



Young scholars and summer fellows at MSRC

Graduate student Tim Anderson points out marine life to visiting students at Flax Pond.



For three-days in August, 20 7th- and 8th-graders heard lectures on marine topics and took field trips to Flax Pond and the adjacent laboratory. And on the final day of the program, they visited the New York Aquarium at Coney Island to see some of the marine creatures they learned about in lectures.

"The program was such a success," said Wise, "that MSRC and C-STEP are planning an improved and expanded 1993 program."

IN THIS ISSUE

- Environmental author Roger Stone researches 3-Village changes
- Video on the Sound ready for classrooms
- Students learn life lessons aboard the R/V Lord Jim

C-Step students learn about marine life at MSRC

For the past several summers, MSRC faculty, staff, and graduate students have conducted field and laboratory courses in marine sciences for high school students. But this year, Associate Director Bill Wise and graduate student Tim Anderson initiated a program to introduce middle school children (grades 7 and 8) to the marine sciences.

The students are part of the University at Stony Brook's Collegiate Science and Technology Entry Program, known as C-STEP. C-STEP's goal is to increase the numbers of under-represented minority and economically disadvantaged college students pursuing degrees in scientific, technological, and health-related fields.

MSRC hosts Summer Research Institute high school students

Three MSRC professors were sponsors for budding high school researchers this past summer. They were matched along common interests through the Summer Research Institute program created by the University's Center for Science Mathematics and Technology Education (CSMTE) and the Center for Excellence and Innovation in Education.

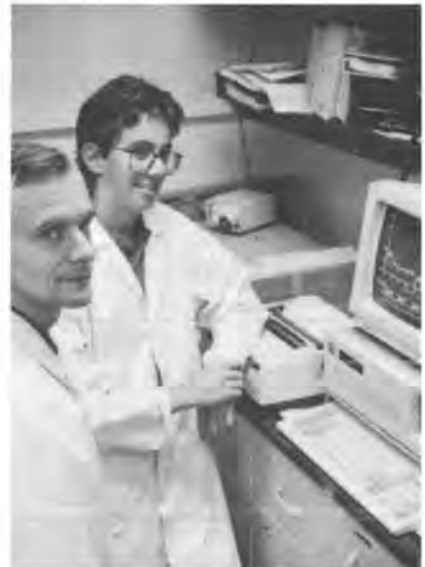
Professor Robert Aller, a biogeochemist, was matched with Daniel Kramer of Mt. Sinai High School. After an interview, both Aller and Kramer agreed on a project to examine suspended material collected in Long Island Sound.

continued on page 2

Summer Research Institute,
continued from page 1

Kramer examined samples from the Sound for various aspects of the manganese cycle. Aller and Kramer clicked so well, they are continuing their partnership beyond the program. "Daniel made enough progress that I would like to see him carry the project through to completion," said Aller. And Kramer hopes this research will be a basis for a Westinghouse science competition project.

Another partnership was fisheries biologist David Conover with twins Christopher and Robert Gatto from Ward Melville High School. The Gattos are also continuing the research after school part-time. Fisheries biologist Robert Cowen was paired with Melissa Laufer of Oceanside High School.



▲
**Bob Aller and
Daniel Kramer**



▲
**Environmental author
Roger Stone**

MSRC aids environmental author Roger Stone in research on Stony Brook area book

Author Roger Stone will once again be visiting the Stony Brook area, but this time for more than a one-day workshop. He will be making a number of extended stays over the coming year to research a new book with the aid of MSRC and Stone's environmental intern Christopher Robbins. He and Robbins will be gathering research for a study of the changing environment around the Three Villages area, which includes Stony Brook.

Stone, who grew up in nearby St. James, visited MSRC in the spring of 1991 to host a workshop for writers. He had not been back to visit the area since the 1950s, and was surprised to see how it has changed since then. Later, he attended the Earth Summit in Rio de Janeiro, and concluded that it would be useful to write a new

book on how environmental changes along this part of Long Island's north shore relate to the world's search for sustainable economic development.

Previous projects that addressed these issues have taken Stone to the Amazon basin ("Dreams of Amazonia") and on an 8,000-mile sail from Maine to Rio de Janeiro, landing along the way to interview scientists, environmentalists, and ordinary citizens about the changes they have seen in their coastal environments ("Voyage of the Sanderling"). His latest book, released this past spring, is entitled "The Nature of Development: A Report from the Rural Tropics on the Quest for Sustainable Economic Growth."

Robbins, a recent graduate from the University of New Hampshire, will be surveying local public opinion to learn what citizens feel

continued on page 3

continued from page 2

the environmental issues are. He will also be collecting environmental data, actually joining an MSRC graduate field course, Oceanographic Problem Solving, to do so.

This year's course project examines dredging Stony Brook Harbor—the potential benefits and dangers and, if it is dredged, how best to do it. The pros and cons of the proposal to dredge the harbor has been debated for several years, so the data from the study, which

"How things turn out here will say much about how things may turn out nationally and globally. I see this region as very much of a bellwether..."

was suggested as a class project by the Town of Brookhaven, will be useful to them in deciding the issue.

