



Just a little over a decade ago, scenes like this one were somewhat rare on the Hudson River. Now, kayakers can be found on any given weekend in the River's waters from New York City to Albany. Photo by Rudy Schuster



EXPLORING THE HUDSON

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Throughout a large part of the year, especially in the summer and fall months, Hudson River Valley (HRV) residents and tourists are, as a new New York Sea Grant publication confirms, out kayaking, windsurfing, motor boating, fishing and even swimming along New York's most famous river. People are launching kayaks in Kingston or "antiquing" in Cold Spring, or gallery hopping in Beacon. Or is it hiking in Constitution Marsh near Cold Spring, shopping for antiques on Beacon's Main Street or enjoying a Riverfront festival in Kingston?

"I believe the results produced from NYSG's research study will become increasingly important to decision makers," says NYSG's Hudson Estuary Specialist Nordica Holochuck. "For many years, creating increased public access to the Hudson waterway has been a priority. As we move forward, Valley residents and visitors alike may also shift emphasis of that focus to include examining the connections between Hudson River communities via hiking or bike trails, water trails, River crossing via passenger ferry or, for example, the new Walkway Over the Hudson pedestrian bridge in Poughkeepsie, NY."

The year 2009 marks the 400th anniversary of Henry Hudson's exploration of the river that bears his name. This year is also the 200th anniversary of Robert Fulton's pioneering efforts to establish commercial steamboat ferry service up and down the Hudson. So, for centuries, the Hudson Valley has been a place of exploration.

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Director
James Ammerman
Interim Associate Director
Robert Kent

Assistant Director
Cornelia Schlenk
COASTLINES
Vol. 38, No. 2, Fall 2009
Editor/Writer
Barbara A. Branca
Barbara.Branca@stonybrook.edu

Web Content Manager
Paul C. Focazio
Paul.Focazio@stonybrook.edu

Contributing Writers
Antoinette Clemetson
Helen Domske
Larissa Graham
Nordica Holochuck
Chuck O'Neill
Mary Penney
Jay Tanski
Ann TeNyenhuis

Layout and Production
Sharon A. O'Donovan
Susan M. Hamill

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New York Sea Grant provides equal opportunities in employment and programming.

New York Sea Grant Institute
121 Discovery Hall
Stony Brook University
Stony Brook, NY 11794-5001
631.632.6905

For a list of NYSG's offices and staff, click on "Contact Us" > "Staff" at www.nyseagrant.org

FROM THE DIRECTOR

The year 2009 has continued to be busy at New York Sea Grant (NYSG). The National Sea Grant office just approved our new strategic and implementation plans for the next four years. We are well along in the search for a new Associate Director for Extension, located at Cornell University, and hope to complete the process shortly. One of the stalwarts of our I FISH NY program, **Malynda Nichol**, recently left NYSG to become a middle school science teacher in Westchester County, NY. We congratulate her on her new position, though she will be greatly missed by NYSG and I FISH NY.

As always, the most important recent happenings at NYSG are the research, education, and outreach activities detailed in this issue of *New York Coastlines*. One of our Communications staffers, **Susan Hamill**, was on hand at the NYSG booth at NY State **Senator Kenneth LaValle's** recent Family Day event, distributing NYSG giveaways and publications to local children and adults (see photo below). The lead article in this issue highlights the results of a recent study on Hudson River Valley tourism which was supported by NYSG and extended by NYSG's Hudson specialist, **Nordica Holochuck**. Tourism is an increasingly important industry for the communities in this region, and the results of this study are already being used by one of them to help plan future waterfront renovations.

Harmful algal blooms are an increasing global problem in coastal and estuarine waters, including the waters around Long Island. As described on pages 4 and 5, Long Island waters have had a history of brown tides over the last few decades and now face the challenge of red tides as well. These blooms are often related to nitrogen inputs and may cause finfish and shellfish deaths and contribute to long-term declines, especially of shellfish. NYSG has actively supported a number of research projects on brown and red tides, and some of the recent projects and results are described in this issue.

NYSG staff member **Mary Penney** coordinates the Eastern Lake Ontario Dune and Salmon River Steward Program, which is partially supported by the New York State Department of Environmental Conservation. This program hires college students to work for the summer as stewards to help promote ecologically responsible uses of this unique natural

area. Following experience the previous summer writing a blog aboard ship in Lake Ontario, NYSG Web content manager **Paul Focazio** helped Mary Penney and the Dune Stewards to develop a blog of their stewardship activities during the summer of 2009. The results are described on pages 6 and 7, and this effort helped both the stewards to focus more on the impacts of their activities and the public to become better informed about both the environment and the programs available.

