ANNUAL REPORT
1980-82

Marine Sciences Research Center
State University of New York at Stony Brook

J. R. Schubel, Director
15 July 1982

Part I Summary Information
Part II Narrative
Appendix A Colloquia and Seminars
A. SUMMARY OF CENTER ACTIVITIES AND ACCOMPLISHMENTS

(1) A list of departmental seminars is attached (Appendix A). The Center sponsored 80 seminars during the 1980-82 academic years. Interest in receiving our seminar announcements continues to increase. The mailing list now includes 75 local agencies and individuals.

(2) Other department activities are covered in the narrative section, Part II. Highlights of the past 2 years include:

a. MSRC officially launched its new Beach and Nearshore Processes Unit with the appointment of two new assistant professors (Freilich and Zarillo) and with more than $50,000 in uncommitted funds raised entirely from private sources for program development.

b. MSRC signed a Cooperative Agreement with the U.S. National Oceanic and Atmospheric Administration (NOAA) which calls for MSRC to take a leadership role nationally in assisting NOAA in resolving important pollution problems in coastal waters.

c. MSRC generated more than 10% of total core campus sponsored funding. This is up from 7% in 1979-80.

d. MSRC ranks #2 among all 63 SUSB departments in number of awards.

e. MSRC generates more research dollars per State-funded faculty than any of SUSB's other 63 departments; each State faculty line generated nearly $5.00 for each $1.00 of State faculty salary received.

f. Increased the Center's contribution series by 50 items.

g. Published 9 special reports and 7 Working Papers.

h. Hosted more than a dozen regional, State, and National meetings dealing with various aspects of coastal oceanography and coastal zone management.

i. Conducted the third and fourth SUNY-wide educational cruises up the Hudson River to Albany aboard the R/V ONRUST.
j. Extended the scope of MSRC's international programs which now include Africa, Argentina, Canada, Chile, China, Japan, Korea, Mexico, New Zealand, and Trinidad.

k. MSRC supports a greater percentage (>75%) of its graduate students from grants and contracts than any other department at SUSB.

l. Drs. David Conover, Michael Freilich, Jed Fuhrman, and Gary Zarillo were appointed to the faculty as assistant professors.

m. With support from the U.S. National Oceanic and Atmospheric Administration (NOAA), the MSRC began publication of a new national newsletter--Coastal Ocean Pollution Assessment News (COPAS).

n. The MSRC's Jessie Smith Noyes Fellowship Program was renewed for the 1980-81 AY, for the 1981-82 AY, and for the 1982-83 AY.

o. With awards of more than $150,000 from the William H. Donner Foundation and $100,000 from the National Oceanographic Data Center the MSRC initiated a new Program--Coastal Science and Management Alternatives--within the Center to improve effectiveness in environmental decision making.
B. Summary of Faculty and Staff Activities and Accomplishments

(1) Faculty

a. Faculty Holding Academic Rank

Edward R. Baylor, Professor

Current research: Surface chemistry; oil spills; ethology.

Accomplishments/Community Service:

Presented lecture at Geophysical School of Fluid Dynamics, Woods Hole. Oceanographic Institution, Woods Hole, MA.

Served as section convenor at the Gordon Conference on Aerobiology in Woods Hole, August 1980.

Harry H. Carter, Professor

Current research: Estuarine and coastal dynamics; turbulent diffusion.

Research grants:

"Langrangian-Eulerian Diffusion Study"  
Sponsor: Department of Energy.

"Identification of Hard Clam Brook Stock Areas Which Produce Sets on Productive Beds"  
Sponsor: New York Sea Grant Institute.

"A Study of the Circulation and Ground-Water Flows in Great South Bay"  
Sponsor: New York Sea Grant Institute

"A Great South Bay Dye Study"  
Sponsor: Suffolk County

"Estimation of Eddy Diffusivities for DWP-106 from Site D Current Meter Records"  

University committees: Chairman, Graduate Programs Committee; Marine Sciences Research Center

Chairman, Search Committee for Assistant Professor in Physical Oceanography; Marine Sciences Research Center.

Member, Written Comprehensive Examination Committee; Marine Sciences Research Center.

Member, Admissions Committee; Marine Sciences Research Center.
Accomplishments/Community service:

Member, Search Committee for Electronic Engineer Search Committee; Marine Sciences Research Center.

Presented invited lecture "Engineering Applications of the Dye Tracer Technique" at Stevens Institute of Technology, Hoboken, N.J.

Presented two invited lectures on dye tracing at the Estuarine and Coastal Research Institute, Shanghai Normal University, Shanghai, Peoples Republic of China.

Presented invited lecture on nephelometry at the Second Institute of Oceanography, Hangchow, Peoples Republic of China.


Participant, 8th Middle-Atlantic Bight Physical Oceanography and Meteorology Workshop, October 1980, Annapolis, MD.


J. L. McHugh, Professor

Current research: Fishery management; fishery oceanography; domestic and international ocean affairs; whales and whaling.


University committees: Member, Search Committee for Assistant Professor of Biological Oceanography; Marine Sciences Research Center.

Member, Jessie Smith Noyes Fellowship Committee; Marine Sciences Research Center.
| Accomplishments/  
|                   | Member, Scientific and Statistical Committee of the Mid-Atlantic Fishery Management Council. |
|                   | Chairman, Town of Brookhaven committee to advise the Town's shellfish programs. |

**Akira Okubo, Professor**

<table>
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<tr>
<th>Current research:</th>
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<tbody>
<tr>
<td>Oceanic diffusion; animal dispersal; mathematical ecology.</td>
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<table>
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<tr>
<th>Research grants:</th>
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</thead>
</table>
| "Lagrangian-Eulerian Diffusion Study"  
| Sponsor: Department of Energy. |
| "Behavior and Kinetics of Insect Swarming"  
| Sponsor: University of Minnesota. |

| Accomplishments/  
<table>
<thead>
<tr>
<th>Community service:</th>
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<tr>
<td>Contributing Editor, Lecture Notes in Coastal and Estuarine Studies, Springer-Verlag.</td>
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<tr>
<td>Presented invited seminar &quot;The dynamics of animal grouping&quot; at the University of Minnesota, December 1980.</td>
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<tr>
<td>Presented invited seminar, &quot;Dynamical aspects of ecological patchiness&quot; at the University of Minnesota, December 1980.</td>
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<tr>
<td>Presented invited seminar &quot;A seagrass ecosystem model&quot; at Cornell University, April 1981.</td>
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**Donald W. Pritchard, Professor**

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<tr>
<th>Current research:</th>
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<tr>
<td>Estuarine and coastal dynamics; coastal zone management.</td>
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<tr>
<th>Research grants:</th>
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| "Hydrographic Studies, Power Plant Evaluation"  
| Sponsor: Johns Hopkins University |
| "A Study of the Fluorescent Background Problem and of a Near Term Solution"  
| Sponsor: State of Maryland. |
"Computation of Currents in Moriches Inlet"
Sponsor: Long Island Regional Planning Board.

"Evaluation of Effects of Inlet Geometry on Potential for Flooding and Distribution of Salinity Within Moriches Bay"
Sponsor: Suffolk County

University committees:
Member, Search Committee for Assistant Professor in Biological Oceanography; Marine Sciences Research Center.

Chairman, Steinberg-Squires Award Committee; Marine Sciences Research Center.

Member, Computing Advisory Committee; SUSN.

Chairman, Search Committee for Assistant Professor in Seaweed Aquaculture; Marine Sciences Research Center.

Accomplishments/Community service:
Advisor to the Ocean Science Board, National Academy of Sciences relative to report being prepared on Satellite Oceanography.

Advisor to the Office of the Geographer, U.S. State Department, relative to the dispute between the U.S. and Canada as to the extension of the border through the Gulf of Maine and across the Continental Shelf to the edge of the 200 mile zone.

J. R. Schubel, Professor

Current research:
Coastal sedimentation; suspended sediment transport; interactions of organisms and sediment; coastal zone management.

Research grants:
"Processes and Resources of the Bering Sea: Traineeship for Dominick Ninivaggi"
Sponsor: Brookhaven National Laboratory/Louisiana University Marine Consortium.

"Cooperative Agreement: FY'81 Scope of Work"
Sponsor: National Oceanic and Atmospheric Administration.

"Organization and Conduct of Workshop"
Sponsor: National Oceanic and Atmospheric Administration.
"Preparation of a Report on the Marine Monitoring Activities in Delaware, Maryland and Virginia"
Sponsor: National Oceanic and Atmospheric Administration.

"Salinity Measurements in Moriches Bay"
Sponsor: Suffolk County.

"Partial Support of a Seminar on the Hudson-Raritan Estuary"
Sponsor: National Oceanic and Atmospheric Administration.

Offices:
Member, Board of Trustees, Stony Brook Foundation.
Secretary/Treasurer, State University of New York at Stony Brook Sigma Xi Club, 1981.
President-elect, State University of New York at Stony Brook Sigma Xi Chapter, 1982.

University committees:
Chairman, Search Committee for Vice President for Campus Operations, SUSB.
Chairman, Inter-collegiate Athletics Committee 1981.
Vice-President, Estuarine Research Federation.
Member, Search Committee for Academic Vice President; SUSB
Member, President's Committee on Intercollegiate Athletics, 1982; SUSB.
Member, Search Committee for Dean of College of Engineering; SUSB.
Member, SUNY Senate Committee on Graduate Academic Programs and Research.
Member, Jessie Smith Noyes Foundation Fellowship Committee; Marine Sciences Research Center.

Accomplishments/Community service
Keynote speaker, First National Estuarine Symposium (Shanghai, China).
Keynote speaker, Symposium on Ocean Dumping, New Jersey Sciences Consortium.
Session Chairman, Second International Ocean Dumping Symposium, Woods Hole.

Participant, NOAA Workshop on Marine Pollution Policy, Pt. Judith, R.I.

Member, Mississippi-Alabama Sea Grant Review Team.

Member, NASA's National Oceanic Satellite System (NOSS) Science Working Group.

Member, Steering Committee and Panel Chairman on Waste Disposal for Conference on Marine Pollution Problems in the Northeast and Mid-Atlantic United States sponsored by National Oceanic and Atmospheric Administration, Durham, NH.

Member, Moriches Inlet and Beach Stabilization Study Group.

Member, National Research Council's Ocean Policy Committee Ad Hoc Task Group on Pollution and Environment.

U.S. Correspondent for activities dealing with the coastal transport of pollutants in the Western Pacific (WESTPAC) region.

Reviewer, New Jersey Sea Grant Program for National Sea Grant Office.

U.S. Delegate to the Second Session of the IOC Programme Group of the WESTPAC, Jakarta, Indonesia.

Member, National Association of State Universities and Land-Grant Colleges, Committee on Marine Affairs.

Senior Editor, Coastal Ocean Pollution Assessment (COPAS) News.

Member, Governing Board of Estuarine Research Federation.

Member, Sea Grant Professorship Site Visit Team to assist The New York Sea Grant Institute's Board of Governors in selection of campus for Sea Grant Professorship in Great Lakes Sportfishery Studies.
Presented keynote address at the New York State Education Association's Annual Conference, May 1981, at Hofstra University.


Peter K. Weyl, Professor

Current research:
Coastal zone planning; physical oceanography; paleoceanography.

Research grants:
"Coliform Analysis of Great South Bay"
Sponsor: New York Sea Grant Institute.

University committees:
Member, Jessie Smith Noyes Foundation Fellowship Committee; Marine Sciences Research Center.

Member, Montauk Marine Basin Scholarship Committee; Marine Sciences Research Center.

Accomplishments/Community service:
Served on site review panel for U.S. Department of Energy.

Member, Town of Brookhaven Environmental Committee.

Coordinator, Marine Sciences Research Center-University of Concepcion, Chile, Cooperative Agreement.


Member of Site Visit Team, Dalhousie University, Halifax Nova Scotia, for Canadian Research Council, 1981.
Malcolm J. Bowman, Associate Professor

Current research: Descriptive and dynamical oceanography of estuarine and coastal waters; water quality modeling; microstructure and turbulence.

Research grants:

"Tidal Stirring and the Distribution of Phytoplankton in Shallow Seas" Sponsor: National Science Foundation.

"Shelf Dynamics and Plankton Production in Greater Cook Strait, New Zealand" Sponsor: National Science Foundation.

University committees: Departmental Senator, SUSB Faculty and Arts and Science Senates, 1980-81.

Accomplishments/Community service:

Guest lecturer, American Geophysical Union Annual Meeting, Toronto, Canada, May 1980.


Guest lecturer, University College of North Wales, Bangor, Wales, July 1980.


Guest lecturer, Johns Hopkins University, Baltimore, October 1980.

Guest lecturer, Middle Atlantic Bight Physical Oceanography Workshop, Annapolis, October 1980.

Guest lecturer, Johns Hopkins University, Baltimore, April 1981.


Presented invited paper at the American Geophysical Union Annual Meeting, Baltimore, May 1981.


Presented invited paper at the Middle Atlantic Bight Workshop, University of Rhode Island, October 1981.

Managing Editor, "Lecture Notes in Coastal and Estuarine Studies."

Edward J. Carpenter, Associate Professor

<table>
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<tr>
<th>Current research:</th>
<th>Nitrogen cycling among plankton and ambient seawater; phyto- and zooplankton ecology; effects of toxic chemicals and electric power stations on coastal plankton.</th>
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</thead>
</table>
| Research grants:  | "Nitrogen Fixation and Denitrification in Eelgrass (Zostera) Beds"  
|                    | Sponsor: National Science Foundation.                                                                                                     |
|                    | "Studies on Sediment Effects on the Nitrogen Cycle in Great South Bay, New York"  
|                    | Sponsor: New York Sea Grant Institute.                                                                                                    |
|                    | "Recovery Processes in a Eutrophic Estuary"  
|                    | Sponsor: National Oceanic and Atmospheric Administration.                                                                                   |
|                    | "Great South Bay Salt Marsh Nutrient Exchange"  
|                    | Sponsor: New York Sea Grant Institute.                                                                                                     |
| University committees: | Member, Jessie Smith Noyes Foundation Fellowship Committee; Marine Sciences Research Center.                                       |
|                    | Member, Search Committee for Assistant Professor of Biological Oceanography; Marine Sciences Research Center.                            |
|                    | Member, Student Recruitment Committee; Marine Sciences Research Center.                                                                     |
| Accomplishments/ Community service: | University representative to the Long Island Association of Business and Commerce (LIA).                                                  |
|                    | Associate Editor, Marine Biology Letters, Elsevier North Holland Biomedical Press.                                                           |
|                    | Member, Environmental Monitoring Committee, Bermuda Biological Station for Research Inc.                                                     |
Iver W. Duedall, Associate Professor

Current research: Marine environmental chemistry; physical chemistry of seawater; coastal and deep-sea chemical oceanography.

Research grants:

"Hydrodynamic Studies for the Evaluation of Marine Pollution Processes in the Bay of Concepcion, Region VII, Chile"
Sponsor: The Tinker Foundation.

"Strengthening Marine Science Capabilities and Program at the University of Concepcion, Chile"
Sponsor: National Oceanic and Atmospheric Administration.

"The Fixation of Fly Ash: Physical and Leachate Properties"
Sponsor: Consolidated Edison Company of New York.

"Physical, Chemical and Biological Effects of Stabilized Coal-Fired Power Plant Wastes in Chesapeake Bay"
Sponsor: State of Maryland.

"Third International Ocean Disposal Symposium"
Sponsor: National Oceanic and Atmospheric Administration.

"Hydraulic Winch for CTDO System"
Sponsor: Universidad de Concepcion, Chile.

"Symposium Volume, Second International Ocean Disposal Symposium"
Sponsor: University of Rhode Island.

Accomplishments/Community service:

Presented an invited paper at a symposium in Montreal, Canada on the cycling of nutrients and pollutants in the marine system.

Presented an invited paper at the Flue Gas Desulfurization meeting in Houston, Texas.

R. E. Wilson, Associate Professor

Current research: Estuarine and coastal ocean dynamics.

Research grants:

"Study of Dynamics of Phytoplankton Patches on Nantucket Shoals"
Sponsor: National Aeronautics and Space Administration.

