

New York Sea Grant NEMO: Promoting Regional Water Quality Protection Initiatives

Long Island's beaches, bays, and harbors have long been renowned for their beauty and their bounty. They are prized by more than seven million residents and they drive the Island's coastal business, tourism, and fishing industries.

However, as development and population pressures have grown, impacts to water quality, fisheries, and beaches have become costly. To facilitate cost-effective municipal efforts to mitigate such impacts, the New York Sea Grant Nonpoint Education for Municipal Officials Program (NYSG NEMO) has promoted inter-municipal initiatives to reduce the pollutants transported to the coast by runoff.

Specifically, NYSG NEMO began working with partners to support formalized establishment of a cross-jurisdictional watershed protection committee in the Oyster Bay/Cold Spring Harbor drainage area in 2009. Support among the 18 municipalities in the watershed for the protection committee was built gradually.

Presentations and consultations were provided during which NYSG NEMO explained the potential to reduce costs and improve stormwater management by leveraging expertise, equipment, and funding. Further, NYSG NEMO assisted in the development of a successful grant application, which provided for a Coordinator.

In August 2012, efforts came to fruition when 14 municipalities signed an agreement to work together to protect water quality and to establish



*Stormwater mitigation projects protect water quality.
Photo: Eileen Keenan, NYSG NEMO*

the Oyster Bay/Cold Spring Harbor Protection Committee. Members include the Villages of Glen Cove, Center Island, Cove Neck, Laurel Hollow, Bayville, Lloyd Harbor, Mill Neck, Lattingtown, Muttontown, Upper Brookville, and Oyster Bay Cove; the Towns of Oyster Bay and Huntington; and Nassau County.

Partnering with New York Sea Grant in this effort are the Hempstead Harbor Protection Committee, Manhasset Bay Protection Committee, Town of Oyster Bay, and Friends of the Bay.

The Committee plans to heighten awareness of the need to protect Oyster Bay and Cold Spring Harbor and to obtain increased funding for protective measures in 2013.

**Oyster Bay and Cold Spring Harbor, with their economic and environmental benefits,
are "important to our quality of life."**

-- Nassau County Legislator Delia DeRiggi-Whitton

This project meets the performance goals of Sea Grant's Hazard Resilience in Coastal Communities Focus Area.

New York Sea Grant is a joint program of Cornell University, the State University of New York, and NOAA. New York Sea Grant Extension administration is located at 112 Rice Hall, Cornell University, Ithaca, NY 14853.

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Quick Response by New York Sea Grant Provides Information to Better Manage Hurricane Sandy Impacts

By acting as a bridge between decision-makers and researchers, New York Sea Grant was able to quickly provide sound information to coastal managers when they needed it most.

Hurricane Sandy inflicted tremendous damage along the New York and New Jersey coastlines. The force of the storm's waves and surge opened several breaches through the barrier islands protecting Long Island's south shore.

Of particular concern to coastal land managers was a breach in the Fire Island National Seashore in a federal wilderness area. The breach was in a barrier fronting a portion of the mainland containing 13,000 homes collectively valued at \$10 billion dollars. Under state and federal policies, the breach was to be monitored for 45 to 60 days to determine whether it posed a threat to the mainland and should be artificially closed or allowed to close naturally.

The National Park Service (NPS), which was responsible for making the decision regarding closure, asked New York Sea Grant's Coastal Processes Specialist to assist their interagency Breach Assessment Team composed of 35 federal, state and local officials.

New York Sea Grant (NYSG) provided the group with research-based information on impacts of new breaches from earlier NYSG efforts and helped them identify data needed to properly evaluate the situation. NYSG worked with researchers at Stony Brook University to identify ongoing field projects that provided some of the needed data, synthesizing and disseminating it to the Assessment Team within two weeks of the storm.



Hurricane Sandy created this breach in the Fire Island National Seashore near a residential area valued at \$10 billion. Photo: C. Flagg

NYSG coordinated with researchers and managers to develop and fund a quick response project to collect critical real-time data on physical changes associated with the breach when it became apparent other agencies were not able to respond in a timely manner.

NPS used NYSG information to evaluate the condition of the breach and its impacts, and decided not to close it immediately, which would have cost approximately \$6 million. The initial data showed the feature was fairly stable and having minimal impacts on main land tide levels.

Recognizing the value of the information, NPS is funding continuation of the data collection program to monitor the breach and its physical impacts to ensure it did not cause increased flooding on the mainland.

This project meets the performance goals of Sea Grant's Hazard Resilience in Coastal Communities Focus Area.

