CURRENT RESEARCH

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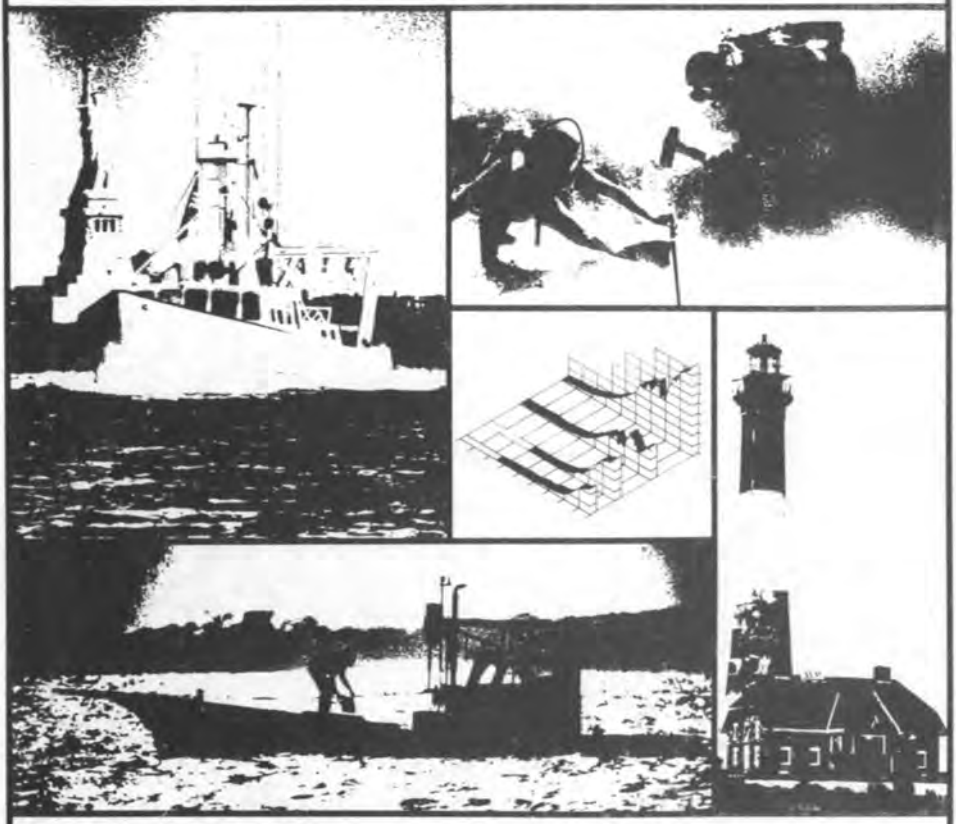

MARINE SCIENCES RESEARCH CENTER

marine sciences research center

StonyBrook

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THE MARINE SCIENCES RESEARCH CENTER

A Different Kind of Oceanographic Institution; One that is Making a Difference

"You are to be congratulated for the progress you have made in creating a major addition to the oceanographic research capability of this country."

Dr. George S. Benton, Former Assistant Administrator, National Oceanic and Atmospheric Administration

Overview

Stony Brook's Marine Sciences Research Center (MSRC) is the youngest of the Nation's major oceanographic institutions. In keeping with the Stony Brook tradition, the rate of evolution of the MSRC as a center of excellence has been dramatic. Over the past 10 years, sponsored research support has increased by approximately 15-fold, the faculty by nearly 3-fold, and the graduate student body by 5-fold. Growth in stature has been even more impressive. Over its brief history of 17 years, the MSRC has achieved a remarkable degree of distinction. Our goal has been to develop a center which would rival in quality the very best oceanographic institutions in the world, but one of a different character: a comprehensive coastal oceanographic institution with programs not only of excellence in fundamental research but also in the applications of science to serve society as well.

The MSRC is a comprehensive coastal oceanographic institution. One of its distinguishing features is clear and persistent focus on the Coastal Ocean--from

approximately the outer edge of the continental shelf inland to the last traces of sea salt. This is the part of the World Ocean which has been neglected by most oceanographic institutions. Problems there are more complex than in the deep sea; solutions less tidy. It also is the part of the World Ocean with which society has its most intimate contact and upon which it has its greatest impact. The MSRC has programs in biological, chemical, geological and physical oceanography; in mariculture; in fisheries oceanography and fisheries management; and in coastal zone management.

"The Marine Sciences Research Center is rapidly acquiring international stature as one of the very best coastal oceanography centers in the world."

Robert O. Reid,
Professor and
Chairman, Department
of Oceanography,
Texas A&M
University

James J. McCarthy,
Agassiz Professor and
Director, Museum of
Comparative Zoology,
Harvard University

A second distinguishing feature of the MSRC is the emphasis it places on the application of the results of research to the resolution of those problems which arise from society's multiple and conflicting use of the Coastal Ocean.

The hallmark of all MSRC activities is its creative approach to problem solving--problems old and new, large and small, basic and applied. The Center's research has resulted in major advances in our understanding of the natural processes which characterize the Coastal Ocean and of how man has affected those processes. The Center's research has led to marked and innovative changes in environmental management practices and policies. The

MSRC is a high leverage unit which generates more than $3.00 for every $1.00 it receives from the State of New York for faculty salaries. The base of sponsored research support is broad, including funding from towns, countries, several states, from every Federal agency that supports research in the marine sciences, from several foreign countries, and from the United Nations.

The Center's State-supported faculty number more than 25 and is expected to grow to about 30 within three years. Its research-supported faculty numbers 12 and is expected to increase to about 15 over that same period. It is our intent to keep the MSRC a relatively small, dynamic, flexible community of scholars with complementary objectives and goals; a community of scholars dedicated to attacking important multidisciplinary problems in small multidisciplinary groups unimpeded by erection of departmental barriers.

The MSRC with approximately 100 students enrolled has one of the largest graduate oceanographic programs in the Nation. Some 25% of the Center's students are foreign and over the past five years, have come from 20 different countries.

The Center has developed special programs designed to maintain a high level of creativity to foster

"You have embarked on a unique enterprise in marine science..."

Professor Roger R. Revelle, Former Director of the Scripps Institution of Oceanography

new ways of looking at the Coastal Ocean now and in the future, and to ensure the continuation of a dynamic evolving institution which is responsive to changing needs and opportunities.

- Each year four to six of the world's outstanding scholars are brought to the Center through the Distinguished Visiting Scholar Program for one to two weeks each for lectures, seminars and informal discussions.

- Each year the Coastal Marine Scholar Program brings to the Center at the initial stages of their careers two recent Ph.D.'s who have demonstrated an unusual degree of creativity. Coastal Marine Scholars are provided full support for two years and are provided with the resources needed to pursue their own research and scholarly activities.

- Each year the MSRC Associates Summer Fellowship Program brings to the Center three to five outstanding undergraduate students majoring in one of the basic sciences and provides them with an opportunity to conduct research in collaboration with experienced marine scientists. The program is

designed to attract exceptional students into the field at a time when they are still considering a variety of career paths.

- The MSRC's Seminar Program brings to the Center an average of more than 75 speakers each year.

Marine Management and Policy

The Center has a unique program in marine policy and management--the Coastal Ocean Science and Management Alternatives (COSMA) Program. Initiated in 1982 with a grant from the William H. Donner Foundation, the COSMA Program is designed to improve management of uses of coastal environments through the development of better tools and techniques for decision makers, and through the analysis of important, complex multidisciplinary problems which result from society's multiple and conflicting uses of the Coastal Ocean.

COSMA brings together scholars from different disciplines and from different institutions so that they may respond effectively to complex environmental problems. COSMA does not attempt to formulate management plans or policies. It does affect the formulation of such plans and policies by providing decision makers with rigorous technical assessments of the effects of the full range of alternative ways of dealing with

problems and by casting the results in forms which allow a comparison of consequences associated with each alternative.

Fisheries and Aquaculture

Later this year, the MSRC will launch a new institute, the Living Marine Resources Institute (LIMRI), dedicated to resolving problems and exploiting opportunities associated with mariculture and fisheries. The Institute will expand the considerable strength in these areas that already exists within the Center. The new unit will concentrate on New York, but will contribute to mariculture and fisheries activities throughout the Nation and the World.

International Activities

MSRC scientists are active in research in coastal environments throughout the World. The Center has formal memoranda of understanding with universities in Chile, China, Korea, Mexico, New Zealand and Spain and informal collaborative agreements with oceanographic institutions in Australia, Japan, the Netherlands and Pakistan.

A Few Honors and Awards

In 1983 Ms. Monica Bricelj, then a Ph.D. candidate, won the

1983 T.C. Nelson Award for the best student paper presented at the National Shellfisheries Association.

In 1983 Professor Akira Okubo received the prestigious Medal of the Oceanographic Society of Japan for his "important contributions to our understanding of oceanic diffusion processes."

In 1984, Professor J.L. McHugh was honored by the American Fisheries Society (AFS) and the National Shellfisheries Association (NSA) with the highest awards of the two professional societies: the Award of Excellence of the AFS and Lifetime membership in the NSA and a Citation for Exceptional Service. McHugh was a Fellow of the Woodrow Wilson International Center for Scholars in 1971.

In January 1985, Associate Director, Dr. Donald W. Pritchard, was awarded an Honorary Doctor of Science degree by the College of William and Mary. He was honored for his outstanding contributions to the physical oceanography of estuaries and coastal waters, and for his contributions to the understanding of the Chesapeake Bay and to the enlightened management of the Bay and its resources.

In January 1985, Dean J.R. Schubel was made an honorary

professor of East China Normal University.

Over the past two years the Center's graduate students have won more than 50 external awards for their scholarly activities.

