



Healthy Coastal Ecosystems Focus Team Report 2011



Topical Area #1: Biology

#13925 -- MICHIGAN SEA GRANT

Michigan Sea Grant brought together The Nature Conservancy (TNC), the Michigan Natural Features Inventory and Canadian partners to develop a Biodiversity Conservation Strategy for Lake Huron and its basin, and was recently awarded grants to conduct a similar process for Lake Erie and Lake Michigan.

6282 – GEORGIA SEA GRANT

As a result of Georgia Sea Grant funded research, the Gray's Reef Sanctuary instituted an anchoring ban and designated research only areas to help further determine the effects of sport fishing on hard bottom communities.

#10210 – CALIFORNIA SEA GRANT

As a result of California Sea Grant funded research a tool was developed to identify critical seabird habitats, which could be used to reduce fishing impacts, especially from long-lining, to seabirds.

#6946 -- WASHINGTON SEA GRANT

Washington Sea Grant-supported research cruises led to the discovery of a new habitat of glass sponge reefs (organisms long thought to be extinct) and a potential new non-seasonal food source. The proximity of these two features and their correlation with high marine productivity suggests that the area of the continental shelf around Grays Canyon is a biological hot spot. Identification of these regions of high biological productivity and diversity is critical to the successful management of marine resources.

#14108 -- SOUTH CAROLINA SEA GRANT

With \$200,000 in grant support, the SCSGEP and its partners, worked with landowners to eradicate 1,500 acres of Phragmites along the state's coastal waters.

#10258 --LAKE CHAMPLAIN SEA GRANT

Early in 2003, LCSG, USFWS and USGS staff presented an aquatic invasive species workshop for law enforcement personnel charged with invasive species interdiction on the U.S. -- Canadian border in the vicinity of Lake Champlain. The training paid off in August 2008, when a Canadian citizen declared her intent to transport a shipment of live fish into the U.S., including several Emperor snakehead (*Channa maruloides*), and the entire shipment was seized.



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Topical Area #2: Ecosystem Based Management

#6225 -- CALIFORNIA SEA GRANT

California Sea Grant Extension in partnership with NOAA Coastal Services Center produced fine-scale benthic habitat maps for Humboldt Bay and Eel River Estuary.

#9889 -- CONNECTICUT SEA GRANT

River herring research results inform management and regulatory decisions for anadromous fish populations in Connecticut.

#6355 -- FLORIDA SEA GRANT

Florida Sea Grant organized a wildlife lighting workshop and certification program that informed communities of ways in which to reduce lighting impacts to light sensitive animals that inhabit coastal locations. The community of Gulf Trace incorporated knowledge gained at the Wildlife Lighting workshop to unite residents in making lighting improvements that resulted in it becoming the first certified Wildlife Friendly Community in Walton County.

13828 – ILLINOIS/INDIANA SEA GRANT

To combat the spread of invasive species through gardening activities, Illinois/Indiana Sea Grant's AIS team put together a working group from the nursery trade -retailers, wholesalers, and hobbyists- plus scientists and representatives from related non-profit organizations, to develop solutions that encompass policy, best management practices, and outreach. Several water garden business owners are already taking action, including: educating customers about invasive species through on-site classes, guiding customers to purchase native plants, and using native plants in pond installations.

#14137 –DELAWARE SEA GRANT

Delaware Sea Grant sponsored research into the identification and cultivation of seashore mallow could provide farmers with a marketable alternative to current salt-intolerant crops in light of rising sea level. Native Atlantic coast strains of seashore mallow have been isolated, identified and cultivated under a wide variety of environmental conditions. Seashore mallow appears to be not only a harvestable crop as a source of biofuel and animal feed, but also acts as a coastal shoreline stabilizer.



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Topical Area #3: Restoration

#6982 -- CONNECTICUT SEA GRANT

A one-acre dune restored by Connecticut Sea Grant and partners passed its first major test during Tropical Storm Irene, migrating landward and growing, while protecting a marsh that provides up to \$114,000 in storm damage protection annually.

#14479 -- OHIO SEA GRANT

Based on the success of past synthesis and summary efforts for Lake Erie and Ohio, Ohio Sea Grant is serving on Ohio's Phosphorus Task Force II and the Agriculture Nutrient Task Force. Based on our success in helping Ohio receive over \$11 million dollars from USEPA to support over 30 projects to restore Lake Erie, we were also asked to co-lead Ohio's Synthesis Team to summarize and synthesize the results of these projects.

