



Photo courtesy of Barbara A. Branca

# Reflections

# Coastlines

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It was late autumn in 1971, time for fall fishing, closing summer cottages or getting boats secure for winter. Some of us were listening to John Lennon's new single "Imagine" while the federal government was imagining a new player on the New York environmental research landscape. With funding to study the impacts of power plants, contaminants in our waterways, and the health of fisheries, New York became part of the infant **National Sea Grant College Program**.

Reflecting on 35 years of research, extension and educational successes relevant to New York's marine and Great Lakes resources is impossible to cover in a few pages. So to mark our 35th anniversary, we've told our *Coastlines* stories through the perspective of some of the people who live, work and play along New York's shores. We also thought it would be a good time to debut some new elements of *Coastlines* that echo our redesigned Web site, [www.nyseagrant.org](http://www.nyseagrant.org), to be launched later this winter.

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# From the Director

This newsletter's lead article reflects on examples of NYSG's contributions toward solving resource problems, but NYSG has recently begun to contribute to a new issue that has the potential for even larger future contributions. On August 9, 2006, New York became the second state to incorporate ecosystem-based management (EBM) into the governance of coastal resources when Governor Pataki signed into law the "New York Ocean and Great Lakes Ecosystem Conservation Act." The Act is New York's response to reports by the Pew Commission and President's Commission on Ocean Policy.

The Act is more than a landmark in NYS resource management. It applies to the marine coasts, including coastal bays, the New York Bight and the Hudson River estuary to the Troy Dam, as well as to Lakes Erie and Ontario and the Niagara and St Lawrence Rivers and their watersheds. The Act recognizes the interconnection of land, air and water resources, and includes humans in the ecology of resource decisions, making it state policy "to conserve, maintain and restore healthy, productive and resilient coastal ecosystems to provide the resources that citizens want and need." The law also establishes a council, made up of the leaders of eight state agencies and the Chancellor of SUNY, to lead the effort.

The potential impact of the effort is huge, but the path that it sets us on will not be simple, short or cheap. EBM is in its infancy and the tools that have been used mostly require assumptions about

how the anthropogenic, chemical, physical and biological processes interact within the ecosystem. Those assumptions result in uncertainty in scientific predictions. Advances in EBM are needed to reduce these uncertainties.

NYSG is playing a role in advancing EBM in the State by preparing a research plan for the New York Ocean and Great Lakes Ecosystem Conservation Council to gain the understanding of ecosystem processes and structures (socioeconomic as well as ecologic) that are important in EBM. This involves surveying resource managers to determine information needs to improve EBM at two demonstration sites—the Sandy Creeks watershed in the dunes area at the eastern end of Lake Ontario and the Great South Bay on the south shore of Long Island. With those needs as starting points, researchers at meetings near each of the areas will be asked to identify and prioritize research projects required to supply the desired information as well as estimate their costs. The research plan, as well as a process to identify the needs for other areas, will be completed before the end of the year.

What happens then depends on the next NYS administration. We hope that there will be a willingness to commit the funds and agency effort to this long term focus so that NYSG's 35th year will witness further success in developing objective science to aid resource decision-making.




**Vice-Admiral (ret.) Conrad Lautenbacher, Undersecretary of Commerce for Oceans and Atmosphere, was the keynote speaker at July's National Marine Educators Association conference, cosponsored by NYSG. Over 500 educators attended the weeklong event at Long Island University, Brooklyn Campus and Kingsborough Community College. From left to right are: NYSG staffers Kimberly Graff, conference exhibit chair and LIS outreach coordinator; Barbara Branca, NYSG communications manager; Laura Bartovics, NY/NJ Harbor Estuary outreach coordinator and Estuary Live host; and coastal educator Helen Domske who presented the COSEE (Centers for Ocean Sciences Education Excellence) Great Lakes Program.**

Photo by Mark Oswell, NOAA Fisheries Service

# Sound Reflections

Working down in the muck of Long Island Sound (LIS) is what hooked **Karen Chytalo** on the wonders of being a marine scientist. As an ambitious grad student under **Jerry Schubel**, then Dean and Director of Marine Sciences at Stony Brook University, Karen studied contaminants—PCBs specifically—in LIS with funding from a very young NYSG program. It was the decade of the 1970s, when the environmental movement was gaining momentum and new Sea Grant programs were growing along the nation's coasts. Soon the NYSG offices would move from the state capital in Albany to the state university campus at Stony Brook on Long Island.

## *Hypoxia in Long Island Sound*

According to Chytalo, now director of the NYSDEC's office of Marine Habitat Protection, back in the 1950s people started documenting changes occurring in LIS, one of the nation's most economically and ecologically significant estuaries. By the late 1970s, scientists said hypoxia, the reduction in the Sound's dissolved oxygen (DO) content, was the greatest threat to LIS's health. Says Chytalo, "By the 1980s, conditions of low DO coupled with winds caused numerous 'jubilee' hypoxia events in LIS embayments."



Examining the muck at the bottom of Long Island Sound are Karen Chytalo and William Wise when they were Sea Grant funded graduate students at Stony Brook University's Marine Sciences Research Center (MSRC) in the 1970s. Wise, who was an acting director of New York Sea Grant in the mid-1980s, is now MSRC's Associate Director.

Photo courtesy of New York Sea Grant



Researcher Larry Swanson is also an advisor to the Head of the Harbor/Nissequogue Joint Coastal Commission. He's pictured here with Suffolk County Legislator Vivian Vilorio-Fisher during Harbor Day, a day when non-polluting kayaks and canoes dot Stony Brook Harbor.

Photo by Barbara Branca

These jubilees were no cause for celebration, but they did galvanize the community into action. A bi-state effort to learn more about hypoxia helped form the Long Island Sound Study (LISS), authorized by Congress in 1985 and sponsored by the US Environmental Protection Agency (EPA) and the states of Connecticut and New York. Says Chytalo, who was the LISS coordinator in 1986, "There was a realization that it would take a regional effort to address and correct conditions in LIS. Citizens thought this would happen quickly, but scientists had to first develop models—still in their infancy—and figure out what could actually be done that was cost effective."

Scientists had ascertained that low DO levels get even lower with the input of excess nutrients from the surrounding watershed. By controlling nitrogen inputs, like those from sewage, DO levels could be better controlled. They could see the direct effects of low oxygen levels on fisheries and other marine resources through trawl surveys done across the Sound. In 1990, New York and Connecticut developed a phased approach to limit sewage treatment plant discharges of nitrogen into LIS. These limits are set according to EPA approved Total Maximum Daily Load (TMDL) for nitrogen discharges from sewage treatment plants as mandated by The Clean Water Act.

