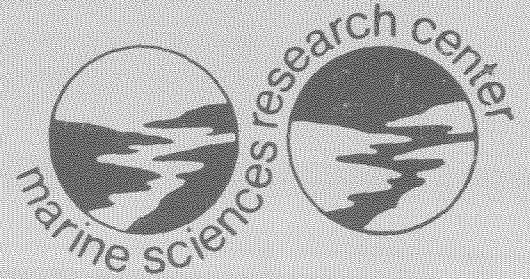


MARINE SCIENCES RESEARCH CENTER



1990 Graduate Study

STONY BROOK
STATE UNIVERSITY OF NEW YORK

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MARINE SCIENCES RESEARCH CENTER ...

...The Choice for Graduate Studies

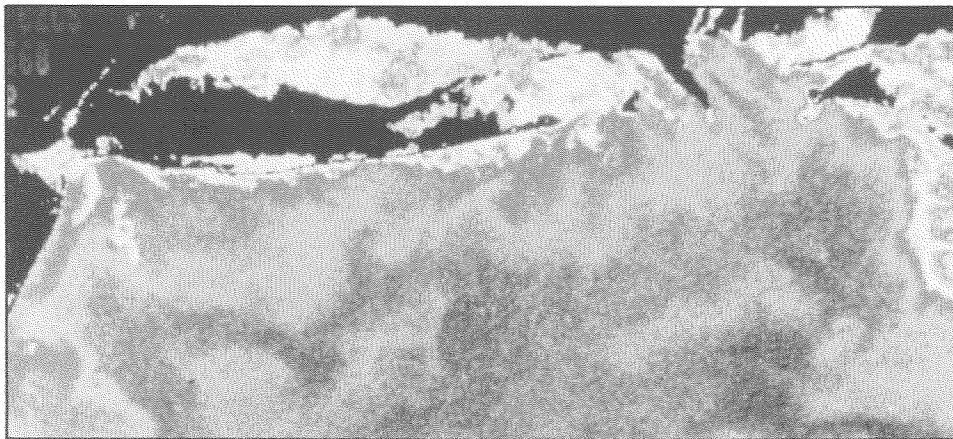
MSRC is the center for research, graduate education, and public service in the marine sciences for the State University of New York (SUNY) system, one of only 70 Type 1 Research Institutions in the nation, as designated by the Carnegie Foundation. MSRC is one of the few comprehensive coastal oceanographic institutions in the world, with scientists who work in marine environments across the globe and students and scholars who come from all nations to work and study.

Located on Long Island's north shore, a short distance from Long Island Sound and about 50 miles from New York City, MSRC is situated in one of the world's greatest natural coastal laboratories. The diversity of coastal environments—all within an hour's drive of the Center—is greater than any comparable region in the world: a deep estuary modified by glacial processes (Long Island Sound); a bar-built estuary (Great South Bay); a drowned river valley estuary (Hudson River Estuary); barrier islands; fresh and saltwater tidal wetlands; and open continental shelf waters.

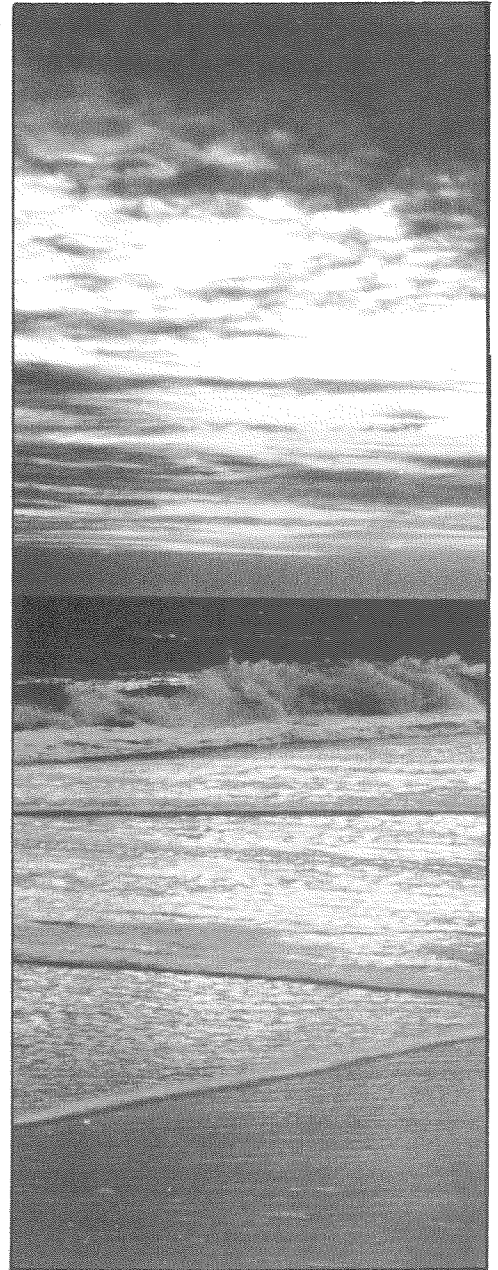
Because of the large population in the region, society makes varied, intensive, and competitive demands on these environments. These demands, ranging from swimming to dumping wastes, are unmatched in any other area of comparable size. Nearly 10% of the population of the United States lives within 100 miles of MSRC. The distribution of the stresses of society are characterized by a sharp west to east gradient. Coastal waters of New York Harbor, the New York Bight Apex, and western Long Island Sound are seriously degraded. Farther to the east, the waters of the central and eastern Sound and the Peconic Bay system are among the most pristine coastal environments in the United States.

The combination of diversity of natural environments, their importance to society, and the stresses caused by society make Long Island a unique laboratory for students wishing to pursue careers emphasizing fundamental research on coastal processes or the applications of research to improve environmental management. But even though there is no shortage of problems close to home, many MSRC students conduct their graduate research in such far-off places as Pakistan, China, Brazil, Peru, the Antarctic, the Caribbean, the Mediterranean, and Scandinavia.

We at MSRC invite you to visit us and hope you, too, will discover the excitement and challenge of our unique environment.



Satellite photograph of Long Island.



Oceanography is an international science. I've found learning and interacting at MSRC with students from every habitable continent to be equally important and stimulating as learning and interacting with students from each scientific discipline.

—John Reinfelder
Ph.D. Student

GRADUATE STUDY AT MSRC

“When I chose the graduate program at MSRC, I was particularly interested in applying research science to policy and land use decision making. The mixture of basic core science, management, and environmental law courses and original field research allowed me to build a foundation that has been useful to me and attractive to employers.”

—Betsy Adamson
Deputy Director

Office of Environmental Impact
New York City Department of
Environmental Protection
M.S., 1982

“One of the unique things about the Center is its interdisciplinary nature. Thesis projects usually encompass various aspects of biological, physical, chemical and geological oceanography. The faculty are outstanding in all areas. It’s great to be able to interact with so many different people with so many different specialties all in one place.”

—Lisa Clough
Ph.D. Student

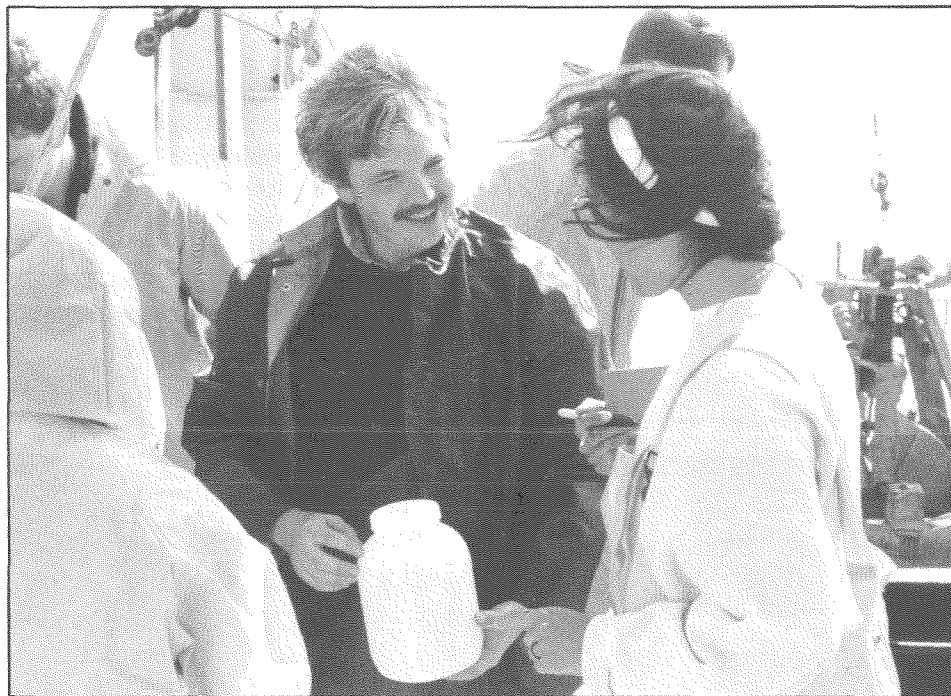
The primary focus of the MSRC faculty and students is on fundamental research, research designed to increase our understanding of oceanographic processes, particularly those that characterize the Coastal Ocean. But the Marine Sciences Research Center is also committed to the use of the results of research to solve problems that result from society’s uses and misuses of the ocean.

Interdisciplinary Approach

MSRC prides itself on the interdisciplinary emphasis it places on research and education. Within this interactive framework are faculty and students making fundamental scientific breakthroughs across the breadth of disciplines representing marine sciences:

- biological oceanography
- fisheries biology
- chemical oceanography
- geological oceanography
- physical oceanography.

An interdisciplinary approach is essential in tackling complex research problems of prime interest in oceanography today. For example, research being conducted on the migratory behavior of fishes entails an understanding not only of the behavior, but also of currents and eddies, which play a role in egg and larval dispersal from, and sometimes return to, a site.



MSRC's Institutes

A large number of MSRC's many research projects involve commercial and recreational fisheries, aquaculture, transportation, shoreline development, waste management, and beach erosion and stabilization. Over the past few years, MSRC has launched three institutes to allow a more effective response to emerging problems and opportunities:

- The Living Marine Resources Institute (LIMRI)
- The Waste Management Institute (WMI)
- The Coastal Ocean Action Strategies (COAST) Institute.

The Living Marine Resources Institute. LIMRI'S focus, along with that of the Fisheries Biology Group, is on research that increases knowledge for better management of marine resources such as fish, shellfish and seaweeds, and on related policy development.

The Waste Management Institute. WMI's focus is on research that addresses the impacts of waste in our coastal marine environment and on policy development for waste management.

The Coastal Ocean Action Strategies Institute. The COAST Institute's focus is on working with policy makers on problems in the management of the coastal zone to develop strategies for taking action in the pressing issues affecting our coastal environment.

All of these institutes are interrelated in some way, as are the institutes' research goals with those of many of our faculty. The institutes are valuable resources for the student interested in coastal zone management, policy development, research that aids these goals, and the translation of the results of that research into usable forms for managers and policy makers.

THE GRADUATE PROGRAMS

MSRC offers both a Master's degree in Marine Environmental Science and the Ph.D. degree in Coastal Oceanography. Both programs are flexible and require students to acquire a broad understanding of the processes that characterize the Coastal Ocean. Both programs require a solid foundation in the basic sciences: physics, chemistry, biology, and geology. The graduate student must also concentrate on original work in an area of oceanography, most often with laboratory or field work involving the special problems posed for scientists who work at sea.

The Master's Degree

The Master's degree program is flexible and designed not only to provide students with the training required for successful pursuit of more advanced degrees, but also to equip them with the background needed for effective careers in oceanography without additional training.

A research thesis is required, which must be an original work of publishable quality. The thesis may take any one of several forms. Most often it is based on laboratory and field research.

The thesis may also reflect the application of existing knowledge to develop a management strategy for an environmental problem; or it may be a critical assessment of the effectiveness of existing pollution abatement techniques or management strategies and an exploration of alternatives.

"The involvement with the scientific community, policy makers, marine environmental managers, and industry—this multiple-entity involvement—is an important factor for me as an oceanographer."

—Arnoldo Valle
M.S., 1988

"I have greatly enjoyed my years at MSRC, and have since then found the comprehensive education and diverse experience I gained there to be invaluable in my pursuit of a marine research management career."

—Cornelia Schlenk
Assistant Director
New York Sea Grant Institute
M.S., 1983





The Ph.D. Degree

The doctoral program is designed to give students a professional command of oceanography at the highest level and to provide them with the means to develop their capacity for creative research.

Students must demonstrate the ability to formulate an important original problem and to address the problem effectively. Although oceanography requires an interdisciplinary course of study, the student must also achieve a profound knowledge of at least one basic science.

The doctoral program is designed for students who already have a Master's degree, but exceptional scholars in the Marine Environmental Science Program can have the requirement of a Master's degree waived. A doctoral dissertation is required of all candidates.

Admission to the Programs

Admission is highly competitive. Minimum entrance requirements normally include a bachelor's degree in one of the basic sciences, introductory courses in other basic sciences and mathematics at least through calculus. An overall B average is required with significantly better performance in the student's major field. You will need to have taken the GREs and, if English is not your native language, the TOEFL to complete your application for admission.

Because the program is both interdisciplinary and innovative, exceptions can sometimes be made. Applicants exceptionally well qualified by experience or training, but lacking certain undergraduate preparation, may be admitted on the condition that they remedy deficiencies after admission.



“The most valuable part of my experience at MSRC was the association with the faculty and their research—there were no barriers between faculty and students. The faculty were approachable when I needed research advice, and this accessibility provided me with the opportunity to develop research methodology and to learn ways to tackle problems.”

—Kuo-Chuin Wong
Assistant Professor
College of Marine Studies
University of Delaware
Ph.D., 1982

SPECIAL PROGRAMS

Five-Year BS/MS Program—ESS and MSRC

MSRC and the Department of Earth and Space Sciences (ESS) offer a cooperative undergraduate/graduate course of study in Geological Oceanography leading to the BS and MS degrees. Students enter the Geological Oceanography track in the ESS department to obtain the BS degree. In their senior year, students may, with approval, begin to take graduate courses offered by MSRC. Students doing well in the undergraduate program may be considered for admittance to the accelerated Master's program offered by MSRC. This program enables most students to obtain their BS and MS degrees in five years.

Five-Year BE/MS Program—CEAS and MSRC

A joint program with the College of Engineering and Applied Sciences (CEAS) and MSRC enables a student majoring in Engineering Science to specialize in Marine Environmental Science and to obtain both an undergraduate engineering BE degree and a Master's degree in an additional 14 months. The student must include in their curriculum several marine sciences core courses.

Dillard University Articulation Agreement

MSRC is committed to increasing the number of Blacks and other minorities in the environmental field and, particularly, in the marine sciences. MSRC has created a cooperative agreement with Dillard University, a historically Black institution, in New Orleans.

The agreement enables Dillard undergraduates to spend the spring semester of their junior year and the fall semester of their senior year at SUNY Stony Brook. Following the completion of their fall semester at SUNY Stony Brook, they return the following summer and enter the graduate program at MSRC. By spending a year at Stony Brook as an undergraduate, they have a head start in the graduate program, making the transition from undergraduate to graduate study easier. All students in the Dillard Program are supported both as undergraduates and as graduate students.

“I have been concentrating in chemical oceanography for three years and my experience is that MSRC is a great place for both marine science education and research.”

—Xuchen Wang

Ph.D. Student



FINANCIAL ASSISTANCE

MSRC provides nearly 95% of our students with funding through university graduate and teaching assistantships (GA/TA) and research project assistantships (RPA). The amount of these assistantships for the nine-month academic year (for 1990 and 1991) is \$8,862. Most students are further supported through sponsored research projects over the summer. Full tuition scholarships can accompany the award of a fellowship, a full GA/TA or a full RPA.

Special Awards

MSRC has a variety of special awards available to graduate students. Increased stipends are available to the most outstanding students in recognition of their excellence. Special awards are available to assist students in completing their research and for travel to national and international meetings to present the results of their research.

The W. Burghardt Turner Fellowship Program

This award provides a \$10,000 stipend plus a tuition scholarship to African American, American Indian, and Hispanic American students. Students are nominated by the Center, based on their admission to the graduate program and their academic promise. The award may be supplemented for the summer.

The Patricia Roberts Harris Fellowship

This award provides a \$10,000 stipend plus a tuition scholarship per calendar year, with possible renewal for a second or third year. The award is granted to women and minorities who demonstrate financial need and who are admitted to the graduate program. The award may be supplemented for the summer.

Alumni Award

The MSRC Alumni Association annually provides a financial award to the MSRC graduate student for the best student thesis project.

The M.P. O'Brien Fellowship Program

This fellowship shall be awarded for two years to an outstanding first-year student interested in beach and nearshore processes and coastal engineering. The stipend may be renewed.

J. L. McHugh Fellowship

This fellowship shall be awarded each year to an outstanding first-year student interested in fisheries or fisheries management.

Donald W. Pritchard Fellowship

This fellowship shall be awarded each year to an outstanding first-year physical oceanography student interested in the physics of estuaries and nearshore waters.

STUDENT-FACULTY INTERACTIONS

MSRC's faculty have traditionally established personal, supportive relationships with the students. The breadth of expertise represented by our faculty allows students a great amount of flexibility in choosing a research director and also provides a large pool of resources for solving multidisciplinary research problems.

MSRC's graduate students are treated as colleagues—professionals—who participate fully in the intellectual life of the Center. Graduate students serve on almost every committee, having a voice in such activities as hiring of new faculty and decisions about the graduate programs.



"I believe that MSRC is a great place to pursue advanced study. Personally, I benefitted the most from its excellent faculty and superior location. The faculty members make you feel comfortable to talk with them. When I brought my problems to them, they always tried their best to help me."

—Jeng Chang
Ph.D., 1989

"The geochemical group that I work with is intellectually strong, receptive to new ideas, and emotionally supportive. They are also helpful in mobilizing ideas to fruition. They have made my experience here an exciting and enlightening one."