#14206 – TEXAS SEA GRANT

In 2010 Texas Sea Grant oversaw 54 newly certified Naturalists join 408 active TMNs who volunteered 56,344 hours (27 FTEs), valued at \$1.2M (\$21.36/hour via Independent Sector). Their combined efforts resulted in the development of 20.2 miles of nature trails, and the restoration of more than 3,400 acres of dune and wetland habitat.

#9888 -- CONNECTICUT SEA GRANT

Connecticut Sea Grant researchers identified a new fungus pathogenic to *Spartina alterniflora* and determined that interactions of the fungus, a nematode and stress contributes to, but does not cause, Sudden Vegetation Dieback.

#13991 -- FLORIDA SEA GRANT

FSG partnered with the Sanibel-Captiva Conservation Foundation to support a critical monitoring component of the project to re-engineer a closed tidal pass, to improve water quality in a biologically significant estuary in Lee County, Florida. The project enhanced 211 acres of submerged aquatic habitat, which includes extensive sea grass beds and other habitat that nurtures popular sport-fish species and the endangered Florida manatee.

#6468 – CONNECTICUT SEA GRANT

Connecticut Sea Grant research on the influence of emigration date on the age and size of adult river herring returning to spawn provides fisheries managers with tool to help counter declining populations.



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Topical Area #3: Restoration (continued)

#6615 – LOUISIANA SEA GRANT

Working with CWPPRA and OCPR, Louisiana Sea Grant marine extension economists developed a series of applied economic assessments to improve the return on investment of more than \$1 billion in coastal restoration program spending.

#6690 – MAINE SEA GRANT

Maine Sea Grant research is documenting the success of dam removal efforts in restoring populations of sea-run fish, including endangered Atlantic salmon, alewife, and sea lamprey.

#14247 – MARYLAND SEA GRANT

Maryland Sea Grant researchers documented conditions that best promote restoration and conservation of submerged aquatic vegetation. The findings will aid resource managers in constructing models to simulate the effects of different management methods and of climate variation on the Bay's SAV restoration.

#6511 – WISCONSIN SEA GRANT

Recap: Wisconsin Sea Grant has contributed to a robust commercial wild rice industry and helped maintain Native-American pride in this culturally significant crop.



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Topical Area #4: Water Quality

#6622 -- SEA GRANT

With help from Louisiana Sea Grant, Floating Islands Environmental Solutions, Inc., a company which obtained the distribution rights for a patented floating matrix composed of recycle plastic drinking bottles, has grown significantly, currently employs eight full time employees and intends to hire more, and plans to expand its location to a larger facility. Louisiana Sea Grant has been at the fore front of assisting this enterprise with data and knowledge regarding surface water treatment.

#6294 – MICHIGAN SEA GRANT

A Sea Grant-funded project helped public officials change their ordinances, master plans and public works practices to reduce the impact of stormwater runoff.

#13982 -- MINNESOTA SEA GRANT

With the partnering leadership of Sea Grant's Non-point Education for Municipal Officials (NEMO), the Mississippi River Renaissance has united urban, suburban and rural stretches of the Mississippi River by bringing resources and information to the people whose decisions and actions can help keep the river healthy. NEMO efforts involved 74 participants in Lessons across the Landscape Shoreland Zone, and Policy and Planning Tool workshops. Eleven communities adopted the Mississippi River Renaissance vision.

#14366 -- MISSISSIPPI/ALABAMA SEA GRANT

Recent Sea Grant research led to the development of a watershed model (SWAT) to predict effects of land use/cover changes on water quality. The model is used by the Baldwin County Planning Department, the Alabama Department of Transportation, and the Alabama Department of Environmental Management to identify the total maximum daily load for pollutants in the Fish River watershed in coastal Alabama.

#14011 – NEW HAMPSHIRE SEA GRANT

Sealcoat has been banned in Austin, Texas, Minneapolis/St. Paul, Minn., and the state of Washington, and several counties in Illinois and the state of Minnesota are considering banning sealcoat based in part on research conducted by the UNH Stormwater Center using NHSG funding.

#14380 –OHIO SEA GRANT

A \$75 million Ashtabula River Partnership (ARP) - led environmental dredging effort removed over 600,000 cubic yards of contaminated material from the lower two miles of the Ashtabula River and placed it in a specifically designed landfill that was capped in 2009. This significantly reduced the contamination threat to the Lake Erie ecosystem and resulted in the construction of over 1,000 ft. of fish habitat and ~ 2 acres of wetlands on the lower Ashtabula River.