Finally, I would like to highlight the NYSG supported work of **Drs. Paul Bowser** and **James Casey** of Cornell University on the Viral Hemorrhagic Septicemia Virus (VHSV) in fish, detailed on page 10. Dr. Bowser recently received a major award for his work on this virus and other fish diseases. VHSV infections have caused significant fish kills in several Great Lakes fish species, and NYSG fisheries specialist **Dave MacNeill** has been very active in outreach efforts to help limit the spread of this virus. He and Dr. Bowser presented a joint seminar in Washington, DC, last June about VHSV impacts. This issue is one of the best examples of the close connection between research and extension that is a hallmark of many Sea Grant projects and an important reason for the continued effectiveness of Sea Grant efforts.

New York Sea Granter Susan Hamill sharing "Green Tips for Coastal Living" with host of Fall 2009 Family Day, NY Senator Kenneth LaValle.

Photo by Jeffrey Kito



EXPLORING THE HUDSON

continued from page 1

As part of this year's 'Explore NY 400 Hudson-Fulton-Champlain Quadracentennial Celebration,' many communities along the Hudson River have hosted waterfront festivals, art exhibits and special environmental and estuarine education programs," says Holochuck. "The depth and breadth of events really emphasizes the great cultural and environmental history that characterizes this special region of New York State."

"With nature-based and heritage tourism both increasing in popularity in the Hudson Valley, coastal communities like Kingston, Cold Spring and Beacon can benefit, as can their local economies," says **Dr. Rudy Schuster**, formerly of the State University of New York's College of Environmental Science and Forestry (SUNY CESF). That's why Schuster, along with ESF's **Diane Kuehn**, led a team in a recently-completed NYSG-funded project to help find the best ways to promote River-related tourism in the HRV. This team, assisted by Penn State University's **Duarte Morais**, released a 42-page publication this past summer that summarizes their analyses of the attributes that residents and visitors have identified as markers for each community.

"Our aim with this research was to help characterize for these communities the distinct image that represents their unique social, cultural and environmental qualities in sustainable tourism development," says Schuster. This 'destination image' will provide usable information about the attributes of the natural environment and tourism opportunities that identify the community as similar or unique in relation to other HRV destinations.

"Understanding which attributes of the nature and heritage tourism experience are attractive and valued by tourists will facilitate marketing efforts, increase visitation and enable market positioning among these communities," says Morais. Complementing Morais' comment, Schuster states that "understanding

Cold Spring offers visitors plenty of dining and shopping choices, including antique stores. Photo by Barbara A. Branca



and planning around the attributes contributing to residents' sense of place will foster community stability." Kuehn adds, "as detailed in the report, we found that both visitors and residents have positive images of the communities. The majority of visitors are either likely or very likely to return within two years and to recommend the communities to others; the majority of residents have a desire to stay in their home community."

According to study findings, while many visitors (both in- and out-of-state) are drawn to the HRV for nature-based activities and water recreation opportunities, on average, cultural activities are most frequently participated in by visitors. Visitors clearly link the unique natural setting of the HRV with cultural activities, as exhibited by responses to image questions, where River viewing and access received high scores.

Residents' images of their communities were also positive. Residents engage in cultural activities more often than nature-based activities or water recreation activities. Increased participation in cultural activities leads to a more positive image of both cultural and nature offerings, suggesting that local natural resources are important to residents, regardless of whether they engage in outdoor recreation activities. A higher percentage of residents than tourists report receiving information about local activities and events from a range of sources. Participation in cultural activities and length of residency contribute to a stronger place identity among residents.

"As Hudson River communities are revitalized through increased public access and recreation opportunities," says Holochuck, "these cities, towns and villages need information that can guide tourism planning and also preserve the scenic beauty, open spaces and relative tranquility valued by residents and visitors alike. And, the findings in this research project will help." Schuster adds, "A strength of this project was that we went from social science theory all the way down to application in one project; one of the most exciting aspects is that the Village of Cold Spring's Comprehensive Plan Special Board and Waterfront and Open Space Working Group is using the report while planning future renovations for their Riverfront sites."

— Paul C. Focazio and Barbara A. Branca

Laura Sullivan (far right), a SUNY CESF graduate student on this project, helped visitors in Kingston and the other towns to fill out the survey. She says, "Resident and visitor survey responses emphasized the attraction of scenic vistas and public access to the Hudson and its tributaries." Of the overall experience, she adds, "Working on this project was my first real exposure to this unique region. I enjoyed learning about the natural, social, and historic attributes of the HRV from dynamic residents who are working towards a vibrant, sustainable future for their communities."