Later that decade at Stony Brook University's Marine Sciences Research Center, **Larry Swanson**, director of the Waste Reduction and Management Institute and **Bob Wilson**, a physical oceanographer, found that physical and climatic

continued on page 4

# Sound Reflections



This 1980s menhaden fish kill was due to hypoxic conditions at a Long Island Sound dock. Photo by Rick D'Amico, NYSDEC

factors play an important role in controlling dissolved oxygen levels in LIS. With funding from NYSG, they examined historical NYC data from a monitoring station near Hart Island in western LIS where oceanographic data have been recorded since 1914. They found that DO data from the 1990s showed declining summertime DO concentration in bottom waters over the past five decades. The pair also examined the hydrography, salinity, temperature and seasonal stratification and concluded that DO levels are controlled, in part, by physical and climatic factors which are beyond human control. Hart Island, a hotspot for hypoxia, lies near the mouth of the East River close to the outflow of many NYC sewage treatment plants and is hemmed in by the Hempstead sill,

a relatively shallow region that serves to isolate it from the deeper waters of the Sound. The research suggests that this particular hydrology is what may cause the onset, severity and duration of hypoxia. In other words, a predictor of hypoxia is “location, location, location.”

Results from this project may limit the anticipated effectiveness of implementing mandated TMDLs at sewage treatment plants. Says Swanson, “This precise analysis of hypoxia’s cause is of great importance especially when municipalities and managers propose upgrades from secondary to tertiary sewage treatment.” Upgrading sewage treatment at great cost will not necessarily relieve hypoxic conditions.

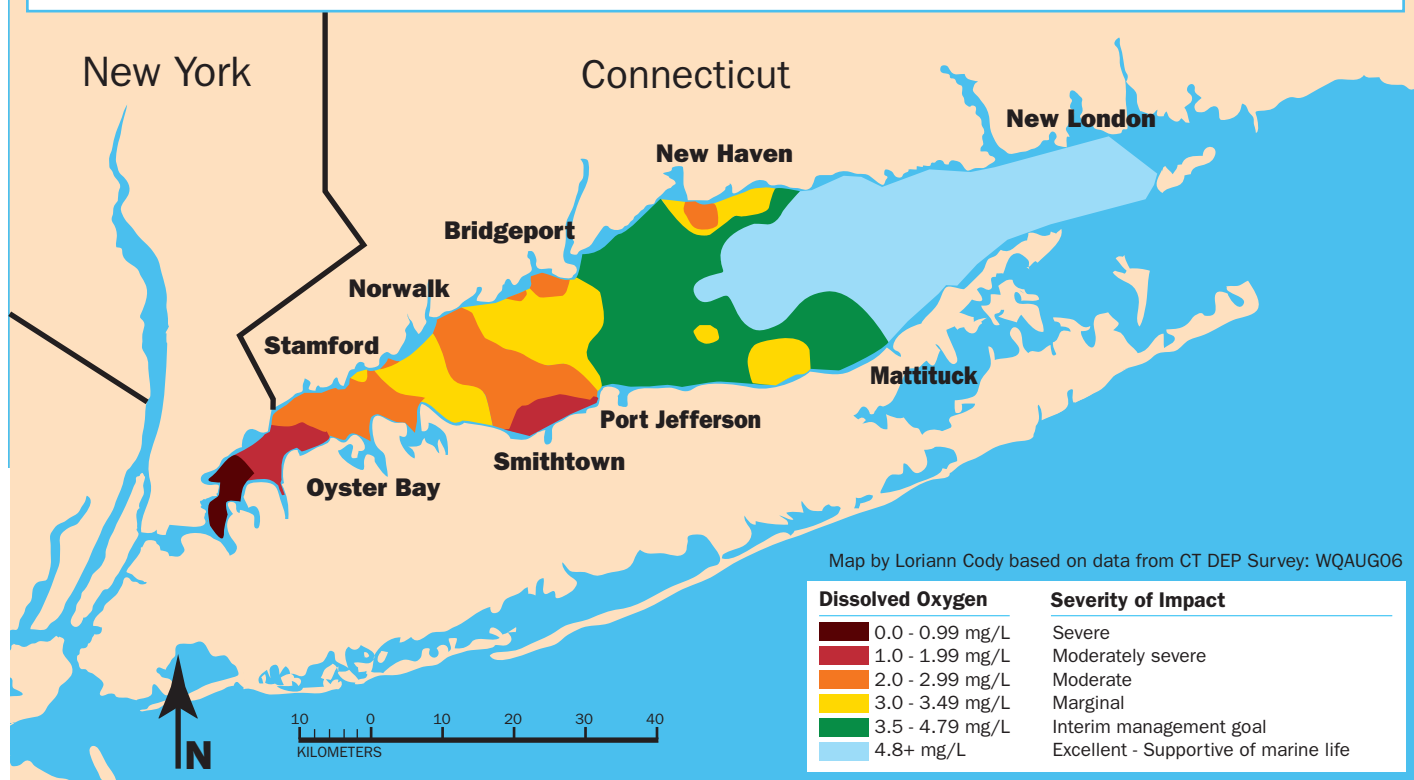
From 1994 to 2004 municipalities along the Sound have improved sewage treatment and successfully reduced nutrient loadings by 24 percent according to the *Sound Health 2006 Report* published by LISS. Yet summer hypoxia persists. Since Swanson’s NYSG funded project, he was asked by NYSDEC to look at the hydrology of Long Island embayments that exhibit hypoxic conditions each year. In one such analysis, Swanson found that



... for more of the Long Island Sound Study’s water quality report for 2006.

## Dissolved Oxygen in Long Island Sound Bottom Waters

August 1 - 7, 2006



**“Community groups and government share issues, money and resources,” observes Eric Swenson of the Hempstead Harbor Protection Committee. Community volunteers learned how to monitor water quality and the Town of Oyster Bay contributed to their efforts by supplying a water monitoring boat and providing laboratory services.**

Photo of Hempstead Harbor by Eileen Keenan.



Eatons Neck and Crane Neck on either side of Smithtown Bay set up a gyre that reduces the water’s flow and keeps the bay sluggish. In this case, moderately severe hypoxia is likely caused by currents and density of the water column rather than nitrogen inputs from waste treatment.

### *Working together to address stormwater runoff*

NYSG’s **Eileen Keenan** is the manager of the NY NEMO program which educates municipal officials about nonpoint source pollution. Says Keenan, “Tremendous advances have been made to clean up the aquatic environment by controlling pollution from point sources such as industries and sewage treatment plants. Unfortunately, we have not done enough to control runoff from diffuse, or nonpoint, sources. Today nonpoint source pollution, or runoff, remains a primary cause of water quality problems. Runoff from urban areas is a major cause of water quality impairments to estuaries such as Long Island Sound.”

In Keenan’s work with municipalities in Nassau and Suffolk Counties, she has emphasized the watershed approach. “Watershed boundaries are irrespective of governmental boundaries. Effective protection and restoration of our waterways necessitates multi-jurisdictional partnerships and collaboration.” Her nonpoint source pollution education program began with north shore community groups such as the Hempstead Harbor Protection Committee (HHPC) and the Manhasset Bay Protection Committee (MBPC), Long Island’s first and second watershed-based inter-municipal coalitions to follow the watershed model.

The HHPC, founded in 1995, represents a success story. **Eric Swenson**, its current Executive Director, has spent the last 24 years in government in Nassau’s Town of Oyster Bay and has seen many changes. “In the 1970s,” says Swenson, “community groups and governmental organizations were often distrustful of each other. There were unimproved sewage treatment plants which caused beach closures. The NYS Department of State and the federal governmental kicked off the water clean up. Those problems are largely resolved now but the cleaner harbor faces now intense development pressure.”

