



**Sodus Point Lighthouse. Crashing waves break over barriers protecting Sodus Point on eastern Lake Ontario.**

Photo courtesy of Wayne County Office of Tourism

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## BREAKING THE WAVES

Even before the Colossus stood guarding the port of Rhodes in ancient Greece, people have erected barriers along shorelines to protect harbors, ports and beaches from the ravages of storms and breaking waves. In 19th century New York State, a lattice work of timber boxes filled with sand protected the city of Plattsburgh from swells on Lake Champlain. Lighthouses were erected along barriers to protect the Great Lakes ports of Buffalo, Sodus and Oswego. Whether wood or rock, concrete or mounded earth, these structures generally built parallel to the shoreline are known as breakwaters. When needs call for a low-tech barrier made of recycled materials in an upstate NY lake or a high-tech perforated concrete structure built to withstand a Japanese tsunami, Dr. Phil Liu wrote the book...

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... for more on breakwaters  
ancient and modern

continued on page 3

# FROM THE ACTING DIRECTOR

Since our last issue of *Coastlines*, the summer of 2008 passed quickly, filled with many activities, accomplishments, and changes. You will learn in this issue about some of NYSG's recent advances in valuable, cutting-edge research on breakwater design and storm surge forecasting, in teacher training on Lake Ontario and the estuarine environments of the NY/ NJ Harbor, and relative to New York State's new commitments towards addressing marine animal diseases and invasive species.

There are many other noteworthy items, some of which you will likely hear more about in future issues. We completed our peer-reviewed selection of research to be undertaken in 2009-2010. Provided that the federal budget holds steady for NOAA Sea Grant, we anticipate starting more than \$2M worth of new, urgently needed projects focusing on issues from Lake Erie to Peconic Bay. With special funds from the EPA Long Island Sound Study, we are working with CT Sea Grant to identify and support \$800K of additional research, specific to that extraordinary water body. The Hard Clam Research Initiative culminated in an information session for shellfish managers and others, and will release a state-of knowledge synthesis about the factors affecting hard clams in Long Island's south shore bays. We are working with others to pilot a pharmaceutical take-back program, to coordinate a film festival exploring how maritime traditions are depicted, to run an Atlantic states-focused workshop on the devastating fish disease VHS (viral hemorrhagic septicemia), and more.

At the national level, a bill reauthorizing the National Sea Grant College Program has been passed by Congress and is awaiting the President's signature. New organizational mechanisms will help further highlight Sea Grant's impacts across the country. And, an increased emphasis is being placed on regional collaborations and approaches to help maximize expertise and resources. Nevertheless, each coastal Sea Grant program must and will continue to serve the unique needs of its home state.

Finally, the past months brought several personnel changes to NYSG. Two staff members have moved on: Nim Lee of the NYS DEC-NYSG I FISH NY program and John Herring of our Coastal Communities program. In addition, our long-time Associate Director for Extension, Dale Baker, will be retiring at the end of the year (see page 10). We and others will miss working with these folks. On the bright side, however, we have recruited several outstanding new individuals. Darin Alberry and Ann TeNyenhuis have joined the popular I FISH NY effort as program aides. Most importantly, we are very excited to have attracted the eminently qualified Dr. James Ammerman as New York Sea Grant's new director (see below). Please join us in welcoming him as he takes the helm in mid-October.

## Please welcome our new director



**Dr. James Ammerman, an aquatic microbial ecologist and biogeochemist, received his Ph.D. from Scripps Institution of Oceanography. He has been a member of the faculty at Texas A&M University and the research staff at Lamont-Doherty Earth Observatory of Columbia University. Dr. Ammerman served as an Associate Program Manager in the Biological Oceanography Program at the National Science Foundation and as Science Director of NOAA's Undersea Research Center at Rutgers University. He leaves his research faculty post at the Institute of Marine and Coastal Sciences at Rutgers to take on the mantle of New York Sea Grant Director.**

# BREAKING THE WAVES

*continued from page 1*

A leading expert world wide on structures for protecting coastlines and harbors, **Dr. Philip L.-F. Liu** of Cornell University's School of Civil Engineering knows about breakwaters. For a recent NYSG-funded project, Dr. Liu developed a mathematical model to aid in the design of breakwaters to fit the needs of individual locations. According to Liu, traditional laboratory development of breakwater design has its limitations. Says Liu, "Out in the field, there are so many factors in play that it is difficult to assess all the parameters. But using a numerical approach avoids these limitations and gives you a much more robust model."

