

National Sea Grant College Program



HEALTHY COASTAL ECOSYSTEMS



THE ISSUE

Degradation, **rapid coastal development**, and **other human activities** are just some of the threats to our Nation's coastal ecosystems. Responsible management of ecosystems requires new kinds of thinking and actions.

Sea Grant is leading regional efforts to understand and maintain healthy ecosystems. Planning efforts are underway across the country to identify information gaps, set research priorities, and coordinate information and technology transfer to citizens. Sea Grant's regional consortia, nationwide networks, and international contacts are particularly well-suited to help the Nation address ecosystem health at the appropriate local, state, regional, national, and global levels.

SEA GRANT WORKS TO:

Support ecosystem-based approaches to managing the coastal environment: Increase capacity of managers to consider the entire ecosystem.

Restore the function and productivity of degraded ecosystems: Identify and evaluate innovative policies, technologies, and methods to restore services provided by our nation's ecosystems.

Promote stewardship of healthy ecosystems: Provide life-long learning programs that enhance understanding of coastal, ocean, and Great Lakes environments and the services they provide.

SEA GRANT EMPOWERS CITIZENS AND COMMUNITIES

- Identifies and implements innovative management approaches
- Increases understanding of ecosystem processes and stressors
- Promotes sound management principles and practices
- Partners with federal, state, and local agencies
- Increases the effectiveness of restoration efforts
- Advances restoration science



SEA GRANT IMPACTS: BALANCING HUMAN & ENVIRONMENTAL NEEDS

Sea Grant Efforts Improve Louisiana's Rivers and Streams

Over 70 percent of Louisiana's waterways are on the Environmental Protection Agency's (EPA) 303(d) list as impaired and not suitable for fishing or swimming. Many of these impairments are thought to result from non-point pollution emanating from watershed land use practices, such as agriculture, individual sewage treatment, home landscape, and construction practices. To educate farmers and landowners, and to encourage adoption of site-specific, cost-effective best management practices to mitigate runoff from various land uses, Sea Grant uses Louisiana State University Agricultural Center programs, such as the Master Farmer Program. Since its inception, 115 farmers have become Master Farmer certified with 2,600 others working toward certification. With an increasing number of farmers now working to mitigate runoff, the Tangipahoa River, an important economic and recreational waterway, was de-listed by the EPA and Department of Environmental Quality from the 303(d) list and is now open for fishing and swimming. Two other river segments in the area are scheduled to come off the list this year. (LA)



Louisiana marsh. (Credit: NOAA.)

Demonstrating the Economic Impact of Restoration

The Great Lakes are integral to the economic and cultural vitality of Michigan. However, their health is threatened by toxic contaminants, outdated sewage infrastructure, invasive species, and a lack of coordinated conservation efforts. Sea Grant has played a key role in estimating the economic value of restoration. In 2006 and 2007, Michigan Sea Grant led a working group of economists and ecologists to estimate the extent of ecological improvements that would result if the Great Lakes Regional Collaboration's restoration plan was enacted. Using these estimates, another team of economists conducted a cost-benefit analysis for restoration. This work was published in the widely distributed Brookings Institution report, *America's North Coast: A Benefit-Cost Analysis of a Program to Protect and Restore the Great Lakes*. In 2008, Michigan Sea Grant worked with Michigan Office of the Great Lakes officials and US Senator Carl Levin to estimate the economic value of restoration in Michigan alone and to calculate the number of jobs in Michigan that are connected to the Great Lakes. **Sea Grant found that over 800,000 jobs are connected to the Lakes and that comprehensive restoration could potentially produce benefits ranging from \$7 to \$13 billion for Michigan.** State and regional officials used Sea Grant information to highlight the measurable connection between the economy and the environment. This work, and the efforts of many regional organizations, resulted in significant federal investment through the Great Lakes Restoration Initiative, funded at \$475M in 2009. (MI)

Research Leads to Fewer Beach Closings

Across the nation, beach closings due to contamination pose a challenge for public health officials, regulatory agencies, water resource managers, and policymakers. Traditional sample analyses require 24 to 48 hours before a decision can be made about pathogen sources and beach safety. **Sea Grant developed a rapid testing method in which sand and water samples are tested using DNA sequencing. This DNA method ensures that contaminant sources are pinpointed quickly and accurately.** At Bradford Beach in Wisconsin's largest city, Milwaukee, the changes mean an underused Lake Michigan shorefront is now jammed with beachgoers from a nearly 1.6 million-population metropolitan area. The beach was cleaned up with \$1.5 million in combined public-private money that funded work such as installation of stormwater outflow infrastructure along the beach, rain gardens and the use of trained border collies that chase off sea gulls, whose waste is a significant source of contamination. Additionally, another researcher has developed "Cladophora and Lake Michigan Beaches: Community Options for Management." More than 100 beach managers and public health officials in eight Wisconsin counties have adopted the practices to prevent closings of state beaches. (WI)

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