—Myrna Jacobson
Ph.D. Student

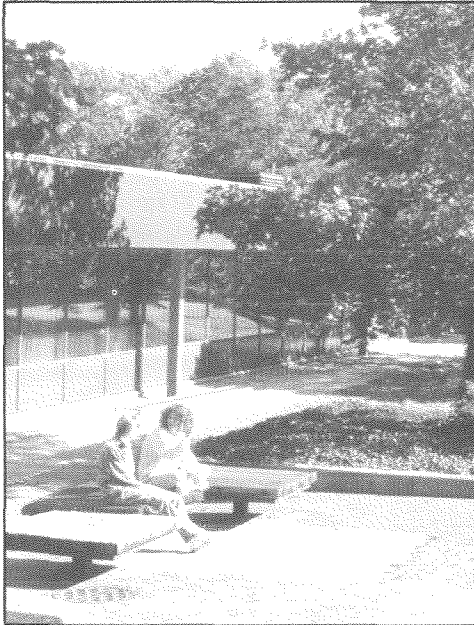
LIFE AT MSRC

Sponsored Activities

Many activities exist to keep the graduate student active on south campus, and an additional wealth of activities exists on main campus within each science department. MSRC sponsors several programs that bring visiting scholars to the Center for as little as one day to give a seminar to as long as two years of residency. These longer visits give students ample opportunity to question, exchange ideas, and get to know another researcher from a different institution and a different part of the world—often with a different perspective.

Coastal Marine Scholar Program

This program brings an outstanding recent Ph.D. scholar to the Center each year. These scholars, who spend two years at the Center, are sought through an international search and have backgrounds in oceanography, engineering, and mathematics. These visitors play an important role in developing the research activities of the faculty and students through collaboration during their two years at MSRC.



Lawrence Distinguished Visiting Scholar Program

Each year a committee of faculty, staff, and students select four to six of the world's most outstanding scientists to spend a week at MSRC. During their week's stay, these scholars, who are world leaders in their own fields, present seminars and one public lecture, and interact extensively with the graduate students, discussing problems of common interest.

Graduate Seminar Program

This program brings more than a dozen of the most renowned marine scientists, from all over the world each year to speak about their exciting research and latest discoveries. These seminars attract faculty, students, and staff alike to interact with outside researchers. Speakers include researchers from around the world on topics ranging from physical oceanography in the Antarctic to fish resources in the Arabian Sea.

Friday Discussion Group

A more casual forum to exchange ideas and information is the Friday Discussion Group, a weekly ritual that brings faculty and students together over coffee, tea, and donuts. Speakers are usually drawn from the Stony Brook community, and presentations include work-in-progress, reports of meetings, practice talks for students, and slide shows of field work in all parts of the world.

Extracurricular Activities

Besides these academic activities, a number of social events draw students, faculty, and staff together socially. One event that has rapidly become tradition is the yearly international dinner when faculty, students and staff prepare and share dishes from all nations. Another annual event takes place each fall when the graduate studies director and staff sponsor a welcoming picnic for new students. Other events are more impromptu such as softball games and volleyball at the sand court by Discovery Hall.



RESOURCES AND FACILITIES

One-half mile from main campus, MSRC is housed in four one-story buildings on south campus. Ample, well-equipped laboratories comprise the central core of each building, with offices and dry laboratories along the perimeter.

Flax Pond Marine Environmental Laboratory

Located on a tidal salt marsh approximately five miles from south campus is the MSRC Flax Pond Marine Environmental Laboratory. The Flax Pond salt marsh preserve, connected by an inlet to the Sound, is an ideal location for the laboratory. This 8,000 square foot research facility is well equipped with fresh, running seawater, more than 20 sea tables and aquaria and an 800 square foot greenhouse for seaweed research.



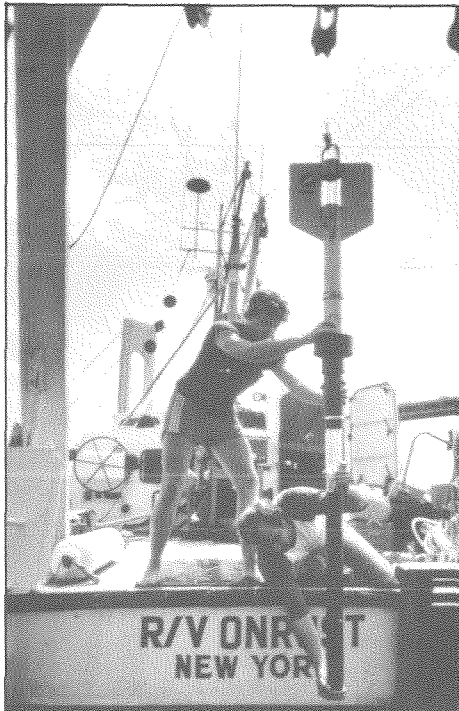
Equipment and Instrumentation

MSRC has a major dedication in staff, equipment, and instrumentation to provide researchers with the state-of-the-art technology to conduct experiments both in the lab and at sea. Equipment is often specially designed and pre-cruise tested for individual needs. The inventory provided by faculty research grants includes some of the most sophisticated instrumentation used in the sciences today.

Research Vessels

At the head of our fleet of research vessels is the 55-foot steel-hulled ONRUST (Dutch for "Restless"), built specifically for MSRC. The ONRUST is completely equipped for coastal oceanographic research with 168 square feet of wet laboratory, 21 linear feet of bench and sink space, and an A-frame on the 240 square foot aft working deck.





The Center also maintains a fleet of four small boats and support vehicles for field research in sheltered waters around Long Island: the R/V Siome, a 23-foot shallow draft cabin cruiser; two 16-foot Boston Whalers; and the R/V Privateer, a 24-foot open workboat.

Computer Facilities

The Center provides two microcomputing laboratories with IBM PCs and Apple Macintoshes for student use and a remote sensing laboratory with a VAXstation II/GPX; a graphic lab with a Calcomp 910/563 and Calcomp 907/1051. There is also a terminal lab with four VT100 CRT terminals and two LA120 hardcopy terminals; a workstation lab with six VAXstation 2000s; and VAX 8530 and VAX 11/730 minicomputers.



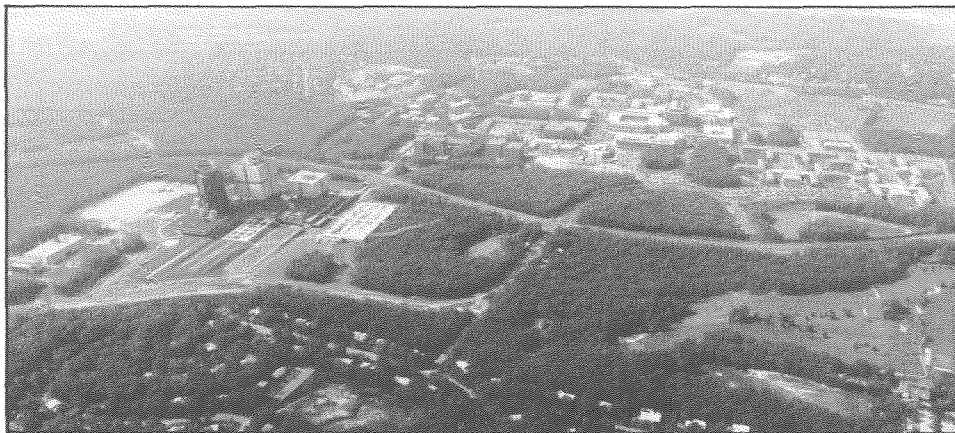
Reference Room

Also housed on the South Campus is a reference room with holdings in the most important books, journals, and newsletters for oceanographic research. MSRC is expanding its holdings considerably in 1989.

STATE UNIVERSITY OF NEW YORK AT STONY BROOK

Since its establishment almost 30 years ago, Stony Brook faculty has grown from 175 to 1,400 and the number of students from 1,000 to 16,000, 5,000 of whom are graduate students. Graduate departments exist in all disciplines, with most of our science departments ranked among the nation's top 30 and several ranked among the top 12. Research at Stony Brook pervades all disciplines, attesting to the diversity and vitality of its faculty. The most recent statistics show a phenomenal 900 active sponsored projects, more than any other SUNY campus.

The 103 buildings of the campus include a university hospital, which is a tertiary care facility and a teaching hospital acting in concert with research and academic activities of the adjacent health sciences center. The university also includes a graduate school of business and a college of engineering. A new field house, which will have arena seating for 4,100 and a five-lane indoor track, is being built adjacent to the gymnasium and is scheduled to open in fall 1990.



THE FACULTY AT MSRC

Our faculty come from nearly every major university and oceanographic institution in the country. They bring a high quality of research and teaching skills to MSRC, and their many achievements, awards, and honors have contributed greatly to the growth in stature MSRC has continued to experience over the years. Their research brings in more than \$3.7 million in external funds annually. Following are brief descriptions of each faculty member's current research.

"I selected MSRC over several other prestigious universities in Canada and the U.S. because of its focus on coastal oceanography and coastal management, but also because of the international reputation of its faculty. I feel that having graduated from MSRC was a big plus during the few successful career moves I have made within Canadian oceanographic institutions."

—Vladimir Koutitonsky
Research Professor
Institut National
de la Recherche
Scientifique - Océanologie,
Université du Québec, Canada
Ph.D., 1985

"One of the most beneficial aspects about MSRC is the diversity of the faculty teaching and conducting research. This has afforded me the opportunity to begin to understand how geological, chemical, physical, and biological oceanographers solve problems."

—Irma Lagomarsino
M.S. Student



JOSEPHINE Y. ALLER
Associate Research Professor
Ph.D., 1975
University of Southern California

The activities of bottom-dwelling organisms modify the physical and chemical properties of sediments very near the sediment-water interface and thereby influence a variety of ecological processes. My research interests concern (1) the importance of macrofauna and meiofauna on microbial metabolism and the decomposition of organic matter in marine sediments and (2) the impact of physical disturbance on the structure and functioning of benthic communities in marine environments.

One area my laboratory is continuing to study is a deep-sea habitat in the western boundary zone, where strong currents disturb and transport bottom sediments but also bring in fresh organic material. In this area we are examining how the bottom-dwelling organisms interact with and are influenced by the current regime. This study area differs from the classic abyssal plain deep sea environment in that sedimentation rates, inputs of utilizable food, and current velocities are low. Our research is providing unique insights for understanding the ecology of the deep sea.

Other active research areas include (1) the examination of spatial and seasonal variability in bottom infauna in relation to oxygen demand and nutrient fluxes from the sediments in Long Island Sound, as part of a larger water quality project for the U.S. Environmental Protection Agency; and (2) a study of the benthic fauna on the Amazon shelf in relation to the discharge regime of the Amazon

River. As part of a multidisciplinary project, we are interested in the importance of biological processes to sedimentary and geochemical processes on the shelf.

Aller, J.Y. and R.C. Aller. 1986. Evidence for localized enhancement of biological activity associated with tube and burrow structures in deep-sea sediments at the HEBBLE site, western North Atlantic. *Deep-Sea Research* 33(6):755-790

Aller, J.Y. and R.C. Aller. 1986. General characteristics of benthic faunas on the Amazon inner continental shelf with comparison to the shelf off the Changjiang River, East China Sea. *Continental Shelf Research* 6:291-310.

Aller, J.Y. 1989. Quantifying sediment disturbance by bottom currents and its effect on benthic communities in a deep-sea western boundary zone. *Deep-Sea Research* 36(6):901-934.



ROBERT C. ALLER
Professor
Ph.D., 1977
Yale University

I am interested in diagenetic reactions involving the decomposition of organic matter and dissolution, mobilization, and reprecipitation of metals sensitive to oxidation-reduction reactions. These reactions are most intense and rapid in the upper meter, and especially in the upper 10 centimeters, of marine sediment. It is in this upper zone where most benthic organisms live and interact with sediments and where exchange of material between sediment and overlying water is largely determined. Knowledge of diagenetic processes occurring in this zone is, therefore, essential for understanding the chemistry of sediments and of water overlying the sediment, certain ecological interactions and adaptations of marine organisms, and long-term recording of historical information in marine deposits such as fossil preservation.

My students and I are currently studying selected aspects of sediment diagenesis and exchange rates of dissolved material across the sediment-water interface in a variety of coastal and deep-sea marine areas, including Long Island Sound, Florida Bay, the Amazon shelf, and Panama Basin. Our research places particular emphasis on the way macrobenthic organisms influence these processes and how to quantitatively model them. We have several collaborative projects with other MSRC faculty, including Josephine Aller, J. Kirk Cochran, Cindy Lee and James Mackin. Several of our research projects are listed here:

1) Interstitial water and sediment chemistry near the sediment-water interface, where Fe, Mn, Al, F, chloropigments and products of SO_4 reduction are of

special interest.

2) Rates and kinetics of authigenic mineral dissolution-precipitation reactions (e.g., CaCO_3) near the sediment-water interface. Rates are obtained by diagenetic modeling as well as by direct laboratory measurements.

3) Animal-sediment interactions, particularly biogeochemical, of macrobenthos living in soft-bottom regions of the sea floor.

4) Studies of diffusion coefficients in fine-grained sediments.

5) Effects of macrobenthic organisms on microbial metabolic activity and on the rate and distribution of biogenic and abiogenic reactions in the bioturbated zone of sediments.

6) The distribution of natural radionuclides of the U-Th series, particularly U-238, U-234, Th-234, and Pb-210 in near-shore and deep-sea marine sediments.

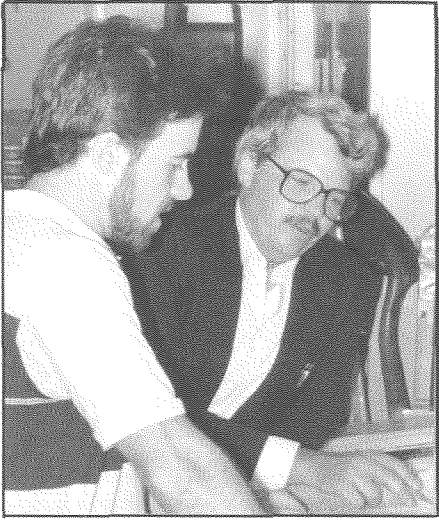
Aller, R.C. 1988. Benthic fauna and biogeochemical processes in marine sediments. In: Nitrogen cycling in coastal marine environments, T.H. Blackburn and J. Sorenson (eds.). John Wiley and Sons, NY. pp. 301-338.

Aller, R.C., P.D. Rude. 1988. Complete oxidation of solid phase sulfides by manganese and bacteria in anoxic marine sediments. *Geochimica et Cosmochimica Acta*; 52:751-765.

Aller, R.C., C. Lee, D.-P. Wang. 1988. Proceedings of the Frontal Exchange Processes Workshop (U.S.-Taiwan). Marine Sciences Research Center, State University of New York at Stony Brook, NY. 4-6 May.

Aller, R.C., J.E. Mackin. 1989. Open-incubation, diffusion methods for measuring solute reaction rates in sediments. *Journal of Marine Research*; 47:411-440.

Rude, P.D., R.C. Aller. 1989. Early diagenetic alteration of lateritic particle coatings in Amazon continental shelf sediment. *Journal of Sedimentary Petrology*; 59.



HENRY BOKUNIEWICZ
Associate Professor
Ph.D., 1976
Yale University

Cerrato, R.M., H.J. Bokuniewicz. 1988. The benefits of subaqueous borrow pits as disposal sites. In: Proceedings of the North Atlantic Regional Conference on beneficial uses of dredged material. M.C. Landin (ed.). U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS. 231 pp.

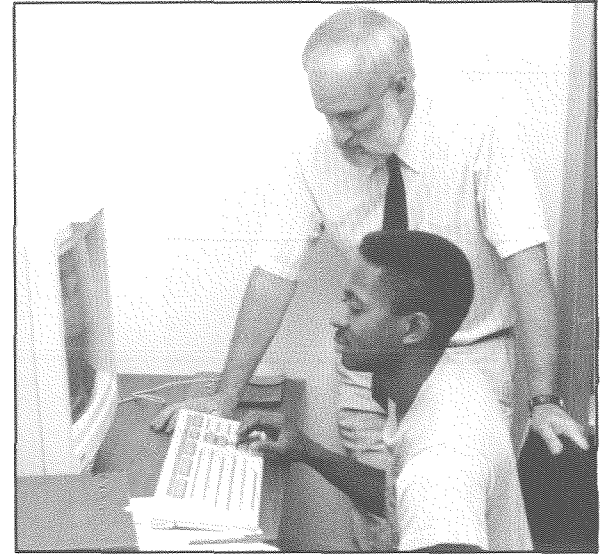
My research is concerned primarily with the behavior of coastal sedimentary systems and especially the fate of fine-grained sediment particles. My students and I are doing field work to study the transportation of fine-grained sediments in rivers and estuaries, shore changes and the partitioning of sediment particles at the shoreline, and the deposition of sediments and sedimentary evolution in coastal environments.

Research into elements of coastal hydrology and the character of changes in relative sea level are included in these studies. For example, we are studying the evolution of Long Island Sound, the coastal processes at the south shore of Long Island, and the processes of resuspension and deposition of fine-grained sediments.

Much of this research is directly applicable to problems of coastal zone management. I am interested in applying my research to the problems of shore erosion, the dispersion of contaminants, siltation, and dredging and disposal of the dredged sediments.

Bokuniewicz, H.J. 1988. Sand mining in New York Harbor. *Marine Mining*; 7:7-18.

Bokuniewicz, H.J., J. Tanski. 1988. Westhampton Beach: options for the future. New York Sea Grant Special Report 102, pp. 1-28. Available from: New York Sea Grant Institute, Stony Brook, NY.



MALCOLM J. BOWMAN
Professor
Ph.D., 1970
University of Saskatchewan

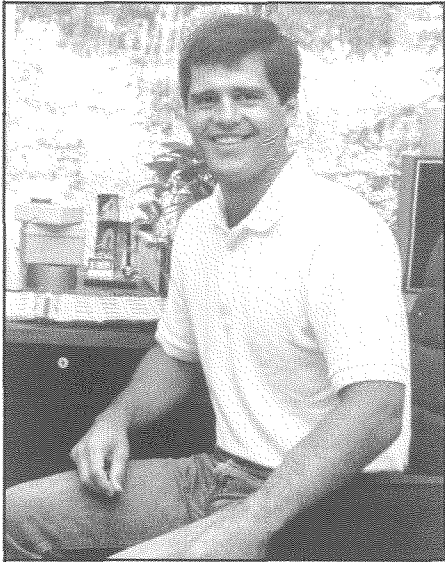
My research group and I are primarily interested in the dynamics of coastal fronts and eddies, island wakes, circulation, and mixing in coastal sea straits, especially in tidally energetic regions. We are investigating the dynamical mechanisms that lead to basin-wide eddies in wide coastal sea straits off the west coasts of Canada and Alaska. We are also interested in the applications of remote sensing to coastal ocean dynamics and biological production.