There are many factors that affect the efficiency of a breakwater. Three primary ones are: the nature of the material that makes up its foundation, the characteristics of the waves it will be subject to, and the slope and sediment of the harbor bottom. A hard structure may be rocked by wave action whereas a porous structure may let waves pass through with a diminished force. A muddy versus a sandy bottom will alter the wavelength of the incoming waves. Adequate mathematical models take all these variables into account.

Dr. Liu and his group at Cornell are looking at innovative breakwater designs for the global community. He is currently working with colleagues in Europe and Asia, helping researchers and engineers find the most effective and efficient breakwater design at each unique location using local materials. For example, in Japan where designers of coastal protection structures are most concerned with tsunami damage, the preferred design is of poured concrete and not rocks or gravel as these resources are not readily available.

One of the trends in modern breakwater design is making them more environmentally friendly. According to Dr. Liu, "Using a perforated structure improves water quality. By allowing water to flow in and out of the structure, water does not become stagnant."

Another global trend is using breakwaters for multiple purposes. In some locations in Europe and North America, breakwaters create areas for recreational use such as swimming or fishing. In Portugal, resource managers are using breakwaters for wave energy conversion and generating electricity. Each of these kinds of designs can benefit from Liu's numerical model.

**Dr. Liu's numerical model includes complex equations that help designers calculate wave action above a breakwater. Whether made of natural materials like this one on LI Sound, heavy construction to support this Lake Erie lighthouse, or perforated concrete like this Japanese design, numerical models translate into proper design for local needs.**

$$\frac{\partial \langle \bar{u}_i \rangle}{\partial x_i} = 0$$

$$\frac{\partial \langle \bar{u}_i \rangle}{\partial t} + \frac{\partial \langle \bar{u}_i \rangle \langle \bar{u}_j \rangle}{\partial x_j} = -\frac{1}{\rho} \frac{\partial \langle \bar{p} \rangle}{\partial x_i} + g_i$$

$$-\frac{\partial \langle \bar{u}_i \bar{u}_j \rangle}{\partial x_j} + \frac{1}{\rho} \frac{\partial \langle \bar{\tau}_{ij} \rangle}{\partial x_j}$$

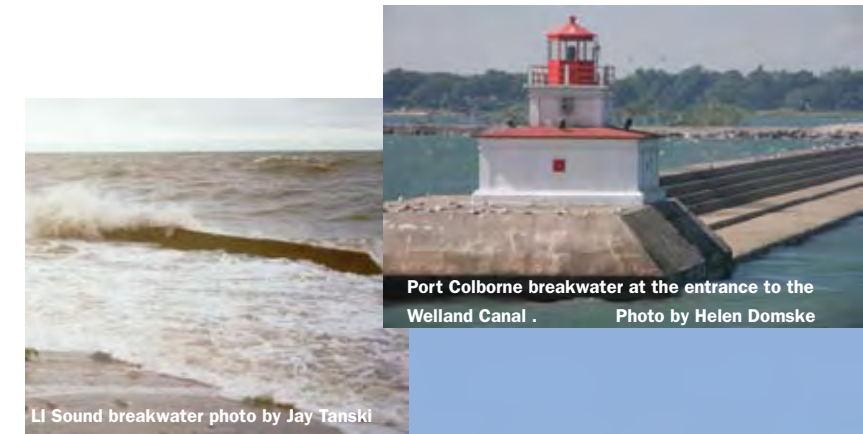
With all of his international work, Dr. Liu warns that with global climate change and the danger of storm surge, breakwater designers and engineers must be more innovative.

Dr. Liu has spent some time in Louisiana, post-Katrina. His recommendation is that designers use a multi-layered system of a submerged breakwater and the natural environment of the wetlands. "These multi-layered systems don't have just one levee," he observes, "The design must consider the effects of wetlands and forests on wave heights before waves come into contact with the manmade structures."

Considered a world expert on the subject, Dr. Liu was called to Sri Lanka after the devastating December 2004 tsunami where he helped to calculate the wave forces that brought about unparalleled destruction and loss of human life. This sobering experience led Dr. Liu to feel even more strongly about developing early warning systems especially in the Pacific regions where earthquakes occur almost daily and the potential for tsunamis is great.

Dr. Liu's NYSG-funded project is culminating in a practical user's manual for the numerical model. His colleagues at the Universidad de Cantabria in Santander, Spain are already using this manual to calculate wave forces on the northern coast of Spain. Warning systems coupled with efficient breakwater design using the numerical model have the potential for keeping coasts and their inhabitants protected world wide.

