


Winter 1991

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NSU Oceanographic Center

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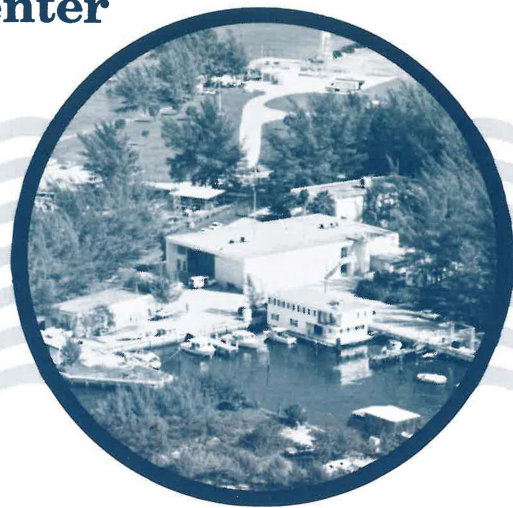
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Currents



Winter 1991 Volume V Number 1

TURTLE PROJECT ENTERS THIRD YEAR

The Broward County Sea Turtle Conservation project is about to enter its third year of activity at the Center. Headed by **Dr. Curtis Burney** and **Cathy Mattison**, the project will be in full swing in April and will continue through November, when the last egg hatches out.

Data from the 1990 nesting period have been analyzed, and they have yielded some surprising results. According to Dr. Burney, "The big deal this year is the tremendous increase in the number of nests. Loggerheads are up 40% from last year. We have data going back 10 years that give yearly nesting counts. This year's total was 69% above the 9-year average! For greens, the number of nests jumped from 20 last year to 106 this year, and the average over the previous 9 years was only 31.8."

Dr. Burney cites several possible explanations for this large nesting increase. One possibility is that there actually are more first-time nesters this year, and that we are seeing the results of Head Start programs that took place 20 years ago. (Sea turtles reach maturity at about age 20.) Another possibility is that sea turtles do not nest every year - "They may skip 1, 2, or 3 years." One factor that could cause this behavior is the amount of food available in a given year. Thus it is possible that so many turtles nesting this year was by chance. "However," Dr. Burney continues, "if this is true, then it happened in two different species at the same time. Loggerheads and greens are very different in their



Loggerhead hatchling.

feeding modes, so chance coincidence in nesting cycles doesn't seem that likely. It is also possible that turtles that normally nest elsewhere decided to nest here, but it would take a massive tagging program to run that down. If that is the case, then nesting would have to be lower somewhere else. But word on the street is that nesting is also higher north of here, in central Florida."

For those interested in statistics, the numbers are rather staggering this year. Countywide (including Lloyd Beach State Park), the following figures give the number of *relocated* eggs in 1990:

| | |
|--------------------|----------------|
| loggerheads | 228,587 |
| greens | 6,307 |

Overall, of the 242,296 total loggerhead eggs laid, 175,173 hatchlings were released, either naturally (from

unrelocated nests) or from hatcheries. Of the 10,980 green sea turtle eggs laid, 7,129 hatchlings were released. One leatherback nest was identified, but it was not relocated (42 of 78 eggs hatched).

One aspect of the data now being analyzed is particularly intriguing. There appear to be certain nesting distribution patterns along the beaches of Broward County. For instance, according to Dr. Burney, in areas where there are piers, the nesting events are significantly lower. This could be because nesting sea turtles do not like to have lights behind them. Nesting also is lower in areas where busy streets, such as A1A, run close to the beach.

All of this is of particular interest to Cathy Mattison, who plans to use distribution patterns as a M.S. thesis topic. She will go back to early data collected in the county up to 9 years ago, as well as the data that she has amassed over the past 2 years plus that from 1991, to look for areal patterns in nesting density.

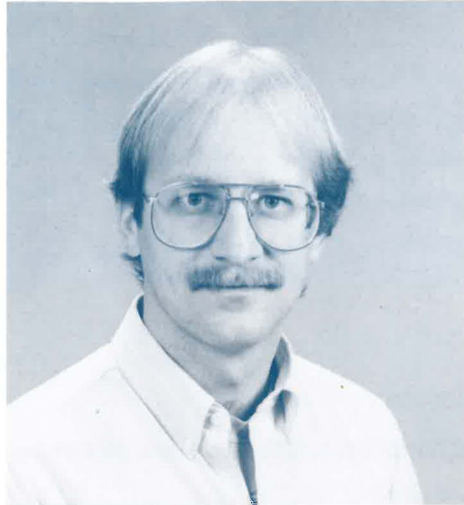
M.S. student **Bill Margolis** also is interested in the recent nesting data. He wants to study the relationship between tides and nesting frequency. He hopes to be able to determine at what point during the tide cycle most sea turtles lay their eggs. We will provide a nesting progress report in the Summer 1991 issue of *Currents*. Meanwhile, happy hunting.

