ISSN: 0098-4590

Florida Scientist

Volume 65 Supplement 1

Program Issue

66th ANNUAL MEETING

BARRY UNIVERSITY
Miami, Florida
MARCH 7-9, 2002

ISSN: 0098-4590

FLORIDA ACADEMY OF SCIENCES
2001-2002 OFFICERS

PRESIDENT: MR. BARRY WHARTON, HDR Engineering, Inc.
PRESIDENT-ELECT: vacant
PAST PRESIDENT: DR. MARIBETH DURST, Saint Leo University
SECRETARY: MR. RONALD FEDERSPIEL, University of South Florida
TREASURER: MS. GEORGINA WHARTON.
COUNCILLORS-at-LARGE:
DR. JAN EMS-WILSON, Valencia Community College
DR. ELIZABETH HAYS, Barry University
MS. RITA KARPIE
DR. RICHARD TURNER, Florida Institute of Technology
EXECUTIVE DIRECTOR: DR. GAY BIERY-HAMILTON, Rollins College.
ASSISTANT DIRECTOR: NATALIE SMITH, University of Florida
FLORIDA SCIENTIST: MS. BARBARA MARTIN, Co-Editor; Editor, DR. DEAN MARTIN, University of South Florida.
BUSINESS MANAGER, FLORIDA SCIENTIST: DR. RICHARD TURNER, Florida Institute of Technology.
PROGRAM CHAIR: DR. DONALD LOVEJOY, Palm Beach Atlantic College.
LOCAL ARRANGEMENTS CHAIR (2002 meeting): DR. ELIZABETH HAYS, Barry University.
JUNIOR ACADEMY OF SCIENCE CO-ORDINATOR: MS. PAT ZALO, Manatee High School.

SECTION CHAIRS

Coordinator: Dr. Rick Copeland, Florida Department of Environmental Protection.
Agricultural and Natural Resource Sciences: Dr. James Cuda, University of Florida.
Anthropological Sciences: Dr. Linda Taylor, University of Miami
Atmospheric and Oceanographic Sciences: Dr. John Trefry, Florida Institute of Technology.
Biological Sciences: Dr. Thomas Dreschel, Kennedy Space Center, and Mr. David Karlen, Environmental Protection Commission of Hillsborough Co, Co-Chairs.
Computer/Mathematical Sciences: Dr. Jacci White and Dr. Siamack Bondari, Saint Leo University, Co-Chairs.
Engineering Sciences: Mr. Al Hall, City of Tallahassee.
Environmental and Chemical Sciences: Ms. Melissa Derby, University of South Florida
Florida Committee on Rare & Endangered Plants & Animals: Dr. I. Jack Stout, University of Central Florida, and Ms. Laura Finn, Fly By Night, Inc., Co-Chairs.
Geology/Hydrology: Dr. Gary Maddox, Florida Dept. of Environmental Protection.
Medical Sciences: Dr. Arvind Dhople, Florida Institute of Technology, and Dr. Roseann White, University of Central Florida, Co-Chairs.
Physics and Space Sciences: Dr. Hamid Rassoul, Florida Institute of Technology, and Mr. Al Hall, City of Tallahassee, Co-Chairs.
Science Teaching: Dr. Robin Jordan, Florida Atlantic University.
Social Science: Dr. Maribeth Durst, Saint Leo University.
Urban & Regional Planning: Mr. Daniel Moss, South Florida Water Management Dist.

2002 PROGRAM ISSUE

THE SIXTY-SIXTH ANNUAL MEETING OF THE
FLORIDA ACADEMY OF SCIENCES
in conjunction with the
Florida Junior Academy of Science
and the Science Talent Search

Featuring a Special Session:

Forever Glades: Current Trends in Everglades Restoration
with a Saturday Field Trip to the Rocky Glades
and a Helicopter Tour of the Everglades Construction Project's STA's

Medalist Address

The Value and Destruction of Florida's Coastal Communities
by Dr. Clinton J. Dawes

Gale Plenary Lecture

The Everglades Construction Project – Science, Engineering and the
Political Process Marching to the Same Beat.
by Joseph A Schweigart, P.E., P.L.S.

Barry University
Miami
March 7-9, 2002

FLORIDA SCIENTIST
Volume 65 Supplement 1
ISSN: 0098-4590 Price: $5.00

Published by the Florida Academy of Sciences
Orlando Science Center
777 E. Princeton Street Orlando, FL 32803

TABLE OF CONTENTS

PRESIDENT'S WELCOME

It is indeed a pleasure to welcome participants to the Sixty-sixth Annual Meeting of the Florida Academy of Sciences. This year we are being hosted by Barry University, one of South Florida's leading private educational institutions, and we wish to express our sincere appreciation to the Barry administration, staff and faculty for the preparations they have made to enable us to hold a profitable and enjoyable meeting.

The Florida Academy of Sciences has the distinction of serving as the only scientific society in the State with the mission of embracing all the disciplines in the field. This emphasis enables us to bring together representatives from many branches of science to concentrate on a single issue of statewide importance. This year we are pleased to present a Special Session titled Forever Glades: Current Trends in Everglades Restoration. We are indebted to Mr. Mike Norland, project manager for the Hole-in-the-Donut Restoration Project for his expertise in arranging a field trip to the Rocky Glades, and to Mr. Daniel J. Moss and the South Florida Water Management District, for arranging a helicopter tour of the Everglades Construction Project's STA's..

Barry Wharton

MEETING INFORMATION

The 66th Annual Meeting of the Florida Academy of Sciences will be held at Barry University in Miami, Florida from March 7-9, 2002. At 12:45 PM Friday, March 8, the Annual Business Meeting will take place, followed by the Gale Plenary Lecture at 1:30 PM. The lecture will be given by Joseph A. Schweigart, P.E., P.L.S. He oversees the Everglades Construction Project and the Comprehensive Everglades Restoration Plan for the South Florida Water Management District. Following the Academy Banquet on Friday evening, Dr. Clinton J. Dawes, Distinguished Research Professor at the University of South Florida and the 2001 Academy Medalist, will give the Annual Medalist Address. A Special Session will be given on Friday, beginning at 9:30 AM. It is titled *Forever Glades: Current Trends in Everglades Restoration.* In connection with this session, on Saturday there will be an all-day field trip to the Rocky Glades, and a Helicopter Tour of the Everglades Construction Project's STA's. Advance reservations for the Helicopter Tour must be made with Mr. Daniel J. Moss, Chair of the Urban and Regional Planning Section, which meets in O'Laughlin 114 at 11:00 AM Friday.

LOCATION

In June 1940, a forty-acre tract of tropical vegetation located in residential Miami was transformed into the campus of Barry College. By action of the Board of Trustees, the college became Barry University on November 13, 1981. Today's University community is comprised of approximately 7,000 students, served by over 700 administrators, faculty members, and support staff representing diverse religious, cultural, and ethnic backgrounds. Barry is coeducational and fully accredited. Needs of the local community led Barry to begin graduate programs for men and women in 1954. Barry has continued to grow in recent decades, adding the Continuing Education Program (1974), the School of Business (1976), the Division of Biological and Biomedical Sciences (now the School of Natural and Health Sciences) (1983), and the School of Graduate Medical Sciences (1985). The physical plant of the Miami campus includes 40 buildings, with indoor and outdoor athletic facilities spread over 40 acres of the University's 90-acre campus, as well as adjacent areas. There is also a campus in Orlando.

Barry University's main campus is located in the Village of Miami Shores, seven miles north of downtown Miami, and 14 miles south of Ft. Lauderdale. For easy access to the campus, take the 125th St. East Exit from I-95, follow 125th St. east for roughly 0.5 miles, and turn right on NE 2nd Avenue. The campus lies between 115th St. and 111th St. on the west side of NE 2nd Ave.

REGISTRATION

ALL PARTICIPANTS MUST REGISTER and will receive the Program Issue of the *Florida Scientist* (Supplement 1 to Volume 65) at the Registration Desk, which will be open on Thursday afternoon, March 7, 3:00-5:30 PM, Friday, March 8, 7:30 AM-4:00 PM, and Saturday March 9, beginning at 7:30 AM.

LODGING

No reservations can be made through the Academy. A complete listing of hotels in the greater Miami area is given at the website http://www.miamishores.com/ The following hotels are nearby and may have "Barry rates" if you identify yourself with the FAS meeting at Barry University. Prices listed are approximate and may show seasonal variation. Early reservations are a must at this time of year.

White House Inn (10 minutes from Barry). Barry gives this their highest recommendation. 2305 NE 123rd Street, North Miami, FL 33181, 305-893-8280 - Barry Rate during season $55

Best Western Inn on the Bay (20 minutes from Barry). Also highly recommended by Barry. 1819 79th Street Causeway, North Bay Village, FL, 305-865-7100 - Barry Rate around $75

Sea View Hotel (20 minutes from Barry). Highly recommended but Barry Rate in season is $185. 9909 Collins Avenue, Bal Harbour, FL 33154, 305-866-4441

Bay Harbor Inn & Suites (20 minutes from Barry). Also highly recommended; rates $130-140. 9660 East Bay Harbor Drive, Bay Harbor Island, FL 33154, 305-868-4141

Howard Johnson Motor Lodge (20 minutes from Barry). Rates in season: $99+. 16500 NW 2nd Avenue, North Miami, FL 33169, 305-945-2621 or 1-800-446-4656

Holiday Inn North Miami (10 minutes from Barry). Rates in season: $99+ (Barry does not use). 12210 Biscayne Blvd, North Miami, FL 33181, 305-891-7350 or 1-800-465-4329

Holiday Inn Pro-Player Stadium (20 minutes from Barry). Rates in season: $99+. 148 NW 167th Street, North Miami, FL 33169, 305-949-1441 or 1-800-465-4329

The Local Arrangements Committee has information on other lodgings within easy driving distance of Barry University. This information is available at the Registration Desk.

MEALS

The Academy Banquet will be held on Friday evening (March 8) in Andreas 111 at Barry University beginning at 6 PM with a reception that includes complimentary beer and wine. The dinner at 7 PM will be a choice of Prime Rib, Salmon, or Vegetarian Plate. Pre-registration for the banquet is suggested as only a limited number of tickets will be available on the day of registration.

The Barry University Cafeteria and the Snack Bar will be open for lunch on Friday (March 8), and information about local restaurants within a few minutes drive of Barry University will be available at the Registration Desk.

ACADEMY PLENARY SESSION & BUSINESS MEETING

Mr. Joseph A Schweigart, P.E., P.L.S., who oversees the Everglades Construction Project and the Comprehensive Everglades Restoration Project for the South Florida Water Management District, will present the Gale Plenary Lecture at 1:30 PM Friday, March 8, in Wiegand 116, immediately following the Annual Business Meeting. Mr Schweigart has also had a distinguished career in the U. S. Navy, where he held the rank of Commander. The title of his address is "The Everglades Construction Project – Science, Engineering and the Political Process Marching to the Same Beat."

MEDALIST PRESENTATION

Dr. Clinton J. Dawes, the 2001 Academy Medalist, will present the Annual Medalist Address immediately following the Banquet Friday evening. Dr. Dawes is University Distinguished Research Professor in the Department of Biology at the University of South Florida. He received his Ph.D. degree from U.C.L.A in 1961, and is a marine botanist noted for his studies of seaweeds, seagrasses, salt marshes and mangrove. The title of his address will be "The Value and Destruction of Florida's Coastal Communities."

FIELD TRIPS

In connection with the Special Session, a Saturday field trip is planned to the Rocky Glades. Information regarding this field trip is available at the Registration Desk. The Helicopter Tour to the STA's requires advance reservations. These should be made with Mr. Daniel J. Moss, Chair of the Urban & Regional Planning Section. The Registration Desk can also provide information concerning local attractions such as Fairchild Tropical Gardens, Monkey Jungle, and Air Boat rides in the Everglades.

LOCAL ARRANGEMENTS

The Local Arrangements Chair for the Annual Meeting is Dr. Elizabeth T. Hays of Barry University (305-899-3224, email ehays@mail.barry.edu). She may be consulted for any special meeting needs.

SPECIAL SESSION

Forever Glades: Current Trends in Everglades Restoration, with a Saturday Field Trip to the Rocky Glades and a Helicopter Tour of the Everglades Construction Project's Stormwater Treatment Areas

This special session has been planned by Mr. David J. Karlen, Co-Chair of the Biological Sciences Section; Dr. John H. Trefry, Chair of the Atmospheric and Oceanographic Sciences Section; Mr. Gary Maddox; Chair of the Geology/Hydrology Section; and Mr. Daniel J Moss, Chair of the Urban and Regional Planning Section. The Special Session begins at 9:30 AM on Friday, with Mr. Michael Norland, of the National Park Service, presiding..

On Saturday there will be a Field Trip to the Rocky Glades. Check at the Registration Desk for information regarding this field trip. A Helicopter Tour to the STA's is also planned for Saturday. Advance reservations must be made with Mr. Daniel J. Moss, Chair of the Urban and Regional Planning Section.

FLORIDA JUNIOR ACADEMY OF SCIENCE ANNUAL COMPETITION

The Junior Academy will meet with Florida Academy of Sciences this year. As the student division of FAS, the Florida Junior Academy of Science provides opportunities that encourage middle and high school students in science by allowing them to compete, share, and network with other students and adults having common interests. The focus of this "common bond" among participants is their research activities. The Florida Junior Academy of Science is seeking volunteers to assist in judging and to act as section moderators at its meeting, to be held on Saturday (March 9). Persons interested in participating in this rewarding experience should contact the FJAS Coordinator: Pat Zalo, 2812 26th Avenue Drive W., Bradenton, FL 34205-3707, telephone 941-756-4156, email pzalo@yahoo.com

COMMERCIAL AND INSTITUTIONAL EXHIBITS

Space is available on a first come-first served basis for a fee of $75.00. Exhibits by research institutions or organizations offering programs of an informational nature may be given free space. Parties interested in fee or free spaces should contact the Local Arrangements Chair for details.