— Barbara A. Branca



Port Colborne breakwater at the entrance to the Welland Canal . Photo by Helen Domske



LI Sound breakwater photo by Jay Tanski

Photo courtesy of Dr. Philip L.-F. Liu



# IMPROVING STORM SURGE FORECASTS FOR METRO NY

## Research team makes advances in high-resolution modeling

If a category-3 hurricane hit New York City, the Army Corps of Engineers estimates that nearly 30 percent of the southern tip of Manhattan would be flooded. Accurate flood forecasts are crucial to emergency managers planning for impending storms, especially in a city with more than 18 million residents and billions of dollars of infrastructure.

A report in the June '08 issue of the Bulletin of the American Meteorological Society by **Dr. Brian Colle** and his colleagues at the School of Marine and Atmospheric Science at Stony Brook University (SoMAS) offers hope that a new high-resolution storm surge modeling system will better be able to predict flood levels and when flooding will occur. The report also warns that flooding is dependent



Several members of the Stony Brook Storm Surge Team (from left to right), Drs. Roger Flood, Malcolm Bowman and Brian Colle flank NYSG Acting Director Ms. Cornelia Schlenk at Stony Brook University's 50th Anniversary Time Capsule celebration. A copy of the teams' recent report was added to the Time Capsule, to be opened in 50 years. Photo by Barbara A. Branca



This screen capture from the Stony Brook Storm Surge Team's Website (<http://stormy.msrc.sunysb.edu>) shows observation stations in the NY metro area. The data from these stations aids in accuracy of the storm surge model.

not just upon the intensity of the tropical storm, hurricane, or nor'easter, but also on the local phase of the tide at the time of the storm.

In a project funded by New York Sea Grant, the research team tested the utility of coupling a state-of-the-art atmospheric model with an ocean model from the Stony Brook Storm Surge (SBSS) system in order to predict storm surges for the NYC metropolitan region. "Ultimately, the goal is to provide emergency managers with a range of possibilities as to what may happen as the result of a storm, and this approach shows great promise," says Dr. Colle.

Colle and colleagues tested their combined model against Tropical Storm Floyd and a nor'easter from December 1992, and found the model predicted peak water levels comparable (within 10 percent) to those measured during the storms at several water level gauges around the region.

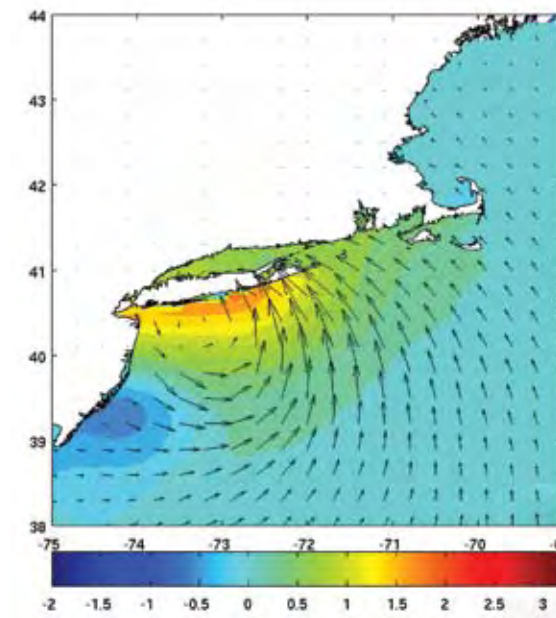
The modelers also performed simulations to assess the impact of parameters such as local tide level and wind intensity on flooding severity. Model simulations showed that if Tropical Storm Floyd had arrived in New York City a week earlier, coinciding with a spring high tide, water levels would likely have been high enough for minor flooding to occur.

Another simulation, which used wind levels of a category-1 hurricane timed to arrive at spring high tide, predicted water levels likely to have caused significant flooding. These results suggest that the New York City metropolitan region was spared from flooding during Tropical Storm Floyd only because the storm's winds had weakened before reaching the region and because the strongest winds luckily occurred during local low tide.

"We're playing Russian roulette in some sense with these storms coming up the coast," says Colle. "If we have a high tide or spring high tide when we have one of these events, then we're in trouble."

Storm surge flooding could threaten billions of dollars of property and have a grave impact on the lives of the millions of people who live in New York City. During the December 1992 nor'easter, storm tides over-topped some of the region's seawalls for only a few hours, but managed to flood the NYC subway and the PATH train systems at the train station in Hoboken, New Jersey, shutting down these transportation systems for several days.