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Undo the Chemical Brew: **Keeping Unwanted Medicines Out of NY's Waters**

New York Sea Grant (NYSG) and the Sea Grant programs in Pennsylvania, Illinois-Indiana, and Ohio have partnered to create a highly successful *Undo the Great Lakes Chemical Brew* project, funded by the Great Lakes Restoration Initiative.

Since its inception in 2010, the *Undo the Brew* team has collected 2.7 million pills for proper disposal, and informed more than one million anglers, educators, students, 4-H youth, medical professionals, legislators, and community members about the need to keep the chemicals in pharmaceuticals and personal care products (PPCPs) out of the Great Lakes.

In 2012, public presentations, conference sessions, school visits and teachers' workshops educated more than 10,000 New Yorkers about what they can and should do to keep unwanted medicines out of local waters. Many residents are unaware of the danger these chemicals pose, since most pharmaceuticals are not removed through normal water treatment processes.

NYSG outreach to stakeholders, teachers, and anglers associations is an effective vehicle for informing others about the dangers of releasing these substances into the environment. The ripple effect extends learning opportunities exponentially to each of the target groups' own audiences.

Undergraduate students enrolled in the annual NYSG-taught Great Lakes Ecology course at the University of Buffalo tackled the problems associated with PPCPs "going down the drain" in Western New York. Students used social media to reach thousands of their friends and contacts to survey their behaviors and knowledge of the issue. That survey indicated the need

NY Sea Grant is a key partner in encouraging the public to help protect water quality in the Great Lakes Basin by properly disposing of pharmaceuticals and personal care products.

Photo below: Anna McCartney, PA Sea Grant



for informed learning opportunities about proper disposal of PPCPs.

A series of newspaper, radio and television public service announcements delivered the message to tens of thousands of New Yorkers. A NYSG-produced fact sheet and promotional pieces, encouraged interested citizens to learn more at www.unwantedmeds.org.

Once the public realizes their actions can protect aquatic environments, people willingly take part in drug take-back events or other proper disposal practices. Collectively, NYSG actions focused on raising awareness of this critical environmental issue are encouraging New Yorkers to take necessary steps to help "undo the chemical brew" and protect the waters of the Great Lakes region.

NYSG partners in the effort to keep drugs out of NY waters include Buffalo-Niagara Riverkeepers, Southtowns Walleye Association, Fly Fishermen of Erie County, and the Science Teachers Association of NYS.

This project meets the performance goals of Sea Grant's Healthy New York Coastal Ecosystems Focus Area.

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New York Educators Help Restore Gulf Coast Habitats

In 2012, New York Sea Grant (NYSG) and the New York State Marine Education Association (NYSMEA) led a trip to the Gulf Coast to help educators understand the need for stewardship of New York's wetlands.

Wetlands provide crucial feeding, breeding, and nursery grounds for thousands of native animals. In New York's Jamaica Bay, a 39-square-mile estuary that includes portions of Brooklyn, Queens, and Long Island's Nassau County, wetlands are being lost at a rate of 44 acres per year.

To teach educators about wetland loss occurring in New York State, NYSG Long Island Sound Study Outreach Coordinator Larissa Graham, NYSMEA President Meghan Marrero, a faculty member at Mercy College in Dobbs Ferry, NY, led a group of 14 educators to Louisiana where wetlands are being lost at a rate of one acre an hour.

Louisiana and New York struggle with similar challenges regarding wetlands. While in Louisiana, Marrero and Graham taught the NY educators about wetland loss and current restoration projects in Jamaica Bay and Long Island Sound, and issues such as hypoxia (a low level of dissolved oxygen) that occurs in both the Gulf of Mexico and Long Island Sound. They provided science-based information, highlighting research funded by NYSG.

To learn about rebuilding wetland habitats, the group volunteered at the U.S. Department of Agriculture's Natural Resource Conservation Service Golden Meadow Plant Materials Center in Galliano where they planted more than 1,700 gulf bluestem plants, harvested seeds, and prepped



New York State Marine Education Association members assist with habitat restoration projects during a volunteer trip to coastal Louisiana. Photo: Larissa Graham, NYSG

planting materials. They worked with Louisiana Sea Grant at the Wetland Plant Center in New Orleans to pot native wetland vegetation which will be planted at various wetlands around southern Louisiana.

Working with the Barataria-Terrebonne National Estuary Program, the group planted nearly 500 live oak, sand oak, and hackberry trees on a restored ridge recreated from dredged sediments from Port Fourchon. With this and future plantings, this ridge will one day become a mature maritime forest and a crucial habitat providing food and shelter for migrating birds.

Back in NY, participants spoke to students, colleagues, and friends about their experiences, and each participant led a restoration project of their own - from invasive species removal and wildlife monitoring to beach and park cleanups.

