ANNUAL REPORT

1976-77

Marine Sciences Research Center

State University of New York at Stony Brook

J. R. Schubel, Director

June 1, 1977

Part I Summary Information
Part II Narrative
Appendix A Seminars and Colloquia
DEPARTMENTAL ACTIVITIES

(1) A list of departmental seminars is attached. The Center sponsored 41 seminars during the 1976-77 academic year. The series continues to attract considerable interest outside the University. The seminar mailing list now includes 50 local agencies or individuals.

(2) Other departmental activities are covered in the narrative section following Part I. Highlights of the year include:

   a. Campus endorsement of proposed Ph.D. program in Coastal Oceanography.

   b. Submitted 57 research proposals with a total value of $1,487,658.

   c. Conducted 40 sponsored research projects with a total value of $688,895.

   d. Increased the Center's contribution series by 30 items.

   e. Published 4 special reports.


   g. Awarded Sea Grant Professorship in Shellfish Biology.
STAFF

(1) Faculty

a. Faculty Holding Academic Rank

Edward R. Baylor, Professor

Current research: Adsorption of viruses to air bubbles and the production of virus-laden aerosol particles both in the laboratory and on the beach.

Research grants: "Does the Surf Transmit Viruses to the Atmosphere?" Sponsor: NOAA/N.Y. Sea Grant Institute.

University committees: Faculty Advisory Committee for the Computer Center.

Accomplishments/Community Service: Science Advisor to Congressman Downey and Assemblyman Hochbrueckner.

J. L. McHugh, Professor

Current research: Preparation of annotated bibliography of the hard clam; hard clam management model; analysis of the marine fisheries of the Middle Atlantic Bight; writing articles on whaling for Encyclopedia Americana and special global commons issue of Journal of International Affairs.

Honors or Awards: Appointed by U.S. Commerce Secretary Elliott Richardson to three-year term on the Mid-Atlantic Regional Fishery Management Council.


"An Assessment of the Effects of an Unusually Severe Winter on Mortality..."
of Hard Clams" Sponsor: NOAA/N.Y. Sea Grant Institute.


"History and Present Condition of the Coastal Fisheries of the Middle Atlantic Bight and Causes of Fluctuations and Trends" Sponsor: NOAA/N.Y. Sea Grant Institute.

University committees:

Member, Jessie Smith Noyes Foundation Fellowship Committee.

Member, Search Committee for Sea Grant Professorship in Shellfish Biology.

Accomplishments/Community Service:

Served on National Academy of Sciences Steering Committee to review NOAA fishery programs and non-fishery oceanography programs.

Expert witness for Suffolk County at hearings on Outer Continental Shelf Lease Sale No. 40, Federal Court, Westbury, N.Y.

By invitation, presented a paper "Recreational Use of Shellfishes: Issues and Conflicts" at the Symposium on Coastal Recreation Resources in an Urbanizing Environment.

By invitation, participated in panel discussion on Management of the United States Fisheries by Regional Councils at FISH EXPO.

By invitation, panel member on "The Anglers' Stake in the 200-mile Limit" at Sportfishing '77, The Delmarva-New Jersey Forum and Expo '77.

Served on Sea Grant Advisory Services Shellfish Commission.

By invitation, spoke to the Town of Brookhaven Shellfish Commission.
By invitation, attended meeting of the Sea Grant representatives with operators of five clam hatcheries on Long Island.

Invited speaker at monthly evening meeting of Great South Bay Baymen's Association.

Met with Congressman Downey to discuss legislation on shellfish water quality standards.

By invitation, participated in and presented Conference Summary at the Bi-State Conference on Chesapeake Bay sponsored by the Chesapeake Research Consortium.

By invitation, lectured on whales and whaling to Jamaica Bay Council.

By invitation, attended Mariculture Workshop at the Department of Environmental Conservation, Stony Brook.

**Akira Okubo, Professor**

**Current research:** Modeling chemical reaction and diffusion system in the ocean in METREX (Multidisciplinary Eastern Tropic Experiment) project; analyzing high-speed movie films for the movement of midges in swarms; dynamics of fish schooling; mathematical modeling for plankton patchiness and Fourier spectral analysis of chlorophyll fluctuations.

**Research grants:** "Multidisciplinary Eastern Tropical Experiment (METREX)" Sponsor: University of Washington.


**University committees:** Member, Search Committee, Department of Ecology and Evolution.
Accomplishments/
Community service: U.S. representative at the Planning Meeting for NATO Symposium on marine patchiness, Aberdeen, Scotland.

J. R. Schubel, Professor

Current research: Coastal sedimentation; effects of power plants on entrained fish eggs and larvae; development of effective management strategies for coastal areas; dredging and spoil disposal; offshore sand and gravel mining; suspended sediment transport; interactions of organisms and sediment.

Research grants: "MSRC Participation in the Brookhaven National Laboratory Coastal Oceanography Program" Sponsor: Brookhaven National Laboratory.