In 1990-1992, Bob Cowen and I will lead interdisciplinary expeditions to Barbados, West Indies to study island wake eddies and their interaction with the life cycle of tropical reef fish.

Bowman, M.J. 1988. Estuarine fronts. In: Hydrodynamics of estuaries, B. Kjerfve (ed.). CRC Press. Boca Raton, FL.

Connell, D.W., M.J. Bowman, D.W. Hawker. 1988. Bioconcentration of chlorinated hydrocarbons from sediment by oligochaetes. *Ecotoxicology and Environmental Safety*; 16:293-302.

Visser, A.W., M. J. Bowman and W. R. Crawford. 1989. Dynamics of tidally forced basin-wide coastal eddies. In: Residual currents and long-term processes in shallow estuaries and bays. R. Cheng (ed.). Coastal and Estuarine Studies, Springer-Verlag, New York.



VINCENT BRESLIN
Assistant Research Professor
Ph.D., 1986
Florida Institute of Technology

My research activities primarily focus on understanding the chemical behavior of both particulate and stabilized combustion wastes in the coastal ocean. Combustion ashes, including such materials as coal fly ash, oil ash, and incineration ash, are rich in metals of environmental concern. These ashes impact our coastal ocean primarily via atmospheric deposition. However, in response to potential groundwater contamination and the scarcity of landfill space, ocean dumping of these ashes has been suggested as an alternative to the current landfilling practices.

Our research group is working to better understand the mechanisms that influence the ability of metals to leach from combustion ashes in seawater. By understanding the chemical behavior of these ashes in seawater, we can better assess the potential impacts of these wastes in the ocean. Thus far, our research has shown that the release of metals from the ashes can be controlled through the process of stabilization using additives to form blocks. These blocks are currently being used to create artificial reefs in our coastal waters, including Conscience Bay in Long Island Sound where we are monitoring their physical, chemical, and biological interactions.

I am also conducting research with other members of the Waste Management Institute to determine the rate and extent of degradation of biodegradable plastics in the environment. We have placed samples of biodegradable plastics in seawater, the strawline of a beach, composts, and landfills and periodically

retrieve samples to conduct a variety of physical and chemical tests.

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V. MONICA BRICELJ

Assistant Professor

Ph.D., 1984

State University of New York at Stony Brook

My research interests lie in the area of physiological ecology, bioenergetics, population biology and aquaculture of benthic macrofauna, especially commercially exploited bivalve molluscs. In recent years, my research efforts have been directed towards (1) investigating the interactions between phytoplankton (microalgae) and filter feeding herbivores such as mussels and clams and (2) studying factors that influence survival and growth of post-settlement bivalves (e.g., bay scallops) in seagrass meadows.

Noxious algal blooms exert a major impact on the production of filter feeding shellfish populations. In turn, their grazing may contribute towards regulating phytoplankton populations in shallow coastal bays. Recent "brown tides" experienced in Long Island waters, and "red tides," which occur periodically throughout the world, are only two well-publicized examples of such blooms. Relying on laboratory experimentation with cultured toxic dinoflagellates, we are modeling the kinetics of toxin uptake and depuration by shellfish and investigating the fate of paralytic shellfish poisons in their transfer up the food chain.

"Brown tides" recently decimated the bay scallop fishery on Long Island and reduced the biomass and extent of eelgrass cover, which provides an important nursery habitat for many benthic marine organisms. Through a combination of laboratory and field experiments, we are investigating the influence of eelgrass structure (density and height) on bay scallop

survival. We are especially interested in the value of eelgrass in providing bivalves with a seasonal refuge from benthic predators (primarily crab species) in shallow, temperate waters. This research will be applied towards the optimization of scallop reseeding programs required to rehabilitate and revitalize this fishery on the east coast of the United States.

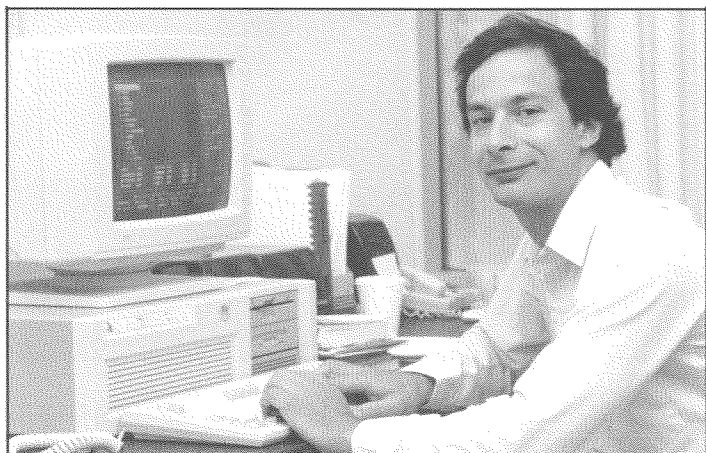
Cosper, E.M., W. Dennison, E.J. Carpenter, V.M. Bricelj, J.M. Mitchell, S.H. Kuenstner, D. Colflesh, M. Dewey. 1988. Recurrent and persistent "brown tide" blooms perturb coastal marine ecosystems. *Estuaries*; 10:284-290.

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BRUCE BROWNAWELL

Assistant Professor

Ph.D., 1986

Massachusetts Institute of Technology/
Woods Hole Oceanographic Institution

I am interested in biogeochemical processes that affect the transport and fate of organic compounds in coastal, estuarine, and groundwater environments. I have been particularly interested in the aquatic chemistry of hydrophobic pollutant compounds. Understanding the biogeochemistry of pollutant compounds is important for managing coastal zone and groundwater resources and for remediating already contaminated sites. Anthropogenically derived compounds can also provide valuable analogs for understanding the cycling of naturally produced organic compounds in the ocean.

My own research has focused on the behavior and transport of a variety of neutral, ionizable, and ionic compounds. In these studies I have been concerned with elucidating adsorption mechanisms of various compound classes with either sediments, soils, aquifer materials, or dissolved organic matter. Development of methods for determining activities of organic compounds in natural waters has been an important aspect of my work.

The questions that I am interested in addressing center around how the physical and chemical form of organic compounds (i.e., dissolved, bound, or complexed) affects their transport, availability to organisms, and the rates at which they are transformed chemically or by bacteria. I have interests in selected research topics in several additional areas, including aquatic photochemistry and the

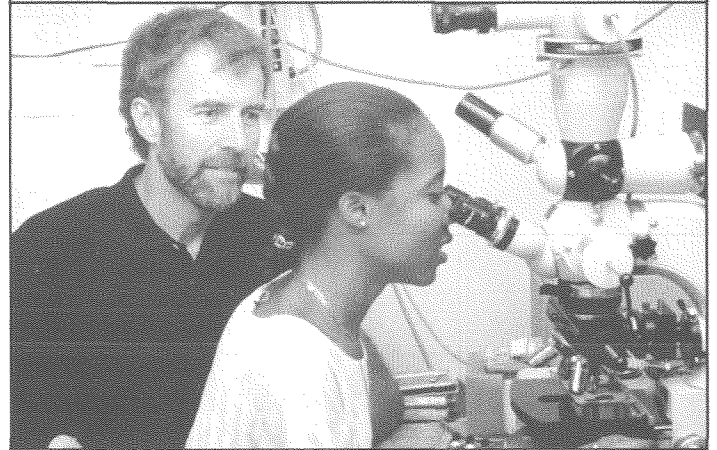
biogeochemistry of surface sediments and groundwater environments.

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EDWARD J. CARPENTER
Professor
Ph.D., 1969
North Carolina State University

Our group has two major interests. One centers on the measurement of species-specific growth rates of phytoplankton in the sea. We are attempting to determine factors that limit phytoplankton growth, as well as to understand the role of a species as a primary producer. This research requires a field program to collect phytoplankton and environmental data, and laboratory measurements using epifluorescence microscopy and video microscopy to measure DNA quantitatively to determine growth rates.

Our second major interest concerns nitrogen fixation in the sea. We work in tropical and subtropical waters on the biology and ecology of nitrogen fixation in the cyanobacterium *Trichodesmium*. Recently we have begun to use remote sensing techniques to study its distribution and factors affecting bloom phenomena.

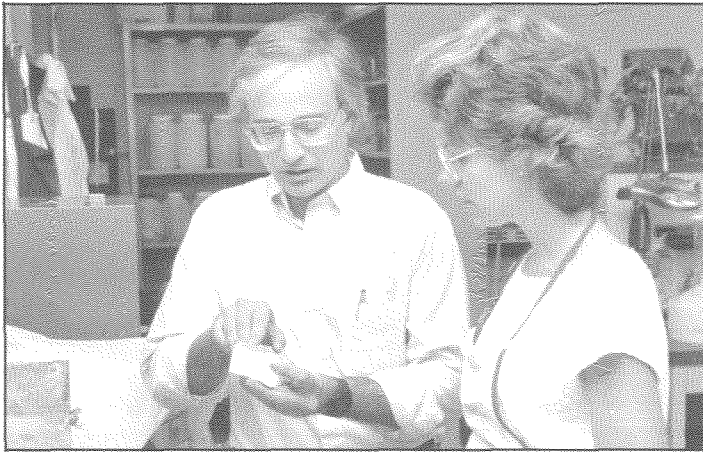
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ROBERT M. CERRATO
Assistant Professor
Ph.D., 1980
Yale University

My research centers primarily around population and community dynamics of benthic animals. My students and I have been using information preserved as structural and morphological features in bivalve shells in a number of population studies. Recent and ongoing work includes studies of the population dynamics of several commercially important species (*Mercenaria mercenaria*, *Spisula solidissima*, and *Mya arenaria*); an investigation of growth line periodicity in larval and postlarval bivalve shells; an analysis of age-structure and growth in a deep-sea Vesicomid clam found at hydrothermal vents; and, using shell remains from middens on Shelter Island, the reconstruction of shellfish seasonal harvesting patterns by prehistoric hunter-gatherers. In the future, I hope to take advantage of image analysis technology to develop new methods of examining the detailed microgrowth records stored in shells.

With other MSRC faculty, I have been studying the feasibility and environmental effects of several alternatives proposed for the disposal of dredged material in New York Harbor. As part of this research program, we have completed an extensive regional study of the benthos in Lower Bay of New York Harbor. This study was specifically designed to match the disparate sampling methods used in prior surveys of the bay conducted over the past 30 years. Analysis on this data base is allowing us to examine for the first time the detailed spatial and temporal structure of the benthos in Lower Bay.

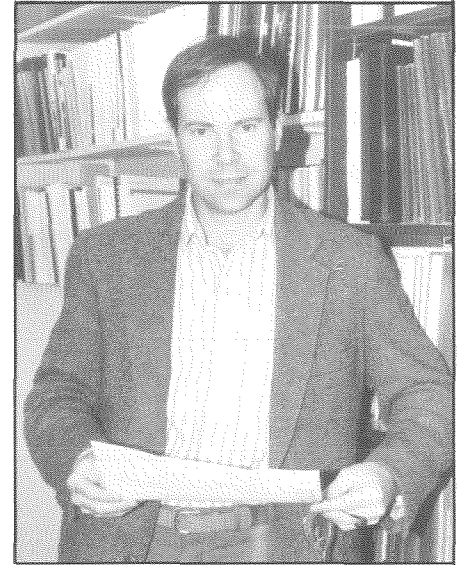
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J. KIRK COCHRAN
Associate Professor
Ph.D., 1979
Yale University

My research group and I are using natural radionuclides, as well as those produced by activities such as atomic weapons testing, to study earth surface processes. The fact that different chemical elements are represented in the suite of radioactive nuclides permits studies of chemical behavior, and the property of radioactivity provides a clock with which to measure rates. Research Assistant David Hirschberg and I are using naturally occurring thorium isotopes to determine rates of removal of reactive chemical species from both the open ocean and coastal waters and estuaries such as Long Island Sound. The results will enable us to determine rates of particle cycling in the euphotic zone and rates of removal of contaminants from seawater.

My students are using radionuclides in diverse ways as tracers of geochemical processes. Christina Barnes' doctoral thesis research involves a study of the geochemical behavior of uranium in marine sediments and an evaluation of the oceanic mass balance of this element. Results of this work can be used to assess the feasibility of isolating radioactive waste by burial in deep-sea sediments. Nathan Epler is using chlorofluoromethanes (freon) and bomb-produced radiocarbon as tracers for rates of groundwater transport in Long Island's aquifer systems. His doctoral thesis work includes using natural radionuclides to determine the chemistry of reactive chemical species in the groundwater. This work will allow evaluation of the fates of contaminants added to the groundwater.

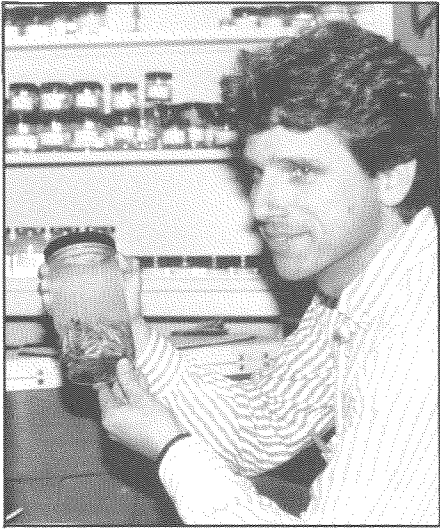
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DAVID O. CONOVER
Associate Professor
Ph.D., 1981
University of Massachusetts

My research interests involve the ecology and evolutionary biology of fishes and fisheries science. In general, I seek to understand the adaptive significance of reproductive, behavioral, physiological, or life history traits in fishes and then to extend this knowledge, where possible, to fundamental problems in resource management.

One long-standing interest of mine, for example, is to understand how the sex ratio evolves. My work has been the first to show that sex determination in fishes is influenced by temperature during larval development. Most of this work has involved the Atlantic silverside, *Menidia menidia*, but the phenomenon is probably widespread. These findings are important not only in designing approaches to sex ratio manipulation in aquaculture, but also to understanding the causes of fluctuations in sex ratio among natural populations.

Another project concerns the recruitment of juvenile bluefish (*Pomatomus saltatrix*) to estuaries along the U.S. East Coast. We use the otolith ring number to determine age (in days), and thereby back calculate spawning dates for larvae and juveniles collected from different geographic regions. The results demonstrate where larvae spawned offshore at different times of the year are transported. My students and I are now testing the hypothesis that young bluefish acquire an important predatory size advantage over their principal prey by virtue of being spawned offshore early in the year and invading

estuaries of the Middle Atlantic Bight at an advanced size, just as the growing season of the local prey species is beginning.

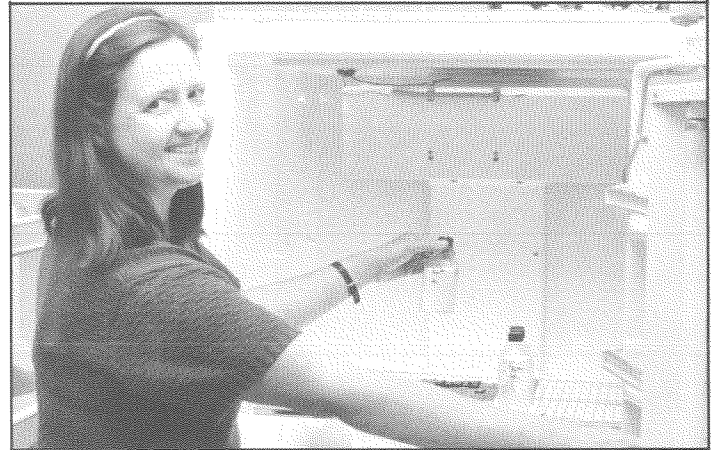
A new area of investigation concerns how growth rate is adapted to differences in seasonality that occur with latitude. In several species distributed along the Atlantic coast of North America, the length of the growing season declines with increasing latitude by a factor of about three. Yet body size at the end of the growing season is independent of latitude. Experimental studies on laboratory-reared fish from one of these species explain this paradox: high-latitude fish have a higher genetic capacity for growth and thereby grow two to three times faster within the growing season than do low-latitude fish. This “countergradient variation” in growth rate appears to be widespread and may provide a general model for choosing natural stocks to be used in aquaculture: the natural populations with the highest capacity for growth may be found where the growing season is shortest.

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ELIZABETH M. COSPER
Assistant Research Professor
Ph.D., 1981
City University of New York
City College

I am generally interested in the physiological ecology of marine phytoplankton. My research mainly involves the use of experimental laboratory systems to address environmental problems that are difficult to assess under field conditions.

In the past my research has involved a study of the effects on the production of a common marine diatom of light fluctuation on natural time scales of variability. More recently, my research has centered on the factors affecting the ability of marine phytoplankton to develop resistance to toxic chemical pollutants and the ecological consequences of the development of this resistance. Concomitantly, one of my students and I have conducted studies of the significance of resting states of diatoms to their population dynamics and adjustment to stressful conditions, both natural and anthropogenic in origin.

Most recently, several of my students and I have become involved in both field and laboratory research into the causes of the "brown tide" blooms which have plagued Long Island embayments since 1985. I have isolated this microalga into culture and, along with other researchers at MSRC, we are conducting studies of its growth physiology to better explain its explosive growth during the summer months in local bay waters. We are also investigating any environmental conditions that could have contributed to the blooming of this previously undescribed phytoplankton species.

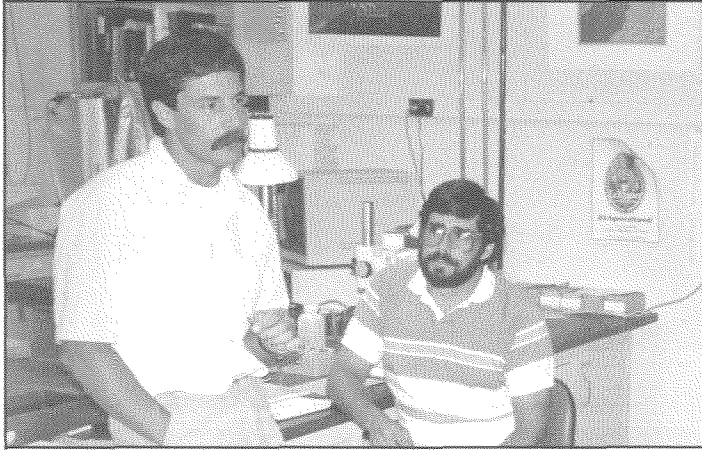
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ROBERT K. COWEN

Assistant Professor

Ph.D., 1985

University of California at San Diego/
Scripps Institution of Oceanography

My main research interests are centered around the biological and physical factors which influence recruitment of nearshore fish populations. In particular, I am studying the various mechanisms that coastal fish species utilize to return their larvae from the open sea to coastal habitats. This work involves an integrated approach in which the biology of the organisms, their distribution, and the physical nature of the current regime must be studied concurrently. My laboratory is presently working on determining the currents utilized by bluefish (*Pomatomus saltatrix*) larvae as they cross the continental shelf waters of the New York Bight to recruit in coastal embayments. This work has involved both extensive field sampling in conjunction with satellite imagery of the ocean surface temperatures within this region. We are also interested in the growth and mortality of the bluefish larvae that are spawned at different times of the spawning season.

