2024 NMFS-SEA GRANT FELLOWSHIP PROJECTS

The NMFS-Sea Grant Joint Fellowship program has supported over 127 population dynamics fellows and 39 marine resource economics fellows. The 2024 fellows are geographically diverse, pursuing doctoral degrees at universities in Oregon, Massachusetts, Florida, California, Connecticut, Maine and Virginia. Their research projects span a variety of topics concerning modeling and managing systems of living marine resources and economics related to the conservation and management of living marine resources.

MARINE RESOURCE ECONOMICS

BRIAN PÉREZ EISENBARTH

Harvesting the Breeze: Evaluating the Impacts of Offshore Wind Developments on U.S. Fisheries

Oregon Sea Grant / Oregon State University
Faculty Advisor: David Kling, Northwest Fisheries Science Center
NOAA Mentor: Lisa Pfieffer

This research evaluates the economic impact of U.S. offshore wind farm (OWF) deployment on fisheries, addressing potential trade-offs between renewable energy development and fisheries sustainability. Using econometric analysis, the project will quantify how installations affect fishery revenues, compare fishing patterns before and after OWF construction, and model projected impacts on the West Coast. The findings will inform marine spatial planning, aiming to balance renewable energy goals with the protection of vital fishing industries.

ANDRES DE LOERA

Innovation and Institutions in Fisheries

MIT Sea Grant / Harvard University
Faculty Advisor: Ed Glaeser, Southwest Fisheries Science Center
NOAA Mentor: Steve Stohs

Technological change is a major factor contributing to the global decline in fish stocks. Accurately measuring technological growth is

crucial for assessing fish abundance, catch, and prices as they influence fisheries management. This project will develop species-specific innovation timelines using fishing technology data from the US, EU, and Japan. The timelines will be compared to estimates of catchability and productivity, such as the innovation and expansion of Fish Aggregating Devices in the Eastern Pacific. The effect of technological innovation on fisheries and various regulatory institutions will be explored. This research will provide the first comprehensive estimates of the consequences of innovation and institutions in fisheries worldwide.

GAL KOSS

Climate Change and the Intensive Margins of Effort Allocation in Fishery Networks

California Sea Grant / University of California, Davis
Faculty Advisor: James Sanchirico, Alaska Fisheries Science Center
NOAA Mentor: Daniel Lew

This project investigates how commercial fisheries adapt to climate shocks in the U.S. Pacific and North Pacific regions. While previous research has focused on fishers' choices to participate (or not to participate) in one or more fisheries, less attention has been given to understanding how much effort fishers dedicate to each fishery they participate in. This research aims to improve understanding of fisher adaptation; develop a novel quantitative tool to analyze changes in fishing effort diversification across fisheries; and assess fishers' potential behavioral responses to climate change, contributing valuable insights for climate-ready fishery policy in the United States.

POPULATION AND ECOSYSTEM DYNAMICS

LIAM KEHOE

Evaluating the Utility of Genetic Tools to Assess and Manage Marine Recreational Fisheries

Florida Sea Grant / University of Florida
Faculty Advisor: David Chagaris, Southeast Fisheries Science Center
NOAA Mentor: Kyle Shertzer

Traditional stock assessments use various tools and techniques to estimate fish population dynamics and how they are impacted by fishing pressure. However, commonly used methods can introduce uncertainty and bias. Novel genetic-based techniques, such as genetic tagging and kinship analyses, are proving to be more efficient and accurate. In this study, I will develop and assess genetic tagging approaches for the U.S. South Atlantic red snapper fishery; explore the sensitivity of abundance estimates from close-kin mark-recapture (CKMR); and investigate the utility of kinship data within a CKMR framework to estimate changes in population abundance over time. This research aims to evaluate the utility of genetic tools in improving stock assessments and fisheries management.

ADRIENNE CHAN

Modeling the Impacts of Bottom Trawling on Regional Biogeochemistry and Ecosystem Dynamics: A California Current Case Study Infused with New Seafloor Data

Oregon Sea Grant / Oregon State University
Faculty Advisor: Clare Reimers, Northwest Fisheries Science Center
NOAA Mentor: Isaac Kaplan

Bottom trawling is a widespread source of seafloor disturbance inside the Exclusive Economic Zones of coastal nations; however, its whole-ecosystem impacts remain understudied. I will evaluate how bottom trawling impacts local and regional ecosystem processes in the California Current Ecosystem by refining the California Current Atlantis Model by adding a detailed benthic sub-model. Using existing samples and associated data from a recently reopened Trawl Rockfish Conservation Area I will assess the physical impacts of trawling on

benthic processes. Simulations will be used to assess how changes in bottom trawling may impact local and regional ecosystems using different management scenarios, including the effects of reopening of the Trawl RCA off the Oregon coast, coast-wide reopening of the Trawl RCA on the California Current Ecosystem, and, using historical data from records and log books, assess how increased bottom trawling prior to the establishment of the Trawl RCA may have altered the ecosystems.