"Reduction and Interpretation of Suspended Sediment Data from the Chesapeake and Delaware Canal" Sponsor: U.S. Environmental Protection Agency.
"Development of a Zoning Plan for the Chesapeake Bay Estuary" Sponsor: The Rockefeller Foundation.

University committees: Search Committee for Dean of Averell Harriman College for Urban and Policy Sciences.

Search Committee for Sea Grant Professorship in Shellfish Biology.

Accomplishments/ Community service: Marine Resources Council of Nassau-Suffolk Regional Planning Board.

Activity Leader, Marine Resources Management Group of the New York Sea Grant Institute.

Dredging Advisory Committee, Nassau-Suffolk Regional Planning Board.

Member, Editorial Board of Earth and Extraterrestrial Sciences Journal.

Review for National Science Foundation.

By invitation, presented dedication speech and paper to the Symposium on Transport Processes in Estuarine Environments at the Belle W. Baruch Institute, South Carolina.

By invitation, presented paper "Dredging and its impacts on upper Chesapeake Bay: some observations" at the Second Annual Conference of the Coastal Society, New Orleans.

Peter K. Weyl, Professor

Current research: Monitoring of water quality; coastal zone planning; physical oceanography; glacial paleoceanography; statistical method for analyzing coliform data.

Research grants: "Glacial Paleoceanography" Sponsor: National Science Foundation.

University committees: Arts and Sciences Senate.

Chairman, Averell Harriman College of Urban and Policy Sciences Review Committee.
Accomplishments/Community service:

- Advised Congressman Downey and his staff member, Bud Mitzman.
- Invited lectures presented at the Isles of Shoals Program, New Hampshire and at the University of Maine, Orono.
- Invited to chair review panel for MESA/NOAA program, Southampton, N.Y.

Charles F. Wurster, Associate Professor

Current research:
Investigating the effects of persistent pollutants, mainly chlorinated hydrocarbons, on plankton communities; toxic chemicals in the marine environment; interaction of science and public policy as influenced by legal action.

Research grants:
- "Effects of Persistent Pollutants on Plankton Communities" Sponsor: NOAA/N.Y. Sea Grant Institute.
- "Effects of Persistent Chemical Pollutants in the Aquatic Environment" Sponsor: The Rockefeller Foundation.

Accomplishments/Community service:
- Invited leader, Wildlife tour of national parks and refuges of India.
- Invited lecture, "The Wildlife of India," Suffolk Bird Club, Stony Brook, N.Y.
- Member, Board of Trustees, National Parks and Conservation Association.
- By invitation, presented paper "American Scientists Take Legal Action to Improve Pesticide Regulation" at the International Conference, The Responsibility of Science in Modern Society, Florence, Italy.
- Board of Trustees, Executive Committee, Environmental Defense Fund.
Panel Member, New York Bight Project, Marine Ecosystems Analysis, NOAA, to evaluate toxic chemicals in the Bight.

Radio interview (closed circuit FM) "Conference Call" regarding the hazards of saccharin.

Lecture and panel discussion "Environmental Carcinogens" National Convention, Natural Food Associates, Evansville, Indiana.

Member, Administrative Pesticide Policy Advisory Committee of the U.S. Environmental Protection Agency.

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**Edward J. Carpenter, Associate Professor**

**Current research:**
- N$_2$ fixation in the marine environment; phyto and zooplankton ecology; effects of toxic chemicals and electric power stations on coastal plankton.

**Research grants:**
- "Nitrogen Cycling in the Euphotic Zones of the Caribbean and Southern Sargasso Seas" Sponsor: National Science Foundation.

**University committees:**
- Chairman, Search Committee for Sea Grant Professorship in Shellfish Biology.

**Accomplishments/Community service:**
- Invited by National Science Foundation to Hawaii to set up a joint marine biological program with Japan.
- Member, Environmental Protection Agency's Hudson River Interagency Technical Committee.
- By invitation, presented paper on Sargassum Production and chaired a session on "Nutrients and Light" at the 39th Annual Meeting of the American Society of Limnology and Oceanography, Savannah, Georgia.
Malcolm J. Bowman, Assistant Professor

Current research: Effects of Hurricane Belle on oceanography of N.Y. Bight Apex; wind stresses and non-tidal flow through East River; numerical model of heat, salt and nutrient fluxes onto the shelf of the N.Y. Bight; oceanic fronts.

Honors or Awards: University Award to initiate a study of jets, fronts and phytoplankton patchiness in coastal waters.

Research grants: "A Workshop on the Roles of Oceanic Fronts in Coastal Processes" Sponsors: Department of Transportation/ U.S. Coast Guard, NOAA.

"The Effects of Hurricane Belle on the Oceanography of the N.Y. Bight Apex" Sponsor: NOAA/MESA.


Accomplishments/ Community service: By invitation, presented paper "Response of Hudson River Plume to Hurricane Belle" at the 1976 Fall Annual Meeting of the American Geo-physical Union, San Francisco.