STUDENT AWARDS

Students presenting papers at the Annual Meeting of the Academy and who are registered for the Meeting may be considered for a number of awards. Details are listed below. Students wishing to be considered for one or more of these awards should indicate their interest on the Abstract Submittal Form.

1. Outstanding Student Papers Award - This award is presented by any of the Academy Sections to graduate and/or undergraduate students.

2. American Association for the Advancement of Science Award - This award is presented to one male and one female undergraduate student annually and is a one-year membership in AAAS including the journal, *Science*.

3. Sigma Xi Awards - The first award, presented by the University of Florida chapter of Sigma Xi, is for $50 and a certificate. This award is presented to graduate students only. The second award is presented by Florida Institute of Technology for the best paper by a Florida Tech student. The award is for $50 and $100 for undergraduate and graduate students respectively.

4. William W. Behrens, Jr./Florida Institute of Oceanography Award - This $750 prize is awarded by the Florida Institute of Oceanography to a graduate student for the best paper in any area of ocean or marine sciences. A written manuscript is required and must be submitted by February 13, 2002 to: Dr. Ernest D. Estevez, Chairman, FAS Awards Committee, Mote Marine Laboratory, 1600 Ken Thompson Parkway, Sarasota, FL 34236, telephone 941-388-4441. Please, no facsimile or email submittals.

ANNOUNCEMENTS

YEAR 2003 MEETING: The date and location of the Annual Meeting for Year 2003 have not yet been announced

PERMANENT OFFICES FOR THE ACADEMY: The FAS office is located at the Orlando Science Center. The Executive Director is Dr. Gay Biery-Hamilton, and the Assistant Director is Ms. Natalie Smith. The address and telephone numbers are shown below.

Florida Academy of Sciences
Orlando Science Center
777 East Princeton St.
Orlando, FL 32803
407-514-2079
gbiery-hamilton@osc.org

FLORIDA ACADEMY OF SCIENCES
2002 ANNUAL MEETING PROGRAM SUMMARY

THURSDAY, MARCH 7

TIME	EVENT
3:00 PM – 5:30 PM	Registration, Wiegand Lobby
5:30 PM – 7:00 PM	Dinner on your own at local restaurants (information at Registration Desk)
7:00 PM	FAS Council Meeting, Kostka Room

continued, next page

FAS MEETING SUMMARY, continued

FRIDAY, MARCH 8

TIME	EVENT
7:30 AM – 4:00 PM	FAS Registration & Information Desk Wiegand Lobby
8:00 AM – 12:30 PM	FAS Concurrent Paper Sessions See Registration Desk for Room Locations
12:00 PM – 2:15 PM	Lunch, Cafeteria, Business Meeting & Gale Plenary Lecture Wiegand 116
2:30 PM – 5:00 PM	FAS Concurrent Paper Sessions See Registration Desk for Room Locations
6:00 PM – 7:00 PM	Reception Andreas 111
7:00 PM – 10:00 PM	FAS Banquet & Medalist Address Andreas 111

SATURDAY, MARCH 9

TIME	EVENT
8:30 AM – 12:00 PM	FAS Registration & Information Desk Wiegand Lobby
8:30 AM – 12:00 PM	FAS Concurrent Paper Sessions See Registration Desk for Room Locations
8:30 AM – 4:30 PM	Field Trip to the Rocky Glades. Helicopter Tour of the Everglades Construction Project's STA's (advance reservations are required)
8:30 AM – 4:30 PM	Junior Academy of Science Annual Meeting Library 101
12:00 PM	Lunch on your own at local restaurants (information at Registration Desk)
AFTERNOON	Trips to various local attractions (information at Registration Desk)

SPECIAL SESSION

Forever Glades: Current Trends in Everglades Restoration

FRIDAY 9:30 AM SNHS 105
SESSION A
MICHAEL NORLAND, NATIONAL PARK SERVICE AND
JOHN TREFRY, FLORIDA INSTITUDE OF TECHOLOGY, presiding

9:30 AM SS-1 Structural Organization of Everglades Floating Periphyton Mat. C. M. DONAR (1), M. GANTAR (2), K. W. CONDON (2), E. E. GAISER AND R. D. JONES, (1) Barry University, 11300 N.E. 2nd Ave. Miami Shores, 33161-6695, (2) Florida International University, Miami 33199. Calcareous floating periphyton mat is a dominant and significant component of the Florida Everglades ecosystem. We studied the distribution and numerical abundance of algae, cyanobacteria, mucilaginous, and calcareous deposits within intact floating periphyton mat using fluorescent microscopy of cryosections. The dominant species was a cyanobacterium, *Phormidium sp.* that was found throughout the mat. *Phormidium sp.* and *Scytonema hofmanii,* had a higher abundance in the mat bottom layer. Small coccoid cyanobacteria, characterized the top surface and interior regions of the mat, which also contained diatoms. *Mastagloia smithii smithii* was the most abundant diatom. Floating periphyton mats are very porous and contain numerous void spaces.

9:45 AM SS-2 Midge Community Composition and Emergence Phenology along Hydroperiod Transects in Everglades National Park. R. E. JACOBSEN AND S. A. PERRY, South Florida Natural Resources Center, Everglades National Park, Homestead, FL 33034. We sampled surface-floating midge (families Chironomidae and Ceratopogonidae) pupal exuviae at 7-10 day intervals along 2 hydroperiod (HP) gradients to gain better insight into midge species and community emergence patterns and how HP length may limit midge community composition during the wet season. With shorter HPs, we found: reduced species richness, cumulative species richness increasingly tracking sample species richness, fewer "rare" taxa,

restriction of rare taxa to the latter part of the inundation period, lower numbers and proportions of long-HP taxa, lower community HP preference scores, and fewer Tanypodinae and Tanytarsini after rewetting. Reducing hydroperiods in the Rocky Glades may reduce species richness by: (1) eliminating late-seasonal species, (2) reducing colonization, and (3) reducing microhabitat development for long-HP species.

10:00 AM SS-3 Suppression of Brazilian Pepper on Soil Disposal Mounds in Everglades National Park. R.T. MCMULLEN (1), K. JAYACHANDRAN (1), AND M.R. Norland (2), (1) Department of Environmental Studies and Southeast Environmental Research Center, Florida International University, Miami 33199, (2) Everglades National Park, South Florida Natural Resource Center, Homestead 33034. A restoration project within the Everglades National Park (ENP) "Hole-in-the-Donut" (HID) area is restoring thousands of acres of abandoned agricultural land dominated by Brazilian pepper (Schinus terebinthifolius), an invasive category I exotic species. Two spoil disposal mounds constructed from scraped soil and mulched Schinus in 1996-1997 exhibit almost no Schinus regrowth. The objectives of this study are to investigate possible Schinus s1uppression factors on these spoil mounds, and provide data for park managers responsible for spoil disposal. The experimental hypothesis is that mowing and/or compost effects are suppressing regrowth of Schinus on spoil mounds in the HID Restoration Area. Several parameters are being measured on these spoil mounds including temperature, gas evolution, and physical, chemical, and biological properties. Data will be collected over an 18-month period for a repeated measures analysis of variance (ANOVA) statistical treatment. Additional studies are being conducted for comparative seed germination and sapling transplant survival on these soils. The expected results include a significant treatment effect from depth of soil due to compost heat and/or gases. These results may identify direct or indirect Schinus suppression factors. However, it is anticipated that this study will be useful in the ENP Adaptive Management Program.

10:15 AM SS-4 Mammal use of restored wetlands in Everglades National Park. B.W. KEITH, N.K. O'HARE, G.H. DALRYMPLE. Everglades Research Group, Inc., 381 North Krome Avenue, suite 208, Homestead 33030. Miami-Dade County and Everglades National Park have an agreement to restore approximately 2,400 ha of previously farmed areas within Everglades National Park. The area is known as the "Hole-in-the-Donut". To date, approximately 500 ha have been cleared and are being re-colonized by native flora and fauna. Monitoring methods include track counts, deer counts, cameras triggered by infrared sensors, surveys of *Typha* stands for rice rat nests, and drift fence trapping. Eleven species of mammals have been documented to date, including marsh rice rat, hispid

cotton rat, southern short-tailed shrew, marsh rabbit, white-tailed deer, bobcat, Florida panther, and Florida black bear. This accounts for the majority of the mammal species that are found in the southern Everglades. The presence of large groups of white-tailed deer (12-32) is prominent on the most recently restored areas, with size of the deer herd increasing each year. Their large numbers may contribute to the increase of their predators in this area. We looked at the dynamics of the deer since they exhibit some atypical behavior, such as large bachelor herds during the breeding season, as well as basic trophic dynamics of increased mammal populations in restored wetlands.

10:30 AM BREAK

10:45 AM SS-5 The effect of mycorrhizal colonization and phosphorus levels on *Cladium jamaicense* growth in marl and Hole-In-The-Doughnut soils. S. KEMP (1), K. JAYACHANDRAN (1), D. STOCKMAN (1), AND M. NORLAND (2), (1) Department of Environmental Studies and Southeast Environmental Research Center, Florida International University, Miami 33199, (2) Everglades National Park, South Florida Natural Resource Center, Homestead 33034. Presently, efforts are being undertaken to reclaim former farmland located in Everglades National Park known as the Hole-In-The-Doughnut (HID) area. Draining of the Everglades, rock plowing, and fertilization to support crop production formed the nutrient enriched soils in this area. The historically dominant plant species in this area prior to the farming activities was *Cladium jamaicense*. One study in the HID area has shown an evidence of arbuscular-mycorrhizal (AM) colonization in *C. jamaicense*, and hypothesized mycorrhizae were beneficial to wetland species such as *C. jamaicense* during the initial stages of succession in this disturbed area. This study will try to determine the effects of mycorrhizal colonization and phosphorus levels on *C. jamaicense* growth in HID soils using marl soil from a Cladium dominated wetland for comparison.

11:00 AM SS-6 Apple snail use of short-hydroperiod restored wetlands. N.K. O'HARE AND G.H. DALRYMPLE, Everglades Research Group, Inc., 381 North Krome Avenue, Suite 208, Homestead 33030. Long hydro-period to permanent wetlands have been considered prime habitat for apple snails and most studies haven carried out in these habitats. Apple snails were included as part of a larger study of lower trophic levels (e.g. apple snails, crayfish, fishes, and amphibians) in natural and restored short-hydroperiod wetlands Hydro-period was determined by local rainfall, and showed high inter-annual differences. The study sites had a hydro-period of 4 to 6 months with small depressions that were wet for 8 to 12 months each year. The number of apple snail egg masses were counted in a subset of

these depressions 4 times per year (July, August, September, and October). Comparisons were made between cover types, as well as between years. The month with the highest number of egg masses fluctuated between years, and was related to the timing of the onset of the wet season. The cumulative number of egg masses encounter each year was also variable, and was related to the duration of the dry season. Apple snails in short-hydroperiod wetlands must contend with a different suite of hydrological stressors than snails in long hydro-period wetlands. These stressors include a longer aestivation period during the dry season, and heavy rains during the breeding season that may detach recently deposited egg clusters from plant stems.

11:15 AM SS-7 Soil Survey of Shark Slough in the Everglades National Park. K. JAYACHANDRAN (1), M. ROSS (1), C.L. COULTAS (2), P. RUIZ (1), D.L. REED (1). (1) Department of Environmental Studies and Southeast Environmental Research Center, Florida International University, Miami 33199, (2) Florida A & M University, Tallahassee 32307. Shark Slough is one the physiogeographic regions in the Everglades located in the Everglades National Park, draining freshwater into Florida Bay and the Gulf of Mexico. As the Everglades undergoes extensive restoration, a more comprehensive information on Shark Slough landscape, particularly on soils is important along with a better understanding of the processes by which it has developed and maintained. One of the specific objectives of the broader study is to examine associations between vegetation, hydrology, and soils in Shark Slough region. We collected 6'' diameter soil cores to bedrock from selected sites representing each of six transects ranged in length from 4 to 12 km. Soil properties were determined by field examination and by laboratory methods. With respect to both depth and profile structure, Shark Slough soils exhibit great variability over distance as small as a few meters. Most Shark Slough soils may be characterized as peats, but a significant percentage exhibit interlayering of marl and peat strata. The peat soils that we observed on all six transects were nearly black, non-fibrous, with a mixture of dead and live roots in the surface, and many fine dead roots in the sub-surface horizons. Snail shells were observed in several layers and were quantified. The physicochemical properties of these soils ranged in pH from 6.3 to 8.1, TN from 0.2 to 4.2%, and TP from 40 to 780 ppm. To our knowledge, this is the most recent Shark Slough soil survey conducted after Leighty and Henderson in 1958.

11:30 AM SS-8 Relationship between soil moisture and nutrient availability in the tree islands of Shark Slough, Everglades National Park. E. MICKLER (1), K. JAYACHANDRAN (1), M. ROSS (1), D. STOCKMAN (1), P. RUIZ (1), D. REED (1), AND S. OBERBAUER (2). (1) Department of Environmental Studies and Southeast Environmental

Research Center, Florida International University, Miami 33199, (2) Biological Sciences Department, Florida International University, Miami 33199. Tree island communities are an important aspect of the Everglades ecosystem. The quantity of water released and timing of water management schedules may affect the processes underlying nutrient transformations in tree island soils. A handful of studies have examined the effect of varying hydrologic regimes on plants in the Everglades, but not much has been researched about the effect of water levels on soil nutrient processes in tree islands. This study examines the effects of soil moisture levels on P and N mineralization in tree island soils. The relationship between soil moisture and nutrient availability over time will be examined.

