

RESEARCH AND OUTREACH ADDRESSING THE NATION'S FISHERIES PROBLEMS

Many of our nation's marine and Great Lakes fisheries are in trouble. Sea Grant researchers and outreach specialists are part of the solution—they identify, analyze and help solve problems in fisheries. Sea Grant has identified the following research and outreach actions as top priorities to revitalize and maintain our fisheries.

Sea Grant will work on these problems in collaboration with the National Marine Fisheries Service, state and regional fisheries agencies and the recreational fishing sector.



harvested, others are protected or not harvested for economic reasons. But all stocks are connected in the ecosystem, and all should be conserved.

To make the best decisions, fishery managers must have a reasonable idea of how many fish comprise each population, the rates at which they grow, reproduce, and die, and how many can be harvested under various scenarios of regulatory measures and fishing pressure.

Sea Grant researchers will collaborate with National Marine Fisheries Service (NMFS) scientists to carry out studies on

population dynamics. And through the Sea Grant/NMFS Joint Graduate Fellowship Program in Population Dynamics, more stock assessment scientists will be produced to alleviate a critical shortage of trained personnel in this field.

Partnering to improve fisheries management

America's fisheries are under extreme stress from many sources and new management approaches must be found to cope with the difficult challenges.

With myriad relationships among university, government and industry researchers, Sea Grant is uniquely situated to promote cooperative research on subjects critical to decisions being made by fisheries managers. Topics include stock assessment, habitat and ecosystem health, environmental contamination, area management strategies, fish biology and behavior, climate change, management institutions, conflict resolution and others.

Sea Grant's outreach specialists translate and transfer useful research findings to stakeholders. Located in coastal communities, Sea Grant extension personnel enjoy cooperative working relationships with recreational, commercial and subsistence fishing interests. This unique front-line presence will allow Sea Grant to facilitate local problem solving and guide experiments in community-based management.

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Taking stock

Some marine and freshwater fishes are commercially

Caring for the people

Changes in fisheries affect society. It is important that fisheries managers know how their decisions might affect people who depend on fishery resources. When changes affect people, it is equally important to help them cope.

Working cooperatively with government agencies and stakeholders, Sea Grant will provide fisheries managers with the socioeconomic data and insight into social and management institutions that are necessary to manage fisheries in a way that minimizes the negative effects their decisions will have on people. And through career training guidance, outreach personnel will help people adjust to changes that profoundly affect their lives.

Who's where doing what?

Fisheries managers must know how many fish are in the water, where they are located, how different species interact with each other and their habitats and how changes in the environment affect the animals.

Sea Grant researchers and outreach specialists will work with



fishermen and other concerned parties to test new sampling technologies and pioneer analytical procedures that will lead to more accurate estimates of distribution and abundance of fish and invertebrates, broaden understanding of how the animals interact with their environments and what habitats are best for different species, and how changes in the environment affect fisheries.

Adding without subtracting

Sea Grant researchers, in collaboration with other scientists, will explore ways to ensure that stocked animals do not affect the genetic diversity of natural populations. The researchers will determine how many cultured animals can be added to an area without adversely affecting other naturally occurring organisms of the same or different species. They will assess how fish released from aquaculture facilities interact with other species in the wild and determine how extensively hatchery fish interbreed with their wild cohorts. Researchers also will study how to minimize effects of aquaculture wastes on water quality and how market competition between cultured fish and wild-caught fish affect the seafood industry.

Homes for homeless

Human activities can degrade fisheries habitat, and natural environmental changes affect habitat in other ways. But little is known about what kinds and quality of habitat fish and invertebrates require throughout their lives, how habitat affects fishery production and how human activities and natural environmental changes affect habitats.

To help fill the knowledge gaps, Sea Grant scientists will



synthesize what is known about estuarine and marine habitats and their importance to the animals that depend upon them, examine how human activities and natural hazards and environmental change affect fisheries, and find effective ways to restore and enhance degraded habitat.

Balancing needs with technology

Through well-informed decision-making, fisheries managers strive to conserve stocks, reduce waste and get more value from the harvest. Managers also try to balance the needs of recreational, commercial and subsistence harvesters.

Sea Grant scientists and outreach specialists will work with fishermen and managers to invent tools and techniques that reduce unintentional capture of sea life during fishing activities and develop new seafood products from target species to maximize value and yield and reduce waste. Sea Grant also will conduct research to discover how fishing gear affects habitat.

To help reduce conflicts among different users, Sea Grant experts will generate and

share information on such topics as catch-and-release programs.

Recognizing reasons, predicting effects

Fisheries oceanography is the science of understanding and predicting the effects of ocean and atmospheric processes on marine ecosystems. It demands the integration of many scientific disciplines and is critical to good fisheries management.

Sea Grant researchers will partner with government scientists to develop techniques to detect and forecast climate and ecosystem (regime) changes that occur in ocean basins over decades. They will examine how these changes affect all levels of sea life, from marine bacteria at the bottom of the food chain, to marine mammals near the top of the food chain. This work will help managers and scientists more accurately predict “domino effect” changes in ecosystems.

Great Lakes fisheries

The Great Lakes hold about 20 percent of the world supply of fresh water and about 95 percent of the U.S. supply. The Lake Erie commercial fishery is the largest freshwater commercial fishery in the world, and the Great Lakes support large recreational fisheries. Well informed management is critical in this highly populated and environmentally sensitive region.

Sea Grant researchers will develop ecosystem models to improve Great Lakes management techniques; find ways to cope with aquatic nuisance species; monitor and mitigate effects of contaminants and educate the public about them; and assess and identify ways to prevent loss of habitat.



Mission

The mission of the Fisheries Theme Team is to identify the most pressing research needs in fisheries science related to the coastal, marine, and Great Lakes waters of the United States and to develop a research and outreach agenda aimed at prioritizing and addressing those needs.

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