In recent decades, citizen and environmental groups have matured and found that they can work well with government. **Aldona Lawson**, the Town of Oyster Bay’s representative to the HHPC from its inception, says, “In Glen Head, Glenwood Landing, and Sea Cliff, the committee worked closely with community groups that had a real interest in acting as stewards of their waterfront. This was the first time that different municipalities and community groups from the same watershed worked together to coordinate their efforts and support one another.”

NYSG’s Keenan also has provided stormwater education for the Manhasset Bay Protection Committee (MBPC). **Patrice Benneward**, its director, grew up in Glenwood Landing and has been active on both committees. “When I was small,” recalls Benneward, “even though Hempstead Harbor was just down the street, we had to travel to Mill Neck to see egrets and other shorebirds.” Birds rarely frequented the harbor in those days and abandoned barges marred the view of the western shore.



... for more on water quality, stormwater runoff and other NY NEMO publications.

# Stewardship Spreads

For six years now, college students have served as stewards along several public areas of Lake Ontario's shoreline, educating visitors about the value of its beaches, dunes and wetlands. This past summer, the stewards program – managed by NYSG in cooperation with The Nature Conservancy, the NYS Department of Environmental Conservation and the NYS Office of Parks, Recreation and Historic Preservation – expanded to cover public access points along the Salmon River corridor through the fall fishing season (see map below).

Signs and snowfencing, like those pictured here at Southwick Beach State Park, help to inform beach goers about the fragility of dunes along Lake Ontario's eastern shoreline.

Photo by Paul C. Focazio



At the start of this year's season, NYSG hired **Mary Penney** as its new Stewards Program Coordinator. Penney, a former DEC River Steward, environmental educator and angler census technician, supervised this year's 10 stewards.

Serving as goodwill ambassadors, the stewards helped promote environmentally-sound recreational use of areas along the Salmon River and Lake Ontario. "They're the first line of communication between the public and agency partners," says Penney. "Not only do the stewards have the opportunity to educate lake and river users on responsible use, but they also provide land managers with insight on potential issues. They can talk about the importance of maintaining strong habitats not only for rare and endangered species, but for everyday backyard wildlife."

New York's 16.5 stretch of sand dunes, wetlands, woodlands, ponds, and creeks along the Eastern Lake



NYSG's Stewards Program Coordinator Mary Penney (far left) with dune and Salmon River stewards (back row, l to r) Alex Studdert, Kyle McCanney, Mike Riegler, John Koltz, Norman Jones, Ryan Collins (front row, l to r) Charlotte Gay, Theresa Eveans, Joe Stredny (kneeling) and Ashley Quarella.  
Photo courtesy of Mary Penney

Ontario shoreline consists of roughly 9.8 miles of private and 6.7 miles of public land. Reaching from the mouth of the Salmon River north to the outlet of Black Pond, the area includes seven properties that are open to the public for outdoor recreation. These areas, most monitored by the dune stewards, include: Deer Creek Marsh Wildlife Management Area (WMA), Sandy Island Beach State Park, Sandy Pond Beach Natural Area, Lakeview Marsh WMA, Southwick State Park, Black Pond WMA, and El Dorado Nature Preserve. One of this year's six dune stewards, SUNY ESF junior **Norman Jones**, spent 30 hours a week in the vicinity of Black Pond, one of the lakeshore areas most in need of public respect.

"It was my job to ask people to follow the simple rules that apply to this fragile dune area," he says. "A steward's

The 173,000-acre Salmon River watershed, located in Oswego, Lewis, Jefferson, and Oneida counties, includes 26 NYSDEC-monitored public access points for fishing and recreation. In addition to rainfall, water comes to the Salmon River via natural springs, tributaries such as the Trout, Orwell, and Beaver Dam Brooks, and the Salmon River Reservoir. Artwork by Lorian CODY



presence on the beach is needed to deter violators 95 percent of the time. Our goal, though, was to create that level of compliance all the time, even when stewards aren't present. Through public education we prompt people to respect the environments that they use and enjoy and to help preserve the dune areas as a unique area of northern New York."

Sure, the dune stewards repaired snow fencing to preserve habitat along the lakeshore at Lakeview WHA, Sandy Pond Beach, and Deer Creek WHA. They also monitored visitor usage, engaged others in beach and shoreline cleanups, and walked many miles daily along Lake Ontario beaches in Jefferson and Oswego counties. And river stewards assisted state fish, wildlife and forestry staff on a variety of important tasks as well as helped with tours and maintenance at the Salmon River Fish Hatchery in Altmar. But, a number of the stewards went above and beyond these responsibilities, leaving behind somewhat of a legacy for those who would fill their shoes in future years.

"The management of the Salmon River stewards program really shows the importance of the overall watershed," says **Fran Verdoliva**, NYSDEC Salmon River Program Coordinator.

Salmon River Steward **Mike Riegler**, a 2006 SUNY ESF Natural Resource Management graduate, spread the word on a "leave no trace" program, one in a series of informative steward sessions planned through the summer and fall months. In preparation for his talk, Riegler wrote, "A recent NYSDEC angler survey indicated that more than 28,000 out-of-state anglers spent an average of \$43 per day in the area. Socially, the Salmon River corridor also provides a venue for the outdoor activities of camping, hiking, and hunting. Ecologically, the area is home to a diverse ecosystem filled

with flora and fauna. For these reasons, we need to enjoy the River while at the same time protecting its health."

Riegler cited seven key principles to support a "Leave No Trace outdoor ethics code," including leaving behind what you find, respecting wildlife, and minimizing campfire impacts. Riegler and the other stewards penned a series of articles to impact what they learned from their experiences this past summer and fall.

Here's a sample of some of the facts you'll find in this series, written by the stewards and printed in several local publications, including the *Jefferson County Journal*, *Lure of the Lake*, *Oswego County Weeklies*, and *Watertown Times*:

- ▶ Visitors to the Salmon River Falls in Altmar are standing on 110 feet of rock that holds millions of years of geologic history. Abundant marine fossils and rare fossils such as Eurypterids (water scorpions) and Trilobites (huge primordial water insects) can be found in our Oswego County bedrock. (**Charlotte Gay**, Salmon River Steward and a 2005 SUNY ESF graduate)
- ▶ The coastal and wetland habitats associated with Lake Ontario provide essential staging areas where migrating birds can stop to rest, feed, and be sheltered during long travels. Designated conservation sites and sanctuaries, such as El Dorado Nature Preserve, Derby Hill Bird Observatory, and the northern spit of Sandy Pond Beach, provide essential habitat for a variety of

birds. (**John Koltz**, Dune Steward and a Cornell freshman majoring in Earth Systems)

