fisheries through the lens of those drivers, e.g. climate change, and explore our underlying assumptions, ideas and perceptions as well as the range of uncertainty concerning the information we have about the future (Meinert 2014).

Scenario planning is a process for explicitly acknowledging and working with that uncertainty (Shell 2008). It does not try and predict the future, but simply examines the range of potential futures to determine effective ways to make decisions despite uncertainty. By working through the scenarios, participants are forced to identify and critically examine their own assumptions about the future and analyze the main factors driving potential outcomes, their connections and feedback loops (Rowland et al. 2014). Each scenario represents an narrative about the future that is plausible. It is not a forecast, but simply a visualization of one possible future. The process reduces two of the major problems when

planning: tunnel vision – a view of the future that's too narrow - and over confidence – belief that a single envisioned future is the most likely (Schoemaker 1995).

Scenario planning is well suited to situations in which the level of uncertainty around key drivers of future conditions is larger in scale than the one's ability to adjust or predict. Scenario planning is a particularly useful tool when considering situations where significant and dramatic changes have occurred in the past and are likely to occur again, and when such changes can have serious consequences on the resource and livelihoods. It can also help when effective long-term strategic planning is difficult due to limited planning resources and/or multi-institution governance complexity. Additionally, scenario planning can provide a collaborative context for airing and reconciling divergent views on the best way forward to achieve a common purpose (Schoemaker 1995).

Guiding principles

When developing scenarios there are a few guiding principles:

- Utilize a **time horizon** that is long enough that it considers the large-scale uncertainties that will shape the future. It should be of sufficient length to move beyond the day-to-day operational decisions, but short enough that it is still relevant and actionable.
- A popular term in the scenario planning process is "**Outside-in thinking**". In general, the participants should first consider how forces outside the Council (e.g. climate change, politics, economy, society) will impact the resource and the management process and then how the Council will navigate those changes.
- Always include **a diverse group of stakeholders** with multiple perspectives. The wider the array of views, attitudes, perspectives and experiences of the participants, the more fully the scenarios will be informed.
- As with all planning processes, establish **clear goals** to ensure everyone is striving for the same end, such as, "management actions to take in the face of climate change."
- Scenario planning is a process that should be **tailored to suit the needs** of the group conducting the planning. Within the framework, there is no single correct way to do things; implement it in a way that achieves the goals (NPS 2013).

Guidance for Scenario Planning

In general, the amount of time needed to conduct scenario planning can vary greatly. Ideally, the process would take no more than one year to complete. It involves a core team of individuals to lead the process, and participants (the number of participants should be tailored to the specific needs) to develop, shape and examine the scenarios over the course of one to three workshops.

There are a number of standard steps in the scenario planning process. Here we outline the five step procedure followed by the National Park Service (NPS 2013):

1. Orientation,
2. Exploration,

3. Synthesis,
4. Application, and
5. Monitoring.

The outline provides a general summary of the National Parks Service approach, but also includes information from other resources to provide a broad overview.

1. Orientation

Orientation is about getting the framework, the information and the people up and running. One of the first steps for the Council, were you to follow this process, is to bring on an experienced scenario planning facilitator.

A core team should be assembled; a small group of people that will lead all phases of the process. Core team responsibilities include inviting participants, setting the schedule, conducting interviews, organizing and facilitating workshops, and drafting scenarios and reports. The core team begins by developing the orientation materials such as defining critical challenges, key deliverables and the audience for the work.

The group should develop a clear goal such as, 'Developing an implementable strategy for managing fisheries in the face of climate change' and a time horizon. The time horizon represents the number of years into the future the process will explore.

As part of orientation, the core team plans a series of workshops that will be executed in future steps (i.e., step #3 Synthesis and step #4 Application). This includes the type and number of workshops, the identification of steering committees (if needed) to help with specific workshop planning, dates and locations, goals and objectives of workshops, facilitators, presenters, note takers, and participants from a range of backgrounds.

During this phase, the core team conducts one-on-one interviews with fishery interests who will be the participants in the workshops (i.e., commercial and recreational fishers, tribes, processors, supply chain experts, tourism staff, fishery related businesses, economists, local politicians, port authority, lawyers, natural and social scientists, town, state and federal managers and non-governmental organizations). The interviews are conducted with broad, open ended questions (e.g. What are the largest uncertainties that could impact fishing and fisheries management over the time-horizon?). The goal is to obtain background material from a range of perspectives on some of the major factors (physical, social, political, technological, or economic) that cause uncertainty in fisheries and to get a sense of the variation in assumptions and beliefs that are held across the industry. The interview results may help to reshape the initial goal, identify critical challenges, and hone the time-horizon.

