Total catches and estimated revenue by species for communities-at-sea based on landings reported on Vessel Trip Reports

Website: https://www.bco-dmo.org/dataset/765560
Data Type: Other Field Results
Version: 1
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Project
» Adaptations of fish and fishing communities to rapid climate change (CC Fishery Adaptations)

Contributors	Affiliation	Role
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Abstract
Total catches and estimated revenue by species for communities-at-sea based on landings reported on Vessel Trip Reports (VTRs). Landings data were compiled from VTRs and summed over the available years of data for each community.

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Coverage

Temporal Extent: 1996 - 2014

Methods & Sampling

The following methods are excerpted from Rogers et al. (in press):
Landings data were compiled from vessel trip reports and summed over the available years of data for each community. Price information was extracted from NOAA Fisheries, Fisheries Statistics Division (https://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html). We used the average price per lb by species, adjusted for inflation (real 2014 prices in US$), over the period for which we had community-level data. State-level prices were used when available, and otherwise regional prices were used.

Data Processing Description

Data were processed using R version 3.4.4.

BCO-DMO Processing:
- replaced periods with underscores in the column headers.

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Data Files

File
catch_revenue_by_community.csv (Comma Separated Values (.csv), 551.28 KB) MD5:c6612e6c523ea62aa3b33ae5004e8d68 Primary data file for dataset ID 765560

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Related Publications

Rogers, L. A., Griffin, R., Young, T., Fuller, E., St. Martin, K., & Pinsky, M. L. (2019). Shifting habitats expose fishing communities to risk under climate change. Nature Climate Change, 9(7), 512–516. https://doi.org/10.1038/s41558-019-0503-z
Results

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Parameters

Parameter	Description	Units
community	Community-at-sea	unitless
years	Number of years the community was extant	unitless
sppcode	Code used to identify species	unitless
sppname	Species common name	unitless
species	Genus species. Only given for the species included in this study.	unitless
lbs_caught	Total number of pounds caught of this species	pounds (lbs)
totalCatch	Total catch (in pounds) of all species for this community.	pounds (lbs)
pCatch	Proportion of totalCatch comprised of this species.	unitless
meanPrice	Mean price per pound (inflation adjusted) based on estimated state-level prices.	US dollars per pound (USD/lb)
rev	Estimated revenue associated with catch of this species for this community	US dollars (USD)
totalRev	Total estimated revenue for this community.	US dollars (USD)
pRev	Proportion of totalRev from this species for this community.	unitless

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Project Information

Adaptations of fish and fishing communities to rapid climate change (CC Fishery Adaptations)

Coverage: Northeast US Continental Shelf Large Marine Ecosystem

Description from NSF award abstract:
Climate change presents a profound challenge to the sustainability of coastal systems. Most research has overlooked the important coupling between human responses to climate effects and the cumulative impacts of these responses on ecosystems. Fisheries are a prime example of this feedback: climate changes cause shifts in species distributions and abundances, and fisheries adapt to these shifts. However, changes in the location and intensity of fishing also have major ecosystem impacts. This project's goal is to understand how climate and fishing interact to affect the long-term sustainability of marine populations and the ecosystem services they support. In addition, the project will explore how to design fisheries management and other institutions that are robust to climate-driven shifts in species distributions. The project focuses on fisheries for summer flounder and hake on the northeast U.S. continental shelf, which target some of the most rapidly shifting species in North America. By focusing on factors affecting the adaptation of fish, fisheries, fishing communities, and management institutions to the impacts of climate change, this project will have direct application to coastal sustainability. The project involves close collaboration with the National Oceanic and Atmospheric Administration, and researchers will conduct regular presentations for and maintain frequent dialogue with the Mid-Atlantic and New England Fisheries Management Councils in charge of the summer flounder and hake fisheries. To enhance undergraduate education, project participants will design a new online laboratory investigation to explore the impacts of climate change on fisheries, complete with visualization tools that allow students to explore inquiry-driven problems and that highlight the benefits of teaching with authentic data. This project is supported as part of the National Science Foundation's Coastal Science, Engineering, and Education for Sustainability program - Coastal SEES.

The project will address three questions:
1) How do the interacting impacts of fishing and climate change affect the persistence, abundance, and distribution of marine fishes?
2) How do fishers and fishing communities adapt to species range shifts and related changes in abundance? and
3) Which institutions create incentives that sustain or maximize the value of natural capital and comprehensive social wealth in the face of rapid climate change?

An interdisciplinary team of scientists will use dynamic range and statistical models with four decades of geo-referenced data on fisheries catch and fish biogeography to determine how fish populations are affected by the cumulative impacts of fishing, climate, and changing species interactions. The group will then use comprehensive information on changes in fisher behavior to understand how fishers respond to changes in species distribution and abundance. Interviews will explore the social, regulatory, and economic factors that shape these strategies. Finally, a bioeconomic model for summer flounder and hake fisheries will examine how spatial distribution of regulatory authority, social feedbacks within human communities, and uncertainty affect society's ability to maintain natural and social capital.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1426891

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