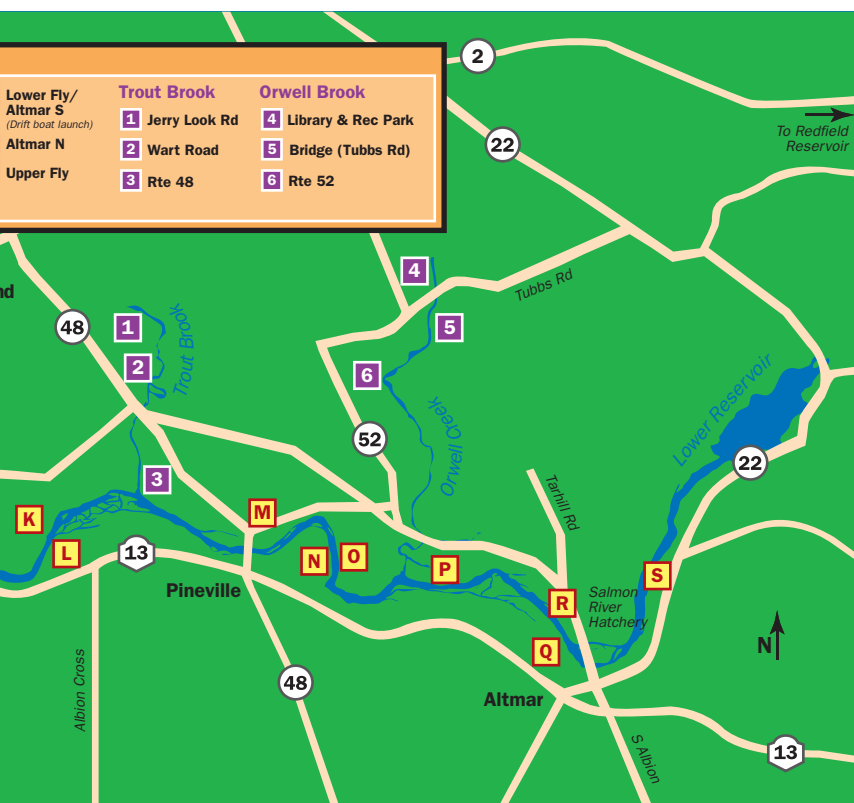
- ▶ At least 55 birds along with a dozen each mammal, fish, reptile and amphibian species call Deer Creek's marsh, cobble beach and surrounding waters their home. The area, known for its mature dunes with stands of anchoring trees, is also an important spot for certain fish species to spawn and migrating birds to stop on their journeys north and south. (**Joe Stredny**, Dune Steward and a SUNY Maritime College junior majoring in Marine Environmental Science)

— **Paul C. Focazio**  
with additional information from  
*Kara Lynn Dunn*



**Theresa Evans**, a dune steward and SUNY ESF freshman majoring in Environmental Studies, was involved in an invasive plant control project that included the release of biological agents at various locations along the eastern Lake Ontario shore's dune system. She's pictured here amongst some purple loosestrife, a very aggressive, non-native, water loving perennial with no natural predators in the U.S., where it was first introduced in the 1800s.

Photo courtesy of Mary Penney



... for more tips from the dune and salmon river stewards, Q and As, printable maps, and more.



In 1996, a \$15.7 million value was placed on the Salmon River fishery. Without the Salmon River Fish Hatchery in Altmar, Salmon River Program Coordinator Fran Verdoliva says “a fishery on that scale wouldn’t exist.” Welcoming 75,000 to 100,000 visitors from April through November each year, “it’s the prime hatchery that produces the fish for Lake Ontario and Erie,” he adds.

Photos this page courtesy of Oswego County Department of Community Development, Tourism and Planning

“What a difference 35 years makes,” says **Fred Kuepper**, an avid angler. “My first experience with Salmon River fishing was with my dad back in 1972. It was one of those father-son days where I was just happy to be with dad, my fishing guru. He had heard of efforts to stock the River with large salmon and trout and felt he needed to show me we could catch these things.”

How true Kuepper’s words of retrospect would prove to be, as fisheries managers reported late this past summer that they are excited but cautious about the finding that five to ten million Chinook salmon were naturally reproduced in the Salmon River in 2005. The finding comes from a NYSG-funded project carried out by SUNY College of Environmental Science and Forestry graduate student **Dustin Everitt**.

In fact, SUNY ESF Dean of Research **Dr. Neil H. Ringler**, project leader, says, “The calculations are actually quite conservative, and the number of juvenile Chinook for 2005 could easily have been close to ten million fish.” Everitt worked under the guidance of Ringler, assisted by **Michael**

**Connerton**, and with hydroacoustic analysis expertise from Cornell University’s **Dr. Lars Rudstam**, project co-investigator.

NYSG Fisheries Specialist **David B. MacNeill** says the finding comes after a litany of meaningful research conducted on the Salmon River by SUNY ESF, the NYS Department of Environmental Conservation (NYSDEC), the U.S. Geological Survey (USGS) and Sea Grant since the late 1970s.

“The good news now is that the Salmon River obviously has good habitat for natural spawning,” says MacNeill. Even better, the Salmon River and other Lake Ontario tributaries were recently touted for their strong draw with anglers. According to the NYSDEC’s Fall 2005 Lake Ontario Tributary Angler Survey, the total estimated angler trips from all 28 tributaries was 256,907. This 2005 estimate, of which 30 percent of the total trips took place on the Salmon River, represents about three times as many angler trips as were estimated on the open lake.

Estimated angler effort from the Lake’s boat fishery in 2005 was 1,119,080 angler hours or 85,576 angler trips from April through September. Estimated effort for the tributary fishery from September through November was 805,491 angler hours, or about 72 percent of the open lake effort.

The 2005 angler survey commenced the day after Labor Day on the Salmon River and mid-September elsewhere and ran through April 2006. It is the first comprehensive tributary survey since DEC’s 1984 New York State Great Lakes Angler Survey.

“A great deal of emphasis is placed on the importance of Lake Ontario’s fisheries and their economic impact on the local community,” says MacNeill. “But let’s not forget about



# Watch

the tributaries, where, ecologically, higher than anticipated numbers of natural salmon are being found. And, as we see in the DEC's angler survey, tributary expenditures are high economically as well."

"The charterboat industry usually is a driving force for decision-making at the 'State of the Lake' talks," MacNeill continues. "But a rise in angler effort and expenditures in streams such as the Salmon River will bring more and more tributary fishermen to the table now." He cautions, though, that both the Sea Grant study and DEC survey should not be viewed as divisive agents between the Lake and River folk. "What they show is that we have an array of world class fishing opportunities in the Lake Ontario watershed – both in the open waters of the lake and in the tributaries."

But does it take a different kind of angler to fish the Lake versus tributaries like the Salmon River? "The Salmon River is the first Lake tributary to have a lower catch limit to conserve fish populations," says **Connie Rodgers**, Manager of the Douglaston Run in Pulaski, which provides private access to some points along the Salmon River. "The difference here from the Lake is that people see this as a resource that's not as endless."



**A freshly caught brown trout on Lake Ontario was this angler's prize for the day back in the late '80s/early '90s, when then Salmon River Douglaston Run river keeper Fred Kuepper snapped the shot. Kuepper, an avid fisherman himself, currently runs an Outdoor Adventure Guide Service, online at [www.outdooradventureguide.net](http://www.outdooradventureguide.net).**



**While not a record-breaker, this Chinook salmon was caught by an angler on a driftboat trip from Altmar to Pineville in 2005. The largest sportfish caught to date? According to NYSDEC's freshwater fishing records, it is a 47 lb 13 oz Chinook salmon caught by angler Kurtis Killian in the Salmon River in September 1991.**

*Photos this page courtesy of Fred Kuepper*

"The Salmon River is the heart and identity of the community," says Rodgers. "It's a family destination now." And while many flock to the River during peak salmon season, between mid-Sept and October, Rodgers says more and more people are discovering that "It's a year-round fishery." While salmon and trout are the catches of the fall, Steelhead fishing is big news in the winter.