2. Exploration

During the exploration phase the core team with input from the participants, additional background material, and literature review, identifies major factors shaping the future and their degree of uncertainty.

In parallel, the core team works with climate and fisheries experts to put together climate change projections for the physical and biological variables on the West Coast. This could include using the IPCC carbon dioxide emission scenarios and global earth system models to project factors such as changes in water temperature, storm frequency and sea level rise. Down-scaled regional climate models and species distribution models can also be used to get a sense of the factors driving change, the range of physical changes that could occur and the uncertainty associated with the changes.

The results of the exploration phase should be a list of factors that drive the future from a range of different disciplines and perspectives. A pragmatic approach is needed to ensure important factors are included, possibly in broad terms, but the list is not so long as to be impractical.

Communications by the core team can help ensure stakeholders are informed of the process and help bring everyone up to speed so that the workshops in steps #3 and #4 can move efficiently.

3. Synthesis

The synthesis phase involves creating different scenarios based on the factors identified in phase 2. A workshop format is recommended to engage participants in discussion and dialogue.

The first step is to review the list of factors as a group, combining or eliminating as many as possible and potentially adding any missing ones. Participants then sort the factors into two groups: 1) Factors that are considered reasonably well known and/or likely to follow their current patterns into the future (e.g. population growth, age of fishing captains), and 2) Factors that are considered largely unknown (e.g. frequency of oceanographic events, seafood market dynamics). When selecting factors, there are no single correct answers and the process is a product of the particular group of people in the room. That is one of the reasons it is so important to have a diversity of people and opinions at the workshop.

The second step is developing the critical uncertainties, which form the basis for building the scenarios. This is done by ranking the unknown factors, or groups of factors, to determine the top two to five. It may be that a bundle of related factors becomes one of the critical uncertainties. It is important that the number of critical uncertainties is limited, that they are significantly different, and that they could impact the future within the specified time horizon.

Finally, the scenarios are built. There are a range of methods for building scenarios, we review two methods:

a) Matrix method

In the matrix method, small break out groups cross two of the critical uncertainties. It is best to select critical uncertainties from two different disciplines (e.g. an economic factor and an environmental factor as opposed to two environmental factors). As each critical uncertainty has two end members, crossing two critical uncertainties perpendicularly creates four quadrants and thus four potential scenarios. The break out group then reviews each quadrant, first determining if a scenario based on that quadrant is plausible (e.g. can sea level rise be maximum and port infrastructure be unaffected?) and then determining if a useful, compelling narrative could be developed. The goal is to find plausible scenarios that challenge participants, forcing

them to examine the main drivers in the system, the underlying causal relationships, considering the range of possible futures while focusing on the challenges that fisheries management might face. At this initial stage, the small groups create short bulleted lists about how the future might unfold in each of the different quadrants and then mix and match the different critical uncertainties, creating new matrices to develop abridged story lines for each quadrant. After working through several different crosses with different critical uncertainties, the small group should select their top two to four plausible scenarios that express the range of potential challenges in fisheries and fishery management in the face of climate change.

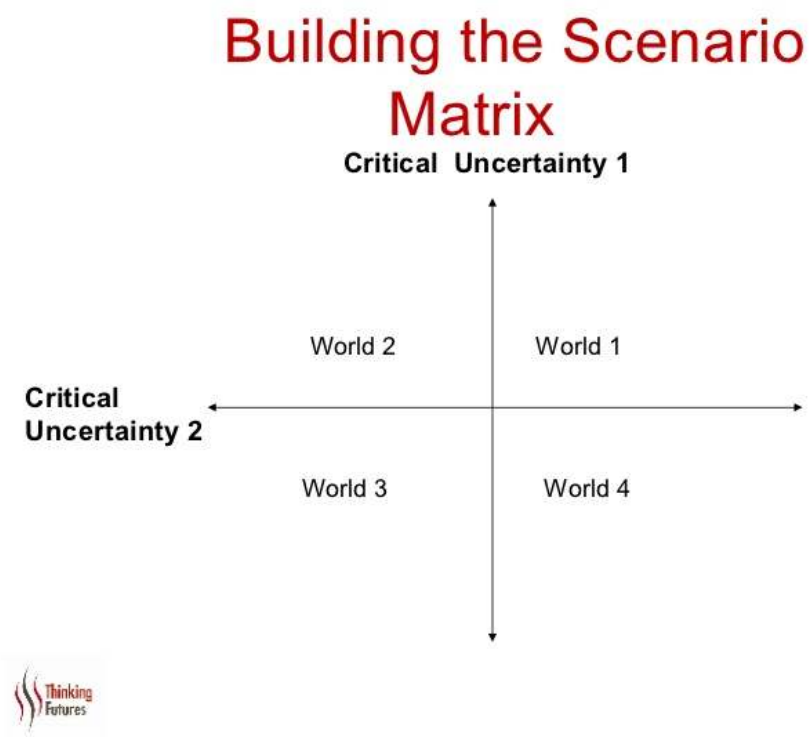

Figure 1. Schematic of a scenario matrix (from (Conway 2007)).

