

THESE SCHOLARS FOLLOW THE FISH



“Being a Sea Grant Scholar was a tremendous opportunity to get involved with some critical issues on sustainable fisheries in the Great Lakes,” says NYSG Fisheries Specialist Dave MacNeill. “It certainly opened some doors and helped me to establish relationships with some top-notch scientists. Many of my contacts today I met as a Scholar.”

Photo courtesy of Dave MacNeill

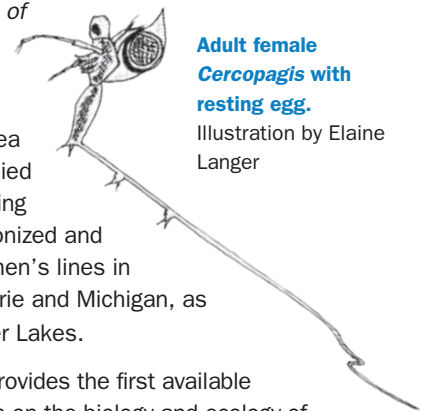
In a newly-funded two year study, Cornell University investigators **Drs. Paul Bowser** and **James Casey** are examining the transmission process of VHSV, the virus that causes the fish disease, so that better bio-safety protocols and decontamination methods can be developed. “The virus destroys the cells that line various blood vessels in the fish and causes bleeding,” says Bowser. “Bleeding destroys internal organs, such as the heart, liver, spleen and kidneys, and eventually the fish dies.” 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 MacNeill.

Striking a Balance

Dave Warner is a Research Fisheries Biologist with the U.S. Geological Survey’s Great Lakes Science Center in Ann Arbor, MI. Upon completing his work as a Sea Grant Scholar in 2004, Warner defended his thesis on *“The Role of Cercopagis pengoi in Nearshore Areas of Lake Ontario.”*

The nearly microscopic fishhook water flea that Warner studied is known for having successfully colonized and clumping fishermen’s lines in Lakes Ontario, Erie and Michigan, as well as the Finger Lakes.



Adult female *Cercopagis* with resting egg.

Illustration by Elaine Langer

“This research provides the first available basic information on the biology and ecology of *Cercopagis* in North America,” says SUNY Brockport’s **Dr. Joseph Makarewicz**, principal investigator, along with newly-retired **Dr. Ed Mills** (Warner’s advisor) on this study.

“By developing and training scientists with large lake experience and providing opportunities to work with leading scientists in fisheries and limnology, we see the full value of the Sea Grant Scholars program

Since 1971, New York Sea Grant has supported nearly 600 Scholars at a total cost of over \$9 million. “Our support helps optimize the students’ educational experiences and provides an introduction to the philosophy of the Sea Grant Program,” says **Cornelia Schlenk**, NYSG Assistant Director.

New York Sea Grant gives high priority to supporting graduate students, recognizing their importance to the conduct of university research in marine or related sciences. Student theses often impart very useful results and information that may not appear in the published literature. And many of NYSG’s Scholars – including several of the fisheries specialists profiled below – have gone on to highly successful careers in government, industry and academia. Their anticipated roles as decision-makers, managers, administrators, business owners, researchers, extension specialists and teachers are critical to the future of our marine and Great Lakes resources and all who rely on them.

“It began my career in Great Lakes resources,” says NYSG’s **Dave MacNeill** of his Sea Grant Scholar days. “It made me realize this is what I want to do.”

MacNeill, now a NYSG Fisheries Specialist who works closely with researchers, says, “The relevance of the research and what’s going on in Great Lakes fisheries is currently a tight fit.” He mentions VHS (viral hemorrhagic septicemia), a fish disease affecting muskellunge, round gobies, smallmouth bass, freshwater drum, among other fish species.



New York’s Sea Grant Scholars work on research throughout the state. For more, click on “Education” > “Publications” > “Coastlines Articles” and peruse the “Sea Grant Fellows/Scholars” section

to both the young scholar and the nation,” says Makarewicz. “Dave Warner has become an important contributing member of the Great Lakes research community with an exciting future.”

At USGS, Warner conducts acoustic research in Lakes Michigan and Huron and assists with other projects such as lake trout restoration. “I design, plan and implement acoustic surveys to provide lakewide assessment of prey fish biomass and distribution for use in ecological research and management of commercially and economically important predators like Chinook salmon and lake trout,” he says.

“As a Sea Grant Scholar, I learned how to design and implement ecological studies in very large bodies of water,” says Warner. “Also, papers stemming from NYSG research – from the ecological role of *Cercopagis* in Lake Ontario, to acoustic methods for mysids, alewife, smelt and other forage fish – are cited in a number of the papers my colleagues and I are currently writing.”