11:45 AM SS-9 Success criteria and successional trends on restored wetlands in the Hole-in-the-Donut in Everglades National Park. G.H. DALRYMPLE and N.K. O'HARE, Everglades Research Group, Inc., 381 North Krome Avenue, Suite 208, Homestead 33030. The State of Florida Department of Environmental Protection permit for the Hole-in-the-Donut states 3 criteria for determining the success of the restoration process: 1) removal and control of non-native species; 2) establishment of a plant community dominated by wetland plants; and 3) establishment of a wetland community that is similar to an undisturbed, natural wetland community. The first goal is met by construction methods. Construction mechanically removes plants, and disturbed rock-plowed substrate, and re-establishes a natural wetland hydrology, driven by rainfall. The natural hydrology prevents re-establishment of Brazilian pepper. The second criteria is also meet within the first year, since the re-establishment of a wetland hydrology promotes colonization by native wetland plants. Annual sampling of vegetation in established plots demonstrated that between 61% and 73% of the plant species and total vegetative cover on the restored sites were hydrophytes. Additional analyses of this data indicated that it may take much longer to attain a high level of similarity in community composition between restored sites and the natural community. Perhaps an intermediate goal between the second and third criteria stated above should be the establishment of a wetland community that resembles the natural community in the vegetative structure (i.e. horizontal and vertical density of plants), if not in the actual plant species.

FRIDAY 2:30 PM SNHS 105
SESSION B

MICHAEL NORLAND, NATIONAL PARK SERVICE AND
DANIEL MOSS, SOUTH FLORIDA WATER MANAGEMENT DISTRICT, presiding

2:30 PM SS-10 Pigment-Based Chemotaxonomy of Phytoplankton in North-Central and Western Florida Bay. J. W. LOUDA. Organic Geochemistry Group, Florida Atlantic University, 777 Glades Road, Boca Raton, FL. 33431. Pigment-based chemotaxonomy is based on the evolutionary divergence of photoautotrophic taxa during which the various groups attained quite specific pigment distributions. The present study is funded through the NOAA backed South Florida Ecosystem Restoration and Prediction Monitoring Program and is applying chemotaxonomy to the assessment and monitoring of phytoplankton in north-central and western Florida Bay including nearshore (Cape Sable) Gulf waters. To date (1-1/2yrs) we have been able to refine our taxonomic estimations, show the presence of cryptophytes ([CR]*via* alloxanthin) and define certain communities (diatom[D], cyanobacterial[CY], D/dinoflagellates[DF], D/DF/CR and chlorophyte [CL]/D/DF. The potential that the 'chlorophytes' we have identified are actually 'prochlorophytes' (divinyl CHL-*a*/-*b*) exists and recent efforts to clarify this will be discussed.

2:45 PM SS-11 Utilization of "Epiphytometers" for the Estimation of Epiphyte Productivity and Community Structure in Conjunction with HPLC Pigment Analysis. A. SINGH AND J. W. LOUDA, Organic Geochemistry Group, Florida Atlantic University, 777 Glades Road, Boca Raton, FL. 33431. Epiphytes, microalgae growing on the submerged aquatic vegetation (SAV), in Florida Bay form a large part of the overall benthic productivity. SAV forms a large longer-term standing crop but we propose that changes in the epiphytic community will respond more rapidly to changes in water quality, such as those which may accompany the efforts of the Everglades restoration ('RESTUDY"). The principles of pigment-based chemotaxonomy (see Louda, this meeting) have been applied to studying epiphytes both on real and 'fake' SAV. 'Fake' SAV is actually 'epiphytometers' constructed from weighted PVC frames to which Mylar strips, mimics of *Thalassia* blades, are attached. The epiphytometers allow us to define t_o and monitor productivity while analysis of both real and 'fake' SAV epiphytes are revealing community changes.

3:00 PM SS-12 Linking Everglades Restoration and Enhanced Freshwater Flows to Elevated Concentrations of Mercury in Florida Bay Fish. D.G. RUMBOLD (1), AND D.W. EVANS (2), (1) SFWMD, 3301 Gun Club Road, West Palm Beach, 33406, (2) NOAA, 101 Pivers Island Road, Beaufort, NC, 28516. Since 2000, we have collected surface water, sediment and fishes from 12 stations along two transects into eastern Florida Bay and at one station in Whipray Basin and analyzed them for total mercury and methylmercury. Preliminary results reveal levels of mercury in certain gamefish from northeastern Florida Bay continue to exceed 0.5 ppm, which

is the criterion for limited consumption advisories. Gradients in surface water and sediment implicate runoff from the mainland and *in situ* production within the mangrove ecotone as significant sources of methylmercury. When completed, results of this study should improve our ability to make informed decisions about the management of Everglades' inflows for the restoration of the sport fishery and the protection of fish-eating wildlife in Florida Bay.

3:15 PM SS-13 Retrospective Analysis of the Impacts of Major Hurricanes on the Sediment of the Lower Everglades and Florida Bay. W.-J. KANG (1) AND J. H. TREFRY (2), (1) Southwest Florida Water Management District, Brooksville 34609, (2) Department of Marine & Environmental Systems, Florida Inst. of Tech., Melbourne 32901. Sediment cores collected from different locations in the lower Everglades and Florida Bay record the impacts of major hurricanes that passed through Florida Bay since 1935. Two to three hurricane-associated layers were identified in each core using the temporal and spatial distributions of excess ^{210}Pb. The degree of sediment disturbance during a hurricane, represented by erosive thickness of sediment, is variable, depending on coring locations. Less than 1 cm of sediment was eroded in landward sites and 2-22 cm of sediment were removed in open bay waters. Data for major elements and sediment nutrients imply that hurricanes may help maintain the subtropical ecosystem by redistributing organic matter and by increasing primary productivity in the phosphorus-limited water column of the bay.

3:30 PM SS-14 Effects of the Exotic Old World Climbing Fern, *Lygodium microphyllum,* on the Ant Diversity of Tree Islands in the Northern Everglades. A. C. DARBY (1), J. K. WETTERER (1), L. A. BRANDT (2), F. J. MAZZOTTI (3), (1) Florida Atlantic Univ., 777 Glades Road, Boca Raton 33431, (2) A. R. M. Loxahatchee National Wildlife Refuge, 10216 Lee Road, Boynton Beach 33437, (3) Univ. of Florida, 3205 College Ave., Ft. Lauderdale 33314. *Lygodium microphyllum* is an exotic climbing fern that has invaded many plant communities in South Florida. *Lygodium microphyllum* alters the vegetation composition of bayhead tree islands located in WCA1, A. R. M. Loxahatchee National Wildlife Refuge. Field studies conducted to determine if *L. microphyllum* affects ant communities of bayhead tree islands will be presented. Results using five sampling methods to determine ant abundance, diversity, and dominance will be discussed.

3:45 PM BREAK

4:00 PM SS-15 Crustacean communities from ground waters in the southern Everglades, in relation to hydrological and geological features. M.C. BRUNO (1), K.C. CUNNINGHAM (2), AND S.A. PERRY (1), (1)

South Florida Natural Resources Center, Everglades National Park, 40001 State Rd. 9336, Homestead 33034, (2) US Geological Survey, 9100 NW 36th St., # 107, Miami 33178. We coupled a study of stratigraphy and lithology with a study of subterranean microcrustaceans to assess hydrologic exchange between surface and ground water along canals on the Atlantic Coastal Ridge northeast of Everglades National Park. Fifteen wells were sampled monthly from June 2000 to May 2001. At each well we collected samples at depths corresponding to highly permeable strata, identified with cores and optical logs. Wide variations in temperature, oxygen concentration, and conductivity were recorded during the high rainfall period. Low values of conductivity and high temperature were recorded in the shallow samples. These results suggest a high surface water infiltration in the shallow aquifer and high rainwater percolation. Faunistic data support this hypothesis: the communities were made mostly of stygoxenes, the number of individuals and species was related to the depth from the surface. During the wet season surface organisms dispersed into groundwater. The same organisms appeared to remain in groundwater during the dry season, as a refugium from the drought, although most of these organisms probably died during the dry season.

4:15 PM SS-16 Apple snail use of short-hydroperiod restored wetlands. N.K. O'HARE AND G.H. DALRYMPLE, Everglades Research Group, Inc., 381 North Krome Avenue, Suite 208, Homestead 33030. Long hydro-period to permanent wetlands have been considered prime habitat for apple snails and most studies have been carried out in these habitats. Apple snails were included as part of a larger study of lower trophic levels (e.g. apple snails, crayfish, fishes, and amphibians) in natural and restored short-hydroperiod wetlands. Hydro-period was determined by local rainfall, and showed high inter-annual differences. The study sites had a hydro-period of 4 to 6 months with small depressions that were wet for 8 to 12 months each year. The number of apple snail egg masses were counted in a subset of these depressions 4 times per year (July, August, September, and October). Comparisons were made between cover types, as well as between years. The month with the highest number of egg masses fluctuated between years, and was related to the timing of the onset of the wet season. The cumulative number of egg masses counted each year was also variable, and was related to the duration of the dry season. Apple snails in short-hydroperiod wetlands must contend with a different suite of hydrological stressors than snails in long hydro-period wetlands. These stressors include a longer aestivation period during the dry season, and heavy rains during the breeding season that may detach recently deposited egg clusters from plant stems.

4:30 PM SS-17 Effects of Water Level and Predation on Survival of Spotted Sunfish Larvae in the Florida Everglades. X. O. PAGAN (1, 2), J. C. TREXLER (2), AND W. F. LOFTUS (1). (1) USGS-BRD, 40001 SR 9336, Homestead 33034. (2) Florida International University, Dept. of Biology, University Park, OE 167, Miami 33199. Predation can be a determinant of fish community composition. We studied predator abundance around spotted sunfish (*Lepomis punctatus*) nests in relation to water depth and larval survival during the nesting cycle. We collected four species of fish that had sunfish eggs or larvae in their guts: eastern mosquitofish (*Gambusia holbrooki*), lake chubsucker (*Erimyzon sucetta*), Mayan cichlid (*Cichlasoma urophthalmus*), and sunfish juveniles (*Lepomis* species). Mosquitofish were the most common predators at nests. Average larval densities decreased from 712 on Day 1 to 548 at the time of leaving the nest, a 23% decline. Predator density around nests decreased with increasing water depth. The estimated mortality rate from predation decreased from 30% at a depth ≤ 70 cm to 15% at a depth > 70 cm. We conducted a mesocosm experiment to test the effects of water depth, mosquitofish density, and their interaction on larval survival. Larval survival decreased with nest age. Mosquitofish predation significantly decreased larval survival. In the mesocosm tanks, larval mortality increased with predator density and decreasing water depth, consistent with the interpretation of field observations.

4:45 PM SS-18 Mammal use of the restored wetlands in Everglades National Park. B. W. KEITH, N.K.O'HARE, G. H. DALRYMPLE. Everglades Research Group, Inc., 381 North Krome Avenue, Suite 208, Homestead 33030. Miami-Dade County and Everglades National Park have an agreement to restore approximately 2,400 ha of previously farmed areas within Everglades National Park. The area is known as the "Hole-in-the-Donut". To date, approximately 500 ha have been cleared and are being re-colonized by native flora and fauna. Monitoring methods include track counts, deer counts, cameras triggered by infrared sensors, surveys of *Typha* stands for rice rat nests and drift fence trapping. Eleven species of mammals have been documented to date, including marsh rice rat, hispid cotton rat, southern short-tailed shrew, marsh rabbit, white-tailed deer, bobcat, Florida panther, Florida black bear. This accounts for the majority of the mammals groups that are found the southern Everglades. The presence of large groups of white-tailed deer (12-32) is prominent on the most recently restored areas, while the numbers of deer increase with each year. Their large numbers may contribute to the increase of their predators into this area. We look at the dynamics of these deer since they exhibit some atypical behavior, such as large bachelor herds during the breeding season, as well as basic trophic dynamics of increased mammal populations in restored wetlands.

AGRICULTURAL AND NATURAL RESOURCES

FRIDAY 9:30 AM WIEGAND 234
JAMES CUDA, ENTOMOLOGY/NEMATOLOGY
UNIVERSITY OF FLORIDA, presiding

9:30 AM AGR-1 Experiential Teaching in Agri-Science Education: Methods to Improve Instruction. M. A. WADE, Food and Resource Economics Dept., University of Florida, Indian River REC, 2199 South Rock Road, Fort Pierce, FL 34945. Experiential learning is an important element in the teaching of agricultural sciences at the secondary and post-secondary level. This trend recognizes the importance of "hands-on training" in agricultural education and has evolved from the applied curriculum developed by technical schools throughout the country. Theoretical foundations provide some insight into the science of agriculture, but provide little training that can be transferred directly from lecture to field. Experiential learning, where students learn by doing, bridges the gap between the theoretical and the actual production of agricultural commodities. However, in order for this bridge to be formed, instructors must be able to demonstrate the applied aspects of their respective discipline. This paper examines the importance of experiential teaching as a precursor to experiential learning, and the impact of agricultural consolidation on agricultural education. As individuals with production experience and knowledge become scarcer, the ability to teach the applied aspects of agricultural production becomes more difficult. In order for the transfer of applied knowledge and skill to occur, it must first exist.

9:45 AM AGR-2 Land Acquisition and Incentive Programs for Endangered Species Conservation in South Florida. J. A. GRAHAM (1,2), F.J. MAZZOTTI (1), AND J.M. SINCLAIR (3), (1) University of Florida, Ft. Lauderdale 33314, (2) Palm Beach Atlantic College, West Palm Beach 33401, (3) Florida International University, Miami 33199. Restoration and conservation of the South Florida Everglades should include efforts of private landowners. Individual landowners must make decisions balancing ecological conservation with economic requirements. Private property is a major, current obstacle facing conservation efforts for endangered species. In order to bridge this barrier, a positive engagement of landowners through partnerships and incentives at local, state, and federal levels is necessary. To stimulate this engagement, land acquisition and incentive programs were inventoried to determine the extent of programs available at each level. This information was compiled into a practical format to be distributed to landowners, land use planners, and regulators as an educational tool.

