

GRAHAM GIESE NEW ASSOCIATE DIRECTOR

Dr. Graham Giese has been appointed as MSRC's Associate Director. Dr. Giese succeeds F.G. Roberts who retired last winter. In commenting on the appointment Dr. J.R. Schubel, Director of MSRC said, "Dr. Giese has had a distinguished career as a scientist, scientific administrator, and educator and we are delighted to have him join us. I expect him to play a key role in the continued development of the MSRC."

Dr. Giese received his B.S. from Trinity College, the M.S. from the University of Rhode Island and his Ph.D. from the University of Chicago. Before joining the MSRC he was Senior Scientist at the Provincetown Center for Coastal Studies and Guest Investigator at the Woods Hole Oceanographic Institution. Dr. Giese was a co-founder of the Provincetown Center and served as its first president and more recently as its Executive Director, from 1979-1982. He also was a member of the faculty of the University of Puerto Rico.

Dr. Giese is an expert on beach and nearshore processes and has published widely, on problems from Cape Cod to the Caribbean.

NOYES FELLOWSHIP WINNERS

Marine Sciences Research Center students Hans Dam Guerrero and James Mitchell were recently honored by their designation as Jessie Smith Noyes Fellows for the 1983-84 academic year. JNS Fellowships are awarded yearly to outstanding MSRC students working on important problems of the marine coastal environment.

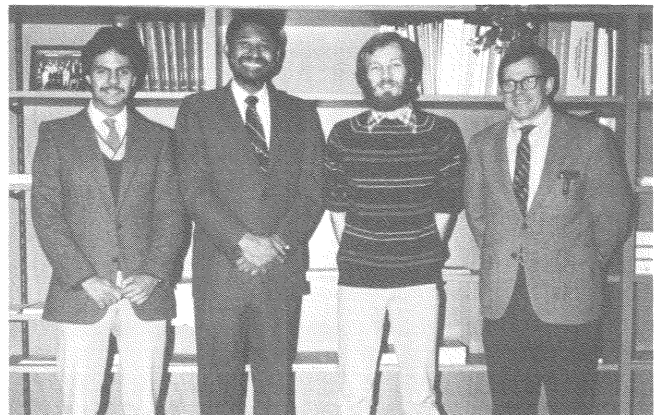
Mr. James Mitchell, a Ph.D. candidate at the Center, will use his fellowship to study whether polyamines act as an intracellular nutrient reserve for phytoplankton. Polyamines are vital to controlling cell growth rates. Mr. Mitchell's research is important for its possible contributions to the study and measurement of phytoplankton, the fundamental food source in most marine food webs.

Mr. Mitchell hails from Covina, California. He received his B.A. in Biology and his M.S. in Marine Sciences from the University of California at Santa Cruz. He is now pursuing a doctorate at

the Center in Coastal Oceanography. Mr. Mitchell's faculty advisor is Dr. Jed Fuhrman.

Mr. Hans Dam Guerrero, a graduate student at the MSRC, will use his fellowship to study micro-and very-fine zooplankton patchiness in Long Island Sound and its significance to survival of fish larvae. To assess fish populations, one must understand the temporal and spatial variability of food available to fish larvae.

Mr. Dam Guerrero, son of Amelia Guerrero of Caracas, Venezuela, received his B.S. degree in Oceanography from the University of Washington in 1982. He now pursues a masters degree in Marine Environmental Sciences at the Center. His particular area of interest is in fisheries biology. Mr. Dam Guerrero's faculty advisor at the Center is Dr. William Peterson.

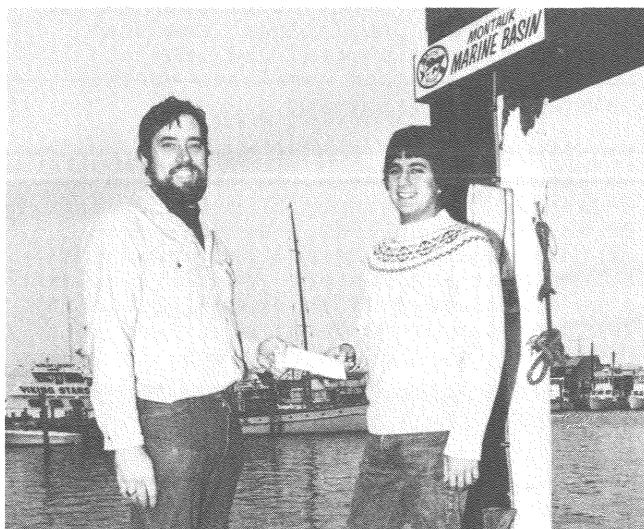


Stony Brook Provost Homer Neal (second from left) and MSRC Director J.R. Schubel (right) congratulate Noyes Fellows, James Mitchell (second from right) and Hans Dam Guerrero (left).