This trip allowed educators to participate in hands-on habitat restoration projects, and created new environmental stewards for New York's coastal ecosystems.

See NYSG Web Coordinator Paul Focazio's Louisiana learning blog about this educational adventure at <http://nysmea.blogspot.com>

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NYSG Helps Students Assist Local Restoration Project

New York Sea Grant partnered with watershed interest groups to provide local students with hands-on learning opportunities.

In 2010, the communities within New York's Nissequogue River Watershed came together to develop an Action Plan. One of the objectives of the plan was to restore tidal flow to surrounding wetlands and to facilitate fish passage upstream on Sunken Meadow Creek at Sunken Meadow State Park. A culvert system, built in the 1950s, was restricting tidal flow in the lower reaches of the creek and restricting the natural flow and flushing of the waterway. The creek was suffering from resulting excessive nutrient levels and temperatures as well as becoming a bottleneck for fish passage.

A habitat restoration project for the area would restore 132 acres of wetland habitat, but, in order to get funding for this habitat restoration project, the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) needed to provide data about the potential impacts of the restoration project. With limited staff, NYSOPRHP did not have the means to collect this information.

NY Sea Grant partnered with NYSOPRHP and the NYS Department of Environmental Conservation to set up a Sound Stewards program in which students would collect the desired data as part of their research projects. Starting in 2008, students from Hauppauge High School in Hauppauge, NY, travelled to Sunken Meadow State Park twice a month to collect data on water quality, macroinvertebrate assemblages, and fish populations in Sunken Meadow Creek. They also learned about the surrounding habitats and, during the process, developed an increased in stewardship for the park and natural resources in general.



Students from Hauppauge High School sample fish populations at Sunken Meadow Creek. Photo: Larissa Graham, NYSG

In 2012, Hurricane Sandy floodwaters washed away most of the culvert system, causing a 50-foot break in the berm built on Sunken Meadow Creek. As a result tidal flow was restored to the Creek.

Sampling one month after the breach indicated that salinity levels and fish populations had changed drastically, water clarity had improved, and changes in water quality and fish populations indicated that tidal flushing was occurring.

Thanks to the Sound Stewards program at Hauppauge High School, NYSOPRHP now has five years' worth of data for use in tracking how the impacts of Hurricane Sandy have affected this Creek now that tidal flow is restored.

The Hauppauge High School Sound Stewards will be continuing their sampling efforts and comparing year-to-year datasets as part of their student research projects.

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Outreach Coordinator Increases Stewardship for Long Island Sound

New York Sea Grant's Long Island Sound Stewardship Initiative was created to protect the areas around the Sound that are not only important for plants and animals, but also for residents that use these areas for recreational purposes.

In 2006, the Long Island Sound Study (LISS) Stewardship Initiative Work Group identified 33 Inaugural Stewardship Areas around the Sound with significant recreational and ecological values. The LISS NY Outreach Coordinator developed various programs to promote stewardship among students, volunteers, and community members for these areas.

Stewardship Days

The New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) and LISS held four volunteer events in the fall of 2012 at LISS Stewardship Areas. The events were organized to improve the ecological conditions at these Areas. Activities included:

- invasive plant pulls and invasive snail removal at Sunken Meadow State Park and Brookhaven State Park,
- native tree planting at Orient Point State Park, and
- native seed collection at Caumsett State Park and Preserve.

More than 50 volunteers participated in these events.

Stewardship Web Pages

The LISS Communications staff developed Web pages for each of the LISS Stewardship Areas, highlighting the ecological importance, recreational



Volunteers stand next to the bags of native seeds they collected for a grassland restoration project at a local Long Island Sound Study Stewardship Area. Photo: Larissa Graham, NYSG

opportunities, nearby places to visit, and links to learn more about each Area. These Web pages will be launched in the spring of 2013.

Student Research Projects

In 2008, the Sound Stewards program was developed to involve middle and high school students in research projects in LISS Stewardship Areas. New York Sea Grant worked closely with partners, including the NYS Department of Environmental Conservation, NYSOPRHP, Stony Brook University, and LISS, to develop research projects that allow students to learn about the problems facing Long Island Sound, while collecting data that will be used by partner agencies. To date, more than 1,900 students have been involved in these research projects.

NYSG partners in LISS programming that educates stakeholders and instills a sense of stewardship for the important natural areas of the Long Island Sound.

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Long Island Sound Mentor Teacher Program

In 2012, New York Sea Grant (NYSG) continued a successful Long Island Sound educational initiative for K-12 teachers in the New York's share of the watershed that includes the Bronx, Queens, and Westchester County.