b) Incremental approach

The incremental approach begins with the same two to five critical uncertainties established by the participants. The critical uncertainties are written down on separate cards with one side of the card indicating one extreme value or lowest level of change for the critical uncertainty and the other side, the maximum level of change. In break out groups, the cards are laid down such that each critical uncertainty is at the lowest level of change. The small group determines if that combination of critical uncertainties is plausible and then puts together a bulleted narrative of what might occur in the future given those realities. The small group then turns over two or more cards and works through an abbreviated story line based on the new value of the critical uncertainty. The goal is the same as in the matrix method above to determine the major factors shaping the future, the different possible realities they could take, and how they could impact

fisheries. Again, the small group works through several different iterations and eventually selects the top two to four scenarios.

In both methods it is important to explore and document first order impacts for each scenario (e.g. if the warm blob persists for ten years then…). While scenarios that are implausible should be removed, unlikely scenarios should not necessarily be eliminated. Examination of low probability, unexpected scenarios can often reveal major insights.

After selecting the top scenarios in each small group, the large group reconvenes, works through the scenarios together to ensure they are internally consistent, have a broad perspective and enable the creation of real actions or strategies. The group combines and eliminates some and then selects the overall top three to five scenarios. **The goal is not to select the correct future, or to predict the most likely future, but to select scenarios representing futures that are relevant, challenging, divergent, and cover the concerns facing fisheries management.** Finally, working with the core team, the participants fully flesh out the story in each scenario, working through the narrative development, the causal chain of events, the interconnections and outcomes for the different aspects (e.g. biological, economic). Creating a story around each scenario is often considered crucial as it one of the main ways humans understand and connect with abstract concepts such as future uncertainty.

4. Application

During the application phase, participants work through the scenario narratives from phase 3 to develop actions and strategies to ensure successful fisheries given the manner in which the scenarios unfold. Often in small groups, in a workshop setting (one or more, depending on the needs of the group), the participants work through the scenario narratives attempting to understand second and third order impacts, how the scenarios would impact specific areas and what the scenario would imply for specific stakeholders.

During this exploration, the participants develop draft actions and evaluate their implications. Questions such as, “If we knew this was the actual future, what actions would we take now? Are there actions we should stop taking? What is needed to meet our objectives under this set of conditions?” can help shape the process. Participants can trial run different ideas and strategies and work through the thought experiment of how they might play out under the different scenarios. The participants explore whether different ideas will work or not and determine the conditions under which certain concept will be effective. The goal is to develop ideas for what actions the stakeholders and the Council could or should take to be successful under the future scenario.

One of the key components of scenario planning is that the process is not trying to predict the actual future and plan for that single outcome. It is not trying to build a single consensus. The goal is to develop a range of scenarios that specify a broad array of potential futures forcing the participants to plan for all of them. **The actions developed across the full set of scenarios can then be evaluated to determine what strategies could work across a broad array of potential futures and thus be prepared regardless of which future actually happens.**

Working as a large group, the participants and core team review the actions and strategies developed for the different scenarios. The group is looking for patterns or suites of actions that cut across scenarios. This can include actions to take and actions to stop taking. It is also important to determine if the recommended actions diverge widely across the different scenarios indicating that different course of action are needed for the different realizations of the future. Different actions for different futures suggest an adaptive strategy is needed. Based on the potential actions, the participants can determine if there are certain actions that make sense across all scenarios (e.g. maintain healthy spawning stock biomass) or if there are sets of actions that are useful within certain reoccurring situations. The participants must then determine if the recommended actions represent gaps in the current strategy and if additional resources/data would be needed to execute them.

Monitoring

Monitoring is essential to know what actions to take when to maintain natural marine resources. Within the scenario planning process, it is important to determine what indicators can be used to determine if certain scenarios are becoming a reality, if there are bifurcation points and how the critical uncertainties are tracking. There is already a robust data collection program for fisheries on the West Coast. The program covers a wide range of indicators from physical and biological data to aspects of social and economic status. Many of the indicators are provided to managers by the NOAA IEA team in various formats, including the Annual Ecosystem Report given the PFMC. It is likely that most of the raw data, particularly for the physical and biological factors, are already collected, but may need to be processed in additional ways to track changes. Within the scenario planning process, the group should have a conversation about the desired indicators, current data streams and their ability to track the needed indicators as well as the allocation of time and resources for collecting and processing data.

