

New York Sea Grant RESPONDS TO SANDY



In the wake of Hurricane Sandy, New York Sea Grant (NYSG) has played a role in providing sound information to managers and stakeholders in a timely way.

New York Sea Grant has long supported fundamental research on the environmental causes and effects of extreme weather events by funding the Stony Brook University Storm Surge Research Group. After the storm, NYSG responded nimbly by funding several important new research projects. The extension staff of NYSG, specialists who work directly with stakeholders, are helping to survey the extent of Sandy's devastating reach on coastal businesses.

RAPID RESPONSE RESEARCH PROJECTS ARE ALREADY UNDERWAY

Two important Sandy-related projects have been selected and are already beginning:

How will the breach on Fire Island at Old Inlet impact Great South Bay and surrounding communities?

Sandy's storm surge and high waves caused breaches across eastern Fire Island but the one likely to have the greatest impact on the back bay areas of Great South Bay is at Old Inlet, a narrow part of the island with a long history of breaches and inlets. How this breach will evolve and what attendant impact it will have on the back bay and mainland of Long Island are the questions facing the National Park Service and nearby residents on the mainland. This research team from the School of Marine and Atmospheric Sciences at SBU is gathering bathymetric data needed to determine the potential evolution of the inlet, including whether it is likely to close on its own or expand further, and how that evolution will affect the tidal dynamics, and eventually the biota, of the eastern Great South Bay. They have installed sensors for measuring sea level, temperature and salinity at Old Inlet, at Bellport marina, and at buoys in Great South Bay so that changes to sea level and tidal characteristics can be constantly monitored. Early reports after the November and December nor'easters indicate that the breach is remaining somewhat stable.



Will the Western Long Island South Shore Estuary ecosystem be able to handle the additional nitrogen from the failure of the Bay Park Sewage Treatment Plant?

A research team from CUNY is looking at the Western Long Island South Shore (WLISS) estuary where storm surge from Hurricane Sandy caused significant damage to the Bay Park Sewage Treatment Plant in East Rockaway, NY that treats 50-85 million gallons day of waste water from 40 percent of Nassau County residents. Immediately after the storm, an estimated 68 million gallons of raw sewage was released into the WLISS estuary. As repairs were underway in the ensuing weeks, partially treated sewage continued to be released bringing the total to more than a billion gallons. The team will measure if the ecosystem will increase its capacity to remove nitrogen or if the enhanced nitrogen loads will shift the ecosystem to an alternative state that perpetuates additional organic matter loading. Researchers expect significant increases in rates of sediment nitrogen and oxygen dynamics to occur. It is critical to begin measuring rates of dissolved nitrogen as soon as possible, so that the amount of nitrogen being removed from the ecosystem or internally recycled can be measured.

AIDING FEDERAL, STATE AND LOCAL OFFICIALS ON BREACH ASSESSMENT

Hurricane Sandy inflicted tremendous damage along New York's coastlines including opening several breaches through the barrier islands protecting Long Island's south shore. Of particular concern was a breach in Fire Island, a barrier fronting a portion of the mainland containing 13,000 homes collectively valued at \$10 billion dollars. The National Park Service (NPS), responsible for making the decision regarding closing the breach, asked NYSG's coastal processes specialist **Jay Tanski** to assist their Breach Assessment Team composed of 35 federal, state and local officials. NYSG provided the team with research-based information on impacts of new breaches and helped them identify data needed to properly evaluate the situation.

Tanski is a co-author of a 2001 New York Sea Grant report: Impacts of Barrier Island Breaches on Selected Biological Resources of Great South Bay, New York—the most authoritative report on the biological impacts of breaches, demonstrating both benefits and losses. He is also the author of Long Island's Dynamic South Shore: A Primer on the Forces and Trends Shaping Our Coast.

LONG-TERM FUNDING OF STORM SURGE RESEARCH

Stony Brook University Storm Surge Research Group has been funded for their research over the last decade in which they created a composite storm surge model that tracks and predicts storm surge in the metro New York area with greater accuracy than other models.