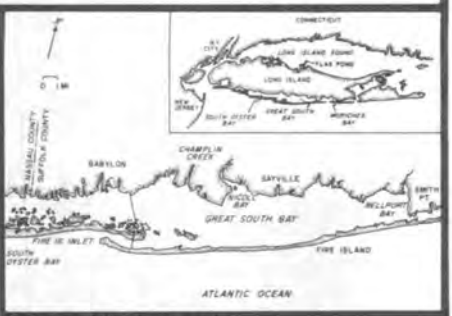
"If science is to learn how life works, at a really deep level, it is necessary to cast a very wide net. Some of the questions that keep popping up at MSRC may someday be answered in ways that will come as welcome astonishments to those of us concerned with human biology."

Lewis Thomas

MSRC scientists have been elected to important offices in many professional societies and are sought out to serve on local, regional, state, national and international scientific and technical advisory boards which deal with a broad spectrum of marine topics; topics which range from coastal zone planning and management in developing countries to the disposal of nuclear submarines and radioactive wastes on the deep sea bed.

Conclusion

The MSRC is a different kind of oceanographic institution; one which is making a difference in our understanding of the Coastal Ocean and in developing strategies to accommodate, with predictable and acceptable impacts, the multiple and conflicting uses society makes of the Coastal Ocean. The acronym MSRC has come not only to stand for the Marine Sciences Research Center, but also for the Center that is Making Scientific Research Count.


CONNECTICUT
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GREAT SOUTH BAY
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NASSAU COUNTY
SUFFOLK COUNTY
BABYLON
CHAMPLIN CREEK
SAYVILLE
BLUE BAR
BELLPORT BAY
SMITH PT.
GREAT SOUTH BAY
FIRE IS. INLET
SOUTH OYSTER BAY
FIRE ISLAND
ATLANTIC OCEAN

Henry Bokuniewicz

Malcolm J. Bowman

HENRY BOKUNIEWICZ, ASSOCIATE PROFESSOR

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. This work is being done in several areas around the Northeast. Projects are being done, for example, to study 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 the dredging and disposal of dredged sediments. As a result, my colleagues and I are in close contact with federal, state, and local regulatory agencies, such as the U.S. Army Corps of Engineers and the Environmental Protection Agency.

MALCOLM J. BOWMAN, ASSOCIATE PROFESSOR

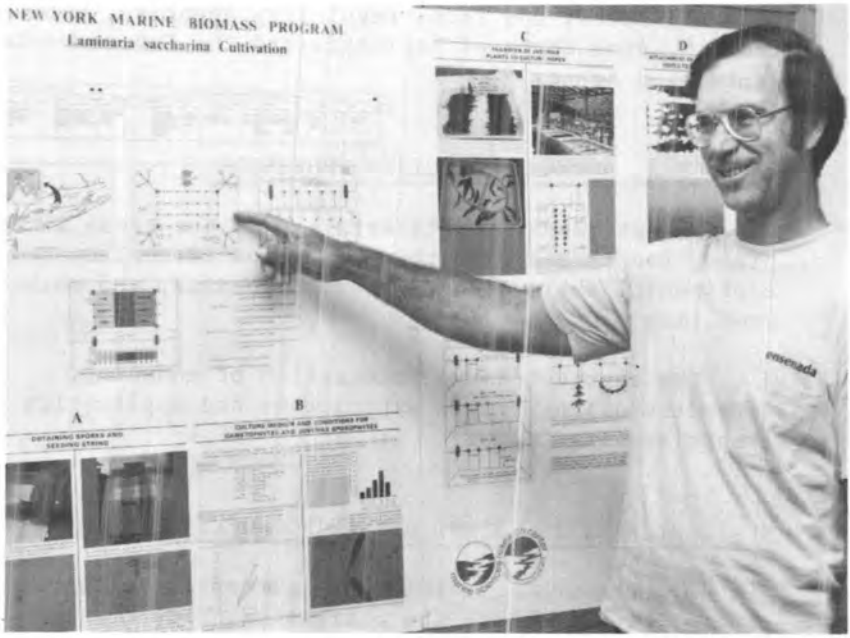
Recent research interests are in the areas of tidal mixing fronts and plankton production in shallow seas, continental shelf and sea strait dynamics, and coastal upwelling.

The approach is an integration of modeling, interdisciplinary field experiments and application of remote sensing imagery.

V.M. BRICELJ, ASSISTANT RESEARCH PROFESSOR

My research activities lie primarily in the area of physiological ecology and energetics of benthic macrofauna, particularly suspension-feeding bivalves. Our work deals with basic reproductive and feeding

V. M. Bricelj



B.H. Brinkhuis

biology of estuarine, commercial species, e.g. hard clams and scallops. This work is often directly applicable to aquaculture and management of shellfisheries.

I am currently involved in a study, funded by New York Sea Grant, on reproductive effort and age-specific utilization of reserves of bay scallop populations in eastern Long Island. I am also interested in the comparative physiology of benthic suspension-feeders and deposit-feeders, producer-consumer relationships, and the role of detritus in marine food webs. I currently hold a joint appointment with Southampton College, Long Island University.

B.H. BRINKHUIS, ASSISTANT PROFESSOR

The main focus of my research centers on seaweed mariculture. Seaweed mariculture is viewed as a means of supplying seaweed biomass for conversion to methane gas by anaerobic digestion, providing uniform seaweed quality important to the phycocolloid industry, and improving management options for natural seaweed populations. The investigations conducted in one of the few running seawater greenhouses in the country emphasize basic research into understanding nitrogen, light and temperature effects on physiology of seaweeds. This knowledge provides a sound scientific basis for evaluating cultivation practices and seaweed farm designs. We have developed several seaweed farm designs and successfully field-tested one.

A second research area involves tissue culture and seaweed genetics. We have successfully cloned kelp species and are working on methods to alter the genetic composition of plants to provide better seed stocks for seaweed mariculture. Other studies are examining heritability of certain morphological and physiological characteristics of plants.

DOUGLAS G. CAPONE, ASSISTANT PROFESSOR

My general research interests are in the areas of marine microbiology and biochemistry--specifically, the

Douglas G. Capone

Edward J. Carpenter

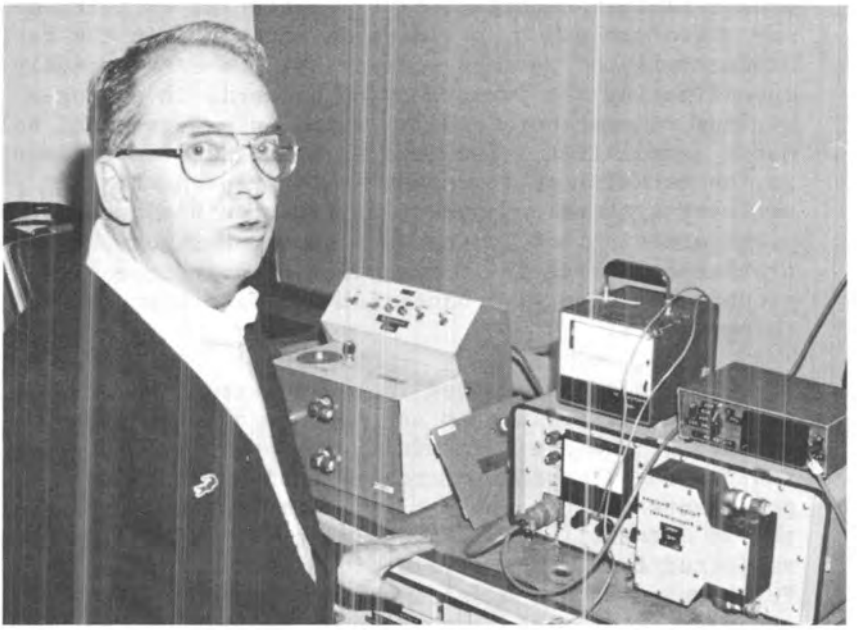
study of microbial activities and interactions in the environment. To understand the microbial ecology of aquatic systems, I have adapted and applied methodologies currently used in other fields (such as biochemistry, organic chemistry, microbiology, and soil biology).

Ongoing research is focused on the importance of nitrogen cycle bacteria in marine sediments. Nitrogen is often the factor that limits primary production in the marine environment. N_2 fixation, nitrification, and denitrification--three strictly bacterial activities--may therefore exert considerable influence on the basic productivity of various ecosystems. We are currently investigating the importance of bacteria in nitrogen cycling in nearshore sediments and in seagrass and salt marsh communities. Specific work includes improvement in the methodology for assaying these parameters in sediment systems and surveying for specific bacterial-plant associations in the root zone. Furthermore, we are investigating the interaction of nitrate-enriched groundwater flow with bacterial nitrogen transformations in sediments.

I am also interested in the interactions of environmental pollutants and the microbiota of marine sediments. We are determining the potential for inhibition of various microbial activities by the pollutants that accumulate in sediments, and comparing the *in situ* activities in sediments which have been subjected to various levels of pollutant loading. Furthermore we are examining the capacity for the sedimentary microbiota to degrade organic contaminants.

EDWARD J. CARPENTER, PROFESSOR

My recent research interests are rather broad, but I am interested basically in nitrogenous nutrient transformations in aquatic habitats. Recent research is concentrated in Great South Bay on the south shore of Long Island and in other coastal habitats adjacent to Long Island. Nitrogen availability is a major factor affecting the growth of marine phytoplankton in the Long Island area. My research is concerned with all aspects of the marine nitrogen cycle (N_2 fixation,



Harry H. Carter

denitrification, uptake, excretion, etc.) and how various factors such as nutrient loading, physical events, and toxic substances affect those processes. Since much of my past work has been with phytoplankton, these organisms receive the bulk of my attention. Other research topics concern 1) the ecology of various strains of chroococcoid cyanobacteria in open-ocean and coastal waters and 2) the ecology and physiology of the toxic dinoflagellate *Gonyaulax tamarensis* in Long Island waters.

