Training Tomorrow's Scientists

Educating the next generation of scientists is part of New York Sea Grant's mission. And what could better exemplify such a mission as the support given to both undergraduate and graduate students participating in scholarship and fellowship programs that focus on coastal research and policy.

Matt Ajemian (far right) enlists the help of other Summer REU students at Stony Brook's Marine Sciences Research Center as they use a 100-foot seine net to catch Atlantic silversides in Great South Bay. Photo courtesy of Megan Dantzler

Undergraduate **Matt Ajemian**, sponsored by New York Sea Grant, sampled the waters of Long Island's south shore on some of the summer's good "beach days" along with other student participants in the **Research Experience for Undergraduates (REU)** hosted by Stony Brook University's Marine Sciences Research Center and directed by **Dr. Josephine Aller**. Matt, a junior at Boston College and Long Island native, looked at the feeding behavior of juvenile Atlantic silversides (*Menidia menidia*) during the eight-week program and often enlisted the help of the other REU students in the program. Those eight students (sponsored by the National Science Foundation) studied other aspects of the Great South Bay, ranging from its physical factors (groundwater discharge and salt penetration), its geological history (salinity variations over time), and its living resources (microbial communities, shellfish and finfish).

Matt's project stemmed from a current NSF funded project being done by his mentor, **Dr. David Conover**, who is looking at the predator-prey relationship between the predatory bluefish (*Pomatomus saltatrix*) and young silversides. Conover and **Dr. Steven Arnott** study how latitude of the fish affects the species' ability to escape predation. They have found that in colder climates, fish must develop more quickly due to a shortened breeding season. This has had certain tradeoffs in evolution—namely that the fish actually develop poorer swimming abilities and thus are more prone to predation. Whether or not this is trend is actively in effect in Great South Bay estuaries is currently under study by Conover and Arnott.

On the rugged coastline of Maine, NYSG has been funding summer research experiences for qualified Cornell undergraduates for the last three years. According to course leader **Dr. Bruce Monger**, senior researcher at Cornell's Center for the Environment, only top students are selected for courses at **The Shoals Marine Laboratory** which is jointly operated by Cornell University and the University of New Hampshire. All the course instructors are NASA Earth Science Enterprise Science Team Members who conduct active research in their respective fields at prestigious institutions.

In the summer of 1999, **Benjamin Carr** analyzed one year's worth of SeaWiFS ocean color data to study the seasonal phytoplankton dynamics in various North Atlantic regions —the Grand Banks, Georges Bank, the North Sea and the open-ocean North Atlantic. Ben developed a method to establish the precise starting time of the spring bloom and created movie loops to demonstrate the dynamic nature of the spring bloom event in the different regions.

To study feeding behavior in these small, but important fish, the students took nine samples within a 24-hr period. Photo courtesy of Megan Dantzler

NYSG has supported a Cornell undergrad for the last three summers at the Shoals Marine Laboratory.

Phillip Roseman did his summer of 2000 student project on the seasonal changes in chlorophyll concentration in the Great Lakes using SeaWiFS ocean color satellite imagery. He clearly demonstrated significant intra-lake difference in the seasonal pattern of change in chlorophyll concentration. Phil offered a good hypothesis that may have explained these differences in terms of the relative flushing time of each lake system.

And in this past summer of 2001, Cornell undergraduate **Eli Perrone** analyzed satellite imagery of ocean wind speed, sea-surface temperature and chlorophyll concentration derived, respectively, from QuickScat, AVHRR and SeaWiFS sensors. He wanted to gain an understanding of the physical mechanism responsible for localized regions in the North Atlantic that experience unusual early spring phytoplankton blooms that occur before usual thermal stratification. He proposed that unusually low wind speeds might allow phytoplankton to remain high in the water column before it is stratified. Eli and advisor Monger are continuing this research as part of Eli's senior thesis.

A little closer to home at SUNY Brockport, **Betsy Damaske**, a Sea Grant Scholar working with **Dr. Joseph Makarewicz**, a NYSG-funded researcher of longstanding in the area of aquatic nuisance species, won the Best Student Presentation in the Limnology and Ecology section of the **Great Lakes Research Consortium** annual meeting in March 2001 held in Syracuse at SUNY CESF. After graduating with a degree in biology from Nazareth College of Rochester, Betsy first worked as a metals analyst at an environmental laboratory in Rochester. She decided to get a master's degree to become an environmental consultant. Her masters thesis on evaluating trophic interactions and changes in Lake Ontario biota due to the invasive fishhook water flea, *Cercopagis pengoi* is being readied for publication.

With the title "Roles of Coastal Habitats in the Life Histories of Lake Ontario Fishes," Sea Grant Scholar **Darran L. Crabtree** received a NYSG **Thesis Completion Award** during the fall of 2001. Darran, under advisement from SUNY-CESF's **Dr. Neil Ringler** was featured in the Winter '99 *Coastlines* article "CoastWatch: A Fisheye View on Lake Ontario."

Another successful Sea Grant Scholar who started in research and has spent a year in the policy area is **Katherine Mills**. Her year as a NYSG's sponsored Knauss Fellow soon draws to a close. Since early 2001, Kathy has worked with the US Senate Commerce Committee's Subcommittee on Oceans, Atmosphere, and Fisheries and handled marine habitat issues such as marine protected areas. Sea Grant's Knauss Fellowship program provides practical, "hands-on" policy-making training on marine and Great Lakes resources to graduate students who are hosted by the legislative or executive branches of the federal government in the Washington, DC area. Says Kathy, the experience "links academic training to real-world marine management issues and provides an opportunity to work in collaboration with managers to address them."

This Duke University grad is working on her thesis on fish community structure in tidal wetlands under Cornell's **Dr. Mark Bain**. Kathy's master's research, was done as a Sea Grant Hudson River National Estuaries Research Reserve/ Sea Grant Fellow in 1998.

New York Sea Grant's 2002 Knauss Fellow **Laura Oremland** will work for the National Marine Fisheries Service. She recently completed her MS and was a Sea Grant Scholar under Stony Brook University's **Dr. Dianna Padilla** on a NYSG-funded project to study zebra mussel population dynamics in the Hudson River.

—Barbara A. Branca

Says Sea Grant Scholar Betsy Damaske, "I have thoroughly enjoyed my time spent at SUNY Brockport working in the lab and on the research vessel."

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