MONTAUK MARINE BASIN SCHOLARSHIP PRESENTED

The third annual Montauk Marine Basin Scholarship has been awarded to Marine Sciences Research Center (MSRC) student Seth Micah Yarish. The \$1,000 award, designed to promote research on a problem affecting Long Island's coastal waters, is made possible through a donation of the Montauk Marine Basin. Mr. Yarish was selected by Marine Basin President Carol Darenberg, Jr. and a committee of MSRC faculty. Mr. Yarish's project was chosen because of its potential to yield scientific and economic benefits to Long Island.

Mr. Yarish's research is part of the MSRC's large multi-disciplinary study to assess the feasibility of using floating seaweed farms to produce gas by harvesting the energy of the sun and then breaking down this seaweed microbially to generate gas. The MSRC will have a pilot seaweed farm in Long Island Sound later this month. Mr. Yarish is investigating the effects of the farm on the release of nutrients from the underlying seafloor. He will use the award to carry out his plan to study the effects of added organic matter--from the pilot seaweed farm--on the seasonal relationship between nitrogen generation from the seafloor and the sinking of organic matter in Long Island Sound.



Montauk Marine Basin President Carl Darenberg, Jr. (right) with Marine Basin Scholarship Winner Seth Micah Yarish.

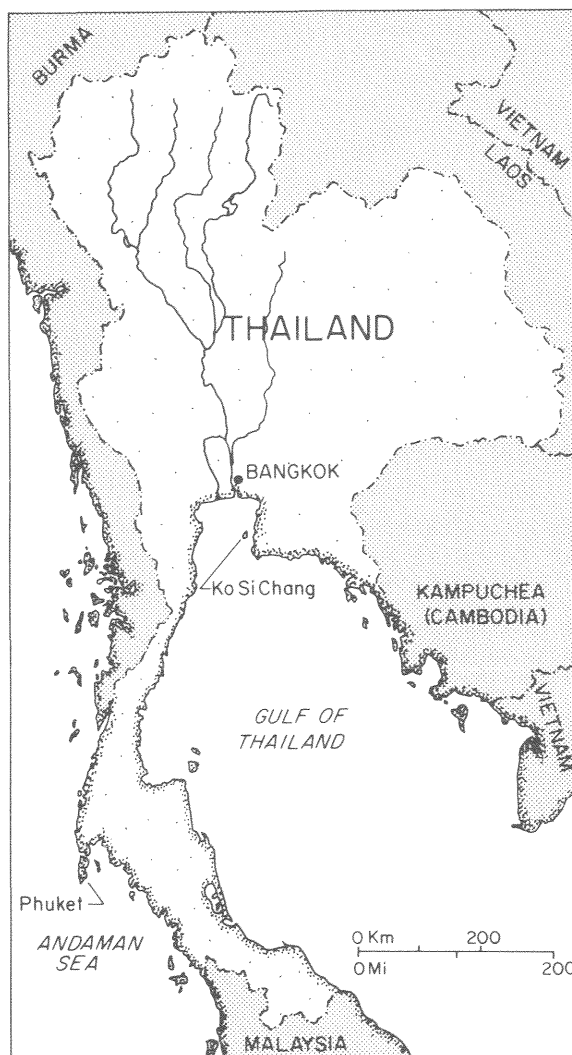
CARTER SERVES AS UNESCO/UNDP ADVISOR IN THAILAND

Professor H.H. CARTER spent 3 June to 2 July 1983 at the Department of Marine Science (DMS), Chulalongkorn University (Chula), Bangkok, Thailand as a UNESCO/UNDP consultant in physical oceanography. Professor CARTER was invited to Thailand to advise them on strengthening their programs of research and education in physical oceanography. Professor CARTER's visit combined lectures, site visits, informal discussions and interviews.