By invitation, presented paper "The Role of Bottom Turbulence in Shallow Water Frontogenesis" at the 8th International Colloquium on Ocean Hydrodynamics at the University of Liege, Belgium.

Iver W. Duedall, Assistant Professor

Current research: Physical chemistry of silicic acid in seawater; ammonium fluxes in coastal waters; nutrients in an estuarine system; geochemistry of the water column in western Long Island Sound.

Research grants: "Physical chemistry of Silicic Acid in Seawater" Sponsor: National Science Foundation.
"Processes Affecting the Decomposition of Sewage Sludge in Seawater" Sponsor: Link Foundation.

"Chemical Properties and Fate of Ocean-Dumped Sewage Sludge" Sponsor: University Awards Committee.

"An Experimental Determination of the Sources and Transformations of Suspended Particulates in the New York Bight Apex" Sponsor: NOAA.

"Environmental Effects of Power Plants Calcium Sulfate/Sulfite and Fly Ash in Seawater" Sponsor: NOAA.

"Chemical and Biological Effects of Power Plant Calcium Sulfate/Sulfite and Fly Ash in Seawater" Sponsor: Link Foundation.

University committees: Worked closely with Professor Schuyler of the Ibero-American Studies program to nominate a Chilean oceanographer for a Fulbright-Hayes faculty award. Member, Executive Committee for the Sigma Xi Club.

Accomplishments/Community service: Sponsored two Eagle Scouts at the 21st Annual Eagle Recognition Day and Dinner.

Participated in the New York programming of OASIS in SPACE "Troubled Waters" produced for public television by the Cousteau Society.

Member, Three Village School District School Board Citizen Advisory Committee.

Reviewer for NSF, Science and Geochimica et Cosmochimica Acta.

Harold B. O'Connors, Jr., Assistant Professor

Current research: Coastal plankton ecology; primary production; patterns of plankton distribution; zooplankton feeding behavior; description and fate of particulates originating from wastewater
sewage disposal.


University committees: MSRC/DEC Flax Pond Advisory Committee.

Search Committee for Sea Grant Professorship in Shellfish Biology.

Robert E. Wilson, Assistant Professor

Current research: Estuarine and coastal ocean dynamics; wind-driven circulation off the south shore of Long Island; structure of the turbulent boundary layer in a tidal current; phytoplankton patchiness.


"Wind-Driven Circulation off the South Shore of Long Island" Sponsor: University Awards Committee.


Accomplishments/Community service: Member, Committee to advise Cold Spring Harbor Laboratory on development of a program in marine science.

Invited speaker, Long Island Sound Conference, Yale University.

b. Faculty Holding Qualified Appointments

Martha Baylor, Adjunct Professor

Current research: Microbiology; airborne viruses.
Harry H. Carter, Professor (Part-time)

Current research: Biological effects of once-through cooling systems of electric generating stations; characteristics, persistence, and impact of plumes of dredged material discharged hydraulically into the marine environment; water tracing with rhodamine dyes; direct measurement of eddy diffusion and current speed and direction; estuarine and coastal circulation and mixing processes.

Research grants:

"Supplemental Support for a Dye Diffusion Experiment in Great South Bay" Sponsor: Nassau-Suffolk Regional Planning Board.

"A Proposal to Develop Procedures for Evaluating Thermally Induced Biological Effects Due to Once-through Cooling Systems" Sponsor: N.Y. Energy Research and Development Authority.

Accomplishments/Community service:

By invitation, presented paper "The study of turbulent diffusion by dye tracers: a review" at the Symposium on Transport Processes in Estuarine Environments at the Belle W. Baruch Institute, South Carolina.

Arthur P. Cooley, Adjunct Associate Professor

Current research: Natural history of Long Island.

Ramesh Dayal, Adjunct Assistant Professor

Current research: Mineralogy and geochemistry of sediments; clay mineral/seawater interactions relating to fields of halmyrolysis and early diagenesis; sediment pore water studies with emphasis on diffusive fluxes of nutrients and heavy metals across the sediment/water interface; kinetics and equilibria of clay minerals-silicic acid; pollution studies; marine geochemistry of germanium and gallium.
| Research grants: | "Clay-Silica Interactions in Seawater"  
Sponsor: American Chemical Society.  
"Sediment Geochemical Studies of Deep Sea Nuclear Waste Disposal Site in the Atlantic Ocean"  
Sponsor: U.S. Environmental Protection Agency. |
|---|---|
| Accomplishments/Community service: | By invitation, presented paper  
"Geochemistry of the Water Column and Sediments of the Western Long Island Sound" at the annual Long Island Sound Conference. |

C. C. Ebbesmeyer, Adjunct Assistant Professor

<table>
<thead>
<tr>
<th>Current research:</th>
<th>Advective-diffusive models; vorticity, divergence, and deformation rates from analysis of drogue motions; acceleration field of midges in a swarm.</th>
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</thead>
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Wayne E. Esaias, Adjunct Assistant Professor

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<tr>
<th>Current research:</th>
<th>Marine photobiology involving light dependency of phytoplankton photosynthesis; spatial distribution of phytoplankton and primary productivity in the New York Bight.</th>
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</table>
| Research grants: | "Continuation of MSRC Participation in the Brookhaven National Laboratory Coastal Oceanography Program"  
Sponsor: Brookhaven National Laboratory.  
"Zooplankton During Anoxic Conditions"  
Sponsor: MESA. |
| University committees: | Search Committee for Sea Grant Professorship in Shellfish Biology.  
MSRC/DEC Flax Pond Advisory Committee. |
| Accomplishments/Community service: | By invitation, presented paper  
By invitation, participant to the IDOE Plankton Workshop on Anoxia on the Continental Shelf, Lamont Doherty |
Geological Observatory.