10:00 AM AGR-3 Population Dynamics of Meristems among Defoliated Brazilian Peppertrees: Consequences for Growth and Reproduction. L. W. TREADWELL AND J. P. CUDA, Dept. of Entomology and Nematology, Univ. of Florida, Gainesville 32611. To simulate the effect of complete defoliation on growth and reproduction of young Brazilian peppertree (BP) seedlings by aggregations of larval sawflies, I monitored production of meristems, flowers, and fruits of BPs subjected to defoliation in field plots. Defoliated plants rapidly compensated for the loss of leaf tissue by activating axillary buds, producing new meristems at a rate ~3 times that of controls after 4 weeks. This may appear counterproductive to the goal of reducing the plant's presence in Florida, but early results indicate a tradeoff in terms of reduced production of flowers and fruits and reduced growth in defoliated plants.

10:15 AM AGR-4 Transport of Agrochemicals in Calcareous Soils of South Florida. K. KONOMI (1), K. JAYACHANDRAN (1), M.R. SAVABI (2), D. SHINDE (2), S.T. REED (2), (1) Department of Environmental Studies and Southeast Environmental Research Center, Florida International University, Miami 33199, (2) USDA-ARS, Everglades Agro-Hydrology Research, Miami 33158. The retention and transport of atrazine and phosphorus (P) in calcareous soils by three types of compost, biosolid, municipal solid waste, and bedminister were analyzed by using a column-leaching study and batch-equilibrium method. Concentrations of atrazine and P in leached and in different layers of the column were analyzed. Data from the study show that the retention and transport of atrazine and P was affected by the presence of the compost layers. The column study demonstrated that atrazine and P leached out at one pore volume slower in soil with compost than in soil without compost. Bedminister had the lowest atrazine and P leaching rate compared to other amendments. Extractable chemical concentrations did not change with column depth; however there was a significant difference between compost layers. This study suggests that amending compost to the calcareous soil reduced leaching potential of atrazine and P, and thereby possibly avoiding groundwater contamination.

10:30 AM BREAK

10:45 AM AGR-5 Agricultural Market Development: Utilization of the Florida Model in Nigeria. M. A. WADE, Food and Resource Economics Dept., University of Florida, Indian River REC, 2199 South Rock Road, Fort Pierce, FL 34945. The African nation of Nigeria produces many of the tropical and sub-tropical commodities grown in Florida. Lack of a working infrastructure, quality standards and extremely competitive markets prevents the rapid movement of agricultural commodities within

the country and diminishes export opportunities. As a result, 20-50% of farm production is lost post-harvest each year. This paper addresses the current situation facing horticultural and livestock producers and processors in Nigeria. Market structures and industry challenges are discussed. Marketing and post-harvest handling solutions are proposed based upon successful strategies utilized by Florida vegetable, citrus and cattle producers. Implications on domestic consumption and international trade are made. In order for Nigerian growers to prosper, government and industry standards must be developed which link commodity prices to supply and demand, as well as quality, factors. Post-harvest losses can be reduced dramatically through simple changes in product packaging and shipping.

11:00 AM AGR-6 Strawberry Guava: Prospects for Classical Biological Control in the USA. J.P. CUDA (1), AND M.T. JOHNSON (2), (1) University of Florida, Gainesville, 32611-0620, (2) USDA, Forest Service, Volcano, HI, 96785. Strawberry guava (SG), *Psidium cattleianum*, is a horticultural plant of South American origin that is invading conservation areas and is a preferred naturalized host of fruit flies affecting US agriculture. The success of SG as an invasive weed can be attributed to its broad environmental tolerances, prolific fruit production, efficient seed dispersal by birds and mammals, and the absence of natural enemies. Surveys were conducted within the native range of SG in Brazil to identify potential insect natural enemies for classical biological control. The bud gall fly *Dasineura gigantea* and the leaf galling scale *Tectococcus ovatus* are the most promising candidates for further study because SG fails to produce fruits when it is heavily attacked by these insects.

11:15 AM AGR-7 Survey of Arthropod Fauna on *Psidium spp.* in South Florida. C. G. MARTIN AND J. P. CUDA. Contributors: Financial and equipment—J. P. Cuda; advice--J. P. Cuda and W. S. Judd. University of Florida, Department of Entomology and Nematology, 900 Hull Road, Gainesville 32611. Populations of *Psidium guajava, P. cattleianum, P. longipes, P. acutangulum,* and *Psidium* sp. were surveyed to identify the arthropod fauna associated with these species growing uncultivated in Florida for the purpose of examining the feasibility of biological control of strawberry guava, *P. cattleianum.* I examined 15 plants at 14 locations in south Florida and found the following: 61 families, 115 species (113 arthropods, two gastropods), and ca. 524 specimens. Herbivores accounted for 28%, 40% were predators, 16% were saprophytic, and 16% had unknown food preferences. In addition, several common specialist and generalist arthropods were found associated with *Psidium* spp.

11:30 AM AGR-8 Bioassay Results of a Novel Bio-rational Compound for Control of Economic and Medically Important Insect Pests. L. S. LONG (1), J.P. CUDA (1) AND B.R. STEVENS (2), (1) University of Florida, Department of Entomology and Nematology, Gainesville 32610, (2) University of Florida, Department of Physiology, College of Medicine, Gainesville 32610. Preliminary results of field and laboratory tests of a new and safer pesticide are presented. The "Compound" (name withheld for patent protection) is a biologically active chemical that acts to interfere with important physiological functions within the digestive tract of insects while maintaining functions within other animals, including humans. Pest insect species *Manduca sexta*, *Leptinotarsa deeimlineata*, and *Aedes aegypti* exhibited high mortalilty in laboratory and field settings using artificial and natural diets. The "Compound" also showed no adverse effects on yields of eggplant, *Solanum melongena.* Future testing methods and benefits of the "Compound" for control of insect pests are also discussed.

11:45 AM AGR-9 Bahiagrass Protection from Mole Crickets with Beneficial Nematodes. M. B. ADJEI AND G. C. SMART. University of Florida, Range Cattle REC, Ona, FL 33865-9706, and University of Florida, Dept. of Entomology/Nematology, P.O. Box 110620, Gainesville, FL 32611-0620. The mole cricket beneficial nematode was applied in strips to cover 0, 1/8, 1/4, or 1/2 the area of treated plots to evaluate the rate of nematode spread in the mole cricket population and the efficacy of reduced nematode application on mole cricket control. Each treatment received the equivalent ratio of the normal application rate of 1 billion nematodes/A. Each treatment was applied to three replicate one-acre plots, each in the center of a two-acre block of pasture to provide borders. One year after application, the nematode infection level in trapped mole crickets was 80% or higher at the1/2 area rate of strip application, 60% at the 1/4 rate, 50% at the 1/8 rate and even 30% at the zero rate. Trap mole cricket numbers showed a remarkable reduction from pre-application levels across the whole pasture. It was concluded that at reduced rates of application, the nematodes were spread by infected mole crickets throughout the entire 24-acre experimental field within a year. However, recovery of damaged pasture was slow initially due to weed encroachment.

12:00 PM BUSINESS MEETING: AGRICULTURAL AND NATURAL RESOURCES
JAMES CUDA, presiding

ANTHROPOLOGICAL SCIENCES

FRIDAY 10:00 AM O'LAUGHLIN 106
LINDA TAYLOR, UNIVERSITY OF MIAMI, presiding

10:00 AM ANT-1 Three Slavers and Key West in May, 1860. M. FARALDO, Univ. of Miami, Dept. of Anthropology, P.O.B. 248106, Coral Gables 33124. Historical records indicate that as many as seven slavers were intercepted by the US Navy enroute from Africa to Cuba and were forced to land in Key West during May of 1860. The human cargo of at least 1400 individuals from these vessels, referred to as recaptured Africans, were housed in temporary barracoons on US government lands adjacent to Fort Taylor for approximately three months while arrangements were made for their repatriation. The goal of this paper is to present historical documentation of the lives and deaths of these Africans. Some documents assert that 294 Africans died and were interred in Key West. We use records and site surveys to determine 1) how many individuals were housed in Key West, 2) how many died and why, and 3) how many eventually repatriated. Oral tradition suggests that some individuals may have left living descendants in Key West, although this is contrary to Federal records.
This research was supported in part by Medley Law Center.

10:15 AM ANT-2 Statures in Two Archaic Florida Populations: Comparison of Estimations Based on Long Bones. H.L. SZUMILA AND P.M. DIETRICH, University of Miami, Dept. of Anthropology, P.O. Box 248106, Coral Gables 33124-2005. Published reports comparing and interpreting the statures of two Early Archaic Florida populations were based on calculations performed using femur length. This study examined the tibiae, radii, and ulnae of one of the population groups, that of Little Salt Spring, Florida (8So18), calculated statures based on these long bones, and examined the differences. Estimated statures based on the humerus and tibia resulted in an increase of one and two inches respectively, and that based on the ulna showed no difference. Preliminary interpretation supports the view of better nutrition for the West coast-based group as compared to the East coast-based group during the same time period.

10:30 AM ANT-3 Pauciarticular Juvenile Rheumatoid Arthritis or Multiepiphyseal Displasy: An Example of Non-invasive Differential Diagnosis. P.M. DIETRICH AND L. E. OVERBAUGH, University of Miami, Dept. of Anthropology, P.O. Box 248106, Coral Gables 33124-2005. A fundamental difficulty in evaluating pathologies in skeletonized material is that extremely diverse disease processes can result in similar osteological manifestations. Exacerbating the problem is the situation in which preservation of the skeletal material must be maintained. Such is the

case with a modern Chinese teaching skeleton in the collection of the University of Miami. This skeleton exhibits an unusual pattern of lesions consistent with a number of diseases, most notably diaphyseal aclasis, pauciarticular juvenile rheumatoid arthritis, and multiepiphyseal displasy. This study utilizes noninvasive techniques to perform a classic differential diagnosis, successfully identifying the pathology as pauciarticular juvenile rheumatoid arthritis.

10:45 AM ANT-4 Demographic Adaptation of Urban Caribbean-Americans. R.A. HALBERSTEIN, Dept. of Anthropology, P.O. Box 248106, University of Miami, Coral Gables, FL 33124. Demographic data and medical histories were collected for 290 Caribbean-born Miamians (ages 21-85). Results indicate that they have adjusted to an unfamiliar urban environment in the US through several demographic adaptations: later ages at marriage, reduced fertility, lower morbidity, altered household composition, higher employment rates and salaries, more frequent physical conditioning and exercise, and relatively fewer divorces/separations than in age-matched counterparts in Caribbean countries. They continued to use traditional ethnomedical healers and herbal remedies. Potential health problems were found in increased body weight, an increased incidence of abortions and miscarriages (16% of ever-married women over 40), and 34.5% were cigarette smokers.

11:00 AM ANT-5 An Urban Troop of Squirrel Monkeys (Saimiri Sciureus) L.L. TAYLOR. Univ. Miami, Dept. of Anthropology, P.O. Box 248106, Coral Gables, FL 33124 A group of 34 squirrel monkeys (Saimiri sciureus) live on an historic, forested 35 acre site in the heart of Ft. Lauderdale, FL. Scan sample technique was used to gather data during wet and dry seasons. Analyses of feeding data show that the urban diet is much like the wild diet: 62.9% animal prey, 19% fruit, and 8% other items. This troop preferred non-native fruits, e.g., sapodilla and Surinam cherry. Native Florida species were the least frequenty exploited resources during the wet season, with the exception of seagrape. During the dry season, monkeys depended on food resources that were consumed only in smaller amounts during the wet season, notably Australian pine spittlebugs. Provisioning by winter tourists is an important dry season resource. This research was supported in part by a University of Miami General Research grant to LLT. This project enabled by Robert Kauth and the Staff of the Bonnet House.

11:15 AM ANT-6 Food Choice and Agonism in Free-Ranging Lemurs in Myakka City, FL. B. GROSSI, Lemur Conservation Foundation, P.O. 249 Myakka City, FL 34251 The Lemur Conservation Foundation houses several species of lemurs in a 13 acre naturalistic forest habitat. The lemurs range and feed freely in the habitat, which features oak and pine as

the predominant tree species. Preliminary data show that the lemurs feed on a variety of native plant and animal species. Species-specific preferences are evident in foraging behavior L. catta are the most insectivorous, and H. griseus prefer new grass shoots. E. mongoz are the only species observed to prey on native vertebrates. These species, not normally sympatric in the wild, coexist in the habitat with relatively low rates of aggression between groups. However, L. catta and H. griseus, exhibit a higher frequency of agonistic behavior towards each other. These are also the only two species which use similar scent marking styles. Such levels were unexpected and may support the hypothesis that these two forms should be included in the same genus.

11:30 AM BUSINESS MEETING: ANTHROPOLOGICAL SCIENCES
LINDA TAYLOR, presiding

ATMOSPHERIC AND OCEANOGRAPHIC SCIENCES

FRIDAY 2:30 PM SNHS 101
JOHN TREFRY, FLORIDA INSTITUTE OF TECHNOLOGY, presiding

2:30 PM ATM-1 Climate Change Impact in Honduras: Preliminary Assessment. A.E. RODRIGUEZ (1), L. GONZALEZ (1), AND I.M. ERAZO (2), (1) Barry Univ., Miami, 33161, (2) National Pedagogical Univ. Francisco Morazan, Tegucigalpa, Honduras. Honduras is the second largest Central American country, and it can be considered especially vulnerable to climate change because a large share of its economy is in climate-sensitive sectors. The long-term goal of this project is to evaluate the climate change impact in Honduras, particularly in the health sector. To achieve this goal, a preliminary assessment was made. The assessment comprises a statistical analysis of three meteorological variables associated to climate change: temperature, precipitation and relative humidity. The data was collected in twelve meteorological stations for the last ten years. Honduras is firmly committed to fight global warming, and already has signed and ratified the Kyoto Protocol.

