BIOGEOGRAPHY

NATIONAL CENTERS FOR COASTAL AND OCEAN SCIENCE

NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

CENTER FOR COASTAL MONITORING AND ASSESSMENT

MISSION

To develop products on the distribution and ecology of living marine resources and their associated habitats for improved ecosystem-based management.

Longspine Thornyheads caught during a NOAA groundfish survey.

MAPPING AND MODELING OF WEST COAST GROUNDFISHES

Project Summary

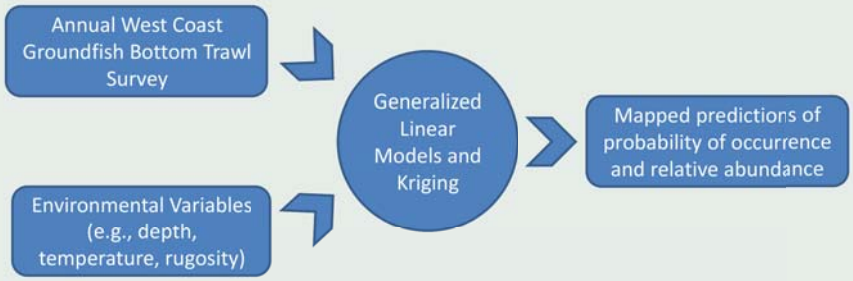
The National Centers for Coastal Ocean Science (NCCOS) is partnered with the National Marine Fisheries Service, The Nature Conservancy and the Environmental Defense Fund to analyze groundfish surveys and map the distribution of 30 key species along the U.S. West Coast.

Why We Care

Groundfishes are important components of the California Current, because they constitute a large proportion of ocean biomass, and are critical to the economic engines of coastal communities in Washington, Oregon and California. The maps will improve our understanding of groundfish distributions, and how environmental conditions and management actions affect the ecosystem and connected communities.

What We Did

NCCOS and its partners developed maps of groundfishes to show long-term patterns of occurrence and relative abundance using fishery independent data collected from 2003 to 2010. Observations of groundfishes were linked to environmental variables such as depth and temperature.



The diagram shows a simplified representation of the modeling process used to develop groundfish maps.

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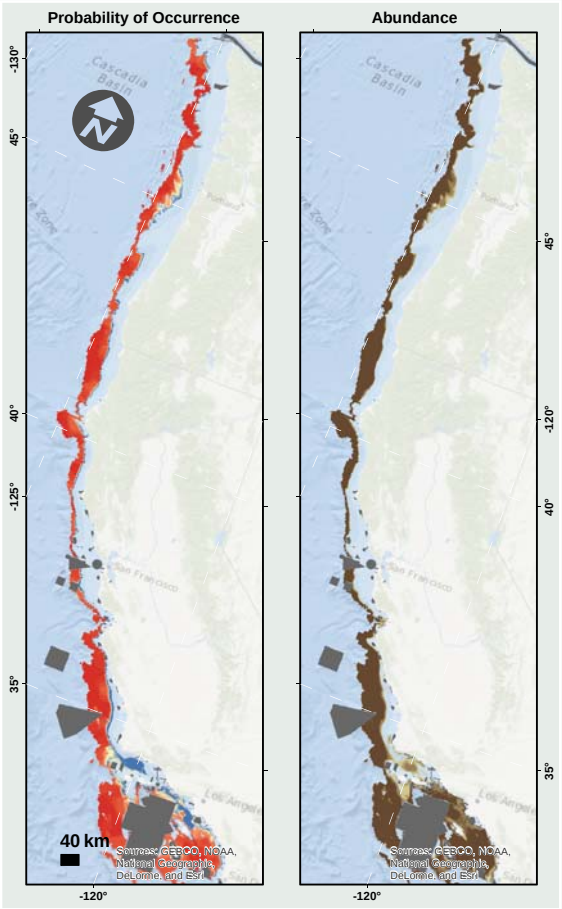
http://coastalscience.noaa.gov/

Then, the links between fish observations and continuous maps of important environmental variables were used to develop maps of continuous groundfish distribution predictions.

The maps build off of existing data and regional modeling efforts, and rely on expertise found in NOAA's Northwest, Southwest and Alaska Fisheries Science Centers, the seafloor mapping lab at California State University, the sustainable fisheries group at University of California (Santa Barbara), Moss Landing Marine Laboratories, The Nature Conservancy and the Environmental Defense Fund.



A model of Longspine Thornyhead probability of occurrence (left) and abundance (right).

Outcomes

Spatial models were used to map the distribution of 30 key species. The maps showed distribution gradients, highlighted abundance hotspots and coldspots and indicated places with uncertain predictions. The maps and models will be integrated into the California Current Integrated Ecosystem Assessment, a synthesis of natural and socioeconomic information in the California Current and a quantitative analysis of their changes in relation to ecosystem management goals.

Models are being used outside of the IEA to evaluate the purpose and siting of existing spatial fisheries management measures, identify fishery bycatch avoidance strategies and determine essential fish habitats.

What's Next

Maps and models for additional groundfishes will be developed and compiled to determine biodiversity hotspots, and we will begin research on how groundfish distributions relate to fishing effort.

Online Resources

NCCOS groundfish mapping and modeling project web page

http://coastalscience.noaa.gov/projects/detail?key=87

Contact Us

For more information on this and projects like it, contact:

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