Sea Grant

Sea Grant Contributions to the Nation in

Ecosystems and Habitats

Healthy Coastal Ecosystems For A Healthy Economy

The mission of the Ecosystems and Habitats Theme is to sustain and renew America's coastal and Great Lakes ecosystems for this and future generations. Sea Grant seeks to partner with public and private interests, including NOAA's National Ocean Service and National Marine Fisheries Service, other federal agencies including the Environmental Protection Agency, the U.S. Fish and Wildlife Service, and state and local environmental and resource agencies. Sea Grant's strong connections with its universities and coastal constituencies, and its capabilities in the areas of basic and applied multidisciplinary research, education and technology transfer, enable it to contribute critical information and assistance to the national effort.

Sea Grant Produces National Benefits

Recent investment in Sea Grant ecosystems and habitat programming has resulted in the following outcomes:

- Sea Grant, in collaboration with the National Marine Fisheries Service (NMFS) and other partners, removed 239 tons of marine debris, primarily derelict fishing gear, from the fragile and unique coral reef ecosystems of the Northwestern Hawaiian Islands. In response to NMFS research that documented high entanglement rates of the endangered Hawaiian monk seal, threatened and endangered sea turtles and other wildlife, a Sea Grant-led effort has established debris recovery protocols, initiated research to identify the sources of derelict nets and has assisted in similar cleanup efforts in Washington and Alaska.
- Sea Grant research on river flow around dams located on a major Lake Michigan tributary led to a shift in flow management practices. Water is now allowed to flow naturally through the dams and the survival of young chinook salmon, a key Lake Michigan sportfish, has increased dramatically in response to the stable water flow.
- Sea Grant's boater education campaign has been very effective in reducing the accidental spread of aquatic invasive species. A five-state boater survey provided evidence that the campaign had actually managed to change boater behavior. States that invested more in invasive species public education had more boaters who were aware of the issues and reportedly took preventive measures.
- Targeted research conducted by experts from Maine to Maryland has identified a number of environmental factors that are likely contributors to the recent harmful algal blooms in Long Island bays. The results from the past six years' research are being synthesized to suggest potential management strategies that should minimize the impact of this harmful algal bloom on the local economy and environment.
- California's wetlands support a staggeringly high proportion of the state's endangered species. There are both national and state mandates to preserve remaining wetlands habitats. Sea Grant researchers were among the first to provide a rigorous characterization of Pacific wetlands and their response to disturbances from dams, freshwater runoff, dredging and loss of tidal flushing. Their work challenged the way wetlands restoration plans were evaluated, and the result has been changes in California's standards for evaluating builders' mitigation projects and in the permitting process for coastal development
- Since 1998, Sea Grant Extension has assisted South Carolina municipal officials in reducing non-point source pollution. As a direct result of the program, the City of Conway adopted a new zoning ordinance designed to help protect water quality in and around storm water retention ponds. When fully implemented, NEMO (Non-point Education for Municipal Officials) programs will have been transferred to communities within 27 of the state's 46 counties.
- Sea Grant provided expertise and leadership in the development of a recently installed dispersal barrier to prevent the movement of exotic aquatic species between Lake Michigan and the Mississippi River basins. Currently, researchers are testing its effectiveness in preventing bighead carp from entering Lake Michigan, and developing the technology for a second barrier to increase the likelihood of success.
- Sea Grant research on the factors controlling circulation, nutrients and plankton dynamics in three Gulf of Maine estuaries has been used by state regulators to open and close clam flats, by sewage plant operators to control operations, by aquaculture businesses to site their growout operations, and by state and federal agencies concerned with regional eutrophication.
- Sea Grant research identified high levels of mercury contamination in the soils of Danbury, CT where a historic hatmaking industry has left a toxic legacy in soils and water. The town has since allocated monies

for bioremediation efforts and education.

- Tracking and mapping of the sewage outfall plumes by Sea Grant researchers at White's Point sewage outfall in Los Angeles, the largest publicly operated treatment works in the country, has allowed sanitation authorities to make informed decisions about future infrastructure needs.
- Long-term Sea Grant investments in eutrophication research resulted in reduced nutrient inputs to Rhode Island's coastal waters through septic system regulation amendments and allowed the state to prioritize coastal water bodies according to risk of eutrophication.
- In the 1990s, the catastrophic spread of a South African parasitic worm threatened the California abalone industry. Sea Grant research into the worm's life cycle led to successful control in hatcheries and the eradication of a small population of this exotic parasite that had become established in the wild. This is the first time an established nonindigenous marine invertebrate has been successfully eliminated.
- Sea Grant Extension staff worked with the city of Cleveland to recycle the rubble from old Cleveland Municipal Stadium into artificial reefs constructed in Lake Erie to enhance habitat diversity and thereby attract fish and anglers. These reefs attract 12 to 66 times as many fish as the surrounding non-reef areas, and have an economic impact of approximately 1 million dollars annually through enhanced tourism.
- Wisconsin's Brown County, with funding from the U.S. Army Corps of Engineers, is rebuilding the Cat Island chain of barrier islands in Green Bay to restore these important habitats for fish and wildlife. Sea Grant habitat restoration and coastal engineering specialists have provided habitat designs, identified potential water quality impacts and helped determine acceptable PCB levels in the dredged material used for construction of the islands. Sea Grant continues to help the county with the planning process and with procurement of local cost-share funds, and by conducting public outreach and informational meetings.

Building the Future on Successes of the Past

Through its unique integration of research, education and outreach, Sea Grant has an enviable record of success in providing policy-makers and the public with useful science-based information for conserving and restoring critical coastal ecosystems. Through its established relationship with more than 3,000 faculty, staff and students at more than 300 universities nationwide, Sea Grant is exceptionally qualified to lead an expanded national effort that brings academia, government and the private sector together to reduce the impacts of human-induced change on the structure and function of coastal ecosystems and to restore these critical habitats for future generations of Americans.º

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