Invited participant on two cruises:
IDOE-CUEA "JASON" Expedition, Peru;
IDOE/CUEA PERU Expedition, Peru.

Invited speaker on "Effects of Man's Activities on Phytoplankton Populations in New York-New Jersey Offshore Waters" at the Symposium on Pollution of New Jersey Continental Shelf: Birth of an Ecological Crisis, Jersey City State College.

Invited speaker on "Phytoplankton Distributions in the New York Bight" at the ERDA Workshop on Mid-Atlantic Coastal Oceanographic Research, Brookhaven National Laboratory.

P. G. Falkowski, Adjunct Assistant Professor

Current research: Marine phytoplankton ecology; phytoplankton physiology.

C. T. Fray, Adjunct Associate Professor

Current research: Coastal processes; geologic structure of continental margins; sedimentation; marine geophysics.

F. Goreau (Goro), Professor (Part-time)

Current research: Scientific photography.

B. Kinsman, Visiting Professor

Current research: Waves and tides; estuaries.

I. Like, Adjunct Professor

Current research: Environmental law.

R. H. Meade, Adjunct Professor

Current research: Coastal and fluvial sedimentation; ground water.
J. R. Naidu, Adjunct Assistant Professor

Current research: Radioecology; radionuclides in the environment.

Joel S. O'Connor, Adjunct Associate Professor

Current research: Estuarine and coastal ecology; contaminants.

Harold M. Stanford, Adjunct Assistant Professor

Current research: Estuarine and coastal marine research; man's impact on marine environment.

Robert L. Swanson, Adjunct Associate Professor

Current research: Physical oceanography; hydrography of N.Y. Bight Apex.

O. W. Terry, Adjunct Associate Professor

Current research: Aquaculture, especially of seaweed; wetlands management.


J. J. Walsh, Adjunct Associate Professor

Current research: Upwelling ecosystems; phytoplankton ecology.

T. E. Whitledge, Adjunct Assistant Professor

Current research: Regeneration of nutrients; chemistry of seawater; stimulation of primary productivity by sewage effluent; ecosystem dynamics.
P. M. J. Woodhead, Adjunct Professor

Current research: Behavior and physiology of fish; coral reef ecology; ocean energy conversion systems.

Accomplishments/
Community service: Presented invited lecture "Power from solar energy conversion in mid-Pacific" at the Custer Institute, N.Y.

C. Promotion and Tenure Actions

No actions completed on current faculty. Actions recommended: Malcolm J. Bowman, promotion and tenure; Edward J. Carpenter, tenure; Iver W. Duedall, promotion and tenure.

(2) Non-teaching Professionals

George E. Carroll, Computer Programmer

Established the Center's remote entry link, both low and high speed, to the Computer Center with time sharing and interactive data capabilities. Prepared over 100 computer programs in support of research at the Center. Completed organization of all oceanographic data files into uniform, computer compatible file structure for the Center's data bank.

Carol Cassidy, Graphics Artist

Appointed February, 1977. Designed MSRC Associates brochure and revamped the MESP brochure. Completed setup of darkroom, now fully operational. Provides 90% of departmental drafting services. Supervised printing of two MSRC reports and one MSRC newsletter.

Robert Comeau, Mate, Research Vessel


Peter K. deNyse, Assistant to the Director

Supervised move of the entire department to new facilities in "F", "G", and "H" buildings. Coordinated rehab of 15 laboratories. Completed MSRC removal from Point of Woods house. Executed approximately $60,000 in capital equipment purchases.
Andrew Hamilton, Electronics Technician

Established a fully functional electronics shop for the Center in H building. Set up and operated a temperature calibration facility. Participated in three extensive research cruises. Designed, built and tested an underwater housing for a fluorometer and related electronics to permit on-line recordings while towed from a research vessel. The instrument has been used successfully on one project in Long Island Sound and on one off the Coast of Peru.

Jeffrey Parker, Assistant Staff Oceanographer

Field director for three major research cruises. Major contributor to Eaton's Neck study final report. Principal Investigator for a current Sea Grant project. Developed over 75 Hewlett-Packard data storage and retrieval programs for faculty, students and staff. Senior author of one paper, coauthor on three papers. Earned MS degree in Marine Environmental Sciences at Stony Brook.