"An Assessment of Physical Climatology of the Hudson-Raritan Estuary"
Sponsor: National Oceanic and Atmospheric Administration.

"Tidal Current Survey"
Sponsor: Long Island Lighting Company.

Accomplishments/Community service: Hosted a Geophysics Study Committee meeting on Estuarine Research Perspectives May 1980. This committee, a sub-panel of the National Science Foundation, was charged with writing a draft report on important research problems in the physical oceanography of estuaries.

Charles F. Wurster, Associate Professor

Current research: Effects of chlorinated hydrocarbons on phytoplankton communities.

Research grants:

"The Behavior and Biological Effects of PCB in Aquatic and Estuarine Environments"
Sponsor: New York State Department of Environmental Conservation.

"Study of Techniques for the Evaluation of the Effects of PCB's on Planktonic Herbivores in Coastal Waters"
Sponsor: National Oceanic and Atmospheric Administration.

"Bioassays for Evaluating Chemical Toxicity to Marine and Estuarine Plankton"
Sponsor: National Oceanic and Atmospheric Administration.

Accomplishments/Community service: Served on Blue Ribbon Task Force advising the Town of Brookhaven on the placement and functions of its Department of Environmental Protection.

Fellowship Award as Visiting Senior Scientist at University of Bergen, Norway, January-July 1981.

Guest lecturer at Universities of Trondheim and Troms, Norway, May 1981.
Henry J. Bokuniewicz, Assistant Professor

Current research: Near-shore transport processes; coastal sedimentation; marine geophysics.

Research grants:
- "Sand and Gravel Mining Study"
  Sponsor: Office of General Services.
- "Episodic Bluff Erosion on the North Shore of Long Island"
  Sponsor: New York Sea Grant Institute.
- "Sedimentological atlas of the Hudson-Raritan estuary"
  Sponsor: Research Foundation of City University of New York.
- "Containment of Dredged Sediment under the Floor of the Lower Bay of New York Harbor"
- "Plan for the Containment of Dredged Sediments in Submarine Borrow Pits"
  Sponsor: New York Sea Grant Institute.
- "Technical Control of Local Beach Studies"
  Sponsor: New York Sea Grant Institute.
- "East Hampton Beach Profile"
  Sponsor: East Hampton Beach Preservation Society.

Honors: Selected by the students of the Marine Sciences Research Center to receive the MSRC Associates Distinguished Teaching Award for 1980 (second consecutive year Dr. Bokuniewicz was selected by MSRC students).

University committees:
- Member, Graduate Programs Committee,
- Admissions Committee, Ph.D. Comprehensive Examination Committee; Marine Sciences Research Center.
- Member, Search Committee for Assistant Professor in Coastal Processes; Marine Sciences Research Center.
- Member, Steinberg-Squires Award Committee; Marine Sciences Research Center.

Accomplishments/Community service: Guest lecturer on geophysical methods, Queens College, 1980.
Invited panel member and speaker, 1980
Long Island Sound Conference, Stony Brook, June 1980.

Presented invited papers at:

Invited speaker, Sea Grant Cooperative Extension public seminar on erosion on the north shore of Long Island, December 1980.

Guest lecturer, Rutgers University, Department of Geological Sciences, 1981.

Invited seminar, Rutgers University, October 1981.


Invited speaker, Board of Cooperative Educational Services, Suffolk County, November 1981.


Invited member, U.S. Army Corps of Engineers (New York District) Public Committee on Dredging in New York City.

Technical advisor for beach observation programs of Bay Shore High School, East Hampton High School, and Hampton Bays High School.
### Jed A. Fuhrman, Assistant Professor

**Current research:** Marine microbial ecology; bacterioplankton production.

**Research grants:**
- "Dissolved Free Amino Acid Formation in Seawater and its Coupling to Uptake"  
  Sponsor: National Science Foundation.
- "Bacterioplankton Production in Long Island Sound"  
  Sponsor: Research Foundation University Awards Program.

**Accomplishments/Community service:**
- Invited speaker on "Patterns of Bacterioplankton Secondary Production in the Southern California Bight" at the American Society for Microbiology Annual Meeting, Atlanta George, March 1982.

### Glenn R. Lopez, Assistant Professor

**Current research:** Benthic ecology.

**Research grants:**
- "Spatial and Vertical Distribution of Potential Food for the Hard Clam, Mercenaria mercenaria, in Great South Bay"  
  Sponsor: New York Sea Grant Institute.
- Effects of Sediment-Microorganism Associations on Deposit-Feeding Molluscs"  
  Sponsor: Research Foundation University Awards Program/National Science Foundation.

**University committees:**
- Member, Search Committee for Assistant Professor in Biological Oceanography; Marine Sciences Research Center.
- Member, Graduate Council Fellowship Committee; Marine Sciences Research Center.
- Member, Graduate Program Committee and Admissions Committee; Marine Sciences Research Center.
- Radiation Safety Officer; Marine Sciences Research Center.

**Accomplishments/Community service:**
- Presented invited paper on distribution of bacteria in marine sediments at the meeting of the American Society of Limnology and Oceanography, 1980.
Reviewer for: National Science Foundation, Limnology and Oceanography, Estuarine and Coastal Marine Science, The Canadian Journal of Fisheries and Aquatic Sciences; National Sea Grant College Program, University of Florida, University of Connecticut Sea Grant, U.S. Environmental Protection Agency–Chesapeake Bay Program.

Collaborated in the preparation of a film on beach profiling for use as a teaching device by high schools.

David O. Conover, Assistant Professor

Current research: Ecology of fishes; fisheries biology.

Research grants:

"Temperature-dependent sex determination in fishes"
Sponsor: Research Foundation University Awards Program.

"Temperature-dependent Sex Determination in the Atlantic Silverside and Other Fishes"
Sponsor: National Science Foundation.

University committees: Member, Search committee for Electronics Engineer/Technical Specialist; Marine Sciences Research Center.

Accomplishments/
Community service:


Invited speaker, Rutgers University, on "Adoptive significance of temperature-dependent sex determination in a fish," 1981.

Robert E. Malouf, Assistant Professor

Current research: Shellfish biology; aquaculture.

Research grants:

"Population Dynamics of the Great South Bay Shellfishery"
Sponsor: New York Sea Grant Institute.

"A Study of Factors Influencing the Growth and Survival of Juvenile Hard Clams, Mercenaria Mercenaria in Great South Bay"
Sponsor: New York Sea Grant Institute.

"An Evaluation of Seed Clam Planting in Long Island Waters: A cooperative approach"
Sponsor: New York Sea Grant Institute.

University committees:

Member, Search Committee for Assistant Professor of Biological Oceanography; Marine Sciences Research Center.

Member Montauk Marine Basin Scholarship Committee; Marine Sciences Research Center.

Accomplishments/Community service:

Presented invited lecture to New York State Marine Education Association, Dowling College, May 1980.

Member, Program Advisory Committee, New York Sea Grant Institute, Albany, 1981-82.

Member, Site Visit Team to review the programs of the Maryland Sea Grant effort, College Park, Maryland, 1980.

Advisor to shellfish management agencies in Towns of Brookhaven, Islip, East Hampton; advisor to Blue Points Company and Shinnecock Indian Tribal Aquaculture Program.

Chairman, Bay Management Advisory Committee, Town of Brookhaven, 1981-82.

Convenor, Workshop on Clam Mariculture on Long Island; Marine Sciences Research Center.

Invited participant, Meeting of European Cooperation for Science and Technology (COST) held in Ghent, Belgium, February 1981.
Presented an invited lecture on "Commercial Shellfish Hatcheries," University of South Carolina, October 1981.

William T. Peterson, Assistant Professor

Current research: Zooplankton population dynamics; fishery oceanography.

Research grants:
"Research Development Fund for Tidal Mixing/ Mechanism for Concentrating Zooplankton and Larval Fish in Long Island Sound" Sponsor: Research Foundation.


"Long Island Sound Zooplankton: 1952-54 Compared to 1980-81" Sponsor: Research Foundation University Awards Program.

University committees: Member, Graduate Programs Committee; Marine Sciences Research Center.

Member, Search Committee for Assistant Professor of Biological Oceanography; Marine Sciences Research Center.

Accomplishments/
Community service:
Presented an invited paper entitled "Upwelling and annual catches of Dungeness Crab" at Humboldt State University, November 1980.


Mary I. Scranton, Assistant Professor

Current research: Marine geochemistry; biological-chemical interactions in seawater.

Research grants:
"The Use of Silicones as Environmental Tracers"
Sponsor: Research Foundation University Awards Program.

"The Role of Cyanobacteria in the Marine Hydrogen Cycle"
Sponsor: Office of Naval Research.

University committees:
Member, Steinberg-Squires Award Committee; Marine Sciences Research Center

Member, Search Committee for Electronics Engineer/Technical Specialist; Marine Sciences Research Center.

Departmental Representative, SUSB and Arts and Sciences Senates.

Member, Graduate Programs Committee, Admissions Committee, Student Recruitment Committee, Comprehensive Examination Committee; Marine Sciences Research Center.

Member, joint committee with Earth and Space Sciences to revise undergraduate program in oceanography.

Accomplishments/Community service:
Guest lecturer on "Evidence for Aerobic Methane Production in the Ocean" at the Microbial Ecology Course, Marine Biological Laboratory, Woods Hole, MA, 1980.


Session Chairman and presented invited papers "Hydrogen production by a marine cyanobacterium" and "Hydrogen in a coastal anoxic marine basin, Salt Pond, MA." Joint American Geophysical Union/American Society of Limnology and Oceanography meeting, February 1982, in San Antonio, Texas.

Chief scientist, U.S. Navy vessel BARTLETT, cruise from Naples, Italy to Roat, Spain to study the role of cyanobacteria in the marine hydrogen cycle.

Gary A. Zarillo, Assistant Professor

Current research: Beach and nearshore processes; sediment dynamics.
### b. Faculty Holding Qualified Appointments

#### Martha B. Baylor, Adjunct Professor

Current research: Microbiology; airborne viruses.

#### Boudewijn H. Brinkhuis, Adjunct Assistant Professor

Current research: Primary productivity of phytoplankton and seaweeds; biogeochemistry of trace metals in marine plants; physiological ecology of marine organisms.

Research grants:
- "Marine Biomass Studies of Macrocystis"
  Sponsor: General Electric Company
- "Analysis of Eelgrass Distribution and Growth Characteristics in Great South Bay By Multispectral Scanning"
  Sponsor: New York Sea Grant Institute.
- "Sand and Gravel Project"
  Sponsor: New York Sea Grant Institute/Office of General Services.
- "Mercury Effects on the Chilean Commercial Seaweed, Gracilaria"
  Sponsor: National Science Foundation.

University committees: Member, Graduate Programs Committee, Ships Committee; Marine Sciences Research Center.

Accomplishments/Community service:

Offices:
- Treasurer, Sigma Xi Research Society, Stony Brook Chapter.
- Member, Peer Review Committee for the State of New Jersey's Oil and Hazardous Substances Research Fund.
- Presented an invited paper on marine biomass at the 10th International Botanical Congress, Sidney, Australia.
**Douglas G. Capone, Adjunct Assistant Professor**

**Current research:** Microbial ecology and biogeochemistry.

**Research grants:**
- "Effect of Persistent Pollutants on Microbial Biomass and Activity in Salt Marsh and Estuarine Sediments"
  - Sponsor: National Oceanic and Atmospheric Administration.
- "Nitrogen Fixation and Denitrification in Eelgrass (Zostera) Beds"
  - Sponsor: National Science Foundation.

**University committees:** Departmental Representative, Arts and Sciences Senate.

**Accomplishments/Community service:** Reviewer for: National Science Foundation, Limnology and Oceanography, Deep Sea Research, Bulletin of Marine Science, Marine Biology, and Environmental Protection Agency-Chesapeake Bay Program.

**Robert E. Cerrato, Adjunct Assistant Professor**

**Current research:** Benthic ecology; population and community dynamics.

**Research grants:**
- "Assessment of the Effects of Changing Hydrodynamic Conditions on Benthic Macrofauna in Moriches Bay"
  - Sponsor: Suffolk County/State of New York.
- "Benthic Borrow Area Investigations, South Shore of Long Island, New York"
  - Sponsor: U.S. Army Corps of Engineers.

**Lisandro A. M. Chuecas, Adjunct Professor**

**Current research:** Chemical oceanography, descriptive physical oceanography.

**Arthur P. Cooley, Adjunct Associate Professor**

**Current research:** Natural history of Long Island.

**M. J. Dagg, Adjunct Assistant Professor**

**Current research:** Zooplankton ecology; continental shelf ecosystems.

**Ramesh Dayal, Adjunct Associate Professor**

**Current research:** Geochemistry of coastal sediments; clay mineral-seawater interactions.
Linda Duguay, Adjunct Assistant Professor
Current research: Invertebrate zoology; protozoology; algal-invertebrate symbiosis; gelatinous zooplankton.

Wayne E. Esaías, Adjunct Associate Professor
Current research: Phytoplankton ecology; photobiology.

P. G. Falkowski, Adjunct Assistant Professor
Current research: Marine phytoplankton ecology; phytoplankton physiology.

Michael H. Freilich, Adjunct Assistant Professor
Current research: Waves and beaches; nearshore dynamics.

K. Gold, Adjunct Lecturer
Current research: Marine protozoan ecology; invertebrate zoology; coastal oceanography; scanning electron microscope.

J. M. Goodman, Adjunct Professor
Current research: Coastal zone management; aquaculture.

F. Goreau (Goro), Adjunct Professor
Current research: Scientific photography.

M. Dennis Hanisak, Adjunct Assistant Professor
Current research: Marine botany; algal physiology and ecology; mariculture.

H. Herman, Professor
(Joint Appointment with Materials Science)
Current research: Ocean engineering; undersea vehicles; marine materials.

T. S. Hopkins, Adjunct Associate Professor
Current research: Coastal current structure; water mass analysis; air-sea interaction.

B. Kinsman, Visiting Professor
Current research: Waves and tides; estuaries.
L. E. Koppelman, Professor part-time

Current research: Coastal zone management; planning; policy studies.

Irving Like, Adjunct Professor

Current research: Environmental law.

Bruce A. Macler, Adjunct Assistant Professor

Current research: Microbiology; biochemistry; research diving.

Accomplishments/Community service:
Created Diving Safety Program at Marine Sciences Research Center including the establishment of the MSRC Diving Safety Board to oversee all use of SCUBA for research purposes, and the drafting of the Diving Safety Manual that outlines the requirements and responsibilities of those using SCUBA in research at MSRC.

Presented invited paper "Seaweed Farming in Long Island Sound" at the American Academy of Underwater Scientists annual meeting, October 1982.

G. F. Mayer, Adjunct Assistant Professor

Current research: Pollution ecology; ichthyology; evolution and function of morphology.

R. H. Meade, Adjunct Professor

Current research: Coastal and fluvial sedimentation; groundwater.

W. J. Meyers, Associate Professor
(Joint Appointment with Earth and Space Sciences)

Current research: Carbonates; sedimentology.

J. R. Naidu, Adjunct Associate Professor

Current research: Radioecology; radionuclides in the environment.

T. Najarian, Adjunct Assistant Professor

Current research: Water quality modelling; physical oceanography.

Joel O'Connor, Adjunct Associate Professor

Current research: Estuarine and coastal ecology.
W. S. Reeburgh, Adjunct Professor

Current research: Chemical oceanography; gases in marine sediments; sediment-water interactions.

S. SethuRaman, Adjunct Associate Professor

Current research: Marine meteorology; air-sea interactions.

L. B. Slobodkin, Professor (Joint Appointment with Department of Ecology and Evolution)

Current research: Theoretical ecology; marine ecology.

S. L. Smith, Adjunct Assistant Professor

Current research: Plankton ecology; nutrient regeneration by zooplankton.

D. F. Squires, Professor and Director, New York Sea Grant Institute

Current research: Marine affairs and science policy.

Harold M. Stanford, Adjunct Assistant Professor

Current research: Marine pollution in estuarine and coastal waters; marine geochemistry.