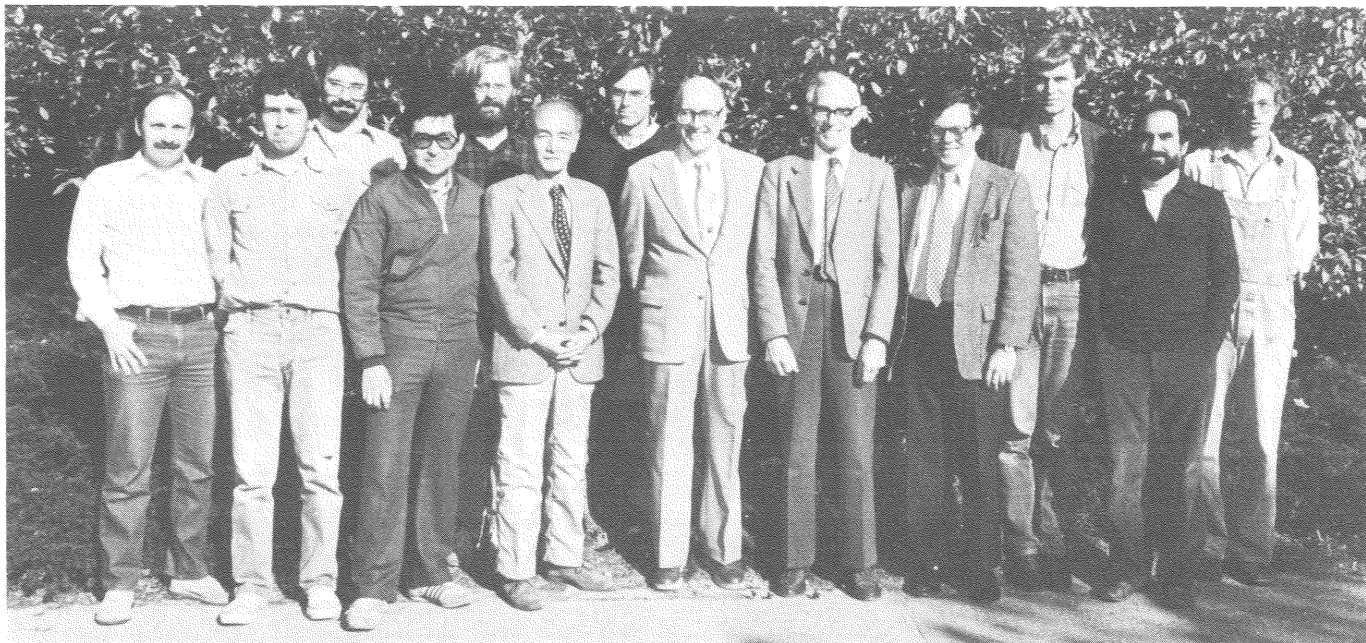
Chula now offers undergraduate (BSc) and graduate (MSc) degrees in oceanography with three options at each level: Biological Oceanography, Marine Science Oceanography and Physical/Oceanography. Professor CARTER evaluated the Physical/Chemical Oceanography curricula and recommended a new Physical Oceanography curriculum separate from the Chemical Oceanography option.

Professor CARTER visited laboratories of the University at Ang Sila and Ko Si Chang, the Department of Fisheries at Parknam and Phuket, the South East Asia Fisheries Development Center at Phrapaepaeng, and the Hydrographic Office of the Royal Thai Navy at Bangkok. Research vessels operated by the latter three organizations also were visited.

Professor CARTER made recommendations regarding the type and source of current meters they should acquire for work in coastal waters of Thailand. He reviewed Chula's library holdings and computer facilities, and presented four hours of special lectures. Six potential candidates for graduate education in physical oceanography were identified and interviewed and a joint program between Chula and Stony Brook has been proffered. A student from Thailand entered MSRC's Ph.D. program in Coastal Oceanography this fall, Mr. Pitiwong Tantichodok who has a BSc in Biological Oceanography from Chula's Department of Marine Science and a MSc in Biology from their Department of Biology.



Map of Thailand Indicating Professor Carter's Itinerary.