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Topical Area #5: Education and Training

#13837 -- CONNECTICUT SEA GRANT

Twenty-six Connecticut Sea Grant Long Island Sound (LIS) Mentor Teachers shared their expertise in teaching about LIS with 284 peers, and through them, enhanced the marine literacy of 12,600 Connecticut students.

#6809 -- WASHINGTON SEA GRANT

A Washington Sea Grant-supported program catalyzed existing programs to educate the public and improve Puget Sound water quality. WSG support helped train volunteer Beach Watchers to educate more than 500 people about the link between their practices and water quality. Master Gardeners helped homeowners install 150 new rain gardens that are capturing and filtering almost 2 million gallons of stormwater before entering Puget Sound.

#6300 -- CONNECTICUT SEA GRANT

Connecticut Sea Grant contributes to local livelihoods, production and markets in Cambodia and Vietnam through aquaculture development and management of small scale fisheries in lower Mekong River system.

#14134 -- FLORIDA SEA GRANT

Expert advice from Florida Sea Grant agent sustains 150 jobs and the economic viability of Florida's \$3 Million commercial sponge fishery.

#14372 -- OHIO SEA GRANT

Ohio Sea Grant/Stone Lab offers a unique immersion into the life sciences to thousands of youth and young adults that often helps instill a Lake Erie stewardship ethic and stimulates an intense interest in science.

#14128 -- FLORIDA SEA GRANT

Florida Sea Grant agent, Betty Staugler, partnered with Mote Marine Laboratory and Progress Energy to develop a Kid's Cup Redfish Tournament that works through volunteers to teach sustainable angling practices to kids.

#6788 -- GEORGIA SEA GRANT

Georgia Sea Grant created a 5-day residency at the Sapelo Island Marine Institute for Nashville children's performer Roger Day and commissioned him to compose a program of songs about the Georgia coast for elementary school children. These songs address state science teaching standards for grades 3-5 and promote ocean literacy while at the same time engaging young students with sing-alongs and interaction.



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Topical Area #5: Education and Training (continued)

#6495 – HAWAII SEA GRANT

Fifteen graduate students participated in the University of Hawaii Sea Grant College Program's graduate traineeship in 2010. These students fulfilled requirements including authorship of a 1,000 word news article, presentations at an evening seminar series for the public, and completion of 40 hours of education outreach in the community in an effort to provide training and experience on conducting outreach.

#14370 – OHIO SEA GRANT

In 2009, Ohio Sea Grant and the ODNR - Division of Wildlife (ODNR-DOW) worked to reopen the old state fish hatchery/museum, and turned it into an Aquatic Visitors Center. In 2010 over 12,500 youth and adults visited the AVC and participated in fishing and hands-on science education.

#14447 – OHIO SEA GRANT

In 2007, Ohio Sea Grant partnered with WKYE-TV in Cleveland to produce a four-part Lake Erie documentary, *Beyond the Surface*. Broadcasting one new segment every quarter, the documentary series featured Sea Grant researchers, program director, Extension agents, as well as industry and agency partners and Sea Grant projects. More than 250,000 watched each of the four segments that began airing in June 2007 and ending in May 2008. The series is now nominated for an Emmy and plans are in the works to repackage the segments to be used as an educational classroom tool for regional teachers.

#14005 – FLORIDA SEA GRANT

Florida Sea Grant extension agents helped to create a new volunteer-based program for statewide crab trap removal to safeguard navigation and to enhance benthic habitats. This project has removed more than 3,000 derelict crab traps from shallow water, seagrass and mangrove environments in Florida, and six clean-up events enhanced approximately 125,000 acres of benthic habitat.

#14356 – MISSISSIPPI/ALABAMA SEA GRANT

Mississippi/Alabama Sea Grant-sponsored oyster gardening volunteers produced 17,500 oysters that were used to restore 3,500 m² of reef in 2010, and Master Naturalists volunteered 700 hours of training involving 2,749 coastal residents. The MASGC-sponsored Mississippi Coastal Cleanup had nearly 2,000 volunteer participants who collected 1,433 bags (140,163 pounds) of trash along the Gulf Coast, barrier islands and waterways.