Photo courtesy of Laura Sullivan



... to download the Hudson Valley tourism report and for more pictures from each of the study's participating communities.

HARMFUL ALGAL BLOOMS PLAGUE LONG ISLAND WATERS



Streaks of red tide in Cutchogue Harbor run along the western side of Nassau Point on Long Island's north fork. Dr. Chris Gobler has observed the red tide *C. polykrikoides* since 2002 in the Peconic Estuary System.

Photo courtesy of Chris Pickerell

Harmful algal blooms (HABs) are a worldwide phenomenon posing a significant threat to fisheries, public health, and economies. HABs have increased in frequency, duration, and distribution in recent decades and New York waters have had their fair share. HABs come in a rainbow of colors, but at the end of this rainbow there's no pot of gold. In fact, it's just the opposite. During the 1950s there were green tide blooms in Long Island's (LI) south shore bays that negatively impacted the oyster fishery. In the mid-1980s, brown tides occurred in Great South Bay, Moriches and Shinnecock Bays on LI's south shore and in eastern LI's Peconic Estuary destroying eelgrass beds and shellfisheries. Since 2002, red tide blooms have occurred in Peconic Estuary and Shinnecock Bay and have caused shellfishery closures on LI Sound bays.

What's the difference among these recent blooms and what harm can they cause?

According to researchers funded via the Brown Tide Research Initiative (BTRI) and reported in the BTRI report series, brown tide blooms of the microscopic alga *Aureococcus anophagefferens*, can occur in such densities that the water turns dark brown. Long Island bays have experienced sporadic brown tide events since 1985. The tiny algae's appearance in quiet bays with little flushing brought on a steep decline in the Peconic Bay scallop population and its eelgrass habitat. Although scallops feed on algae, the organism's tiny size in great concentrations coupled with mild toxicity seem to gum up the works of the

filter feeding mechanism, so that scallops starve to death. Likewise, hard clams do not thrive on a diet of brown tide, but rather become stunted. Such decimation to NY's bivalve populations cost millions in losses to these important commercial fisheries.

The last major brown tide bloom in the Peconic Estuary was in 1995, while the south shore estuaries on Long Island have experienced blooms in varying degrees through 2004. In the spring of 2008, a large bloom swept across LI's south shore bays for much of the spring, summer, and fall reaching farther west than in previous years. And this year, the alga was reported in the east end's Moriches, Quantuck and Shinnecock Bays during June and July.

Dr. Christopher Gobler of Stony Brook University's School of Marine and Atmospheric Science (SoMAS) has been examining the occurrence, biology, ecology and genetics of brown tide for over a decade. The recipient of numerous BTRI and other NYSG grants and author of related journal articles, Gobler is also currently a co-investigator on a new NYSG-funded two-year study of brown tide and its environment. "Due to the ecological impacts on economically important shellfisheries in Long Island from brown tide blooms, the importance of successful management and recovery plans hinges on adequate knowledge of bloom dynamics, ecology and physiology," says Gobler.

This study, which began in February 2009, will provide important information using traditional and molecular genetic techniques to characterize the entire plankton community – phytoplankton, bacteria, small zooplankton – during both bloom and non-bloom conditions. Gobler, along with **Dr. Jackie Collier** and their SoMAS team, will examine the incorporation of nitrogen from nitrate, ammonium, urea, and glutamate into the DNA of *A. anophagefferens* and other plankton.

"It's been hypothesized that *Aureococcus anophagefferens* forms brown tide blooms by relying on dissolved organic nitrogen sources, drawing nutrient concentrations down to such low levels that no competing phytoplankton can match its net growth rate," says Gobler. He and his fellow researchers on this NYSG-funded project will be the first to examine how the whole plankton community changes during brown tides and to measure the incorporation of specific nitrogen compounds by different individual species during these events. Knowing how these blooms acquire nitrogen will have important managerial implications.

Whereas the brown tide alga is a very small golden-brown algae along the size of bacteria, HABs are most commonly caused by dinoflagellates, other larger phytoplankton that have the ability to move with a whip-like flagellum or “tail.” Dinoflagellates under bloom conditions can discolor effected waters red and thus have been dubbed “red tides.” These organisms may synthesize potent biotoxins and can cause direct harm to or even kill marine animals. One such dinoflagellate, known for causing fish kills in southeast Asia, is *Cochlodinium polykrikoides*.