Professor K.F. Bowden (5th from right) at the Center with MSRC Staff and Students.

K.F. BOWDEN MSRC DISTINGUISHED VISITING SCHOLAR

Professor Emeritus K.F. Bowden of the University of Liverpool (England) visited the MSRC after the October Estuarine Research Federation meeting where he had delivered the paper "Turbulence and Mixing in Estuaries." Professor Bowden was this year's first Distinguished Visiting Scholar. The Distinguished Visiting Scholar Program, initiated in 1982, is designed to bring to the MSRC each year a small number of well established scientists and internationally renowned scholars. Professor Bowden is a physical oceanographer with a long and distinguished career in the study of estuarine diffusion and estuarine and physical coastal processes. Professor Bowden spent all day Thursday, 27 October, reviewing presentations by physical oceanography students of their masters and doctoral research providing the students with constructive commentary on their work.

On Friday morning, 28 October, Professor Bowden gave a seminar entitled "Aspects of Mixing in Estuaries." His paper topic was also the subject of the regularly scheduled Friday afternoon physical oceanography discussion group in which Professor Bowden participated. After informal but productive discussion, Professor Bowden attended an MSRC party on Friday evening and left to return to England on Saturday, 29 October.

COORDINATOR OF LAS PALMAS MARINE SCIENCES CENTER VISITS MSRC

Professor Jesus Perez Peña, Coordinator of the Marine Sciences Center at the Universidad Politecnica de Las Palmas visited the Marine Sciences Research Center from 27 October to 27 November. The purpose of his visit was three-fold. He came to study the MSRC program in chemical oceanography, to acquaint himself more broadly with the MSRC's other programs and their faculty, and finally, to explore the possibilities for collaboration and a future exchange program (for students and faculty) between the Marine Sciences Center Las Palmas and the MSRC. Professor Peña was interested in both curriculum and research developments in the various areas and specifically in chemical oceanography.

The Marine Sciences Center Las Palmas began its undergraduate program in 1982 and is now offering both the first and second years in a proposed five year course of study. Over five years it will establish a complete undergraduate program and will begin a Ph.D. program in oceanography. It is the only such institution in Spain with both a research and an education program.

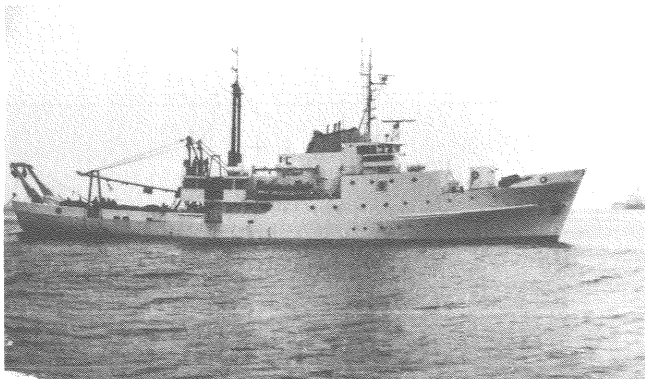
Professor Peña is a theoretical chemist with a research interest in molecular spectroscopy. He now intends to develop his research interests in chemical oceanography. Professor Peña came here as

Errata

In our previous issue, Vol.8, No.1, in Coastal Facets as Indicators of Shoreline Response to Rising Sea Level, it should have read "THE 40km STUDY AREA WOULD SUPPLY 387,700m³ OF SEDIMENT ANNUALLY," not 40m. Also, "THE ANNUAL PREDICTED LOSS OF SAND FROM THE STUDY AREA WAS 173,690m³," not 193,690m³.

a result of an invitation from J.R. Schubel, Director of the MSRC, following a visit to MSRC last summer by Professor Roberto Moreno-Díaz, Director of the Institute for Educational Science at Las Palmas. Professor Peña came with his wife, Maria Carmen Jimenez Acosta, a hospital pharmacologist.

Dr. Schubel expects to visit Las Palmas in the spring to continue the collaboration between Stony Brook and Las Palmas.



R/V Albatross IV Trawler used in National Marine Fisheries Spring and Fall '83 Cruises.