According to a Public Perception Survey conducted by the Long Island Sound Study (LISS), watershed residents were lacking knowledge about Long Island Sound, and its watershed or drainage basin, tidal wetlands, and water quality. To increase the knowledge of watershed residents, LISS provided funding to educate teachers about successful strategies for implementing Long Island Sound (LIS) concepts into existing curricula.

The Long Island Sound Mentor Teacher Program workshops, which align with the content standards of the New York Science Frameworks and/or National Science Education Standards, include a field training component within the Long Island Sound watershed. Participants receive supplies and resources needed to conduct the activities with their students.

In the spring of 2012, two LIS Mentor Teacher Program workshops were held in New York. The first workshop, Teach at the Beach, was targeted for elementary school teachers and held in Wading



Educators conduct hands-on activities they can use with students during field trips to the beach. Photo: Larissa Graham, NYSG

River, NY. The second workshop, Marsh Madness, was targeted for high school level teachers and focused on collecting water quality and fish and macroinvertebrate population data. This workshop was held at Sunken Meadow State Park in Kings Park, NY.

In total, 29 educators participated in these two workshops. Evaluations conducted a few months after the workshops indicated the teachers were using the resources provided with more than 2,000 students and sharing the resources with their fellow teachers.

Funding was secured to continue this program with two workshops in 2014.

To date, this mentor teacher initiative has conducted 33 workshops in Connecticut and New York with more than 300 formal and informal K-12 educators and has reached through those educators, more than 20,000 students.



LIS Mentor Teacher Program field learning in Wading River, NY. Photo: Larissa Graham, NYSG

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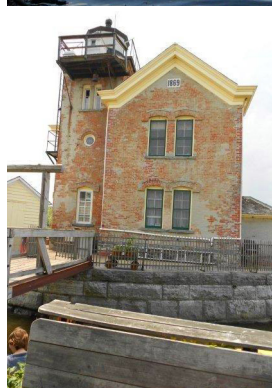
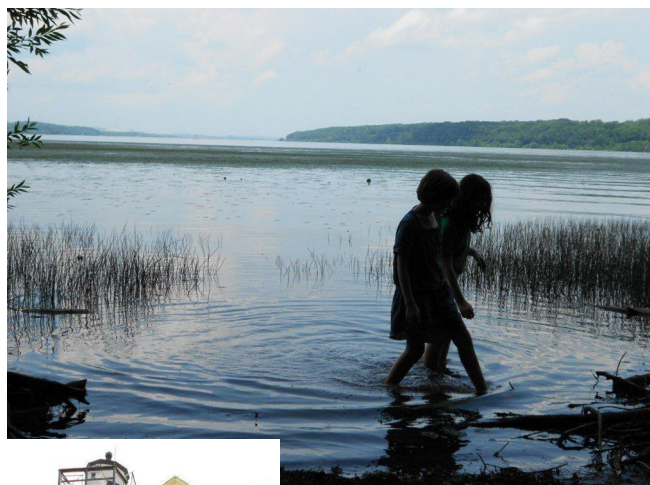
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NYSG Develops Coastal Sea Change Education Materials for New York's Hudson/NYC Estuary Region

In 2012, New York Sea Grant (NYSG), in partnership with the Cornell University Institute for Resource Information Sciences (CUIRS), has developed web-based geospatial learning resources focusing on more than 500 miles of New York coastal and estuarine environments. This project specifically responds to needs expressed by more than 200 grades K-12 educators in the Mid-Hudson and New York metropolitan areas who have participated in Sea Grant geospatial education workshops and field trips.

Hands-on training using publicly-accessible internet resources, including aerial photographs, nautical charts, and maps, helps program participants virtually travel “up and away” to explore the diverse features of their local New York coastlines and learn how these areas have been altered by natural and human activities over the last century.

Program participants at hands-on workshops organized by NYSG have stated the need to be able to retrieve, download and use materials in electronic format for classroom use. In response, NYSG and its project partners developed web-based materials for eight sites throughout the Harbor-Estuary. The resources for each site tell a unique story about the urban and suburban estuaries, of the growth of the coastal communities over time, and the impacts changes have had on habitats. The project materials include an overview of New York City (NYC) estuarine waterways, and the physical settings, environmental challenges



On the Map: above, students explore during high tide near Saugerties on the Hudson River; left: Saugerties Lighthouse in Ulster County is one of the eight study sites developed by the NYSG project team. Once used as an aid to navigation, the lighthouse is now an operating Bed and Breakfast in a publicly-accessible historic park. Photos: Nordica Holochuck, NYSG

and existing programs working to protect and promote responsible stewardship of the region.