Alan Robbins, Numerical Analyst

Developed mathematical model for reaction/diffusion of anoxic space in the eastern Pacific Ocean. Developed and tested computer program for tracking swarm behavior. Preparing a mathematical model for predicting biological effects of power plant plumes. Completed design of the Center's data storage and retrieval system. Coauthor of two publications.

Frederick G. Roberts, Associate Director

Departmental budget review of research proposals—51 to date—and coordination of submission to sponsors through Research Foundation. Contract negotiations with research sponsors. Recruitment of staff personnel. Prepared contractual agreement with Environmental Conservation Department for joint use of Flax Pond Laboratory. Coordinated research vessel operations including 20 instructional cruises for SUNY campuses. Served as the NTP member of the campus Academic Judiciary.

Helmut C. Stuebe, Research Vessel Captain

Completed approximately 80 days at sea with the R/V ONRUST in support of research (75% of total) and instructional (25% of total) programs. Acquired formal "documentation" for the ship as a registered U.S. vessel. Also set up and operated the Center's machine and carpentry shops in H building.
(3) **New Faculty Appointments, effective 1976-77**

Fritz Goro, Professor (part-time); scientific photography.

Blair Kinsman, Visiting Professor; waves and tides.

Irving Like, Professor (part-time); environmental law.

(4) **Terminations (NTP's)**

David Hirschberg, Laboratory Technician; resigned to become a full-time graduate student at MSRC.

Dale Gassaway, Graphics Artist; resigned.

Jeffrey Parker, Technical Specialist; transferred to Research Foundation sponsored research position.

Alan Robbins, Numerical Analyst; transferred to Research Foundation sponsored research position.

Ronald Schoof, Mate, Research Vessel; resigned.

Gregory Weik, Mate, Research Vessel; resigned.

(5) **Post-Doctoral Fellows**

Douglas Biggs, U.S. citizen, Ph.D. from M.I.T. and Woods Hole Oceanographic Institute, 1976; Sponsor: Rockefeller Foundation Grant; Co-investigator with Prof. C. F. Wurster for a field and laboratory study on the effects of organochline compounds on plankton and secondary production. Author or coauthor of five scientific papers in 1976-77.

Boudewijn H. Brinkhuis, Canadian citizen (U.S. Permanent Resident), Ph.D. from SUNY, Stony Brook, 1975; Sponsor: Jessie Smith Noyes Foundation and N.Y. Sea Grant Institute. Principal Investigator for a study of metal uptake by eel grass in Great South Bay; awarded the Harold C. Bold award at the Phycology Society annual meeting in September, 1976.

C. Donald Powers, U.S. citizen, Ph.D. from Michigan State University, 1969; Sponsor: Rockefeller Foundation Grant; Co-investigator with Prof. C. F. Wurster for a field and laboratory study on the effects of organochline compounds on plankton and secondary production. Author or coauthor of four scientific papers in 1976-77.
Marine Sciences Research Center

Biggs, Douglas; Post-Doctoral Fellow


Bowman, Malcolm J.; Assistant Professor

"Hydrographic Properties", MESA N.Y. Bight Monograph #1, New York Sea Grant Institute, 1977, 78 pp.


Carpenter, E. J.; Associate Professor


Carter, H. H., Professor (part-time)


Dayal, R.; Adjunct Assistant Professor


Duedall, I. W.; Assistant Professor


Esaias, Wayne E.; Adjunct Assistant Professor


McHugh, J. L.; Professor


O'Connors, H. B., Jr.; Assistant Professor


Okubo, A.; Professor


Powers, C. D.; Post-Doctoral Fellow


Robbins, A. S.; Technical Specialist


Schubel, J. R.; Professor

"Thermal Effects of Power Plant Entrainment on Survival of Fish Eggs and Larvae: A Laboratory Assessment", CBI Special Report #52, Johns Hopkins University, 1976, 37 pp.


Smith, C. F., Graduate Student

"Thermal Effects of Power Plant Entrainment on Survival of Fish Eggs and Larvae: A Laboratory Assessment", CBI Special Report #52, Johns Hopkins University, 1976, 37 pp.
Weyl, P. K.; Professor


Wilson, Robert E.; Assistant Professor


Wurster, C. F., Associate Professor


A SUMMARY OF 1976-77 AND A LOOK AHEAD

The 1976-77 academic year was probably the best yet in the history of the Marine Sciences Research Center. Major strides were made in each of our mandated areas of responsibility: in research, in education, and in public service.

During the year, the Marine Sciences Research Center emerged as a leader among the nation's coastal oceanographic institutions. This position of leadership was pointed out in the five-year review of our master's program and our proposed doctoral program in March of this year. More recently, Dr. D. W. Pritchard, former director of the Johns Hopkins University's prestigious Chesapeake Bay Institute, pointed out in a letter of evaluation to the SUSB Council on Personnel Policy: "In my opinion MSRC is rapidly becoming the primary center for research and teaching in coastal oceanography in this country, superceding my own institution in this regard."