At the end of the course, students present the results in a public forum. Previous presentations have been widely attended by diverse groups, such as state and local governmental agencies and local community groups.

And with the data he and Robbins collect, Stone may be able to add some insight into the local feelings about the area's environment for his book. He senses that people living here perceive degradation to their beaches and water systems because of the extreme gradation in environmental quality that characterizes Long Island—with New York City to the west and the pristine Peconics bays to the east.

His focus is on the Three Villages because, says Stone, "How things turn out here will say much about how things may turn out nationally and globally. I see this region as very much of a bellwether, and look forward to learning more about how its future is shaping up."

FACULTY AND ALUMNI NOTES

The MSRC Alumni Association presented their annual student travel awards to Mead Allison, Jon Hare, Senjie Lin, Teresa Rotunno, and Arnoldo Valle-Levinson. These awards cover expenses while students present their work at conferences.

Rotunno and Hare presented papers at the 16th Larval Fish Conference in Rhode Island in June. Valle-Levinson presented a paper in June at the Mesoscale Meteorology and Oceanography meeting in Quebec City, and Mead Allison gave a paper at the Second International Research Symposium on Modern and Ancient Clastic Tidal Deposits in Wilhelmshaven, Germany in August. Lin will be presenting a poster at the American Society of Cell Biology meeting in Denver in November.

Physical oceanographers Malcolm Bowman and Kamazima Lwiza have received a grant for 1993-94 from the Hudson River Foundation. Their proposal is titled, "Interaction of the Hudson River estuary with the adjacent coastal waters of the New York Bight."

Physicist Robert de Zafra left for McMurdo Sound, Antarctica this summer to take measurements on the Antarctic spring ozone hole.

Atmospheric scientists Robert Cess and Marvin Geller traveled to Beijing in July to give talks at the International Symposium on Geophysical Fluid Dynamics and the Environment.

Geller also gave talks at National Central University at Chung Li, Taiwan in July. He met with the National Space Program Office to

continued on back

continued from page 3

begin instrument evaluation proposals for Republic of China's Satellite I to be launched in 1997.

Chemical oceanographer Cindy Lee attended the National Academy of Sciences Ocean Studies Board Meeting in Woods Hole, Massachusetts in August.

Lee, Josephine Aller, Robert Aller, and Kirk Cochran attended meetings of the Department of Energy Ocean Margins program, held at Woods Hole and Brookhaven National Laboratory this past June.

Physical oceanographers Akira Okubo and Robert Wilson were invited to a workshop on marine aggregates at Marine Biological Laboratory, University of Copenhagen, Helsingør, Denmark in August. Both gave a series of lectures on shear diffusion, mixing, and particle resuspension in stratified tidal flows, marine biofluid mechanics, and fractals relevant to marine aggregation.

Dr. Terumi Ikawa, on leave from the Department of Physiology, Nippon Medical School, Tokyo, is Visiting Assistant Research Professor at MSRC from 1991-1993. She is working on three-dimensional analysis of animal movements, collaborating with Akira Okubo, her

host at MSRC, marine biologist Jeannette Yen, and others. Ikawa attended the Fourth International Behavioral Ecology Congress in August at Princeton University where she presented a paper, "Sex allocation of parasitic wasps: local mate competition and dispersal before mating and host quality variation."



▲
Susan Sponaugle

MSRC Dean and Director Jerry R. Schubel was appointed Chairman of the National Research Council's Marine Board in July. The Marine Board is an internationally recognized source of expertise on management of oceans and coasts

and marine applications of engineering and technology. Chemical oceanographer Mary Scranton and students Hanguo Wu, Beth Lamoureaux, and Heloisa Borges participated in field trips in June and August in Rhode Island. The research, in collaboration with scientists from the University of Rhode Island, involved studies of methane and low molecular weight fatty acids in an anoxic estuarine basin.

Graduate student Susan Sponaugle has received the 1992 J. Frances Allen Scholarship for her proposal, "Recruitment processes in Caribbean coral reef fishes." Sponaugle, a student of marine biologist Steven Morgan, has been working with fisheries biologist Robert Cowen on patterns of fish recruitment to the leeward shore of Barbados.

Professor Charles Wurster was staff ornithologist on the 70-passenger ecological tour ship, M.V. *Sea Bird* in Southeast Alaska for the month of July. The tours range between Prince Rupert, British Columbia, and Glacier Bay National Park, Alaska.

Editor: T.M. Bell
Graphic Design: L. J. Palmer

**Marine Sciences
Research Center**



State University of New York at Stony Brook
Stony Brook, N.Y. 11794-5000

NON-PROFIT ORG.
U.S. POSTAGE

PAID

STONY BROOK, NY
PERMIT No. 65

Lessons on Long Island Sound

First videotape in series ready for classrooms

Several years ago, Stevens Productions produced the video, "How Sound is Long Island Sound?", which was broadcast on public TV's



Stevens Productions videotaping on Long Island Sound

Channel 21. MSRC served as scientific consultant.