As sea level rises, New York City becomes even more vulnerable to storm surge flooding. It takes high water levels of only 5 to 5.75 feet above mean sea level to cause flooding over some of the southern Manhattan Island seawalls. "Storm tides have exceeded 5.5 feet eleven times since 1980 according to tide gauge records at the Battery," says **Jay Tanski**, New York Sea Grant Coastal Processes



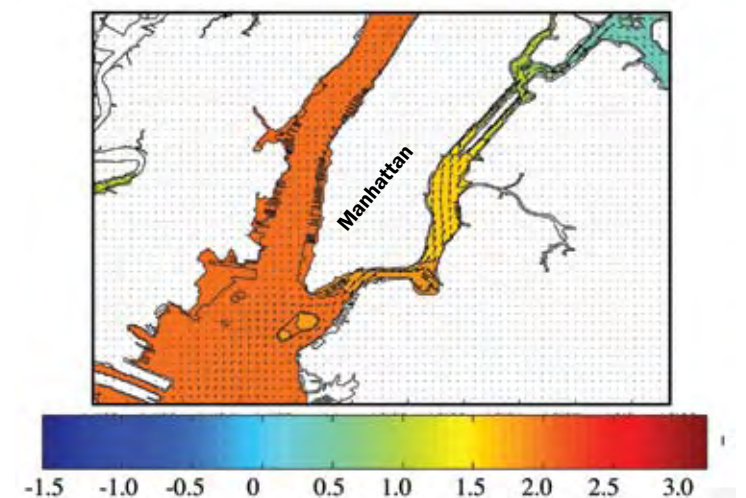
The Stony Brook team simulated Hurricane Gloria, the destructive hurricane of September 1985 and created a 42-hour "hindcast" of its landfall over Long Island. This advanced circulation model (ADCIRC) simulation of the hurricane (left) shows the height of the storm surge indicated in meters by color. It also shows the surface wind vectors. The map on the right shows (in orange) how the Stony Brook model correctly predicted flooding around the tip of Manhattan (white) during the December 1992 nor'easter. For both the hurricane and nor'easter, the models present simulations very close to the reported data of the actual storm events.

Extension Specialist. Global warming is expected to increase the rate at which sea level rises from approximately one foot per century to 1.64 – 2.46 feet per century. However, this rise is only going to be adding incrementally to an existing problem. "The highest recorded storm tide is about 7.5 feet above mean sea level which occurred during Hurricane Donna in 1960. Studies indicate the 100 year storm (a storm with a one percent chance of occurring in a given year) could raise the water to 15 feet if waves are included," adds Tanski.

"The vulnerability of the area speaks for itself as we've already had cases of flooding," says Colle. "When coupled with sea level rise, it's not going to take much of a storm to cause flooding as we go into the coming decades, so we are working to provide better forecasting of these events in the future."

These forecasts will be of great use to the managers and emergency planners such as the Port Authority of New York and New Jersey. Says Chief Engineer **Frank Lombardi**, "As the Port Authority moves forward in developing adaptive strategies to climate change, it is clear that tools such as the storm surge modeling system developed by the Stony Brook Team are invaluable to planners, designers and policy makers responsible for public transportation infrastructure."

— Leslie Taylor and Barbara A. Branca



## Stony Brook Storm Surge Team

The faculty and students that make up the team include: Malcolm Bowman, Frank Buonaiuto, Thomas Di Liberto, Roger Flood, Douglas Hill, Robert Hunter, Alexander Mintz, Katherine Rojowsky and Robert E. Wilson. Some of the results of the team's findings will be presented at the American Meteorological Society meeting in early 2009. See page 9 for related story.



... for more on storm surge prediction



Pictured below: (1) A Ponar grab pulled up mud samples for biological studies of the Lake's benthic animals, including worms, snails, crustaceans and insect larvae. But, (2) as NYSG's Helen Domske pointed out to Wisconsin Sea Grant's Jim Lubner, what came up most were invasive zebra and quagga mussels. Also collected (3) *Cladophora*, a common filamentous algae, displayed here by Buffalo teacher Michelle Tabone, alongside researcher Dr. Gregory Boyer.

Though *Cladophora* is not harmful to humans, Domske says, "The problem in Lake Ontario is that when storms cause it to break off, dead sections pile up near the shore, where they rot and create an anoxic environment for bacteria – including botulism. Botulism outbreaks have killed thousands of fish and waterfowl."

Photos by Paul C. Focazio



"If you come away with nothing else, you've seen first-hand that the Great Lakes is an amazingly complex system," said SUNY College of Environmental Science and Forestry researcher **Dr. Gregory Boyer**, addressing over a dozen teachers who just completed a week-long teaching cruise on Lake Ontario. The educational expedition, aboard the U.S. Environmental Protection Agency's 180-foot *R/V Peter L. Wise Lake Guardian*, was led by NYSG Coastal Education Specialist **Helen Domske** and made possible by the Center for Ocean Sciences Education Excellence (COSEE) Great Lakes.

