

PREFACE

Scenarios for West Coast Fisheries 2040

Climate and Communities Initiative

***Pacific Fishery Management Council
Climate and Communities Core Team
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Introduction

Fishermen face a world of uncertain, changing conditions, an inherent part of life for the industry over generations. The next twenty years hold the promise of being even more volatile. Climate change threatens to affect a range of ocean conditions, and changes in technology, trade relationships, consumer tastes, and shocks like pandemics will create a less predictable world.

Planning for the future is essential in such changing times. Forecasts can be helpful in times of stability, but when conditions are unpredictable, it is important to consider what might happen in a variety of possible, yet unknown, futures.

To do this, the Pacific Fishery Management Council has undertaken a scenario planning exercise to explore the potential future of West Coast fishing to 2040. We provide an early output of this exercise in the document: [*Scenarios for West Coast Fisheries 2040: Climate and Communities Initiative, PFMC, August 2020.*](#)

This accompanying document provides a brief introduction to scenario planning and outlines the specifics of the Council scenario planning process.

A Brief Introduction to Scenario Planning

Scenario planning is a well-established planning process that helps organizations think about and meet new challenges. It is based around constructing a few alternative plausible descriptions for how the future might play out. These descriptions – called scenarios – are not predictions about what will happen. Instead, they are possibilities about what might happen. The scenarios are designed to help us think creatively about the risks and opportunities ahead, and to make decisions today that will help us prepare effectively for the future.

The scenario planning process is more than 50 years old. It was popularized and developed by the Royal Dutch Shell oil company as a way of coping with the turbulence of the international oil crises in the early 1970s. Since then, the process has been adopted and used by commercial, governmental, and non-profit organizations across all industries. In recent years, it has become popular in natural resource management as organizations grapple with the uncertainty of climate change and other environmental shifts, though it is relatively untested in fisheries management.

The Council's Scenario Planning Process

Developing and using scenarios is a creative, collaborative and structured process, based around five steps. Over the past year, the Council has undertaken four out of the five steps in this process. We are now moving into the fifth and final step (“Apply”).



1. Establish

In 2019, the Council began a scenario planning process as part of its Climate and Communities Initiative and stated these two purposes:

- Explore how climate-related shifts in fish stock availability and other factors might affect West Coast fishing communities over the next 20 years
- Define and develop tools, products and processes so that fishery managers and communities can navigate uncertainty and react to potential future states



2. Research

Through a series of stakeholder interviews and desk research, the Council's Climate and Communities Core Team (CCCT) identified a series of driving forces for change – environmental, social, economic and technological developments

that have the potential to affect West Coast fishing in the period 2020-2040. In addition, the CCCT worked with scientists to review related climate change research.



3. Create

In January 2020, the Council and The Nature Conservancy jointly sponsored a two-day scenario development workshop with more than 70 attendees: researchers, climate scientists, fishery participants, fishery managers, harbor masters, and marketing experts. The output of this meeting was a framework of scenario outlines that would be used as the basis for developing more detailed scenarios. This framework was shared and discussed with the Council in March 2020.



4. Validate & Deepen

During summer 2020, in a series of online workshops with nine of the Council's advisory bodies and the public, the CCCT clarified and described the underlying conditions of each of the four scenarios. They added further details to the stories, including the development of examples for key species managed by the Council. Those scenarios are detailed in [*Scenarios for West Coast Fisheries 2040: Climate and Communities Initiative, PFMC, August 2020.*](#)