NYSG has partnered with Queens College in NYC, recipients of a NOAA Environmental Literacy Grant to launch newly-reformatted materials through an upcoming series of training workshops for K-12 teachers in NYC. Helping educators understand how coastlines change over time informs sound habitat stewardship.

NYSG partners in the effort to inform teachers and students about New York's estuarine resources include the Cornell Institute for Resource Information Sciences, Cornell Cooperative Extension (CCE) administration, CCE Ulster County, Queens College, and NOAA.

This project meets the performance goals of Sea Grant's Healthy New York Coastal Ecosystems Focus Areas.

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NYSG-Buffalo State College Collaboration Identifies Four High-Risk AIS Threats to Great Lakes

New York Sea Grant (NYSG) collaborations with academic partner Buffalo State College is helping identify aquatic invasive threats to the Great Lakes.

More than 180 aquatic invasive species (AIS) have been introduced into the Great Lakes, causing a variety of negative ecological and economic impacts. Ballast water discharge has been implicated as a major vector of these introductions, largely originating from the Ponto Caspian region of Eurasia. The species-rich area plus its large volume of ship traffic suggests that this region will continue to be a major source of AIS into the Great Lakes. Research and outreach programs for surveillance, prevention and control efforts are needed to prevent new introductions of AIS into the Great Lakes and to minimize the further spread of organisms to inland lakes, the Mississippi River watershed, and beyond.

Based on information on species' environmental requirements, distribution, and invasion history, scientists have previously identified 66 species that pose a potential Great Lakes invasion threat. Most recently, a Great Lakes Restoration Initiative research project coordinated by Buffalo State College researchers and NYSG's freshwater fisheries specialist led to the identification of nine high risk Ponto-Caspian fish species with the potential to survive and spread if successfully introduced in the Great Lakes. These AIS also have the potential to negatively impact the Great Lakes' food webs.



The Caspian bighead goby, above, is one of four fishes identified as an aquatic invasive species threat for transport into North American waters. This fish will be profiled in a new NYSG-developed fact sheet in 2013. Photo: Brian Coad

To develop detailed information used to predict the invasion potential into North America of the nine high risk species, Buffalo State researchers went to former Soviet bloc countries to translate previously unavailable literature on the fish species endemic to that area.

The researchers have predicted that only four species: kilka, Volga dwarf goby, Caspian bighead goby, and black-striped pipefish could survive ballast water transport to North America, suggesting that ballast water exchange, if carried out properly by ships, is an effective tool in reducing future introductions of the high-risk Ponto-Caspian fishes.

NYSG will now summarize the information on these four species into factsheets to help guide early warning monitoring programs for AIS.

NYSG is developing fact sheets on four fish species at high risk for introduction into North American waters. Those fish are: kilka, Volga dwarf goby, Caspian bighead goby, and black-striped pipefish.

This project meets the performance goals of Sea Grant's Healthy New York Coastal Ecosystems Focus Area.

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NYSG Facilitates Lake Ontario Scenarios Look at the Future of Great Lakes Ecosystems

New York Sea Grant (NYSG) and the U.S. Geological Survey (USGS) organized a Lake Ontario Scenarios Workshop to help 30 diverse stakeholders representing research, management, businesses, and conservation organizations manage future uncertainty.

Escalating changes in Great Lakes ecosystems are driving future trajectories of ecosystem goods and services in uncertain directions, prompting concerns for sustainable management of coastal resources under uncertainty.

Scenarios are gaining acceptance among ecologists as tools for proactive strategic planning and the synthesizing of cross-disciplinary information about known and unknown processes that may be driving ecosystems into different states. Scenarios are a suite of projections into the future from the current state, representing alternative, but logically, consistent views of likely future states. Decisionmakers use scenarios to critically evaluate the uncertain future dynamics that could result in sudden events, catastrophic or otherwise, and how these events could unfold.

Participants in the NYSG/USGS-led scenarios workshop focused on Lake Ontario identified two major uncertainties, i.e., will conditions be dry or wet, and will the lake region population increase or decrease, that would be driving the future of Lake Ontario climate change as a basis for further breakout discussion. Four future scenarios focused on the following combinations:



The Lake Ontario Scenarios Workshop drew 30 diverse stakeholders interested in the lake system's future. Photo: NYSG

1. Dry climate and higher population
2. Dry climate and lower population
3. Wet climate and high population, and,
4. Wet climate and lower population.

Based on workshop evaluations, participants were unanimous in their support for the scenario process, the realism of scenarios developed by the group, educational value in better understanding the complex ecological and social forces that could be shaping the future of Lake Ontario, and the utility of these scenarios for future planning.

