

Maintaining Coastal Fisheries

Each year, New York's seafood, commercial fishing and sport fishing industries generate a total of \$11.5 billion worth of economic activity statewide. The figure is part of a report released this past spring by New York Sea Grant (NYSG) under the guidance of seafood specialist Ken Gall, who compiled the 100-page read along with an advisory committee of representatives from industry and government.

NYSG provided funding to economists at TechLaw, Inc. of Bethesda, MD who formulated the report's estimates of economic activity for these New York industries. "Prior to this study, no one had assessed the economic contribution of all three of these sectors to the state's economy," says NYSG Director **Jack Mattice**.

Promoting NY's Saltwater Sport Fishing

Last year marked the 50th anniversary since the signing of the Sport Fish Restoration Act, a major U.S. landmark in natural resources restoration and conservation. Several fishing organizations joined efforts to promote the sport and encouraged people to "step outside and enjoy fishing" as part of the year-long celebration. New York Sea Grant took steps to participate in this national initiative at the local level through its extension program, a partnership with Cornell University.

Marine Fisheries Specialist **Antoinette Clemetson**, along with NYSG's Office of Communications, completed an online "Fishery Resource Center" to provide marine-related fishing information. "Our goal was to enhance the initial fishing experience of beginners and less experienced anglers in order to generate an interest in the sport that will eventually develop into a long-term commitment," says Clemetson.

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In addition to analyzing the economic impacts of these industries, NYSG maintains coastal fisheries throughout the state. In New York's Great Lakes region, which includes Lakes Ontario and Erie, their tributaries, and the St. Lawrence and Niagara Rivers, the bulk of NYSG's fisheries-related upstate extension and research activities has been targeted on Lake Ontario. This smaller, but more economically important lake has been a focal point because it accounts for most of the state's Great Lakes shoreline. Related programming downstate in fisheries biology, management, conservation, restoration and aquaculture focuses primarily on Long Island's marine waters (*see sidebar*).

Efforts in both regions target a variety of primary audiences - anglers, bait and tackle dealers, organized fishing groups, charter and party boat operators, business owners, coastal communities, and elected officials.



In New York's marine district, these endeavors are documented in the regularly published *Sport Fishing Industry News*. And for 25 years, the Sea Grant quarterly publication *New York's Great Lakes Angler* has summarized the latest upstate technical fisheries information in an understandable format.

Currently, anglers from all over the world come to fish for trophy sized trout and salmon, smallmouth bass and panfish in the economically viable waters of Lake Ontario and its numerous tributaries and streams. But early in the 1990s, there was escalating concern for

the future sustainability of the fisheries among researchers, fisheries managers and fishery stakeholder groups. Some potential causes included possible food web unsteadiness, non-indigenous species impacts, heavy stocking pressure, nutrient reduction, fish predation by cormorants (*see Spring/Summer 1999 issue*), and the overall complexity of managing large ecosystems.

In addressing these issues, New York Sea Grant has been and continues to be a credible and objective information source between fisheries resource users and the research and management communities. NYSG played a role in the development and expansion of the Lake Ontario fishery by educating anglers on various techniques in locating, catching and identifying target sport species and practicing catch and release and by fostering growth of charter boat organizations and county fishery advisory groups. These efforts have created a sense of empowerment within the sport fishing industry.

Working closely with researchers at Cornell and SUNY College of Environmental Science and Forestry (CESF) in Syracuse, NYSG continues to address New York's Great Lakes invasive species issues and monitor impacts of the lakes' sport fisheries on the region and its coastal businesses. In the last decade, research studies have focused on angler effort and expenditures, angler markets, New York's Great Lakes charter boat industry, the effects of fish contaminant issues on fishing activity, and angler satisfaction (*see research on cited pages 5-7, and 15*). In addition, NYSG monitors changes in fishing license sales and motorboat registration data. Fact sheets and service letters are produced for all applied research results and distributed throughout the region to coastal businesses, chambers of commerce, tourism promotion agencies, and fisheries managers.

Throughout the 1990s, New York Sea Grant has prominently and consistently provided timely and comprehensible information to sport fishing stakeholder groups. "The successes of this program are directly attributable to extension and research working in unison," says NYSG Fisheries Specialist **Dave MacNeill**. "Our activities over the years have integrated extension outreach with sponsored research to successfully break down information barriers and have fostered closer working relationships between resource managers and public stakeholders."

For example, MacNeill, who is currently on temporary leave to complete his doctorate, commissioned renowned artist Peter Thompson to render full-color

artwork that accurately identifies all Lake Ontario watershed trout and salmon for educational posters and brochures. Currently available fish drawings — either generalized blackline drawings or inaccurate, low-resolution color — cause misidentification. Mac Neill says this new anatomically accurate and detailed set will help anglers better target species.

On the research side, NYSG developed a two-year \$600,000 “special focus” fisheries research project in early 2000 to better understand the complex dynamics of the Lake Ontario ecosystem and its fisheries. Headed by Cornell researcher **Patrick Sullivan**, this study is improving the understanding of factors affecting early survival and management of salmon in Lake Ontario (*see Summer 2000 issue*). This enhanced knowledge of the Great Lakes food web has aided the NYSDEC in its management of Great Lakes fisheries. One finding so far is that stocking levels of salmon was too great to be supported by the forage fish population, advancing the State’s ability to manage for a sustainable salmon population.