Gobler and his team reported the emergence of *C. polykrikoides* blooms in the Peconic Estuary and Shinnecock Bay during the late summers of 2002 through 2009 which may have caused shellfish and fish mortality events on eastern LI in recent years. Prior to 2002 the only North American occurrences of *C. polykrikoides* have been in Virginia and Barnegat Bay, NJ. Interestingly, the regions currently plagued with *C. polykrikoides* in LI and RI formerly hosted brown tides in the 1980s and 1990s.

To judge the toxicity of this red tide species, Gobler’s team showed that a 24-hour exposure to bloom waters killed 100% of multiple finfish species (both young and adult of some species) usually via impaired gill function. Juvenile bay scallops and American oysters experienced elevated mortality compared to control treatments. Concludes Gobler, “Our results indicate *C. polykrikoides* blooms have become annual events on eastern LI and that bloom waters are capable of causing rapid mortality in multiple species of finfish and shellfish.”

Another species of red tide has also appeared in Long Island waters. The red tide organism *Alexandrium fundyense*, also a dinoflagellate, synthesizes a powerful toxin but one that is different from *C. polykrikoides*. This toxin can accumulate in shellfish and thus can be harmful to humans when they consume shellfish that have been feeding on high concentrations of the toxic red tide cells. Consumption of effected shellfish may bring on a condition known as Paralytic Shellfish Poisoning or PSP that can cause tingling, numbness of the mouth, convulsions and even death. “Fortunately, in 2009 on the east end and south shore of LI, *Alexandrium* red tide was found only in areas that were not open to shellfishing,” says Gobler. However, some western LI Sound bays that are open to shellfishing, Northport and Huntington,

were closed due to PSP in 2006, 2008, and 2009. These closures had a drastic financial impact on the area’s shellfisheries.

In spring of 2009, Gobler began a new Long Island Sound Study/NYSG-funded project to study the development and dynamics of *Alexandrium* red tide. This research will give fisheries managers and local health departments the essential information they need to protect human health and sustain healthy ecosystems and local economies.

— Barbara A. Branca and Paul C. Focazio

<i>Aureococcus anophagefferens</i>	<i>Cochlodinium polykrikoides</i>	<i>Alexandrium fundyense</i>
		
Brown Tide	Red Tide	Red Tide
CLASS		
Pelagophyte	Dinoflagellate	Dinoflagellate
ECOSYSTEM IMPACT		
Harmful to shellfish, eelgrass	Lethal to fish, shellfish	TOXIC to humans (saxitoxin)
GLOBAL DISTRIBUTION		
East coast US, South Africa	Northern hemisphere	Global for genus
BLOOMS IN NY		
South shore bays (Great South, Moriches, Shinnecock)	East end bays (Peconic, Shinnecock)	North shore bays (Huntington, Northport, Mattituck)

How does red tide “measure up” to brown tide? The table compares some important characteristics of brown tide with those of the two species of red tide that have been found in Long Island waters. Red tide organisms are an order of magnitude larger than brown tide cells. Whereas 50 brown tide cells can fit across the width of a human hair, only two to four red tide cells can.

Table by Anita Kusick

Coast Watch

Anglers at Ellis Cove on the Salmon River.

STEWARDS HAVE GONE BLOGGIN'

Photo by NYSG Steward Coordinator Mary Penney

During this past summer's Oswego County Conservation Field Days, local fifth graders built a squirrel's nest at the "Habitat and Dwelling Steward Program Station."

Photo by Mary Penney



Stewards and other participants netted 200+ pounds of trash on Lakeview Wildlife Management Area during the National Littoral Society Beach Cleanup Day. The most common items: plastic bottle caps and balloon string.

Photo by River Steward Greg Chapman



Most times during the summer and fall, you'll find the Eastern Lake Ontario Dune and Salmon River Stewards educating the public about the value and proper recreational use of the area's vital environmental resources. This could be at one of the River's access points or a state park, wildlife management area, nature preserve or natural area along the lakeshore. But, for the first time this past summer, the stewards began regularly documenting their experiences in an interactive blog, www.elodsrstewardprogram.blogspot.com.

Contributing to the blog encouraged the 2009 stewards to look at the resource areas in new ways. Although each blog entry was authored by one steward, all six stewards contributed content each week.

Chief Steward **Greg Chapman** says, "Thinking about what my weekly blog contributions would be prompted me to actively identify aspects of the area that might be overlooked or misunderstood by some visitors to the region, or that could be interesting to someone who had not previously experienced natural resource areas."