R. L. Swanson, Adjunct Professor

Current research: Coastal dynamics; marine policy.

Orville W. Terry, Adjunct Associate Professor

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

Research grants: "Manuscript Review for OMPA"
Sponsor: National Oceanic and Atmospheric Administration.

Accomplishments/Community service: Member, Suffolk County Council on Environmental Quality.
Member, Institutional Biosafety Committee, Plum Island Animal Disease Laboratory.
Member, Land-use Committee, Cooperative Extension Service, Nassau-Suffolk Counties.

J. M. Vaughn, Adjunct Associate Professor

Current research: Transport, fate and effects of viruses in the aquatic environment.
J. J. Walsh, Adjunct Professor

Current research: Upwelling ecosystems; phytoplankton ecology; modelling of continental shelf ecosystems.

F. F. Y. Wang, Professor
(Joint Appointment with Department of Materials Sciences)

Current research: Ocean engineering; ocean structural; energy.

T. E. Whitledge, Adjunct Associate Professor

Current research: Nutrients; chemistry of seawater; ecosystem dynamics.

Peter M. J. Woodhead, Adjunct Professor

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

Research grants:
"Analysis and Evaluation of Coal Waste Blocks in Freshwater"
Sponsor: Power Authority of New York

"Physical, Chemical, Biological, Analysis and Evaluation of Coal Waste Blocks in Freshwaters"
Sponsor: Electric Power Research Institute

"Basic Population and Biological Data for Spiny Dogfish, Squalus Acanthias"
Sponsor: National Oceanic and Atmospheric Administration

"Differentiation of Populations of Yellow Tailed Flounder Off New York and New England"
Sponsor: National Oceanic and Atmospheric Administration

Accomplishments/Community service:
Participated in planning meeting for the Mid-Atlantic Artificial Reef Conference and was selected chairman of the industry section.
(2) Non-teaching Professionals

George E. Carroll, Data Processing Manager

Major responsibility for systems design and selection of computer equipment for a coherent data acquisition, storage, retrieval and analysis system. This represented $130,000 investment of research generated funds. Designed an integrated graphics system around the new Calcomp 1051 drum plotter for data plotting, analysis and machine produced charts. Set up and programmed the DEC VT-10A micro-computer to be used aboard the Research Vessel ONRUST for data acquisition and on-line display. Wrote over 120 programs for MSRC faculty, staff, and graduate students. Administered the recharge system that provides the financial support for MSRC's computing facilities through recharges to grants and contracts.

Peter K. deNyse, Assistant to the Director

Served as building manager for MSRC's South Campus laboratory-office buildings "G," "F," and "H" and, recently added "D" building (less animal wing). Responsible for the re-hab of building "D" for occupancy by MSRC and preparation for the transfer of the federal Office of Marine Pollution Assessment (National Oceanographic and Atmospheric Administration) from the main campus (Old Biology Building) to offices in Building "D" on the South Campus. Also assigned as Building manager for the Flax Pond Laboratory in Oldfield and overseeing the rebuilding of the Laboratory's external seawater system. Participated as an instructor onboard the Research Vessel ONRUST during two Hudson River Instructional Cruises. Elected NTP member of the Professional Employees Governing Board's Personnel Policy Committee. Served as an environmental consultant and instructor for the Nassau County Girl Scout Council.

Marie T. Eisel, Graphic Artist

Directed MSRC's Graphic Arts Department that produced, on average, twenty technical illustrations per day in support of publications by MSRC faculty, staff and students. Established a flexible system of trained, part-time personnel to meet the fluctuating demands placed on her department. Prepared over 200 drawings to illustrate the textbook "Marine Ecology," written by Professor Jeffrey Levinton of the Ecology and Evolution Department. Administered the recharge system that supports MSRC's Graphic Arts Department and generates funding to upgrade our graphic arts facilities and equipment.

Stephen C. Leffert, Small Boat Captain

Responsible for the operation and maintenance of MSRC's 'small-boat' fleet consisting of three Boston Whalers (14' - 16') and two mid-size (19' - 22') research vessels. As Small Boat captain, operated research vessel in support of faculty and graduate research work in South shore embayments, New York Harbor and Long Island Sound. Trained and supervised approximately 20 graduate students and staff personnel in small boat operations. Administered charter accounts to recover full costs of small boat operations through recharges to grants and contracts. Served as Captain for the Research Vessel ONRUST during the vacation absence of the regular Captain.
Gina Passaro, Electronics Technician

During the academic year 1981-82, Ms. Passaro served as a part-time technical specialist. During her appointment, Passaro maintained MSRC's electronics shop providing repair and calibration services for electronic instrumentation and equipment in support of research activities of faculty, staff and students at MSRC.

F. G. Roberts, Assistant Director

Represented the Director for campus, local and statewide activities as required. Responsible for departmental review of sponsored research proposal budgets. Received two grant awards; from NSF for the upgrading of navigational equipment of the Research Vessel ONRUST, and SUNY Research Foundation for support of the Hudson River Instructional cruise. Contributed to research proposals to the NSF for upgrading the Flax Pond Laboratory's internal seawater delivery system (pending) and the Donner Foundation (awarded). Author of two published articles on research projects at MSRC. Prepared press releases on current research activities at MSRC. Appointed member of the Arts and Sciences EEO/AA Committee (continuing) and Nominating Committee for the Chancellor's Award in Professional Service. Served as instructor for MSRC's Graduate Seminar Course, MAR-580.

Jeri Schoof, Assistant to the Director

Responsible for coordinating arrangements for the third and fourth MSRC Associates' Dinners. Responsible for the Center's OR and IFR accounts and the Director's research grants and contracts. Continued to oversee the Center's I&DR account. Responsible for production of two newsletters (MSRC Newsletter and Coastal Ocean Pollution Assessment News [COPAS]). Continued to provide administrative support and organization of MSRC meetings, symposia and workshops. Serving on the Purchasing/Accounts Payable Management Group.

Helmut C. Stuebe, Research Vessel Captain

Captain Stuebe bears the sole responsibility for the operation, maintenance and safety of MSRC's principal research vessel, the 55' R/V ONRUST. For the third successive year, the R/V ONRUST logged over 120 sponsored research and instructional days at sea, a high average for a ship of her size. The performance of the ship has been outstanding; breakdowns have been rare and speedily repaired. In May, 1981, the R/V ONRUST, under charter by the Brookhaven National Laboratory, participated in a two-week, multi-ship research cruise over the Nantucket Shoals of Cape Cod (NASA sponsored). Captain Stuebe served as a lecturer and demonstrator for the 3rd and 4th annual Hudson River Instructional cruises.

(3) a. New Faculty Appointments, effective 1980-81

William T. Peterson, Assistant Professor; previous position: Research Assistant, Oregon State University; biological oceanography.
Glenn R. Lopez, Assistant Professor; previous position: Assistant Professor, University of North Carolina, Chapel Hill; Biological Oceanography.

b. New Faculty Appointments; effective 1981-82

David O. Conover, Assistant Professor; previous position: Research Assistant, University of Massachusetts; biological oceanography.

Jed A. Fuhrman, Assistant Professor; previous position: Research Assistant, Scripps Institution of Oceanography; marine microbiology.

Gary A. Zarillo, Assistant Professor; previous position: Postdoctoral Research Associate, University of South Carolina; coastal processes.

(4) Terminations

Andrew Hamilton, Technical Specialist; resigned to assume a position with a local engineering firm.

Susan Risoli, Technical Assistant; promoted to University News Service.

(5) Post-doctoral Research Associates

Eric Partch; U.S. citizen; Ph.D. from University of Washington, Seattle; faculty sponsors: Harry Carter and Robert Wilson; working on development of effective procedures for assessing the dispersive characteristics of potential offshore disposal sites.

Patricia P. Lapennas; U.S. citizen, Ph.D. for Duke University; faculty sponsor: Malcolm Bowman; working on tidal stirring and distribution of phytoplankton in shallow seas.

Robert M. Summers; U.S. citizen; Ph.D. from Johns Hopkins University; faculty sponsor: J. R. Schubel; working on dredging and dredged material disposal.

Kuo-Chuin Wong; citizen of Taiwan; Ph.D. from State University of New York at Stony Brook; faculty sponsor: H.H. Carter; working on Great South Bay hard clam project.
3.0 Staff Publications

**Marine Sciences Research Center**

**Baylor, Edward R.; Professor**


**Bokuniewicz, Henry J.; Assistant Professor**


**Bowman, Malcolm J.; Associate Professor**


   Brinkhuis, B. H.; Adjunct Assistant Professor


   Capone, Douglas G.; Adjunct Assistant Professor


   Carpenter, Edward J.; Associate Professor


   Conover, David O.; Assistant Professor


   Duedall, Iver W.; Associate Professor


Fuhrman, Jed A.; Assistant Professor


Lopez, Glenn R.; Assistant Professor

"The availability of microorganisms attached to sediment as food for some marine deposit-feeding molluscs, with notes on microbial detachment due to the crystalline style", Marine Benthic Dynamics, 1980, Univ. South Carolina Press, pp 387-405.


Malouf, Robert E.; Assistant Professor


McHugh, J. L.; Professor


"Whales and Man", Gateway to the Sea, Lecture series in celebration of the Year of the Coast, National Park Service and the New York Sea Grant Institute, 1981, 14 p.

Okubo, Akira; Professor


Peterson, William T.; Assistant Professor


Pritchard, Donald W.; Professor


Schubel, J. R.; Professor


Scranton, Mary I.; Assistant Professor


Weyl, Peter K.; Professor


Wilson, Robert E.; Associate Professor


Woodhead, Peter M. J.: Adjunct Professor


Zarillo, Gary A.; Assistant Professor


A SUMMARY OF 1980-82 HIGHLIGHTS AND A LOOK AHEAD

The Marine Sciences Research Center continues to grow in stature as a center of excellence in coastal oceanographic research, graduate education, and public service. In each of our last four annual reports, we have pointed out that the past year was the best yet in the history of MSRC. This year was no exception. It was the best yet! The best in research, in development of our academic programs, and in delivery through our programs of public service. Our pervasive goal is to become the premier coastal oceanographic center in the World. That goal lies within our grasp. The justification for pursuing that goal, its potential importance to SUNY and a description of the resources required to attain it were described in a document prepared for the Stony Brook budget hearing with SUNY Central Administration on 30 July 1981. A copy of that document is included in Appendix B to this report.

Several features distinguish the Marine Sciences Research Center from other leading oceanographic institutes. One is its clear focus on the coastal marine environment. There are very few outstanding coastal oceanographic institutes in the world. MSRC is one of them. A second feature that distinguishes MSRC is the effectiveness with which it has attacked problems of the marine environment on both theoretical and applied levels. 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 of the coastal ocean. These distinguishing features of the MSRC are now recognized widely throughout the World.

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 zone. That emphasis persists, but we recognize the need to expand our work to other areas throughout the United States, and indeed throughout the World.

The MSRC is being called upon increasingly to assist developing countries in designing and implementing institutions and programs to ensure the orderly development of their coastal areas, and to assist developed countries in designing and implementing institutions and programs to identify and conserve important unimpacted coastal areas and to rehabilitate unacceptably impacted areas.

MSRC is unusual in what it does and unusually effective in doing it—a surefire combination for success. The MSRC continues to develop as an internationally recognized center of excellence in coastal oceanography. This development has been achieved through more effective
use of existing resources and through a significant and crucial infusion of new faculty resources. Investment of these resources in the Center has paid off handsomely for MSRC and for SUSB; in more research dollars, in more and better graduate students, in an enhanced reputation of the University as a resource that can and does aid the State and the nation in resolving important societal problems. The Center's most pressing need is for the addition of several new State-funded technical and secretarial support lines. We are badly understaffed in these areas.

Changes in personnel resources over the past eight years are summarized in Table 1 and OTP support in Table 2 and 3.

Over the past nine years our extramural funding of sponsored research has increased by more than a factor of ten as shown in Table 4 and continued growth is anticipated.

MSRC is still small. Its faculty numbered only 21 at the end of the 1981-82 AY. With the addition of a new line from SUNY Central beginning with the 1982-83 AY, with approval of the Provost for the University to accept the new Sea Grant Professorship in seaweed aquaculture beginning with the 1982-83 AY, and with approval of the Provost for assignment of an unfunded assistant professor line for the 1982-83 AY with phased State funding (0% 1982-83 AY, 25% 1983-84 AY, 50% 1984-85 AY, 75% 1985-86 AY and 100% beginning with the 1986-87 AY), the Center's faculty will number 23.

The present faculty of 23 is a modest number for the faculty of an oceanographic center that is truly interdisciplinary in character, particularly for the center for the entire SUNY system. [The University of Delaware's College of Marine Studies has a full-time, tenure-track faculty of 26. The University of Rhode Island's School of Oceanography has a full-time, state-funded faculty of 31, Scripps Institution of Oceanography has >50. The University of Maryland's Center for Estuarine and Environmental Studies has a faculty of 36.]

There are several important areas of coastal studies unrepresented within the MSRC, areas where the addition of one, or two, new faculty members would permit us to take advantage of unusual opportunities. Three such areas are water quality modelling, coastal engineering and fishery management. But our most critical need is for additional technical support and secretarial lines.

We do not have a single line for a computer specialist and yet we contributed more support to the Computing Center from grants and contracts than any other unit within the entire University. We do not have a single secretarial line in support of our graduate program which is now the third largest graduate program among the sciences, mathematics, and engineering at SUSB. This fall we will add an undergraduate component to our educational program which will significantly increase the secretarial demands—demands which we can meet only by using secretaries paid from grants and contracts. Our needs for adequate support staff have been serious for the past several years and are approaching a critical stage.
Table 1. Summary of MSRC Personnel Resources, 1974-'80

<table>
<thead>
<tr>
<th>Academic Year</th>
<th># Faculty Lines</th>
<th>'74-'75</th>
<th>'75-'76</th>
<th>'76-'77</th>
<th>'77-'78</th>
<th>'78-'79</th>
<th>'79-'80</th>
<th>'80-'81</th>
<th>'81-'82</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.R.</td>
<td></td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>I. &amp; D. R.</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Sea Grant</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>1*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFR Recharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1**</td>
<td>3***</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td># NTP Lines</td>
<td></td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td># Secretarial Lines</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The agreement between SUSB and N.Y. Sea Grant Institute called for SUSB to assume fiscal responsibility for the position after the first 3 years through assignment of a new faculty line to MSRC. This has been accomplished.

**To fill a critical faculty need in our academic program we proposed to the AVP in 1980 that we would fund a new faculty line 100% during the first year and 50% during the second year, if SUSB would pick it up in the third year with assignment of a new line to MSRC. The proposal was accepted, a new faculty member was hired, and a line has been provided to MSRC for the 1982-83 AY.

***Two new faculty members were hired on the IFR account this year and will transfer to the I&DR budget in 1982-83. We proposed to the Administration that the line vacated when Dr. J. L. McHugh retired in June 1982 be split into two assistant professor lines. The administration agreed with this strategy and the split will occur Sept. 1982. The third person on the IFR is the faculty member currently supported 50% MSRC - 50% SUSB to become 100% SUSB effective Sept. 1982.