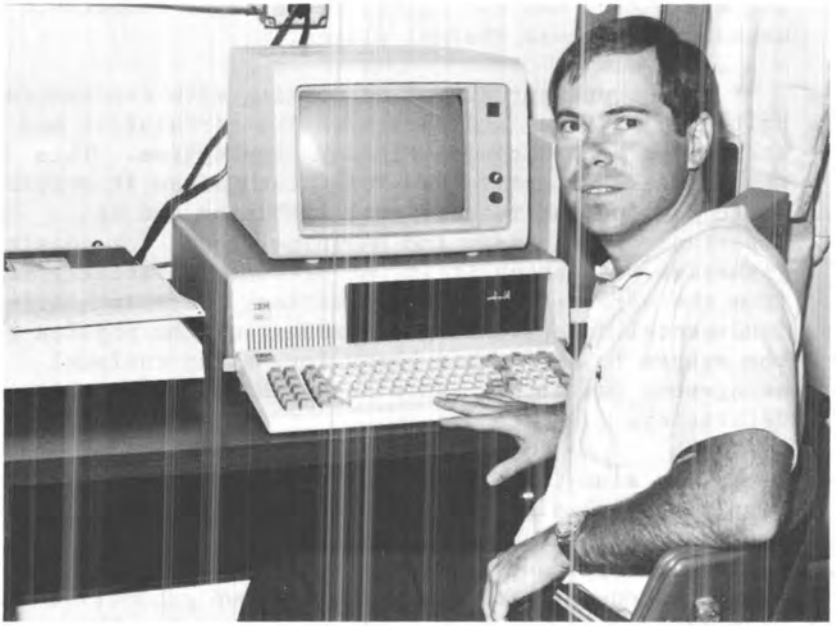
HARRY H. CARTER, PROFESSOR (EMERITUS)

Since 1964 I've been working on methods for measuring and mitigating man's impact on his estuaries and coastal waters. This has involved fundamental studies of turbulent mixing (i.e., mixing in estuaries and coastal waters), the design of waste water outfalls, studies of plumes associated with heated cooling water discharges from electric generating stations, and the development of models for predicting the distribution in the receiving waters of this heated cooling water and for evaluating the biological response of planktonic organisms to these thermal plumes.

At the present time I am working with Professors Pritchard, Vieira, and Partch on the circulation and exchange of the Peconics-Flanders Bay system. This system is important to New York State since it supports large scallop and recreational fisheries and is important as a nursery and spawning ground for coastal fisheries. Although it is, at present, relatively free from the effects of man's activities, there is little fundamental understanding at present of the physics of the system to serve as a basis for making rational management decisions. This research addresses that deficiency.

I am also interested in the hydrodynamic aspects of bivalve larval dispersal. In conjunction with Professor Malouf, we have developed and applied a rationale for identifying the hard clam brood stock areas responsible for the sets on known productive clam beds for the Towns of Babylon, Islip and Brookhaven. These areas, called spawner sanctuaries, will then be

Robert Cerrato



J. Kirk Cochran

set aside and stocked with fecund adult clams so as to maximize spat setting on the targetted beds.

ROBERT CERRATO, ASSISTANT RESEARCH PROFESSOR

My research centers primarily around the response of individual organisms, populations and communities to physical disturbances. A physical disturbance can be created by a variety of processes, both natural and man-made, such as storm waves, tidal scour, seafloor mining, and the disposal of dredged sediment. Study of this response is important for both conservation and management, and provides interesting information about the dynamics of biological systems.

At present, I am studying with others at the Center the feasibility of a number of alternatives to the disposal of dredged sediments in New York Harbor. My chief concern is with the impact of these alternatives on the benthic fauna. In addition, I have been using microgrowth records stored in the shells of bivalves to examine environmental changes. This technique was used to assess the impact on hard clams of the January 1980 breach in the barrier beach at Moriches Bay. Currently, we are comparing shell growth rates in surf clams collected along environmental gradients in both Long Island Sound and the Atlantic Ocean.

J. KIRK COCHRAN, ASSOCIATE PROFESSOR

In my research I use natural radionuclides, as well as those produced by man, as tracers to understand marine 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. Radionuclides which become associated with sediments or marine deposits can be used to time events related to the deposits. Applications of particular interest to me include determining rates of sediment accumulation in both nearshore and deep-sea environments, rates of mixing of bottom sediments by organisms which live in them, and rates of formation of marine deposits such as deep-sea manganese nodules.

David O. Conover

Elizabeth M. Cosper

Radioisotopes which are included in the hard parts of organisms can be used to determine growth rates, and a colleague and I recently have measured growth rates of the chambered *Nautilus* in this way.

I am also interested in the potential problem of disposing of radioactive waste in the oceans and have ongoing research studying the rate of scavenging or removal of radionuclides from the water column and the chemical behavior of radionuclides after deposition on the sea floor.

DAVID O. CONOVER, ASSISTANT PROFESSOR

My general area of interest is in ecology of fishes and fisheries biology. I am especially interested in the evolution of adaptive responses of fish populations to exploitation, habitat alteration, pollution, and naturally occurring environmental factors. My recent research has involved population ecology, mating behavior, and the evolution of environmental sex determination in the Atlantic silverside, *Menidia menidia*, an important forage fish throughout most of the eastern U.S. coast. Among other things, my work has demonstrated that sex determination is temperature-dependent during the larval period in *Menidia*. This work has been supported by NSF and has important implications for manipulation of sex ratio in fish culture, and for understanding how fluctuating environmental factors affect the dynamics of fish populations.

I am also conducting research on offshore distribution, abundance and early life history of bluefish along the U.S. Atlantic coast. This work involves interpretation of growth patterns from ring deposition within otoliths of juvenile fish.

ELIZABETH M. COSPER, ASSISTANT RESEARCH PROFESSOR

I am generally interested in the physiological ecology of marine phytoplankton. Mainly, my research involves the use of experimental laboratory systems to address environmental problems which are difficult to

M. Carmela Cuomo

assess under field conditions.

Recent research has involved a study of the effects of fluctuation in light on natural time scales of variability on the production of a common, marine diatom. I intend to expand the study to include other species and groups of microalgae as well as the significance of any enhancement in rates of release of dissolved organics by the microalgae growing under variable light to microheterotrophic coupling.

Presently, my work is centering on the factors affecting the ability of marine phytoplankton to develop resistance to toxic chemical pollutants, and the ecological consequences. Concomitantly, I am conducting studies of the significance of resting states of diatoms to their population dynamics and adjustment to stressful conditions, both natural and anthropogenic in origin. The use of experimental microcosms to investigate benthic filter feeding on plankton dynamics and the importance in terms of nutrient regeneration and the fate of particle reactive pollutants is another area of interest in which I have done some work but will develop further.

M. CARMELA CUOMO, COASTAL MARINE SCHOLAR

My main interests lie in the areas of benthic biogeochemical ecology and paleoecology. Specifically, I am involved in working with animal/sediment relationships in dysaerobic (low oxygen) marine environments. My most recent work has been on the relationship between sediment geochemistry and settlement of the larvae of a pioneering polychaete. From my studies of these organisms in the Recent, I have been able to identify specific traces which organisms similar to them (i.e. pioneering polychaetes) would leave in the rock record and I am currently in the process of assessing whether or not these organisms were present in dysaerobic habitats throughout the Paleozoic.

Other projects which I am currently at work on vary widely but all are connected to dysaerobic habitats. I am studying environmental influences on polychaete life history traits, geochemical influences on settlement of

William C. Dennison

Linda Duguay

the bivalves *Mulinia lateralis* and *Mya arenaria*, factors affecting the production of anoxic marine bottom waters, factors affecting the preservation potential of polychaetes and pellets in the rock record, global distributions of dysaerobic environments and the organisms which occupy them, and the question of the early evolution of the metazoans.

WILLIAM C. DENNISON, COASTAL MARINE SCHOLAR

I have been conducting investigations in the physiological ecology of marine plants, especially the marine flowering plants, or seagrasses. I have investigated the influence of light and nutrient availability on seagrass photosynthesis and growth, and the physiological mechanisms contributing to their adaptation to marine habitats. Specific seagrass research projects include: investigation of the mechanism of internal gas flow in seagrasses, study of disturbance and seagrass recolonization in various benthic habitats, and analysis of the interactions between the bay scallop and a temperate seagrass (eelgrass). Other research projects include: assessment of the genetic component of photosynthetic response in kelp, determination of nutrient effects on metabolism of coral zooxanthellae, and study of photosynthetic characteristics of phytoplankton. These studies of interactions between environmental factors and marine plants should lead to a better understanding of the processes in coastal marine ecosystems which affect primary productivity.

LINDA DUGUAY, ASSISTANT RESEARCH PROFESSOR

My research interests center on the physiological ecology of marine organisms. Current research focuses on the biology of benthic foraminifera, in particular the trophic relationships of several shallow water species found in Long Island Sound, NY. Foraminifera are an important and ubiquitous group of marine Protozoa which construct calcareous skeletons. The abundance of foraminiferal skeletons in fossil sediments has led to an important role for these organisms as biostratigraphic indicators in paleoecology and

Jed Fuhrman

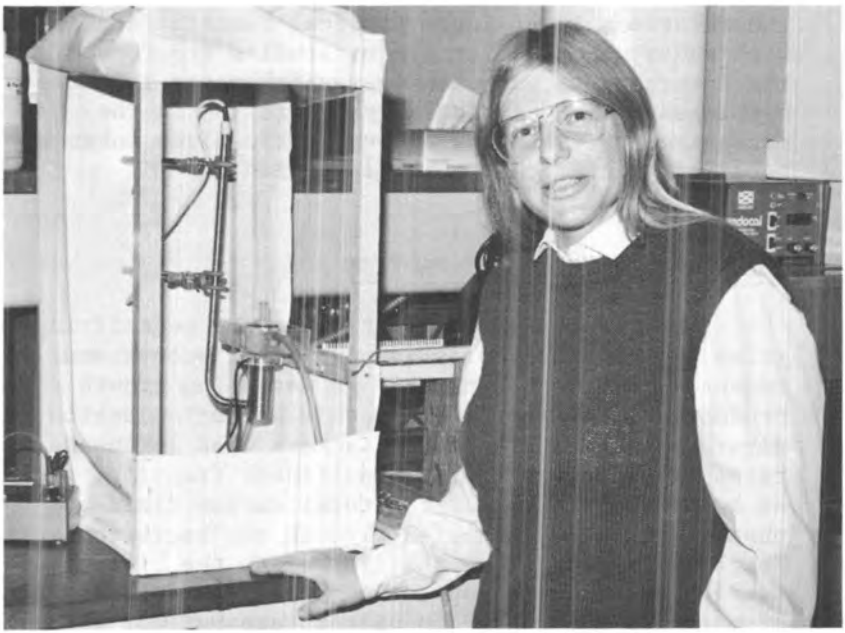
paleoclimatology studies. However, despite their abundance and diversity in present day sediments, very little information exists on their biotic interactions or on the role they play in cycling of materials in modern day marine communities. Specific studies in progress are examining the feeding behavior, rates of ingestion, and food selection of these organisms in natural and artificial sediment systems, as well as estimating growth rates under field and laboratory conditions.