A number of NYSG-funded angler surveys were done in the last decade, three administered under Cornell’s **Tommy Brown**, **Barbara Knuth** and **Nancy Connelly** and two by CESF’s **Chad Dawson**. Overall, the surveys inquired licensed Lake Ontario anglers and charter operators on fishing efforts, satisfaction (theirs and customers), and fish consumption. Studies also helped to better identify anglers in New York’s varying geographic regions and suggested where to direct future fishery-related marketing and administrative efforts by analyzing market segmentation factors such as angler preferences, fishing experience, geographic origin, motivations, and product-related interests.

How have invasive species in the Great Lakes impacted New York’s fisheries? In addition to overseeing several fish ecology studies in the 1990s, CESF’s **Donald Stewart** assessed the impact of the zebra mussel on lake dynamics in Oneida Lake. Although results showed the zebra mussels helped to increase water clarity through filtration and declines in algae were found, primary productivity in the lake’s lower trophic level did not decline significantly and no decline in the lake’s total phosphorus was observed.

Also on Oneida Lake, Cornell’s **Ed Mills** found that while smaller yellow perch tend to feed mainly on zooplankton, larger ones prefer small crustaceans, which he found increased in abundance in the presence of zebra mussels. Another of Mills’ studies, which wrapped up in Fall 2000, examined changes in the Lake Erie ecosystem due to decreased nutrient loading and invasions of exotic species in an attempt to better predict fish production for improved fishery management.

On the pathology (disease)-related end of the fisheries spectrum, Cornell’s **Paul Bowser** led a study on the Cayuga Syndrome, a lethal deficiency of thiamine (vitamin B₁) affecting larval landlocked Atlantic salmon in several of New York’s Finger Lakes. The syndrome has been linked to a maternal diet of non-native alewife that has high concentrations of thiaminase, the enzyme responsible for B₁’s breakdown. Results have shown that earlier treatment at the egg hardening stage might provide a greater likelihood of avoiding long-term effects of the deficiency.

Also at Cornell, Paul Bowser and **James Casey** continue a study through early next year on the little-known swim bladder sarcoma virus - a possible skin lesion-causing disease recently identified in the U.S. affecting Atlantic salmon. “Our intent is to determine if monitoring for presence of the disease must take into account the time of year during which fish are tested,” says Bowser.

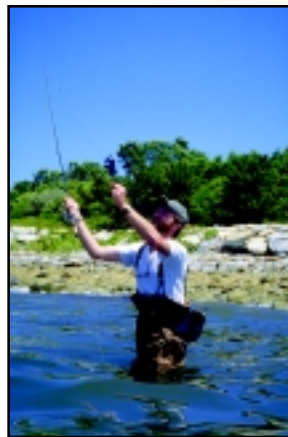
Fisheries management and population dynamics issues continue to be addressed in both New York’s Great Lakes and marine waters. At Cornell, **Lars Rudstam**’s examination of Lake Ontario mysid population dynamics helped refine acoustic techniques to estimate abundances of aquatic organisms. Results also determined that mysids are the dominant plankton eaters in offshore deep-water habitats, while fish are dominant in shallow nearshore habitats, and that mysids compete with larval salmonids for zooplankton, one of the basic foods for larger aquatic animals.

Stony Brook University’s (SBU) **Dave Conover** wrapped up two related projects in 2000, the first focusing on bluefish recruitment dynamics and the second on the role of marine reserves in fisheries management. Findings in the latter study addressed when reserves would work best, social issues surrounding their implementation, and their role within broader management schemes. And why study bluefish? As Conover explains, “Abundance of the species in any one segment of the coast in a given year may be a poor reflection of recruitment to another region in that same year, or for the coast as a whole.” Research showed a strong relation between April and May winds and the abundance of spring-spawned bluefish, possibly indicating that wind-driven surface flow aids the transport of larvae or juveniles across the shelf-slope region.

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During production of the online Center, a great deal of input was received from several stakeholder groups, including experienced anglers and bait and tackle suppliers, who Clemetson says deserve many thanks for generously offering their time and expertise on the project. The end result: a Web site featuring information on the biology, life history, distribution, management and regulation for species that are targeted by the region’s avid sport fishers—bluefish, porgy/scup, striped bass, summer and winter flounder, blackfish/tautog, and weakfish. Angling tips, rigging, knot tying, hook selection, angling etiquette and releasing techniques provide users hints for improving their fishing skills.

Says Clemetson of the Center’s electronic format, “This medium not only affords us the advantage of providing regular content updates, but also has the potential to reach a wider audience than by other more convention methods. We welcome comments and suggestions to assist us in improving the contents.” Downloads of *Sport Fishing Industry News* are also available.



NYSG’s Fishery Resource Center:
www.seagrant.sunysb.edu/Fishery

Photo courtesy of David Hutchins

**Article and sidebar
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