MSRC has suffered a net loss in OTP resources over this same eight-year period. These are summarized in Table 2 and in more detail in Table 3.
### Table 2. Summary of OTP Support, 1974-'82

<table>
<thead>
<tr>
<th>Source</th>
<th>74-'75</th>
<th>75-'76</th>
<th>76-'77</th>
<th>77-'78</th>
<th>78-'79</th>
<th>79-'80</th>
<th>80-'81</th>
<th>81-'82</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.R.</td>
<td>$82,800</td>
<td>$73,338</td>
<td>$73,030</td>
<td>$77,800</td>
<td>$78,060</td>
<td>$75,740</td>
<td>$80,500</td>
<td>$81,450</td>
</tr>
<tr>
<td>I. &amp; D.R.</td>
<td>5,000</td>
<td>5,000</td>
<td>3,600</td>
<td>2,600</td>
<td>3,850</td>
<td>3,500</td>
<td>11,500</td>
<td>11,850</td>
</tr>
<tr>
<td>Total</td>
<td>$87,800</td>
<td>$78,338</td>
<td>$76,630</td>
<td>$80,400</td>
<td>$81,910</td>
<td>$79,240</td>
<td>$92,000</td>
<td>$93,300</td>
</tr>
</tbody>
</table>

### Table 3. Summary of OTP Support, 1974-82

<table>
<thead>
<tr>
<th>O.R.</th>
<th>74-'75</th>
<th>75-'76</th>
<th>76-'77</th>
<th>77-'78</th>
<th>78-'79</th>
<th>79-'80</th>
<th>80-'81</th>
<th>81-'82</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp. Serv.</td>
<td>$4,000</td>
<td>$3,500</td>
<td>$4,380</td>
<td>$4,000</td>
<td>$4,500</td>
<td>$5,000</td>
<td>$6,300</td>
<td>$6,500</td>
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<tr>
<td>S. &amp; E.</td>
<td>44,000</td>
<td>35,238</td>
<td>25,200</td>
<td>45,200</td>
<td>42,700</td>
<td>42,700</td>
<td>44,900</td>
<td>47,700</td>
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<tr>
<td>Recharge</td>
<td>34,800</td>
<td>34,600</td>
<td>33,450</td>
<td>28,600</td>
<td>30,860</td>
<td>28,040</td>
<td>29,300</td>
<td>27,250</td>
</tr>
<tr>
<td>Totals</td>
<td>$82,800</td>
<td>$73,338</td>
<td>$73,030</td>
<td>$77,800</td>
<td>$78,060</td>
<td>$75,740</td>
<td>$80,500</td>
<td>$81,450</td>
</tr>
</tbody>
</table>

1 excludes TS positions funded by and for Sea Grant
<table>
<thead>
<tr>
<th>Sponsoring Agencies</th>
<th>'73-'74</th>
<th>'74-'75</th>
<th>'75-'76</th>
<th>'76-'77</th>
<th>'77-'78</th>
<th>'78-'79</th>
<th>'79-'80</th>
<th>'80-'81</th>
<th>'81-'82</th>
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</thead>
<tbody>
<tr>
<td><strong>FEDERAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>NSF</td>
<td>$19,617</td>
<td>$66,707</td>
<td>$58,383</td>
<td>$91,803</td>
<td>$148,193</td>
<td>$120,468</td>
<td>$124,191</td>
<td>$149,352</td>
<td>$125,044</td>
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<tr>
<td>NOAA</td>
<td>34,963</td>
<td>38,581</td>
<td>24,920</td>
<td>86,873</td>
<td>84,040</td>
<td>150,501</td>
<td>103,752</td>
<td>230,546</td>
<td>290,430</td>
</tr>
<tr>
<td>NOAA/Sea Grant</td>
<td>118,542</td>
<td>64,845</td>
<td>112,532</td>
<td>167,667</td>
<td>139,698</td>
<td>119,903</td>
<td>186,079</td>
<td>198,074</td>
<td>161,976</td>
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<td>Other</td>
<td>8,669</td>
<td>236,840</td>
<td>207,051</td>
<td>338,188</td>
<td>167,127</td>
<td>505,066</td>
<td>424,686</td>
<td>603,797</td>
<td>472,372</td>
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<tr>
<td><strong>Totals</strong></td>
<td>$181,771</td>
<td>$406,973</td>
<td>$402,886</td>
<td>$684,531</td>
<td>$539,058</td>
<td>$850,938</td>
<td>$838,708</td>
<td>$1,181,469</td>
<td>$1,049,822</td>
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<td><strong>STATE AND LOCAL GOVERNMENT</strong></td>
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<tr>
<td>N.Y. ERDA, N.Y. Office of General Services</td>
<td>58,646</td>
<td>125,475</td>
<td>509,268</td>
<td>349,451</td>
<td>298,837</td>
<td>479,321</td>
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<tr>
<td>Bi-County Planning Board</td>
<td>20,454</td>
<td>29,160</td>
<td>21,612</td>
<td>3,500</td>
<td>16,810</td>
<td>12,191</td>
<td>4,900</td>
<td>6,447</td>
<td>-0-</td>
</tr>
<tr>
<td>Nassau &amp; Suffolk Counties</td>
<td>0</td>
<td>72,350</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>84,018</td>
<td>30,263</td>
<td>42,140</td>
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<tr>
<td><strong>Totals</strong></td>
<td>$20,454</td>
<td>$101,510</td>
<td>$21,612</td>
<td>$62,146</td>
<td>$142,285</td>
<td>$521,459</td>
<td>$438,369</td>
<td>$335,547</td>
<td>$521,461</td>
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<tr>
<td><strong>NON-GOVERNMENT</strong></td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Private Foundations</td>
<td>1,400</td>
<td>2,950</td>
<td>30,200</td>
<td>43,696</td>
<td>67,257</td>
<td>316,900</td>
<td>228,729</td>
<td>80,808</td>
<td>57,275</td>
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<tr>
<td>Corporations/Industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145,777</td>
<td>119,075</td>
<td>45,101</td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
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<td></td>
<td>122,374</td>
<td>335,952</td>
<td>364,121</td>
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<tr>
<td><strong>Totals</strong></td>
<td>$1,400</td>
<td>$2,950</td>
<td>$30,200</td>
<td>$43,696</td>
<td>$67,257</td>
<td>$316,900</td>
<td>$496,880</td>
<td>$535,835</td>
<td>$466,497</td>
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<tr>
<td><strong>TOTAL ANNUAL RESEARCH FUNDING</strong></td>
<td>$203,625</td>
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<td>$454,698</td>
<td>$790,373</td>
<td>$748,600</td>
<td>$1,669,297</td>
<td>$1,773,957</td>
<td>$2,052,851</td>
<td>$2,037,780</td>
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</table>
Research

The continuing effort to generate outside support for the research and instructional programs of the MSRC has brought in more sponsored funding than ever before. Based on Research Foundation reports, for the second year in a row the annual MSRC sponsored research expenditures have exceeded $2,000,000. At present MSRC investigators hold more than fifty active sponsored research grants and contracts with a total value exceeding $4.7 million. This represents an average of over $200,000 per state-funded faculty position at MSRC. Measured in terms of the Stony Brook campus as a whole for the 1981-82 year:

- MSRC generated more than 10% of total core campus sponsored funding.
- MSRC ranks #3 among all departments in total dollars generated (behind Physics and Chemistry, departments with more than twice the faculty of MSRC).
- MSRC ranks #2 among all 63 SUSB departments in number of awards.
- MSRC ranks #1 among all 63 SUSB departments in total dollars generated per faculty line.
- MSRC ranked #1 in number of research proposals submitted.

Table #4 illustrates the growth of sponsored funding at MSRC over the last nine years and the increased diversity of sponsors supporting the Center's programs.

Some highlights of research activities and achievements over the past two years are described briefly below.

- With awards of more than $150,000 from the William H. Donner Foundation and $100,000 from the U.S. National Oceanographic Data Center (NODC), the Center has initiated a new Program—Coastal Science and Management Alternatives (COSMA). The goals of COSMA are to develop methods and mechanisms to improve the effectiveness of using scientific data and information in environmental decision making and to provide a vehicle through which the MSRC can use these new tools and techniques to identify and evaluate alternative ways of attacking important environmental problems.

The problems for study through COSMA will be selected by an Advisory Committee. Each problem must be important, tractable, interdisciplinary, and at least slightly "salty." Problem solvers will be sought first within MSRC, next throughout SUSB, next throughout SUNY, and finally in the "real world." For each problem we will attempt to secure some of the very best problem solvers from academic, from industry, and from government.
The first problem selected as a case study of how COSMA will operate is to develop a comprehensive dredging and dredged material management plan for the Port of New York and New Jersey. A component of the larger study calls for the development of a new data and information system using personal computers. Agencies participating in the study include: the U.S. Army Corps of Engineers, the N.Y. State Department of Environmental Conservation, the Port Authority of New York and New Jersey, and the N.Y. City Department of Ports and Terminals. Participation of other agencies is being sought.

In December 1980, the MSRC signed a Cooperative Agreement with the National Oceanic and Atmospheric Administration's Office of Marine Pollution Assessment. The Cooperative Agreement calls for the MSRC to take a leadership role nationally in assisting the Office of Marine Pollution Assessment in designing and conducting coastal oceanographic research programs, in translating research results into forms readily usable by decision makers in the resolution of societal problems of the Coastal Ocean, and in developing strategies to ensure multiple-usage of the Coastal Ocean with predictable and acceptable impacts on the environment, on its living marine resources, and on the spectrum of uses society chooses to make of the Coastal Ocean.

The Cooperative Agreement has provided more than $350,000 in support of our research. In addition, the Center has received on an indefinite loan basis oceanographic equipment valued at more than a quarter of a million dollars.

MSRC researchers in the New York Marine Biomass Program are investigating the feasibility of developing commercial seaweed "energy farms" in the coastal waters of New York. This project is an important part of the over-all plan to reduce dependency on foreign sources for our energy needs. On an energy farm, seaweeds would be cultivated, harvested and then fermented to produce methane, which is the principle component of natural gas. During the past year, growth rates of nine major species of the local flora were determined in tank cultures at the Flax Pond greenhouse. From these studies, it now appears that a large scale farm would probably consist of a series of species, rather than a single species, grown throughout the year. Based on their seasonal growth patterns, chemical composition, and digestibility, three or four species will be shortly selected as the most attractive candidates for biomass farms. The biology of these species will be studied in greater detail and faster growing, hardier strains will be developed. Preliminary work has been conducted with cultivating these seaweeds offshore in small raft-like structures. MSRC biologists are working with SUSB engineers to design an experimental test farm that will eventually be deployed to investigate the economic feasibility of large-scale marine biomass farms.

MSRC was selected as the host institution for the award of the new Sea Grant Professorship in seaweed aquaculture. The New York
Sea Grant Institute provides full (12 months) salary support for the first year (1982-83), two-thirds of the AY salary and full summer salary for the second year (1983-84), and one-third of the AY salary and full summer salary for the third year (1984-85). The University is responsible for providing full academic year salary support in 1985-86 AY and thereafter. The N.Y. Sea Grant Institute will provide research and graduate student support at least for the first three years, and we expect for sometime thereafter. We are delighted that Provost Neal and President Marburger accepted the award. A search is now being conducted to fill the post.

The MSRC launched its new Beach and Nearshore Processes Unit with the appointment of two new assistant professors (Freilich and Zarillo) and with more than $50,000 in uncommitted funds raised entirely from private sources for program development. Professors Freilich and Zarillo join Professors Bokuniewicz and Kinsman, several graduate students, and one staff member to form the new unit.

For the first time ever, there is a unit in New York that can assist in resolving the myriad of complex and serious shoreline problems that plague the State. The opportunities for significant scientific contributions, as well as for those in public service, are almost boundless. Nowhere in the United States are the fundamental processes of scientific concern expressed in as great a range in such a limited geographical area as on Long Island, and nowhere in the United States do these processes cause more serious social and economic problems.

The Coal Waste Artificial Reef Program (C-WARP) has begun its fifth year of investigation of the environmental acceptability of using coal waste blocks to construct artificial reefs. On 12 of September 1980, an artificial reef was formed with 15,000 blocks (500 tons) placed at the Atlantic project site. Subsequently, monthly cruises have been conducted to monitor the chemical and physical characteristics of the reef blocks and to document the biological colonization occurring on them. One and one-half years after reef placement, the blocks had increased in strength and were being colonized by many of the organisms typical of that environment.

Reefs are now in-place in Conscience Bay, the Atlantic Ocean, and Chesapeake Bay. A reef is planned later this year for Lake Ontario. Once this one is in-place, we will have reefs in fresh water, brackish water, and full sea water.

We are now turning our attention to developing other creative uses for coal wastes. Laboratory and field tests are being run to determine whether coal wastes can be combined successfully with sewage sludge, garbage, and industrial wastes to produce high quality, stable blocks. Other experiments are being conducted to improve the mechanical properties of coal waste blocks to increase the range of possible uses for these
materials. This project is one more in a continuous series that demonstrates that the acronym MSRC stands not only for the Marine Sciences Research Center, but also for the Center that is Making Scientific Research Count.

- MSRC Hosts Regional, State, and National Workshops and Meetings.

MSRC continues to attract regional, State, National, and international workshops and meetings to Stony Brook. During the 1980-81 and 1981-82 AYs, the MSRC hosted a number of important meetings and workshops with support from a variety of town, county, State, and National agencies. The topics and sponsors of some of these meetings are summarized below.


Workshop on Moriches Inlet to Assess what we know, what we do not, and what needs to be done. (Town of Brookhaven)

Hudson-Raritan Estuarine System (HREP). A series of workshops was held at Stony Brook and the SUNY conference room in New York City to assist the National Oceanic and Atmospheric Administration (NOAA) in designing a multi-year research program for the Hudson-Raritan estuarine system. (NOAA)

Marine Biomass Workshops designed to assess the potential of large scale marine farming of seaweeds through raft culture for production of natural gas. A separate workshop brought engineers from around the Country to MSRC in May 1982 to begin the design of large scale floating farms. (U.S. Department of Energy, N.Y. State Energy Research and Development Authority, Gas Research Institute).

Review of a dredging and dredged material management plan prepared by MSRC scientists for the Port of New York and New Jersey. The plan was developed as a case study for the National Marine Pollution Program Office and was reviewed by representatives of all of the agencies responsible for management of the Port as well as a number of scientists from East Coast oceanographic institutions. (National Marine Pollution Program Office).

Hard Clams and Hard Clam Fishery Management in Great South Bay. A series of informal workshops to assist baymen, shellfish companies, and town and State environmental conservation departments in their efforts to grow, harvest, and manage Great
South Bay's hard clams.  
(New York Sea Grant Institute, Town of Brookhaven.)

The 1982 Long Island Sound Task Force Meeting held at MSRC in May 1982 attracted more than 70 people from New York and Connecticut to discuss dredging and dredged material disposal in Long Island Sound. (Long Island Sound Task Force, Oceanic Society, MSRC).

International Programs

Chile

The scholarly collaboration initiated in 1978 between scientists of the MSRC and the Department of Marine Biology and Oceanography (DMBO) of the University of Concepcion (Chile) continued this year. Dagoberto Arcos, a faculty member of DMBO, spent the academic year at MSRC completing requirements for the M.S. degree. Two MSRC staff members spent a month in Chile teaching an instrumentation course. Dr. Peter Weyl has assumed the role of coordinator for the Chile exchange program and is seeking funding to continue the program.

Professors Carter and Schubel will participate in a coastal zone management workshop in Concepcion, Chile, in September 1982 and teach an intensive one-week course on estuarine oceanography following the workshop.

China

J. R. Schubel visited China in October 1981 to collaborate with Chinese scientists on papers on China's estuaries which were presented at the Estuarine Research Federation (ERF) annual meeting in November. Dr. Schubel and Dr. Chih-Yu Chen, of Shanghai Normal University, were joint chairmen for the session on Chinese estuaries. After the ERF meeting, a delegation from China visited MSRC for about 10 days.

One Chinese scholar and one Chinese graduate student will spend the next two years at MSRC pursuing their academic and research goals.

Africa

The UN-sponsored course on coastal zone management to be offered in Abidjar, Ivory Coast in January 1981 by MSRC faculty was postponed. The UN has requested we offer the course in 1982 or 1983 when an alternate host government has been selected.

New Zealand

A Memorandum of Agreement in Marine Sciences establishing an educational exchange program between the University of Auckland and SUSB was signed in August 1980. Professor Bowman and his
group continue to carry out collaborative studies in New Zealand waters with support from NSF and the New Zealand Government.

Western Pacific (WESTPAC) Region

J. R. Schubel continues to serve as WESTPAC Correspondent at the National Science Foundation's request. He participated in the WESTPAC meeting held in Jakarta in October 1981 and will be one of the organizers for the 1983 meeting in Australia.