Part of the River's allure may come down to a simple game of dollars and cents. "There's less of an expense here," says Rodgers. "Even if you hire a guide, it's cheaper than a captain's fee for a day out on the Lake."

And there's a 'Kuepper connection' at Douglaston Run as well — he was the Run's first river keeper when the program began in 1987. For six years, Kuepper helped to, as he puts it, "create a sportfishing environment where anglers could fish as fishing was meant to be — where they could safely bring their families and rely on a good outing." As for turning anglers onto more ethical fishing practices and away from now banned practices such as snagging, where anglers would use multiple baited or non-baited hooks to maximize fish catch, Kuepper says, "Education through seminars, meetings, guiding, classes, and just one on one conversations was and remains key."

— **Paul C. Focazio**

*with additional information from Kara Lynn Dunn*



**... for Salmon River facts, more on Sea Grant-related research, the DEC angler surveys, and personal accounts through the years from avid anglers Fred Kuepper, Charles Knauf, and James Kelso.**



**Helen Domske and Dr. Greg Boyer, of SUNY ESF, demonstrate a Secchi disk to teachers aboard the *Lake Guardian*.**

Photo courtesy of L. Makeyenko

# Smooth Sailing for Great Lakes Education

The spring and summer of 2006 have been filled with many noteworthy Great Lakes education

programs sponsored by New York Sea Grant. On May 18-19, nearly 200 teachers and students from as far away as Indiana came to Buffalo as part of the 6th biennial Great Lakes Student Summit. The GLSS culminates in a two-day event where students come together to act as “student scientists” as they learn from each other and participating scientists and environmentalists who conduct workshops.

**Helen Domske**, NYSG Senior Extension Coastal Education Specialist, has been one of the organizers since the program’s inception. She also served as a workshop presenter, educating the students about invasive species in the Great Lakes.

During the Summit, students participated in educational workshops, and hands-on field trips, including a voyage on the Buffalo River and Lake Erie. The culminating event is the development of a Statement of Stewardship (S.O.S.), which reflects what they have learned during the summit and how the students can protect the Great Lakes. “Hearing the students read their S.O.S. and knowing that they are pledging to act as the next generation of lake guardians is a key component to the event,” says Domske.

Speaking of a real Lake Guardian, NYSG joined forces with other Great Lakes Sea Grant educators to run a week-long course in early summer for teachers aboard the 180-foot long U.S. EPA Great Lakes National Program Office research vessel, the *R/V Lake Guardian*. This maiden voyage for 16 teachers, six scientists and four Sea Grant educators focused on Shipboard and Shoreline Science on Lake Erie. The cruise was the first major event of the Center for Oceanic Sciences Education Excellence (**COSEE**) in the Great Lakes, a consortium of educators and scientists assembled to promote science

literacy through study of the Great Lakes, America’s inland sea. COSEE GL is sponsored by the National Science Foundation and the National Oceanic and Atmospheric Administration.

The teachers aboard the *Lake Guardian* learned first-hand beside scientists from four states, including **Dr. Greg Boyer**, a Sea Grant researcher from New York. A typical day included stops at research sampling sites along the lake where teachers actively collected information about water quality, physical conditions, and life forms in the water and on the bottom surfaces. After collecting samples, the teachers headed to the ship’s laboratories where they learned how to interpret new data and identify lake plankton and benthic invertebrates. Their information will be added to the EPA’s data, but more importantly it will become part of curricula in grades 4-10 and informal education centers in Ohio, Pennsylvania and New York.

Helen Domske had the opportunity to teach the enthusiastic crew of educators about Lake Erie and the damage that invasive species have done to the environment. Along with lectures and lessons, the teachers experienced Lake Erie’s sudden storms,



**Students learned about Niagara Falls and the Niagara River as one of the field experiences of the GLSS.**  
Photo courtesy of GLSS Committee

mayfly swarms, and the intricate interrelationships of wind, water, land and life in and around the lake. One of the national COSEE goals is to develop interrelationships with educators and scientists and this course provided many opportunities for teachers and researcher to work side-by-side aboard the ship.

The summer ended with a week-long course led by New York Sea Grant to teach Great Lakes educators about tropical marine ecology in Roatan, Honduras. With the marine focus of COSEE, the Great Lakes program wanted to teach educators how to make a connection between the Great Lakes and ocean environments. Through a series of “marine immersion” experiences, COSEE GL will help educators learn about the similarities and differences between salt and

freshwater environments. The Roatan trip was the first such course and the nine educators involved enjoyed the opportunity to learn about coral reefs, seagrass beds, and mangroves. NYSG’s Helen Domske served as one of the course co-leaders along with **Garry Dole** of ERIE 2 Board of Cooperative Educational Services. During the week, Domske was able to link Great Lakes environmental issues into their marine experiences, but there was no freshwater comparison to the thrill of snorkeling with a pod of bottlenose dolphins!

NYSG’s Great Lakes educational opportunities of this summer provided teachers and students with a great deal to think about as they start a new school year.

— Helen Domske



... to see more Great Lakes Student Summit pictures and read the students’ full Statement of Stewardship to discover how they plan to better protect the Great Lakes. Also, an 8-day blog offers a more detailed (and visual) account of what teachers learned aboard the Lake Guardian this past summer. And learn more about NYSG’s role in COSEE Great Lakes.



## The New Fulton Fish Market

On November 14, 2006 the Fulton Fish Market marked the first anniversary of its relocation to a brand new facility in the Hunts Point Food Distribution Center in the Bronx. Called the New Fulton Fish Market, 35 seafood wholesale businesses are now located in this new 400,000 square foot state-of-the-art temperature controlled facility. The move has equipped the largest collection of seafood wholesalers under one roof in the U.S. to meet the challenges of the 21st century and deliver high quality seafood products from across the U.S. and around the world to wholesalers, retailers, supermarkets and restaurants across the tri-state area. Visit the new market’s Web site at [www.newfultonfishmarket.com](http://www.newfultonfishmarket.com) for information about the market and each of the wholesale businesses located there.

New York Sea Grant’s Seafood Specialist has worked with Fulton Market for many years on a variety of issues related to HACCP and other regulatory requirements, sanitation and marketing. NY Sea Grant extends its congratulations to the New Fulton Market on its first anniversary in the new facility.

— Ken Gall



Bustling with early morning activity, the New Fulton Fish Market is located in Hunts Point, Bronx, NY. Photo by Jack Mattice



... for more on the New Fulton Fish Market.

# Sound Reflections

Continued from page 5

Since then, the municipalities surrounding Hempstead Harbor and Manhasset Bay have completed cooperative water quality improvement plans, as well as many clean up and restoration projects. “Now shorebirds abound; even ospreys and Peregrine falcons nest and feed in and around both embayments,” Benneward says. “Although there is still much to be done to restore habitat and reduce stormwater runoff, water quality in both embayments is generally quite good.”