BLUEFISH DISTRIBUTION STUDY USING THE NATIONAL MARINE FISHERIES SERVICE (NMFS) SURVEY DATA—JIM GILMORE

The bluefish, *Pomatomus saltatrix*, is presently abundant along the east coast of the U.S. and supports an extensive recreational fishery. It has been estimated that this fishery alone accounts for 31% of the recreational landings. Recent declines in commercial fish species such as menhaden and the development of a foreign market have created a potential for commercial exploitation of bluefish. Concerns from recreational fishermen about the effects of commercial exploitation on the bluefish stock have stimulated the Middle Atlantic Fishery Management Council (MAFMC) to develop a bluefish management plan in an effort to conserve the fishery. At present, information needed for development of the plan such as studies on distribution, age and growth, and fecundity are not published. Any information of this nature, that can be supplied to the MAFMC, will contribute to the formulation of a successful management strategy, as well as enhance our knowledge of the biology of bluefish.

I am interested in the bluefish distribution studies. One of the most difficult problems with any distribution study is obtaining a data base large enough to identify spatial and temporal trends. NMFS has an extensive data base on many fish and invertebrate species, including bluefish, obtained from their on-going groundfish survey. This survey has been

performed at least twice a year since 1967 and covers the continental shelf from Nova Scotia to Cape Hatteras, NC. NMFS is supplying me with their previous 15 years of bluefish data and invited me to participate on their Spring and Fall 1983 cruises. I got a first hand look at the sampling design and helped NMFS in processing the catches in this 16th year of sampling. The concept of analyzing NMFS survey data has been successfully used by my advisor, Professor David Conover, in his distribution studies on Atlantic silversides, as well as by other researchers studying the migration and distribution of other species such as shad and other clupeids.

I participated on both cruises aboard the R/V Albatross IV, a 187 foot stern trawler out of Woods Hole, MA. The first cruise in March '83 was the southern leg of the spring survey which covered the continental shelf area from Delaware Bay to Cape Fear, NC. The second cruise in October '83 was the second leg of the fall survey covering the shelf from Delaware to George's Bank. The sampling is a random stratified design with inshore and off-shore stations. A 36 foot Yankee Otter trawl with 1285 pound doors is used as the sampling gear with 30 minute tows at 3.5 knots performed at each station. Captured fish are counted, measured, and weighed. In addition, sex and sexual maturity are determined and the fish are examined for evidence of pathology. Samples of scales, or otoliths and stomach content are taken from flounder, hake, bluefish and other species. After the preliminary data are taken, scientists attend to their specific research interest (e.g., blood parasitology, PCB analysis).

In addition to trawling, plankton are collected at specific stations with hydrographic and meteorological data.

Of the 172 stations sampled on the spring cruise, 38 bluefish were captured, all of which were from the southern end of the cruise track. This was not unexpected since bluefish are believed to move inshore and northward with increasing light and water temperature. The quantitative results of the fall cruise have not been compiled yet, however, all of the fish captured were located at the warmwater inshore stations of the New York Bight area. These data, will be added to the existing base and will hopefully provide some insight into biology and distribution of bluefish.

The cruise was a valuable learning experience for me, not only because of my research interests, but also for the interaction with other marine scientists from the west coast. Of the 27 scientists from both cruises, 9 were volunteers from institutions from Maine to North Carolina, while the remaining 18 were from NMFS laboratories located in Massachusetts,

Connecticut, Rhode Island and New Jersey. NMFS takes volunteers on the majority of their research cruises, which is an excellent way to obtain oceanic experience. Even if the field experience is not of interest, there does exist a vast amount of data in the NMFS computers that could support numerous research projects.

MSRC ASSOCIATES

We welcome as New Associates

Corporate Associate
Lawrence Aviation Industries

Individual Associates
Mr. S. Spencer
Mr. Isaac Weiner
Mr. Michael Zeitlin

We are pleased to have as Continuing Associates

Mr. and Mrs. Harry Carter
Mr. William Lieblein
Mr. Walker McKinney
Mr. and Mrs. John Mullane
Mr. and Mrs. Ronald Schoof
Mr. and Mrs. T. Schubel
Mr. William Swan
Mr. Paul Windels

AWARDS

P. Woodhead and J. Parker received a year award from A/S Niro Atomizer to study dry FGD wastes for marine disposal.

Graduate Council Fellowships were awarded to Valery Doris and Joseph Kerner.