2:45 PM ATM-2 Water temperature changes at tide gauge sites of the United States. GEORGE A. MAUL, Florida Institute of Technology, Department of Marine and Environmental Systems, Melbourne FL 32901. Tidal observers began measuring air and seawater temperatures at tide gauges as part of their responsibilities in the early 20th century. The water temperature records have been digitized and the longest records analyzed for trends. No consistent pattern emerges along either the USA east coast or west coast, but the southeastern sites, including those in the Gulf of

Mexico, show no statistically significant warming or cooling. The records were also subjected to tests for non-linearity, and again no statistically significant acceleration or deceleration of change is discerned. The records are subject to question in that the method of measuring seawater temperature changed with the introduction of thermisters at the stilling well intake compared with the bucket thermometer method of earlier times. As with air temperature measurements, the effects of urbanization cannot be ignored.

3:00 PM ATM-3 The Effect of La Niña on Florida Precipitation, 1948-2000. KENNETH G. KANDEFER AND GEORGE A. MAUL, Florida Institute of Technology, Department of Marine and Environmental Systems, Melbourne, Florida 32901. This study investigates the timing of La Niña and low rainfall events in Florida. Statistical tests are applied to uncover trends and assess significance of precipitation anomalies with emphasis on serial correlation on the degrees of freedom. Rainfall data from the period 1948-2000 is used from six National Weather Service rain gauges throughout the state. A superposed epoch analysis is applied to analyze the year before and the year after a two-year La Niña event. The analysis reveals a downward trend in rainfall for the two years after the onset of the event and an upward trend in rainfall the year after a two-year decline during the event for three of the six stations. Student's t-test for difference of two means reveals a significant difference in composite annual rainfall involving the year before La Niña and the 2nd year of La Niña.

3:15 PM ATM-4 Fecal Indicator Organisms in Tropical Beach Sands. T. DAVIDIAN (1), A. HARTZ (1), AND M. GREEN (2), N. ESIOBU (2), AND D. MCCORQUODALE (1), A. ROGERSON (1), (1) Nova Southeastern University Oceanographic Center, 8000 N. Ocean Dr., Dania Beach, FL 33004, (2) Florida Atlantic University, 2912 College Ave., Davie FL, 33314. Sandy beaches may act as filters trapping potential pathogens derived from sewage. Moreover, beaches may provide favorable conditions for enhanced survival, and even re-growth of these organisms. Pathogens may enter sand from sewage-contaminated seawater, from land-derived runoff, from the air, and even directly from humans and animals. Three South Florida beaches (differing in 'use') were sampled bi-monthly between August 2001 and February 2002 and levels of the fecal indicators enterococci, *E. coli*, fecal coliforms, somatic coliphage, and F-specific coliphage were determined in the water column, in wet sand (swash zone), and in 'dry' sand (above the high tide level). Bacteria were enumerated by membrane filtration and by MPN using Enterolert® and Colilert®. Coliphage were detected by plaque assay both directly and after enrichment. To date, the results consistently show that dry sand contains the highest number of indicator organisms, followed by wet sand then water, regardless

of beach. Clearly, prevailing conditions led to variation between sampling events, notably the higher counts after periods of heavy rainfall. The preliminary data is interesting and shows that sand, in general, harbors many more fecal organisms than suggested by tests of the water column. Whether these elevated levels pose increased health hazard to beach users will be examined by a questionnaire.

3:30 PM ATM-5 Relative Survival of Fecal Organisms in Beach Sand and Seawater as Indicated by Mesocosm Experiments A. HARTZ (1), T. DAVIDIAN (1), M. GREEN (2), N. ESIOBU (2), D. MCCORQUODALE (1), A. ROGERSON (1), (1) Nova Southeastern University Oceanographic Center, 8000 N. Ocean Dr., Dania Beach, FL 33004, (2) Florida Atlantic University, 2912 College Ave., Davie FL, 33314. Analysis of samples collected bimonthly during the summer and fall of 2001 showed that the number of enterococci on three South Florida beaches were significantly higher in 'dry' sand compared to wet sand. Wet and dry sand samples showed higher levels of fecal organisms than present in seawater. *E. coli* and fecal coliforms showed similar trends, suggesting that the sand is acting as a filter and is concentrating fecal bacteria from the water column. However, this does not satisfactorily explain how high numbers of fecal bacteria are being amassed in the upper beach sand (='dry' sand), which is above the high water mark. The possibility that high numbers of fecal organisms in dry sand is due to airborne transport is being tested using an Anderson Type impactor air sampler. To date, a total of 38,000 liters of air has been filtered but no air-borne enterococci have been detected. Sand may potentially promote increased survival of trapped enteric bacteria, despite environmental fluctuations that occur in the beach environment. Mesocosm experiments are being conducted in a controlled laboratory environment, using sterile beach sand and sterile seawater seeded with a known number of *E. coli* and enterococci. Parameters of interest include temperature, moisture content, salinity, particle size, and nutrient status. Preliminary results have shown that lower salinities may promote growth of enterococci in sand. This may help to explain why such high numbers are present in the upper shore where salinities can be around 6 ppt.

3:45 PM BREAK

4:00 PM ATM-6 Potential Novel Indicators of South Florida Recreational Beaches. M. GREEN (1), N. ESIOBU (1), A. ROGERSON (2), D. MCCORQUODALE (2), T. DAVIDIAN (2), AND A. HARTZ (2), (1) FAU, Davie 33314, (2) Nova Southeastern, Dania 33004. There is growing evidence that classical methods of assessing beach quality using traditional fecal indicators are insufficient. This study evaluates the possibility of utilizing a series of novel, human-derived indicators including

Staphylococcus aureus, Pseudomonas aeruginosa, Vibrio spp, and *Clostridium perfringens*, to assess beach quality using classical and contemporary methods. These bacteria reach the beach either as a result of fecal contamination and/or human beach usage. If these novel organisms are to be useful as indicators, it is crucial to understand whether the bacteria multiply and survive for longer periods in the sand. Data presented will evaluate the abundance, the distributions, the influence of environmental and physico-chemical factors and the macrospatial and microniche distributions of these novel indicators.

4:15 PM ATM-7 Copper in the Sediment of the Hillsborough River Reservoir. RICHARD P. MILLOY, JR. (1,2), AND JACQUELINE C. HOHMAN (1), (1) Southwest Florida Water Management District, Brooksville, FL 34604-6899, (2) Department of Math and Science, Saint Leo University, Saint Leo FL 33574. The Hillsborough River Reservoir consists of a portion of the Hillsborough River between 40th Street and 30th Street where a dam was constructed in 1945. The reservoir is approximately 175 acres and is the principal water supply for the City of Tampa. Copper sulfate pentahydrate has been used as an algicide and herbicide since before 1958 (when the city started keeping records). The purpose of this study is to quantify the amount of copper in the sediment of the reservoir at different depths. There is no evidence that any copper species remains in the water column, rather it precipitates and accumulates in the sediment. It has been known for many years that significantly greater concentrations of copper must be added to water bodies with high alkalinity than to low alkalinity water bodies to achieve algae kill. If this holds true, we should see greater concentrations of copper in the sediment the closer the samples are to the surface. It is very difficult to date the portions of sediments radiometrically because sediments tend to accumulate at different rates depending upon both the location and geology of the sediment sites. We can assume that sediments at a greater depth precede the sediments close to the surface at the same sampling site. A sedimentation rate for the reservoir would be very difficult if not impossible to determine. As a result of this study, we feel that alternate forms of treatment should be researched and a plan to monitor the effect of using ever increasing levels of copper on the aquatic biota be established.

4:30 PM ATM-8 Beachscape Brevard: Coastal GIS Mapping Comes to Florida. C. T. HUTCHERSON (1), J. WINDSOR (1), AND M. WALTHER (3), (1) FL Inst. of Technology, 150 W. University Blvd., Melbourne 32901, (2) Coastal Tech, 3625 20th St., Vero Beach 32960. This presentation will focus on the deployment of the Surfrider Foundation's program Beachscape in Brevard County, Florida, the first such program in the state. Beachscape assimilates coastal data such as armoring, outfalls,

and beach access through the efforts of local chapter volunteers. Beachscape Brevard is a modified version of the national program, designed to reflect the coastal zone management issues distinct to peninsular Florida. For example, marine turtle nesting data, localized erosional significance, and quantifying hard bottom substrate have been reviewed for integration into Beachscape. Beachscape is a visionary coastal mapping program that disseminates coastal zone data through a Geographic Information Systems (GIS) platform. The Surfrider Foundation developed Beachscape to further their mission statement by empowering citizens, governmental agencies, consultants and activists with the necessary information to sustain our valuable coastal resources. Brevard County's expansive coastline, burgeoning growth and economic reliance on tourism made it a prime candidate for Beachscape implementation. An accessible, and comprehensive dataset of Beachscape Brevard is expected to available in the summer of 2002.

4:45 PM ATM-9 The Long-Term Effects of Dredging on Sediment Transport and Water Quality in Crane Creek and the Indian River Lagoon (IRL), Melbourne Florida. D.A. STRACCIONE, AND JOHN G. WINDSOR, JR. Florida Inst. of Tech., 150 W. Univ. Blvd., Melbourne 32901. Fine grained, organic rich sediments were removed from Crane Creek (Melbourne, FL) in 1998 to deepen Melbourne harbor and to improve water quality and reduce suspended matter transport to Indian River Lagoon. Water quality monitoring has continued in Crane Creek since the dredging project was completed and some of those results are reported here. Total suspended solids range from 4.3 to 11.2 mg/L in 2001 and 15 to 50 mg/L in 1997 and 1998; turbidity values range from 3.0 to 7.5 NTU in 2001 and 2.0 to 23 NTU in 1997 and 1998; and, oxygen saturation values vary from 0 to over 200% during the sampling period. Current flow measurements are used to estimate sediment transport. Local rainfall and wind have significant effects on the quantities of sediment transported through and trapped by Crane Creek. Sources of sediment trapped in Crane Creek are from both upstream and downstream (IRL) sources.

5:00 PM ATM-10 Post-Dredging Evaluation of Turkey Creek, Florida. JOHN H. TREFRY, Department of Marine & Environmental Systems, Florida Institute of Technology, Melbourne, FL 32901. As one component of a long-term effort in Florida, so-called muck sediment was dredged from Turkey Creek in Brevard County. In addition to improved navigation, the dredging project also was hoped to improve sediment and water quality. One obvious improvement is lesser amounts of fine-grained, organic-rich sediment that also are now in deeper water. Concentrations of Cd, Cu, Hg and Pb in sediment, when ratioed to Al, are not significantly different from levels observed during pre-dredging surveys in 2001 and

previous studies in 1992. Concentrations of these metals are within the guidelines established by the State of Florida. Significantly lower levels of polycyclic aromatic hydrocarbons and selected pesticides were found in sediment collected following dredging. Concentrations of dissolved trace metals are remarkably similar, and very low, in pre-dredging, post-dredging and 1992 results. Overall, the process of evaluating the positive environmental effects of dredging in Florida creeks is complicated, yet evolving.

5:15 PM BUSINESS MEETING: ATMOSPHERIC AND OCEANOGRAPHIC SCIENCES
JOHN TREFRY, presiding

BIOLOGICAL SCIENCES

FRIDAY 8:00 AM SNHS 101
SESSION A
PRESIDER WILL BE ANNOUNCED

PHYSIOLOGY

8:00 AM BIO-1 The Relationship Between Wing Morphology and Minimum Flight Temperature in Cicadas (Homoptera: Cicadoidea). C.G. VALDES, A.F. SANBORN, L.M. PEREZ, AND M.RM. GEBAIDE, School of Natural and Health Sciences, Barry University, Miami Shores 33161. Early cicada studies demonstrated a relationships between habitat and the minimum body temperature necessary to produce a controlled flight. However, many species do not follow these simple relationships. We measured wing area, wing length, and wing-loading in an attempt to correlate these morphological parameters to the minimum flight temperature (MFT). We analyzed both intraspecific (in *Magicicada* spp.) and interspecific relationships of the wing morphology and the ability of the cicadas to fly. Analyses show that wing morphology (wing area and wing loading) scales to body size as predicted by geometric similarity. Wing length and wing area both correlate to MFT as would be predicted by aerodynamic theory. Wing-loading did not correlate to MFT.

8:15 AM BIO-2 Is There a Thermal Benefit to Crepitating in Cicadas (Homoptera: Cicadoidea)? A.F. SANBORN(1), F.G. NORIEGA(2), AND P.K. PHILLIPS(3), (1) Barry University, Miami Shores 33161, (2) University of Arizona, Tucson, AZ 85721, (3) American University of the Caribbean, Coral Gables 33134. We investigated thermoregulation in the crepitating cicada *Platypedia putnami* var. *lutea*

Davis to determine whether there is a thermal benefit to producing sound through crepitation rather than the timbal mechanism characteristic of cicadas. We found the species to be an ectothermic, behavioral thermoregulator with evaporative cooling being a possible source of heat loss at elevated ambient temperature. Thermal responses of the species were related to the altitude of their habitat. Acoustic activity was restricted to a 6.7°C body temperature range similar to the range found in timballing cicadas. The use of the wing musculature to produce sound does not increase the body temperature range of signaling in crepitating species. Supported by NIH-MBRSRISE (GM59244-01A1).

8:30:AM BIO-3 Optimizing transfection efficiency for HEK-293 cells with cDNA coding Ca^{2+} channel subunits. D.N. RAGOONATH (1), S.PAPADOPOLOUS (2) AND K.BEAM (2), (1) Barry Univ., Miami Shores, FL, (2) Colorado State Univ., Ft. Collins, CO, 80523. Dihydropyridine (DHP) receptor of skeletal muscle contains subunits α_{1S}, $\alpha_2\delta$, γ and β_{1A} or β_{1B}. It has been shown that β subunits are required for targeting of α_{1S} to cell membranes. Human embryo kidney (HEK-293) cells were used to study effects of β subunits on α_{1S}. Cells were transfected with cDNA vectors coding for different subunits. α_{1S} cDNA was coupled to green fluorescent protein (GFP). Different amounts of transfection reagent and vectors were used to find best conditions. Optimum conditions for transfection was a ratio of cDNA (μg) and reagent (μl) of 3:2, volume of reagent being 3 μl per culture dish. We observed that co-transfection with β_{1B} resulted in expression of GFP-α_{1S} at cell surface, whereas β_{1A} led to intracellular localization of GFP-α_{1S}. NIH-NIGMS MARC Grant, GM08021-18, Barry Univ. and Colorado State Univ. Grant HL07904-05.