“I think that NYSG research has a large impact on Great Lakes knowledge as well as day-to-day operations,” he continues. “The mysis work done by [Cornell University researcher]

Dr. Lars Rudstam led me to incorporate new sampling tools earlier this year to acoustically assess mysids in Lakes Michigan and Huron.” Prior to his work under Makarewicz, Warner was also a Sea Grant Scholar on a 2002-2003

hydroacoustic population estimates project of Rudstam and **Dr. Patrick Sullivan**.

“Hydroacoustic surveys have great potential for giving us absolute estimates of forage fish abundances in the Great Lakes,” says Rudstam. “Such abundance measures are necessary to correctly estimate potential production of sportfish such as salmonids and walleye.”

The balance between forage fish (prey) and sportfish (predator) is crucial. In fact, one prey species, alewife, serves as the cornerstone of Lake Ontario’s ecologically and economically valuable trout and salmon sport fishery. Data on the abundance of this key prey species are used by management agencies such as the NYS Department of Environmental Conservation and U.S. Fish and Wildlife Service to help set sustainable stocking levels for a variety of salmon and trout species. “Alewife supports major sport fisheries, contributing millions of dollars to the local economies, so it’s important to look at



what governs the production of the species,” says Rudstam.

Rudstam is currently heading a two-year NYSG-funded project to forecast ecosystem effects of a new invasive species, *Hemimysis anomala* or the “bloody-red shrimp,” in Lake Ontario.

Back to the Future

In the late 1980s, Sea Grant Scholar **Doran Mason** completed his thesis on “*Influences of Predation by Alewives on the Survival of Larval Yellow Perch in a Lake Ontario Embayment*.” Mason, currently the Chief Scientist at NOAA’s Great Lakes Environmental Research Laboratory (GLERL)



in Ann Arbor, MI, studied under SUNY College of Environmental Science and Forestry (SUNY ESF) researcher **Dr. Stephen Brandt** at the same time as NYSG’s MacNeill. “Both Dave and Doran have become extremely successful leaders in Great Lakes fisheries,” says Brandt, new Director of Oregon Sea Grant. “Their continued interest in doing things relevant to Great Lakes communities was developed when they were Sea Grant Scholars.”

Mason’s project provided information to managers on the predation of alewives by larval yellow perch, the primary sport fish in New York State throughout the Great Lakes. Data helped guide management decisions regarding stocking levels and maintaining a desirable population level of these two species, as well as salmonids.

And 20 years later, interactions between these key Great Lakes fish species are just as important. “Understanding and accurately forecasting alewife condition and growth remain a high priority to support important management decisions in Great Lakes fisheries,” says Buffalo State College investigator **Dr. Randal Snyder**, investigator on a new two-year NYSG-funded alewife study. This research will improve the ability to optimize salmonine stocking rates, to forecast how changes in food webs or abiotic (physical and chemical) factors will affect alewife populations, and better predict the impact of alewives on their prey populations.

Overall, MacNeill is pleased with how things have progressed professionally for Warner, Mason, LaPan (see sidebar) and other Sea Grant Scholars. “These former Scholars have gone on to do great things.”

— **Paul C. Focazio**



See “Theme Areas” section for more on VHS, *Cercopagis* and other Fisheries and Aquatic Invasive Species research.

Yellow perch image courtesy of Cliff E. Kraft, Dept. of Natural Resources, Cornell University.

Hemimysis anomala image courtesy of Steve Pothoven, National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Lab.

TAKING STOCK

Before his days as a Lake Ontario fisheries leader at NYS Department of Environmental Conservation’s Cape Vincent Fisheries Station, Steve LaPan was a Sea Grant Scholar.

His 1985 thesis on “*Spawning and Early Life History of Muskellunge and Northern Pike in the St. Lawrence River*” was completed in tandem with NYSG-funded research by SUNY ESF investigators Drs. Robert Werner and Neil H. Ringler.

The project provided managers with information to effectively manage these fish stocks, including their life history, habitat requirements, interactions and basic population parameters.

During the study, LaPan discovered 36 key muskellunge spawning areas in the 1,000 Islands region of the St. Lawrence River. As a result, the bays were protected from development that would have threatened these delicate spawning grounds.

The work was a springboard for LaPan’s NYSDEC days, where he helps to manage the fish resource within Lake Ontario.

“By managing, we mean we evaluate the success of stocking fish, both to enhance some fisheries and to restore others,” he says. “We also undertake regular surveys to monitor the health of fish stocks and to establish the effectiveness of stocking and harvest policies.”