The 16 fourth to tenth grade teachers (pictured above) – from New York schools in Appleton, Buffalo, Chittenango, East Aurora, Silver Creek, Sodus, Syracuse and Williamsville, as well as schools in Ohio, Illinois, Michigan and Minnesota – began their voyage with Domske, Boyer and other researchers and educators in mid-July at the Erie Canal Harbor's marina in downtown Buffalo (see map on page 7 to track their journey).

Domske, who has conducted similar "Shipboard and Shoreline Science" workshops on Lake Erie as well as an excursion on Lake Ontario several years ago,



# Coast Watch

worked with the teachers to develop journals and teaching tools to bring back to their classrooms. And teachers acquired plenty of hands-on experience, from collecting and analyzing data throughout the Lake to touring the Eastern Lake Ontario Dunes and Wetlands Area and Salmon River Fish Hatchery during one stop in Oswego with **Mary Penney**, NYSG's Dune and River Stewards Coordinator.

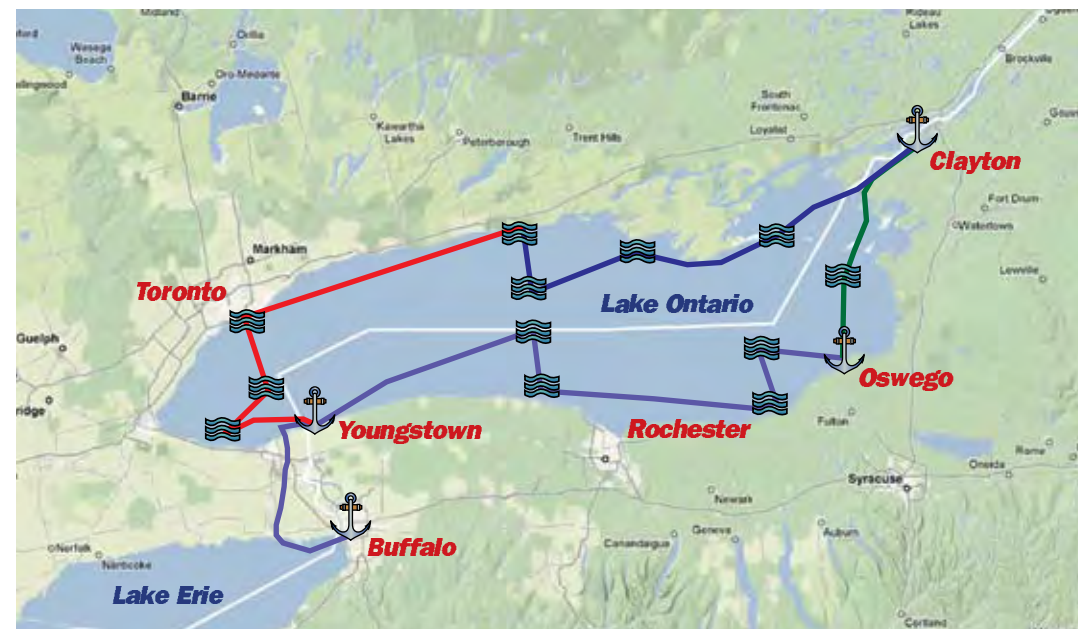
The *Lake Guardian* will take COSEE Great Lakes teachers out on Lakes Huron and Superior next summer. These and the U.S.'s other three "inland seas," Lakes Ontario, Michigan and Erie, form the largest group of freshwater lakes on Earth.

— Paul C. Focazio



On the docks of Youngstown's Coast Guard Station, U.S. Fish and Wildlife Service biologist Mike Goehle and his technicians safely shocked fish species, including a red horse sucker (pictured), smallmouth bass and yellow perch. The fish – which were temporarily stunned so they could be captured for monitoring – were placed in a cooler and identified for teachers and reporters from the *Buffalo News* and *Niagara Gazette* before release back into the Niagara River.

Water samples were drawn using a Rosette sampler to analyze chemistry and water quality – factors such as surface temperature, dissolved oxygen, pH and fluorescence (a measure of algae abundance).



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After leaving the dock in Buffalo, the *Guardian* traversed the eight locks of the Welland Canal before stopping in Youngstown, NY. In addition to docking at ports in Clayton and Oswego, the research vessel passed over a dozen "stations" (noted by wavy lines) in Lake Ontario where water, and bottom sediment samples were drawn for analysis. For more on the sampling aboard the *Lake Guardian*, field trips, media events in Clayton and Oswego, an interactive map, video clips and more, read Paul's daily blog at <http://coseegreatlakes.net/weblog> (Click on "Shipboard and Shoreline Science on Lake Ontario").