8:45 AM BIO-4 The Effect of Free Fatty Acids on AKT phosphorylation. E. HUGHES (1), A. CHAVEZ (2), S. G. FLORANT (2), AND S. SUMMERS (2). (1) Barry University, Miami Shores, FL 33161. (2) Colorado State University, Ft. Collins, CO 80523. Insulin resistance represents a major risk factor for the development of Type II diabetes. Insulin resistance in skeletal muscle is characterized by an inability of insulin to stimulate normal rates of glucose uptake and glycogen synthesis. We hypothesized that free fatty acids (FFA) might alter insulin's ability to phosphorylate AKT/protein kinase B and thus reduce glucose uptake. To evaluate the effects of FFAs on AKT/protein Kinase B phosphorylation in the insulin signaling pathway, we incubated cells with five different FFAs: palmitic acid (16:0), oleic acid (18:1), myristic acid (14:0), palmitoleic acid (14:1) and stearic acid (18:0). Phosphorylated Akt was detected by Western blotting with a phospho-Akt (P-Akt) antibody. We found that only the saturated FFAs, palmitate and stearic acid inhibited AKT phosphorylation

and thus, insulin action.We conclude that, preincubation of the cells with long-chain saturated fatty acids palmitic and stearic acids will decrease the insulin-stimulated phosphorylation and activation of AKT/PKB.

9:00 AM BIO-5 Role of Inhibin as an Intragonadal Modulator. T. PETRINO, AND Y.-W. P. LIN. Barry University, 11300 NE 2nd Ave., Miami Shores, FL 33161. Inhibin is produced by the ovary and specifically inhibits pituitary FSH production. To investigate the role of inhibin as a possible paracrine and/or autocrine ovarian regulator, *in vitro* culture of ovarian follicles (*Rana pipiens* and *Fundulus heteroclitus*) was assessed for two follicular responses: steroidogenesis and oocyte maturation or germinal vesicle breakdown (GVBD). Results showed that inhibin significantly blocked steroidogenesis in *Rana* (an autocrine effect), but not in *Fundulus.* Inhibin effectively blocked steroid-induced GVBD in both species (a paracrine effect). Inhibin appears to act directly in the oocyte and to affect some early step in the process of GVBD. Results from this study present evidence that inhibin may be a relevant paracrine/autocrine modulator of oocyte maturation because its effect was dose dependent, not permanent or deleterious. (Supported by NIH Grant 45455-09).

9:15 AM BIO-6 Tyrosine kinase activity in cultured rat embryonic septal neurons affected by nerve growth factor (NGF) and estrogen. D GREEN, A. JONUSAS, L.M. MUDD, AND J.R. MONTAGUE, SNHS-Biology, Barry University 11300 NE 2nd Avenue, Miami Shores, FL 33161. We grew rat embryonic septal neurons in bilaminar culture. Day in vitro-4 (DIV4) neurons were treated with NGF and/or estrogen. Immunostaining with monoclonal anti-phosphotyrosine was used to determine tyrosine kinase activity (as estimated by percent of control and treatment neurons stained). The peak of tyrosine kinase activity occurred within three minutes of exposure to either NGF or to estrogen, and tyrosine activity decreased back to control (unexposed) levels within 10 minutes. Such rates of enzyme activity suggest estrogen may trigger much more rapid patterns of protein phosphorylation and cellular activation than previously reported. . (Supported partly by NIH-MARC-USTAR Grant to Barry University).

9:30 AM BIO-7 The Effect of Beta-amyloid Concentrations on Survival of Cultured Septal Neurons. A.CHRISTIAN, D. GREEN, J. MONTAGUE, AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 NE 2nd Ave., Miami Shores 33161. Alzheimer's disease is a neurodegenerative disease characterized by the loss of memory and beta-amyloid (βA) plaques. The objective of this research is to determine how βA effects the survival of cultured septal neurons. Embryonic rat septal neurons were grown in bilaminar culture with

embryonic cortical glial cells in a defined medium. The cultures were treated with 1-50 nM βA. Survival of cells was determined using fluorescence to examine random fields of living and dead septal cells. After 5 days in vitro, 42% of control neurons were alive. βA did not appear to have a statistically significant effect on neuronal survival. Supported by NIH MBRS Grant # 45455.

9:45 AM BIO-8 Growth Factor Reversal of Beta-Amyloid Toxicity in Septal Neurons. B. R. GARCIA, C. EDWARDS, AND L. M. MUDD, SNHS, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161. Alzheimer's Disease (AD) whose pathology includes senile plaques affects the septal nucleus of the brain. Beta-amyloid (□A) is found in high concentrations in the plaques of AD. This study will test the efficacy of certain growth factors on the survival of neurons affected by □A. To test this, bilaminar cultures of astrocytes and neurons from embryonic day 16 rats were grown in serum-free media. The cultures were chronically treated with 1nM □A followed by estrogen (EST, 10nm), insulin-like growth factor I/II (IGFI, IGFII; both 10ng/ml), basic fibroblast growth factor (bFGF, 5ng/ml) or nerve growth factor (NGF, 100ng/ml). After six days in vitro, preliminary results show cells incubated with bFGF or IGFI, following □A treatment, had the highest rates of survival, 69% and 72%, respectively, suggesting a neuroprotective role. Supported by NIH MBRS grant # 45455.

10:00 AM BREAK

10:15 AM BIO-9 Beta-amyloid Effects on S100β and Reversal by Growth Factors in Neurons. D. N. RAGOONATH AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 N.E. 2nd Avenue Miami Shores 33161. Alzheimer's disease (AD) is a neurodegenerative disease distinguished by memory loss and amyloid plaques. AD plaques contain beta amyloid (βA), a protein toxic to several neuronal populations. S100β increases neurite outgrowth and is essential for development and nerve regeneration. The study used a bilaminar culture of septal neurons and cortical glial cells from the embryonic rat to assess effects of βA on S100β. Cells were treated with 10 nM βA followed by nerve growth factor (100ng/mL), insulin-like growth factors I and II (both 10ng/mg), estrogen (10nM), or basic fibroblast growth factor (5ng/ml). Preliminary findings include immunostaining in 76% of neurons. This staining appears to be altered by treatment with βA and growth factors. Supported by NIH-NIGMS Grant, GM08021-18 and MBRS Grant 45455.

10:30 AM BIO-10 Growth Factor Reversal of Ethanol Effects on Synapse Formation in Cortical Neurons. W. E. KRAYSSA AND L. M. MUDD, SNHS, Barry University, 11300 NE 2nd Avenue, Miami Shores

33161. Fetal Alcohol Syndrome results from prenatal exposure to ethanol and is characterized by brain abnormalities and decreased mental capacity. Growth factors may play a significant role in reversing ethanol-induced neuronal damage. This study will assess the effects of growth factors on synapse formation in ethanol-exposed cortical neurons. Neuronal and glial cells from embryonic day 16 rats were cultured in serum free media using a bilaminar culture system. The cultures were treated with 45mM ethanol followed by nerve growth factor (100ng/ml), insulin-like growth factor I and II (both 10ng/ml), basic fibroblast growth factor (5ng/ml), or estrogen (10nM). Preliminary evidence showed a band for synaptophysin of MW 38KD in Western blotting experiments, indicating the formation of new synapses after treatment. Supported by Northridge Cancer Foundation, Inc.

10:45 AM BIO-11 Ethanol Effects on GFAP in Glia. A. ACKBARALI AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161. In Fetal Alcohol Syndrome, decreased survival and development of neurons is characteristic. Studies have shown that the toxic effects may be reduced or reversed by growth factors. Glial fibrillary acidic protein (GFAP) is a chemical marker found in embryonic glial cells, and its presence indicates differentiation of glial cells. It has been suggested that ethanol causes early differentiation of glial cells, as indicated by the presence of GFAP. This study will investigate the effects of ethanol on GFAP in glial cortical cells from embryonic day 16 rats. Glial cells are treated with 45mM ethanol and the growth factors, basic fibroblast growth factor (5ng/ml), nerve growth factor (100ng/ml), insulin-like growth factors I and II (both 10ng/ml), or estrogen (10nM). Preliminary results show staining for GFAP in Western Blot experiments. Supported by Northridge Cancer Foundation, Inc.

11:00 AM BIO-12 Determination of D-Aspartic Acid in the optical lobes and synaptosomes of *Octopus vulgaris* subjected to exercises of learning and memory. J.RIOS[1], A.CHRISTIAN[1], K.PETERSON[1], and A.D'ANIELLO[2], (1) Barry University Miami Shores, FL, (2) Stazione Zoologica Naples, Italy (NIH TW00033, Barry University). Previous research first identified the presence of D-aspartic acid (D-Asp), an endogenous amino acid, in the nervous systems of *Octopus vulgaris*, a marine mollusk. In this study we have extended the determination of D-Asp to the optical lobes and synaptosomes of the octopus that has been subjected to exercises of learning and memory. Optical lobes were homogenized in TCA and analysis of D-Asp was carried out on the supernatant by enzymatic colorimetric, HPLC, and spectrophotometric methods. Previously it was found that L-Asp and L-Glutamic acid were excitatory neurotransmitters in the synaptic vesicles of octopus. The research was extended to see if D-Asp is also found in synaptic vesicles using electron

microscopy. The results show an increase in D-Asp in the learning group and its presence in synaptic vesicles.

11:15 AM BIO-13 D-Aspartic acid and N-methyl-D-aspartic acid in rat and human brain and its involvement in learning and memory. A. E. CHRISTIAN (1), K. B. PETERSON (1), J. M. RIOS (1) AND A. D'ANIELLO (2), (1) Barry University, Miami Shores, FL, (2)Stazione Zoologica, Napoli, Italia. (NIH TW00033-09, Barry University. D-Aspartic acid (D-Asp) and N-methyl-D-aspartic acid (NMDA) are both endogenous amino acids found in the nervous and endocrine systems and are believed to be involved in the learning and memory processes. The objective of this research is to determine whether these amino acids are involved in mammalian learning and memory. Rats were subjected to learning and memory exercises using the water-maze method. Purified samples were analyzed for D-Asp and NMDA by HPLC, spectrophotometric, and colorimetric methods. Data obtained showed an increase of these amino acids in the rats. In human brain from Alzheimer's patients the concentrations of the amino acids were reduced, indicating that they are involved in the learning and memory processes.

12:00 PM BUSINESS MEETING SNHS 106
DAVID KARLEN, ENVIRONMENTAL PROTECTION COMMISSION OF HILLSBOROUGH COUNTY, presiding

FRIDAY 8:00 AM SNHS 106
SESSION B
DAVID KARLEN, ENVIRONMENTAL PROTECTION COMMISSION OF HILLSBOROUGH COUNTY, presiding

GENETICS

8:00 AM BIO-14 Detection and Induction of Polyketide Synthase and Bioactive Compounds in Marine Sponges and Associated Bacterial Isolates. K. A. SANDELL AND J. V. LOPEZ, Harbor Branch Oceanographic Institution, 5600 US1 North, Fort Pierce, FL 34946. The potential for drug discovery from marine invertebrates is illustrated through the detection and induction of both Type I polyketide synthase (PKS or PKS-related mRNA transcripts) and biologically active compounds in two species of marine sponges and associated sponge-derived bacterial isolates. A brief overview is given of all molecular and microbiology techniques used. Both DNA and cDNA analysis of PKS gene sequences and mRNA analysis (or "in situ" expression) of PKS are examined in the target marine sponges and bacterial cultures. A series of induction experiments were performed to either induce microbes to express PKS or to induce the

production of bioactive (antimicrobial) compounds. Results indicate that "challenging" pure cultures with different marine bacterial species can induce the production of antimicrobial compounds and PKS.

8:15 AM BIO-15 Expressed Sequence Tag of the Larval Mosquito Gut. R. PIERRE-CHARLES(1), E. MELESHKEVITH(2), AND P. J. LINSER(2), (1)Barry University, Miami Shores 33161, (2)University of Florida's Whitney Laboratory, St Augustine 32086. *Aedes aegypti,* yellow fever mosquito, is the primary vector for viruses that cause human dengue and yellow fever. The larval gut has physiologically and morphologically distinct regions. The anterior midgut of the larva has an extremely high luminal pH of ~11. A better understanding of this unique physiology might lead to improved mosquito control strategies. Our objective was to generate ESTs, which will be used in microarray assays to identify mRNA expression in the anterior midgut. A series of molecular biology techniques were used to obtain 600 EST's. The transcripts from PCR were subjected to BLAST Analysis. The data will be used to create a specific microarray to study gene expression in the larval. NIH-NIGMS GM59244-01A1, Barry University.

8:30 AM BIO-16 Molecular Evaluation of the *tumorous-head-1* locus in Drosophila. M. ABREU AND G. PACKERT. Barry University, 11300 NE 2nd Ave., Miami Shores, Fl 33161. The *tumourshead-1 (tuh-1)* maternal effect gene in Drosophila is located at the base of the X chromosome at the euchromatin-ß-heterochromatin junction in region 20A1-5. Genetic analysis revealed that there are two naturally occurring iso-alleles, termed *tuh-1h* and *tuh-1g*. Deficiency analysis places the locus between the lethal genes *extra organs* and *lethal B20.* Five P1 clones carrying approximately 80 kb of DNA each from the 20A1-5 region of the X chromosome have been evaluated using restriction enzyme digests and Southern blot analysis to determine the presence of the *tuh-1* gene. The results of this study will be presented. (Supported by NIH Grant 45455-09).