ELIZABETH (LIZZY) ASHLEY

Using model-based inferences to characterize the trajectory and conservation impact of highly pathogenic avian influenza in Pacific marine ecosystems

California Sea Grant / University of California, Davis
Faculty Advisor: Christine Johnson, Pacific Islands Fisheries Science Center
NOAA Mentor: Michelle Barbieri

Highly pathogenic avian influenza is causing widespread mortality in vulnerable marine mammal and bird populations. I propose to strengthen HPAI surveillance in Pacific marine ecosystems, evaluate the effectiveness of a rapid influenza diagnostic test, and assess the impacts of the disease on marine mammal populations. Using Hawaiian monk seals as a case study, I will develop an agent-based disease model to forecast outbreaks and evaluate the efficacy of interventions. My overall goal is to improve NOAA's ability to assess disease threats that are capable of causing population declines or hindering recovery of protected species.

HALLE BERGER

Assessing the Vulnerability of the Atlantic Sea Scallop to Changing Ocean Conditions to Inform Fishery Management Decision Making

Connecticut Sea Grant / University of Connecticut
Faculty Advisors: Samantha Siedlecki and Catherine Matassa, Northeast Fisheries Science Center
NOAA Mentors: Shannon Meseck and Dvora Hart

The Atlantic sea scallop fishery is one of the most valuable fisheries in the U.S., but climate change and ocean acidification may cause

declines in scallop availability, harvest, and revenue. Scallop habitats in the Northeast and Mid-Atlantic already experience stressful conditions due to suboptimal temperature and carbonate chemistry conditions which are expected to worsen in the future under the most severe climate change scenarios. This proposal uses existing datasets and models to evaluate the impacts of changing ocean conditions on scallop population dynamics. By integrating key environmental factors and potential management strategies into the current stock assessment model, this research aims to support long-term sustainability and resilience in the fishery. Oregon coast, coast-wide reopening of the Trawl RCA on the California Current Ecosystem, and, using historical data from records and log books, assess how increased bottom trawling prior to the establishment of the Trawl RCA may have altered the ecosystems.

JERELLE JESSE

Redefining Biological Reference Points in a Dynamic Environment

Maine Sea Grant / University of Maine
Faculty Advisor: Lisa Kerr, Northeast Fisheries Science Center
NOAA Mentor: Timothy Miller

NOAA Fisheries has prioritized addressing the effects of climate change in fisheries management and supporting climate-informed decision-making. My research focuses on these needs by evaluating how biological reference points (BRPs), which help determine stock status and guide catch limits, can be adjusted to account for climate-driven changes in stock productivity (such as recruitment, growth, and natural mortality). Traditional methods assume stock productivity remains constant, which can lead to ineffective management and have consequences for the stock and fishery. I will explore current and alternative approaches for defining BRPs under changing conditions and assess their performance using the Woods Hole Assessment Model, which allows for time-varying dynamics and incorporating environmental covariates. Simulation results will be shared through an interactive web application to communicate findings. This research aims to provide the best available science needed to inform NOAA's climate-resilient fisheries management efforts.

EMMA GEE

Population connectivity and essential fish habitat of the Pacific striped marlin

California Sea Grant / University of California Santa Cruz
Faculty Advisor: Katherine Seto, Southwest Fisheries Science Center
NOAA Mentor: Elliott Hazen

Managing highly migratory species like striped marlin (Kajikia audax) is challenging due to their wide-ranging distribution and frequent crossing of management boundaries. Striped marlin is an important recreational fishing species, but it also faces high levels of bycatch in commercial fisheries. Management efforts are limited by gaps in understanding their habitat and population structure. My research will use a resistance surface model to identify movement corridors and patterns in population connectivity incorporating climate change impacts. This model will integrate Indigenous knowledge about striped marlin movement and habitat preferences from Indigenous and recreational fishers representing thousands of years of fishing practice.

REBECCA MESTAV

Evaluating the impacts of climate-induced range shifts on the assessment and management of spot and Atlantic croaker

Virginia Sea Grant / Virginia Institute of Marine Science
Faculty Advisor: Robert Latour, Southeast Fisheries Science Center
NOAA Mentor: Cassidy Peterson

Spot (Leiostomus xanthurus) and Atlantic croaker (Micropogonias undulatus) are two important commercial and recreational finfish species along the southeastern US Atlantic coast. Assessing these stocks has been challenging due to uncertainties such as difficulty in estimating shrimp fishery bycatch, poor estimates of stock-recruitment relationships, and inconsistent data from commercial and recreational surveys. These challenges have led to high uncertainty in these stock assessments and unknown stock status in recent years.
In addition, rising ocean temperatures due to climate change could alter the spatial distributions and productivity of these species. Spot and Atlantic croaker are associated with warmer waters and as temperatures rise, are projected to undergo range shifts or expansions. My research aims to address these uncertainties by analyzing the

coastwide distributions of these species through a spatiotemporal model that links environmental covariates to range shifts; investigating the impact of range shifts on stock productivity; and evaluating the effectiveness of current management strategies under changing environmental conditions. This research will help improve our understanding of the population dynamics of these species and inform future management decisions.

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