In January 1990 I will be initiating a new research program, in collaboration with Malcolm Bowman, concerning the retention of larval fish in the lee of islands. Specifically, we will test whether or not eddies are important in the entrapment, export, and eventual return of larval fish to the reef habitat, and if not, what features of the local current regime are important in the retention of larvae. Related to this project, I am also interested in the length of time various larvae are capable of remaining in their pelagic phase. Through the study of the microstruc-

ture of otoliths (i.e. small ear bones) of larval fish, the duration of their various developmental stages can be determined and then compared among species with respect to their offshore distribution.

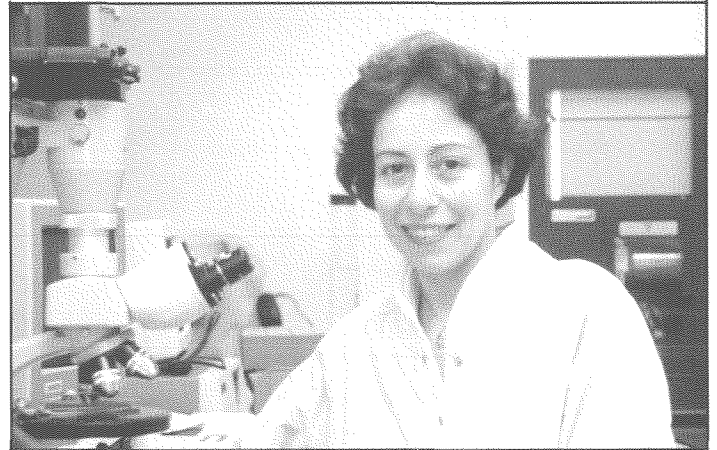
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M. CARMELA CUOMO
Assistant Research Professor
Ph.D., 1984
Yale University

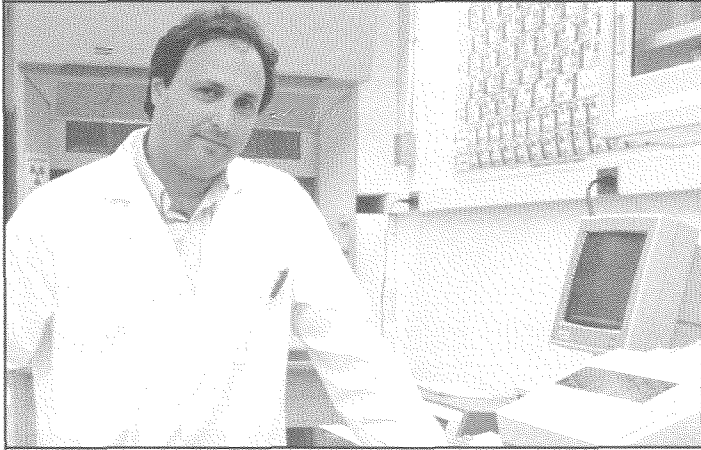
My research centers on the relationships between benthic organisms and the geochemical environment surrounding them. Specifically, I study the effects that organisms in low oxygen environments have on the sediments in which they live. These effects include physical (e.g., pelletization of the sediments), as well as inorganic and organic geochemical effects.

I also study animal-sediment-geochemical relationships in the rock record. Presently, I am using information gathered from the studies described above to ascertain whether or not specific black shales were deposited in environments with marginal oxygen or totally anoxic environments. This information will then be used to reconstruct the paleoecology of several ancient marine basin environments.

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NICHOLAS S. FISHER
Associate Professor
Ph.D., 1974
State University of New York at Stony Brook

My research is concerned with the interactions of marine organisms with toxic chemicals. Most of these biogeochemically oriented studies focus on marine plankton and their interactions with select metals and long-lived radionuclides emanating from the nuclear fuel cycle. I explore the bioaccumulation and trophic transfer of the chemicals, their impacts on the organisms, and the roles that the organisms play in mediating the cycling and vertical transport of these chemicals in the ocean. Laboratory experimentation generally employs radiotracer methodology, which enables working with environmentally realistic metal concentrations.

My research group and I are conducting experiments to determine the accumulation and cellular localization of metals in marine phytoplankton cells, the assimilation of metals in herbivorous animals, the gut pH of different types of planktonic herbivores, the bacterial degradation rate of different forms of biogenic debris, and the influence of these processes on the retention of metals in this debris. I am also currently trying to incorporate new production models to quantitatively assess the influence of different forms of sinking biogenic debris in vertically transporting metals in different water columns.

My other research interests include phytoplankton physiology and ecology, phytoplankton-herbivore interactions, the nature of element binding to particle surfaces, and metal geochemistry.

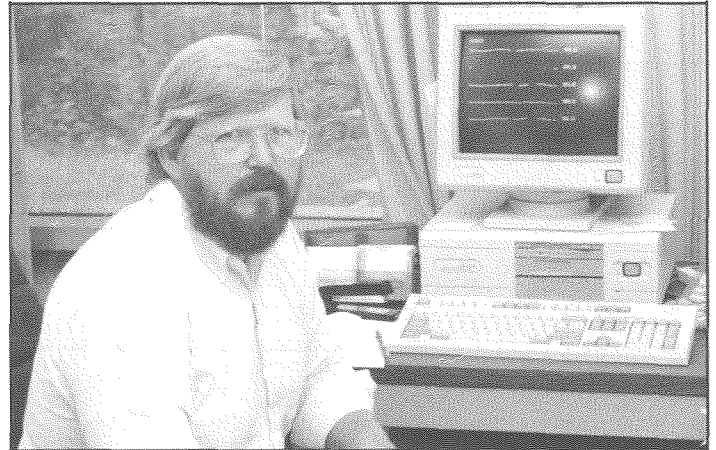
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ROGER D. FLOOD

Associate Professor

Ph.D., 1978

Massachusetts Institute of Technology/
Woods Hole Oceanographic Institution

I am presently studying sedimentation in several marine and fresh water environments. I am particularly interested in the use of high-resolution methods, including geophysical techniques (side-scan sonar, seismic profiling, shear-wave analysis, and bathymetry); photography; submersible and diver sampling; and sediment analysis, to provide new insights into sedimentary processes. My current research interests focus on processes in active sedimentary environments (including the deep sea, continental margins, large lakes, and estuaries) and with the study of bedforms in cohesive sediment.

Recently, my students and I have been studying the structure and development of submarine fans on the continental margin. These major sediment bodies contain much of the sediment eroded from continents during sea level lowstands. Our intensive geophysical and sedimentological studies have demonstrated some of the complexity of these systems and helped to clarify processes responsible for fan development. Also, recent bedform studies have been conducted in the deep sea along the U.S. continental margin and in the Argentine Basin, in the Great Lakes, and in the Hudson River. Bedforms created by fluid flows can be used to understand both local and regional sediment transport and depositional patterns. Our studies help to understand both the complex flow-sediment interactions that cause and maintain bedforms in cohesive sediments and bedform-animal interactions.

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Manley, P.L. and R.D. Flood. 1988. Cyclic development within the Amazon deep-sea fan. *American Association of Petroleum Geologists*; 72:912-925.

Flood, R.D. 1989. Submersible studies of current-modified bottom topography in Lake Superior. *Journal of Great Lakes Research*; 15:3-14.



VALRIE A. GERARD

Associate Professor

Ph.D., 1976

University of California, Santa Cruz

My research interests focus on the ecology and physiology of seaweeds, particularly the group of large brown algae known as kelps. Many kelp species are highly productive and form dense subtidal stands or forests, which provide food and habitat for many other marine organisms. Certain kelps are used commercially as a source of food and phycocolloids and are harvested from wild populations or grown as aquaculture crops.

Recently, I have been studying genetic variation among populations of the common kelp, *Laminaria saccharina*. This species has a circumpolar distribution in the northern hemisphere, and its wide geographic range is partly due to its ability to adapt genetically to a variety of environmental conditions. This research has aquacultural applications, because ecotypes could be selected as seed crops for sites with specific environmental characteristics.

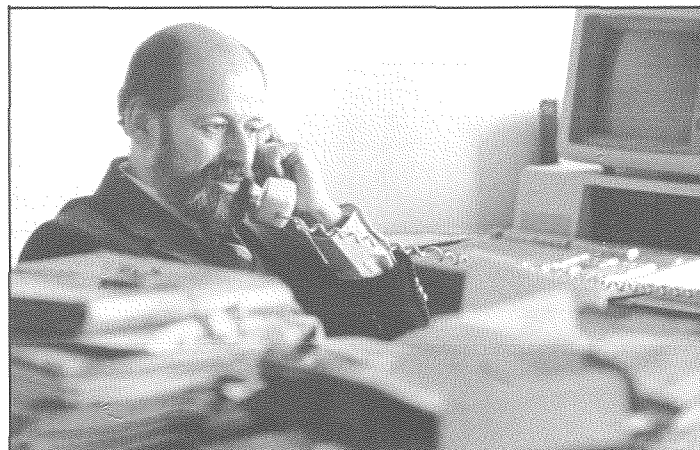
I have also been conducting several other research projects in my laboratory. One project developed a mathematical model to predict the population dynamics of the giant kelp, *Macrocystis pyrifera*. Another project examined the relationship between nitrogen-fixing cyanobacteria and the green alga *Codium fragile*. An ongoing project deals with the effects of high-frequency light fluctuations on the photosynthetic physiology of the red seaweed *Chondrus crispus*.

Gerard, V.A. 1987. Hydrodynamic streamlining of *Laminaria saccharina* Lamour in response to mechanical stress. *Journal of Experimental Marine Biology and Ecology*; 107:237-244.

Gerard, V.A., K. Du Bois, R. Green. 1987. Growth responses of two *Laminaria saccharina* populations to environmental variation. *Hydrobiologia*; 151:229-232.

Gerard, V.A. 1988. Ecotypic differentiation in light-related traits of the kelp, *Laminaria saccharina*. *Marine Biology*; 97:25-36.

Gerard, V.A., K. Du Bois. 1988. Temperature ecotypes near the southern boundary of the kelp, *Laminaria saccharina*. *Marine Biology*; 97:575-580.



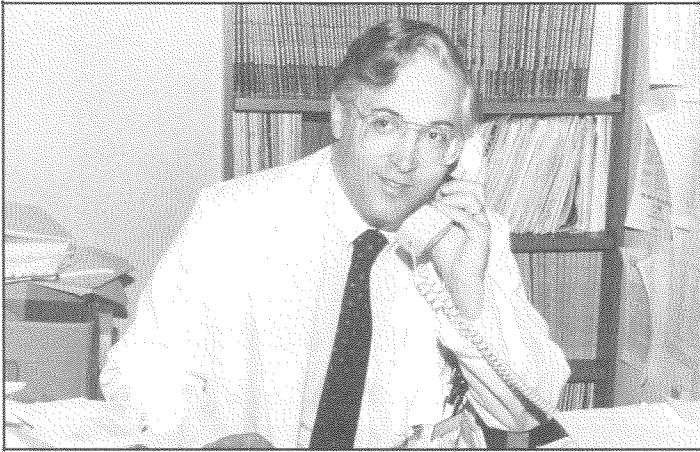
THEODORE D. GOLDFARB
Associate Professor
Department of Chemistry, Joint with MSRC
Ph.D., 1959
University of California, Berkeley

In recent years my research interests have shifted from physical chemical investigations of the structure and reactivity of molecules to the application of physical chemical methods to real world environmental problems. The pollution problems resulting from the use of agricultural chemicals, the production of energy, and the disposal of waste encompass the range of issues that I have joined with scientists in other disciplines to explore. Our present activities are focused on the environmental consequences of alternative means of addressing the need to dispose of both municipal and industrial waste, including incineration, waste reduction, reuse, and recycling. Related to this work is my interest in the interactions between science and public policy.

Goldfarb, T.D. 1984. Solid waste incineration: the need for stringent regulation and the vigorous pursuit of more environmentally acceptable means of solid waste disposal. Proceedings of the First Annual Conference for Government and Citizen Decisionmakers, sponsored by the New York State Legislative Commission on Solid Waste Management. September.

Goldfarb, T.D. and D. Deutsch. 1988. PCDD/PCDF contamination following a fire in a university lecture hall building. *Chemosphere*; 17:2423.

Goldfarb, T.D. 1989. Evidence for post-furnace formation of PCDDs and PCDFs: implications for control. *Chemosphere*; 18:1051.



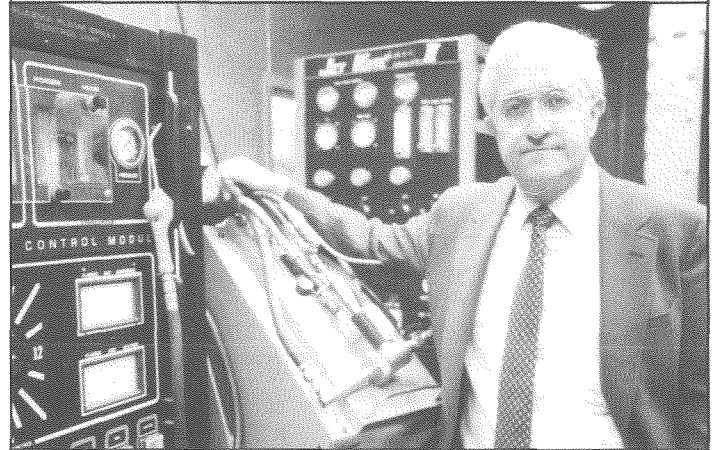
WILLIAM H. GREENE

Clinical Associate Professor of Medicine,
Division of Infectious Control
Health Sciences Center, Joint with MSRC
M.D., 1968
State University of New York Downstate

My research interests have evolved from that of infectious complications in patients with neoplastic disease to the more general area of infectious complications of hospitalized patients. This latter field, hospital-acquired infections, has traditionally also included infection prevention methods for health-care workers and visitors, as well as patients.

In turn, recent priorities in society have brought to the fore the management of medical waste, particularly the minimization of infectious hazards in its generation, transport, and disposal. My current research interests revolve around the clinical investigation of experimental antibiotics; the prevention of hospital-acquired infection, particularly of the respiratory tract; and the medical implications of waste handling for health-care workers, solid waste personnel, and communities surrounding landfills.

Green, W.H. 1987. Infection control policies and AIDS. *New England Journal of Medicine*; 316:1479-1480.



HERBERT HERMAN
Professor
Department of Materials Science
Joint with MSRC
Ph.D., 1961
Northwestern University

My research activities in ocean engineering involve principally marine materials. We have a long-term program underway aimed at the protection of materials at sea. Our work, much of which is supported by the U.S. Navy, involves the thermal spray metallization of structural steel, yielding long-term corrosion protection in a wide range of industrial and marine environments. We also have a joint program with the New York and New Jersey Port Authority on corrosion protection of marine-related structures. Research and testing programs, with use of the above and related corrosion control techniques, are being carried out cooperatively with industrial and government organizations.

Wang, H.G., G.S. Fishman, and H. Herman. 1989. Plasma spray cordierite: structure and transformations. *Journal of Materials Science*; 24:811-815.

Wang, H.G. and H. Herman. 1989. Structure and properties of plasma sprayed spinel. *Ceramics Bulletin*; 68:97-102.



SARAH G. HORRIGAN

Assistant Professor

Ph.D., 1982

University of California at San Diego/
Scripps Institution of Oceanography

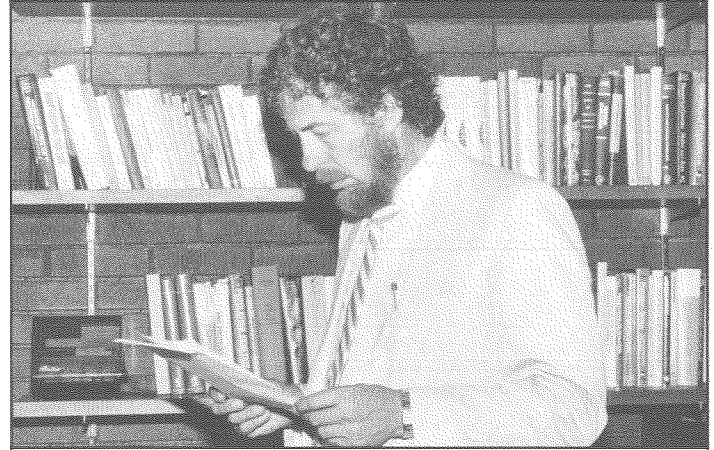
In the past decade, the study of marine microbial ecology has grown from infancy to maturity. We now have methods to measure numbers and activities of bacteria in marine environments, and the time is ripe for attempting to understand the way physical, chemical, and biological factors control these numbers and rates.

My research focuses on the role of bacteria in the marine nitrogen cycle. Nitrogen is an important limiting nutrient and is particularly important in coastal areas such as Long Island Sound, where increased nitrogen inputs in sewage may affect the entire ecosystem. My current projects examine the seasonal and spatial changes in the microbial nitrogen cycle in coastal areas, including Long Island Sound, the northern Baltic Sea, and in the Antarctic Ocean.

Chen, D., S.G. Horrigan, D.-P. Wang. 1988. The late summer vertical nutrient mixing in Long Island Sound. *Journal of Marine Research*; 46:753-770.

Fuhrman, J.A., S.G. Horrigan, D.G. Capone. 1988. The use of ^{15}N as a tracer for bacterial and algal uptake of ammonium from seawater. *Marine Ecology Progress Series*; 45:271-278.

Horrigan, S., Å. Hagström, I. Koike, F. Azam. 1988. Inorganic nitrogen utilization by assemblages of marine bacteria in seawater culture. *Marine Ecology Progress Series*; 50:147-150.