Some of the Group's work on storm surge prediction and wave forecasting has been picked up by the popular press and the concept of storm surge barriers at several "choke points" around New York City (as done in some places in Europe vulnerable to flooding) has regained some attention by New York City officials. NYSG funded the original modeling research that suggested that storm surge barriers or flood gates could be feasible. As part of developing a resilience strategy for New York Harbor, as called for by the NYS 2100 report, the report suggests "Conduct(ing) a comprehensive storm surge barrier assessment for New York Harbor."

Team members **Drs. Malcolm Bowman** and **Brian Colle** kept close watch before, during and after landfall of Sandy in late October. They provided their results via email, the Group's website, and NYSG's website. During the height of the storm, NYSG's Twitter and Facebook feeds were the primary avenues for providing information as many (including the University) lost power and network connections. In some cases, the groups was able to correct some of the storm-related inaccuracies reported about coastal flooding in lower Manhattan.

COMING TO THE AID OF LOCAL COASTAL BUSINESSES HIT BY THE STORM

New York Sea Grant Extension is working closely with coastal businesses hard hit by Sandy:

Surveying the Impacts of Sandy on Recreational Fisheries

Antoinette Clemetson, NYSG's marine fisheries specialist, is working on the effect of Sandy on several segments of the coastal business sector: recreational fishers, marinas, bait and tackle businesses, charterboat and headboat captains—since the declaration of a fisheries disaster. The impacts to the fisheries community has been tremendous and the costs to the region's infrastructure are being measured in the billions of dollars. Docks, boats, businesses and entire communities have been lost in several locations. As the region struggles to assess the impacts on livelihoods, a collection of industry groups asked NY Sea Grant to facilitate data collection to document the damages in recreational fishing communities.

In mid-November, the Department of Commerce officially determined that a regional fisheries disaster had occurred. In addition to authorizing Small Business Administration loans (SBA), the determination allowed Congress to appropriate disaster relief funding to assist affected communities. At the request of the New York Fishing Tackle Trade Association, United Boatmen of NY, New York Sportfishing Federation, Regal Marine Products, and the Recreational Fishing Alliance, New York Sea Grant is helping to collect information to document losses and physical damages to businesses as a part of the recreational fishing industry. NYSG developed a confidential questionnaire and asked business owners to describe the changes in their business that occurred since Saturday October 27, 2012. Data are being collected from tackle shops, party/charter boats, and marinas, and create the foundation to prepare a spending plan that is required in an appropriation request to rebuild the fishing industry.

Surveying the Impacts of Sandy on Marinas

NYSG's **Jay Tanski** is also working closely with marinas to survey their economic losses. He has asked marina owners to describe the type, square footage, and initial investment on the buildings, facilities, structures, inventory and equipment in their marina before and after Sandy as well as estimate the lost revenues and marketing opportunities.

The NYS 2100 Report also encourages the use of green and natural infrastructure, including "provid(ing) incentives for creation of soft shorelines and wetlands," and "including building living shorelines, new wetlands," and similar structures. Tanski is conducting a workshop on the uses of living shorelines and related methods in the spring of 2013.

NYS 2100 COMMISSION

NYS 2100 Commission: Recommendations to Improve the Strength and Resilience of the Empire State's Infrastructure—is a commission appointed by the Governor of NY in the wake of Hurricane Sandy. NYSG participated through the SUNY experts team.

This list of restoration recommendations of the NYS 2100 Commission requires a better understanding of local conditions and uses to make the best decisions about how to implement needed repairs and restoration. This is the kind of information that NYSG can help acquire, analyze, and distribute quickly to those who need it.

- Restore damaged dunes, beaches, and barrier islands
- Repair and strengthen critical hard infrastructure along the coast
- Repair and protect wastewater infrastructure
- Repair important public recreational infrastructure