An associated area of interest and ongoing study is the relationship of large tropical benthic foraminifera with endosymbiotic microalgae; studies are focused on the interactions and exchanges which occur in these symbioses. I am particularly interested in the mechanisms by which the endosymbiotic algae enhance rates of calcium carbonate deposition.

JED FUHRMAN, ASSISTANT PROFESSOR

I am interested in identifying and quantifying the roles that bacteria play in planktonic ecosystems. My recent work has concentrated on measuring growth and production rates of heterotrophic bacterioplankton in nature, and identifying the factors that influence those rates. It appears that a significant fraction, perhaps as much as one half, of the total carbon fixed by phytoplankton is channeled through the bacterioplankton. Therefore, the factors that influence the biomass and activities of bacterioplankton greatly affect the flow of material and energy in pelagic ecosystems, although these factors are unknown.

My current research is aimed at learning: (1) the mechanisms by which organic matter becomes available for consumption by bacteria, usually through dissolution; (2) how the bacteria assimilate this material; (3) what the ultimate fates of the bacteria are (predation, death?); (4) the ways that bacteria influence the rest of the ecosystem, largely through nutrient regeneration and the conversion of dissolved organic matter into particulate organic matter available to filter feeders; and (5) the ways that physical, chemical, and biological factors control the processes mentioned above.



V. A. Gerard

V.A. GERARD, ASSISTANT PROFESSOR

My research interests focus on the ecology and physiology of marine plants, primarily the large brown algae known as kelps. Many kelp species are highly productive and form dense subtidal stands or forests which provide food and shelter for many other marine organisms. Certain kelps are used commercially as a source of phycocolloids and have potential as aquacultural crops. Several species are already being farmed in Japan and China.

Spatial and temporal fluctuations in the populations and productivity of kelps are important to their utilization, both by marine organisms and humans. Much of my research examines effects of environmental factors (light, nutrients, water motion...) and biotic factors (population structure, biomass density, grazing pressure...) on kelp population dynamics and primary productivity. Mathematical models based on my results have been used to predict optimal growth conditions and potential yields of kelp farms.

At present, I am studying ecotypic differentiation (genetic variation between populations, resulting from adaptation to different environments) in photosynthetic characteristics of the kelp, *Laminaria saccharina*. Differences are compared to the potential of each population for photosynthetic acclimation. Ultimately, this research will help us understand the mechanisms which allow a single species to exist under a wide range of environmental conditions. Identification of specific ecotypic traits and genetically-distinct populations will also provide a basis for selective breeding of seaweeds for aquaculture.

H. HERMAN, PROFESSOR

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

Sarah Horrigan

environments. Research and testing programs, with use of this and related corrosion control techniques, are being carried out cooperatively with industrial and government organizations.

Other ocean engineering projects include mineral accretion technology, where minerals are extracted from seawater for the formation of structural shapes, and marine biomass, in which our group is supplying supportive engineering services in a significant seabased energy generation system.

I hold a joint appointment with the Department of Material Science.

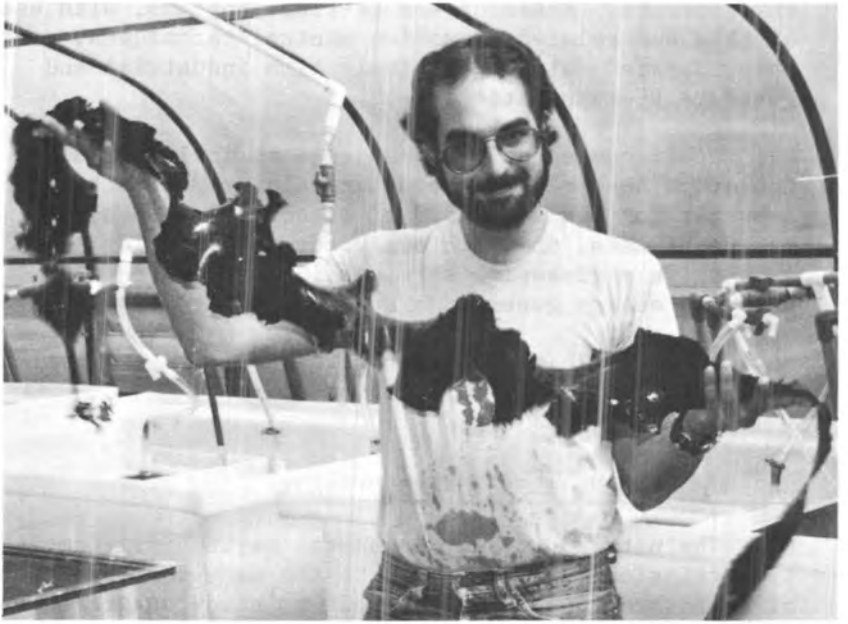
SARAH HORRIGAN, ASSISTANT PROFESSOR

The nitrogen cycle in coastal marine environments is intrinsically complex due to the many possible routes of transformation, and difficult to study due to methodological constraints. In temperate environments, study of the biological processes which affect nitrogen cycling is complicated by seasonal changes in environmental parameters such as temperature, oxygen levels, light, and organic input. I am currently studying nitrogen cycling, with specific interest in nitrification, in several coastal marine environments, including the water column of Chesapeake Bay and the sediments of Great South Bay, Long Island.

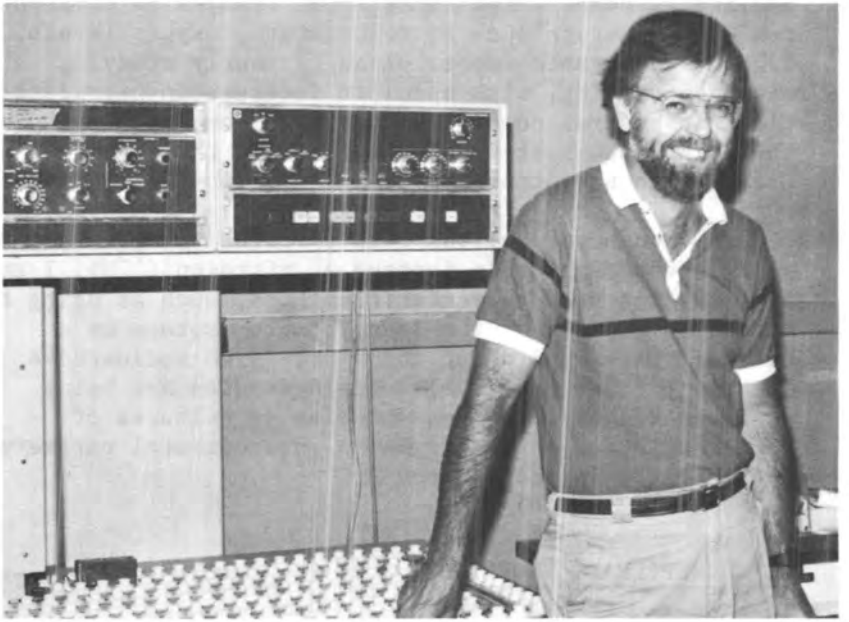
Although much of the work involves tracer studies using the heavy stable isotope of nitrogen (^{15}N), I am also looking at more esoteric methods, such as using the natural abundance of the heavy stable isotope as a natural tracer and using the short-lived radioactive isotope of nitrogen (^{13}N). Field studies are being complemented by laboratory studies on cultures of bacteria to evaluate changes in environmental parameters under controlled conditions.

L.E. KOPPELMAN, PROFESSOR

My major research over the past decade and a half generally has been concerned with the environmental



H. G. Levine



Glenn Lopez

policy aspects of regional planning, and has been specifically directed towards coastal zone management. This has included project managership 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 thereto, 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. The most current efforts include a National Urban Runoff study funded by the Environmental Protection Agency, and the completion of a book titled *The Long Island Coastal Zone Plan*. I also serve as Executive Director of the Long Island Regional Planning Board.

H.G. LEVINE, RESEARCH ASSOCIATE

I am currently working with Dr. Brinkhuis on the Marine Biomass Project. My primary interest is phenotypic plasticity in the kelp *Laminaria saccharina*, and the potential for strain enhancement through genetic selection.

An ongoing research interest is the biology of the green seaweeds *Ulva* (Sea Lettuce) and *Enteromorpha*, especially as they relate to the monitoring of coastal waters for pollution. The approach taken has been to employ these seaweeds as bioaccumulators of pollutants. Tissue extracts derived from indigenous populations have been analyzed for Cd, Co, Cr, Cu, Fe, Ni, Pb, Zn and organohalides. This research involves the development of procedures for the propagation and deployment of these plants at selected sites. The objective is to have the seaweeds function as portable, *in situ* sampling devices which can be deployed and retrieved at will.