Continued on page 2

Jeffrey Proehl Joins Faculty

We are pleased to announce that **Dr. Jeffrey A. Proehl** joined the Oceanographic Center's research faculty in February. He was formerly a Postdoctoral Fellow in the Advanced Study Program at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, from 1988 until 1991. Dr. Proehl earned the M.S. and Ph.D. degrees in Physical Oceanography from the University of Washington. His Ph.D. dissertation title was "Equatorial Wave-Mean Flow Interaction: The Long Rossby Waves." He received the B.S. degree (*cum laude*) in Marine Sciences from the University of South Carolina.

Dr. Proehl lists several research interests that he is eager to pursue. Among them are numerical modelling; equatorial, coastal and estuarine dynamics; wave-mean flow interaction; flow stability; and air-sea interaction. His interests in theoretical physical oceanography fit well with the ongoing research efforts of **Drs. Julian McCreary** and **Pijush Kundu**. He soon will receive federal funding sup-



Dr. Jeffrey Proehl, Assistant Professor.

port for research in modelling tropical instability waves.

Dr. Proehl has published a substantial number of scientific papers in major refereed journals and has participated in several national conferences. Among other honors, in 1985 he was selected to attend the NATO Advanced Study Institute on Physical Oceanographic Numerical Modelling in Banyuls-Sur-Mer, France. Welcome aboard, Jeff!

Continued from page 1



On the beach: Bill Margolis and Cathy Mattison.

People On The Move

During January 30-31, **Dr. Julian McCreary** and Ph.D. student **Zuojun Yu** visited the University of South Florida in St. Petersburg. Dr. McCreary presented a seminar on their recent work, entitled "Equatorial Dynamics in a 2-1/2 Layer Model."

Dr. Gary Kleppel has logged many miles this winter and will continue in that mode in the coming months. In January he attended a meeting of the *ad hoc* science advisory committee of the Ocean Fisheries section of NOAA's Coastal Ocean Program, held in Silver Spring, Maryland. In February he attended a meeting of the American Fisheries Society in Brooksville, Florida, where he presented a paper on the role of the Gulf Stream front in fish larvae survival and recruitment in Florida. M.S. students **John Braker**, **Carol Burkart**, and **Gayle Stone** also attended.

During March 25-28, Dr. Kleppel and his students will travel to St. Petersburg to attend the second annual meeting of The Oceanography Society. They will present a poster entitled "Physical/Biological Characterization of the Gulf Stream Front and Adjacent Waters off Southeast Florida: Trophic Implications." Ph.D. students **Zuojun Yu** and **Yasushi Fukamachi** also will attend the meeting.

Dr. Kleppel will return to St. Petersburg in April to present a seminar on his Gulf Stream front work at the University of South Florida. On May 1 he will present a seminar entitled "Zooplankton Diet and Egg Production" at the NOAA Great Lakes Environmental Research Laboratory in Ann Arbor, Michigan.

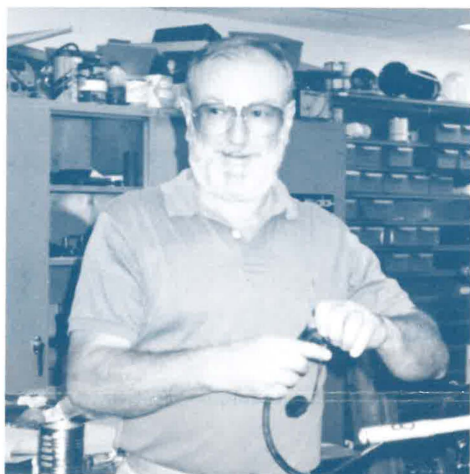
In June Dr. Kleppel will be on the road again, traveling to Halifax, Nova Scotia, to attend a meeting of the American Society of Limnology and Oceanography. He will give a talk entitled "Carotenoid Pigments in Microzooplankton." **Gayle Stone** will present a poster with Dr. Kleppel on "Copepod Density, Container Volume, and Egg Production of *Acartia tonsa*."