Prof. J. Cochran received a National Geographic Award to study the growth rates of the chambered nautilus determined using natural radionuclides.

Gene Feldman's NASA predoctoral Fellowship was renewed for studies into the temporal and spatial distributions of phytoplankton.

Prof. D. Pritchard received an NSF grant for one year to study spatial variations in the temporal response of the residual currents to meteorological forcing in estuaries.

Prof. Mary Scranton is continuing her study of the role of cyanobacteria in the marine hydrogen cycle on a renewal grant from the Office of Naval Research.

Prof. D. Capone received an EPA grant for one year to study the interactions between microbiota and persistent pollutants in marine sediment.

Prof. B. Brinkhuis received a nine month grant from NOAA to carry out aquacultural work on fucus and laminaria.

PUBLICATIONS

BOWMAN, M.J., A.C. KIBBLEWHITE, S.M. CHISWELL and R.A. MURTAGH. 1983. Shelf fronts and tidal stirring in Greater Cook Strait, New Zealand. *Oceanologica Acta* 6(2):119-130.

CARPENTER, E.J. 1983. Physiology and ecology of marine planktonic *Oscillatoria (Trichodesmium)* (Review). 4(2):69-85.

ECKMAN, J.E. 1983. Hydrodynamic processes affecting benthic recruitment. *Limnology and Oceanography* 28(2):241-257.

FELDMAN, GENE. 1983. Remote Forcing of Sea Surface Temperature and Rainfall Anomalies at the Angola Coast. *Tropical Ocean-Atmosphere Newsletter* 20:6-7.

ITZKOWITZ, N., J.R. SCHUBEL and P.M.J. WOODHEAD. Responses of summer flounder, *Paralichthys dentatus*, embryos to thermal shock. *Env. Biol. Fish.* 8(2):125-135.

LOPEZ, G.R. and I.-J. CHENG. 1983. Synoptic measurements of ingestion rate, ingestion selectivity, and absorption efficiency of natural foods in the deposit-feeding molluscs *Nucula annulata (Bivalvia)* and *Hydrobia totteni (Gastropoda)*. *Marine Ecology, Progress Series* 11(1):55-62.

McHUGH, J.L. 1983. Jeffersonian democracy and the fisheries revisited. In: *Global Fisheries: Perspectives for the 1980's*, B.J. Rothschild (ed.).

SCRANTON, M.I. 1983. The role of the cyanobacterium *Oscillatoria (Trichodesmium) thiebautii* in the marine hydrogen cycle. *Marine Ecology, Progress Series* 11(1):79-87.

THORNE-MILLER, B., M.M. HARLIN, G.B. THURSBY, M.M. BRADY-CAMPBELL and B.A. DWORETZKY. 1983. Variations in the distribution and biomass of submerged macrophytes in five coastal lagoons in Rhode Island. *USA. Botanica Marina* 26(5):231-242.

PEOPLE AND MEETINGS

Professor MALCOLM BOWMAN chaired a session "Physical Processes of the Coastal and Nearshore Zone" at the International Association for the Physical Sciences of the Ocean's (IAPSO) interdisciplinary symposium during the IUGG XVII General

Assembly in Hamburg, West Germany August 15-27. He also presented an invited lecture at the same symposium entitled "Topographically induced cyclogenesis and upwelling in a baroclinic coastal current." The IUGG (International Union of Geodesy and Geophysics) is an international non-government organization, established in 1919, and is one of the 18 scientific Unions grouped within the International Council of Scientific Unions. The General Assembly is held once every four years.

Professor MALCOM BOWMAN went to sea with Canadian colleagues at the Institute of Ocean Sciences, Vancouver Island, between June 27 and July 11 aboard the Navy auxiliary vessel "Endeavor". Bowman is working with Dr. Ken Denman studying the dynamics and productivity of Dixon Entrance and Hecate Strait, deep coastal straits separating Queen Charlotte Islands from the mainland at the Alaskan-British Columbia border.