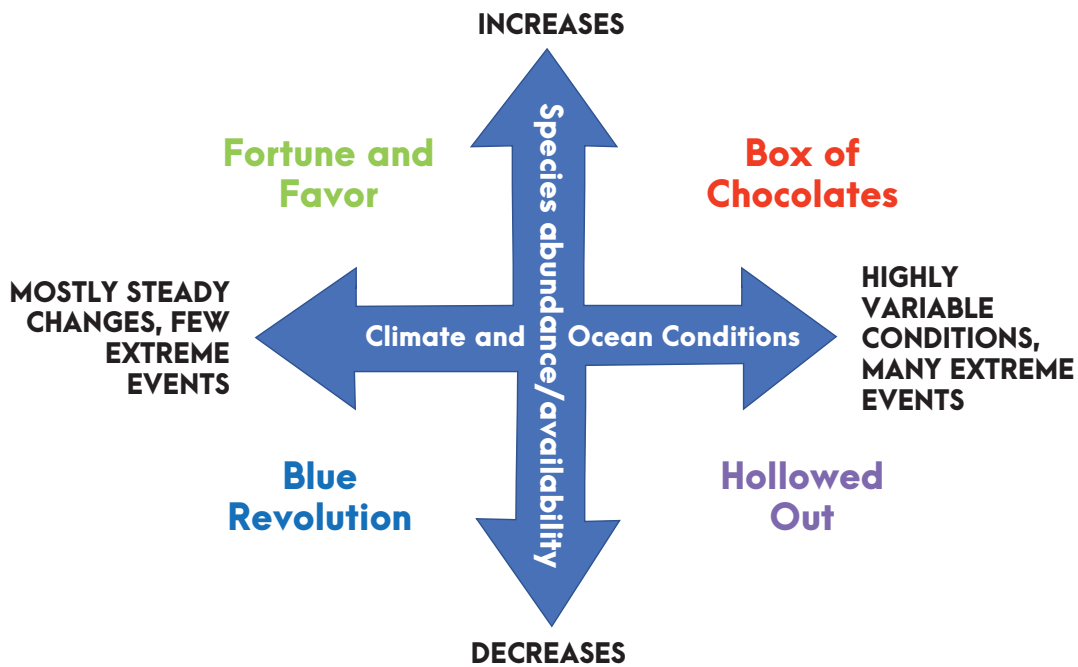


5. Apply

The scenarios will be used in a series of regional Implications Workshops scheduled for December 2020 and January 2021. These workshops will help fisheries constituents from Washington, Oregon, Northern California, and Southern California consider the specific regional challenges and opportunities under each of the scenarios, and to generate a series of actions/decisions to better prepare for a world of climate change over the next 20 years. Results will be reported to the Council in March 2021.

Process Outputs

The four scenarios generated through this process are based on a number of different factors that will affect fishing over the next 20 years. Two fundamental uncertainties create the framework for the scenarios:



- How variable will climate and ocean conditions be? Over the next 20 years, will there be mostly gradual change (in temperatures, acidification, oxygenation), and relatively infrequent ecological surprises and weather events? Or will there be extreme variability in conditions from year to year along with frequent and major ecological surprises and weather events?
- What will happen to species abundance (productivity) and availability? Will the next 20 years see an increase in stock abundance or availability of important harvested species, or will stocks decrease or otherwise become less available?

These uncertainties are described in a matrix, orienting our four possible alternative futures (see figure above):

FORTUNE AND FAVOR

The natural environment in this scenario is not radically different from today. Conditions for fish and fisheries are comparable to current ones. The frequency of extreme events (such as marine heatwaves) is little changed from the 2000-2020 period, although high-end temperatures depart from a higher long-term average. Many economically important stocks are about as abundant as they were in 2020 and in some cases they have increased. Although the effects of climate change have been gradual and relatively benign, ocean conditions—and fish stocks—have been far from static. Societal values have turned decisively to favor

reducing greenhouse gas emissions, and there is broad support for new collective action through a variety of policies and government interventions.

BLUE REVOLUTION

Similar to the Fortune and Favor scenario, in Blue Revolution the climate warms but is less variable year to year. Many currently fished stocks decline but new subtropical and tropical species appear in the south. Although new fishing opportunities arise, the growth in alternative ocean uses puts pressure on many commercial fisheries. An open and globalized economy seeks inexpensive ways to supply protein, and wild-caught fisheries struggle to meet those needs. Industry players don't suddenly go bankrupt, but interest in commercial fisheries gradually falls away as stocks decline and ocean use competition intensifies.

HOLLOWED OUT

Conditions in this scenario creates extreme and sometimes insurmountable challenges for the fishing industry. Ocean acidification, deoxygenation, and shifts in decadal oceanographic processes lead to a fundamental reorganization of the food web. Only a few stocks remain at harvestable levels and commercial fisheries suffer—a few firms opportunistically engage in commodity fisheries while small, part-time operations deliver local, boutique products. Extreme storms and rising tides create regular and damaging inundations. Interest in recreational fishing continues on a long-term decline.

BOX OF CHOCOLATES

This is a scenario of environmental surprises and extremes—but where, on average year to year, the abundance and availability of exploited species is at or near historical levels. Fishermen see “boom and bust” cycles for some key stocks. Species infrequently seen before on fishing grounds periodically appear in catchable amounts, while other species dwindle. New technology is deployed to better monitor the environment, predict environmental conditions, and exploit resources. Seafood marketing becomes more difficult because of unpredictable availability.

Overall, this scenario planning process is designed to help us all ask and answer tough questions: Should we approach fishery management differently in this era of climate change? How can different players across the industry and in coastal communities best prepare for the challenging times ahead? Are existing management frameworks flexible enough to respond? Ultimately the process will help the Council – and other stakeholders - better prepare for the future as conditions change.