RICHARD KOEHN
Professor
Department of Ecology and Evolution
Joint with MSRC
Ph.D., 1967
University of Arizona

I am studying the biochemical and physiological mechanisms of adaptation, including enzyme function, the energetic cost of the control of metabolism, and the genetic basis of physiological variation. I have had a long-standing interest in adaptation, particularly with respect to enzyme-encoding loci and have worked on both fishes and marine mollusks. I have also had an interest in systematics and am currently involved in a project on the systematics of species in the bivalve genus *Mytilus*, as well as their worldwide distribution.

My students have worked on a variety of organisms. Research projects have focused upon the relationship between multiple-locus genotype and energy metabolism and have been directed towards understanding the biochemical genetic basis of genotype-dependent energy balance.

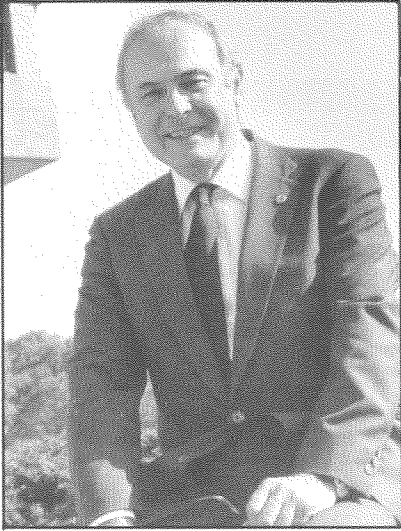
Koehn, R.K. and T.J. Hilbish. 1987. Biochemical genetic mechanisms of adaptation. *American Scientist*. 75:134-141.

MacDonald, J.H. and R.K. Koehn. 1988. The mussels *Mytilus trossulus* and *M. galloprovincialis* on the Pacific coast of North America. *Marine Biology* 99:111-118.

Koehn, R.K., W.J. Diehl, and T.M. Scott. 1988. The differential contribution by individual enzymes of glycolysis and protein catabolism to the relationship between heterozygosity and growth rate in the coot clam, *Mulinia lateralis*. *Genetics* 118:121-130.

Koehn, R.K. and B.L. Bayne. 1989. Towards a physiological and genetical understanding of the energetics of the stress response. *Biol. J. Linn. Soc.* 37:157-171.

Silva, P.J.N., R.K. Koehn, W.J. Diehl, R.P. Ertl, E.B. Winshell and M. Santos. 1989. The effect of glucose-6-phosphate isomerase genotype on *in vitro* activity and *in vivo* flux in *Mytilus edulis*. *Biochem. Genet.* 27:451-465.



L. E. KOPPELMAN

Professor

Center for Regional Policy Studies

Joint with MSRC

Ph.D., 1970

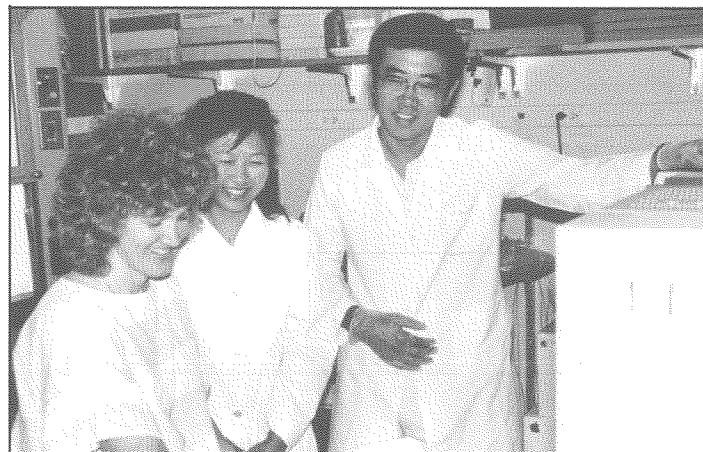
Cornell University

My major research over the past decade and a half generally has been concerned with the environmental policy aspects of regional planning and has been specifically directed towards coastal zone management. This has included being project manager over almost \$20 million in directed research, including coastal regional planning, comprehensive water management, shoreline erosion practices, and related studies. In addition to the development of legislation related to coastal zone management and the design of administrative mechanisms for policy implementation, I am particularly involved in the development of synthesis techniques for relating coastal zone science into the regional planning process.

In October 1988 I was appointed Director of the Center for Regional Policy Studies, which currently is carrying out a number of research projects dealing with governmental productivity, strategic economic planning, and environmental planning. I also serve as Executive Director of the Long Island Regional Planning Board.

Koppelman, L. and J. DeChiara. 1981. Urban planning and design criteria, 3rd edition. Van Nostrand. 700 pp.

Koppelman, L. and J. DeChiara, 1982. Time saver standards for site planning. McGraw Hill. 700 pp.



CINDY LEE

Associate Professor

Ph.D., 1975

University of California at San Diego/
Scripps Institution of Oceanography

My research is concerned with the distribution and behavior of biogenic organic compounds in the marine environment. Understanding how organic compounds behave requires knowledge of the biological, geological, and physical processes in the sea. Most biogenic organic compounds are produced in surface waters by phytoplankton as a result of photosynthesis. These compounds can enter the marine food chain by acting as food for bacteria or zooplankton. Organic compounds can also be affected by chemical and physical processes such as adsorption, photochemical degradation, and transport by currents. I am interested in the rates and mechanisms of the transformation reactions which occur as organic compounds are affected by these processes. To study transformation reactions, my students and I use radiolabeled compounds as tracers to simulate the behavior of naturally occurring compounds. We also identify and measure the amount of individual organic compounds present in the environment with analytical techniques like gas chromatography, mass spectrometry, and high performance liquid chromatography (HPLC).

Although most of my research has been in the open ocean, I am interested in the behavior of organic compounds in all environments. I have also studied organic compounds in sediments and waters of coastal areas, salt marshes, and lakes. Recently, I have begun to study volatile organic compounds in the atmosphere. A knowledge of the behavior of

biogenic organic compounds in the environment will help us in practical ways. For example, we can better understand the formation of coal and oil deposits if we know how organic matter is produced, decomposed, and preserved. We may also be able to use the behavior of naturally occurring organic compounds as models in predicting the behavior of organic pollutants in the environment.

Lee, C., S.G. Wakeham. 1988. Organic matter in seawater: biogeochemical processes. In: Chemical oceanography, J.P. Riley and G. Skirrow (eds.). Academic Press, New York; 9:1-51.

Lee, C., S.G. Wakeham, J.I. Hedges. 1988. The measurement of oceanic particle flux - are swimmers a problem? *Oceanography*; 2:34-36.

McNichol, A.P., C. Lee, E.R.M. Druffel. 1988. Carbon cycling in coastal sediments: I. A quantitative estimate of the remineralization of organic carbon in the sediments of Buzzards Bay, MA. *Geochimica et Cosmochimica Acta*; 52:1531-1543.

Dzurica, S., C. Lee, E.M. Cosper, E.J. Carpenter. 1989. Role of environmental variables, specifically organic compounds and micronutrients, in the growth of the chrysophyte *Aureococcus anophagefferens*. In: Novel phytoplankton blooms: causes and impacts of recurrent brown tides and other unusual blooms. Coastal and Estuarine Studies, Vol. 35. E.M. Cosper, et al. (eds.). Springer-Verlag, Berlin. pp.231-254.

Wakeham, S.G., C. Lee. 1989. Organic geochemistry of particulate matter in the ocean: the role of particles in oceanic sedimentary cycles. *Organic Geochemistry*; 14:83-96



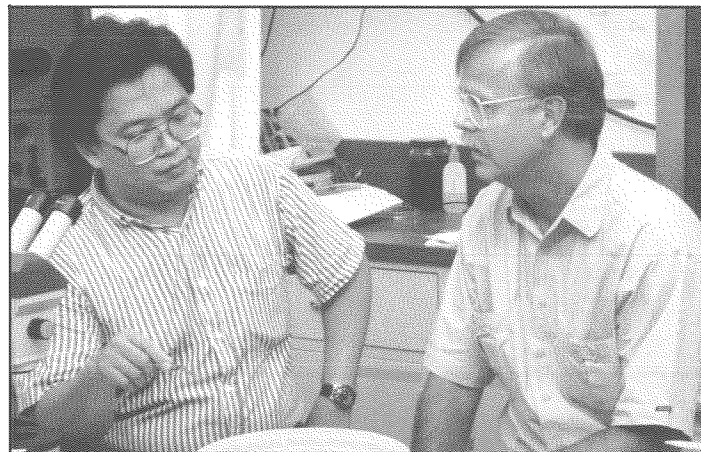
DARCY J. LONSDALE
Assistant Professor
Ph.D., 1979
University of Maryland

I study the physiological and life history adaptations of estuarine invertebrates, particularly copepods, to their environment. Currently, I am investigating the hypothesis that genetically-based differences in reproductive traits such as egg size and lipid content and reproductive effort found among latitudinally separated populations of an estuarine copepod reflect differences in food availability. Many estuaries are undergoing substantial physical and biological changes due to human activity (e.g., changes in the rate of freshwater discharge and other sources of pollution). Thus, knowledge of the significance of natural variation in populations is necessary to fully comprehend the ecological impact of coastal activities.

The graduate students in my laboratory are undertaking diverse research projects. One project is an investigation of the impact of changing food resources, particularly biochemical changes that may be associated with species succession of planktonic microalgae, on the recruitment of important coastal species of copepods. Another study involves an investigation of the impact of a common ectoparasite on copepod energetics and diapause egg production. In many seasonal species, diapause eggs are an important source for copepod recruitment in the following year.

Lonsdale, D.J., J.S. Levinton, S. Rosen. 1988. Reproductive compatibility among populations of a widespread Harpacticoida. *Hydrobiologia*; 167/168:469-476.

Lonsdale, D.J., J.S. Levinton. 1989. Energy budgets of latitudinally separated *Scottolana canadensis* (Copepoda: Harpacticoida). *Limnology and Oceanography*; 34(2):324-331.



GLENN R. LOPEZ
Associate Professor
Ph.D., 1979
State University of New York at Stony Brook

I am a benthic ecologist interested in many aspects of life in sediment. My students and I are investigating the detrital and microbial food sources of deposit feeders and the physiological mechanisms used for digesting such foods. Because gut residence time is very short in juveniles of many species, we are interested in the control of the energy budget by the kinetics of ingestion and digestion. We are studying how deposit feeders grow and the biological meaning of observed allometric shifts. We are also studying population dynamics of benthic animals.

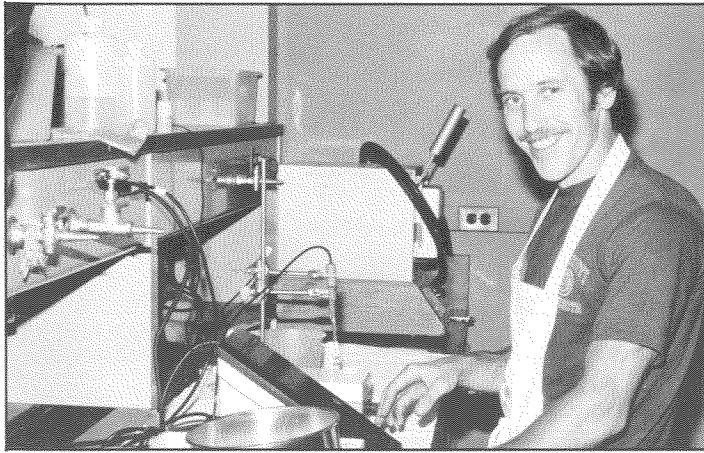
Kofoed, L.H., V. Forbes, G.R. Lopez. 1988. Time-dependent absorption in deposit feeders. In: Ecology of marine deposit feeders, G. Lopez, et al. (eds.). Springer-Verlag, New York. pp. 129-148.

Lopez, G.R. 1988. Comparative ecology of the macrofauna of freshwater and marine muds. *Limnology and Oceanography*; 33:946-962.

Lopez, G.R., P. Tantichodok, I.-J. Cheng. 1988. Radiotracer methods for determining utilization of sedimentary organic matter by deposit feeders. In: Ecology of marine deposit feeders. G. Lopez, et al. (eds.). Springer-Verlag, New York. pp. 149-170.

Forbes, V., G.R. Lopez. 1989. The role of sediment particle size in the nutritional energetics of a surface-deposit feeder. I. Ingestion and absorption of sedimentary microalgae by *Hydrobia truncata* (Vanetta). *Journal of Experimental Marine Biology and Ecology*; 126:181-192.

Lopez, G.R., G. Taghon, J. Levinton (eds.). 1989. Ecology of marine deposit feeders. Springer-Verlag, New York. 322 pp.



JAMES E. MACKIN
Associate Professor
Ph.D., 1983
University of Chicago

My research emphasizes theoretical and practical aspects of organic matter and clay mineral diagenesis in marine sediments. The goal of this research is to determine the influence of reactions involving major phases of sediments on both present day ocean chemistry and sedimentary rock chemistry and mineralogy. I am, therefore, interested in solid-solid transformations as well as the behavior of solutes during early diagenesis in sediments. Field and laboratory experimental work are essential components of this research.

Mackin, J.E., R.C. Aller, W.J. Ullman. 1988. The effects of iron reduction and nonsteady-state diagenesis on iodine, ammonium, and boron distribution in sediments from the Amazon continental shelf. *Continental Shelf Research*; 8:363-386.

Mackin, J.E. 1989. Relationships between Si, Al, and Fe deposited on filter-covered glass substrates in marine sediments and in suspensions of sediments and standard clays. *Marine Chemistry*; 25.

Mackin, J.E., R.C. Aller. 1989. The nearshore marine and estuarine chemistry of dissolved aluminum and rapid authigenic mineral precipitation. *Reviews of Aquatic Science*; 1:537-554.

Mackin, J.E., K.T. Swider. 1989. Organic matter decomposition pathways and oxygen consumption in coastal marine sediments. *Journal of Marine Research*. 4.

Michelson, A.R., M.E. Jacobson, M.I. Scranton, J. Mackin. 1989. Factors controlling the distribution of acetate in anoxic marine and estuarine sediments. *Limnology and Oceanography*; 34:747-757.



ROBERT E. MALOUF
Associate Professor
Ph.D., 1977
Oregon State University

Long Island's coastal waters are among the most important shellfish-producing areas in the United States. In fact, Great South Bay, on Long Island's south shore, has historically produced more hard clams (*Mercenaria mercenaria*) than any other single body of water in the world. Other areas on Long Island are important producers of oysters (*Crassostrea virginica*) and bay scallops (*Argopecten irradians*). These and other bivalve species are the primary objects of my research activities.

Upon joining the faculty of the MSRC in 1977, I began a research program to address important basic questions concerning a wide variety of aspects of the biology of commercially important bivalves. The research program was supported by a number of funding agencies and relied heavily on the cooperation of local and state shellfishery managers, harvesters, and shellfish growers on Long Island. A few examples of the research topics addressed by my students are laboratory and field studies of bivalve feeding, reproductive cycles, larval behavior, as well as predation on both juvenile and adult bivalves. A common goal throughout these studies is the search for solutions to management and shellfish culture problems through the application of results from research that is, in its own right, of high scientific quality.

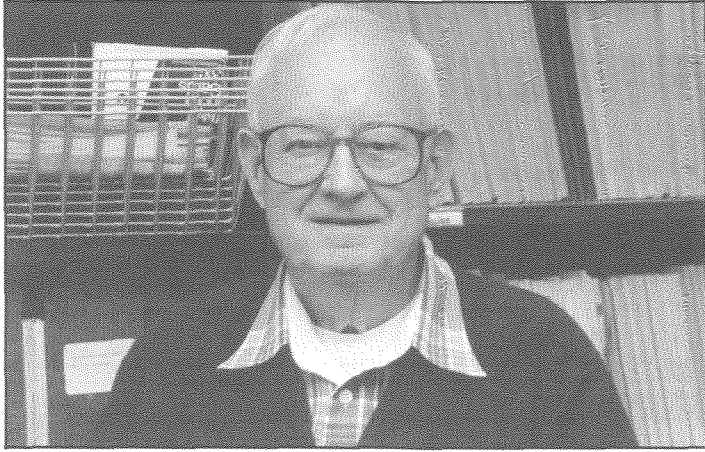
In 1987 I became director of the New York Sea Grant Institute, a state and federally supported program that supports research, education, and

extension activities on New York's Great Lakes and marine coasts. New York Sea Grant is a cooperative program of SUNY and Cornell University and is one of the largest of a national network of 29 similar programs. The Institute's offices are immediately adjacent to the MSRC, and I retain a faculty position with the Center. Consequently, although Sea Grant demands most of my time, I continue to work with faculty and students on important questions relating to shellfisheries and the biology of commercially important bivalve molluscs.

Epp, J., V.M. Bricelj, R.E. Malouf. 1988. Seasonal partitioning and utilization of energy reserves in two age classes of the bay scallop, *Argopecten irradians irradians* (Lamarck). *Journal of Experimental Marine Biology and Ecology*; 121:113-136.

Malouf, R.E. 1989. Clam culture as a management tool. In: *Clam mariculture in North America*. J.J. Manzi and M. Castagna (eds.). Elsevier, Amsterdam; pp. 427-447.

Malouf, R.E., V.M. Bricelj. 1989. Comparative biology of clams: environmental tolerances, feeding and growth. In: *Clam mariculture in North America*. J. Manzi and M. Castagna (eds.). Elsevier, New York; pp. 23-73.



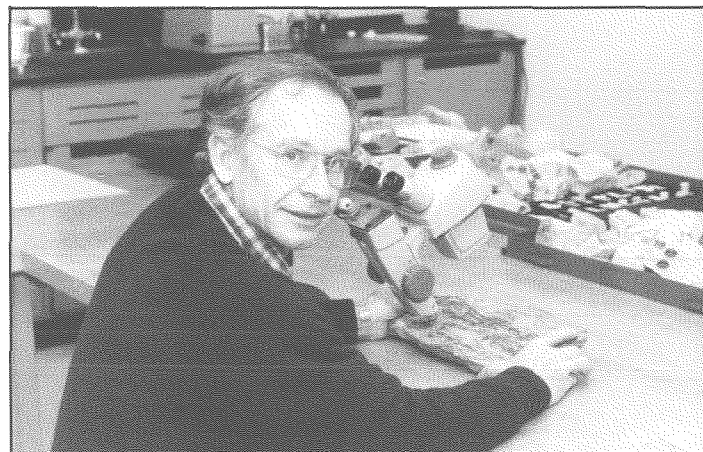
JOHN L. MCHUGH
Professor Emeritus
Ph.D., 1950
University of California
at Los Angeles

I continue to be interested primarily in research. At present I am engaged in two projects: a study with Emerson Hasbrouck entitled "Fishery management under the Magnuson Act: Experience in New York Bight" and a popular study comparing the records of Charles Lindbergh and Aristotle Onassis in whale conservation. Both of these we hope will be published shortly.