Mexico

Professors D.W. Pritchard, J.R. Schubel and B. Kinsman continued to work on Mexican coastal problems. Pritchard spent some time in Baja California at the Centro de Investigacion Cientifica y de Educacion Superior de Ensedada where he is titular head of their section devoted to the study of esteros—evaporation driven coastal basins.

Portugal

Mr. Jorge Castineros of Comissao Nacional do Ambiente spent part of June 1982 at the MSRC reviewing progress on a study of the Tejo estuary. Professors Carter, Pritchard, Schubel and Vieira expect to collaborate in the design and execution of the next phases of the study with support from the UNDP.

Trinidad

The MSRC has been asked by UNDP to assist in the development of a marine program for Trinidad.

Education

Graduate Programs

MSRC's graduate programs continue to grow in size and in stature. Enrollments during the 1980-81 AY and the 1981-82 AY are summarized below:

<table>
<thead>
<tr>
<th>Program</th>
<th>1980-81</th>
<th>1981-82</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time Students</td>
<td>61</td>
<td>62</td>
</tr>
<tr>
<td>Part-time Students</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Ph.D. Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time Students</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>Part-time Students</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>
Quality of students as measured by GRE's, grade point averages, and letters of recommendation have shown dramatic improvement over the past several years and the students now rank among SUSB's best entering graduate students. Thirteen students were awarded the M.S. degree in Marine Environmental Sciences during the 1980-81 AY. Twenty-one students received the M.S. degree in Marine Environmental Sciences and four students the Ph.D. degree in Coastal Oceanography in the 1981-82 academic year. These were the first students to be awarded the Ph.D. through our new Coastal Oceanography Doctoral Program which was approved in September 1978. On 1 June 1982, we had a total of 72 full-time and 21 part-time students enrolled in the MES and Coastal Oceanography Programs.

Jessie Smith Noyes Fellowship Program

The MSRC's Jessie Smith Fellowship Program has been established as a prestigious program for students in the marine sciences. Noyes Fellowships are used to support outstanding young scholars working on important environmental problems of the coastal zone. The stipends are the highest at SUSB.

During the 1980-81 AY the Center's Jessie Smith Noyes Fellowship Program supported in full two predoctoral graduate students, John Ellsworth and Jonathan Kramer.

John Ellsworth completed his B.S. degree in May, 1978 at the University of Rochester, and majored in biology and geology. Mr. Ellsworth spent the fall term of his senior year on an independent research project at the St. Croix Marine Laboratory in the West Indies. His research for the M.S. was a study of the sources of sediments to the Hudson estuary.

Jonathan Kramer is an honors graduate of the University of Massachusetts at Amherst where he completed his B.S. degree in May 1979 with a major in Environmental Sciences. During the spring term of his junior year, he held an internship with the Smithsonian Institution at the Chesapeake Bay Center for Environmental Studies and participated in a U.S. Geological Survey study of the benthic infauna of the Potomac River estuary. For his M.S. research, Mr. Kramer is investigating the biochemical pathways of photosynthetic carbon fixation and how these pathways are affected by light and nutrients in a brown seaweed.

During the 1981-82 AY, the Center's Jessie Smith Noyes Fellowship Program supported, in full, two doctoral fellows, Lisa Campbell and Jennifer Jesty; and one pre-doctoral fellow, Brian T. Duncan.

Lisa Campbell received a B.A. in biology from the University of California at Santa Cruz in 1976. From 1976 to 1979 she worked as a research associate with the Food Chain Research Group at Scripps Institution of Oceanography. She was the Quarterly
Review of Biology graduate editorial fellow during her second year at MSRC, and she is the recipient of a Jessie Smith Noyes Fellowship this year. Her research involves developing an immunofluorescent technique for specific cyanobacteria (blue-green algae) and using this method to determine the distribution and density of these organisms.

Jennifer Jesty received a B.A. and M.A. in Chemistry from Oxford University, England and then worked as an editor at Oxford University Press. Her current research involves an investigation of the effects of pollutants on microbial nitrogen transformations occurring in sediments.

Brian T. Duncan attended the State University of New York at Stony Brook and received a B.S. in Biology in 1977. As a Masters degree candidate, his research involves the isolation and testing of local marine phytoplankton species to determine whether they are capable of developing, or have already developed, resistance to the toxic effects of polychlorinated biphenyls (PCB's) and other organic and heavy metal pollutants.

Our Jessie Smith Noyes Fellowship program was renewed for the 1982-83 academic year to provide full fellowships for two graduate students at $9,000. each for the calendar year.

Two new graduate student award programs

MSRC initiated two new graduate student award programs with support from private sources. One, the Steinberg-Squires Award is a $200. prize to be awarded annually for the best thesis by an MSRC graduate student.

The other, the Montauk Marine Basin Scholarship carries a $1,000. award to a graduate student in support of his/her research on a problem of particular importance to Long Island. High risk projects with great potential payoff to Long Island are favored. Support for the 1982-83 AY has been secured for both awards, and we expect support to continue for at least the next five years.
## Student Awards

During the 1980-81 and 1981-82 academic years, MSRC graduate students received a substantial number of awards. Some of these are tabulated below.

<table>
<thead>
<tr>
<th>Student</th>
<th>Name of Award</th>
<th>Amount</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bettyann Adamson</td>
<td>Sea Grant Scholarship</td>
<td>$6250.</td>
<td>NYSGI</td>
</tr>
<tr>
<td></td>
<td>Sea Grant Scholarship</td>
<td>5500.</td>
<td>NYSGI</td>
</tr>
<tr>
<td>Mark Alexander</td>
<td>Sigma Xi</td>
<td>150.</td>
<td>Scientific Research Soc.</td>
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<tr>
<td>Ann E. Bass</td>
<td>Sea Grant Scholarship</td>
<td>6250.</td>
<td>NYSGI</td>
</tr>
<tr>
<td>James E. Bauer</td>
<td>Woman's Seamen's Friend Soc. of Connecticut Scholarship</td>
<td>1000.</td>
<td>WSFS of Conn.</td>
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<tr>
<td>V. Monica Bricelj</td>
<td>Doctoral Dissertation</td>
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<td>NSF</td>
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<td>Improvement Grant</td>
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<td>M. Steinberg, D. Squires</td>
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<td>Steinberg-Squires Award</td>
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<tr>
<td>Joseph Bergstein</td>
<td>Sea Grant Scholarship</td>
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<tr>
<td></td>
<td>Sigma Xi</td>
<td>50.</td>
<td>Sigma Xi</td>
</tr>
<tr>
<td>Vincent Breslin</td>
<td>Sea Grant Scholarship</td>
<td>6250.</td>
<td>NYSGI</td>
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<tr>
<td>Lisa Campbell</td>
<td>Jessie Smith Noyes Fellowship</td>
<td>7800.</td>
<td>JSNF</td>
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<td></td>
<td>Graduate Editorial Fellowship</td>
<td>3800.</td>
<td>Quarterly Review of Biology</td>
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<td>Cynthia G. Dietz</td>
<td>Sea Grant Scholarship</td>
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<td>Joseph L. DiLorenzo</td>
<td>Sea Grant Scholarship</td>
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<td>JSNF</td>
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<tr>
<td>John M. Ellsworth</td>
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<td>Gene C. Feldman</td>
<td>NASA Graduate Student Researcher's Program Scholar</td>
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<td>(Renewable up to 3 years)</td>
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<td>Ronald Filadelfo</td>
<td>Sea Grant Scholarship</td>
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<td>Walter Fitzpatrick,  III</td>
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<td>Richard A. Fogel</td>
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<td>Mary C. Gibbons</td>
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<td>Sigma Xi</td>
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<td>Jennifer Jesty</td>
<td>Jessie Smith Noyes Fellowship</td>
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<td>Sea Grant Scholarship</td>
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<td>Joseph P. Kerner</td>
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<td>Suam Kim</td>
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<td>Full Support</td>
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<tr>
<td>Vladimir G. Koutitonsky</td>
<td>Canadian Gov't Scholarship</td>
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<td>Jonathan G. Kramer</td>
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<td>Helene R. Laufer</td>
<td>Buttonwood Fellowship</td>
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<td>James T. Liu</td>
<td>Sea Grant Scholarship</td>
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<td>NYSGI</td>
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<tr>
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<td>John S. Lively</td>
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<td>S. Shawn McCafferty</td>
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<td>Sea Grant Scholarship</td>
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<td>NYSGI</td>
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<tr>
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<td>Montauk Mar. Basin Scholarship</td>
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<tr>
<td>Katherine A. Minsch</td>
<td>Sea Grant Scholarship</td>
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<td>Glynis M. Nau-Ritter</td>
<td>Intercampus Fellowship Program</td>
<td>5500.</td>
<td>ICF</td>
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<tr>
<td>George C. Nardi</td>
<td>International Exchange Students Program Award - awarded jointly with Harvey Simon</td>
<td>3000.</td>
<td>IESP</td>
</tr>
<tr>
<td></td>
<td>Sigma Xi</td>
<td>300.</td>
<td>Sigma Xi</td>
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<td>John A. Nicholson</td>
<td>Sea Grant Scholarship</td>
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<td>Paul Novelli</td>
<td>Sea Grant Scholarship</td>
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<td>Eugene C. Revelas</td>
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<td>200.</td>
<td>Sigma Xi</td>
</tr>
<tr>
<td>Student</td>
<td>Name of Award</td>
<td>Amount</td>
<td>Sponsor</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------</td>
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</tr>
</tbody>
</table>
| Cornelia T. Schlenk | Sea Grant Scholarship  
                        | $6250.  
                        | 5500.  | NYSGI            |
| Suzanne E. Schrey   | Sea Grant Scholarship                                                              | 6250.  | NYSGI            |
| Harvey Simon       | International Exchange Students Program Award – awarded  
                        | 3000.  | IESP             |
|                   | jointly with George C. Nardi                                                   |         |                  |
| Timothy P. Slauson | Sigma Xi                                                                      | 250.   | Sigma Xi         |
| Joseph J. Tanski   | Sea Grant Scholarship                                                            | 5500.  | NYSGI            |
| David S. Ullman    | NSF Fellowship                                                                   | 6900.  | NSF              |
| Jose G. Zertuche   | Mexican Gov't Scholarship                                                      | Full Support | Mexican Govt. |
| Philip M. Zion     | Graduate Council Fellowship  
                        | (last year of 3 years awarded)       | 5500.  | GCF              |
|                   | Graduate Council Fellowship                                                   | 4000.  | SUSB Graduate School |

**KEY**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>NYSGI</td>
<td>New York Sea Grant Institute</td>
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<tr>
<td>WSFS</td>
<td>Woman's Seamen's Friend Society</td>
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<td>NSF</td>
<td>National Science Foundation</td>
</tr>
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<td>JSNF</td>
<td>Jessie Smith Noyes Foundation</td>
</tr>
<tr>
<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
</tr>
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<td>MMBS</td>
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<tr>
<td>GCF</td>
<td>Graduate Council Fellowship</td>
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<td>Intercampus Fellowship Program</td>
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</tr>
<tr>
<td>SUSB</td>
<td>State University at Stony Brook</td>
</tr>
</tbody>
</table>
. Undergraduate Activities

During the 1982-83 AY the MSRC will offer its first undergraduate courses. Three new courses have been approved by the Curriculum Committee. These are (1) MAR 101 Long Island Sound: Science and Use, (2) MAR 302 Marine Microbiology and Microbial Ecology, and (3) MAR 333 Coastal Oceanography. In addition to these three new courses, MSRC will assume full responsibility for a fourth undergraduate course, presently listed as ESS 104 Oceanography.

During the 1981-82 AY the MSRC developed jointly with Professor Patrick Hill, Director of the Federated Learning Communities, three new minors in environmental studies: (1) Environmental and Planning Studies, (2) Environment and Public Policy, and (3) Long Island Regional Studies. Two of the courses listed above—MAR 101 and MAR 333—were designed to be integral parts of the minors. In addition, MSRC faculty will share responsibility for one of the new FLC Core Courses designed specifically for these new minors in environmental studies.

The Center will continue to provide undergraduates with opportunities for laboratory and field experience in the marine sciences.

. Oceanography Courses for Non-specialists

Each year MSRC offers introductory courses in the marine sciences for non-specialists.

For the past seven years we have offered "The Marine Environment of Long Island" through the summer session. This course, taught by Arthur Cooley, explores the geology of Long Island and the oceanography of its surrounding waters. The physical and chemical processes that mold the environment as well as the flora and fauna are examined during field trips, cruises, laboratory exercises, and lectures. The course continues to be very popular.

We offer an "Introduction to Oceanography" through CED. This course covers the biological, chemical, geological, and physical processes that characterize the World Ocean. Because of declining enrollments, this course was not offered the past two years but has been listed for the 1982-83 AY. Several years ago we designed a new 3-credit CED course to introduce lay people to several of Long Island's marine environments including: wetlands, Long Island Sound, Great South Bay, New York Harbor, and the New York Bight. The course combines lectures with laboratory exercises and field trips. Some time is spent aboard the R/V ONRUST.

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. This is a responsibility MSRC takes very seriously. The acronym MSRC has come to stand not only for the Marine Sciences Research Center, but also for the center that Makes Scientific Research Count in solving societal problems of the coastal ocean.

The MSRC does not take advocacy positions on environmental issues.

SUNY-Wide Activities

Third and Fourth Annual Hudson River Instructional Cruises.

More than 400 students from nearly a dozen SUNY campuses participated in instructional cruises on the Hudson River aboard MSRC's Research Vessel ONRUST in 1980 and 1981. During two-week periods the ONRUST sailed from Long Island to Albany and back making stops along the route to take classes from SUNY campuses aboard for five or six hours each of oceanographic demonstrations and instruction. Participating campuses included:

Community colleges - Dutchess County
Herkimer County
Schenectady
Ulster County
Columbia-Greene
Rockland County

Technical Colleges - Cobleskill

Arts and Sciences College - New Paltz
- Purchase
- Manhattan College of NYC

Cruise plans were arranged in advance with each instructor and MSRC personnel served to give students "hands-on" experience with scientific gear aboard and lead discussions on research activities of interest to the particular class. Water, sediment and plankton samples were taken and prepared for transport back to the local campus' laboratories.

Research activities were scheduled throughout each cruise, both to take advantage of the opportunity and to underscore the reality of the demonstrations.

Several of the SUNY instructors had participated in MSRC's first and second Hudson River Cruises the two years before. With the experience gained, they were able to build the cruise into their curriculum and plan their time aboard more effectively.
Supplemental support for the 1980 and 81 Hudson River Cruises was provided by the N.Y. Sea Grant Institute and the Research Foundation Multi-Campus Development Fund. The bulk of the support--more than 75%--was provided by the MSRC.

SUNY-wide laboratory.

A new "lab away from home" was opened in December 1978 at MSRC to give students from any of SUNY's 64 campuses a convenient place to carry out their work when researching on Long Island. The lab which can accommodate 40 students, has an oven for drying organisms and sediment samples and facilities for preserving organisms. Teaching aids include binocular microscopes and slide and movie projectors.

The lab, "SUNY's outlet to the sea," was funded by the New York Sea Grant Institute and the Chancellor's office.

Groups from the SUNY campuses of Buffalo, New Paltz, Oswego, Herkimer, Cortland, Oneonta, Binghamton, and others have used the SUNY-wide laboratory.

Groups usually arrive on a Friday evening and settle in for a busy weekend. The next days may be spent aboard the R/V ONRUST gaining "hands-on" experience. Using the different types of oceanographic sampling gear: plankton nets, trawls, bottom grabs, water bottles, current meters or bottom corers, or going on a tour of the vessel with a member of the crew demonstrating and explaining the operation of the electronic navigation and search gear: Loran, Mini-Ranger, Radar, Side Scan Sonar, bottom and sub-bottom profilers. The day may also be spent walking the barrier beaches or sloshing through the salt marshes at Flax Pond collecting the smaller inhabitants or the surf and marsh or just recording field observations.

The evenings are usually spent in the lab, working over the gatherings of the day.

They leave for their home campuses, tired, happy and carrying enough samples and specimens for a year's work. For many of them this trip has been their first, "close-encounter" with the sea.

Flax Pond Laboratory.