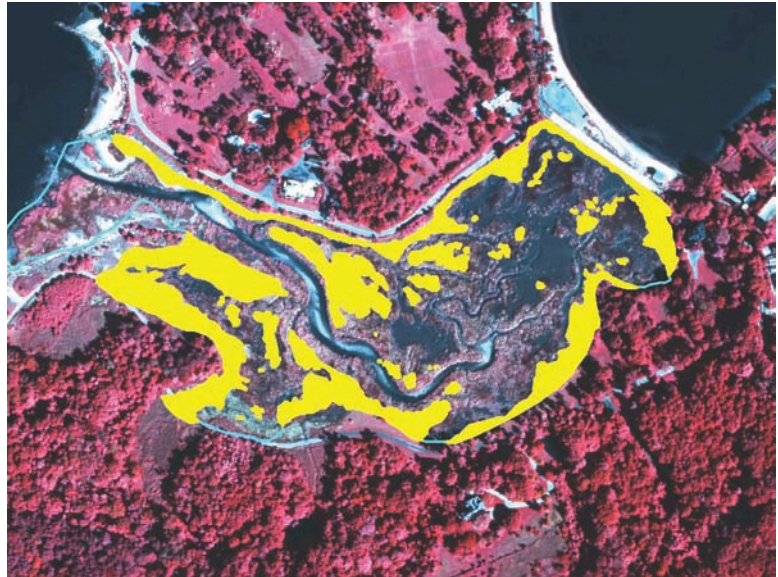
## Tidal wetland loss

But while contaminant and sewage input have been reduced, conditions of accessibility improved, and some habitats restored, the tidal wetlands that support estuarine life have deteriorated. According to **Fred Mushacke**, a biologist from the NYSDEC, throughout the 1950s and 1960s thousands of wetland acres throughout NYC, Nassau and Suffolk Counties were drained, dredged and filled. Those practices abated with passage of NY’s Tidal Wetland Act of 1973. “Using infrared aerial photography, the NYSDEC began a wetland inventory in 1974. Infrared aerial photographs are taken in early fall at low tide to better identify zones of vegetation,” explains Mushacke.

As he pores over photo series of LIS wetlands, Mushacke can see areas of subsidence and changes in marsh plants. “If plants are overfertilized with nitrogen or waterlogged,” says Mushacke, “the soil becomes toxic and marsh plants lose their root systems causing the plants to weaken and die.” Mushacke points to maps from the Glen Cove area, not too far from where Patrice Benneward grew up. Aerial photos indicate that the 21.8 acres of intertidal marsh seen in the early 1970s have been reduced to a mere 8.6 acres, a 60 percent loss.

## The Sound heats up

Changes in water chemistry and small increments in Long Island Sound’s temperature affect marine plants and animals. “Over the last three decades biologists have seen numerous changes in species,” says Chytalo. “Increasing water temperatures bring in more southern species and greater stress on the northern species.”



Yellow indicates a 60% loss of wetlands. In this infrared aerial photo near Glen Cove, NY, LIS is on the left and a tidal pond on the right. The red-pink mottled color represents the tidal wetlands in 1974. The yellow overlay represents the extent to which the wetlands have retreated as of 2005 based on photo interpretation and GIS trends analysis.

Composite photo courtesy of Fred Mushacke, NYSDEC

Perhaps the most dramatic example of the impacts of temperature increase is the toll taken on LIS lobsters. In their funded research project to address the causes of the lobster mortality event of 1999, Robert Wilson and Larry Swanson analyzed bottom temperature data for 50 stations throughout LIS. They found that bottom temperatures were the highest of the decade in the summer months preceding the September 1999 lobster dieoff and that a strong wind event caused by the vertical mixing of warm surface waters resulted in a rapid increase of bottom temperatures.



... for more on the causes of the LI lobster die off.

“We all know that you can’t try to correct just one problem at the expense of everything else,” says Chytalo about managing our marine resources. “You have to understand all the pieces: biology of the species, physics of the hydrology, chemistry of the water, and then finally the management piece of bringing it altogether and working with all the various stakeholder and governmental groups.”

Says NYSG’s **Kimberly Graff**, Long Island Sound Outreach Coordinator, “When results of a survey of public perception about the Sound are released later this year, we will see just how far such improvements in Long Island Sound’s health have resounded with the public.”

— **Barbara A. Branca**



... for more on Estuary Live, a live Web cast held on September 29 to raise awareness of the nation’s estuaries. That’s when scientists **Fred Mushacke** and **Karen Chytalo** as well as Sea Grant staff and graduate students shared their expertise with thousands of school children.

# Dave White on the Small Screen

On the third Tuesday of every month since April, NYSG's Recreation/Tourism Specialist **Dave White** has been waking up early to bring Sea Grant's "message" to the morning masses. A six-month trial run with the Morning Show at WWNY TV 7, a Fox affiliate in downtown Watertown, finished up in September.

Airing during one of the highest rated TV blocks in the "wake-up hours," the 6:30-7 am stretch, Sea Grant's five minutes of fame features topics such as boating safety, aquatic invasive species, diving in search of sunken wrecks, the dune and Salmon River stewards program, shoreline land issues, tourism, and marine safety. Monthly outlines for the talks, which potentially reach around 10,000 viewers in Jefferson and Northern Oswego Counties, are drawn up by NYSG Great Lakes publicist **Kara Lynn Dunn**.

Morning Show Producer **Jack W. Miller** recently renewed the series through at least the next six months. "The interviews have exposed a large number of people to the wide variety of programming that New York Sea Grant organizes and participates in," says Miller. "I look forward to working with Dave White and other Sea Granters on other topics in the coming months."

After White wraps things up at WWNY TV 7 each month, he heads over to WTNy Radio 790 AM to reinforce the key points of his discussion for

drivers making their morning commute. NYSG's 5-minute segment, now a regular feature, airs during one on the show's highest rated times of the day, the 7:30-8 am slot.

The interviews between White and WTNy Radio News Director **Nathan Lehman** and Morning Show Host **George Neher** are relaxed in nature and cover a great deal of information, often in a light-hearted manner that helps listeners remember "who to call" for information on everything from scuba diving sites to invasive species.

Neher says the NYSG series has helped local listeners realize the value of their own backyard. "People are often not aware of the advantages of their own area. They vacation elsewhere so the Sea Grant series is good for sharing information about local resources," he says.

WTNY Radio 790 AM is part of a Regent Communications, Inc. cluster of stations that holds 41 percent of the market based on market revenue and compared to all other clusters in the market.

— **Paul C. Focazio**

*with additional information from Kara Lynn Dunn*



... for a peek at some of the segments that have made it on air at WWNY TV 7. And more on the Great Lakes Dune Conference.

## NYSG Spearheads Dune Protection

Early October in Traverse City, Michigan was the scene of the first-ever meeting of researchers, educators and resources managers from eight states and Ontario, Canada to discuss the unique dunes of the Great Lakes.

"While scientists have studied dunes in specific areas, they lack comprehensive data on the entire Great Lakes regional network...That's one reason the EPA approved a request from the NYSG program to fund the conference," reads an AP wire story carried nationwide after the event.