DR. BRINKHUIS travelled to Qingdao, Peoples Republic of China to attend the XIth International Seaweed Symposium 19-25 June. He presented a paper on "Cultivation of *Laminaria saccharina* in the New York Marine Biomass Program." The meeting was attended by 400 participants from 36 countries. After the meeting, Dr. Brinkhuis went on a tour of several coastal cities in the northeast of China to witness seaweed mariculture techniques. He then travelled to Japan and visited several seaweed research stations. Several of these stations were quite sophisticated, indicating the commitment of Japanese to furthering seaweed farming for food and chemical production.

Professor J.L. McHUGH participated by invitation in the Workshop on Raritan Bay, sponsored by the Sandy Hook Laboratory of the National Marine Fisheries Service, the American Littoral Society, and the New Jersey Marine Sciences Consortium - September 30, 1983. Professor McHUGH gave a paper, to be published subsequently, entitled "The Inshore Catch of Food Fishes in the Raritan Bay area." Professor McHUGH gave a lecture by invitation on "Management of Whale Resources" at the Mystic Marinelife Aquarium on 13 October 1983.

Professor McHUGH attends meetings of the Scientific and Statistical Committee of the Mid-Atlantic Fishery Management Council every two months in Philadelphia, PA.

MYRNA JACOBSON and PETER WOODHEAD presented a paper entitled "Epifaunal settlement and processes of community development and succession over two years on an artificial reef in the N.Y. Bight" at the 3rd International Artificial Reef

(IAR) Conference in New Port Beach CA, November 3-5, 1983. M. JACOBSON received a student award from the conference and a travel award from the MSRC Associates to attend.

P.M.J. WOODHEAD and M. ALEXANDER presented a paper on "Patterns of fish habitation in a new artificial reef, a quantitative study" at the IAR Conference.

JEFF PARKER presented his film "To build a reef...the C-WARP project" at the same conference.

H. BOKUNIEWICZ was invited to give seminars on sedimentation in estuaries at the University of Rhode Island Graduate School of Oceanography in their Biological Oceanography Series as well as at the University of Connecticut, Marine Sciences Institute.

FRIDAY DISCUSSION GROUP (FDG) celebrated its second anniversary on November 11. DR. PATTY LAPENNAS, founder of the group, was invited to attend as an Honorary Member. Professor SCHUBEL led the meeting with a speech "Welcome back, PATTY," followed by a special seminar by Professor L. SLOBODKIN, Dept. of Ecology and Evolution, on "Model of evolutionary space of hydra."

MARY SCRANTON was the departmental speaker in the Oceanography Dept. at Dalhousie University on 20 September 1983.

MARY I. SCRANTON and PAUL C. NOVELLI are participating in the cruise of R/V Wecoma working on the western continental shelf and slope of Mexico during November and December.

Nitrogen in the Marine Environment, by DOUG CAPONE and ED CARPENTER went to press in November 1983 (Academic Press).

LINDA DUGUAY and DOUG CAPONE went on a research cruise to the Bahamas with Dr. Pat Kremer of the University of Southern California on a University of Miami ship. DUGUAY studied the calcification rates of benthic tropical forams and CAPONE was working on nitrogen fixation and denitrification in algal mats.

DOUG CAPONE was invited to be a Visiting Professor in the Department of Marine Sciences at the University of Puerto Rico during the third week of November, 1983.

Professor J. R. SCHUBEL served as the U.S. Correspondent, Coastal Oceanography, and alternate chairman at the biennial meeting of the Intergovernmental Oceanographic Commission's WESTPAC (Western Pacific) Programme Group held in Townsville, Australia in September. The group met to develop a series of research programs that would be valuable to member states.