## TEACHERS GET A BIRD'S EYE VIEW



Educators learn much about New York City waterways at an all-day workshop designed by New York Sea Grant. Says New York Aquarium's Merryl Kafka (pictured far right) who hosted a second workshop this fall, "Coastlines are our lifelines, and without education, there is little compliance to protecting our natural resources and wonderful wetlands."

Photos by Nordica Holochuck

In May 2008, NYSG's Hudson Estuary specialist Nordica Holochuck presented a full-day professional development workshop to 28 educators at the American Museum of Natural History (AMNH) in Manhattan.

New York Sea Grant designed "The Bird's Eye View: Exploring Changes to New York – New Jersey Harbor Estuary Environments" to meet NYC middle school science curriculum guidelines. The effort was sponsored by the EPA NY-NJ Harbor Estuary Program. Holochuck says, "This workshop aimed to introduce teachers to low- or no-cost publicly accessible geospatial data. Our teaching materials included current and historic topographic maps, aerial photos and Internet resources, including the NYC OASIS Web Site. The teaching materials are an engaging starting point for students to learn more about NYC waterways, and inspire teachers to involve schools in harbor stewardship projects."

The workshop focused on seven Harbor Estuary Program restoration sites. The majority of participants were middle school teachers and the remainder educators from community or environmental education organizations.

The workshop proved such a great success that **Merryl Kafka**, Curator of Education from

the New York Aquarium, invited Holochuck and her team to repeat the workshop for the New York State Marine Educators Association at the Aquarium in September 2008. "This workshop is an excellent professional development opportunity for an introduction to estuarine ecology, Web site resources, and the use of the Aquarium as a partner in education," says Kafka. The NY Aquarium is a federally designated Coastal Ecology Learning Center and part of Coastal America.

NYSG also collaborated with **Susan Hoskins**, Image Analyst at Cornell University Institute for Resource Information Sciences. Hosted by AMNH, Senior Education Program Supervisor **Jay Holmes** introduced participants to the Museum's geospatial and estuarine learning resources. This effort was inspired by the recent AMNH special exhibit, Water H<sub>2</sub>O = Life, and as a capstone, the museum provided tickets to the exhibit to workshop participants

Says Holochuck, "I firmly believe that collaboration with existing educational institutions in New York City is key to effective programming for teaching about the importance of coastal waterways and habitat conservation and restoration. These workshops prove the great value of such partnerships."

— Nordica Holochuck

## HELPING TO MAINTAIN HEALTHY FISH STOCKS

The NYS Legislature committed \$1.5 million in the budget that was signed by Governor Paterson in Spring 2008 to continue research into pathogen-bearing organisms that threaten fisheries in waters around New York.

Declines in New York's major fisheries in the past two decades can be attributed to several different microorganisms: brown tide algae, QPX, MSX, *Perkinsus* (these two are the major pathogens of historically-abundant bivalves in NY and other parts of the northeast), Paramoeba, and a wide range of bacteria and viruses. All but brown tide are considered pathogens. NYS committed funds in 2000 to establish a diagnostic and fish pathology research facility, following a system-wide mortality event of American lobster stocks in Long Island Sound. Since then, the Marine Animal Disease Lab (MADL), which is located at the School of Marine and Atmospheric Sciences (SoMAS) of Stony Brook University, operates as a partnership among SoMAS, Cornell University, the New York State Department of Environmental Conservation and New York Sea Grant.

This most recent financial commitment from the Legislature will facilitate New York Sea Grant's work

with MADL to increase outreach to get the results out to the fishing community.

**Antoinette Clemetson**, NYSG Fisheries Extension Specialist, will be working closely with fish pathologists **Drs. Bassem Allam** and **Mark Fast** to educate anglers, commercial fishers and the general public, about common pathogens and teach the best practices to minimize the spread of undesirable pathogens. Special courses will be developed to teach simple techniques to live bait traders to minimize cross contamination of their products, which can be disastrous under circumstances of eminent disease outbreaks.

This outreach service will simplify communications between the fish pathologists and commercial fishers who are in the best position to report abnormalities in fisheries.

— Antoinette Clemetson

Dr. Bassem Allam, fish pathologist at the Marine Animal Disease Laboratory (foreground), and Sea Grant Scholar Qianqian Liu conduct experiments on hard clams, *Mercenaria mercenaria*, as part of Sea Grant's funded QPX research.