Our goal is to be the best--most effective--coastal oceanographic institute in the world. The MSRC and SUNY have a tremendous opportunity to develop a center of international excellence in a field of critical importance. The time is right, and we shall do everything we can to ensure that we take full advantage of this unparalleled opportunity. The advances we have been able to make would not have been possible without the strong support of the University.

Several features distinguish the Marine Sciences Research Center from other leading oceanographic institutes. One is its focus on the coastal marine environment. There are very few outstanding coastal oceanographic institutes in the country. MSRC is one of them. Another distinguishing feature is MSRC's commitment to translating the results of its own research and that of others into forms readily usable by decision makers in resolving important environmental problems. A third feature that distinguishes MSRC is the effectiveness with which it has attacked problems of the marine environment on both theoretical and applied levels.

The focus of our efforts in research, education and public service continues to be on the coastal marine environment. The geographical emphasis has traditionally been on New York's coastal
That emphasis persists, but we recognize the need to expand our work to other areas. This past year we conducted sponsored investigations in the: Pacific, Mediterranean, Gulf of Mexico, Apalachicola Bay (Florida), Atchafalaya estuary (Louisiana), Chesapeake Bay, Chesapeake and Delaware Canal, and in a corn field in Minnesota.

Selected highlights of accomplishments in each of our mandated areas of responsibility are briefly described below. No attempt has been made to be comprehensive.

Education

- MSRC's proposed doctoral program in coastal oceanography was approved by the SUSB Graduate Council.

  Our new doctoral program in coastal oceanography was approved by the SUSB Graduate Council and forwarded to Albany. The program is unique in the State of New York, and one of only a few in the entire United States. The program will be one of excellence from the outset, will require no new resources, and will make far more effective use of existing resources. It fills a clear and present need not only in the State of New York but in the country. New York clearly stands to benefit the most. There is probably no other coastal state that has so badly neglected the study of its coastal environment. While the proposed doctoral program is not the entire answer, it will be a major step in rectifying this situation.

- Jessie Smith Noyes Fellowship Program.

  The MSRC's Jessie Smith Noyes Fellowship Program has been established as a prestigious program for students in the marine sciences. The stipends are the highest at SUSB. This year the program supported, in full, three pre-doctoral fellows--Scott Becker, Gregory Greene, and Monteith Heaton--and partially supported one post-doctoral fellow--Dr. Boudewijn H. Brinkhuis. Noyes Fellowships are used to support outstanding scholars working on important environmental problems of the coastal zone. Both Becker and Greene are working on problems related to the hard clam industry of Great South Bay, New York's most important fishery. Heaton is working on the release of sediment associated contaminants during open-water disposal; and Brinkhuis's research is directed at assessing the role of rooted marine plants in releasing contaminants from dredged spoil deposits.

  The MSRC Noyes Fellowship Program has been renewed for the 1977-78 academic year and three new Fellows have been selected: David Hirschberg, Wayne Penello, and Dominick Ninivaggi.
Extended cooperation with other SUSB departments.

Two special courses initiated by MSRC were jointly offered with other SUSB departments.

1. **Scientific Photography**, taught by Fritz Goro, was offered jointly with the Department of Anatomical Sciences.

2. **Environmental Law**, taught by Irving Like, was offered jointly with Political Science.

Both of these instructors hold Adjunct Appointments with the MSRC.

Professor Akira Okubo continues to be an active participant in the Department of Ecology and Evolution. All of his teaching continues to be through that department. Dr. Okubo's participation has led to the development of a new area of strength in the Department of Ecology and Evolution--Quantitative Ecology.

Professor Edward Carpenter of the MSRC was recently granted a joint appointment in the Department of Ecology and Evolution.

The MESP continues to flourish.

The MESP had its five-year review this spring. The review resulted in a strong endorsement of the program. Selected comments from the review include:

The goals of the MESP are both valid and desirable: filling a need for trained personnel at the master's level in local, state and national levels.

Individuals familiar with the basic scientific information to solve applied problems in the nearshore environment are needed. No comparable program seems to exist.

The proposed directions of growth of the MESP are modest in terms of numbers of students. The expressed goals of the faculty are to increase the general quality of both entering students and the academic program. The reviewers agree that the MESP should probably include no more than 25 students. Full-time master's students should dominate over part-time students.
The quality of the current program is high incorporating a proper balance between teaching in the basic disciplines and active training. Student participation in the training is high. Staff and student interaction is good. The advisory system appears to work well and the teaching staff is of high quality. The instructional staff have been receptive of student criticism of the curriculum. This has resulted in a desirable evolution of core course content. The reviewers encourage a continuation of this student-faculty dialogue.

Graduate students generally appear complimentary of the program and faculty. The core curriculum is perceived by students as being excellent, although particularly demanding in the area of mathematics and physics. There is a constant need, which seems to be met, of this information being applied and tailored to specific situations and problems in marine biology.

Eighteen students received the master's degree through the MESP in the 1976-77 academic year.