This workshop, funded by the Great Lakes Restoration Initiative, will serve as the basis for educating scientists, other stakeholders, and policymakers about the connectedness of ecosystems with societal needs and for incorporating uncertainty in future sustainable management of coastal resources. Other groups and organizations, recognizing the value of scenario workshops, have requested scenario exercises from NYSG.

This project meets the performance goals of Sea Grant's Healthy New York Coastal Ecosystems Focus Area.

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NYSG Launch Stewards Engaging Public in Watercraft Inspection to Slow Spread of AIS

The New York Sea Grant (NYSG) Launch Stewards Program educates and empowers boaters in the effort to protect New York waters from aquatic invasive species (AIS).

AIS are non-native aquatic organisms that, when introduced into new waters, are likely to cause economic or environmental harm or harm to human health. AIS are well adapted for spreading throughout an ecosystem, limiting food and habitat for native species, and competing with or displacing them. Currently, there are believed to be more than 180 AIS in self-sustaining populations in the Great Lakes basin. Cost estimates of AIS impacts to the Great Lakes region exceed \$100 million annually.

Recreational boating is a key pathway for the spread of AIS to the inland lakes of the Great Lakes basin. Organisms, e.g., spiny water flea, Eurasian water-milfoil, and zebra and quagga mussels, can be transferred on boats and trailers. Motorized and non-motorized boaters can help prevent AIS spread from infested to uninfested waters by properly inspecting their watercraft and equipment for “hitchhikers” every time they enter and leave the water.

The NYSG Launch Stewards program educates recreational boaters on how to look for, remove and dispose of unwanted debris through voluntary watercraft inspections. The stewards offer the inspections throughout the summer at locations along the southern and eastern shores of Lake Ontario, Oneida Lake, and other inland waters.

By fostering awareness of the AIS issue, the stewards engage the boating public to become part of the

NYSG Launch Stewards Program Partners:

Finger Lakes-Lake Ontario Watershed Protection Alliance
New York State Department of Environmental Conservation
U.S. Fish & Wildlife Service Great Lakes Protection Funds Program



NYSG Launch Steward Matt Brincka (right) guides a boater through proper watercraft inspection steps. Photo: Julia Gilbert

solution rather than extending the problem. NYSG is working with launch steward programs across the state to standardize steward training tools. To help boaters easily recognize stewards anywhere in New York, the stewards across the state are consistently using the national *Stop Aquatic Hitchhikers!* campaign messaging and branding.

In 2012, the NYSG Launch Stewards:

- monitored 12 launch sites
- educated 5,701 people
- conducted 2,456 watercraft inspections
 - 72% were NYS-registered boats
 - 10% of the boats had visible debris, e.g. Eurasian milfoil, water chestnut, curly leaf pond weed, algae.

Participating boaters indicated the educational outreach made them more aware of ways they can help limit the spread of AIS; 81% reported using preventative measures, e.g., inspecting/washing/drying boat, and draining bilge and bait buckets.

Simultaneously, the NYSG Launch Steward experience prepares the college student-stewards for future careers in the environmental field.

This project meets the performance goals of Sea Grant's Healthy New York Coastal Ecosystems Focus Areas.

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NY Sea Grant Brings Recognition of Seafood into Local Food Systems

In 2012, New York Sea Grant (NYSG) helped New York's fishing communities integrate seafood products into local food systems.

Support for local food systems has gained popularity in recent years largely due to programs successfully encouraging the public to "know where your food comes from" and that buying local can be better for the environment and the economy. Farmers' markets in New York's metropolitan and suburban communities enjoy strong support and public loyalty from spring through fall, and in some areas year-round. Although studies have proven the healthy benefits of eating seafood, seafood is underrepresented in local food systems.

NYSG worked to integrate seafood into local food systems, which ultimately improves the financial condition of commercial fishing businesses, consistent with Sea Grant's goals to establish profitable seafood businesses that depend on safe, high quality seafood products. Local food systems present many opportunities for farmers and seafood producers.

Activities NYSG facilitated to help integrate seafood products into local food systems include:

- administering a workshop about opportunities to start a shellfish business under the auspices of the Long Island Small Farms Summit
- administering a local seafood, wine, and chocolate food pairing event to teach versatile uses of seafood around the holidays
- developing information kiosks and poster displays about community supported fisheries (CSF), to inform the public about purchasing seafood shares directly from commercial fishing vessels, and



Fresh local fish was transformed into a chef's delight at a NYC "Seafood Throwdown" co-sponsored by New York Sea Grant. Photos courtesy of New York Sea Grant

- participating in two "Seafood Throwdown" events (NYC Greenmarkets, Grown on Long Island Day), showcasing chefs actively involved in the local food systems, preparing seafood cuisine.