Chapman and the other stewards blogged about the wildlife species they saw; reported interactions with kayakers, beach walkers, and anglers fishing for such species as freshly-stocked landlocked Atlantic salmon and steelhead; provided information on why the eastern shore of Lake Ontario is critical habitat for migrating and resident birds and what makes the Salmon River Falls Unique Area unique; and noting the impacts and influences their efforts are having on the greater community.

A Chinook salmon caught in the lower stretch of the Salmon River.

Photo by Mary Penney



In an entry from June, Dune Steward **Liz Wolff** continues to prepare for summer usage at the bird sanctuary at Black Pond Wildlife Management Area/ El Dorado Nature Preserve. Fellow steward Chapman wrote, "The eastern Lake Ontario shoreline provides important natural habitat for shorebirds that may call it home or are just stopping by on their way to more distant shores. Signs and string fencing have been installed to show the way around, and Liz is busy transplanting beach grass growing in the path to areas where it is more needed."

"The product that the stewards produced is impressive," says NYSG's Dune and River Steward Coordinator **Mary Penney**. "Using new technology like this blog has proven to be a successful tool for reaching new audiences, and repackaging our already successful program. Stewardship has been a fantastic educational tool for our newfound E-audience as well as the stewards themselves."

This was the second blog that highlighted a NYSG-managed program in as many years. After producing last summer's "Shipboard & Shoreline Science on Lake Ontario," the well-received daily blog for Centers for Oceans Science Education Excellence (COSEE) week-long teacher training, NYSG's Web Content Manager **Paul C. Focazio** worked with Penney to create something similar for the Eastern Lake Ontario Dune/Salmon River Steward Program.

Focazio says, "It has been a perfect fit to have the dune and river stewards document their experiences with the public throughout the summer and fall. We've offered Web surfers, especially those away from these resources, a first-hand account of, among other things, touring the beaches that provide public access along eastern Lake Ontario and the Salmon River Falls Unique Area."

Looking back on the experience, Wolff says, "My favorite part of the blog was showing that the stewards are multifaceted individuals. The blog is just one more way for us to reach out and educate the public about the natural resource areas in our own voices."

And what says the public, the users of this blog? **Kavin Bahler**, from Williamsville, NY, said, "The Eastern Lake Ontario Dune and Salmon River Steward blog is wonderful. It gives great information that always keeps me coming back for more." **Sarah Howey**,



River Steward Liz Wolff assisted with Salmon stocking. "I learned that it's best to release the fish when the water is moving more rapidly, thus containing more oxygen," says Wolff.

Photo courtesy of Liz Wolff



Sandy Pond Beach Natural Area in August 1997 and 2009.

Notice the increase in vegetation has completely covered the walkover in places. "By monitoring dune changes, we can pinpoint potential blowout areas and take measures to slow the process, such as installing snow fencing or planting dune grass," says NYSG's Mary Penney.

Photos courtesy of www.nysgdunes.org



from Waverly, NY, added, "This blog is an informative and interesting peek into the efforts of the stewards to educate the public and to protect this unique part of the world."

Kyle Teufel, from Syracuse, NY, commented, "The blog was a great way to inform someone like myself, who didn't know much about the River, about life at the River and the River community. I thought it was very cool how the bloggers wrote about the children and the educational programs. It's great to see that [the stewards and the kids] are able to get outdoors and learn."

— **Paul C. Focazio and Mary Penney**



... for a map of the areas the Stewards monitor and blog entries through this year's summer/fall seasons.

AN ACRONYM BY ANY OTHER NAME....

An acronym is an abbreviation formed using the initial components of a name. New York Sea Grant partners with many organizations on our research and extension projects, most of them referred to by their acronyms. Here's a brief update of some of those projects—and what all those initials stand for.

COSEE

Center for Ocean Sciences Education Excellence

Next summer, NYSG's Coastal Education Specialist **Helen Domske** is planning a week-long land-based Lake Ontario Exploration Workshop for 15 teachers in grades 4-10. The COSEE Great Lakes experiential program will provide interactions between educators and scientists along diverse environments of Lake Ontario, from embayments to sand dunes. In Summer 2008, NYSG's Domske and other educators embarked on a similar week-long COSEE training tour with 15 teachers, only this time on Lake Ontario via USEPA's research vessel the *Peter Wise Lake Guardian*. For more go to www.coseegreatlakes.net. COSEE GL is funded by the National Science Foundation and NOAA Sea Grant.