"This conference leads the way for the isolated geographic pockets of people interested

in the dunes to come together across state and international borders to share interests, resources, responsibilities and new ways of protecting the Great Lakes dunes system," says NYSG Recreation/Tourism Specialist **Dave White**.

The conference agenda addressed the current efforts in dunes research, education and resource management. Participants brainstormed needs, threats and opportunities to begin shaping a strategic management plan.

— **Kara Lynn Dunn**

# Annual Report

## New York Sea Grant

State, Federal, and Other\* Funds Allocated in Calendar Year 2005 for use in 2005 and beyond

### Program Administration

From NSGO (core) and New York State (core and/or member items) .....	\$759,968
From NSGO initiatives and national investment .....	\$0
From other sponsors .....	\$38,341
<b>Total Program Administration .....</b>	<b>\$798,309</b>

### Communications

From NSGO (core) and New York State (core and/or member items) .....	\$317,853
From NSGO initiatives and national investments .....	\$0
From other sponsors .....	\$20,508
<b>Total Communications .....</b>	<b>\$338,361</b>

### Extension

From NSGO (core) and New York State (core and/or member items) .....	\$936,318
From NSGO initiatives and national investments .....	\$310,618
From other sponsors .....	\$1,404,450
<b>Total Extension .....</b>	<b>\$2,651,386</b>

### Research and Scholars

From NSGO (core) and New York State (core and/or member items) .....	\$1,062,280
From NSGO initiatives and national investments .....	\$0
From other sponsors .....	\$0
Percent of above research funds allocated to Scholars .....	39.19%
<b>Total Research and Scholars .....</b>	<b>\$1,062,280</b>

### Additional Activities

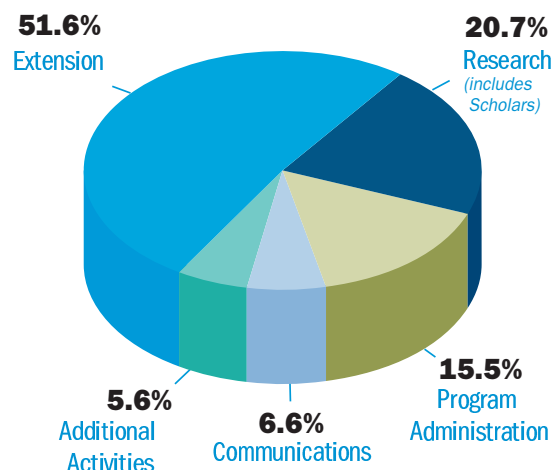
From NSGO (core) and New York State (core and/or member items)	
— Fellowships .....	\$15,800
— Other Conferences/Workshops/Special Projects .....	\$67,913
From NSGO initiatives and national investments	
— Fellowships .....	\$183,334
— Other Conferences/Workshops/Special Projects .....	\$11,811
From other sponsors	
— Fellowships .....	\$8,000
— Other Conferences/Workshops/Special Projects .....	\$683
<b>Total Additional Activities .....</b>	<b>\$287,541</b>

**Total Funds Allocated .....** **\$5,137,877**

**Unallocated and Pending Committed\*\* Funds Carried Into 2006 .....** **\$547,165**

**Additional Non-Federal Cost-Sharing or In-Kind Support  
(not already included as direct support in table above) .....** **\$808,958**

## DISTRIBUTION OF FUNDING AMONG PROGRAM ELEMENTS 2005

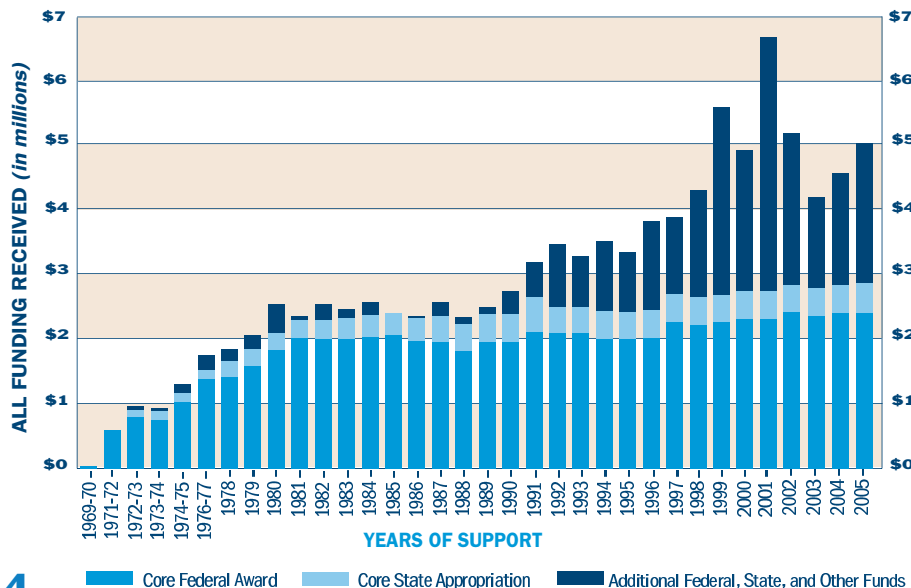


Note: In 2005, Extension received \$1.4M in funding from non-core resources, resulting in a much larger percentage of NYSG's overall allocation.

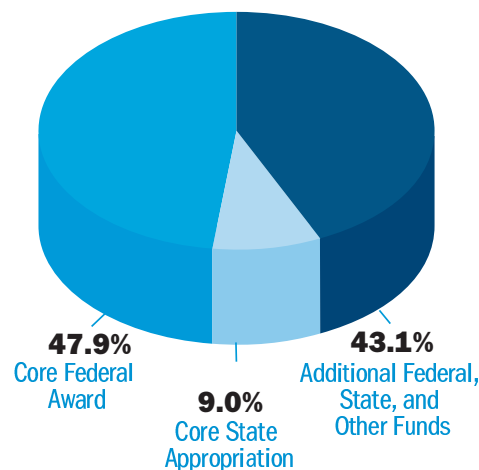
\*"Other" includes funds provided by Cornell, SUNY, local and private sources

\*\*Includes funds committed to continuation of specific projects/activities, and projects slated to begin in 2006

## NEW YORK SEA GRANT FUNDING (Since Inception)



## FUNDING SOURCES 2005



—**Stefanie Massucci**  
former Fiscal Officer of NYSG

## Uncertainties and Risks in Fisheries

### Managing and Communicating Fisheries

**Uncertainties** is now available. This 200-page final report, written by NYSG Extension specialist Dave MacNeill, includes speaker presentations from an October '05 workshop entitled **Identifying Uncertainties in Great Lakes Fisheries Management**. Convened in Syracuse, this New York Great Lakes Protection Fund-sponsored event was targeted to decision makers, communications specialists, and others who provide information for Lake Ontario managers.

The publication, along with its eight page extension fact sheet written for stakeholders (**Uncertainties and Risks in Fisheries**), will help to familiarize fisheries managers with sources of uncertainty and the basic tools for addressing uncertainty in fisheries management. Both publications will soon be available in pdf at [www.nyseagrant.org](http://www.nyseagrant.org), or contact Dave MacNeill directly at [dbm4@cornell.edu](mailto:dbm4@cornell.edu).