These activities connected with more than 2,000 New York City/Long Island area residents and four new CSF businesses were launched over two years in New York through the local food systems movement. A new CSF, Dock to Table, successfully piloted in Montauk for six weeks in fall 2012 will expand in 2013.

This programming was possible through partnerships with several agencies, including the Long Island Small Farms Summit, Grow Long Island, Northwest Atlantic Marine Alliance, NYC Green Market, Cornell Cooperative Extension of Suffolk County, Long Island Farm Bureau, Long Island Wine Council and Casting for Recovery.

This project meets the performance goals of Sea Grant's Safe & Sustainable New York Seafood Supply Focus Area.

New York Sea Grant is a joint program of Cornell University, the State University of New York, and NOAA. New York Sea Grant Extension administration is located at 112 Rice Hall, Cornell University, Ithaca, NY 14853.

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NYSG-Driven HACCP Internet Training Course Enhances Seafood Safety

Seafood is a traditional and important part of New Yorker's diets, and the seafood industry is an important part of New York State's economy, contributing several billion dollars annually. Each seafood business is required by the U.S. Food and Drug Administration (FDA) and New York State to have a Hazard Analysis & Critical Control Point (HACCP)-based food safety plan in place, and certain activities associated with this plan must be conducted by a trained individual.

NY Sea Grant (NYSG) developed and manages an Internet training course for the nation's seafood businesses in collaboration with the National Seafood HACCP Alliance to help those businesses meet federal and state training requirements.

In 2012, 1,282 individuals completed NYSG's Seafood HACCP Internet course. Of these, 890 individuals (nearly 70%) provided the following feedback on how they will use the training and information provided:

- 577 individuals (65%) reported they will modify improve or update their company's existing HACCP food safety plan. Of these, almost half will make changes to correct deficiencies found during an inspection or audit.
- 565 individuals (63%) reported they will share their knowledge and provide training to others. About 60% will train their own company's employees to help with the successful implementation of their HACCP food safety system, and 40% will provide training to others.
- 562 individuals (63%) reported they will conduct the routine food safety monitoring or verification activities required by their company's HACCP food safety plan.



NYSG seafood safety training provides critical assistance to NY's fishing and seafood purveyor industries. Photo: NYSG

- 313 (35%) individuals reported they will be involved in developing a HACCP food safety plan for either new seafood products their company will handle or a new process their company is developing to enable them to expand their business.
- 155 (17%) individuals reported they will use this training so that they can develop a HACCP food safety plan for a new business that they or others will be starting.
- 183 (21%) individuals reported they will use the training and information provided to conduct inspections or regulatory reviews for FDA or a state or local food safety authority.
- 121 (14%) individuals reported they will provide consulting or other services to seafood companies to help them meet regulatory food safety requirements.

In addition to the FDA, NYSG partners in this safety training initiative are the National Seafood HACCP Alliance and the National Association of Food & Drug Officials.

This project meets the performance goals of Sea Grant's Safe & Sustainable New York Seafood Supply Focus Area.

New York Sea Grant is a joint program of Cornell University, the State University of New York, and NOAA. New York Sea Grant Extension administration is located at 112 Rice Hall, Cornell University, Ithaca, NY 14853.

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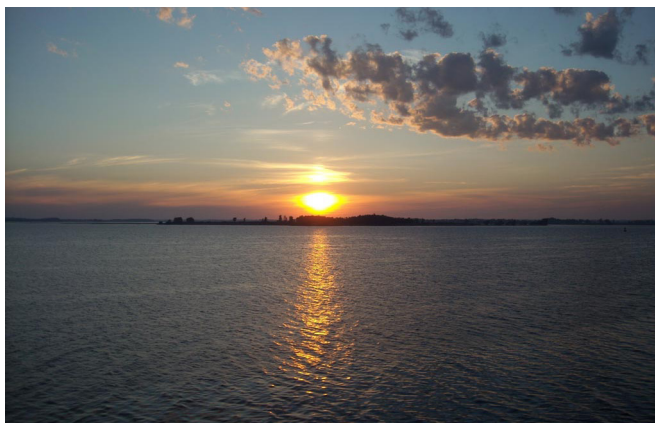
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Visioning for Lake Ontario Engages Community and Agency Decisionmakers

To better align public input on the conservation and restoration needs of the Lake Ontario basin with federal, state and local management plans, New York Sea Grant (NYSG) planned and co-facilitated a public participation and involvement initiative. A series of open communication forums for community and agency stakeholders was held in 2012.