GLENN LOPEZ, ASSISTANT PROFESSOR

My research interest are in marine benthic ecology, particularly in the trophic relations of animals and microorganisms in sedimentary environments. These

James E. Mackin

R. E. Malouf

interests have carried me into the study of the functional morphology and behavior of deposit-feeding animals; I am investigating the various adaptations that animals display for feeding on detritus- and sediment-associated microorganisms. I am also interested in the study of population dynamics of animals as it relates to competition and succession in the soft-bottom benthos.

JAMES E. MACKIN, ASSISTANT PROFESSOR

The research conducted in my laboratory 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.

R.E. MALOUF, ASSOCIATE PROFESSOR

The coastal waters of Long Island are among the most important shellfish producing areas in the U.S. For example, Great South Bay on Long Island's south shore produces 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 species of bivalve molluscs are the primary objects of my research efforts.

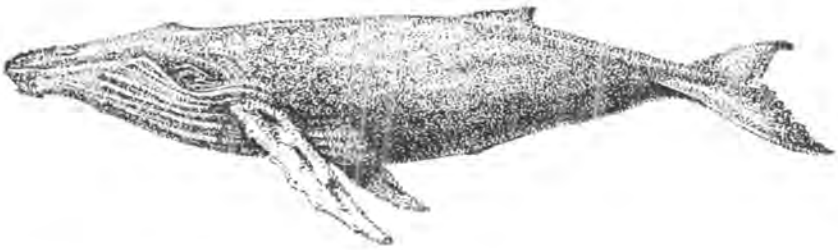
With support primarily from the New York Sea Grant Institute supplemented with funding from N.S.F. and from local sources and with considerable cooperation from state, county, and town government agencies, a research program has been developed to address important basic biological questions concerning a wide variety of aspects of the life cycles of bivalves. A unifying

J. L. McHugh

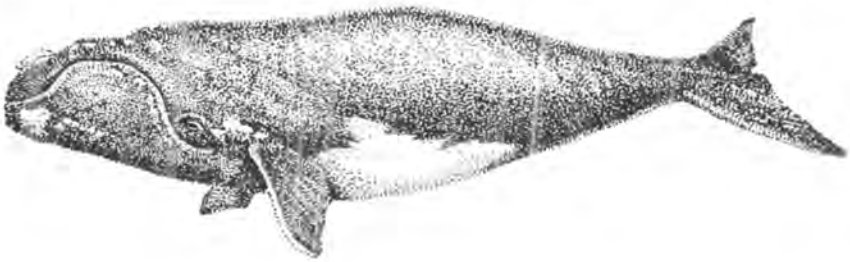
theme in this highly diverse research program is an effort to work with appropriate agencies and institutions in applying the results of basic research to solving real problems in fishery management and mariculture. Some examples of studies completed to date include analysis of histological sections of the gonads of hard clams to describe the nature of the reproductive cycle in local waters. Concurrent studies determined age-specific fecundity in hard clams and documented the effect that adult clams have on their own planktonic larvae. This work, completed in 1980, contributed to our understanding of the reproductive biology of the species and at the same time resulted in modification of local fishery management practices. More recent studies addressed questions relating to the influence of suspended sediments on the bio-energetics and growth of hard clams. Other recent work dealt with the physiology and behavior of important crustacean predators and the behavior of newly metamorphosed clams. Current work includes laboratory and field studies of the physiology and growth of bay scallops, and laboratory flume studies of oysters. In cooperation with local shellfish culturists, basic and applied work is also underway or planned to improve culture practices and to determine some of the environmental impacts of intensive shellfish culture.

J.L. McHUGH, PROFESSOR EMERITUS

My present interests continue to be diverse. My invited foreword to the book Fish Community Ecology in Estuaries and Coastal Lagoons: Towards an Ecosystem Integration, entitled Foreword: The estuarine system integrated, is still in press but should be out shortly. A book, Fishery Management, was published by Springer-Verlag New York, Inc. late in 1984. A paper, The inshore catch of food fishes in the Raritan Bay area, was published, also late in 1984, in the Proceedings of the Walford Memorial Convocation by the National Marine Fisheries Service. Two reviews of books were published in the Quarterly Review of Biology. A paper History and condition of food finfisheries in the United States has just been completed by David Conover and myself, for possible publication in the Fishery Bulletin of the National Marine Fisheries Service. It shows that the



Humpback Whale



Right Whale

Minke Whale

Middle Atlantic region fisheries have fared worse than fisheries in any other section of the coasts of the United States, and suggests that drastic action will be necessary to correct it. My book Whales and Man has yet to find a suitable publisher. My contribution to the book Georges Bank: Book and Atlas is still in press, as is my chapter in the book Synthesis of the Results of the Great South Bay Study. I also contributed to the report Suffolk County's Hard Clam Industry. I am now reviewing some earlier work on growth of oysters and the activities of oyster drills, with a view to preparing them for publication.

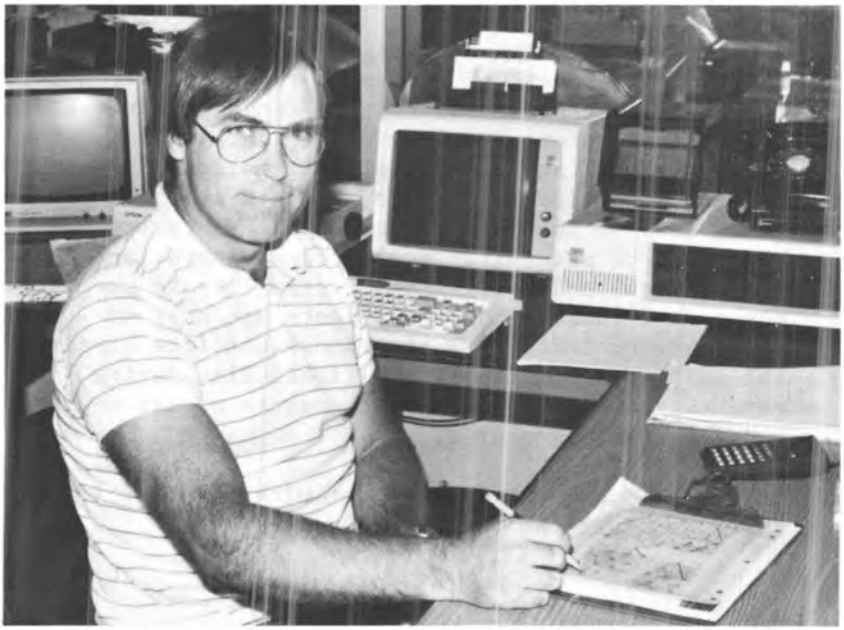
In the past year I was honored by two important fishery organizations. The National Shellfisheries Association awarded me a citation for exceptional service and presented me with a certificate of Honorary Membership. The American Fisheries Society presented me with a suitably inscribed bronze medal and bestowed upon me the Award of Excellence, its most prestigious award.

W.J. MEYERS, ASSOCIATE PROFESSOR

I am conducting a petrographic and geochemical study of diagenesis of ancient carbonates. Much of the work to date has been on calcite cements in Mississipian skeletal limestone from New Mexico and Arizona, with the goal of establishing regional diagenetic models that may be widely applicable. Trace elements and isotopes are being studied in these cements to characterize the chemistry of precipitational ground waters, and to test for regional and stratigraphic gradients in chemistry of the cement zones. These gradients are used as paleocurrent indicators of groundwater flow directions and as a test for cross-formational flow during cementation, and to interpret sources of trace elements and isotopic signatures.

I hold a joint appointment with the Department of Earth and Space Sciences.

A. Okubo



Eric Partch

A. OKUBO, PROFESSOR

Physical diffusion in natural environments and the diffusional aspect of living organisms are my research interests. The study of physical diffusion includes Lagrangian description of dispersing particles and mathematical modeling for the dispersion of contaminants in the sea by oceanic diffusion and mixing.

With regard to the diffusional aspect of organisms I am interested in mathematical modeling for animal swarms such as insect swarms, zooplankton swarms, and fish schools. To properly model animal swarming it is necessary to take into account the behavioral effect in addition to the general process of diffusion due to randomness in animal movement.

I am also interested in models of interacting populations in spatially heterogeneous environments, e.g., turbulent sea. In particular, attempts have been made to model the patchy distribution of plankton ("patchiness") and shading effect on algal vertical distribution in the sea.

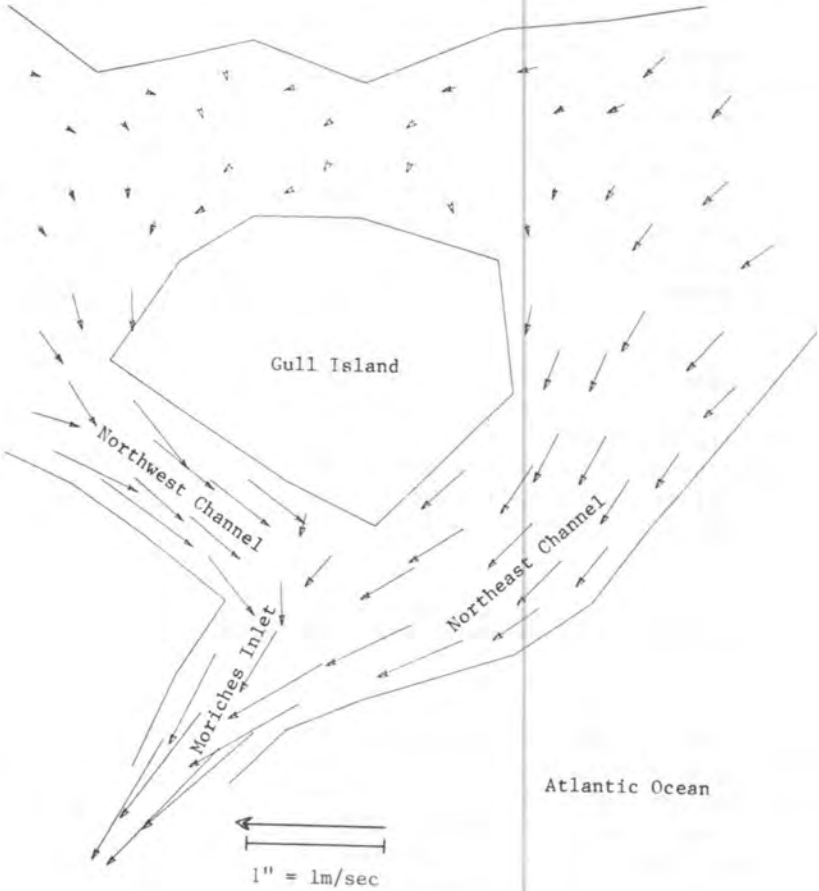
ERIC PARTCH, ASSISTANT RESEARCH PROFESSOR

My research interests involve oceanic diffusion, turbulent mixing, and studies of estuarine circulation and time-dependent phenomena in estuaries at both subtidal and super-tidal frequencies.