8:45 AM BIO-17 Genetic Interactions between the *Polycomb* gene and the Bithorax-Complex in Drosophila. G. PACKERT. Barry University, 11300 NE 2nd Ave., Miami Shores, Fl 33161. The Bithorax-Complex (BX-C) in Drosophila is a homeotic gene cluster that has been the focus of extensive genetic analysis for many years. The genes within this complex are responsible for proper development of the posterior 2nd thoracic segment and all abdominal segments of the adult fly including genitalia and analia. The maintenance of expression and repression of the BX-C genes depends on the *Polycomb* group *(Pc-G)* of genes. This negative regulatory function is required throughout development. The adult phenotype of *trans*-heterozygous flies carrying mutations within the BX-C on one chromosome

and the *Polycomb* (*Pc*) mutation on the homologue will be discussed. (Supported by NIH Grant 45455-09).

9:00 AM BIO-18 Cloning and Sequencing of *Danio rerio* (Zebrafish) *Polycomb* Gene Using Polymerase Chain Reaction (PCR). Y.-W. P. LIN, G. PACKERT, AND T. PETRINO. Barry University, 11300 NE 2nd Ave., Miami Shores, FL 33161. The *Polycomb* (*Pc*) gene has been implicated in the repression of gene activity during development. In order to evaluate the role of *Pc* gene in the regulation of homeotic genes expression, the isolation of the zebrafish *Pc* gene was carried out. PCR using degenerate primers (designed based on conserved regions of known *Pc* genes) and zebrafish cDNA template was used to specifically amplify the zebrafish *Pc* gene. A PCR product of 403 base pairs was isolated, cloned, sequenced, and subjected to BLAST analysis. Result indicated that the above zebrafish clone sequence encodes the predicted 134 amino acids of the amino terminal (chromodomain) of the Pc protein and shows 85% homology to Pc protein of human, mouse, chicken and frog. (Supported by NIH Grant 45455-09 and Barry Univ. Research Scholarship Grant).

9:15 AM BIO-19 Tyrosine^{283} Mutation of the Rat GnRH Receptor by Polymerase Chain Reaction. M. ABREU (1), D. OH (2), AND H. KWON (2), (1) Barry University, Miami Shores, FL., (2) Chonnam National University, Kwangju, Korea. Gonadotropin-Releasing hormone (GnRH) is an essential reproductive stimulant in both males and females. This decapeptide stimulates luteinizing hormone (LH) and follicle-stimulating hormone (FSH), which then stimulates gonadal secretion of testosterone, progesterone, and estrogen. The hypothalamus produces and secretes GnRH, which then binds to receptors on gonadotrophs. A comparative analysis of amino acid sequences among mammalian and nonmammalian GnRH receptors suggested that tyrosine^{283} located on the VI extracellular loop of the rat GnRH receptor is crucial for ligand binding affinity and signal transduction. Thus, we attempted to mutate the tyrosine^{283} on the rat GnRH receptor by using polymerase chain reaction (PCR). Results of this study will be presented. (NIH TW00033-09, Barry University).

9:30 AM BIO-20 Color Vision: A Study of Color Weakness and Gender. M. GOTTFRIED (1), B. E. ROTHSTEIN (1), AND M. S. GAINES (2), (1) BEAM, North Miami Beach Senior High School, 1247 NE 167th Street, North Miami Beach 33162, (2) University of Miami, Coral Gables 33124. Using a computerized color vision test and standard measures of color vision, the researchers and student assistants surveyed students, parents and others to investigate the frequency of color "weakness." It was hypothesized that among those with what is commonly

considered normal color vision, more females than males would show a weakness in color discrimination. It was further hypothesized that this would be due to X-inactivation (Lyonization), the process of dosage compensation in organisms with XX/XY sex determination. Heterozygotic females should have a mosaic of functional and non-functional cone cells. This research was inspired by our participation through the University of Miami in the Howard Hughes Medical Institute (HHMI71199514104) Holiday Lectures, whose topic this year was sex.

9:45 AM BREAK

MARINE BIOLOGY

10:00 AM BIO-21 Study of the polyketide synthase (PKS) gene from a marine dinoflagellate (Genus *Symbiodinium*). R.V. SNYDER (1), J.R. MONTAGUE (2), AND K. REIN (1), Chemistry Department, Florida International University, 11200 SW 8th St., Miami, FL 33199, (2) SNHS-Biology, Barry University 11300 NE 2nd Avenue, Miami Shores, FL 33161. We examined DNA extracted from a marine dinoflagellate (Genus *Symbiodinium*). These microscopic algae are closely related to certain red-tide dinoflagellates that are known to produce deadly polyketides. After purifying and amplifying selected pieces of DNA, we inserted a 700-bp piece into bacterial plasmids, which were then used to transform *E. coli* cells. The transformed bacteria now carry selected pieces of algal DNA. We discovered that the inserted DNA comes from within a polyketide synthase (PKS) gene. This gene produces one of the enzymes that make the toxic polyketides. We also began work on a total genomic DNA library for *Symbiodinium*. It is hoped that this research will lead to a better understanding of gene expression in species of the notorious red-tide algae. (Supported partly by NIH-MARC-USTAR Grant to Barry University, and partly by NIH-SBIR to Florida International University).

10:15 AM BIO-22 Use of brine shrimp (*Artemia franciscana*) to assay LD_{50} toxicity of ethyl acetate extracts from a marine dinoflagellate (Genus *Symbiodinium*). K. REIN (1), J.R. MONTAGUE (2), N. CHIN (2), AND S. DICK (2), (1) Chemistry Department, Florida International University, 11200 SW 8th St., Miami, FL 33199, (2) SNHS-Biology, Barry University 11300 NE 2nd Avenue, Miami Shores, FL 33161. We used a brine shrimp bioassay to study toxicity of ethyl acetate extracts from a marine dinoflagellate (Genus *Symbiodinium*). *A. franciscana* cysts were cultured in 3.5% seawater; 90% of nauplii larvae hatched within 24 hours, and were then exposed to controlled concentrations of toxin. Dilutions of *Symbiodinium* extract as low as 500 μg/ml produced 50% mortality within 24 hours of exposure to samples of *A franciscana*. (Supported partly by

NIH-MARC-USTAR Grant to Barry University, and partly by NIH-SBIR Grant to Florida International University).

10:30 AM BIO-23 The Seasonal Occurrence of Higher Filamentous Marine Fungi on Mangroves in J. U. Lloyd State Park. CATHERINE VOGEL (1), SCOTT SCHATZ (1,2), HAROLD LAUBACH (3), ANDREW ROGERSON (1), HOWARD HADA (3), AND JONATHAN CAUFFMAN (3). Nova Southeastern University Colleges of (1) Oceanography, (2) Optometry, (3) Medical Sciences Little is known regarding the occurrence and distribution of higher filamentous fungi on mangroves in South Florida. In this study we collected and identified over 20 species of higher filamentous marine fungi in J.U. Lloyd State Park. The predominant fungi included the ascomycetes, Hypoxylon oceanicum, Leptosphaeria grandispora, L. australiensis, the Fungi Imperfecti, Humicola allopallonella and Periconia prolifica as well as the marine basidiomycete, Halocyphina villosa. A key to the filamentous marine fungi of J. Lloyd State Park will be presented and their seasonal occurrence and their role in the marine environment will be discussed.

10:45 AM BIO-24 Vegetation and Salinity Relationships along the Northwest Fork of the Loxahatchee River. J. G. ZAHINA, South Florida Water Management District, Mail Stop 4350, 3301 Gun Club Road, West Palm Beach 33406. The distribution of vegetation communities along the Northwest Fork of the Loxahatchee River is discussed relative to the inland extent of saltwater conditions. The floodplain vegetation has changed dramatically over the past century, mostly as a result of increasing salinity due to changes in the watershed, alterations to the River and estuary, and a rise in sea level. A study of the floodplain vegetation offers a unique opportunity to explore ecological relationships and the complexities of managing this natural system in the face of significant alterations.

11:00 AM BIO-25 Water Quality and Seagrass Monitoring Programs in the Shell Key Preserve, Tampa Bay, Florida. M. E. FLOCK (1), A. SQUIRES (1), AND C. FLEGEL (2), (1) Pinellas County Dept. of Env. Man., Water Res. Man. Sect., (2) Pinellas County Dept. of Env. Man., Div. Env. Lands. Shell Key is a new county preserve located at the mouth of Tampa Bay. The Division of Environmental Lands management plan includes a detailed inventory and assessment of the preserve's natural resources. In January 2001, the Water Resources Management Section and Division of Environmental Lands implemented two ecological monitoring programs to address management of seagrass habitat. Water quality monitoring is characterizing baseline conditions in the preserve including indicators of water clarity (e.g., PAR, Secchi disc depth, chlorophyll-a) which have been shown to be strongly related to the sustainability and

expansion of seagrass in Tampa Bay. The seagrass monitoring effort gives an initial assessment of the condition (areal coverage, species composition, shoot densities) of seagrass in the preserve. Results of these two monitoring efforts will be presented.

11:15AM BIO-26 Combining Ecological and Paleoecological Methodologies to Decipher "Change" in Florida's Coral Reef Communities. W.F. PRECHT, PBS&J 2001 NW 107th Ave., Miami, 33172. Coral reefs of Florida have been in a state of flux for the past 25 years. Among these changes has been the near elimination of the dominant coral species *Acropora palmata* and *Acropora cervicornis*. Whether this change is natural or the result of human disturbances is a topic of strenuous debate. To address this issue, we must ask the question "Did episodes of reef degradation occur in the past, before the era of human interference, or is the current state of coral reefs unique to our time?" . Because coral reefs are both geologic and biologic entities, it should be possible to observe the effects of various disturbances in ecological time, detect historical changes in the paleoecological record, and deduce the multi-scale processes behind those patterns. Investigation of the Pleistocene Key Largo Limestone shows it was devoid of the major reef-building acroporid species. Understanding the reason for this similarity may be a key to unlocking the mysteries of Florida's reef woes. In addition, the past may serve as a predictive model for the future of Florida's reefs.

11:30 AM BIO- 27 Spatial and Temporal Variation in the Recruitment Patterns of Encrusting Organisms Associated with Sabellariid Reefs in Boynton Beach, Florida. D. A. MCCARTHY, Smithsonian Marine Station at Ft. Pierce, 701 Seaway Drive, Ft. Pierce, 34949. Seasonal recruitment patterns of encrusting organisms into intertidal and subtidal sabellariid reefs off Boynton Beach, Fl were followed from 1997 to 2000. Caged and uncaged settlement plates were exchanged every month to determine the effects of predation on the number of species, and on the abundance of several solitary species. Twenty-three species were observed on settlement plates during this study. Of these, the sabellariid *Phragmatopoma l. lapidosa* was most common. The number of species recruiting was usually higher in subtidal than intertidal habitats. For most species, differences in recruitment patterns between intertidal and subtidal habitats could not be explained by predation on recruits. *Phragmatopoma. l. lapidosa* may limit recruitment of these species by covering over them. Additionally, high juvenile mortality in these other species could be caused by sand scouring or burial.

11:45 AM BIO- 28 Population Biology of a Fissiparous Brittlestar (Echinodermata) in sponge and algal habitats. E. A. SPRINGER AND R.

L. TURNER, Fla. Inst. Technol., 150 W. University Blvd., Melbourne 32901. The ophiuroid *Ophiocomella ophiactoides*, previously known from reef rubble and algal turf, is reported for the first time living in nine species of mangrove sponge in Lake Surprise, Key Largo, Florida. Red mangroves, mangrove sponges, and the spongicolous ophiuroid occurred along most of the 8.5 km of shoreline; the species was also found in algal turf. Most brittlestars were small (mode 1–1.5 mm disc diam.), showed signs of recent fission, and were unsexable. Sexable animals were rare, larger, and more completely regenerated and showed signs of cyclic gonadal activity and spawning. Sex ratios favored males only on one of three dates. Many population parameters in sponges vs. algae are similar to prior results for other fissiparous ophiuroids in sponges vs. algae. Its associa-tion with sponges might give *O. ophiactoides* physical and chemical protection from predators and competitors and an enhanced supply of particulate food.

12:00 PM BUSINESS MEETING SNHS 106
DAVID KARLEN, ENVIRONMENTAL PROTECTION
COMMISSION OF HIILLSBOROUGH COUNTY, presiding

FRIDAY 2:30 PM SNHS 106
SESSION C
DAVID KARLEN, ENVIRONMENTAL PROTECTION
COMMISSION OF HILLSBOROUGH COUNTY, presiding

AQUATIC BIOLOGY & VERTEBRATES

2:30 PM BIO-29 Seasonal Abundance and Periodicity of *Daphnia* species in Central Florida. J.A.OSBORNE, Biology Department, University of Central Florida, P.O. Box 25000, Orlando 32816. Most cladocerans and *Daphnia*, in particular, in temperate lakes are most abundant in spring and summer, then undergo a midsummer crash that results in absent autumn and low winter densities. This study was conducted to determine if *Daphnia* species in central Florida's subtropical, warm monomictic lakes undergo this same seasonal trend. *Daphnia* were sampled from an experimental pond (*D. laevis*) and a dystrophic lake (*D. ambigua*) in Orange Co. and three eutrophic lakes in Polk Co. (*D. lumholtiz*) to determine their seasonal population dynamics. When these populations were compared to that for *Daphnia ambigua* reported in the literature for other central Florida lakes, the seasonal trend of high spring/early summer and low autumn/early winter population densities was found to be similar. The seasonal trend for Florida *Daphnia* was also found to be similar to that for temperate *Daphnia*.

2:45 PM BIO-30 The Influence of Flow Rate on Fish Distribution in Blue Spring (Volusia County, Florida). L.F. FRENCH, K.A. WORK, AND M.A. GIBBS, Department of Biology, Stetson University, DeLand, 32720. This study was conducted in order to assess the effect of flow rate and dissolved oxygen concentration on fish diversity in Blue Spring during the transition between the dry and wet seasons. Species diversity, flow rates and dissolved oxygen measurements were taken at five sampling stations (each with 3 microhabitats) along the length of the Blue Spring run during the summer of 2001. Flow rate was negatively correlated with both dissolved oxygen concentration and diversity, as measured by the Shannon Wiener Diversity Index. Sampling date and location of sampling site were also found to be significant factors in fish diversity. This data suggests that small spring fish take advantage of transitory low flow, high dissolved oxygen environments scattered along the periphery of the main spring channel.