Research

- MSRC awarded Sea Grant Professorship in Shellfish Biology.

  Dr. Donald Squires, Director of the New York Sea Grant Institute, announced that the new Sea Grant professorship in shellfish biology has been awarded to the Marine Sciences Research Center. At the end of the initial three year appointment which will be supported by the N.Y. Sea Grant Institute, SUSB will assume the responsibility for continuing the position.

  MSRC expects to appoint, by September 1977, a shellfish biologist who will not only develop research programs of excellence, but who will also work closely with the Sea Grant Advisory Service, the Department of Environmental Conservation, and commercial fishermen in resolving problems associated with New York's shellfish industries.

- MSRC hosts national and international workshops.

  During the 1976-77 academic year MSRC hosted four important workshops with support from a variety of federal and state agencies. The topics were:
Transport Processes in Estuaries
Power Plant Entrainment: A Biological Assessment
The Role of Fronts in Coastal Processes
The Suitability of CaSO₄ Coal Wastes for Disposal in the Ocean

Each of these workshops brought together a group of distinguished scientists and decision makers; two of the workshops were international in scope. The results of the workshop on Power Plant Entrainment: A Biological Assessment will be published in book form this summer by Academic Press.

- Extramural support continues to grow.

   During the 1976-77 academic year the MSRC generated nearly $1.50 for every $1.00 it received from the University. The base of support has been considerably broadened to include a variety of federal, state, and private sources. The balance between grants and contracts is a healthy one.

- Long-term agreement reached with Department of Environmental Conservation for joint use of Flax Pond Laboratory.

   We succeeded in finalizing a long-term rental agreement with the N.Y. Department of Environmental Conservation for joint use of the Flax Pond Laboratory. Approximately half of the laboratory will be under the supervision of the Marine Sciences Research Center for SUNY-wide use.

- MSRC moves into new quarters on South Campus.

   Late last summer MSRC moved out of Building J and into F, G, and H on the University's South Campus. The buildings, although not yet completely rehabilitated, provide MSRC with space it needs for growth over the next several years.

- MSRC adds to its fleet.

   During the 1976-77 academic year the MSRC added, through the courtesy of the Department of Mechanics three floating platforms to its small fleet of oceanographic vessels. These platforms will be very useful for projects we hope to initiate in Great South Bay this next year.

Service

   Members of the MSRC continue to serve in key advisory roles to a variety of international, federal, state, county, and local environmental agencies. Many of these affiliations are listed in
Part I of this report.

Three selections which are of particular importance include:

(1) Appointment of Professor J. L. McHugh to a three-year term on the Mid-Atlantic Regional Fishery Management Council.

(2) Appointment of Professor Charles Wurster to President Jimmy Carter's Environmental Task Force.

(3) Election of Professor J. R. Schubel to a three-year term on the Advisory Council of the University National Oceanographic Laboratory System.

A CLOSING COMMENT

The 1976-77 academic year was a good one for MSRC, probably its best. It was during this period that we came of age as a coastal oceanographic institute and were recognized for our national leadership in coastal oceanographic research, education, and public service. We have major responsibilities to live up to, and a bright future. I see as one of our goals for this year, the development and enhancement of the State's perception of MSRC as a resource, a problem solver, that it can and should turn to for assistance in resolving its coastal marine problems. This will not be an easy goal to attain because of the perceptions which some key members of the New York Department of Environmental Conservation have of their own roles, but I believe we must do it.
Appendix A

Annual Report for 1976-77

Marine Sciences Research Center

DEPARTMENTAL ACTIVITIES

Departmental Colloquia and Seminars

June 17, 1976
Profs. Dennis Polis and Chuck Sabardan, University of Delaware
"Estuarine Fronts in Delaware Bay"

September 23, 1976
Prof. Robert Gordon, Yale University
"Dispersion of Dredged Spoil in Coastal Waters"

September 30, 1976
Prof. Donald Rhoads, Yale University
"Effects of Dredged Spoil Disposal on Benthic Communities"

October 7, 1976
Mr. Denis Cunningham, Connecticut Department of Environmental Protection
"Spoil Disposal in Long Island Sound--A Regional Plan"

October 14, 1976
Prof. J. A. Sherk, U.S. Fish & Wildlife Service
"Effects of Suspended Solids on Estuarine Organisms--A Laboratory Assessment"

October 21, 1976
Dr. Lee Koppelman, Nassau Suffolk Regional Planning Board
"Development of a Plan for Dredging and Spoil Disposal on Long Island"

October 27, 1976
Mr. Les Kiehn, National Park Service
"Construction of a Spartina Marsh Using Plug Transplants"

November 4, 1976
Mr. William J. Librizzi, Jr., U.S. Environmental Protection Agency
"EPA's Role in Regulating Sewage Sludge Dumping in the New York Bight"
November 11, 1976  Mr. Carl Hard, U.S. Army Corps of Engineers  
"The Future of Dredging and Spoil Disposal in Long Island Sound"

November 15, 1976  Prof. Alan Faller, University of Maryland  
"Langmuir Circulation"

November 18, 1976  Mr. Thomas R. Glenn, Interstate Sanitation Commission  
"New York-New Jersey Metropolitan Area Sewage Sludge Disposal Management Plan"

December 9, 1976  Dr. Martin Stempien, Osborn Laboratories of Marine Science  
"Sponges: New Source of Drugs?"