The collaboration continued with the U.S. Environmental Protection Agency-sponsored video, "Alive in an Urban Harbor," with

MSRC again serving as scientific consultants as well as co-producers.

Now, a new collaboration is nearing completion, with the target audience science students of Long Island and Connecticut schools. The subjects of the series of five videos are the biology, chemistry, geology, physical oceanography, and management of the Sound.

"The Biology of Long Island Sound," generously illustrated with professor Jim Mackin's computer-generated graphics, has had a preliminary showing for several science teachers. Judging by their responses to this first video of the series, schools will be very interested in using them as teaching aids for science, advanced placement, and even other, non-science classes.

For information on the videos, contact MSRC's main office: 516-632-8700.

Chancellor Academy teaches classes and confidence on cruises

Chancellor Academy of Pompton Plains, New Jersey is using MSRC's 48' trawler yacht, the R/V *Lord Jim*, for an innovative teaching program called Oceanographic Odyssey. The academy, a high school for students at risk of educational failure, began Odyssey as a seamanship program to

instill self-confidence in students with a history of failure.

In the original program, students learned first hand how to navigate, pilot, and maintain a vessel, including some refurbishing, using their carpentry and woodworking skills. But Odyssey has now been expanded into a hands-on environmental education program, as well, with a series of excursions to Port Jefferson harbor and MSRC.

For this past summer's program, MSRC's Associate Director Bill Wise conducted lectures on marine topics and field trips in the harbor and at Flax Pond. "MSRC is proud to be working with Chancellor Academy to try to turn these young lives around," said Wise, "by using their innate interest and curiosity about the sea."

Bill Wise discusses video on Long Island Sound with Chancellor Academy students



David Conover

Unfolding the unusual life history of bluefish

"Slammer" bluefish—the large, fast, and fighting spirited favorite of group fishing parties—are by weight the number one landed sport fish on the U.S. east coast. With a healthy population and only a small commercial fishery at stake, why should fishery biologist David Conover bother studying them?

According to Conover, the bluefish's unusual life history, of which very little was known before he began this research, is of interest in its own right. Given their value as a recreational species and the decline of other sport fish, bluefish have recently been protected by catch limits.

"We want to study bluefish while they are still abundant, so we have something to compare to if they do go into decline," said Conover. "Much of the data we have collected will be valuable to advise conservation officials on an effective management strategy."

Some of his data relate to the timing of their spawning and migration as larvae, which allows them to arrive from the south in New York waters when the fish they will prey on are the right size for them to eat. And some of the data relate to the advantage bluefish gain from being spawned earlier than their prey.

Every Spring, adult bluefish living along the nearshore coasts of the Carolinas swim offshore to lay their eggs. The newly hatched larvae are transported northward by warm currents associated with the Gulf Stream, arriving on the continental shelf offshore of New York and New Jersey in May and June. About 60 days after hatching, they begin swimming inshore to live in local bays.

For a number of years, Conover and his students have been studying the association between



bluefish spawning season and recruitment into local bays by collecting data from their earbones, or otoliths. From the number of growth rings in the otoliths, he can back calculate to estimate the spawn dates of bluefish collected in the shore zone.

He has learned that there are two recruitments, one consistent with spawning off the Carolinas, and one from a later spawning off the shores of New York. From these same otolith calculations, he has also learned that bluefish—the only inshore fish that enters the fishery at less than one year old—grows faster in its first few months of life than almost any other East Coast fish.

Bluefish spawned off the Carolinas arrive in New York when the local waters have warmed—just as spawning of resident species is beginning. As they begin swimming into local bays, the planktonic larval bluefish, which had been feeding on zooplankton, abruptly shift their lifestyle. As they

metamorphose into juveniles, they suddenly become voracious predators, feeding at a higher rate than most other fish species.

Their prey at this time are the larvae and smallest juveniles of other fish species, most of which weigh less than a gram. During their first three months of life, bluefish grow from 2-4 grams to about 100-200 grams. Based on the known growth efficiencies of most fish (about 10-20%), this weight gain indicates they must be eating roughly one kilogram of food, or about 1,000 prey.

This rapid ingestion rate accounts for their rapid growth rate, a beneficial factor in their pursuit of prey. But what exactly is the impact on the young-of-the-year prey species by juvenile bluefish? Conover is currently trying to relate bluefish consumption to the abundance of prey to determine this.

To get a rough idea of how fast bluefish process their food, called the gut evacuation rate, Conover and his students will feed bluefish at three stages of development their preferred prey over a 10-day period in the laboratory.

"Knowing this and how much food on the average is in their stomachs over a 24-hour period, we can calculate the amount consumed," said Conover. They will also use a database from the NY State Department of Conservation from 10 years of fish tows on the Hudson River to determine bluefish abundance relative to their prey.

Bluefish feed on almost any small fish they come across—anchovies, weakfish, and the endangered striped bass. Thus, management of these prey species requires knowledge of the impact that bluefish have on them.