In May 1979, a special long-term (25 year) space-use agreement was signed by the New York Department of Environmental Conservation (NYSDEC) and the State University of New York (SUNY) transferring responsibility for the Flax Pond Laboratory from DEC to SUNY. Money was also provided in the SUNY budget to begin rehabilitation of the laboratory.

The laboratory is available for SUNY-wide use and provides SUNY scientists with an attractive facility for conducting experiments that require holding of marine organisms for extended periods.
The past two years, a number of cosmetic and fundamental changes were made to the Laboratory to make it more functional, and a more pleasant place to work and study. The seawater system is inadequate. This past year we were successful—with SUSB support—in replacing that part of the system that pumps water from the Pond and gets it to the storage tanks in the Laboratory. This year we will concentrate on replacing the distribution system within the laboratory.

Another major change was the addition of a new greenhouse complete with a continuous seawater system for cultivating seaweeds and other marine plants. Construction of the greenhouse was being funded entirely with research dollars. The greenhouse is a key element in the Center's large biomass project which is designed to assess the feasibility of farming seaweeds for the production of natural gas.

During the past year the MSRC also added two environmental chambers to the Flax Pond Laboratory, entirely with research dollars. Other modifications to the Laboratory are required. These should be funded through cooperative SUNY-Research Foundation ventures.

MSRC has taken the lead in developing research projects and securing funding for investigators from other campuses.

1. Sedimentation studies of New York Harbor with Binghamton geologists.

2. Water to air transfer of viruses in the surf zone off the South Shore of Long Island with scientists from the Atmospheric Sciences Research Center.

3. The creative use of coal wastes to construct artificial fishing reefs with SUNY Research Laboratory at Oswego.

4. Negotiated a Cooperative Agreement with NOAA to involve investigators from throughout SUNY in the resolution of complex interdisciplinary environmental problems.

5. A study with a faculty member from Nassau Community College to assess the feasibility of combining coal wastes with sewage sludge.

Some Specific Goals for Next Year

* Addition of two State-funded technical support staff lines to alleviate the serious problem we have in this area.

* Addition of one State-funded secretarial line to support our growing educational programs. At present we have none.

* Addition of two new I&DR faculty lines.
. Extension of our program linking Long Island towns to the center through a town-supported fellowship program. Appropriate towns would support graduate students working on problems of particular interest to them.

. Development of an endowed chair for a Coastal Marine Scholar. The position would be permanent; holders would be transient with appointments limited to three years.

. Establishment of a new Society of Marine Scholars Program to attract three to five outstanding postdoctoral fellows to Stony Brook each year for two years each.

. Establishment of the Nation's first Mariculture Experiment Station. The station would be modelled after the highly successful Agricultural Experiment Stations and could, if provided modest support, rival the best of these in scope and in quality within 5 years. Nowhere in the United States is there an area so well-suited for the development of mariculture as is Long Island. We have productive and diverse coastal environments. We have a large population, and hence a large potential local market. We have nearby a transportation center for distribution of seafood products throughout the Country, and indeed throughout the World.

. Establishment of a new institute within the MSRC designed specifically to do research on innovative ways of dealing with waste disposal problems. Support will come primarily from a consortium of industries and municipalities. Plans are well underway.
Appendix B

MARINE SCIENCES RESEARCH CENTER

ANNUAL REPORT

for

1980-81 AY

INTRODUCTION

This year's Annual Report consists of two parts: a brief summary of some of the Center's major achievements during the 1980-81 AY and a copy of the Center's budget statement presented at Stony Brook's budget hearing with SUNY Central Administration on 30 July 1981. Part II summarizes the growth and development of the Center, the unusual opportunity it offers the University, and the resources that will be required to exploit that opportunity.

PART I. A BRIEF OVERVIEW OF MSRC AND A SUMMARY OF SOME MAJOR ACHIEVEMENTS

The Marine Sciences Research Center (MSRC) continues to grow in stature as a center of excellence in coastal oceanographic research, graduate education, and public service. In each of our last four annual reports, we have pointed out that the past year was the best yet in the history of MSRC. This year was no exception. It was the best yet! The best in research, in development of our academic programs, and in delivery of information and services through our programs of public service. Our pervasive goal is to become the premier coastal oceanographic center in the World. That goal is within our grasp.

Several features distinguish the Marine Sciences Research Center from other leading oceanographic institutes. One is its clear focus on the coastal marine environment. There are very few outstanding coastal oceanographic institutes in the world. MSRC is one of them. A second feature that distinguishes MSRC is the effectiveness with which it has attacked problems of the marine environment on both theoretical and applied levels. 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 of the coastal ocean. These distinguishing features are now generally recognized throughout the world.
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 zone. That emphasis persists, but we recognize the need to expand our work to other areas. Within the past five years we have conducted sponsored investigations in: North and South Atlantic Ocean, North and South Pacific Ocean, Gulf of Mexico, Corpus Christi Bay, Atchafalaya Bay, English Channel, Caribbean, Chesapeake and Delaware Canal, Lake Michigan, Chilean coastal waters, a tropical rain forest in Ecuador, Japan, as well as in most local coastal water.

MSRC is unusual in what it does and unusually effective in doing it—a surefire combination for success. The MSRC continues to develop as an internationally recognized center of excellence in coastal oceanography. This development has been achieved through more effective use of existing resources and a modest, but crucial, infusion of new faculty resources. Investment of these resources in the Center has paid off handsomely for MSRC and for SUSB; in more research dollars, in more and better graduate students, in an enhanced reputation of the University as a resource that can and does aid the State and the nation in resolving important societal problems.

Research

Measured in terms of the Stony Brook campus as a whole:

- MSRC generated over 7.1% of total campus sponsored funding; 11.2% of core campus sponsored funding.
- MSRC ranks #3 among all departments in total dollars generated (behind Physics and Chemistry, departments with approximately twice the faculty of MSRC).
- MSRC remains #1 among all 63 SUSB departments in number of awards.
- MSRC ranks #1 among all 63 SUSB departments in total dollars generated per faculty line.
- MSRC exceeded two million dollars in grant expenditures.

Other research highlights:

- The Center launched its new unit on beach and nearshore processes. A new faculty position was awarded to the Center specifically for this purpose for the 1981-82 AY,
and a second was made available by reorienting an existing line which will become free through retirement. Appointments have been made to both lines. One went to a marine geologist with expertise in beaches and inlets. The second appointment was a physical oceanographer who specializes in nearshore processes, and in particular in the interactions of waves and beaches. To provide these individuals with equipment and assistance needed for program development, the Center succeeded in raising $50,000 from private sources. We hope to raise another $50,000 this year.

For the first time, there is a unit in New York that can assist in resolving the myriad of complex and serious shoreline problems that plague the State. The opportunities for significant scientific contributions, as well as for those in public service, are almost boundless. Nowhere in the United States are the fundamental processes of scientific concern expressed in as great a range in such a limited geographical area as on Long Island, and nowhere in the United States do these processes cause more serious social and economic problems.

- One of the major achievements of this past year was the successful negotiation of a Cooperative Agreement with the U.S. National Oceanic and Atmospheric Administration (NOAA). The Cooperative Agreement calls for the MSRC to take a leadership role at the national level in assisting NOAA in the identification and resolution of important problems resulting from society's uses of United States' coastal waters. The Cooperative Agreement is one more step toward establishing the MSRC as the national center of excellence in coastal oceanography.

- With support from the U.S. National Oceanic and Atmospheric Administration (NOAA), the Center began publication of a new newsletter, Coastal Ocean Pollution Assessment News (COPAS). The newsletter is national in scope and is designed to provide timely and useful information on pollution in coastal waters--its sources and effects, what is being done to eliminate or mitigate it, and what research and monitoring activities are being conducted to develop more effective strategies to manage it.

- MSRC researchers in the New York Marine Biomass Program are investigating the feasibility of developing commercial seaweed "energy farms" in the coastal waters of New York. This project is an important part of the overall plan to reduce dependency on foreign sources for our energy needs. On an energy farm, seaweeds would be cultivated, harvested and then fermented to produce methane,
which is the principle component of natural gas. During the past year, growth rates of nine major species of the local flora were determined in tank cultures at the Flax Pond greenhouse. From these studies, it now appears that a large scale farm would probably consist of a series of species, rather than a single species, grown throughout the year. Based on their seasonal growth patterns, chemical composition, and digestibility, three or four species will be shortly selected as the most attractive candidates for biomass farms. The biology of these species will be studied in greater detail and faster growing, hardier strains will be developed. Preliminary work has been conducted with cultivating these seaweeds offshore in small raft-like structures. MSRC biologists are working with SUSB engineers to design an experimental test farm that will eventually be deployed to investigate the economic feasibility of large-scale marine biomass farms.

The Coal Waste Artificial Reef Program (C-WARP) has begun its fourth year of investigation of the environmental acceptability of using coal waste blocks to construct artificial reefs. On 12 of September 1980, an artificial reef was formed with 15,000 blocks (500 tons) placed at the Atlantic project site. Subsequently, monthly cruises have been conducted to monitor the chemical and physical characteristics of the reef blocks and to document the biological colonization occurring on them. One year after reef placement, the blocks have increased in strength and are being colonized by many of the organisms typical of that environment.
Education

- The Graduate Programs continue to improve in quality and reputation. They are now third largest among the sciences and mathematics at SUSB. Students were drawn from throughout the U.S. and ten foreign countries. Quality of students as measured by GRE's, grade point averages, and letters of recommendation have shown dramatic improvement over the past several years and the students now rank among SUSB's best entering graduate students. Ten students received the masters degree through the MSP in the 1980-81 academic year. On 1 June 1981 we had a total of 74 full-time and 18 part-time students enrolled in the masters and doctoral programs.

- The Center received continue support for its Jessie Smith Noyes Fellowship program for the 7th straight year. This represents the longest period of continuous support ever awarded by the Jessie Smith Noyes Foundation. Noyes Fellows receive the highest stipends of any graduate students in the SUNY system. The Program carries full support for three outstanding students each year.

- MSRC initiated two new graduate student award programs with support from private sources. One, the Steinberg-Squires Award is a $200 prize to be awarded annually for the best thesis by an MSRC graduate student. The other, the Montauk Marine Basin Scholarship carries a $1,000 award to a graduate student in support of his/her research on a problem of particular importance to Long Island. High risk projects with great potential payoff to Long Island are favored. Support for the 1981-82 AY has been secured for both awards, and we expect support to continue for at least the next five years.

- Listing of Individual Awards

During the 1980-81 academic year MSRC graduate students received a number of awards. Some of these are tabulated below.

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<th>Name</th>
<th>Award</th>
<th>Amount</th>
<th>Organization</th>
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<tr>
<td>Betty Ann Adamson</td>
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<td>Scientific Research Soc.</td>
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<tr>
<td>Name</td>
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<td>Amount</td>
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<td>V. Monica Bricelj</td>
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<td></td>
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<td>Jonathan G. Kramer</td>
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<td>David J. Sarokin</td>
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<tr>
<td></td>
<td>NYS Assembly Internship</td>
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</table>
Cornelia Schlenk  Sea Grant Scholarship  $5500  NYSGI

Joseph J. Tanski  Sea Grant Scholarship  $5500  NYSGI

Philip M. Zion  Graduate Council Fellowship  $4000  SUSB Grad School

• Undergraduate Activities:

While the Center does not, at present, offer any undergraduate courses in the marine sciences and oceanography, we will offer in the Spring an upper division course in oceanography for the extended day program and we anticipate a more active role in undergraduate programs in future years.

We also assist undergraduates by providing them with opportunities for laboratory and field experience in the marine sciences. Each year we employ a small number of undergraduates on a part-time basis.

International Programs

• Chile

The scholarly collaboration initiated in 1978 between scientists of the MSRC and the Department of Marine Biology and Oceanography (DMBO) of the University of Concepcion (Chile) continued this year. Dagoberto Arcos, a faculty member of DMBO, spent the academic year at MSRC completing requirements for the M.S. degree. Two MSRC staff members spent a month in Chile teaching an instrumentation course. Dr. Peter Weyl has assumed the role of coordinator for the Chile exchange program and is seeking funding to continue the program.

• China

Two Chinese scholars will spend the next two years at MSRC pursuing their academic and research goals.

J. R. Schubel will visit China in October 1981 to collaborate with Chinese scientists on papers on China's estuaries to be presented at the Estuarine Research Federation (ERF) annual meeting in November. Dr. Schubel and Dr. Chih-Yu Chen, of Shanghai Normal University, are joint chairmen for the session on Chinese estuaries. After the ERF meeting, a delegation from China will visit MSRC.
Africa

The UN-sponsored course on coastal zone management to be offered in Abidjar, Ivory Coast in January 1981 by MSRC faculty was postponed. The UN has requested we offer the course in 1982 when an alternate host government has been selected.

New Zealand

A Memorandum of Agreement in Marine Sciences establishing an educational exchange program between the University of Auckland and SUSB was signed in August 1980.

Western Pacific (WESTPAC) Region

J. R. Schubel is serving as WESTPAC Correspondent at the National Science Foundation's request. He will participate in the next WESTPAC meeting to be held in Jakarta in October.

SUNY-Wide Activities

Third Annual Hudson River Instructional Cruise

For third consecutive year, two weeks of MSRC's research vessel schedule were devoted to instructional cruises on the Hudson River serving SUNY campuses throughout the Hudson Valley and beyond. Each day, instructors and their classes spent six hours aboard ship for "hands-on" experience with oceanographic research gear and collection of water-column, sediment and biological samples for analysis as part of their laboratory course work.

Participating campuses were:

Community College: Dutchess
Schenectady
Columbia-Greene
Herkimer
Ulster

Arts & Sciences: NYU Manhattan College
New Paltz
Purchase

Flax Pond Laboratory

More than 35 instructional groups from SUNY campuses and local schools used the Flax Pond wetlands for course-related field trips.
The laboratory has become a vital research tool for researchers from MSRC, other SUNY departments/campuses and from non-SUNY Universities. Once, space was not a problem with only one or two seatables being used occasionally. Now, requests for space often exceed the amount of available seatables and a laboratory manager has been hired to resolve conflicts.

**SUNY-Wide Laboratory**

The Lab, "SUNY's Outlet to the Sea" has hosted visiting student groups from such campuses as Buffalo, Herkimer, and New Paltz.

Days are spent on the salt marshes and the beaches gathering marine plants and animals, taking water and sediment samples. The evenings are spent in the lab, processing samples, studying life sequences under the microscope, identifying and tagging collections that will be carried back to home campuses for further study. Starting at dawn and ending late in the evening, they cram as much as possible into this marine experience. For many, this is their first touch with "The Sea."
Public Service

Members of the MSRC continue to serve in key advisory roles to a variety of international, Federal, State, County, and local environmental agencies. This is a responsibility MSRC takes very seriously. The acronym MSRC has come to stand not only for the Marine Sciences Research Center, but also for the center that Makes Scientific Research Count in solving societal problems of the coastal ocean.

The MSRC has strived assiduously to develop closer and more effective relationships with local governments so that the University community center can better serve the area in which we live. The development and projection of the image that the University is a resource that can be called upon to assist in the resolution of important problems has been slow in coming, particularly in the local area. But, there has been progress and the rate is increasing.

Research support from local governments and from the State and the number of agencies that seek advice from MSRC all have increased dramatically over the past few years. This past year a new program was launched; a program started in the Town of Brookhaven, but one which we hope to expand to other towns throughout the area. The program calls for a town to "adopt" one of our graduate students and to support him/her to work on a M. S. thesis problem that is timely and important to the town. To initiate the process the town brings a problem to the Center. When the Center finds a student whose interests and skills match the "problem," it nominates him/her to the town board. If the student is accepted by the town board, he/she will be supported by the town. He/she will be responsible not only for carrying out the research successfully, but also for keeping the board informed of his/her progress and for providing guidance and advice to the town when requested.
PART II
A Statement Submitted to SUNY Central Administration at the Stony Brook Budget Hearing on 30 July 1981
organized research center in 1968, it now offers the full range of graduate degrees. Several features distinguish the MSRC from the nation's other leading oceanographic institutions. One distinguishing feature is its clear and persistent focus on the coastal ocean—from approximately the seaward edge of the continental shelf inland to the last measurable traces of sea salt. This is the part of the World Ocean with which people have their most intimate contact and upon which they have their greatest impact. It is also the part of the World Ocean largely neglected by oceanographers. Problems are more complex than in the deep sea, solutions less tidy. The MSRC is the only comprehensive coastal oceanographic center in New York, and indeed, the only one in the entire northeast United States. It is one of three such institutions in the entire United States.