January 24, 1977  Dr. C. Ebbesmeyer, Evans-Hamilton, Inc.  
"Puget Sound Circulation"

January 27, 1977  Dr. C. D. Powers, Marine Sciences Research Center  
"Persistent Pollutants and Microalgae"

February 3, 1977  Dr. W. Reeburgh, University of Alaska  
"A New Look at Methane in Aquatic Systems"

February 10, 1977  Prof. K. K. Turekian, Yale University  
"The Fate of Metals in Estuaries"

February 17, 1977  Prof. L. Krasner, SUNY, Stony Brook  
"The Sea Ranch, California: Ecology and Architecture"

February 17, 1977  Prof. Peter M. J. Woodhead, Marine Sciences Research Center  
"A Severe Winter in European Seas"

March 10, 1977  Prof. Peter M.J. Woodhead  
"Arcto-Norwegian Cod Migration Tactics, Strategy and Control"
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<tr>
<th>Date</th>
<th>Presenter, Institution</th>
<th>Title</th>
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<tr>
<td>March 17, 1977</td>
<td>Prof. Ronald Eisler, University of Rhode Island</td>
<td>&quot;Toxicity Evaluation of a Complex Metals Mixture to Marine Bivalves&quot;</td>
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<td>March 24, 1977</td>
<td>Prof. J. L. McHugh, Marine Sciences Research Center</td>
<td>&quot;Fishery Management Under Extended Jurisdiction&quot;</td>
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<td>March 31, 1977</td>
<td>Mr. William Pell, Mid-Atlantic Regional Fishery Management Council</td>
<td>&quot;The Sea Around Us&quot;</td>
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<td>April 14, 1977</td>
<td>Prof. John Edmond, Massachusetts Institute of Technology</td>
<td>&quot;Geochemistry of Large River Systems&quot;</td>
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<td>April 26, 1977</td>
<td>Prof. Akira Okubo, Marine Sciences Research Center</td>
<td>&quot;Spectral View of the Kierstead-Slobodkin-Skellam Critical Size for Phytoplankton Bloom: Non-mathematical Presentation&quot;</td>
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<td>April 28, 1977</td>
<td>Prof. J. J. McGurik, University of Karlsruhe</td>
<td>&quot;Numerical Modeling of Thermal Jets&quot;</td>
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<td>May 2, 1977</td>
<td>Prof. George Stroup, University of Hawaii</td>
<td>&quot;Oceanography at the University of Hawaii--Plans and Programs&quot;</td>
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<td>May 5, 1977</td>
<td>Mr. Richard Hennemuth, National Marine Fisheries Service</td>
<td>&quot;Status of Commercial Fish Stocks in the Northwest Atlantic&quot;</td>
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<tr>
<td>May 11, 1977</td>
<td>Dr. Jan Naidu, Brookhaven National Laboratory</td>
<td>&quot;Marshall Islands: Educational Program on Radiation&quot;</td>
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</table>
May 12, 1977  Dr. David M. Nelson, Woods Hole Oceanographic Institution

"Uptake and regeneration of silicic acid in diatom cultures and natural phytoplankton populations"

Student Seminars: A Requirement for the Master's Degree

July 30, 1976  Brian E. Doyle

"Lateral Dynamic Balance in the Sandy Hook to Rockaway Point Transect"

Jack Lekan

"The Spatial Variability of Phytoplankton Biomass in the Surface Waters of Long Island"

August 3, 1976  Robert L. Olson

"Spatial and Temporal Variations in the Abundance and Distribution of Nutrients and Phytoplankton in Western Long Island Sound"

August 5, 1976  Barbarajean Kaufman

"The Effects of Chlordane and Heptachlor on the Marine Dinoflagellate Exuvieilla baltica, Lohmann"

Kathleen McDonough

"A Benthic Index of Environmental Quality for the New York Bight Apex and Raritan Bay"

August 11, 1976  Michael Klein

"Effect of Petroleum Hydrocarbons Upon the Distribution of the Benthos in Port Jefferson Harbor"

August 24, 1976  Gary Grunseich

"The Decomposition of Sewage Sludge in Seawater"

December 6, 1976  Michael Gaertner

"Seasonal Migration of Fishes of Importance to New York State"
December 17, 1976  Susan Robbins
"Interdisciplinary Study of Stony Brook Harbor as Natural Resource"

December 20, 1976  Jeffrey A. Leslie
"Wind Induced Currents in a Shallow Coastal Sea"

January 13, 1977  Christopher Zeppie
"Vertical Profiles and Sedimentation Rates of Cu, Cr, Cd, Ni, and Pb in Jamaica Bay, New York"