5. Outputs

Scenario planning should have four products:

1) A series of bulleted scenario narratives
2) A list of actions to be taken to meet Council objectives within each scenario.
3) A list of strategy/action that cut across all scenarios that are the recommendations from the scenario planning process, and
4) A monitoring plan.

The core team is responsible for compiling all the information and producing the final report. The bulleted scenarios should be turned into written stories to ensure that they are accessible to those outside the workshops and so they can promote critical and creative strategic planning across the Council. The recommended actions or strategies will largely be derived from the workshop discussion surrounding actions developed for each individual scenario. Additional discussion with participants after the workshop as well as discussion with other stakeholders can also be used to develop additional strategies in the future.

The process can be completed in three to twelve months if the core team has dedicated time for the exercise. It may be possible to complete most of the work in one workshop, but two or three workshops

are frequently seen. It is best if the same participants are part of all phases of the process and it is highly recommended to hire a facilitator with experience in scenario planning.

A Scenario Planning Example: Rhode Island Commercial Fisheries

A good example of using this process to develop scenarios and responses in fisheries can be found in Rhode Island (Schumann 2018b). It is important to note that this is not a recommendation to follow this exact process. Rather, it is a demonstrative example of the successful use of scenario planning in fisheries.

In 2015, 12 Rhode Island fishermen were awarded a NOAA Saltonstall Kennedy grant to develop collective thinking on future environmental change, known as the Resilient Fisheries RI Project. They developed a Project Oversight Team and hired a Project Coordinator. They contracted with the Future Strategy Group to facilitate scenario development and undertook a process to develop scenarios that evaluated four different climate scenarios, combined with four difference socio-political scenarios (Schumann 2017):

- A period of high climate variability ("Global Weirding") and a "Do It Yourself" governance structure;
- A period of global cooling and increased eutrophication (greater anoxic events and acidification) and period of new technological innovation (i.e., artificial intelligence, micromanufacturing, and robotics) with a growing U.S. economy;
- An "Anthropogenic Warming" period, with increased temperatures, lower salinity and dissolved oxygen levels, and increasing ocean acidification, combined with a sluggish economy and tough protectionism and government programs; and
- A "Natural Warming" period with the same results to the environment as the previous scenario, but the drivers are natural, rather than human caused. This is combined with a new economy based on cheap renewable energy, creating profound economic uncertainty globally.

These scenarios were developed and evaluated through a multi-phase process that consisted of one-on-one interviews with fishery participants, and a series of facilitated workshops to determine the critical uncertainties that would form the basis of the scenarios and develop goals, strategies, and opportunities for Rhode Island's commercial fisheries in a changing climate.

During the first phase, the project coordinator conducted one-on-one interviews with fishery participants. The interviews were developed to solicit an understanding of how the environment is changing and how fishery participants are adapting to these changes, and to understand barriers that limit fishery participants' adaptive capacity and resilience. Discussions were not limited to environmental changes, rather they were open to all factors that affect fisheries.

The information collected in the interviews formed the basis for a series of workshops in the second phase that evaluated several topics that were identified as areas of uncertainty for fisheries in the future, including: ecosystem-based fisheries management and warming waters, ocean acidification, ecological changes and water chemistry in Narragansett Bay, changes in the seaweed community, squid

in a variable climate, socio-ecological community vulnerability, the expansion of black sea bass, the pros and cons of diversified versus specialized business portfolios, and models for combating the low level of new entry into Rhode Island's fishing industry. Political climate and climate change uncertainty were identified as the critical uncertainties and formed the four scenarios that would be evaluated in the next phase.

In the final interactive phase, a full day facilitated workshop was held with the focus on strategies that would achieve a thriving fishing industry in 2025-2030, under four distinct scenarios developed from the critical uncertainties identified above. Strategies that held promise in multiple scenarios were identified as the most winning strategies to attain future goals. This information was compiled in the *Rhode Island Commercial Fisheries Blueprint for Resilience* (Schumann 2018b).