ECWS

East Coast Winter Storms

East coast winter storms, also known as nor'easters, have a major impact on coastal communities in New York and actually cause more damage than hurricanes due to their frequency and duration. NYSG's Coastal Processes Specialist **Jay Tanski** and **Dr. Arthur DeGaetano**, Director of NOAA's Northeast Regional Climate Center (NRCC) and professor at Cornell University, recently held a workshop introducing a new ECWS Web site for coastal emergency management personnel and managers. The **East Coast Winter Storm Climatological and Forecasting Data** Web site, <http://nywinterstorm.org>, housed at Cornell's Department of Earth and Atmospheric Sciences, provides seasonal forecasts, climatological data and real time data on winter storms that can be used by managers and other coastal audiences to better prepare for and respond to these events. The web site also allows users to compare a current storm with the most similar historic storm chosen from a database of 700 storms and provides the storm surges associated with that historic storm. NRCC forecasts indicate that ECWS activity this winter will be higher than normal in both number and strength of storms.

I FISH NY

I FISH NY

I FISH NY, a joint program of the NYS Department of Environmental Conservation and NYSG now welcomes educators to the "for Teachers" page at ifishnewyork.org with links to many lessons useful for both formal (labeled In-Class) or informal (Out-of-Class) settings to teach about ecology and conservation biology as it relates to fish and the enjoyment of fishing.

"These lesson plans and assessment activities fit nicely into the science curricula and can be taken as full lessons or pieced into existing lessons," says **Malynda Nichol**, former I FISH NY educator who is now a middle school teacher. All lessons, elementary through high school, are aligned with the NYS Education Learning Standards. The I FISH NY team serving NYC city students led by **Dr. James McDonald** and aide **Darin Alberry** is working to increase the number of secondary lessons. Says **Ann TeNyenhuis** of I FISH NY Long Island, "This past season was a great success with outreach to new school districts, libraries, and summer camps, giving more students and residents the opportunity to try their hand at fishing—always a rewarding experience."

MADL

Marine Animal Disease Laboratory

NYSG's **Antoinette Clemetson** works closely with anglers, many of them striped bass enthusiasts. She's also working with researcher **Dr. Mark Fast** at Stony Brook's MADL who reports that **Striped Bass Wasting Disease** (*Mycobacteriosis*) has threatened striped bass in the Chesapeake Bay for more than a decade, affecting more than 70% of the striped bass population. Dr. Fast isolated the bacteria from striped bass caught in NY's marine waters where the infection levels are much lower, affecting approximately 20% of the population. This disease is being monitored closely by the MADL research team because the pathogens can be transmitted to humans who handle infected fish and can cause illness.

NYIS Info

The New York Invasive Species Information Clearinghouse

Administered by NYSG under contract from the New York State Department of Environmental Conservation, NYIS Info continues to expand its scope and services. “We are happy to announce that that NYIS Info has absorbed the National Aquatic Invasive Species Database under the infrastructure of the new Clearinghouse web site (<http://NYIS.INFO>),” said **Chuck O’Neill**, NYSG invasive species specialist and Director of NYIS Info. The Clearinghouse has also become the “go to” Web site for information on several coastal invaders studied with NYSG funding including Japanese knotweed and Phragmites, as well as the emerald ash borer (*Agrilus planipennis*), a high-profile wood boring beetle that threatens NY’s forests. The Clearinghouse, already linked to Web pages for seven of the state’s eight Partnerships for Regional Invasive Species Management (PRISMs), now welcomes the eighth, the Long Island Invasive Species Management Area (LIISMA). “Supporting the PRISMs, both as an educational resource and for use on the Web to make the activities of the PRISMs accessible to all stakeholders, is a major objective for the Clearinghouse,” adds O’Neill.



Emerald ash borer
(*Agrilus planipennis*)

NYMSC

New York Marine Sciences Consortium

The New York Marine Sciences Consortium is an association of colleges, universities, and degree-granting institutions with expertise and interest in marine and/or coastal science. New York Sea Grant is an associate member and was represented at the NYMSC annual September meeting at SUNY Maritime in the Bronx by NYSG Director, **Dr. James Ammerman**. The theme of the meeting was “Climate Change – Marine Connections: an Ecosystem Approach.”

“Interdisciplinary, collaborative and ecosystem-based approaches to tackle marine issues have long been a hallmark of NYSG research,” said Dr. Ammerman. “NYMSC is a new platform to facilitate even greater collaboration and advocacy by the academic marine science community in New York. NYMSC should become a major voice for this community and strive to communicate marine science priorities and increase support for marine science within New York State,” he continued.