Cathy Mattison and **Bill Margolis** will attend the Eleventh Annual Sea Turtle Workshop in Jekyll Island, Georgia, February 26 to March 2. Cathy will present a paper on "Effects of Beach Renourishment on Sea Turtle Nesting in Broward County, Florida," as well as a poster on the results of the 1990 Broward County Sea Turtle Project.

FINAL FIELD EXPERIMENT READY FOR THE ABACOS

Dr. Russell Snyder and group are making preparations for the final field experiment in the current series (see *Currents*, Summer 1990), to monitor the growth and decay of waves in the Bight of Abaco, Bahamas. The experiment is intended to carry the research one step farther than last spring's effort, in that the group will try to widen the coverage of the wave field by monitoring the full Bight rather than just the northern section.

"The whole idea of the experiment," explains Dr. Snyder, "is to get a complete picture of the development of the wave field throughout an enclosed basin. Last year's experiment didn't allow us to get a complete picture be-



Machinist Laszlo Nemeth.



Electronics consultant Chuck Wilkins.

cause of telemetry range limitations, on the spatial side. On the temporal, or time, side, the ideal would be to have a totally continuous record at all stations. But that would have exceeded the capacity of the telemetry link. So we compromised by collecting only 10 minutes of data for each half hour at the stations."

In an attempt to increase the spatial coverage, Dr. Snyder reports, "We are putting in an intermediate relay station, so that the stations in the southern Bight can send data to the base station via this relay. To expand the temporal coverage, we will preprocess the raw data at the remote sites. This will condense the amount of data that has to be sent, and will effectively double our temporal coverage. We will be getting 20 minutes' worth of data out of each 30 minutes, instead of just 10."

So, in early March the group will once again depart for the Abaco Bight aboard the University of Miami's R/V *Calanus* and Dr. Snyder's 36-foot ketch, *Catspaw*. As before, a great deal of equipment, as well as people, will need to be transported.

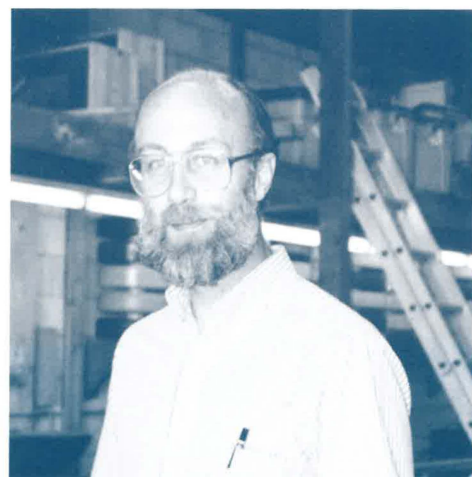
Helping out with the project this year will be several Center M.S. students, including **Kevin Carter**,

Kevin Kuta, and **David Stout**. Center technicians **Terry Thompson** and **Ted Tankard**, as well as consultant **Greg Gosch**, will be on hand for most of the operation. Center Adjunct **Dr. Robert Long**, of NOAA/AOML in Miami, and his wife **Barbara** will be on hand for part of the odyssey, as will the Center's **Dr. Georges Blaha**, his wife **Patricia**, and **Dr. Duncan Ross**, of CIMAS, University of Miami. Other colleagues on the research end once again will include **Dr. Wayne Neu**, of Virginia Polytechnic Institute and State University, and the usual contingent from Delft Hydraulics in the Netherlands.

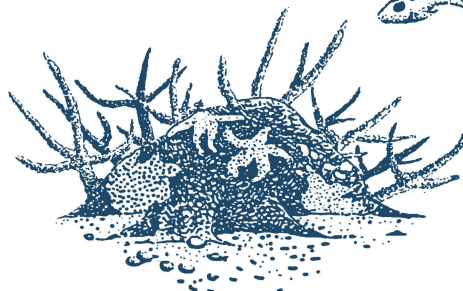
The group plans to wrap it up by mid-May. Bon voyage!



M.S. student Kevin Kuta.



Technician Ted Tankard.