RECENT MSRC GRADUATES

M.S. Degrees, December 1982

- ADAMSON, BETTY ANN
Advisor: B.H. Brinkhuis
Thesis: Primary Productivity of Eelgrass in Great South Bay
- BRESLIN, VINCENT T.
Advisor: I.W. Duedall
Thesis: The Behavior of Fly Ash-Derived Arsenic in Seawater
- CROSS, TIMOTHY E.
Advisor: P.M.J. Woodhead
Thesis: Trace Metal Uptake by Mussels Exposed to Suspended Coal Waste Particles
- FOGEL, RICHARD A.
Advisor: P.M.J. Woodhead
Thesis: The Growth, Fecundity and Racial Analysis of the Ocean Pout (*Macrozoarces americanus*)
- KASSNER, JEFFREY
Advisor: R.E. Malouf
Thesis: Gametogenesis in the Hard Clam (*Mercenaria mercenaria*)
- KRAMER, JONATHAN G.
Advisor: B.H. Brinkhuis
Thesis: Seasonal Aspects of Photosynthesis in *Fucus vesiculosus*
- LIU, JAMES TSU-CHIEN
Advisor: H.J. Bokuniewicz
Thesis: Deformation of Layered System of Sediments
- MCCAFFERTY, SHAUN S.
Advisor: P.M.J. Woodhead
Thesis: Genetic Population Structure of Yellowtail Flounder
- NARDI, GEORGE C.
Advisor: W.T. Peterson
Thesis: A New Multi-purpose Dock Receipt for Fisheries Management
- RICHMOND, ROBERT H.
Advisor: P.M.J. Woodhead
Thesis: Aspects of Coral Biochemistry, Reproduction and Larval Physiology
- SLAUSON, TIMOTHY P.
Advisor: P.M.J. Woodhead
Thesis: Growth, Maturation and Fecundity of Spiny Dogfish *Squalus acanthias*
- ZION, PHILIP M.
Advisor: B.H. Brinkhuis
Thesis: Assessment of Remote Sensing Methods in a Shallow Tidal Bay

M.S. Degrees, May 1983

- CHEMERYS, RUTH A.
Advisor: M.I. Scranton
Thesis: Microbial Hydrogen Cycling and Nitrogen Fixation in Salt Marsh Sediment
- MURTAGH, RICHARD A.
Advisor: M.J. Bowman
Thesis: Summer Nutrients in Cook Strait, New Zealand

NICHOLSON, JOHN A.

Advisor: F.J. Carpenter
Thesis: Nitrogenous Nutrient Exchange in Great South Bay

ZIMMERMAN, MINDY S.

Advisor: H.J. Bokuniewicz
Thesis: Coastal Facets as Indicators of Shoreline Response to Rising Sea-Level

M.S. Degrees, August 1983

AMBROGIO, EDWARD

Advisor: Robert M. Cerrato
Thesis: Animal Sediment Relationships Along the South Shore of Long Island

ARAUJO, ROCHELLE

Advisor: I. Duedall
Thesis: Season Vertical Distribution of Trace Metals in the Central Bay of Concepcion, Chile

BARTON, HOWARD III

Advisor: B. Brinkhuis
Thesis: Nitrogen Uptake and Translocation by Eelgrass (*Zostera marina*)

BASS, ANN ELIZABETH

Advisor: R. Malouf
Thesis: Growth of Hard Clams, *Mercenaria mercenaria*, Feeding on Chlorophyte and Cyanobacterial Picoplankton

DUNCAN, BRIAN T.

Advisor: C. Wurster
Thesis: The Development of Resistance to PCB by Marine Phytoplankton

SCHNEIER, SHAUN M.

Advisor: Peter K. Weyl
Thesis: The Development of Space Specific Coastal Land Information Files for a Microcomputer Decision Assistance System

SIMON, HARVEY

Advisor: W. Peterson
Thesis: Management Alternatives for the Spiny Lobster (*Panulirus Argus*) Fishery of the Turks and Caicos Islands, BWI

TURNER, ELIZABETH

Advisor: R. Cerrato
Thesis: Effects of a Storm-Induced Breach on *Mercenaria mercenaria* in Moriches Bay

WILSON, THOMAS C.

Advisor: B. Brinkhuis
Thesis: Sulfate Reduction and Anaerobic Decomposition Associated with the Seagrass *Zostera marina*

Ph.D. Degree, August 1983

CHISWELL, STEPHEN M.

Advisor: M. J. Bowman
Thesis: Vorticity and Upwelling Near an Isolated Feature on the Continental Shelf



Dr. John V. Byrne (left), Administrator of NOAA, visited the MSRC on 18 October 1983 for discussions with Dr. John H. Marburger III (center), President of the State University of New York at Stony Brook, Dr. J.R. Schubel (right), Dean of the Marine Sciences Research Center, and members of the MSRC staff. Dr. Byrne presented an overview of NOAA activities and advised the MSRC on the development of its new coastal ocean science and management alternatives program.



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