Photo by Barbara A. Branca



## SCHOLAR DI LIBERTO WINS MATTICE TRAVEL AWARD

In October 2008, **Thomas Di Liberto**, a Master's candidate at Stony Brook University's School of Marine and Atmospheric Sciences (SoMAS) won the Mattice Sea Grant Scholar Travel Fund Award.

Di Liberto, a Cornell University graduate, is doing his graduate work under **Dr. Brian Colle** of the Stony Brook Storm Surge Team (see page 5). For his Master's thesis, Di Liberto focused on how accurately the new model predicts weather conditions during major storms such as Hurricane Gloria that struck Long Island in 1985. He will use these funds to travel to Phoenix, Arizona where he will present the verification of the Stony Brook Storm Surge Model at the 89th Annual Meeting of the American Meteorological Society in January 2009.

— Barbara A. Branca



Dr. Jack Mattice, former Director of NYSG (left), presents the Mattice Sea Grant Scholar Travel Award to graduate student Thomas Di Liberto of Stony Brook University's School of Marine and Atmospheric Sciences.

Photo by Barbara A. Branca



# Baker Wins Prestigious Extension Award



NYSG's Dale Baker (center) received the William Q. Wick Award. He is congratulated by Dr. Leon Cammen (right), director of the National Sea Grant College Program and Jim Murray (left), Deputy Director of the NSGCP.

Photo by Barbara A. Branca

At the September meeting of the National Sea Grant Extension and Communications Leaders in Seattle, Washington, New York Sea Grant Associate Director and Extension Leader **Dale Baker** (center) received the William Q. Wick Award for Visionary Career Leadership. The award is the highest honor given to a Sea Grant Extension leader and is named for one of the founders of Sea Grant Extension. Baker, who has been NYSG's extension leader since October 1995, began his Sea Grant career in the early 1970s working as an agent first at New York Sea Grant and then Minnesota Sea Grant. Baker plans to retire at the end of 2008.

— Barbara A. Branca

# New York State Steps Up Battle Against Invasive Species

In response to the problem of invasive species, NY established an *Invasive Species Task Force* to explore how the State could best address this growing issue. In late 2005, the Task Force submitted its 146-page report to the Governor and Legislature containing a number of recommendations, including:

- Establish state leadership structure to coordinate invasive species efforts
- Produce a comprehensive invasive species management plan
- Allocate resources for invasive species efforts
- Establish a comprehensive invasive species education and outreach effort
- Integrate invasive species databases and information clearinghouses
- Establish a center for invasive species research
- Recognize and fund invasive species demonstration projects.

In 2007 legislation, the *New York Invasive Species Council* was created and charged with implementing initiatives to

protect native species and prevent the spread of invasive plants and animals. The Council will continue the work begun by the Task Force and will ensure that the recommendations are implemented. The Council will enhance the State's ability to fight the invasive threat to NY's biodiversity, food supply, recreation, and human health. The law also created the *NY Invasive Species Advisory Committee* to advise the Council.

Since 2006, more than \$11 million has been added to the *NYS Environmental Protection Fund* for invasive species programs, including grants to eradicate invasive species, the creation of an *Invasive Species Research Institute* at Cornell University, a *NY Invasive Species Clearinghouse* (co-located with *NY Sea Grant's National Aquatic Nuisance Species Clearinghouse*), and statewide public outreach efforts through Cornell Cooperative Extension. Most exciting is the development of *Partnerships for Regional Invasive Species Management* (PRISMs) to involve a wide range of public and private stakeholders to work together to combat invasive species locally and regionally.

— Chuck O'Neill



... for more on Chuck O'Neill's testimony before Congress related to New York State's invasive species

# LAST WAVE

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**New York Sea Grant Communications**  
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## Journal Reprints

A standard protocol for stable isotope analysis of zooplankton in aquatic food web research using mass balance correction models. P.M. Smyntek, M.A. Teece, K.L. Schulz, and S.J. Thackeray. 2007. *Limnology and Oceanography* 52(5): 2135-2146. Pub ID# 3163. Free

Economic impacts of zebra mussels in drinking water treatment and electric power generation facilities. N.A. Connelly, C.R. O'Neill, Jr., B.L. Brown. 2007. *Environmental Management* 40: 105-112. Pub ID# 3125. Free

New York City's vulnerability to coastal flooding storm surge modeling of past cyclones. B.A. Colle, F. Buonaiuto, M.J. Bowman, R.E. Wilson, R. Flood, R. Hunter, A. Mintz, and D. Hill. 2008. *Bulletin of the American Meteorological Society* 89(6): 1-13. Pub ID# 3165. Free