Dr. Christopher Gobler, Associate Professor at the School of Marine and Atmospheric Sciences (SoMAS) at Stony Brook University and long time NYSG researcher gave a keynote speech entitled “The role of climate change in altering NY’s coastal ecosystems: from algal blooms to shellfish and beyond.” (See article on pages 4-5 for some of Gobler’s most recent research on harmful algal blooms.)

NYSMEA

New York State Marine Education Association

In June 2009, 60 members of the New York State Marine Education Association (NYSMEA) met at Stony Brook Southampton for their annual conference. They enjoyed informative lectures by **Jeffrey Herter**, Project Director for the New York Ocean and Great Lakes System Conservation Council (Department of State), **Deborah Cramer**, author of Smithsonian Ocean: Our Water, Our World, and photographer and author, **Heather Perry**.

One of the concurrent workshops was led by New York Sea Grant’s **Nordica Holochuck** who joined **Susan Hoskins**, Image Analyst at Cornell University Institute for Resource Information Sciences, to provide educators a “Bird’s Eye View” to exploring changes to the New York/New Jersey Harbor Estuary environments.

New York Sea Grant will partner with NYSMEA to redesign their Web site and provide new educational materials to members with a re-launch planned for early next year.



At the June NYSMEA conference, Larissa Graham, Long Island Sound (LIS) Outreach Coordinator, gave a workshop on LIS and the free educational resources that are available about this important estuary.

Photo by Barbara A. Branca

New Research, Education Addresses VHS in Great Lakes Fish

Cornell University's Dr. Paul R. Bowser (left) receiving the S.F. Sneiszko Award in June 2009 from Dr. Gael Kurath of the USGS Western Fisheries Research Center, Seattle, WA, and President of the Fish Health Section, American Fisheries Society.

Photo courtesy of Paul R. Bowser



In early June, NYSG-funded researcher **Dr. Paul Bowser**, was the recipient of the S. F. Sneiszko Distinguished Service Award. This is the highest honor given from the American Fisheries Society's Fish Health Section and is a career achievement award for service and contributions to the field of aquatic animal health.

"Receiving such an award has to be described as an overwhelming experience," says Bowser, a faculty member of Cornell University's College of Veterinary Medicine since 1985. "I was truly fortunate to have met the late Dr. Sneiszko on several occasions during my graduate program. He was a true giant in the field."

Bowser's research has included such topics as parasitic, bacterial and viral diseases of fish, tumor biology in fish, evaluation of new therapeutic compounds in fish, and emerging diseases of fish. Most recently, his laboratory group has been heavily involved in the investigation of Viral Hemorrhagic Septicemia (VHS), a fish disease that has been found in a wide diversity of species in the Great Lakes Basin.

In a newly-funded two year NYSG study, Bowser and **Dr. James Casey** are examining the transmission process of VHSV, the virus that causes the fish disease, so that better bio-safety protocols and decontamination methods can be developed.

"The virus destroys the cells that line the blood vessels (endothelial cells) in the fish and causes bleeding," says Bowser. "Bleeding along with other damage caused by the virus to internal organs, such as the heart, liver, spleen and kidneys, eventually kills the fish." Over the last several years, significant mortalities have been reported in several Great Lakes fish species: muskellunge (a kind of pike), round gobies, gizzard shad, smallmouth bass and freshwater drum.

"This research is a perfect example of Sea Grant being on the forefront of an emerging issue and addressing research needs on how this disease is affecting Great Lakes fisheries," adds NYSG Fisheries Specialist **Dave MacNeill**.

Earlier this summer, MacNeill and Bowser gave National Sea Grant's first "Ralph Rayburn Beltway Brown Bag seminar" of the year in Washington, D.C. on NYSG's proactive research on and extension of the VHS issue in the Great Lakes. MacNeill was also involved in the planning of an informative VHS workshop last fall for Marine Extension and Fish Health Professionals. Held at the University of Rhode Island, this workshop was sponsored by Sea Grant programs in New York and Rhode Island.

The appearance of VHSV in the Great Lakes has convinced many people that microbial pathogens could be treated like aquatic invasive species (AIS) as well. Aquaculturists, from shrimp farmers to walleye hatchery managers, are beginning to realize HACCP (Hazard Analysis and Critical Control Point, pronounced "hassip") planning – an approach best known for its use in food safety and seafood processing – is also very useful in their fight to stay pathogen free.

To that end, Sea Grant programs in New York, Michigan, Illinois-Indiana, Ohio, Pennsylvania and Wisconsin have partnered to create training curricula materials centered around the AIS-HACCP concept.