Seminars Past And Future

The Center has been providing a multitude of seminars in recent months and will continue to do so in coming months. There have been two sets of talks. One is entitled "Public Lecture Layman Talks," which are presented in the evening by Center faculty and graduate students. The other set is called "Seminars in Marine Sciences," which are given by guest speakers usually on Friday afternoons.

LAYMAN TALKS:

- 11/20/90: "The Marine Food Web,"
by **Dr. Gary Kleppel**
- 1/16/91: "Deep Sea Bioscience,"
by **Dr. Charles Messing**
- 2/13/91: "Gravity Waves,"
by **Dr. Russell Snyder**
- 3/13/91: "Squirts," by Ph.D. student
Yasushu Fukamachi,
and "Gulf Stream," by M.S.
student **Gayle Stone**
- 4/17/91: "Electron Microscopy and
Marine Geology,"
by **Dr. Pat Blackwelder**
- 5/15/91: "On our Beaches:
Molecular Biology and
Evolution,"
by **Dr. Nathaniel Apter**
- 6/15/91: "Florida Sea Turtles,"
by **Dr. Curtis Burney**
- 7/17/91: "El Niño and Global
Weather,"
by **Dr. Julian McCreary**
- 8/21/91: "Deterministic Chaos,"
by **Dr. Pijush Kundu**
- 9/18/91: "Coral Reefs," by
Dr. Richard Dodge

SEMINARS IN MARINE SCIENCE:

- 12/17/90: "Equatorial Wave Mean
Flow Interaction," by
Dr. Jeffrey Proehl
(new Center Faculty)
- 1/11/91: "Control of Reproduction in
Crustaceans," by **Dr. L.
Scott Quackenbush**
(Florida International
Univ.)
- 1/18/91: "The Ecology of Black Coral,
Antipathes fiordensis, from
New Zealand," by **Dr.
Walter Goldberg** (Florida
International Univ.)

- 1/24/91: "Can Reflected Extra-equa-
torial Rossby Waves Drive
ENSO?" by **Dr. William
Kessler** (Woods Hole
Oceanographic Inst.)
- 2/1/91: "Fish Recruitment in Tropi-
cal Ecosystems," by
Dr. M. Elizabeth Clarke
(Univ. of Miami)
- 2/8/91: "Taxonomy of Dwarf Cis-
coes," by **Dr. Barbara
Shields** (Florida Marine
Research Inst.)
- 3/1/91: "Data Assimilation into
Numerical Models," by
Dr. Robert Long (NOAA/
AOML, Miami)
- 3/8/91: "Ecology and Fisheries
Biology," by **Dr. Daniel
Beckman** (Louisiana State
Univ.)
- 3/14/91: "Larval Fish Recruitment,"
by **Dr. Edward Houde**
(Chesapeake Biological
Laboratory)
- 3/22/91: "A New Look at Near Sur-
face Layers of the North-
western Indian Ocean,"
by **Dr. Donald Olson**
(Univ. of Miami)

Another Seminar Past

On November 15, **Dr. Charles Messing** presented an invited seminar sponsored by the Environmental Studies Council and held at the Environmental Studies Center, Jensen Beach, FL. The title of his talk was "Beneath Crystal Seas: A Half-mile Down in the Bahamas."

FLORIDA SEA GRANT SEMINAR

On March 14, **Dr. Gary Kleppel** will host one of a series of Florida Sea Grant seminars at the Center. The speaker will be **Dr. Edward Houde**, of the Chesapeake Biological Laboratory, University of Maryland. His topic will be "Variability and Vital Rates: Causes of Fluctuations and Potential for Regulation in the Early Life of Fishes." As stated in a Sea Grant seminar announcement, "Commercial and recreational fisheries are key industries in Florida's economy. Florida exploits over one hundred species of fin and shell fishes. As a result, the management problems that Florida encounters with respect to its fisheries are unparalleled in the nation. It is widely held that an understanding of an ability to predict the recruitment of species would be of enormous value in fishery

management. Because mortality during the early life history stages of most fishes far exceeds that during the adult stages, accurate and potentially long-range stock forecasting is feasible when one can predict survivorship through early life history. The implications to regulating stocks and ensuring long-term resource availability to the industry are addressed in this seminar." Dr. Kleppel expects a large turnout from other Florida institutions at this special seminar. Nova University is one of 14 participating institutions in the Florida Sea Grant College Program, which is housed at the University of Florida.