Photo courtesy of Fred Kuepper

### Theses

Natural Reproduction and Recruitment of Chinook Salmon in the Salmon River, NY: An Application of Otolith Microstructure Analysis. N.G. Smith. 2005. PhD Dissertation, Cornell University, Ithaca, NY. 61 pp. Pub ID# 2956. (not for distribution).

The Seasonal Evolution of Thermohaline Circulation in Long Island Sound. H.A. Crowley. 2005. PhD Dissertation, Stony Brook University, Stony Brook, NY. 114 pp. Pub ID# 2806. (not for distribution).

# Last Wave

## Ordering Publications

Please send requests for the following publications to:

**New York Sea Grant Communications**  
**121 Discovery Hall, Stony Brook University,**  
**Stony Brook, NY 11794-5001/631.632.9124**

## Journal Reprints

A perspective on bottom water temperature anomalies in Long Island Sound during the 1999 lobster mortality event. R.E. Wilson, and R.L. Swanson. 2005. *Journal of Shellfish Research* 24(3): 825-831. Pub ID# 2964. *Free*

Application of water quality modeling technology to investigate the mortality of lobsters (*Homarus americanus*) in western Long Island Sound during the summer of 1999. R.E.L. Miller, J.R. Wands, K.N. Chytalo, and R. A. D'Amico. 2005. *Journal of Shellfish Research* 24(3): 859-864. Pub ID# 2962. *Free*

Dissolved trace element concentrations in the East River-Long Island Sound System: Relative importance of autochthonous versus allochthonous sources. N.J. Buck, C.J. Gobler, S.A. Sanudo-Wilhelmy. 2005. *Environmental Science & Technology* 39(10): 3528-3537. Pub ID# 2804. *Free*

Lobster Resource Failure in Long Island Sound, Fisheries Extension, and Litigation. N.C. Balcom, and A.O. Clemetson. 2006. *Fisheries* 31(6): 276-284. Pub ID# 3002. *Free*

Maladaptive changes in multiple traits caused by fishing: impediments to population recovery. M.R. Walsh, S.B. Munch, S. Chiba, D.O. Conover. 2006. *Ecology Letters* 9(2): 142-148. Pub ID# 2967. *Free*

Quantitative Polymerase Chain Reaction Assay Used to Measure the Prevalence of *Clostridium botulinum* type E in Fish in the Lower Great Lakes. R.G. Getchell, W.J. Culligan, M. Kirchgessner, C.A. Sutton, R.N. Casey, and P.R. Bowser. 2006. *Journal of Aquatic Animal Health* 18(1): 39-50. Pub ID# 2973. *Free*

Simulations of transient pesticide concentrations in Long Island Sound for late summer 1999 with a high resolution coastal circulation model. R.E. Wilson, H.A. Crowley, B.J. Brownawell, R.L. Swanson. 2005. *Journal of Shellfish Research* 24(3): 865-876. Pub ID# 2963. *Free*

Using Otolith Microstructure to Determine Natal Origin of Lake Ontario Chinook Salmon. N.G. Smith, and P.J. Sullivan. 2006. *Transactions of the American Fisheries Society* 135: 908-914. Pub ID# 3029. *Free*

## Sea Grant Publications

Managing and Communicating Fisheries Uncertainties Final Report. D.B. MacNeill, and C.R. O'Neill, Jr. 2006. 200 pp. Available in PDF format at: [www.nyseagrant.org](http://www.nyseagrant.org) *Free*

Nonpoint Source Pollution: New York's Primary Water Quality Problem. New York Sea Grant NEMO Program. E. Keenan. 4th printing 2006. Pub ID# 316. *Free*

Partners in Protecting the Sound. Long Island Sound Study. 2006. *Free*

Reducing the Impacts of Contaminated Stormwater through Local Authority. New York Sea Grant NEMO Program. C. Witters. 2005. Pub ID# 2788. *Free*

Sound Update. Long Island Sound Study. Spring/Summer 2006. Kimberly Graff, Editor. *Free*

Step by Step: A citizen's guide to curbing polluted runoff. Long Island Sound Study. 2nd printing 2006. *Free*

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## The Fishery Council

For this 35th anniversary issue of *Coastlines*, we found a vintage recipe for an old favorite — provided by The Fishery Council. The Fishery Council was created in 1939 to conduct public relations and marketing efforts for Fulton Market and was the first known seafood industry organization of its kind according to Bruce Beck, author of the *Official Fulton Fish Market Cookbook* published in 1989. The Fishery Council was largely the work of a man named John von Glan who joined in 1940 and oversaw the Council until his retirement in 1983. His successor was a young Englishman named Richard Lord who changed the organization's name to the Fulton Fish Market Information Service, which he ran for nearly a decade into the early 1990s. This recipe from the original Fishery Council represents a traditional Manhattan style clam chowder. Read more about the Fulton Fish Market on page 11.

— Ken Gall

## Manhattan Clam Chowder

### Ingredients

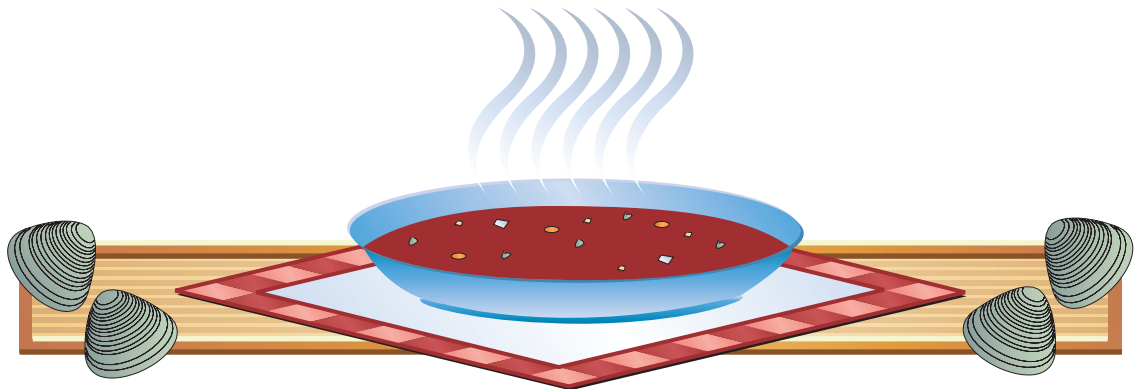
1/4 lb. salt pork, diced  
1 large onion, diced  
1 green pepper, diced  
1 cup diced, raw carrots  
1 cup diced, raw potatoes  
1 cup, raw celery  
3 1/2 cups of canned tomatoes  
3 cups water  
1/4 tsp. pepper

Source: "Fish 'n Tips," by the Fishery Council, Fulton Fish Market

2 dozen large clams, shelled, cleaned and chopped  
or 2 cups of chopped clams  
1/2 cup fine cracker crumbs  
salt to taste

### Method

Cook pork in large kettle until delicately brown; add onion and cook until lightly brown. Add remaining vegetables, water and seasonings; cover and cook over simmer heat 1 hour. Add clams, cook 5 minutes. Add cracker crumbs. Serves 6 to 8.



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# Seafood Corner