Currently, I am working with Professor Wilson on the Lagrangian-Eulerian Diffusion Study (LEDS) off Shinnecock Inlet. I am also applying those results to archived current-meter records taken at 'Site D' on the continental slope, in order to assess the dispersive characteristics at the proposed Deepwater Dumpsite 106, which is considered part of the same system as Site D. This work is important because DWD 106 has been proposed as the major future site for the dumping of municipal sewage sludge and industrial waste generated in the New York area.

W. T. Peterson

D. W. Pritchard


Gull Island
Northwest Channel
Moriches Inlet
Northeast Channel
Atlantic Ocean
1" = 1m/sec

W.T. PETERSON, ASSISTANT PROFESSOR

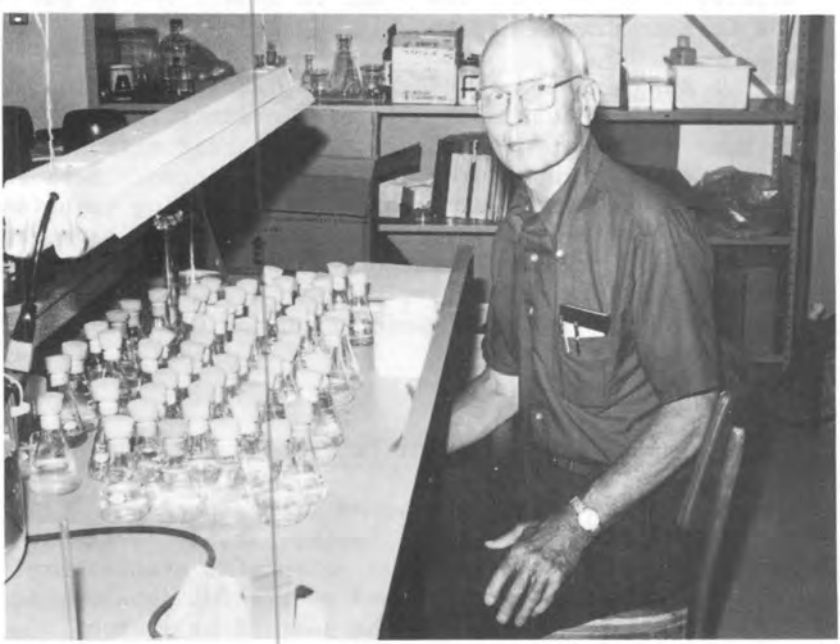
My general interest is the population ecology of coastal zooplankton. Presently, our focus is on the population dynamics of the copepods *Temora longicornis*, *Acartia hudsonica* and *Paracalanus crassirostris* and the chaetognath *Sagitta elegans*. Population age structure has been worked out from samples collected weekly, for five years, from Long Island Sound. Laboratory studies of copepod fecundity and feeding (using the gut fluorescence technique) are being conducted to determine the effects that phytoplankton species and concentration have on these rates. Other related studies include relationships between phytoplankton and copepod patchiness in the Sound, and diel variations in copepod feeding and vertical distribution of copepods. We are also conducting a modest study of the hydrography and plankton dynamics of Jamaica Bay, NY.

I also study the planktology of coastal upwelling systems. Annual visits are made to Chile (beginning in 1986) and occasional visits to South Africa are planned. Our interest here is a consideration of how changes in primary production and phytoplankton species composition associated with upwelling events affect bacterial production, copepod fecundity and feeding rates.

D.W. PRITCHARD, ASSOCIATE DIRECTOR FOR RESEARCH PROFESSOR

My research interests continue to be directed towards an improved understanding of the motion and mixing in estuaries, bays, sounds, and straits, and in other coastal tidal water bodies. Because these coastal bodies of water interact with the open waters of the continental shelf, my research involves the dynamic response of the continental shelf waters to the astronomical tide and to meteorological forcing, as well as the dynamic interaction and exchange between these shelf waters and the coastal tidal water bodies.

Currently, I am involved in several specific research projects. One of these involves analysis of time series records from tide gauges and from current meter arrays deployed in the Chesapeake Bay, together



O. W. Terry

cycling of organic matter in marine and freshwater oxygen-depleted (anaerobic) sediments. Our approach has been to examine crucial intermediates in the terminal portions of the anaerobic food chain and to study how the cycling of these intermediates affects carbon turnover. In particular we are looking at processes controlling how cycling of these components influences fermentation pathways. We are studying freshwater, brackish and marine environments because different microbial pathways dominate in these different systems. Finally we intend to extend our coastal studies by working in truly marine anoxic basins such as the Cariaco Trench and the Black Sea.

A second area of interest is a study of hydrogen production and consumption in open ocean surface waters. We have been examining the role of oceanic nitrogen fixers as hydrogen sources to the open ocean. Because of recent concerns about traditional sampling techniques which may disturb these fragile organisms, we have begun to utilize *in situ* collection and incubation procedures involving divers. Finally, we have begun studies on processes controlling H_2 production and uptake in coastal waters.

SCOTT E. SIDDALL, ASSISTANT PROFESSOR

I am principally concerned with aspects of physiological ecology of molluscs, notably larvae and juveniles, and how such basic scientific studies may contribute to the rational and successful development of molluscan mariculture. In the past, I have been involved with studies of the effects of temperature and salinity on larvae of several invertebrae phyla, the taxonomic value of morphological features of bivalve larvae, the biological, social and economic impact of mariculture development in lesser developed countries, and the development of hatchery technology for the Caribbean queen conch through studies of the snail's early life history. Both mainframe and microcomputer applications have been an important adjunct throughout my research.

My research plans focus on the basic biology and mariculture potential of commercially important bivalves

Mary I. Scranton

Scott E. Siddall

FRANK ROETHEL, LECTURER

My research focuses on the stabilization and disposal of industrial and municipal wastes in the marine environment. Currently, I am investigating the feasibility of stabilizing incineration ash and the possibility of incorporating dewatered sewage sludge within an ash matrix. In addition, industrial waste fixation, especially wastes generated by the aerospace industry on Long Island, is under investigation. If it can be shown that stabilization yields a block of sufficient structural integrity, then these blocks may be acceptable substrate for artificial reef construction. The environmental implications of ocean disposal of stabilized wastes is examined by monitoring the chemical and physical behavior of these materials following placement in the sea.

J.R. SCHUBEL, DEAN AND LEADING PROFESSOR

My current research is concentrated in two general areas--coastal sedimentation and coastal zone management. I am involved in a number of studies to characterize geological processes in the coastal ocean, to assess man's impacts on the coastal marine environment, and to develop strategies to ensure the continued multiple use of these areas with predictable and acceptable risks to the environment and the living marine resources.

I am involved in studies of estuaries in Chile, China, South Korea, Pakistan, and the United States. I am particularly interested in the processes that determine the ability of estuaries to act as filters for fine-grained particulate matter, and in how these processes change as estuaries mature geologically.

MARY I. SCRANTON, ASSOCIATE PROFESSOR

My research interests lie in the area often called biogeochemistry--the study of the interactions between biological and chemical systems and the effect of these interactions on the distribution of chemical species in the marine environment. Currently we are studying the

Frank Roethel

J. R. Schubel

with records of atmospheric pressure and of wind over the Bay. This study will investigate how meteorological processes force variations in the tidally averaged surface elevations and in the residual, tidally averaged field of motion in this water body, which is the largest estuary in the U.S.

Another project concerns the development of a method for predicting the effects of a breach of the barrier islands of Long Island's south shore on storm surge elevations and salinity distributions in the bays behind these barrier islands. This study resulted from concerns expressed by local officials, watermen, and shoreline property owners following a breach that occurred in January, 1980. The breach was formed in the barrier island that encloses Moriches Bay, just east of the present Moriches Inlet.

The accompanying diagram shows a computer-generated plot of the computed current velocity vectors in the vicinity of the present Moriches Inlet, for an ebbing tide following a winter coastal storm surge. These current velocity vectors were computed with use of a numerical model of the hydrodynamics of Moriches Bay. This model will be the primary tool in the study of the effects of additional breaches in the barrier islands off Moriches Bay, as well as in the island enclosing the other south shore bays.

In addition, I am involved in a study of the sources of unusual fluorescent background interference to the measurement of the concentration of fluorescent tracer dyes. These dyes are introduced into natural water bodies, in order to observe directly the motion and mixing within these water bodies. In some areas the usefulness of this procedure has been degraded due to interfering, naturally occurring fluorescent pigments. The end goal of this research is to find a way to eliminate the intefering fluorescence without decreasing the sensitivity of the procedure for measurement of the dye concentration.

including the scallop *Argopecten*, the hard clam, *Mercenaria*, the surf clam, *Spisula*, and the blue mussel, *Mytilus*.