NYSG and the Finger Lakes–Lake Ontario Watershed Protection Alliance (FOLLOWPA) partnered to plan and implement a series of six workshops to gather the opinions and input of stakeholders, including municipal leaders, state and local government agency representatives, landowners and residents, non-government agency staff, and the general public. Inquiry focused on the current condition of the Lake Ontario basin, the identification of priority projects for implementation, and additional needs and concerns for the local area and the Lake Ontario basin holistically.

The workshops were held primarily in Lake Ontario shoreline communities plus one watershed area inland. A media campaign invited residents and resource managers from throughout the basin to attend any of the workshops. Participants were given the opportunity to hear presentations by FOLLOWPA, NYSG, and the New York State Department of Environmental Conservation and to submit input on the current condition of the lake, its priority tributaries, and research priorities.



New York's waters represent a diverse resource to stakeholders with varied interests. Visioning workshops for Lake Ontario in 2012 helped find common ground for moving ahead with restoration initiatives. Photo: Mary Penney, NYSG

Nearly 100 Lake Ontario basin residents were given the opportunity to provide input through discussions and written surveys.

Workshop proceedings, with stakeholder input, will be made available to federal, state and local agencies as well as the public in spring 2012. Resource management agencies will use the proceedings that captured the weighted interests of those who live, work, and play in the Lake Ontario basin to help determine agency research priorities and leverage funds for Lake Ontario basin projects.

"The public needs a voice in the discussion of critical issues, with more emphasis on problem solving. Multiply this effort across the board," commented Maxine Appleby of Sodus Point, NY.

**Funding for these Lake Ontario visioning workshops was obtained by
the Niagara County Soil and Water Conservation District
from the U.S. Environmental Protection Agency's Great Lakes Restoration Initiative Program.**

This project meets the performance goals of Sea Grant's Sustainable New York Coastal Development and Healthy New York Coastal Ecosystems Focus Areas.

New York Sea Grant is a joint program of Cornell University, the State University of New York, and NOAA. New York Sea Grant Extension administration is located at 112 Rice Hall, Cornell University, Ithaca, NY 14853.

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NYSG Assists Access to New Web-Based Tool: A Boaters' Forecast for the St. Lawrence River

New York Sea Grant (NYSG) helped make a new real-time, web-based tool available to recreational boaters on the St. Lawrence River.

Conditions on the River can change dramatically due to weather events, drawdowns in the system, pooling, and ponding. Water level regulation on the upper St. Lawrence River has noticeable effects on the river, particularly due to releases from the control dam on the River at Cornwall, Ontario-Massena, NY. Other human-driven decisions, and natural factors (i.e., wind), also impact the river conditions for boaters.

The Great Lakes Observing System (GLOS) and the National Oceanic and Atmospheric Administration's Great Lakes Environmental Research Lab (GLERL), with assistance from NYSG, developed a new web-based forecasting resource for the River, integrating data from several sources including Environment Canada.

The St. Lawrence River Boaters Forecast is a real-time application of the Great Lakes Observing System for recreational boaters. Boaters, marina operators, and anyone with a computer or smart phone can access the easy-to-use Web site at www.glos.us.

This new tool provides real-time and forecasted water current and water depth data for points all along the River. Users can simply click on their desired locations to see depth and current readings now and 12 hours into the future.

Users can pre-set their own safety datapoints, e.g., a specific water depth or water current speed, and the Boaters Forecast will send an email or text alert when that point is reached.

At right, a GLOS data buoy that provides information on water conditions on the Great Lakes.

The new Boaters' Forecast tool for St. Lawrence River provides boaters with current and 12-hours-ahead data on water depth and current. Photo: GLOS



Knowing this information helps boaters realize when they should head back to homeport or seek a safe haven.

Working with GLOS and GLERL, NYSG provided the education/outreach component for the "St. Lawrence River Boater Forecast" development and access project. Four public meetings were held along the river in Alexandria Bay and Ogdensburg, NY, to provide developers with actual boater input that was used to enhance the hydrodynamic modeling initiated by researchers.

John Cannon, a St. Lawrence boater who tested the site noted, "I enjoyed using the website. It was very straightforward. I will be using the information when boating in the 1000 Islands. This tool will be very helpful to anticipate changes in river conditions."

GLOS Program Coordinator Kelli Paige reports that between July 2012 and mid-January 2013 this new boaters' resource had been accessed by more than 3,000 unique viewers who spent an average 4:15 minutes on the site. This pilot project is now the basis for the development of a Great Lakes-wide "Boater's Forecast" tool.

This project meets the performance goals of Sea Grant's Sustainable New York Coastal Development Focus Area.

New York Sea Grant is a joint program of Cornell University, the State University of New York, and NOAA. New York Sea Grant Extension administration is located at 112 Rice Hall, Cornell University, Ithaca, NY 14853.

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