A second feature that distinguishes the MSRC from the nation's other leading oceanographic institutions—coastal and deep sea—is the effectiveness with which its faculty, staff, and graduate students translate the results of research, their own and that of others, into forms readily applicable to the resolution of important problems that result from society's uses of coastal environments. The range and intensity of problems in the coastal marine environments of the other 49 states pale in comparison to those of New York. These problems become opportunities for the University to serve the State. These opportunities have not gone unnoticed by the MSRC.

This is not an activity that is merely tolerated. It is one that we devote a great deal of attention to, and one in which we take great pride. We have made the acronym MSRC stand not only for the Marine Sciences Research Center, but also for the Center that Makes Scientific Research Count in solving societal problems.

Is there a problem, an opportunity?

Nowhere in the Nation does Society make more uses and more conflicting demands of its coastal marine environments than in New York.

- The Port of New York is the largest port in the U.S.
- To maintain the Port's channels, 10-12 million cubic yards of this total are highly polluted. New York ranks second among all U.S. ports in dredging activity.
- The metropolitan New York area's only economic source of sand and gravel is submerged beneath the sea—in the lower Bay of New York Harbor and on the continental shelf.
ON SELECTIVE EXCELLENCE
and
THE MARINE SCIENCES RESEARCH CENTER (MSRC)

J. R. Schubel
Director
Marine Sciences Research Center
A SUNY-Wide Unit

I assume that you have read our request (pp 60-64) in Stony Brook's Preliminary Planning Proposal. It is a request that is formula-driven. The proposed additions of personnel can be justified on the basis of FTEs and workload. A serious incongruity now exists between the Center's graduate program and its personnel resources to support them. If the Center is even to maintain its graduate programs, the deficiencies must be relieved in large measure now. But, there are other reasons to support the MSRC.

Recently, Chancellor Wharton stated that "We are striving for selective excellence and that is what we intend to achieve" (quoted in New York Times, 3 July 1981). I do not think any among us would disagree with the Chancellor's goal or with his strategy to attain it. Being selective in what we choose to do and in what we eschew is the only way that SUNY, or any other institution, can achieve distinction, particularly during times of zero-sum games. Excellence equates to superiority, to eminence. I assume that, in selecting areas for development of excellence, we mean excellence in the national and international arenas, and not just within New York, or even just within the northeast United States. In identifying areas for development of excellence special considerations should be given to areas that deal with important and unmet needs of the region, the State, the Nation, and the World, and areas that are already of very high quality; areas where a modest investment of resources will secure the status of excellence swiftly and surely.

My objective here is to convince you that not only is the Marine Sciences Research Center one area that should be selected for development of excellence, but that it should be one of the first areas to be selected, and that because it is a SUNY-wide unit it deserves the special attention of SUNY Central.

What is the MSRC and what distinguishes it from the nation's other leading oceanographic institutions?

The Marine Sciences Research Center (MSRC) is the center for research, graduate education, and public service in the marine sciences for the entire SUNY system. Established as an
- Long Island power plants alone draw more than 1,000,000 gallons of water from coastal areas every minute.

- An estimated 40,000,000 to 50,000,000 people visit New York's marine beaches every year.

- New York has approximately 2,000 miles of marine and estuarine coastline; much of it with serious shore erosion problems. Long Island has only 0.6% of the nation's total coastline, but more than 10% of that with "critical shoreline erosion" problems.

- Great South Bay produces more than half the nation's total harvest of hard clams; a $100,000,000/year industry. It is the World's most prolific hard clam factory.

- More than 70% of all ocean dumping activity in the entire United States takes place in New York's coastal waters.

- New York has 13,000 to 14,000 commercial fisherpersons.

- New York has an estimated 3,000,000 recreational fisherpersons.

- New York has more than 400,000 registered pleasure boats, about 30% of these on Long Island. (There are an estimated 150,000 unregistered boats.)

Consider for a moment, Long Island and the Greater Metropolitan Area. On Long Island alone there are more than 7 million people not one of whom lives as far as 10 miles from a coastal marine environment; from some coastal marine environment. One cannot, not and live on Long Island. Add Manhattan, the Bronx, and Staten Island too...and you add another 3.7 million people, not one of whom lives as far as 10 miles from a coastal environment.

These millions of people make varied uses of our coastal marine waters, uses that often result in conflicts. The conflicts result primarily between those activities that require the maintenance of certain levels of environmental quality and those activities that not only do not, but that can lead to environmental degradation if not properly managed. We have problems; lots of them. But not so many or so serious that things are hopeless. The patient is not terminal.

We have large gradients in population along our marine shoreline. Not surprisingly, the effects of society mimic the population gradient. The effects of society in and around New York Harbor are large, in places almost debilitating. Near the eastern end of Long Island, on the other hand, the
effects of society are small, almost imperceptible. This
great range in the effects of society in a limited area and
rich diversity of coastal marine environments in that same
limited area make Long Island an ideal location for a Center
of Excellence in Coastal Oceanography.

Is the MSRC Close to Excellence:

The MSRC plays three important roles—in research, in
graduate education, and in public service. In each of these
areas it maintains programs of such high quality that a small
infusion of resources would transform the MSRC into the inter­
national center of excellence in coastal oceanographic
research, graduate education, and public service.

Research

The Center maintains a well balanced program of basic and
applied research covering a broad range of problems in coastal
oceanography and coastal zone management. The mix of problems
being addressed changes with time, of course, just as in a
traditional academic unit. But there is a difference. Being
an Organized Research unit, the Center must maintain a good
match between society's problems—real and perceived—and the
problems it addresses. One new mechanism the Center recently
secured (19 December 1980) for ensuring a good match is a
Cooperative Agreement with the National Oceanic and
Atmospheric Administration (NOAA) for..."cooperative work on
problems of marine pollution in open coastal and estuarine
waters." The Agreement goes on to point out..."the general
aim of this effort is to foster research on problems result­
ing from society's uses of these waters, and the translation
and application of findings to management analysis and appro­
priate action.... The agreement is expected to enhance
relationships between basic and applied marine sciences to
shorten the lag between understanding and action."

The Center conducts research to assist in the resolution
of environmental crises when they occur. It responds rapidly
to requests for assistance from local, regional, State, and
national governmental units. This is an important function,
but the Center plays an even more important role; one which
perhaps only academia can fulfill. That role is to identify
potential environmental crises, to anticipate future problems
and to pose them in tractable forms. Then, to design the
necessary research programs; to secure the funding to carry
out that research; and to develop strategies to prevent these
incipient problems—what Herman Melville called Loomings—from
developing into full-blown crises. The Center has excelled
in this role. Three recent examples include: (1) the develop­
ment of creative and environmentally acceptable uses for coal
wastes, (2) the combination of submarine sand mining and
dredged material disposal to solve two of New York City's most
pressing environmental problems, and (3) the production of natural gas from the microbial digestion of seaweeds produced on large floating farms.

A summary of the Center's sponsored research activity from 1971 - 1981 is shown in Figure 1. The total level of external funding has increased by nearly 10X in ten years. Over that same period OR funding from the State increased by less than 2X, and total State support for the Center by only about 2X. At present MSRC faculty bring in approximately $5.00 for every $1.00 they receive in salary. The ratio of external support to total State support during the 1980-81 AY was 2.4:1.

Graduate Education

The Center's graduate programs have grown dramatically in size and in stature. When the MSRC was established, it was conceived as an OR unit with no instructional functions. In 1971 a program leading to the degree of Master of Science was added, and in September 1978 a program leading to the Doctor of Philosophy received final approval. It is stated frequently that research and graduate education go hand-in-hand; that they are inseparable. Perhaps nowhere in SUNY are the benefits that can accrue from a strong symbiotic relationship between these two activities demonstrated more vividly than in the MSRC.

Over the past 10 years the Center's graduate student FTEs have increased by more than 7X; from 11 in 1971 to more than 78 for the 1980-81 AY. The trend is still upward (Figure 2). During the 1980-81 AY the MSRC had the third largest graduate program among the sciences and mathematics at SUSB, and the eighth largest among all of Arts and Sciences. It accounted for 3.6% of the campus's total graduate FTEs with only 0.9% of the I&DR faculty FTEs, only 1.5% of its TA/GA lines, 0.0% of its I&DR NTP lines and only 0.7% of its I&DR SG lines. It is a major graduate program without a single I&DR secretarial line to support it. Clearly, there is a serious incongruity between the Center's graduate programs and the personnel resources to support them. These deficiencies must be relieved in substantial measure if the MSRC is even to maintain the size and quality of its programs in education, research, and public service.

Nearly all of the Center's graduate students work on State problems—on environmental and oceanographic problems of direct importance to the State of New York. The benefits to the State are enormous. First, the Center has the only group of researchers in the State capable of responding effectively to a broad range of multi-disciplinary problems of the coastal marine environment. The MSRC advanced graduate students are important members of this community of scholars.
MSRC SUPPORT, 1971-1981

SPONSORED RESEARCH EXPENDITURES

TOTAL STATE SUPPORT

TOTAL "OR" SUPPORT

TOTAL "I+DR" SUPPORT

Figure 1
Second, most of the support for this research (> 85%) comes in the form of grants and contracts from non-State sources. Even more than 80% of the direct support for MSRC's graduate student stipends is derived from non-SUNY sources.

The MSRC will offer its first undergraduate course during the spring semester of the 1981-82 AY. It will be an upper division course and will be offered through the Extended Day Program. We expect to add a second undergraduate course for the fall semester of the 1982-83 AY. We intend also to develop a series of research seminars in the marine sciences to give upper division undergraduates opportunities to work with peers, graduate students, and faculty--each in his/her own discipline--in a coordinated attack on real-world problems that are truly interdisciplinary in nature.

A few highlights are listed below:

- The Center has the only graduate program in coastal oceanography and marine environmental sciences in the entire SUNY system.
- The Center now has the third largest graduate program among the sciences and mathematics at SUSB.
- The Center has its own privately supported fellowship program with the highest stipends in the SUNY system.
- Approximately 80% of all graduate student support comes from non-SUNY sources.
- MSRC graduate students won a total of nearly 3X as many awards and scholarships as any other department at SUSB.
- The Center has developed a new internship program with Towns on Long Island in which towns "adopt" and support MSRC students to do thesis research on Town problems.
- The Center recently completed negotiation of a new Cooperative Internship program with the U.S. Army Corps of Engineers. It calls for support of 1-2 students per year at $10,000/student/year and guarantees employment upon completion of the degree.

Public Service

"At the State University of New York, Public Service means using our teaching and research skills to improve the quality of life in the State. It means helping to encourage economic development and revitalization. It means cooperating with small businesses, corporations, unions, and state and local governments. It means turning our 64-campus
network into a knowledge-delivery system for responding to the
needs of a modern information-based economy." (From a SUNY
flyer entitled: "The State University of New York, A Public
Service Institution.")

MSRC plays leadership roles in each of the areas of
public service identified above. A special document is being
prepared to describe these activities.

How does MSRC fulfill its SUNY-wide mandate?

Creating interest and participation in the SUNY-wide
activities requires dedication of resources and energy. A few
examples of how MSRC fulfills its SUNY-wide mandate are cited.

- Beginning in 1978, MSRC has dedicated two weeks of
research vessel time each fall to a Hudson River
Instructional Cruise. The ship, manned by her crew
and a team of instructors from MSRC transits from
Tarrytown to Albany and back, stopping off along the
way each day to drop off and pick up a SUNY class.
Each "leg" of the cruise takes approximately seven
hours. Students, accompanied by their campus instruc-
tor, have the opportunity to use oceanographic
sampling equipment, make preliminary analyses aboard
ship, and take samples back to the laboratories at
their home campuses. More than 80% of the total
cost is provided by MSRC.

- Approximately 1,000 students from throughout SUNY
have participated in instructional and research cruises aboard the R/V ONRUST each year for each of
the past 3 years.

- A fully equipped, 24 station teaching laboratory at
the MSRC has been outfitted and is reserved for the
exclusive use of visiting SUNY classes and their
instructors.

- Approximately 1,000 students from throughout SUNY and
from local schools have utilized MSRC research and
instructional facilities each year for each of the
past 3 years.

- MSRC prepared a special flier "Your Outlet to the Sea"
(copy as Attachment A), which was mailed to all Science
Departments throughout SUNY describing the instruc-
tional facilities available through MSRC.

- SUNY lecture series in the marine sciences. Every
other year MSRC sends a number of its faculty to other
SUNY campuses to lecture and lead seminars on various
aspects of coastal oceanography.
MSRC has taken the lead in developing research projects and securing funding for investigators from other campuses.

1. Sedimentation studies of New York Harbor with Binghamton geologists.

2. Water to air transfer of viruses in the surf zone off the South Shore of Long Island with Atmospheric Sciences Research Center.

3. The creative use of coal wastes to construct artificial fishing reefs with SUNY Research Laboratory at Oswego.

4. Negotiated a Cooperative Agreement with NOAA to involve investigators from throughout SUNY in the resolution of complex interdisciplinary environmental problems.

What are the minimum resources needed from the State to make the MSRC the World's premier coastal oceanographic institution?

Faculty

5 Assistant Professors
1 Associate Professor
2 Full Professors

Staff

NTP's
1 Computer Analyst PR3
1 Public Extension Agent PR2
1 Small Boat Captain PR1
1 Diving Officer PR1
1 Field Operations Officer PR2

SG's
3 SG lines (1 SG-5, 2 SG-3)

Equipment, Purchase & Replacement

1 Midi Computer $250,000
Other Equipment 200,000
Total Equipment $450,000

Given these resources, the MSRC would be transformed swiftly and surely into the World's most prestigious coastal oceanographic center for research, graduate education, and public service. This is not an insignificant request, but neither is it an inappropriate one.

The MSRC meets the criteria I outlined at the outset for selecting areas for development of excellence. The MSRC addresses important societal problems. Problems of New York's
coastal waters are intense. They are more severe than in any other area in the Nation. Not only will these problems persist, they will be exacerbated over the next one to two decades as we dump more wastes into the ocean than ever before. These problems become SUNY's opportunities to serve. The MSRC is unique in SUNY, unique in New York, unique in the northeast United States, and unusual in the United States in its ability to deal effectively with problems of the Coastal Ocean in a comprehensive fashion.

Merit aside, the requested personnel can be justified entirely on need; the deficiencies must be relieved if the present status is to be maintained. But the opportunity for excellence the Center presents to SUNY is more compelling than the problems it offers.

The MSRC is a very good coastal oceanographic center. A relatively small investment in resources would pay enormous dividends in research, in graduate education, and in public service. I doubt if there is another unit within SUNY where an investment of the size I have proposed would yield such handsome returns. Because of MSRC's SUNY-wide character, it deserves SUNY Central's special consideration.

"The little more, and how much it is! The little less, and what worlds away."