Ph.D. student Dennis Stetter.

NEW PH.D. STUDENT JOINS RANKS

Dennis Stetter has enrolled as a Ph.D. student in oceanography with a specialty in marine microbiology, directed by **Dr. Curtis Burney**. At present Dennis is working as an admissions counselor at Nova's main campus, but he feels that he will be able to take on his graduate studies without too much difficulty. Dennis received a B.S. degree from the University of Illinois and an M.S. degree in microbiology from McGill University in Montreal, where he studied bacterial genetics. Although his previous work has centered around terrestrial bacteria, Dennis feels that he can easily make the transition to marine bacteria, an area of research in which there is still much to be learned. Welcome aboard.

UNDERCURRENTS

INSTITUTE OF MARINE AND COASTAL STUDIES

Spring Term Schedule For 1991

M.S. specialties are **Marine Biology and Coastal Zone Management**. Courses may be of interest for teacher recertification. Each course counts 3 credits or may be audited. Tuition is \$225/credit hour (50% less for audit). Each class meets once per week for 12 weeks, from 6:30 PM to 9:30 PM. For further information, call (305) 920-1909.

Marine Invertebrates (OCMB-6080): Deals with the important groups of planktonic and benthic invertebrates, with emphasis on their abundance, role in food webs and nutrient cycling, feeding and growth rates, productivity, reproduction, and interactions. Instructor: **Dr. Charles Messing** (Center Faculty). Begins Mon., April 1.

Dynamic Biological Oceanography (OCMB): Explores modern concepts of life in the sea, including scales and coupling of biotic and physical variability, the use of modern continuous sampling techniques, and data handling. Guest lectures and roundtable discussions will examine relationships between physical and biological processes in a variety of oceanographic systems (e.g., California Current, Gulf Stream). Instructor: **Dr. Gary Kleppel** (Center Faculty). Begins Tues. April 2.

Marine Geology (OCOR-5604): Stresses the origin, form, and resources of the ocean basins and continental margins. Topics include sea-floor spreading; trenches and island arcs; mountain building; coral reefs and atolls; sedimentation; ocean mining; coastal morphology; and the impact of wave action and human activities on beaches and coasts, continental shelves, and submarine canyons. Instructor: **Dr. Pat Blackwelder** (Center Faculty). Begins Wed., April 3.

Wetlands Ecology (CZMT-0791): Covers basic ecology of coastal marine and freshwater wetlands. Includes intensive fieldwork on identifying wetland indicator species; techniques of wetlands agency delineation based on vegetation, soils, and hydrology; and evaluation of wetland functions. A minimum of 4 required Saturday field trips/lectures will replace evening classes. Instructor: **Dr. Bart Baca** (Center Adjunct Faculty). Begins Thurs., April 11 (1 week late).

NEW PH.D. STUDENT ARRIVES



Ph.D. student Shuliang Zhang.

Shuliang Zhang, a Ph.D. student in physical oceanography, finally arrived at the Center in January to embark on a new academic venture. His major professor is **Dr. Julian McCreary**, who accepted Shuliang as a student over a year ago. However, many obstacles had to be overcome before he was able to make the trip from the People's Republic of China. Shuliang earned an M.S. degree in meteorology from the Ocean University of Qingdao. He emphasizes that his background includes studies in oceanography as well as meteorology. For his thesis work, he plans to concentrate on either boundary currents or tropical ocean currents, but he has not yet decided which direction his research will take. At present Shuliang is enrolled in one formal course in oceanography: Descriptive Marine Physics, which is taught by **Dr. Pijush Kundu**. He is also taking three courses in the tutorial mode: Numerical Methods, Mathematical Techniques, and Dynamic Oceanography. Although it has taken a year for Shuliang to get here, he is certainly hard at work making up for lost time.



M.S. STUDENTS TAKE ON MONITORING PROJECT

Three M.S. students, under the direction of **Drs. Curtis Burney** and **Gary Kleppel**, are studying a small local lake to determine the effectiveness of treated sewage effluent in a deep lake. **David Stout**, **Laura Goepfert**, and **Carol Burkart** travel to the lake three times a week to monitor their experiments.

In a 6-month project, David and Laura are looking at free chlorine and combined chlorine levels to see whether the concentrations are possibly harmful to aquatic life in the lake, which contains several species of fresh-water fish. They are also checking fluctuations in the pH levels to determine whether the effluent is causing significant stress to the lake.