L. SLOBODKIN, PROFESSOR

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 over-simplified and arbitrary models, suggested by, but not representing, nature? This is approached by three paths. One is an attempt to so thoroughly describe a simple group of organisms (*Hydra*) that their responses, both ecological and evolutionary, 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.

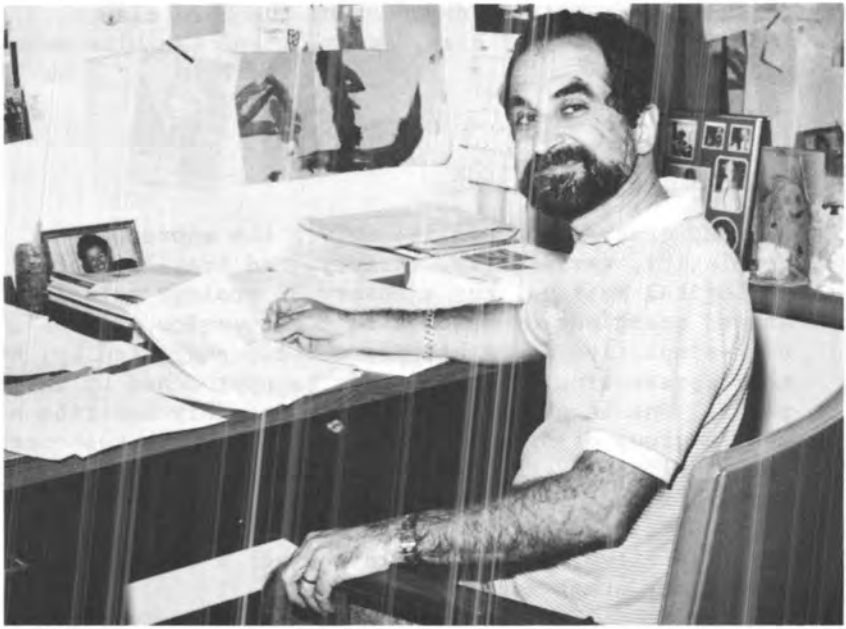
The second is my participation in a joint study of the global bio-geochemistry of carbon. Lastly, I'm working on a study of epistemological problems related to theories of complex biological systems.

I maintain a joint appointment with the Department of Ecology and Evolution.

O.W. TERRY, ASSOCIATE RESEARCH PROFESSOR

Over the long term I am interested primarily in the management of living marine resources. Recently I worked with local staff of the National Oceanic and Atmospheric Administration's Office of Marine Pollution Assessment on studies of the ecological impact of marine pollution. Previous research dealt with various aspects of tidal wetlands ecology and preservation, and also with the technical aspects of several different kinds of marine aquaculture. The most recent such activity was participation in the Marine Biomass Project.

Future plans include continuation of marine pollution studies, limited consulting relative to



Mario Vieira

D-P. Wang

assessing ecological impacts on marine and freshwater wetlands and on mitigation techniques, and research on a few ideas in wetlands ecology and the practical utilization of solar energy. I hope to find time to do an increasing amount of writing, mainly in these areas.

MARIO VIEIRA, ASSISTANT RESEARCH PROFESSOR

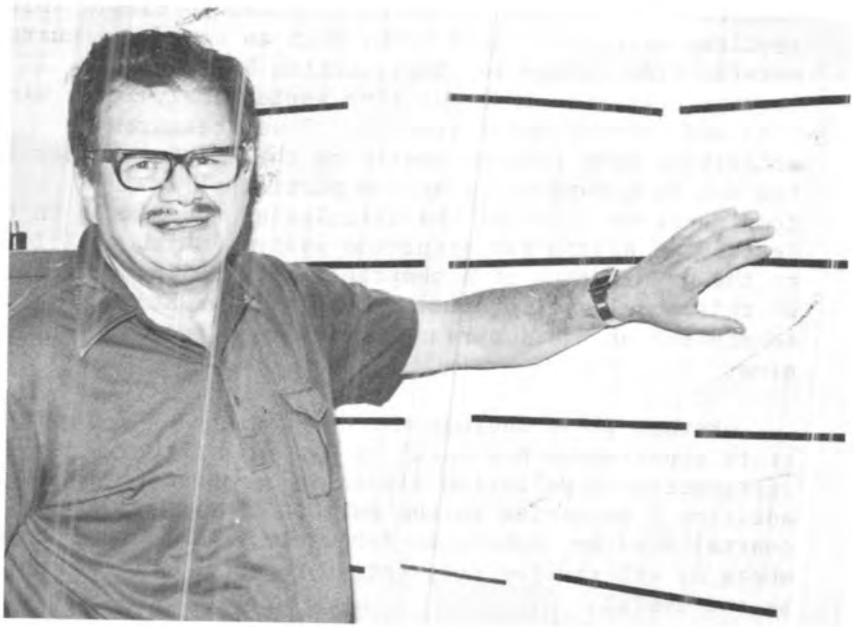
I have been involved, for the past few years, in research dealing with the residual circulation in estuaries in response to meteorological forcing. This requires extensive field work, such as deploying current meters, tide gauges and implementing hydrographic surveys. It also involves time series analysis of wind, tide and current meter records. These research activities have focused mostly on the Chesapeake Bay and the New York Harbor. I am now participating in a comprehensive study of the circulation and mixing in the Peconics-Flanders Bay estuarine system, which will lead to the development of a numerical model. The exercise of this model will provide valuable information for the management of the important marine resources of the area.

Future plans include the development of a transient state two-layered box model of New York Harbor with application to pollution dispersion problems. In addition I am active in the pursuit of estuarine and coastal studies, namely in Portugal, Pakistan and China, where my efforts for cooperative research will hopefully be successful.

D-P. WANG, PROFESSOR

My research interests focus on model and analysis of coastal oceanographic processes. I am interested in circulation and mixing processes in reservoir, canal, estuary, continental shelf, and sea strait. I also study environmental effects caused by waste water discharge.

My current research projects include Lagrangian transport in shallow estuaries, three-dimensional model



Peter K. Weyl

of sea strait circulation, and far-field model for waste water effluent. The Lagrangian transport study examines the tidally rectified flow field. The strait circulation model studies the water mass adjustment and density current intrusion in sea straits. The far-field model predicts the effluent dispersion and flow recirculation for a buoyant discharge.

F.F.Y. WANG, PROFESSOR

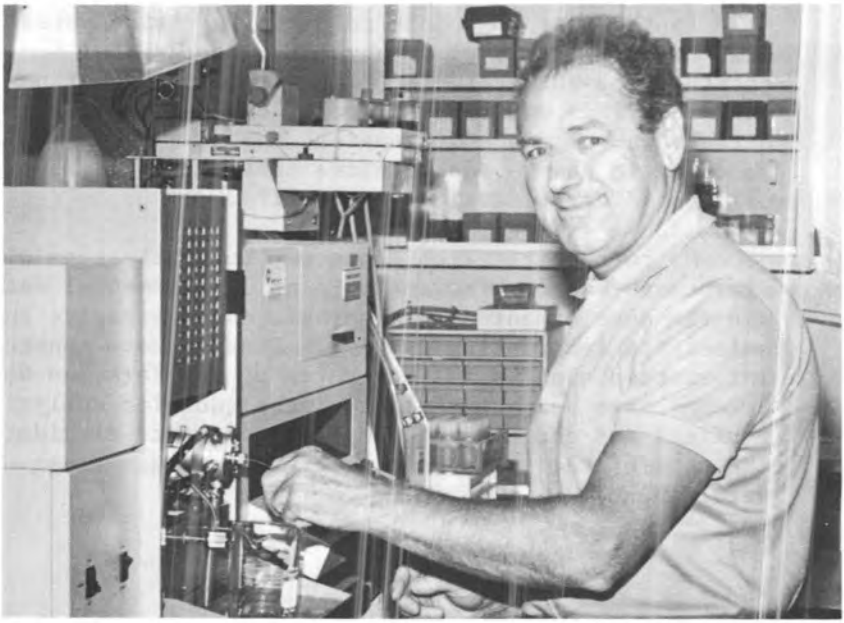
Coastal reinforcement--the design and installation of cost-effective systems to protect the coastlines--is one of my interests. I am also involved in devising material systems to consolidate municipal and industrial waste in both liquid and solid forms. In addition, I am interested in the energy systems of aquaculture. I hold a joint appointment with the Department of Materials Sciences.

PETER K. WEYL, PROFESSOR

In the past I've done research in various areas of science including nuclear physics, the physical chemistry of seawater, the transformation of marine sediments into sedimentary rocks, the interaction between carbonates and seawater, the role of the ocean in climatic change, descriptive oceanography, and the origin and early development of life.

My current research concerns the application of microcomputers for the analysis of environmental data and the development of managerial, administrative and scientific information systems. Coastal zone management information systems for the Ports of New York and New Orleans have been developed. Techniques for analyzing physical and chemical oceanographic data to elucidate the role of the ocean in climatic change are under development.

R. E. Wilson



Peter M. J. Woodhead

R.E. WILSON, ASSOCIATE PROFESSOR

My work involves estuarine and coastal ocean dynamics. Current research interests include low frequency meteorological forcing of Long Island Sound and exchange processes between Great South Bay and the adjacent shelf at subtidal frequencies. I am also making dispersion estimates on the inner shelf from Eulerian current measurements, and am studying low frequency circulation and exchange processes within the Hudson-Raritan Estuary.

PETER M.J. WOODHEAD, RESEARCH PROFESSOR

I study the ecology of reef systems, both natural and man-made. Currently, I am director of the coal waste artificial reef program, the largest research study in the MSRC. The program considers many of the chemical, physical, and biological interactions of marine ecosystems with consolidated reef construction materials. My principal interests concern habitation by fish and lobsters and effects upon the benthic epifauna and macrobenthic infauna.

