



Northwest Fisheries
Science Center

West Coast Groundfish Program



Exciting Science Critical Challenges

The West Coast groundfish fishery includes some 80 commercially fished stocks off the Washington, Oregon, and California coasts and supports millions of dollars in economic activity and many livelihoods. In recent years the abundance of some of these stocks has seriously declined, affecting fishing communities, consumers, and the marine ecosystem.

The Northwest Fisheries Science Center (NWFSC) coordinates the NOAA Fisheries Groundfish Program on the West Coast. The Center provides the best available scientific information on groundfish species, their habitats, and the fishery to support management decisions.

The NWFSC's West Coast Groundfish Program has six primary components:

- groundfish surveys
- an observer program
- ecosystem and habitat surveys
- stock assessments
- socioeconomic assessments
- innovative approaches and
- a cooperative research program.

To accomplish key activities in each of these areas, the Center works in close collaboration with state agencies, the Pacific States Marine Fisheries Commission, the Pacific Fishery Management Council, universities, the fishing industry and community, and various constituent groups.



Groundfish Surveys

The Center conducts annual groundfish surveys to target important species using acoustic technologies, fixed gear, and midwater and bottom trawls. These surveys provide information about distribution, abundance, and age structure of groundfish populations. This year, the Center expanded its annual series of slope species surveys from Cape Flattery, WA to the Mexican border (previously surveys ended at Morro Bay, CA) and in 2003 will increase the frequency of the Pacific whiting acoustic survey. Center scientists are also currently planning resource surveys in untrawlable habitat, which requires that acoustic and other techniques be used. Increasing the number and frequency of groundfish surveys will improve our ability to track trends in the abundance of key groundfish species.

coastwide on the permitted trawl and fixed-gear groundfish fleet, as well as on some vessels that are part of the open-access groundfish fleet. Observers improve our understanding of fishing activities and help the Center provide accurate accounts of total catch, bycatch, and discard associated with different fisheries and fish stocks.

Ecosystem and Habitat Surveys

Changes in marine ecosystems influence groundfish populations. The Center conducts ecosystem and habitat surveys using a variety of tools, including multibeam sonars, echosounders, and remotely operated vehicles and instruments. These surveys help determine how natural fluctuations in the marine ecosystem affect fishery productivity, how manmade stress (e.g., contaminants, habitat alteration, and fishing gear) affects the ecosystem and fishery, and the complex interactions between fish and their habitats. In the summer of 2001, the Center co-lead a team of scientists on an expedition to study and compare Astoria Canyon, an unexplored submarine canyon off the mouth of the Columbia River, with Heceta Bank, a heavily fished submarine plateau off Oregon's coast. Scientists mapped, explored, and documented the physical, chemical,

Observer Program

The Center coordinates the West Coast Groundfish Observer Program. As part of this program, fisheries observers are placed on commercial fishing vessels to monitor and record catch data, including species composition of retained and discarded catch. They also collect critical biological data such as fish length, sex, weight, and age. The Center currently deploys about 40 observers





used by managers to identify overfished and threatened stocks, guide the monitoring and rebuilding of overfished stocks, and set biologically sustainable harvest levels for healthy stocks. Last year, Center scientists completed stock assessments for Pacific whiting and canary rockfish, updated the stock assessment for sablefish, and coordinated the rebuilding analyses for widow and darkblotched rockfish. Center scientists are trying to expand the number of assessments that are conducted, as well as improve the certainty of the information that is used in its assessments.

Socioeconomic Assessments

Socioeconomic information and analyses (e.g., operating costs of commercial fishers and processing centers) help determine the economic impacts of proposed management actions on various constituent groups—who will be affected and how? The Center is building core expertise and partnerships with other institutions to conduct research in this important area.

Innovative Approaches

Innovative techniques, applications of technologies, and partnerships offer the potential to explore new areas and develop more cost-effective and accurate methods to accomplish research objectives. For example, Center scientists are using acoustic (sonar-based) technologies with high-frequency sound pulses to measure groundfish abundance and map their distribution. These technologies are

and biological systems of Astoria Canyon. Information collected will enable scientists to answer important questions about the distribution of invertebrates and fishes, the differences and similarities between fish and invertebrate populations in Astoria Canyon and Heceta Bank, and more generally, how the structure of the Canyon influences the distribution and abundance of biological life.

Stock Assessments

Center scientists integrate information from observers, groundfish surveys, and fishermen into mathematical models and draw conclusions from the results. These assessments are



improving our understanding of groundfish stocks and are enabling the Center to study groundfish in many more areas of the ocean. The Center is also exploring the artificial propagation of marine species, which could broaden the range of recovery options available to managers. This year, Center scientists began developing culture techniques for some depleted rockfish species.

Cooperative Research Program

The NWFSC values cooperative research opportunities with fisheries partners. Since 1998, the Center has conducted a slope resource survey in cooperation with commercial fishing vessels. The Center is now expanding its cooperative research activities to form a comprehensive coastwide program. This program will broaden participation of fishing vessels in groundfish research and will include a new program to fund industry-conceived research proposals.



We still have a lot to learn about groundfish; it is critical that we continue to monitor these valuable species and their ecosystems. Having scientific information on groundfish species and the ecosystems within which they exist, is key to building sustainable groundfish fisheries.

A close-up photograph of a green fishing net floating on blue water. A red buoy is attached to the net. The net is made of thick green rope with a diamond-shaped mesh. The water is a deep blue color. The net is slightly out of focus in the foreground, creating a sense of depth.

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The Northwest Fisheries Science Center provides the science that is needed to conserve and manage living marine resources and their habitats in the Pacific Northwest. It is one of five NOAA Fisheries science centers in the nation. Center scientists study key living marine resources (e.g., salmon and marine fish) in the Pacific Northwest to understand their biology and ecology. They also study man-made and natural hazards that can impact these resources (e.g., harmful algal blooms, fishing operations, point and non-point source pollutants, climate change and other environmental factors). The Center's research brings together a number of disciplines, including fisheries science, marine biology and ecology, genetics, biochemistry, molecular biology, oceanography, and physiology, which is conducted at its headquarters in Seattle, WA, as well as at its five research stations in Washington and Oregon.