Carol's experiment involves measuring primary production in the lake. She is incubating water samples taken at different depths, from the surface to the 1% light level, to determine whether the effluent is enhancing or retarding production. In this experiment, she is using the classic light/dark bottle method, whereby water in the clear bottles produces oxygen by photosynthesis, and water in the dark bottles, where no photosynthesis takes place, is marked by the consumption of oxygen. Through specific calculations, the amount of carbon produced at various levels can then be determined. Using this method, Carol can classify the state of the lake by the amount of productivity that takes place at 5 different stations at varying distances from the point of effluent discharge.

Nutrient, biomass, and diel dissolved oxygen studies also are underway at the lake. Nitrogen and phosphorus, which are limiting nutrients for phytoplankton, are indicators of where excessive amounts of nutrients may be delivered to the lake by the sewage discharge. Chlorophyll fluorescence is used to measure the phytoplankton biomass at different depths at the 5 stations. Fluctuations in phytoplankton blooms are monitored monthly for a period of one year to look for any seasonal changes that may occur.



David Stout and Carol Burkart in the Biology Laboratory.

Help Wanted!

Center Adjunct **Dr. William Venezia**, of the Navy Surface Warfare Center, has announced that the Marine Technology Society will sponsor a conference on Remotely Operated Vehicles at the Diplomat Hotel in Hollywood, May 21-23. He reports that he could use some volunteers to assist with the conference logistics. Free admission and other perks will be offered in return. For further information, call Student Association president **Gayle Stone** at (305) 920-1909.

STUDENT UPDATE

Jerome Hall, now a Ph.D. student in marine archaeology under **Dr. George Bass** at Texas A&M University, plans to revive the extensive shipwreck excavations begun in the Dominican Republic by the late **Capt. Peter Throckmorton**, a Center Adjunct (see *Currents*, Fall 1987). Jerome has been named Principal Investigator of the project. He writes, "Peter's dream of excavating the 'Pipe Wreck' now lives on in the nonprofit 'Monte Cristi Shipwreck Project.' I'm busy raising money for a June-August '91 excavation. The permit has been obtained, and 'Earthwatch,' a nonprofit volunteer organization, has accepted the excavation as one of their programs (32-48 volunteers over 100 days, \$31,000 funding!)." Good luck, for Peter.

Latsy Best, a recent M.S. graduate, is now teaching marine biology at Palm Beach Community College. M.S. graduate **Glenda Kelly** is wearing two worthy hats: she is an adjunct instructor teaching vertebrate structure and function in the undergraduate program at Nova College, and she also is a resource teacher at Bonnet House in Fort Lauderdale. M.S. graduate **Carol Reese** wears two hats as well. She is working as a marine laboratory technician at NOAA/AOML in Miami and also is enrolled in the Ph.D. program at Florida International University, where she will continue studies in marine biology. **Joanne Hidalgo**, who is about to graduate, is working as a consultant in coastal zone management at HMM Associates, Inc., Concord, MA.

New Winter Term Students Arrive

The following are new winter term students in the Institute for Marine and Coastal Studies:

Li-Chieh Chang: National Sun Yat-Sen University

Vicci Cruse: University of Miami

Inger Hansen: Florida Atlantic Univ.

Jang Hwan Jeon: Kon-Kuk University and Hofstra University

Stephanie Morris: Seton Hall College

Sofia Russell: Jacksonville Univ.

BOARD OF GOVERNORS MEETS

On January 11, the Center's newly appointed Board of Governors met in the library of the Forman Building. Present were **Betty Blaisdell Berry, Bud Brown, Richard Donato, John Grady, Michael Greep, Chris Jacoby, Marshall Lytle, Jerry Pascoe, Joe Paskoski, Jim Ramsey, Ron Stroud, Anna Tal-lent, and Richard Wilson.** Guests included Nova President **Dr. Abraham Fischler,** Vice-President **Richard Miller, Louis C. Huch,** Director of Center Development, **Jack LaBonte,** Trustee, and **Richard Nolan.** Also present were several Center faculty members. Mr. Miller reported that the Board has a new chairman, **Chris Jacoby,** and a new vice-chairman, **Bud Brown.**

Among the major topics discussed were the types of fund-raising activities that the Center might consider, as well as goals and action plans for the various standing committees set up earlier. Mr. Jacoby brought up the Board's short-term goals and wish lists, as well as more ambitious, long-term goals. Dr. Fischler spoke briefly of the satisfaction that comes from establishing small goals, and suggested that we think about hosting some social events.