McHugh, J.L. 1988. United States commercial fishing: what is it worth? Delaware Center for the Study of Marine Policy. Marine Policy Reports; 10(2):1-7.

McHugh, J.L., Sumner, M. 1988. Annotated bibliography of the hard clam *Mercenaria mercenaria* - II. NOAA Technical Report National Marine Fisheries Service, Special Scientific Report, Fisheries Series. U.S. Dept. of Commerce, Washington, DC; iii + 59 pp.

McHugh, J.L. 1989. Overview of bay scallop (*Argopecten irradians*) landings. In: Novel phytoplankton blooms: causes and impacts of recurrent brown tides and other unusual blooms. Coastal and Estuarine Studies, Vol. 35. E.M. Cospers, et al. (eds.). Springer-Verlag, Berlin. pp. 487-492.



W. J. MEYERS
Associate Professor
Department of Earth and Space Sciences
Joint with MSRC
Ph.D., 1973
Rice University

The main focus of my research is the deposition and diagenesis of carbonate rocks and sediments. Through integrated field, petrographic, and geochemical studies, my students and I are investigating regional dolomitization, cementation, and compaction in a wide range of shallow-water reefal, platform, and peri-platform carbonate rocks from a range of ages and tectono-sedimentary settings. The main goals are to reconstruct the diagenetic histories of the rocks and to reconstruct the chemistry, sources, and dynamics of the diagenetic fluids that caused large-scale cementation and dolomitization. To this end we are applying standard and cathodoluminescent petrography, fluid inclusion studies, stable and radiogenic isotopes (C, O, Sr, Pb, B); trace elements (Mg, Fe, Mn, B, Sr, Pb, Na, Zn, REE, and others); and quantitative water-rock interaction modeling. The geochemical work is in close collaboration with Professor Gilbert Hanson, an effort resulting in development of innovative analytical and modeling approaches to studying diagenetic carbonates.

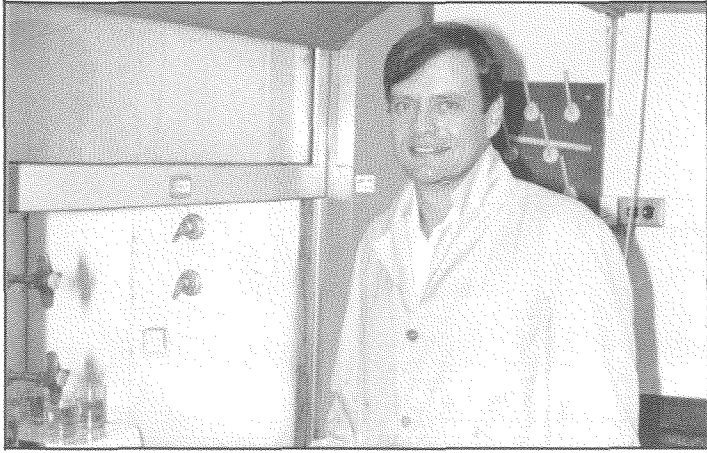
Current projects include studies of facies, stratigraphy, and diagenesis of carbonate sequences from the U.S. midwest (Mississippian); Ireland (Mississippian); Spain (Miocene); Netherland Antilles (Mio-Pliocene); Western Australia (Devonian); and Alberta (Devonian).

Meyers W. J. and B. Hill. 1983. Quantitative studies of regional compaction, Mississippian skeletal limestones, New Mexico. *Journal of Sedimentary Petrology*; 53:231-242.

Meyers, W.J. and K.C. Lohmann. 1984. Isotope geochemistry of regionally extensive calcite cement zones, Mississippian, New Mexico. In: *Carbonate Cements*, SEPM Special Publication No. 36, Harris and Schneidermann (eds.). pp. 223-239.

Meyers, W.J. 1987. Paleokarstic features in Mississippian limestones of southwestern New Mexico. In: *Paleokarst*, P. Choquette and N. James (eds.). Springer-Verlag.

Banner, J., G.N. Hanson, W.J. Meyers. 1988. Multiple episodes of dolomitization in Burlington-Keokuk limestones and evidence from trace element and isotopic variations. In: *Dolomitization*, SEPM Special Publication, P. Baker and V. Shukla (eds.). pp. 97-114.



CHARLES NITTROUER

Professor, Associate Director of Research

Ph.D., 1978

University of Washington, Seattle

My research interests deal with understanding the formation of sedimentary strata in continental margin environments. The primary effort of my research group has been to examine environments of the continental shelf, but our work also extends to shallower (lagoon, tidal flat) and deeper (continental slope and rise) environments. An underlying philosophy is that emphasis should be placed on understanding strata formation where large amounts of sediment are accumulating in modern environments and where large amounts of sediment have accumulated in ancient environments. This has led much of our research effort toward fine-grained siliciclastic sediments tied to dispersal systems of rivers (e.g., Amazon, Columbia, Yangtze, Huangho, Ebro).

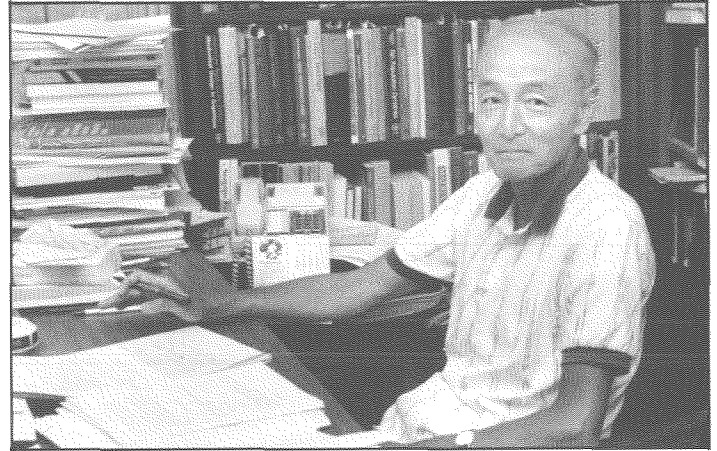
I am interested in documenting, within modern strata, sedimentary characteristics which will reach the geological record (e.g., grain size, mineralogy, sedimentary structure, seismic stratigraphy) and in examining how these characteristics are affected by physical and biological oceanic processes. A critical factor is the ability to evaluate temporal aspects of strata formation such as rates of accumulation, frequency of physical erosion, and rates of biological reworking. These parameters can be measured on time scales commensurate with oceanic processes by using several short-lived radioisotopes ($Pb-210$, $Cs-137$, $Th-234$) found in marine sediments. The inclusion of geochemical, physical, and biological observations within sedimentological studies causes much of my research to be multidisciplinary in

nature. Hopefully, the range of information obtained provides a more general understanding of strata formation and allows development of fundamental concepts that can be applied to other modern and ancient continental margins.

Kuehl, D.A., C.A. Nittrouer, D.J. DeMaster. 1988. Microfabric study of fine-grained sediments: observations from the Amazon subaqueous delta. *Journal of Sedimentary Petrology*; 58:12-23.

Nittrouer, C.A., B.E. Bergenback, D.J. DeMaster, S.A. Kuehl. 1988. Accumulation of mixed carbonate and siliciclastic muds on the continental shelf of eastern Spain. In: *Carbonate-clastic transitions*. L. Doyle and H. Roberts (eds.). Elsevier, Amsterdam. pp. 251-269.

Nittrouer, C.A., J.M. Coleman, R.D. Flood, R.N. Ginsburg, D.S. Gorsline, A.C. Hine, R.W. Sternberg, D.J.P. Swift, L.D. Wright. 1988. Sedimentation on continental margins: an integrated program for innovative studies during the 1990's. *EOS*; 69:58-68.



AKIRA OKUBO
Professor
Ph.D., 1963
The Johns Hopkins University

One of my major research interests is dispersion—the spread and mixing of substances—in the sea. Dispersion (synonymously called “diffusion”) plays a very important role in pollution in marine environments, in particular, coastal environments. Those pollutants include oil, toxic chemical substances, sewage and sludge, plastics, and even medical debris.

Oceanic diffusion means a multitude of physical processes occurring in the sea, which tend to produce uniformities in the embedded properties. Flows in the sea are generally in a state of turbulence, i.e., a very complex, irregular motion. Turbulence consists of many superposed whirls (“eddies”) moving in a fashion that is spatially and temporally extremely complicated. For this reason the practical treatment of turbulent oceanic diffusion is customarily dealt with using a stochastic model; that is, dispersion is considered as a random, probabilistic characteristic of oceanic motion.

Oceanic motions also have an important effect on marine organisms. The transport of fish eggs and larvae are mostly passive and, hence, subject to the mercy of the oceanic currents and turbulence. Ocean waves, surface waves, and internal waves (that is, waves that arise from density stratification in the water column) also act in transporting marine organisms, preferably toward shore. This process may contribute to larval recruitment toward coastal and inshore regions.

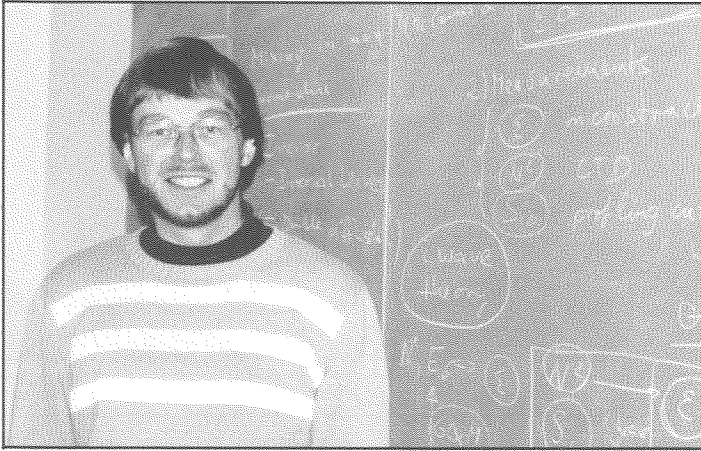
Okubo, A. 1988. Biological vortex rings: fertilization and dispersal of fish eggs. In: *Mathematical ecology*. T.G. Hallam, et al. (eds). World Scientific, New Jersey; pp. 270-283.

Okubo, A. 1988. Biological-physical interactions in the sea. In: *Ecodynamics*. W. Wolff, et al. (eds.). Springer-Verlag, New York; pp. 102-112.

Okubo, A. 1988. Planktonic micro-communities in the sea: biofluid mechanical view. In: *Community Ecology*. A. Hastings (ed.). Springer-Verlag, New York; pp. 13-24.

Sanderson, B.G., A. Okubo. 1988. Diffusion by internal waves. *Journal of Geophysical Research*; 93:3570-3582.

Okubo, A., S.A. Levin. 1989. A theoretical framework for data analysis of wind dispersal of seeds and pollen. *Ecology*; 70:329-338.



HARTMUT PETERS

Assistant Professor

Ph.D., 1981

University of Kiel, West Germany

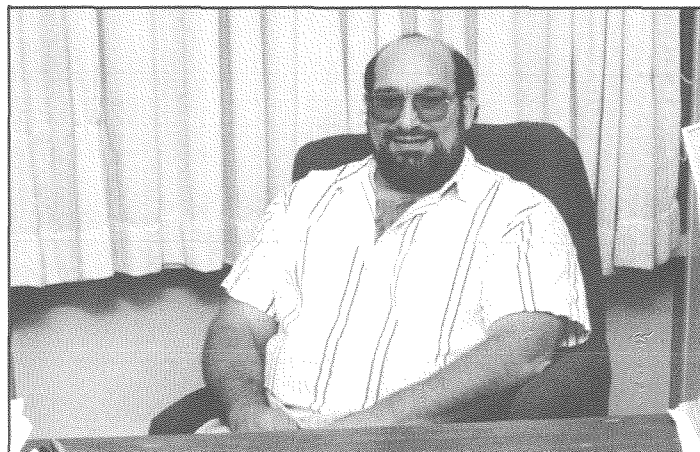
My research is in the areas of turbulent mixing and other small-scale processes such as internal waves. I am especially interested in the interaction of small-scale mixing with larger-scale circulation and in the effect of the turbulent transport of momentum, heat, and nutrients.

Turbulent mixing is a complex process, which we do not understand well. To assess the role of turbulence in the circulation of the ocean and estuaries, we need to study the interaction of small-scale processes with the larger-scale flow. Often, large-scale flows and turbulence are not coupled directly, but are linked through intermediate processes like internal waves. In all stratified waters, turbulent mixing accomplishes or controls all flow across the density field, especially the vertical transport of nutrients. Thus, small-scale mixing is one of the key processes linking the biological and the physical environment.

Peters, H., M.C. Gregg. 1988. Some dynamical and statistical properties of equatorial turbulence. In: Small-scale turbulence and mixing in the ocean, J. Nihoul and B. Jamart (eds.). Elsevier, Amsterdam, pp. 185-200.

Peters, H., M.C. Gregg, J. M. Toole. 1988. On the parameterization of equatorial turbulence. *Journal of Geophysical Research*; 93:1199-1218.

Peters, H., M.C. Gregg, J.M. Toole. 1989. Meridional variability of turbulence through the undercurrent. *Journal of Geophysical Research*; 94.



SHELDON REAVEN
Associate Professor
Department of Technology and Society
Joint with MSRC
Ph.D., 1975
University of California at Berkeley

I have been working mostly in two areas of waste management: what to do with garbage, especially plastics, and what to do with nuclear wastes. My approach to these problems might be called "technology assessment," that is, working on problems from both the scientific end (assessing expert disagreement over the relevant scientific theories, mathematical models, and methods of analysis) and from the ethical and policy end (focusing on fairness issues, competing values of interested parties, risk analysis, facility siting, and overall policy evaluation). My experience has been that all of the complex environmental problems we face today are characterized by thoroughgoing scientific and nonscientific disagreement, and I have tried to help both scientists and lay citizens untangle the web of conflicting evidence and argumentation surrounding these problems.

Current research projects include (1) a study with Vince Breslin and Larry Swanson of the breakdown and environmental impacts of degradable plastics in landfills, seawater, and other environments; (2) a project to develop a recycling "audit service" (a walk-through, on-site list of options for reducing waste generation, increasing recycling, and using more recycled materials) for restaurants, including fast-food establishments; (3) a study of the composition of this university's waste stream; and (4) preparation of a general guidebook to plastics waste

issues with Larry Swanson. I also work with towns and cities to develop recycling and waste management programs.

Reaven, S.J. 1988. Using science and technology news issues to develop scientific and quantitative literacy. *Bulletin of Science, Technology, and Society*; 8:265-268

Reaven, S.J. 1988. The methodology of probabilistic risk assessment: completeness, subjective probability, and the "Lewis Report." *Explorations in Knowledge*; V(1):11-31.

Reaven, S. 1988. One person's opinion: we need a model professional recycling curriculum. *Resource Recycling*, September/October. pp: 36-37, 66.

Reaven, S.J. 1989. Choosing among risk management alternatives for mitigating groundwater pollution. In: *Groundwater risk assessment for pollution control*, W. McTernan (ed.). American Society of Civil Engineers, New York; pp. 225-245.

Reaven, S.J. 1989. New frontiers: science and technology at the fair. In: *Remembering the future: the New York World's Fair from 1939 to 1964*, R. Bletter, et al. (eds.). Rizzoli Press, New York. pp: 75-103.



JAMES M. RINE
Associate Research Professor
Ph.D., 1980
University of Miami

My general research interests involve the correlation of sedimentary deposits with depositional processes within nearshore and continental shelf areas. The general goal, as with most marine geology, is to better understand the origins of ancient rocks by comparing them with modern sediments and environments. My research experience and interests include examinations of both modern and ancient shallow marine and delta deposits.

Of particular interest to me are first, muddy coastlines and second, nearshore and continental shelf sand bodies. Ongoing research into muddy coastlines is focused on the Guiana coast of northeast South America. The Guiana coast, which is the world's longest continuous mud coastline, extends from the mouth of the Amazon River in Brazil to the mouth of the Orinoco River in Venezuela.

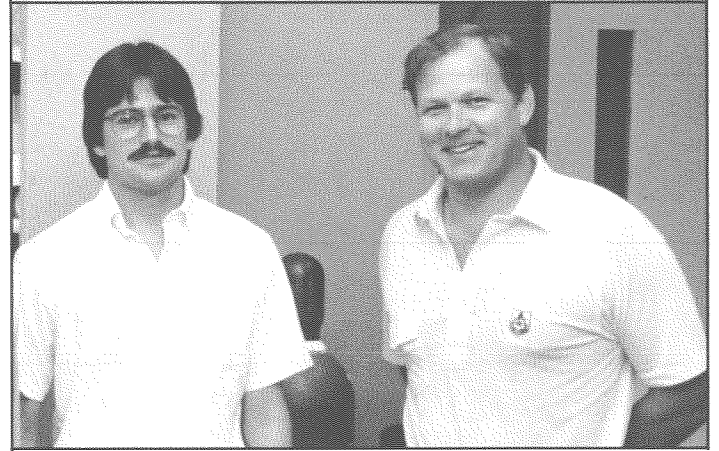
Past research consisted of detailed sedimentologic analyses of a linear sand ridge off the New Jersey coastline. Present research is aimed at better understanding the character of sandy sediment transport between the inner shelf and the nearshore off the south shore of Long Island.

Rine, J.M. and R.N. Ginsburg. 1985. Depositional facies of a mud shoreface in Surinam, South American - a mud analogue to sandy nearshore marine deposits. *Journal of Sedimentary Petrology*, 55:633-652.

Rine, J.M., R.W. Tillman, W.L. Stubblefield, and D.J.P. Swift. 1986. Lithostratigraphy of Holocene sand ridges from the nearshore and middle continental shelf of New Jersey, U.S.A. In: *Ancient and modern shelf clastics*. T.F. Moslow and E.G. Rhodes (eds.). Soc. Econ. Paleontologists and Mineralogists Core Workshop No. 9, Tulsa, OK. pp. 1-72.

Rine, J.M., K.P. Helmold and G. Bartlett. 1987. Cardium formation 6. Stratigraphic framework of the Cardium in subsurface: discussion. *Bulletin of Canadian Petroleum Geology*, 35(3):362-363.