NYSG Coastal Education Specialist **Helen Domske** worked with others in the Sea Grant programs throughout the Great Lakes to produce, among other things, *A Field Guide to Fish Invaders of the Great Lakes Region*. The guide includes full-color illustrations for 38 invasive and common look-a-like native fishes.

"The purpose of this guide is to assist private and public fisheries personnel in identifying and reporting potentially invasive fish species that pose threats to the recreational, environmental and economic value of the Great Lakes region," says Domske. The guide is also designed to accompany AIS-HACCP training workshops (for which Domske and others in the Great Lakes Sea Grant network have given and continue to offer), curriculum, video and other program materials. Copies can be requested through NYSG Communications at 631-632-9124.

— Paul C. Focazio



for more on VHS disease and AIS-HACCP training materials

LAST WAVE



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Journal Reprints

Quantitative real-time PCR assay for QPX (Thraustochytriidae), a parasite of the hard clam (*Mercenaria mercenaria*). Q. Liu, B. Allam, and J.L. Collier. 2009. *Applied and Environmental Microbiology* 75(14): 4913-4918. Pub ID# 3254.

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Lake Ontario Sportfishing: Trends, Analysis, and Outlook. 2009. HDRU Series No. 09-3. T.L. Brown, and N.A. Connelly. Human Dimensions Research Unit Department of Natural Resources Cornell University. 21 pp. **Available online**

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Tourism & Community Sustainability in the Hudson River Valley, New York: Resident & Visitor Engagement in Three Communities. S.E. Sullivan, R.M. Schuster, and D.M. Kuehn. 2008. New York Sea Grant Institute, Stony Brook, NY. 31 pp. Pub ID# 3200. **Available online**



How to hold a successful pharmaceutical take-back event without outside funding

On Saturday, April 18th 2009, a "Return Unwanted Medicines" event collected almost 500 pounds of unwanted medicines from over 140 community members. Sponsors included New York Sea Grant, Stony Brook University, Stony Brook Medical Center, Suffolk County Legislator Lynne Nowick, Suffolk County Health Department, Suffolk County Police Department Narcotics Unit, and Triumvirate Environmental, Inc. This document, written by the committee chair for the April event and approved by the full committee, is intended to provide clear instruction as to how to hold a successful pharmaceutical collection program in the state of New York. 22 pp. **Available online**

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GOLDEN TILEFISH

Golden tilefish is consistently harvested in New York waters each month depending on the weather. Montauk on Long Island's east end is one of its major ports.

According to the National Marine Fisheries Service, the mid-Atlantic coast tilefish population is not experiencing overfishing nor is it approaching an overfished condition. This fishery is in year 8 of a 10-year rebuilding management plan. Tilefish from New York is safe and nutritious to eat; it is not included in the FDA advisory for mercury which is in effect specifically for the tilefish from the Gulf of Mexico.

For every 3 oz. (85 grams) of plain cooked fish, tilefish provides 21 grams of protein and 130 calories with 30 calories from fat. Tilefish is a good source of Omega 3 and potassium and is low in cholesterol.

---Ken Gall, NYSG's seafood specialist and the New York Seafood Council

Bringing Science to the Shore
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New York Sea Grant
121 Discovery Hall
Stony Brook University
Stony Brook, New York
11794-5001

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SEAFOOD

CORNER

Two Cousins' Seafood Stew

Ingredients

1 lb. skinless tilefish, monkfish or other firm white fish
1 lb. Pacific halibut
¼ cup olive oil
1 bay leaf
1 ½ cups onion, chopped
¼ tsp. hot red pepper flakes
1 cup celery, chopped
¼ cup fresh parsley, chopped
1 cup sweet green pepper, chopped
½ cup garlic, chopped
1 cup dry white wine
4-6 cups tomatoes, peeled & crushed
1 lb. mussels, fresh cleaned with beards removed
12 little neck clams
1 lb. medium shrimp peeled & de-veined
salt & pepper to taste

Method

Cut all fish into 1-1/2 inch cubes. Set them aside.
Heat olive oil in large saucepan over medium heat. Add onion, celery, green pepper, and garlic. Cook and stir for 5 minutes. Add wine and bay leaf. Cook for 1 more minute. Stir in tomatoes, hot pepper flakes, salt and pepper. Simmer for 5 minutes.

Add the fish, clams, and mussels. Stir and cook over high heat for about 5 minutes. Add the shrimp and parsley. Simmer for 4-5 minutes. Serve immediately. Serves 6.

Source: Modified from Kevin Smith, Two Cousins' Fish Market, Freeport, NY.