--Browning
Appendix A  Annual Report for 1980-82

Marine Sciences Research Center

DEPARTMENT ACTIVITIES

Departmental Colloquia and Seminars

August 14, 1980  Robert Richmond, Marine Sciences Research Center, SUNY at Stony Brook

"Aspects of Coral Biochemistry, Reproduction and Larval Physiology"

September 4, 1980  Prof. Malcolm J. Bowman, Marine Sciences Research Center, SUNY at Stony Brook

"Tidal Stirring and the Distribution of Phytoplankton in Cook Strait, New Zealand" (Part 1 of 2 Parts)

September 18, 1980  Prof. Malcolm J. Bowman, Marine Sciences Research Center, SUNY at Stony Brook

"Tidal Stirring and the Distribution of Phytoplankton in Cook Strait, New Zealand, Part II"

September 25, 1980  Prof. Glenn R. Lopez, Marine Sciences Research Center, SUNY at Stony Brook

"Food Sources of Benthic Deposit-Feeding Animals"

October 2, 1980  Dominick Ninivaggi

"The Trophic Position of Euphausiids in the Southeastern Bering Sea; A Preliminary View"

October 7, 1980  Alan Mytelka, Interstate Sanitation Commission

"Some Aspects of Water Pollution in the Arthur Kill, the Kill Van Kull and Newark Bay"
<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker &amp; Affiliation</th>
<th>Presentation Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 9, 1980</td>
<td>Patty E, LaPennas, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Demographic Patterns of Phytoplankton Species in a Variable Estuary&quot;</td>
</tr>
<tr>
<td>October 14, 1980</td>
<td>Martin Lang, Management Consulting Division, Camp, Dresser, and McKee</td>
<td>&quot;An Overview of How Environmental Decisions are Made&quot;</td>
</tr>
<tr>
<td>October 16, 1980</td>
<td>William T. Peterson, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Pacific Salmon: (1) The hatchery and ranching business, and (2) food habits of juveniles in the Oregon coastal zone&quot;</td>
</tr>
<tr>
<td>October 23, 1980</td>
<td>Dr. Manuel Fiadero, Geology and Geophysics Department, Yale University</td>
<td>&quot;Three Dimensional Modelling of Tracers in the Pacific Ocean&quot;</td>
</tr>
<tr>
<td>October 30, 1980</td>
<td>Dr. Michael Dagg, Brookhaven National Laboratory</td>
<td>&quot;Feeding of Copepods in Natural Seawater&quot;</td>
</tr>
<tr>
<td>November 6, 1980</td>
<td>Prof. Richard Koehn, Ecology and Evolution, SUNY at Stony Brook</td>
<td>&quot;Isolation in the Sea: Precipitory and Genetic Mechanisms in Mytilus edulis&quot;</td>
</tr>
<tr>
<td>November 13, 1980</td>
<td>Jeff Levinton, Bio/Science, SUNY at Stony Brook</td>
<td>&quot;Nutrition of Deposit Feeders and Their Effects on Microbial Interactions in Sediments&quot;</td>
</tr>
<tr>
<td>November 17, 1980</td>
<td>Dr. Judith S. Weis, Zoological Department, Rutgers University</td>
<td>&quot;Effects on Contaminants on Embryonic Development of Fishes in the Hudson-Raritan Estuary System&quot;</td>
</tr>
<tr>
<td></td>
<td>Dr. G. Moulter, Dept. of Earth Sciences, Fairleigh Dickinson University</td>
<td>&quot;A Progress Report on Raritan Estuary--Our Fluctuating &quot;Leaky&quot; Sink&quot;</td>
</tr>
<tr>
<td>Date</td>
<td>Speaker and Institution</td>
<td>Topic</td>
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<td>Adam the\H{\textbf{\textit{\text{The Relationship Between Hydrogen Concentrations and Biological Processes in the Mediterranean&quot;}}}}</td>
</tr>
<tr>
<td>November 20, 1980</td>
<td>Linda Duguay, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Algal-Foraminiferal Symbioses&quot;</td>
</tr>
<tr>
<td>November 25, 1980</td>
<td>Dr. Ronald S. Oremland, USGS Menlo Park, California</td>
<td>&quot;Anaerobic Microbial Formation and Oxidation of $C_2$ Hydrocarbons&quot;</td>
</tr>
<tr>
<td>December 2, 1980</td>
<td>Bud H. Brinkhaus, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Mercury uptake kinetics and effects on photosynthesis in <em>Gracilaria verrucosa</em> from Chile&quot;</td>
</tr>
<tr>
<td>December 10, 1980</td>
<td>Dr. Nathan Hawley, Dept. of Atmospheric and Oceanic Sciences, University of Michigan</td>
<td>&quot;Inter-tidal Sedimentary Structures on Macrotidal Beaches&quot;</td>
</tr>
<tr>
<td>January 27, 1981</td>
<td>Dr. Des Connell, School of Environmental Studies, Griffith University, Brisbane, Australia</td>
<td>&quot;Some Investigations of Petroleum Hydrocarbons and PCB's in an Estuarine System&quot;</td>
</tr>
<tr>
<td>February 3, 1981</td>
<td>Mary I. Scranton, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;The Relationship Between Hydrogen Concentrations and Biological Processes in the Mediterranean&quot;</td>
</tr>
<tr>
<td>February 5, 1981</td>
<td>Steven Covell, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Coastal Natural Hazards in Region VIII, Chile: Information for Coastal Zone Management Decision Making&quot;</td>
</tr>
<tr>
<td>February 19, 1981</td>
<td>Dr. Carl Boyd, Oceanography Dept., Dalhousie University</td>
<td>&quot;Spines on Diatoms- Do Copepods Care?&quot;</td>
</tr>
<tr>
<td>February 24, 1981</td>
<td>Dr. Sharon Smith, Brookhaven Laboratory, New York</td>
<td>&quot;Biological Responses of the Northwestern Indian Ocean to the Southwest Monsoon&quot;</td>
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<tr>
<td>Date</td>
<td>Speaker and Institution</td>
<td>Topic</td>
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<tr>
<td>March 3, 1981</td>
<td>Dr. D. W. Connell, Visiting Professor from Griffith University, Brisbane, Australia</td>
<td>&quot;Water Quality Studies in an Australian Bay&quot;</td>
</tr>
<tr>
<td>March 10, 1981</td>
<td>Anthony Taormina, Department of Environmental Conservation, Stony Brook, New York</td>
<td>&quot;Wetlands Preservation Act, A Case Study&quot;</td>
</tr>
<tr>
<td>March 13, 1981</td>
<td>Dr. David Mackas, Institute of Ocean Science, Sidney, B. C. Canada</td>
<td>&quot;Plankton Communities off the West Coast of Vancouver Island and Their Relation to Physical Oceanography&quot;</td>
</tr>
<tr>
<td>March 17, 1981</td>
<td>Movie: &quot;Low Reynolds Number Flow - A Demonstration of Viscous Flow&quot;</td>
<td></td>
</tr>
<tr>
<td>April 1, 1981</td>
<td>Lisa Levin, Scripps Institution of Oceanography</td>
<td>&quot;Life Histories and Dispersal Patterns of Backbay Polychaetes&quot;</td>
</tr>
<tr>
<td>April 3, 1981</td>
<td>Robert G. Dean, Professor, University of Delaware</td>
<td>&quot;Equilibrium Beach Profiles&quot;</td>
</tr>
<tr>
<td>April 3, 1981</td>
<td>John Sydney Lively</td>
<td>&quot;Primary Production and Abundance of Phytoplankton in a Barrier Island Estuary&quot;</td>
</tr>
<tr>
<td>April 6, 1981</td>
<td>Millicent Quammen, University of California, Santa Barbara</td>
<td>&quot;Predation on Intertidal Mud Flats: The Role of Birds, Fish and Crabs&quot;</td>
</tr>
<tr>
<td>Date</td>
<td>Speaker and Institution</td>
<td>Title</td>
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<tr>
<td>April 7, 1981</td>
<td>Dr. John Bane, University of North Carolina</td>
<td>&quot;Gulf Stream Meanders Along the Continental Margin of the Southeastern United States&quot;</td>
</tr>
<tr>
<td>April 9, 1981</td>
<td>Dr. David Young, Dames and Moore, Los Angeles, California</td>
<td>&quot;Evaluation of Biomagnification Potential for Marine Food Webs Using Cesium-Potassium Ratios&quot;</td>
</tr>
<tr>
<td>April 14, 1981</td>
<td>Dr. Bruce Macler, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Carbon Pathways during Photoheterotrophic Hydrogen Production in <em>Rhodopseudomonas sphaeoides</em>&quot;</td>
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<tr>
<td>April 21, 1981</td>
<td>Dr. Paul Falkowski, Brookhaven National Laboratory</td>
<td>&quot;Light/Shade Adaptation and Vertical Mixing of Marine Plankton&quot;</td>
</tr>
<tr>
<td>April 22, 1981</td>
<td>Zena Gold Kaufman, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Nitrogen Assimilation by Phytoplankton in Great South Bay, New York&quot;</td>
</tr>
<tr>
<td>April 28, 1981</td>
<td>Dr. Rita Colwell, University of Maryland</td>
<td>&quot;Nitrogen Effects of Ocean Dumping&quot;</td>
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<tr>
<td>May 13, 1981</td>
<td>Kenneth P. Kurkowski</td>
<td>&quot;Effects of Filtration by Adult <em>Mercenaria mercenaria</em> upon its Larvae&quot;</td>
</tr>
<tr>
<td>June 10, 1981</td>
<td>Dr. George Mellor, GFD Program, Princeton University</td>
<td>&quot;A Mathematical Model of the Hudson-Raritan Estuarine System&quot;</td>
</tr>
<tr>
<td>July 9, 1981</td>
<td>Dr. John T. Proni, Director, Ocean Acoustics Laboratory, NOAA Atlantic Oceanographic and Meteorological Laboratory, Miami, Florida</td>
<td>&quot;Acoustic Tracking of Dumped Material in the New York Bight&quot;</td>
</tr>
</tbody>
</table>
July 21, 1981  Gordon Robert Chu

"The Behavior and Transport of Anthropogenic Radionuclides in the Peconic River, New York"

July 31, 1981  David M. Goodrich

"The Tides of New York Bight"

August 7, 1981  V. G. Koutitonsky

"Some Aspects of the Physical Oceanography of the St. Lawrence Estuary"

August 21, 1981  Mark S. Alexander

"Population Response of the Sequential Hermaphrodite Black Sea Bass, Centropristis striata, to Fishing"

August 26, 1981  George McManus

"Elimination of PCB Residues by the Copepod, Acartia tonsa, and Effects of PCB on Fecundity, Egg Viability and Survival of Nauplii"

September 9, 1981  Charles Wurster, Marine Sciences Research Center, SUNY at Stony Brook

"The Effects of Chlorinated Hydrocarbons on Phytoplankton"

September 16, 1981  Peter Hershey, Marine Sciences Research Center, SUNY at Stony Brook

"The Physical Chemistry of Silicic Acid in Seawater"

September 18, 1981  Hal Marc Rose

"Variations in Phytoplankton Biomass and Primary Productivity on the Inner Continental Shelf"

September 21, 1981  Dr. Richard Newell, Institute for Marine Environmental Research, Plymouth, England

"Intertidal Ecology"
<table>
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<tr>
<th>Date</th>
<th>Presenter and Affiliation</th>
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<tbody>
<tr>
<td>October 7, 1981</td>
<td>David Hirschberg, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Suspended Sediment Transport in the Hudson Estuary&quot;</td>
</tr>
<tr>
<td>October 14, 1981</td>
<td>Edward Carpenter, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Aspects of Nitrogen Fixation in the Costa Rican Rain Forests&quot;</td>
</tr>
<tr>
<td>October 15, 1981</td>
<td>Mr. Bertram D. Moll, Vice President Consolidated Edison of New York, New York</td>
<td>&quot;Con Ed's Plans for Conversion to Coal&quot;</td>
</tr>
<tr>
<td>October 21, 1981</td>
<td>Peter K. Weyl, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Micropaleontology and the Ocean Surface Climate&quot;</td>
</tr>
<tr>
<td>October 28, 1981</td>
<td>Jed Fuhrman, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Bacterioplankton Growth in Coastal Waters&quot;</td>
</tr>
<tr>
<td>November 4, 1981</td>
<td>Dr. David Tolmazine, Director of the Marine Sciences Center, University of Connecticut</td>
<td>&quot;Variability of Current and Horizontal Eddy Coefficients in Eastern Long Island Sound&quot;</td>
</tr>
<tr>
<td>November 11, 1981</td>
<td>William T. Peterson, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Plankton Productivity in Coastal Upwelling Systems&quot;</td>
</tr>
<tr>
<td>November 18, 1981</td>
<td>Dr. Richard Bohrer, Max Planck Institute for Limnology</td>
<td>&quot;The Physiological Aspects of Daphnia Feeding in Lakes of Northern Germany&quot;</td>
</tr>
<tr>
<td>November 25, 1981</td>
<td>Dr. Thomas Hopkins, Brookhaven National Laboratories</td>
<td>&quot;Sea Level Model of the Mid Atlantic Bight&quot;</td>
</tr>
</tbody>
</table>
December 2, 1981

Dr. Thomas Donnelly, Geology Dept., SUNY, Binghamton

"What's New About Deep-Sea Sediments?"

December 4, 1981

Fernando E. Gandarillas

"Benthic Assemblages of the Lower New York Bay"

Dr. M. King Hubbert, 1981 winner of the Vetlesen Prize for achievement in the Sciences of the Earth and Universe
The Lamont-Doherty Geological Observatory
Palisades, New York

"Two Intellectual Systems: Matter-Energy and the Monetary Culture"

December 4, 1981

Professor Ji-yu Chen, Director
Institute of Estuarine and Coastal Research

Professor Lu Cheng, Vice Dean
of Geography Department

Associate Professor Cai-xing Yun, Chief
Remote Sensing Division, Institute of Estuarine and Coastal Research

East China Normal University, Shanghai

"The Chang Juang Estuary"

December 14, 1981

Emerson C. Hasbrouck, Jr.

"The Fishing Fleets of the New York Bight"

February 10, 1982

Prof. Mary Scranton, Marine Sciences Research Center, SUNY at Stony Brook

"Two Aspects of the Biochemical Hydrogen Cycle"

February 24, 1982

Dr. H. Lee Conway, Brookhaven National Laboratory

"Distribution, Fluxes and Biological Utilization of Organic Nitrogen in the New York Bight"
<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter</th>
<th>Institution/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 3, 1982</td>
<td>Dr. David O. Conover, Marine Sciences Research Center, SUNY at Stony Brook</td>
<td>&quot;Adaptive Significance of Temperature-Dependent Sex Determination in a Fish, The Atlantic Silverside, <em>Menidia menidia</em>&quot;</td>
</tr>
<tr>
<td>March 10, 1982</td>
<td>Dr. Dennis Waslenchuc, Asst. Prof. of Geochemical Oceanography, Marine Sciences Institute, University of Connecticut</td>
<td>&quot;The Geochemist's Mixing Diagram: Interpreting the Fate of Minor Elements in Estuarine or Waste Water Mixing Zones&quot;</td>
</tr>
<tr>
<td>March 26, 1982</td>
<td>Dr. Frank Cantelmo, Biology Department, St. Johns University, New York</td>
<td>&quot;The Use of Miofauna in Pollution Monitoring Studies: Present Concepts and Future Directions&quot;</td>
</tr>
<tr>
<td>March 29, 1982</td>
<td>Joseph J. Tanski</td>
<td>&quot;Episodic Bluff Erosion on the North Shore of Long Island&quot;</td>
</tr>
<tr>
<td>March 31, 1982</td>
<td>Dr. Louis Brown, National Science Foundation</td>
<td>&quot;Opportunities and Impediments for Research in the Marine Sciences in the International Arena&quot;</td>
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<tr>
<td>April 19, 1982</td>
<td>Dwight David Reese</td>
<td>&quot;The Effect of Metals on Methanogenesis in Salt Marsh Sediments&quot;</td>
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<tr>
<td>April 21, 1982</td>
<td>Dr. Sucwoo Chiang, NOAA, Northeast Fisheries Center, Sandy Hook, New Jersey</td>
<td>&quot;The Nuts and Bolts of Fisheries Management&quot;</td>
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April 23, 1982

J. Peter Hershey

"The Physical Chemistry of Aqueous Silicic Acid: Partial Molal Volume and Partial Molal Compressibility in NaCl Solution at 1°C"

April 28, 1982

Dr. Robert M. Cerrato, Marine Sciences Research Center, SUNY at Stony Brook

"Changing Hydrodynamic Conditions in Moriches Bay: Potential Effects on the Bivalve Mercenaria mercenaria"

May 7, 1982

Dr. John Marra, Lamont-Doherty Geological Observatory, Palisades, New York

"Variability of Chlorophyll a at a Shelf Break Front"