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NEW RESEARCH TO EVALUATE ADAPTIVE CAPACITY IN ENHANCING CLIMATE-RESILIENT FISHERIES

INTRODUCTION

Climate change influences multiple components of fisheries management in the U.S., whether it is environmentally and biologically through impacts on recruitment and species distributions, or socially and economically through impacts on state quotas and fishing effort. For fisheries to persist long-term, managers must incorporate information that will increase the fishery's capacity to adapt to changing conditions. The Lenfest Ocean Program is supporting Dr. Tim Essington, University of Washington, and a team of researchers to better understand what barriers and opportunities exist to enhancing adaptive capacity in fisheries by clarifying the concepts and methods for how it can fit into policy and management.

WHY DOES ADAPTIVE CAPACITY MATTER IN FISHERIES?

In the context of fisheries management, adaptive capacity refers to a fishery's ability to cope with change while continuing to deliver its desired social, ecological, and economic outcomes. Managers can use vulnerability assessments to understand at-risk fisheries and take appropriate action. A full vulnerability assessment evaluates three basic dimensions: exposure to a novel stressor (e.g., increasing ocean temperature), the consequences of that stressor (e.g., whether or not the species range shifts as a result of increasing temperature), and the ability to cope with those consequences, or adaptive capacity (e.g., adopting management measures to cope with a range shift).

The concepts of adaptive capacity are well studied but remain abstract in their application. Previous research has not yet led to appreciable changes in fisheries decision-making. Thus, there is a need to jointly identify these components with scientists, decision-makers, and stakeholders.

RESEARCH TEAM

- Tim Essington, University of Washington
- Arielle Levine, San Diego State University
- Marissa Baskett, University of California, Davis
- Kathy Mills, Gulf of Maine Research Institute
- Abigail Golden, University of Washington

This project is an outcome of the Lenfest Ocean Program Ideas Lab, a workshop held in October 2019 to identify research priorities for shifting marine species.

Learn more at lenfestocean.org.

RESEARCH APPROACH

Dr. Essington and his team seek to understand whether and how adaptive capacity applies to U.S. fisheries management. The team will do this by engaging with key managers and stakeholders to design a research agenda, formulate a survey, and analyze and interpret results. They will create an advisory board that will provide feedback on the process, and conduct informational interviews with representatives from key management bodies including:

- Members and staff of regional fishery management councils and multi-state commissions,
- Administrators at NOAA Fisheries,
- Senior scientists that engage with decision-makers on a regular basis, and
- Commissioners and advisors in the Pacific States and Atlantic States Marine Fisheries Commissions

The research is divided into three major activities:

Activity 1: Summarize Key Concepts of Adaptive Capacity

The team will start by summarizing the science of adaptive capacity into short vignettes to explain what it is, how it is assessed, the types of fishery attributes that can enhance adaptive capacity, and its potential benefits to fisheries. They will work with their advisory board and the Gulf of Maine Research Institute's Education Program to evaluate and enhance accessibility of these vignettes.

Activity 2: Conduct Informational Interviews and Online Surveys

Next, researchers will share their descriptive vignettes in interviews with 2-3 individuals from each fisheries management region. These interviews will gather information on how decision-makers view the application of adaptive capacity in fishery-specific examples and give researchers a better sense of the divide between studying and implementing adaptive capacity and the barriers to crossing it. Based on the themes that arise during interviews, the research team will then craft a web-based survey and distribute it to a wider range of fisheries management stakeholders at the state and federal levels.

Activity 3: Analyze Responses

Finally, the research team will analyze interview and survey responses to identify broad similarities across regions, distinguish regional differences, and explore whether such differences are associated with attributes of fishery systems. A cross-regional synthesis will allow them to identify shared and perhaps generalizable features, as well as local or fisheries-specific contexts that consistently influence responses and perspectives.

Results from this project will help researchers and managers understand a pathway forward in applying the concept of adaptive capacity in fisheries management, and whether or not it can be useful when working toward building climate-resilient fisheries. The research team will produce one or more peer-reviewed publications and share their findings across audiences, including managers, policymakers, and stakeholders through webinars and one-on-one conversations.

The project started in March 2021 and will take place over two years.

CONTACT

For questions, please contact Emily Knight, Lenfest Ocean Program, at eknight@lenfestocean.org. To learn more about this research and stay up to date on our latest projects, follow us on Twitter [@lenfestocean](https://twitter.com/lenfestocean) or sign up for our newsletter at www.lenfestocean.org.

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