Dr. Julian McCreary, Center Director, announced the hiring of a new faculty member, as well as the receipt of new research grants by **Dr. Russell Snyder** (\$400,000) and **Dr. Pijush Kundu** and himself (\$140,000). **Dr. Richard Dodge,** Associate Director, reported the receipt of the Rinker Companies Foundation grant [see p. 8]. He also announced that the Center will host a dinner for the Marine Industries Association on April 11 and invited the Board to attend.

Prior to adjourning, the Board decided to hold its next meeting just before the Marine Industries dinner on April 11. The Board plans to meet four times a year.



Kathy Maxson, Dr. Charles Messing, and Dr. Russell Snyder.



Dr. Lu Peng.

HOLIDAY PARTY IS SMASH HIT

As usual, the annual Christmas party at the Center, held on December 15, was quite a success. That is, provided that one measure of success is the quantity of food put away at a given time. This year it took three five-foot hoagies to tame our appetites. Music was provided by local talent found among the faculty and staff, and a great time was had by all. Guests included many visitors from Nova's main campus, Friends of the Oceanographic Center, and of course faculty, staff, and students. The festivities were orchestrated by **Kathy Maxson.**



Nova Vice-President James Guerdon.

SPECIAL AWARDS DEPARTMENT

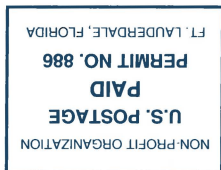
The Ohio State University recently honored one of its alumni, **Dr. Georges Blaha,** a Center Research Scientist, by presenting him with the Kaarina and Weikko A. Heiskanen Award. His award letter reads, in part, "Annually, on the Eve of Thanksgiving Day, an award is made to a person 'who has most successfully forwarded the cause of geodesy and strengthened the reputation of the Department of Geodetic Science and Surveying in the field of geodesy.' This year the faculty have chosen you to be the recipient of the award.... The award consists of an engraved plaque, which is being sent to you under separate cover." Congratulations, Georges.



Jan Witte and Dr. Charles Forman.



Nova's Ed Pattison and Nancy Varner.



Oceanographic Center
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Dania, Florida 33004

Currents, Winter 1991

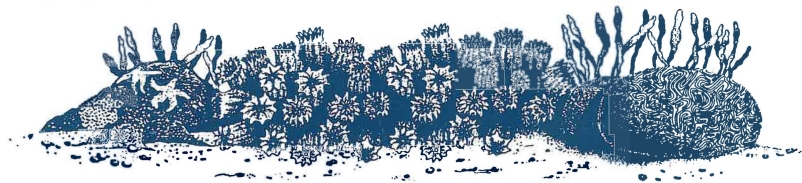
NOVA UNIVERSITY 

RINKER GIVES CENTER UNRESTRICTED RESEARCH FUNDS



At the end of last year, Rinker Companies Foundation presented the Center with a terrific Christmas gift: unrestricted funds totaling \$50,000, to be paid in installments of \$10,000 per year for 5 years. According to **Dr. Richard Dodge**, the funds will be applied to graduate student research projects, ranging from wetlands studies to coral reef and aquaculture projects. A portion of the funds will be used to enhance the Center's outside laboratory facilities, which require a running seawater system to support the marine life under study.

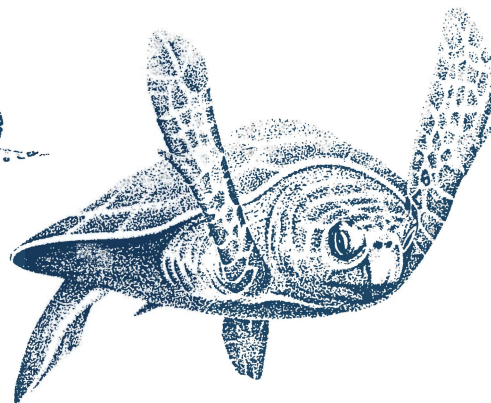
Rinker's G. Duncan Lott III, John Ordnung, and Jim Jenkins present check to Dr. Julian McCreary, Dr. Richard Dodge, and Nova Development officer Louis C. Huch.



Currents

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