This process was based on that developed by the National Parks Service (described previously;(NPS 2013)), and follows the five-step procedure of orientation, exploration, synthesis, application, and monitoring. The results of this process include a well-constructed vision for the future, an exploration of the challenges fishermen face (e.g., mounting regulatory strain, regulatory discards, time lags in data, regulatory fragmentation, business specialization, withering of the waterfront, rising business expenses, market stagnation and volatility, public apathy, shortened planning horizons, graying of the fleet, individual isolation, environmental variability and change, habitat degradation, and competing ocean uses) and an identification of future opportunities (e.g., Rhode Island's local foods commitment, collaborative marketing, new attitudes in management, emerging species, and new ecosystem models for managing fisheries). Through the workshops and planning exercised, fishermen identified core strategies and goals that can inform their own business practices or future fishery management actions.

The group developed their own "how-to" guide that could be very informative to the work currently being undertaken by the Council in the Climate and Communities Initiative (Schumann 2018a).

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G4: Omnibus Process Planning and Project Prioritization

Bill James

Port San Luis Commercial Fishermen's Association
2/7/19 1:57pm PST

Mr. Chairman and Members of the Council: My name is Bill James. I am the fisheries consultant for PSLCFA an a commercial nearshore fisherman. I request that the Open Access Nearshore and Directed Groundfish vessels and fishermen in the area of 40:10 to 34:27 given a much greater access to the healthy Shelf Rockfish species in the Omnibus Process Planning and Project Prioritization process. This should be given the highest priority because other user groups have enjoyed access to healthy fish stocks while we have been denied access for over 17 years. There are presently 3 EFP's gathering data to show that Shelf Rockfish species can be caught while at the same time having little impact on Yelloweye Rockfish. This data should be analysed as soon as available so that the open access bi-monthly trip limits can be greatly increased. There are National Standards and Grounfish Management Plan Goals and Objectives that support this request. I have reviewed The Council's Safe Documents "Status of Pacific Coast Groundfish Fishery and Recommendations for Management" for the years 1985 thru 2000. Many of those years the Sebastes monthly trip limits for Open Access in the area from 40:10 to 34:27 were 40,000 pounds. Presently 400 pounds.per 2 months. This is one percent or less of what what was allowed before the year 2000. Please give my request the highest priority. Thank you, Bill James

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February 7, 2019

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

Re: Agenda Item G.5, In-season Adjustments

Dear Chair Anderson,

The Coastal Conservation Association of California (CCA CAL), American Sportfishing Association and Coastside Fishing Club request that the Council consider whether in-season action on groundfish bag limits and sub-bag limits may be appropriate for California recreational anglers. In 2018, the Council specified season dates, depths and bag limits for 2019 and 2020 based on the best information then available. The bag limit for lingcod was set at one fish (south of 40°10') and sub-bag limits for canary rockfish and black rockfish were set at two and three fish, respectively.

In-season action may be appropriate to increase these limits. Under the current limits, the California recreational sector is expected fall far short of attaining the harvest guideline for each of these species. Even though reduced limits may be necessary at times to avoid conservation or allocation concerns, unnecessarily low limits complicate regulatory compliance without serving a corresponding benefit. Moreover, needlessly low limits frustrate efforts to attain optimum yield.

We ask that the following revised limits be analyzed for subsequent in-season action:

- Lingcod – increase bag limit to two fish
- Canary rockfish – increase sub-bag limit to three or four fish
- Black rockfish – increase sub-bag limit to four or five fish

Whether increases in limits are appropriate should be driven by the best scientific information available, which necessarily includes updated harvest forecasts and stock assessments, if available. If the Council's analysis demonstrates that increased limits are not likely to compromise conservation or allocation objectives, then the increased opportunity should be made available without delay through an in-season action.

CCA CAL is a statewide, non-profit marine conservation organization working to protect the state's marine resources and interests of coastal recreational anglers. CCA CAL's objective is to conserve, promote, and enhance the present and future availability of the coastal resources for the benefit and enjoyment of the general public. CCA has proven time and again that anglers are the best stewards of the marine environment. We work to protect not only the health, habitat and sustainability of our marine resources, but also the interests of recreational anglers and their access to the resources they cherish.

The Coastside Fishing Club is an all-volunteer, 10,000-member recreational fishing organization in Central and Northern California founded in 2002. Coastside actively engages at the local, state and national levels to represent the interests of recreational anglers. Coastside advocates for the protection and enhancement of marine resources and for the public's right to sustainably access those resources.

The American Sportfishing Association (ASA) isthe nation's recreational fishing trade association, ASA supports the interests of hundreds of businesses, agencies and organizations and is the champion for the sportfishing industry. ASA's members include sportfishing and boating manufacturers and their representatives, allied manufacturers, independent and chain outdoor retail stores, state fish and wildlife agencies, conservation organizations, federal land and water management agencies, angler advocacy groups, outdoor media groups and journalists.

Sincerely,

Coastal Conservation Association
American Sportfishing Association
Coastside Fishing Club