These publications relate to Dr. Liu's older breakwater research Breaking waves over a mild gravel slope: Experimental and numerical analysis. J.L. Lara, I.J. Losada, P.L.-F. Liu. 2006. *Journal of Geographical Research* 111(C11): doi: 10.1029/2. Pub ID# 3168. Free

Scattering of short-wave groups by submerged horizontal plate. P.L.-F. Liu and M. Iskandarani. 1991. *Journal of Waterway, Port, Coastal, and Ocean Engineering* 117(3): 235-246. Pub ID# 58. Free

Waves trapped along a breakwater. P.L.-F. Liu and C.J. Lozano. 1991. *Wave Motion* 13(3): 253-260. Pub ID# 357. Free

## Collaborative Publications

Information Needs for Lake Ontario: The Great Lakes Regional Research and Information Network Search Conferences. T.B. Lauber, T.L. Brown. 2008. 61 pages. Available in pdf.

The Use of Models in Great Lakes Decision Making: An Interdisciplinary Synthesis. J. Manno, R. Smardon, J.V. DePinto, E.T. Cloyd, S. Del Granado. 95 pages. 2008. Pub ID# 3160. Free

Native Plants and Pollinators. New York Sea Grant. 2008. 2 pages. Free. Loss of native habitats is a major concern in rapidly developing areas. Homeowners and others can help by incorporating native plants into their landscapes. This fact sheet is for homeowners and others interested in using native plants and helping to provide habitat for native pollinators which are threatened by loss of natural areas. Available in pdf only.



## Land Use Planning: An Informative CD for Communities Concerned with Water Quality

Griffith. Harmon. Hilton. Port Roosevelt. If these communities are unfamiliar to you, it's because they are fictitious places. Although based on New York State communities, much of the content of this CD is generic enough to be used or adapted by educators in other locations. This CD provides basic information on land use planning as it relates to water quality concerns and provides four planning scenarios based on four fictitious but representative New York State communities and accompanying PowerPoint presentations. The target audience for the CD includes local decision makers such as planning board and zoning board members as well as extension educators. Copies available from Robert Kent, Senior Extension Associate, 631.727.3910, rjk13@cornell.edu



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## STRIPED BASS

Striper action heats up in September into fall, when surfcasters descend on LI's east end beaches in search of trophy fish. It is a special treat to see these fish schools ride the tides at sunset. Conservation measures that were implemented in response to the stock decline in the 1990s helped to rebuild the local stocks. Presently, anglers fishing south of the George Washington Bridge (GWB) can keep up to two fish – one fish between 28-40 inches and another fish bigger than 40 inches; while anglers fishing north of the GWB (e.g., Hudson River, Tappan Zee, etc.) can keep one fish 18 inches long. Passengers fishing from licensed party/charter boats keep two fish each 28 inches. Fish consumption advisories for PCBs limit consumption of stripers from certain ocean areas to one meal per week for everyone. For women of child bearing age, pregnant women and children, the advisory says to eat no more than one meal per month or less for striped bass caught in western LI Sound, the New York City area, and the Hudson River.

– Antoinette Clemetson and Ken Gall

[@nyseagrant.org](http://nyseagrant.org)

...for more on striped bass regulations and advisories



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*Bringing Science to the Shore*

# SEAFOOD

## CORNER

### *Poached Striped Bass With Gewurztraminer*

#### Ingredients

- 4 6 oz. bass fillets, boneless, skinless
- 1 cup shallots chopped finely
- 2 tbsp. olive oil
- 1 tbsp. salt
- 1 tsp. pepper
- 2 cups Gewurztraminer\* wine
- 1 tsp. ginger, fresh grated
- 15 grapefruit sections
- ½ cup mint leaves, chopped
- ½ cup cold butter or fish stock

#### Method

Season bass with salt and pepper. Coat large sauté pan with oil and shallots. Place fish in pan and pour wine over fish to almost cover. Cover pan with foil and bring to a boil. Simmer until fish is just cooked (about 10 min.) and remove fish to warm plate. Reduce cooking liquid by half and add ginger and grapefruit. Stir in cold butter or fish stock. Add fish and garnish with mint leaves.

This dish can also be made by substituting striped bass with weakfish, tilefish, sea bass, catfish, mahi-mahi, snapper or grouper. Serves 4

Source: *The Food and Wine of the North Fork: Historical Anecdotes and Recipes*, by John Ross

\*Recommended wine for cooking and drinking: Long Island or Finger Lakes Gewurztraminer



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