I have a long-standing interest in fishes and fisheries. Present research addresses the biology and reproductive ecology of the spiny dogfish, black sea bass, and cunner. The dogfish is ovoviviparous and has a two-year pregnancy from fertilization to birth of offspring. The black sea bass is a sequential hermaphrodite, the individual being first a spawning female, and later a male. Cunner have a male to female ratio of about 2:1. These unusual life histories and reproductive strategies may have profound implications for the population responses of these fishes to environmental stresses, and especially to changes in mortality rates induced by commercial fishing. Understanding the nature of the reactions to population stress in such fishes is important to developing rational management practices.

C. F. Wurster

C.F. WURSTER, ASSOCIATE PROFESSOR

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, and the site of origin of the clone. Selective toxicity may alter the species composition within the community.

At 1 to 10 parts per billion, PCB's reduce average cell size in natural phytoplankton assemblages, producing a community of smaller-sized algae. Whereas large phytoplankton are believed to favor large zooplankton, short food chains, and the production of fish, small phytoplankters are thought to lead to smaller zooplankters, longer food chains, and jellyfish production. PCB pollution therefore could have important implications for the production of harvestable fish resources.

Currently we are studying the development of resistance to toxic chemical pollutants by phytoplankton. If resistance to pollutants were widespread among the phytoplankton in chronically polluted areas, it could change our interpretations of the impacts of pollution on plankton communities. To evaluate this factor, we are testing the sensitivity of phytoplankton clones isolated from a polluted and an unpolluted area. We will also determine whether cross-resistance develops when resistant strains are produced in the laboratory. The adaptability of resistant phytoplankters to natural stresses will also be determined.

Gary A. Zarillo

GARY A. ZARILLO, ASSISTANT PROFESSOR

My research interests include the following areas: marine geology, sedimentology, coastal and nearshore hydrodynamics, mechanisms of sediment transport, and the geology of continental margins. I have studied the interrelation of hydrodynamics and sedimentation in a salt marsh estuary. I have been involved in sedimentologic research in estuarine, beach, and inner shelf environments, and in site selection and environmental impact studies for offshore and coastal power plants.

RESEARCH FACILITIES

MSRC is located in four buildings on the South Campus of the State University of New York at Stony Brook which include over 20 research laboratories, a teaching laboratory, a SUNY-wide laboratory, office space, reference room, and publications room. In addition, the Center houses a graphic arts department, a computer "mini-center", and a microcomputer laboratory.

Research Laboratories - each lab is equipped for specialized studies in microbiology, seawater chemistry, geochemistry, biochemistry, biology, physical oceanography, and other allied disciplines. The Center's 15,000 square feet of research space hold such equipment as atomic absorption spectrophotometers, gas chromatograph, CHN analyzer, technicon autoanalyzer, particle counter, and liquid scintillation counter.

Flax Pond Seawater Laboratory - a lab maintained by MSRC on a 142-acre salt marsh near Long Island Sound. The Flax Pond Lab contains 28 heavy-duty fiberglass sea tables that are equipped with a continuous seawater flow, and an environmental control chamber used for algal culturing. An 820-square-foot greenhouse with running seawater was added to the lab in 1980 for large-scale culture experiments.

SUNY-wide Laboratory - a 1,600-square-foot facility that is available to all State University schools for research and teaching purposes. In addition to standard services, this lab is equipped with drying ovens, incubators, autoclave, centrifuge, and a number of balances and stereo microscopes.

Seagoing Facilities - include the R/V ONRUST, a 55-foot steel-hulled ship built specifically for MSRC. The ONRUST has a range of 775 miles at a cruising speed of 10 knots, and is equipped with a "wet" lab and an electronics dry lab. MSRC also has a number of small boats to support field work in local embayments and near-shore waters. These include a 24-foot Privateer open workboat, a 23-foot Penn Yan shallow draft boat with cabin, two 16-foot and one 13-foot Boston whaler, equipped for over-the-side work.

Computing Facilities - A computing "mini-center" is maintained in Endeavour Hall and consists of: Ten CRT and five hard copy computer terminals, Imlac series II graphics terminal, Calcomp 910/563 30-inch drum plotter, Calcomp 907/1051 36-inch drum plotter, LSI-11/23 microcomputer with VT-103 CRT terminal and two 0.5 Mbyte floppy disk drives, Apple II Plus microcomputer with two 140 Kbyte floppy disk drives, 11" and 48" digitizers, Houston Instrument DMP-7 17" flatbed plotter and an Epson MX-100 printer, one Hewlett-Packard 9830A programmable calculator with digital cassette drive, printer, and x-y plotter, PDP-11/34A with 256 Kbytes of memory, two 5.2 Mbyte removable hard disk drives, and one VT-100 CRT terminal, VAX-11/730 minicomputer with 1 Mbyte of memory, one 10.4 Mbyte removable hard disk drive, one 121 Mbyte fixed hard disk drive, and one DEC writer III hard copy terminal, 7 IBM Personal Computers, 12 DEC Rainbow 100 Microcomputers, 12 Osborne Microcomputers, and a Houston Instrument DMP-29 flatbed plotter (8 pen).

Electronics and Oceanographic Instrument Facility - Occupying over 16 square feet of space in Discovery Hall, the Electronics and Oceanographic Instrument Facility employs one full-time engineer and one part-time technician. It's major functions are as a design and repair shop, an instrument calibration facility and a central equipment pool which includes 40 recording current meters, General Oceanics rosette sampler, Interocean CTD, towed profiling in-situ flourometer, 4 direct reading current meters, 7 tide gauges, 7 portable salinometers, Motorola Miniranger precision positioning system, (Conductivity, temperature, depth, oxygen, pH), and a microcomputer-controlled data logger.

ADJUNCT FACULTY

The following is a list of MSRC adjunct faculty, their affiliations, and their areas of expertise:

CAPRIULO, G.M. - Adjunct Assistant Professor. SUNY, Purchase. Microzooplankton/protozoan ecology; marine food webs.

CRAWFORD, W.R. - Adjunct Associate Professor. Institute of Ocean Sciences, Sidney, B.C. Continental shelf and slope dynamics microstructure; tidal dynamics.

DUERR, E.O. - Adjunct Assistant Professor. Oceanic Institute, Hawaii. Aquaculture of marine phytoplankton, particularly cyanobacteria.

ESAIAS, W.E. - Adjunct Associate Professor. NASA/Goddard Space Flight Center. Phytoplankton ecology; photobiology.

FAIRBRIDGE, R.W. - Adjunct Professor. Professor Emeritus, Columbia University. Geology; coastal geomorphology; sedimentology; ecology.

FALKOWSKI, P.G. - Adjunct Assistant Professor. Brookhaven National Laboratory. Marine phytoplankton ecology; phytoplankton physiology.

FLAGG, C.N. - Adjunct Associate Professor. Brookhaven National Laboratory. Continental shelf dynamics; frontogenesis; interactions of Gulf Stream with the continental margin.

FLETCHER, I. - Adjunct Professor. Great Salt Bay Experimental Station, Maine. Population dynamics; fisheries; theoretical ecology; habitat alteration and fisheries production.

MANHEIM, F.T. - Adjunct Professor. U.S. Geological Survey. Marine geochemistry; ocean policy.

NAJARIAN, T.O. - Adjunct Associate Professor. Najarian, Thatcher and Associates. Physical oceanography; water quality modeling.

SMITH, S.L. - Adjunct Assistant Professor. Brookhaven National Laboratory. Plankton ecology; nutrient regeneration by zooplankton.

SWANSON, R.L. - Adjunct Professor. National Oceanic and Atmospheric Administration. Physical oceanography; ocean dumping; coastal zone management.

TAYLOR, L.J. - Adjunct Assistant Professor. Lafayette College. Socio-cultural aspects of fishing communities.

THOMSON, R.E. - Adjunct Associate Professor. Institute of Ocean Sciences, Sidney, B.C. Coastal oceanography; continental shelf waves; slope currents.

VAUGHN, J.M. - Adjunct Associate Professor. Brookhaven National Laboratory. Transport fate and effects of viruses in the aquatic environment.

WHITLEDGE, T.E. - Adjunct Associate Professor. Brookhaven National Laboratory. Nutrients; chemistry of seawater; stimulation of primary productivity by sewage effluent; ecosystem dynamics.

WILLIAMS, S.L. - Adjunct Assistant Professor. West Indies Laboratory. Cycling of carbon and nitrogen in marine ecosystems.

ADMINISTRATION AND STAFF

J.R. Schubel - Director

D.W. Pritchard - Associate Director for Research

Jeri Schoof - Executive Assistant to the Director

C. Lee Arnold - Research Technician

George Carroll - Director of Computing Services

Theresa Crescimanno - Secretary

Peter deNyse - Assistant to the Director

Steven DiPiero - Technical Specialist

Susan Dunham - Technical Specialist

Mitzi Eisel - Director of Graphic Arts

Gloria Falango - Graduate Programs Coordinator

Marie Gladwish - Graphic Artist

Eileen Goldsmith - Secretary

Mary Jane Hamilton - Secretary

Steven Heins - Technical Specialist

David Hirschberg - Assistant Staff Oceanographer

Clifford Jones - Technical Specialist

Mary Ann Lau - Administrative Assistant

Steve Leffert - Small Boats Captain

Lisa Mayer - Librarian and Secretary

S. Shawn McCafferty - Technical Specialist

Connie Pawl - Secretary

Vivian Rieger - Photographer

Gregg Rivara - Technical Specialist

R. George Rowland - Technical Specialist

V. Schaeperkoetter - Technical Specialist

H. Christian Stuebe - R/V ONRUST Captain

Marjorie Sumner - Secretary

Sheila Tobin - Technical Specialist

Helen Ulreich - Secretary

Tom Wilson - Director of Electronics Services

Mindy Zimmerman - Technical Specialist

PUBLICATIONS

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