Rine, J.M., A.B.H. Hassouba, L. Shishkevish, A.A. Shafi, G. Azazi, H. Nashaat, A. Badawy, and Z. El Sisi. 1988. Evolution of a Miocene fan-delta - a giant oil field in the Gulf of Suez, Egypt. In: *Fan deltas: sedimentology and tectonic settings*. W. Nemeč and R.J. Steel (eds.). Backie and Son, London. pp. 239-250.



FRANK J. ROETHEL
Lecturer
Ph.D., 1982
State University of New York at Stony Brook

My research group and I are investigating the feasibility of utilizing ash from the combustion of garbage and trash in novel marine and terrestrial applications. The efforts of my students were realized with the first artificial reef in the coastal waters of the United States constructed from blocks of stabilized incineration ash. Since placement of this structure in Long Island Sound in 1987, a multidisciplinary approach to evaluating the environmental acceptability of this novel recycling option has evolved.

Working with faculty from other Stony Brook departments, as well as with researchers from other institutions, our research team is evaluating changes in the engineering properties and alterations in the chemical composition of the blocks. Students interested in biology and toxicology are investigating the colonization of the habitat and the potential for uptake by marine organisms of both inorganic and organic constituents associated with the residue.

Recent state and federal funding to evaluate terrestrial applications of incineration ash reuse will result in the construction of a boathouse on this campus and the placement of a highway using asphalt made with the ash. Following both construction endeavors, we will monitor the performance with an in-depth multidisciplinary investigation and will conduct an environmental assessment of this material.

Breslin, V., F.J. Roethel, V. Schaeperkoetter. 1988. Physical and chemical interactions of stabilized incineration residue with the marine environment. *Marine Pollution Bulletin*; 19(11B):623-632.

Lechich, A.F., F.J. Roethel. 1988. Marine disposal of stabilized metal processing waste. *Water Pollution Control Federation*, January; 60:93-99.

Roethel, F.J., V.T. Breslin. 1988. Interaction of stabilized incineration ash with the marine environment. In: *Proceedings of the 1988 Conference on Solid Waste Management and Materials Policy*. New York, 27-30 January.

Roethel, F.J., V.T. Breslin. 1988. Unique method of ash disposal can benefit marine life. *Solid Waste and Power*; 2:42-48.

Shieh, C.S., F.J. Roethel. 1989. Physical and chemical behavior of stabilized sewage sludge blocks in seawater. *Environmental Science and Technology*; 23:121-125.



J. R. SCHUBEL
Professor, Dean and Director
Ph.D., 1968
The Johns Hopkins University

My current research is concentrated in two general areas—coastal zone management in the broadest sense and coastal sedimentation in a fairly narrow sense: estuarine sedimentation. In the area of estuarine sedimentation, I am particularly interested in the processes that produce and maintain turbidity maxima and the processes that determine the effectiveness of estuaries to act as filters for fine-grained particulate matter and how these processes change as estuaries mature geologically.

For many years, I have been frustrated by the long lag between advances in our understanding of processes, phenomena, and problems and the translation and incorporation of that new knowledge into management policies and practices to conserve and, when necessary, to rehabilitate important coastal environments and their living resources. In an effort to shorten this lag, I have created two new initiatives in 1989: the Coastal Ocean Action Strategies (COAST) Institute and the Long Island International Forum on the Environment (LIIFE). They are a couplet.

Each autumn, leading environmental scientists and policy makers from around the world will participate in the Long Island International Forum on the Environment. We will meet in Montauk at the Long Island's East End to focus our attention on a single major environmental problem. Each problem selected must be global in scope and expressed with particular clarity within this region. The goals of the session are to state the problem in tractable form, to identify the

full range of alternatives for dealing with it, to assess in broad terms the advantages and disadvantages of each alternative, and to incorporate the findings into an appropriate plan of action. The output of LIIFE will serve as the input to the COAST Institute.

Each summer, the COAST Institute will bring leading scientists together with important regional leaders to interact in an intensive one- to three-week session to produce a comprehensive short-term and long-term plan of action for the specific problem. The first problem that the COAST Institute tackled was floatable and medical-type wastes on the region's beaches, a problem which cost the Long Island economy an estimated \$1 billion in the summer of 1988. The staff of the COAST Institute were successful in working with relevant agencies to craft a comprehensive plan to deal with floatables the following summer and in the longer term.

Schubel, J.R., D.W. Pritchard. 1986. Responses of the upper Chesapeake Bay to variations in discharge of the Susquehanna River. *Estuaries*, December. 9(4A):236-249.

Neal, H.A. and J.R. Schubel. 1987. Solid waste management and the environment: the mounting garbage and trash crisis. Prentice-Hall, 240 pp.

Schubel, J.R. and D. W. Pritchard. 1987. Long Island Sound: resources, status, and management. Contribution No. 550 of the Marine Sciences Research Center, SUNY at Stony Brook, New York.

Schubel, J.R. 1988. Should the ocean receive protection? *U. S. Environmental Protection Agency Journal*, 14(5):20.

Yan, X.-H., J. R. Schubel, and D.W. Pritchard. 1988. Oceanic upper mixed layer depth determined by satellite data. *AGU Spring Meeting*, Baltimore, May. 69(16):383.



MARY I. SCRANTON
Associate Professor
Ph.D., 1977
Massachusetts Institute of Technology/
Woods Hole Oceanographic Institution

My group and I are actively involved in studies of the processes controlling carbon diagenesis in the sediments and water column. In particular, we have been investigating the effect of hydrogen concentrations and turnover rates on the turnover of low molecular weight fatty acids in anoxic systems. This is of interest because both hydrogen and fatty acids are important intermediates in the anaerobic food chain. We have also studied acetate cycling in sediments and have developed a diagenetic model that can predict "bioavailable" acetate concentrations if production rates and uptake rate constants are known. We are just beginning a collaborative study of a coastal anoxic basin with scientists at the University of Rhode Island, during which we will have the opportunity to closely relate biological and chemical processes to turnover of organic compounds in the water column.

My group is also involved in studying the oceanic methane cycle. Methane is a "greenhouse" gas, so it is important to understand sources and sinks of the compound in nature. We recently participated in two cruises to the North Sea, at the invitation of scientists at the University of East Anglia, during the spring bloom. Our principle result was our discovery that the largest source of methane to the North Sea is probably the Rhine-Scheldt Estuary system, rather than in situ biological production. The major sink was air-sea exchange rather than biological uptake. As a part of this study, we are also collaborating

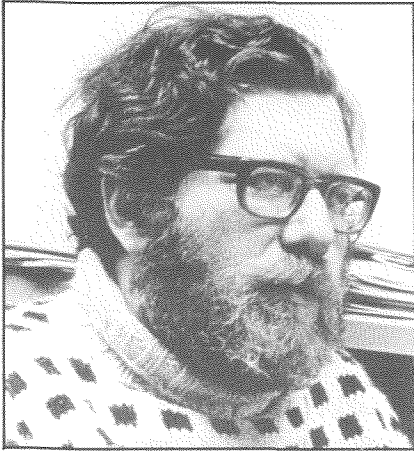
with Cindy Lee in a study of methylamines in the ocean-atmosphere system, with the ultimate goal of investigating the role of methylamines as a biological precursor of methane in the oceanic mixed layer.

Michener, R.H., M.I. Scranton, P.C. Novelli. 1988. Hydrogen (H_2) distributions in the Carmans River Estuary. *Estuarine and Coastal Marine Sciences*; 27:223-235.

Novelli, P.C., A. Michelson, M.I. Scranton, G.T. Banta, J.E. Hobbie, R.W. Howarth. 1988. Hydrogen and acetate cycling in two sulfate-reducing environments: Buzzards Bay and Town Cove, MA. *Geochimica et Cosmochimica Acta*; 52:2477-2486.

Scranton, M.I. 1988. Temporal variation in the methane content of the Cariaco Trench. *Deep-Sea Research*; 35:1511-1523.

Michelson, A.R., M.E. Jacobson, M.I. Scranton, J. Mackin. 1989. Factors controlling the distribution of acetate in anoxic marine and estuarine sediments. *Limnology and Oceanography*; 34:747-757.



LAWRENCE B. SLOBODKIN

Professor

Department of Ecology and Evolution

Joint with MSRC

Ph.D., 1951

Yale University

Slobodkin, L.B., L.R. Ginzburg, H.R. Akcakaya, and D. Slice. 1988. Balanced growth rates vs. balanced accelerations as causes of ecological equilibrium. In: Biomathematics and related computational problems. L. M. Ricciardi (ed.). Kluwer Academic Publishing; pp.165-175.

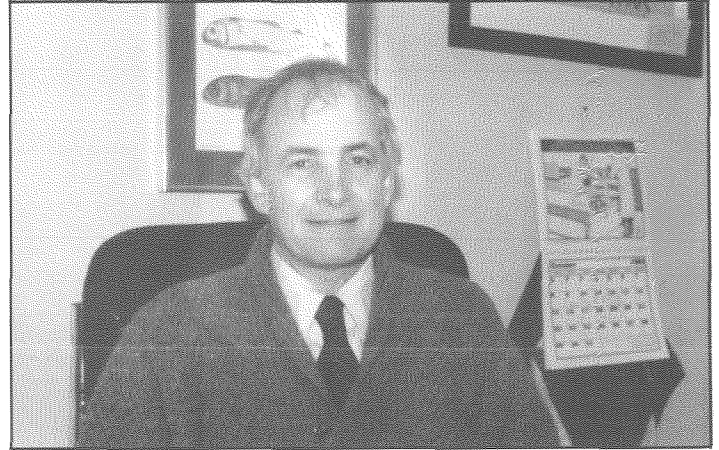
My central concern is, given the enormous complexity, variability, variety, and fragility of ecological systems, can a theory of ecology actually answer questions, or must it be a discussion of oversimplified and arbitrary models, suggested by, but not representing, nature? I have approached this problem by attempting to so thoroughly describe a simple group of organisms (*Hydra*) that their ecological and evolutionary responses to ecological perturbations in the field may be predicted. For reasons related to their developmental constraints they are, I believe, more amenable to such a description than almost any other metazoans.

Other research involves my participation in a joint study of the global biogeochemistry of carbon and my work on a study of epistemological problems related to theories of complex biological systems.

Slobodkin, L.B. 1986. The role of minimalism in art and science. The presidential address to the American Society of Naturalists. *American Naturalist*; 127:257-265.

Slobodkin, L.B. 1988. Intellectual problems of applied ecology. *Bioscience*; 35:337-342 (reprinted in *South African Institute of Ecologists Bulletin*; 7:7-18, December).

Slobodkin, L.B., L.R. Ginzburg, H.R. Akcakaya, and D. Slice. 1988. The theory of population dynamics: II. Physiological delays. *Bulletin of Math. Biophysics*; 50:503-515.



R. LAWRENCE SWANSON
Adjunct Professor
Ph.D., 1971
Oregon State University

My broad research interests concern reducing the impact of waste generation on society. In the context of the ocean, this translates to understanding and identifying the appropriate use of the ocean as part of a comprehensive waste management strategy.

Most recently I have been involved with understanding the sources, transport mechanisms, and effects of floatable wastes, including medical-type wastes in marine systems. Related to this problem is another problem of interest to me: quantifying use impairments such as beach closures, unsafe seafood, and poor marine ecosystem quality and productivity caused by pollutants and the economic and social significance of these impairments.

Plastic degradation is a major issue confronting waste managers. The appropriate role of degradable plastics in overall plastic use and management is of interest to me. It is particularly so with regard to plastics which, because of their use, will never be recycled and have a high probability of reaching marine systems. I am also interested in helping to develop marine uses for secondary materials products, such as plastic lumber and concrete-type structures made from stabilized incineration ash.

Swanson, R.L. 1989. Is Long Island an island? *Long Island Historical Journal*; Fall 1989, II(1):118-127.

Swanson, R.L. 1989. Wastes on New York area beaches. *Journal of Environmental Systems*; 18(2):183-188.

Swanson, R.L., G.F. Mayer. 1989. Ocean dumping of municipal and industrial wastes in the U.S. In: *Ocean processes in marine pollution*. Kreiger, Malabar, FL. pp. 35-52.

Swanson, R.L., C.A. Parker. 1988. Physical environmental factors contributing to recurring hypoxia in the New York Bight. *Transactions of the American Fisheries Society*; 117(1):37-47.



MÁRIO E. C. VIEIRA
Assistant Research Professor
Ph.D., 1983
The Johns Hopkins University

My general research interests lie in the area of the physical oceanography of estuaries and coastal waters. I have been involved in studies of the water circulation in the Chesapeake Bay, New York Harbor, Long Island Sound, and local embayments like the Peconic Bays. These activities generally require extensive field work at sea to obtain comprehensive sets of data which are subsequently analyzed and also utilized to calibrate numerical models. I particularly enjoy an interdisciplinary approach to practical problems, as demonstrated by my present efforts along with biologist colleagues to understand reasons for the outbreak in Long Island waters of a "brown tide" algal bloom. This picoplanktonic organism devastated the economically important scallop fisheries in Great South Bay and Peconic Bays. In my research I am pursuing the analysis of tidal records from the affected embayments, along with wind and precipitation data, to explore the hypothesis of meteorologically induced changes in the residence times of those waters having contributed to the phenomenon.

Another area of activity for me relates to the dynamics of the circulation in Long Island Sound. This is a fascinating subject because the Sound is a very unique estuary which impacts the life of all of us who live close to it in many different ways. I am part of a team of researchers in the Long Island Sound Study, a five-year multidisciplinary project whose overall objective is a thorough understanding

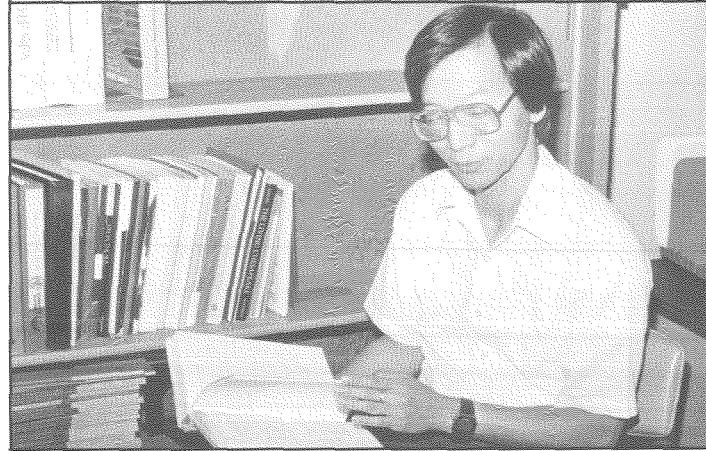
of how the Sound "works" and how its waters can be protected from abuse and deterioration. Current and hydrographic data which I collected is now undergoing analysis to extract important information which will allow the calibration of a numerical model of the Sound and also reveal its relationships to the Atlantic Ocean, the Hudson River, and the New York Harbor.

I am also interested in the dynamics of frontal surfaces and the processes of exchange between coastal shelf waters and the open ocean. I plan to pursue research in these areas with the development of a collaborative study with Mexican colleagues in the Gulf of California. I am also active in cooperative work with researchers in Portugal, where I have been participating in estuarine circulation and modeling studies.

Wang, D.-P., M.E.C. Vieira, J. Salat, J. Tintore, P. LaViolette. 1988. A shelf-slope frontal filament off the northeast Spanish coast. *Journal of Marine Research*; 46:321-332.

Vieira, M.E.C. 1989. The case for meteorologically driven fluctuations in residence times of Long Island waters subject to algal blooms. In: *Novel phytoplankton blooms: causes and impacts of recurrent brown tides and other unusual blooms*. Coastal and Estuarine Studies, Vol. 35. E.M. Cosper, et al. (eds.). Springer-Verlag, Berlin. pp. 297-308.

Wilson, R.E., M.E.C. Vieira. 1989. Residual currents in the Peconic Bays estuary. In: *Circulation patterns in estuaries*, B. Neilson, et al. (eds.). Humana Press, New York. pp. 87-95.



DONG-PING WANG
Professor
Ph.D., 1975
University of Miami

My research interests are modeling and analysis of physical processes in estuaries and over continental shelves and slopes. My students and I are studying coastal upwelling and upper-ocean mixing off California, internal tides and thermohaline circulation in the Gibraltar Strait, vertical mixing in the Long Island Sound, and tidal residual circulation in coastal embayments. We have developed sophisticated numerical models for process-oriented studies and used extensive data bases for model verification and application.

We are also actively involved in international collaboration, studying the shelf-slope front in the Balearic Sea with Spain, the thermocline evolution on the northwest European shelf with the United Kingdom, and the Kuroshio edge exchange off the East China Sea with Taiwan. We are also planning to study the upwelling in the Gulf of California with Mexico, the salt intrusion in Changjiang Estuary with the People's Republic of China, and the general circulation in the western Mediterranean Sea with France and Spain.

Chen, D., S.G. Horrigan, D.-P. Wang. 1988. The late summer vertical nutrient mixing in Long Island Sound. *Journal of Marine Research*; 46:753-770.

Tintore, J., D. Gomis, S. Alonso, D.-P. Wang. 1988. A theoretical study of large sea level oscillations in the western Mediterranean. *Journal of Geophysical Research*; 93:10797-10804.

Wang, D.-P. 1988. Transport model for water exchange between coastal inlet and the open ocean. *American Fisheries Society Symposium 3*; pp. 9-15.

Wang, D.-P., M.E.C. Vieira, J. Salat, J. Tintore, P. LaViolette. 1988. A shelf-slope frontal filament off the northeast Spanish coast. *Journal of Marine Research*; 46:321-332.

Aller, R.C., C. Lee, D.-P. Wang. 1988. Proceedings of the Frontal Exchange Processes Workshop (U.S.-Taiwan). Marine Sciences Research Center, State University of New York at Stony Brook, NY. 4-6 May.