#6641 – NEW YORK SEA GRANT

In 2010, New York Sea Grant worked with 18,160 students and 900 teachers in New York. By using a "teach-the-teacher" approach, NYSG reached an additional 27,700 students, bringing the statewide total to over 45,000 students who learned about critical environmental issues such as water quality and invasive species.



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Gaps

- Not all programs represented in this focus area
- Very little mention of climate change throughout impacts
- No work in HCE on relationship between toxins and seafood
- Focus tends to be on local, not global, issues
- Continual work in specific ecosystems is reported as an impact every year
- With a target audience of Congress and OMB, SG thinks on shorter time scales—but long term investments would be more effective for the organization.
 - Difficult to capture impact of capacity building at the community level using short-term impacts
- NSI's from the NSGO are stove-piped into single-focus area topics
- Focus Area goals for HCE are too “fuzzy”
- Gap in efforts to find effective ways to increase jobs and simultaneously protect the environment
- With so many impacts, SG is facing information overload
- Lacking pre- and post-restoration monitoring for habitats

Opportunities

- Multidisciplinary systems approach to NSI's and research priorities
- Putting impacts into regional context can highlight complementary work on particular ecosystem types, and help to transfer information to relevant stakeholders and among programs
- Social science programs can help to quantify behavior changes
- Documenting economic impacts of environmental events
 - Example: Psteria and loss of tourism revenue
- Vulnerability assessments and adaptation planning for the coast
 - Partnering to assess vulnerability of natural environment
- Research to evaluate actual environmental impacts (both positive and negative) of invasive plants
- Opportunity to develop and utilize early detection technology and to develop better species-specific tools for removal of species that have been documented to be deleterious.
- Synthesizing work across regions or ecosystems, and developing new analytical tools to do meta-analysis is recommended.
 - Could account for the long-term cumulative impact of SG investments in specific ecosystems



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Appendix:

Biology Impacts

The majority of other biological SG projects have focused on invasive species. Many of these projects are primarily educational, to increase public awareness so they know and can recognize which species may invade a particular area (e.g. spiny water flea and Asian clam in Lake Champlain area). These programs may have prevented introduction of these invasive species, or may do so in the future – but it is hard to measure the impact of this. In one case, the USFWS stopped a shipment of fishes that included the snakehead, but there is no way to know whether they would have stopped the shipment anyway, without Sea Grant involvement. The “Stop Aquatic Invasives” program in the Great Lakes is also educating many people. The Great Lakes programs are also involved in developing ballast water legislation that will help to prevent future invasions. But it is also difficult to evaluate the impact of this, unless we assume that (1) the invasions would have occurred and would have been damaging, and (2) the SG educational programs have prevented them from occurring.

In some other projects concerned with invasive species, a number of SG programs have been involved with the general public in the actual physical or chemical (herbicides) removal of invasive plant species on dunes or in tidal marshes. These “feel-good” removal activities can be counted as impacts, but (1) it is known that the plant species frequently return, and (2) wholesale aggressive removal of some plant species is not necessarily the best management approach.

Restoration Impacts

Twenty-nine project impacts were reviewed, and categorized based on several criteria: 1) new, credible technique or established approach, 2) performance monitoring included, 3) supports increase/prevents loss of habitat area. Projects were located in 17 states, with 16 marine-coastal projects, and 13 inland-coastal projects. Ten project impacts used new techniques/approaches (including economic analyses), while another 10 project impacts employed established or emerging techniques. Six restoration project impacts did not include performance monitoring, while 3 did so. Five project impacts focused on restoration-related training and outreach. Twelve project impacts involved restoration of vegetation and their substrates, and 10 involved fish/shellfish restoration. Two impacts focused on contaminants assessment or removal.

These impacts provided comprised a good mix of innovative and established approaches for both freshwater and estuarine environments. The only serious drawback to these impacts overall was the nearly total lack of pre-restoration monitoring (just 1), while only a third of the impacts involving direct habitat restoration included post-restoration monitoring (3/9).



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Water Quality Impacts

This set of impact statements highlight Sea Grant projects related to contaminants, nutrients, pathogens, and sediment entering or in waterways from point and nonpoint sources, especially those brought in from agricultural, urban, or suburban runoff, but also via groundwater, atmosphere, and ocean exchange. The projects include:

- New methods, techniques, or sampling devices
- Monitoring (volunteer teams, supplements to public agency sampling, research-related)
- Outreach and Technical Assistance
- Local Capacity Building
- Education of General Public and Elected Officials and Administrators
- Modeling
- Research
- Evaluation of Management Action Effectiveness

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