FRANKLIN F. Y. WANG

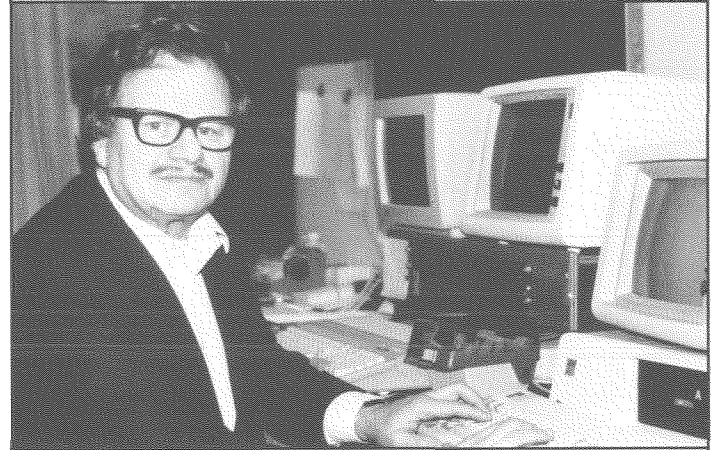
Professor

Department of Materials Science
and Engineering, Joint with MSRC

Ph.D., 1956

University of Illinois

My research activities concern the synthesis of materials for specific applications and the study of their mechanical, chemical and electronic properties. My interests in the marine sciences concern the mechanical and chemical stabilities of artificially synthesized materials for the ocean environment. I am also interested in applying some aspects of materials processing theories and practices to the marine sciences, wherever there are valid features to be treated in common.



PETER K. WEYL
Professor
Ph.D., 1957
Stanford University

My primary interest is interdisciplinary—to combine aspects from various disciplines to obtain insight into the mechanisms by which the World Ocean stabilizes the surface environment of our planet. To get a feel for the interactions of processes operating over a wide range of time scales, I have developed methods for converting time series data into music-like sequences—sonations. This makes it possible to use musical perception as an alternative input to the brain.

My analytical work focuses on extracting information from existing data sets. I am particularly interested in the interaction of processes that operate on very different time scales. Currently I am looking at oceanographic data obtained near Bermuda to investigate climatic changes in the North Atlantic from 1955-1984. On a very different time scale, I am concerned with the relationship between plate tectonics, ocean circulation, and climate.

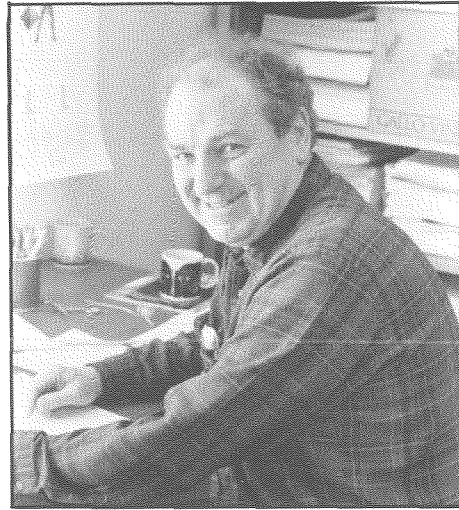


ROBERT E. WILSON
Associate Professor
Ph.D., 1973
The Johns Hopkins University

My current research interests relate to transport processes in estuaries. They include specifically the description of time dependent mixing processes in partially stratified estuaries, tidally induced residual currents in estuarine basins, and the interaction of buoyancy forced and tidally induced residual currents in estuaries.

I currently have projects in both the Hudson estuary and Long Island Sound. I obtain a description of transport processes within these estuaries through the analysis of data and with the help of simple analytical and numerical models.

Wilson, R.E., M.E.C. Vieira. 1989. Residual currents in the Peconic Bays estuary. In: Circulation patterns in estuaries, B. Neilson, et al. (eds.). Humana Press, New York. pp. 87-95.

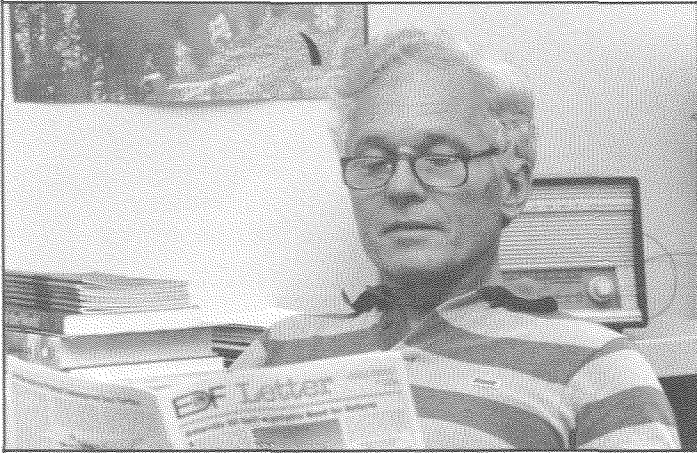


PETER M.J. WOODHEAD
Research Professor
B.S., 1953
Durham University (England)

I have long-standing interests in fishes and fisheries in many waters. Present research concerns the communities of fishes inhabiting the estuary of the Hudson River, New York Harbor, and the New York Bight—their composition, distribution, and changes in space and time. The lower estuary of the Hudson is extremely contaminated, stressed, and with possible effects on fish populations, which are being investigated. The influences of natural (climate) changes on fish populations of the northeast region are also of great interest.

I study the ecology of reef systems, both natural and man-made, and have wide experience on Pacific and Atlantic reefs. I am director of the coal waste artificial reef program, one of the larger research studies in MSRC. The program is multidisciplinary, considering many of the chemical, physical, and biological interactions of marine ecosystems with reef construction materials. My principal interests concern the habitation of reefs by fish, crabs, lobsters, and benthic epifauna, their biomass and productivity.

Woodhead, P.M.J. 1989. The fish community of New York Harbor, spatial and temporal distributions of major species. Conference Report, Impacts of New York Harbor Development on Aquatic Resources. Hudson River Foundation, New York, 1987; pp. 123-143.



CHARLES F. WURSTER
Associate Professor
Ph.D., 1957
Stanford University

My research has been concerned with the effects of stable chlorinated hydrocarbon pollutants on marine plankton communities. Focusing on those chemicals found regularly in the environment (polychlorinated biphenyls, DDT, DDE, and dieldrin), we have studied the effects on individual species, mixed cultures, and natural phytoplankton and zooplankton communities in an attempt to understand the impact of these chemicals on aquatic ecosystems.

The growth of some species of algae is inhibited by chlorinated hydrocarbon concentrations as low as the parts per trillion range. This sensitivity varies greatly with the species, the supply of nutrients, the temperature, light intensity, and the site of origin of the clone. Selective toxicity may alter the species composition within the community.

Currently we are studying the development of resistance to toxic chemical pollutants by phytoplankton. We have found that phytoplankton from chronically polluted areas are more resistant to toxic pollutants than are those from unpolluted areas. Cross resistance to other toxicants sometimes develops when resistant strains are produced in the laboratory. We are currently investigating the mechanisms whereby phytoplankton become resistant to toxic pollutants.

I am also interested in various aspects of ornithology, and with the integration of scientific information into environmental public policy.

Cosper, E., B.J. Snyder, L.M. Arnold, L.A. Zaikowski, and C.F. Wurster. 1987. Induced resistance and altered environmental fitness in a marine diatom. *Marine Environmental Research*; 23:207-222.

Cosper, E., C.F. Wurster, and M.F. Bautista. 1988. PCB-resistant diatoms in the Hudson River estuary. *Estuarine and Coastal Shelf Science*; 26:215-226.

JEANNETTE YEN
Assistant Professor
Ph.D., 1982
University of Washington

Presently I am doing research on the reproductive ecology of an antarctic copepod and on sensory perception by zooplankton. I have spent three seasons—spring, summer and winter—on the Antarctic peninsula at Palmer Station sampling the zooplankton populations in a 1200 meter basin. We are studying the seasonal cycles in the reproductive ecology and lipid metabolism of the copepod *Euchaeta antarctica* and the interactions with their physiology, feeding ecology, and vertical migratory activity. I wish to characterize the life history traits that led to the evolution and success of this large, carnivorous marine copepod in this low temperature habitat.

My studies on sensory perception by zooplankton involve combining laser optics with state-of-the-art video technology to examine the ability of a mechanoreceptive carnivorous copepod to remotely detect fluid deformations produced by its mobile prey. This involves both target recognition by the predator as well as three dimensional spatial localization of hydrodynamically conspicuous prey.

To further examine sensory perception by copepods, I am collaborating with researchers at the Bekesy Laboratory of Neurobiology at the University of Hawaii. We have developed a technique for recording extracellular afferent nerve impulse discharges occurring within the first antennae of copepods. This has never been done before. We find that the antennal receptors are extremely sensitive to mechanical stimuli



and appear to detect rapid displacements on the scale of angstroms. A model of hydrodynamic stimulation of zooplankton will be constructed to integrate the information on copepod behavioral responses, neurophysiological, and morphological properties with information on their species ecology.

Yen, J. 1985. Selective predation by the carnivorous marine copepod *Euchaeta elongata*: laboratory measurements of predation rates verified by field observations of temporal/spatial feeding patterns. *Limnology and Oceanography*; 30:577-595.

Yen, J. 1986. Predatory feeding ecology of *Euchaeta antarctica*, a carnivorous marine copepod. *Antarctic Journal of the U.S.*; 21(5).

Yen, J. 1987. Predation by *Euchaeta norvegica* Boeck on eggs and larvae of the North Atlantic cod *Gadus morhua* L. *Journal of Experimental Marine Biology and Ecology*; 112:283-296.

Yen, J. 1988. Directionality and swimming speeds in predator-prey and male-female interactions of *Euchaeta rimana*, a subtropical marine copepod. *Bulletin of Marine Science*; 43(3):175-193.

COURSE OFFERINGS

The following is a list of courses offered during 1989-1990 academic year. Many additional courses are available to be offered, and the list changes from year to year. Courses may also be developed as a response to student interest.

Course Title

Physical Oceanography
Biological Oceanography
Chemical Oceanography
Geological Oceanography
Geochemical Modeling
Marine Pollution
Geochemistry Seminar
Environmental Toxicology
Regional Planning Applied to Marine Sciences
Primary Productivity in the Sea
Marine Sedimentology
Oceanography Problem Solving
Marine Geophysics
Special Topics
Directed Study
Intro to Mathematics for Marine Scientists
Ecology of Fishes
Seminar Preparation
Special Topics in Chemical Oceanography
Special Topics in Physical Oceanography
Special Topics in Biological Oceanography
Seminar
Coastal Geology Seminar
Research
Dynamics I
Research
Directed Study
Teaching Practicum
Benthic Ecology
Waste Management Issues
History of Waste Management
Environmental Law
Environmental Engineering
Environment and Public Health
Marine Pollution
Oceanography: The World Ocean
Long Island's Environment
Long Island Sound in the Year 2000

“The most useful part of being a student at MSRC was the exposure to multiple disciplines—to work in many different areas at the same time, while still getting involved with the details that are basic to marine sciences. This allows a more creative, less narrowly focused approach.”

—Andre Visser
Ph.D., 1989

PROFESSORS EMERITI

H. H. Carter
J. L. McHugh
Donald W. Pritchard

ADJUNCT FACULTY

Berger, Harold, Department of Environmental Conservation, Region I. Solid waste disposal; groundwater quantity and quality; air emissions; wetland formation and protection

Capone, Douglas, University of Maryland, Center for Environmental and Estuarine Studies. Marine microbial ecology; nitrogen cycling

Crawford, W.R., Institute of Ocean Sciences, Canada. Continental shelf and slope dynamics microstructure; tidal dynamics.

Duerr, E.O., Oceanic Institute, Hawaii. Aquaculture of marine phytoplankton, especially cyanobacteria.

Falkowski, Paul, Brookhaven National Laboratory. Marine phytoplankton ecology; phytoplankton physiology.

Lawton, Peter, Department of Fisheries and Oceans, Biological Station, St. Andrews, Canada. Behavior and ecology of crustaceans; fisheries ecology.

Manheim, Frank, U.S. Geological Survey. Marine geochemistry; ocean policy.

O'Connor, Joel, U. S. Environmental Protection Agency. Environmental assessment, policy, and quality indicators; marine ecology.

Smith, S.L., Brookhaven National Laboratory. Plankton ecology; nutrient regeneration by zooplankton.

Suszkowski, Dennis, Hudson River Foundation. Estuarine sedimentology; ocean and estuarine policy and management.

Thomson, R.E., Institute of Ocean Sciences, Canada. Coastal oceanography; continental shelf waves; slope currents.

Vaughn, J.M., Brookhaven National Laboratory. Transport fate and effects of viruses in the aquatic environment.

POSTDOCTORAL FELLOWS

Chang, Jeng
Hall, Per
Hassett, Patrick
Monteleone, Doreen
Present, Tess
Schubauer, Joseph
Villareal, Tracy

STAFF

Bell, Trudy, Editorial Associate
Carroll, George, Manager, Computing Facilities
Case, Carol, Secretary
Charnon, Sheila, Research Support Specialist
Christie, James, Research Support Specialist
Chiarella, Louis, Senior Research Support Specialist
Dunham, Susan, Research Support Specialist
Eisel, Mitzi, Instructional Support Specialist—Graphics
Goldsmith, Eileen, Secretary
Gordy, John, Research Support Specialist
Greenlees, Michele, Secretary
Harrison, Henry, Electronics Technician
Hirschberg, David, Assistant Research Oceanographer
Jones, Clifford, Facilities Manager
Lau, Mary Ann, Project Staff Associate
Lucyk, David, Ocean Instrument Technician
Murillo, Christine, Secretary
Philbrick, Valerie, Research Support Specialist
Ranheim, Robert, Research Support Specialist
Reeder, Margaret, Research Support Specialist
Richardson, Laura, Graduate Program Coordinator
Rizzitello, Bill, Research Support Specialist
Rowland, George, Flax Pond Laboratory Manager
Salerno, Jonathan, Research Support Specialist
Schaeperkoetter, Victor, Research Support Specialist
Schoof, Jeri, Executive Assistant to the Dean and Director
Schorr, Sharyn, Secretary
Stuebe, Helmut, Research Vessel Captain
Ulreich, Helen, Secretary
Vallely, Barbara, Staff Assistant
Van Voorhees, David, Research Support Specialist
Wiggins, Mark, Field Specialist
Wilson, Thomas, Oceanographic Instrumentation Engineer
Wirick, Susan, Research Support Specialist
Wise, William, Associate Director;
Director, Living Marine Resources Institute
Zielenski, Bret, Small Boats Captain
Zimmerman, Mindy, Research Support Specialist

1988-89 Ph.D. AND M.S. RECIPIENTS AND THESIS TITLES

Ph.D. Degree

Chang, Jeng

Estimating the *in situ* phytoplankton growth rate by cell cycle analysis.

Cheng, I-Jiunn

Seasonal change of food resources and their affect on the feeding behavior of a deposit-feeding gastropod *Hydrobia truncata*.

Gomez-Reyes, Eugenio

Salinity differences in Great South Bay, NY, generated by inlet geometry changes.

Dam Guerro, Hans

The dynamics of copepod grazing in Long Island Sound.

Forbes, Thomas

The importance of size-dependent physiological processes in the ecology of the deposit-feeding polychaete *Capitella* species I.

Forbes, Valery E.

An investigation of the factors determining growth rate and population density in the deposit-feeding gastropod *Hydrobia truncata*.

Mitchell, James G.

The distribution of microplankton and the structure of their physical environment at scales of centimeters to micrometers.

Monteleone, Doreen

Trophic interactions among ichthyoplankton and zooplankton.

Visser, Andre

Tidal stress and residual eddy dynamics in wide coastal sea straits.

Yan, Xiao-hai

Applications of remote sensing to studies of oceanic upper mixed layer dynamics.

Zertuche-Gonzalez, Jose

In situ life history, growth and carrageenan characteristics of *Eucheuma uncinatum* (Setchell & Gardner) Dawson from the Gulf of California.

Master's Degree

Applemans, Nicholas

Effects of variation in temperature and chlorophyll-a on growth of hard clams, *Mercenaria mercenaria* L. in an upflow culture system.

Cahalan, Jennifer

The effects of flow velocity, food concentration and flux of particles on growth rates of juvenile bay scallops.

Chiaraviglio, Andrew

Growth and survival of Milkfish (*Chanos chanos*) juveniles fed lipid containing purified diets.

Chiarella, Louis

Patterns of reproduction and growth in bluefish (*Pomatomus saltatrix*) from the NY Bight.

Costa, Frances

The effects of small-scale temperature changes on sporogenesis induction and subsequent gametophyte growth and development.

Cottrell, Matthew

The specific growth rate of *in situ* populations of a blooming chlorophyte in Great South Bay, NY: comparison with photic zone carbon turnover rates.

Dzurica, Susan

Uptake of organic and inorganic compounds by the "brown tide" organism.

Epp, Jennifer

Energy storage/utilization in the bay scallop (*Argopecten irradians*).

Fouke, Susan

Portunid crab (*Ovalipes ocellatus* and *Callinectes sapidus*) predation on juvenile hard clams (*Mercenaria mercenaria*): interactive effects of substrate type and prey density.

Kim, Byung-Hwan

Suspended sediment budget in Long Island Sound: a box model application.

Kuenstner, Susan

The effects of the "brown tide" alga on bivalve feeding.

Master's Degree, cont.

Lee, Jonghyeon

Radon-222 as a tracer for benthic exchange in Long Island sediments: application to porewater nutrient chemistry.

Marshall, Gregory

Factors influencing the burial and climbing behavior of early juvenile queen conch.

McBride, Richard S.

Comparative growth and abundance of spring vs. summer-spawned young-of-the-year bluefish, *Pomatomus saltatrix*, recruiting to the New York Bight.

McKibbin, Thomas

Fluxes and sediment inventories of excess ^{210}Pb in the North Atlantic.

Mead, Melanie

Life history of *Menidia beryllina* in a Long Island, NY estuary.

Nelson, Christopher

The effect of an algal bloom isolate on the growth and survival of bay scallop larvae.

Park, Jang-Geun

Holocene transgressive sequence on the inner-continental shelf off Fire Island, Long Island, NY.

Pavlik, Barbara

A geophysical determination of the configuration of the freshwater lens in the upper glacial aquifer, Fire Island, New York.

Qadri, Anwar H.

Oceanography and hydrography of Khobar Estuary (lower Indus River).

Salamanca, Marco

^{210}Pb and trace metal distribution in Concepcion Bay sediments, Chile.

Subramaniam, Ajit

Linking maps to spreadsheet based information systems.

Swider, Kenneth

Transformation of sulfur compounds in salt marsh sediments.

Tangren, Sara

Geologic history of the Great South Bay salt marsh system.

Valle-LeVinson, Arnaldo

Variability of temperature and salinity at a mid-Chesapeake Bay summer station.

Wang, Xu-chen

The distribution and adsorption behavior of aliphatic amines in coastal marine sediments.

West, Anne

The relationship between cell size and subcellular accumulation of polychlorinated biphenyl (PCB) in a PCB-resistant marine diatom.