3:00 PM BIO-31 Prey Targeting by the Infrared Imaging Snake *Python*: Effects of Experimental Visual and Infrared Sensory Deprivation. A.B. SAFER, A. MATSUSHITA, B.J. BUCK, AND M.S. GRACE, Biological Sci., Florida Inst. of Technol., 150 W. Univ. Blvd., Melbourne, FL 32901. Facial pit organs of boid and crotaline snakes allow accurate targeting of homeothermic prey in the absence of visual cues. Infrared (IR) and visual information merge in the optic tectum. We investigated the relative importance of vision and IR imaging in guiding accurate predatory strikes. Trigeminal nerves were surgically lesioned unilaterally to render pit organs non-functional; vision was acutely eliminated by temporarily patching one or both eyes. Targeting trials were videotaped to determine strike angles. We found that visible light and IR radiation are important for targeting, and that snakes can switch between the two. However, our data show that vision is more important than IR radiation for predatory targeting. Funding: U.S Air Force Office of Scientific Research.

3:15 PM BIO-32 Movements and Home Range of Raccoons (*Procyon lotor*) on a Coastal Island in Northeastern Florida. J. A. BUTLER, J. L. MOSLEY, AND J. PHILLIPS. Department of Biology, University of North Florida, Jacksonville 32224. A study of raccoons was conducted on Sawpit Island in the Talbot Islands State Geological Park in northeastern Florida from 1 May until 31 October 2001. We trapped and radio-collared 6 male and 2 female raccoons. Our three main objectives were to determine when they were active, characterize types of refugia they used, and calculate home ranges. We located raccoons as often as possible while searching 2-4 times per week for each. When subjects were found we took GPS records and noted their activity and habitat. Researchers used staggered shifts to determine the time of activity, however, no notable

activity pattern could be discerned. The raccoons preferred cedar trees as their primary refuge, and other refuges included marsh grass, palmetto domes, and scrub oaks. GPS data points will be assessed , and home ranges of our subjects will be compared with published records in other areas.

3:30 PM BIO-33 Dispersion Patterns of the Cotton Rat (*Sigmodon hispidus*) in Response to Habitat Structure. K. B. CLANTON (1) AND I. J. STOUT (1), (1) Department of Biological Sciences, University of Central Florida, Orlando 32816. Inter- and intra-grid variation in dispersion patterns of *Sigmodon hispidus* were studied in abandoned farmland near Lake Apopka. Trapping took place from March through August 2000 within the St. Johns River Water Management District's 3,238-hectare North Shore Restoration Area. Horizontal and vertical measures of habitat structure were taken. Significant variation in reproductive condition of subadult females was correlated with both vertical structure and spatial coverage of live herbaceous species; males showed no trends with respect to reproductive condition in response to habitat structure. Analyses indicate habitats with greater herbaceous height support a greater number of adult males. The rate of increase (r) of cotton rats in more heterogeneous areas was twice that observed in more homogeneous areas.

3:45 PM BIO-34 The B.U.C.K.I. (Barry University Cat and Kitten Initiative) Project. AMY LONG, JULIE ECKHOFF AND PAUL I HIGGS. Department of Physical Sciences, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. In May 2001 the pre-veterinary medicine club was allowed to setup a trap, neuter and release or adoption program for abandoned and feral cats resident on it's campus. The methods, results, trials and tribulations from our first year of operation will be presented.

POSTERS

FAS POSTER SESSION (BIO)
FRIDAY 8:00 AM – 4:00 PM
SNHS HALLWAY

POS-1 Identification of a splice variant of mouse allograft inflammatory factor-1. M.E. HANDEL-FERNANDEZ[1], E. VAN DER PUT[2], AND V. VINCEK[2] (1) Barry University, Miami Shores, FL 33161, (2) University of Miami, Miami, FL 33101.

POS-2 Ethanol Effects on GFAP in Glia. A. ACKBARALI AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161.

POS-3 The Effect of Beta-amyloid Concentrations on Survival of Cultured Septal Neurons. A.CHRISTIAN, D. GREEN, J. MONTAGUE, AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161.

POS-4 Growth Factor Reversal of Beta-Amyloid Toxicity in Septal Neurons. B. R. GARCIA, C. EDWARDS, AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161.

POS-5 Growth Factor Reversal of Ethanol Effects on Synapse Formation in Cortical Neurons. W. E. KRAYSSA AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161.

POS-6 Dose Effect of Beta-Amyloid on Glial Fibrillary Acidic Protein in Septal Glia. E. HUGHES AND L. M. MUDD. School of Natural and Health Sciences, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161

POS-7 Beta-amyloid Effects on S100β and Reversal by Growth Factors in Neurons. D. N. RAGOONATH AND L. M. MUDD, School of Natural and Health Sciences, Barry University, 11300 N.E. 2nd Avenue Miami Shores 33161.

POS-8 Rhabdom Shedding in *Limulus* Lateral Eye Photoreceptors. G. TOUSSAINT (1), B. BATTELLE (2), (1) Barry Univ., Miami Shores 33161, (2) Whitney Lab., St. Augustine 32080.

POS-9 Zooplankton Population's Dynamics of two open Lakes along the St. Johns River, Florida: Lake Jessup and Lake Washington. L.M. DRENNAN (1) AND J.A. OSBORNE (2), University of Central Florida, Orlando 32816-0165

COMPUTER/MATHEMATICAL SCIENCES

FRIDAY 9:30AM O'LAUGHLIN 112
JACCI WHITE, SAINT LEO UNIVERSITY, presiding

9:30 AM CMS-1 From Frogs to Recursively and Explicitly Defined Functions. S. SELBY, Palm Beach Atlantic College, Mathematics Department, 901 S. Flagler Drive, West Palm Beach 33416. A problem solving situation is introduced dealing with frogs. Techniques for solving

problems are listed. In solving the problem a pattern is generated. Charts and lists are utilized to display the data. This pattern is then expressed recursively and explicitly using several methods. One of these methods is by use of a graphing calculator and its statistical analysis capabilities. First and second differences are used to establish the degree of the relationship. This exercise emphasizes the importance of thinking of inputs and outputs of functions in terms other than x's and y's. The graphing utility is also used to perform matrix multiplication. Integration of knowledge is a very important tool in teaching. This problem incorporated many different topics in one demonstration and the student needs to combine several techniques in its solution.

9:45 AM CMS-2 On a Problem of Finding the Number of Ways of Changing a Dollar. S. ZIVANOVIC AND A. AKHPOLAU. Barry University. Miami Shores 33161. The problem of finding the number of ways of changing a dollar is a well known problem leading to a diophantine equation. This problem was also studied by Euler. In this talk we propose to investigate the solutions of the well known problem and generalize it. Our hope is to get some analytic methods to solve the problem.

10:00 AM CMS-3 Mathematics Electronically. J. A. WHITE, Saint Leo University, Saint Leo 33574. Two online mathematics course models will be evaluated. The first course is Introduction to Statistics that was developed at Saint Leo University in partnership with Bisk Totaltape publishing and offered through the University Alliance. An interactive message board is the main communication tool in Statistics. The second is an Introductory Algebra course taught at The University of Phoenix, developed by each individual instructor. This course uses learning teams to meet most course objectives.

10:15 AM CMS-4 Teaching Online Statistics at Saint Leo University, S. BONDARI, Saint Leo University, Saint Leo, FL 33574. Three years ago a course in elementary statistics was developed at saint Leo University. In this presentation the main features of the course such as the message boards and randomized testing are discussed. Furthermore, some of the effective online teaching strategies and grading policies are outlined, and finally, the advantages and the disadvantages of the course in comparison with the statistics course offered on campus are discussed.

10:30 AM BREAK

10:45 AM CMS-5 Mathematics on video. J.A. WHITE, Saint Leo University, Saint Leo, FL 33574. Mathematics Tutorial video tapes now come with the textbook, on Cdrom. The author of this section has created

the tutorial videos that accompany six different textbooks from Elementary Algebra through Trigonometry. The authoring of tutorial video tapes for mathematics will be discussed in this session.

11:00 AM CMS-6 A History of the Identities and the Central Identities of the matrix Rings, S. BONDARI, Saint Leo University, Saint Leo, FL 33574. In 1970 Kaplansky proposed the following problem in the ring theory: "Let A_n be the nxn total matrix algebra over a field, n□3. Does there exist a homogeneous multilinear polynomial of positive degree which always takes values in the center of A_n without being identically zero?" Even though during the last three decades a number of partial solutions to the above problem has been obtained, the problem of describing all the identities and central identities for n□3 has remained an open problem. In this brief presentation, a history of the problem, together with some of the open questions associated to the problem are discussed.

11:15 AM CMS-7 Opportunities for Mathematics Educators in HEC. R. CRISS. Saint Leo University, Saint Leo, FL 33574. The Higher Education Consortium (HEC) is a professional organization dedicated to improving the teaching and learning of mathematics and science. This poster session will highlight the history and mission of HEC, as well as some opportunities that exist to get involved with HEC in Region V.

11:30 AM CMS-8 Mathematics & General Chemistry: Equipping the Student Toolbox. J. K. WILLIAMS, Saint Leo University, Saint Leo, FL. 33574. Despite mathematics serving as the root foundation for the physical sciences (chemistry, physics, etc.), overcoming math anxiety is one of the greatest obstacles to student success in general chemistry. The use of information technologies, including the World Wide Web (WWW), to assist students in mastering the fundamental mathematics needed for general chemistry is discussed.

11:45 AM CMS-9 The Aztec and Mayan Calendars. R. SIGLEY, Palm Beach Atlantic College, Mathematics Dept., PO Box 24708, West Palm Beach 33416-4708. This paper, which had its beginnings as a research project for the course History of Mathematics, discusses the remarkable similarities between the Aztec and the Mayan Calendars. Even though the two cultures seemingly had very little interaction and developed their calendars separately, both used a 365-day cycle, one that is divided in a far different manner than the 365-day calendar we now use.

12:00 PM BUSINESS MEETING: COMPUTER & MATHEMATICAL SCIENCES: JACCI WHITE, presiding

ENVIRONMENTAL CHEMISTRY AND CHEMICAL SCIENCES

FRIDAY 9:00 AM POSNER 101
SESSION A
MELISSA DERBY, UNIVERSITY OF SOUTH FLORIDA, Presiding

9:00 AM ENV-1 Use of Silica-supported Reagents and Duckweed in the Removal of Cadmium(II), Nickel(II), Silver(I) and Lead(II) Ions. CRAIG A. BOWE and DEAN F. MARTIN. Institutue for Environmental Studies, Department of Chemistry, University of South Florida, 4202 East Fowler Avenue, Tampa, Florida 33620. The pollution of water by metals is a major environmental problem faced around the world. Treatment of freshwater sources by silica gel is an inexpensive cleanup technology that is an emerging field. Previous work describing the use of silica-supported reagents has established the possibility of using known chelating agents supported on silica gel for the removal of such heavy metals as lead, cadmium, copper, silver, and nickel from aqueous media. Silica gel is currently being used as a support for various straight-chain monofunctional and bifunctional compounds such as mercaptans and mercaptoamines. The current study reports the results of an investigation involving the use of these compounds in the removal of cadmium(II), nickel(II), silver(I) and lead(II) ions from solutions of known concentration. In addition, the use of aquatic plant life is also a technology being explored worldwide (phytoremediation). The use of a common aquatic plant, duckweed, in the subsequent treatment of the metal-containing solution that was first treated with supported silica gel. The results study the effectiveness of using supported silica gel in combination with treatment with duckweed.

9:15 AM ENV-2 The Control of the Florida Red Tide, Karenia brevis through Allelopathy. MELISSA DERBY,[1] EMAN OTTALAH,[1] DEAN F. MARTIN, [1] and JOSEPH J. KRZANOWSKI.[2] (1) Institute for Environmental Studies, Dept. of Chemistry; (2) Department of Pharmacology and Therapeutics, University of South Florida, Tampa, FL 33620. In Florida, harmful algal blooms are caused by a red tide organism, known as *Gymnodinium breve, and* occur every 3-5 years usually in the autumn following periods of heavy rainfall. Outbreaks will cause high mortality rates among fish, dolphins, manatees, and other wildlife. In humans, the side effects that occur are respiratory problems-- lacrimation, rhinorrhea, and asthma-like symptoms to name a few. Researchers are looking into controlling the red tide outbreaks so that these problems do not occur. The present study is concerned with properties of APONIN-1 from the algal strain *Nannochloris sp.* APONIN-1 was tested against a known concentration of *Gymnodinium breve* in enriched seawater medium and was

cytolytic. Toxicity studies and microscopy studies show that *N.sp* controls red tide and keeps the cell wall of the red tide in tact.

9:30 AM ENV-3 Historical Blunders in Chemistry, DEAN F. MARTIN AND BARBARA B. MARTIN, Institute for Environmental Studies, Department of Chemistry, University of South Florida, 4202 East Fowler Avenue, Tampa, FL 33620. A number of instances of exciting discoveries, later found to be blunders, have occurred in the history of chemistry. These include the magneto-optical effect that led to the alleged discovery of the element "Alabamium" (eka-iodine), the discovery of "Illinium" (element 61), and Deryagin water, and cold fusion. The pattern of discovery and discoverers indicated three common problems: inadequate equipment, inadequate controls, and external social pressures.

9:45 AM ENV-4 Comparison of log P Values Calculated with CAChe and Other Methods, MATTHEW E. McKENZIE , BARBARA B. MARTIN, AND DEAN F. MARTIN, Institute for Environmental Studies, Department of Chemistry, University of South Florida, 4202 East Fowler Avenue, Tampa, FL 33620-5205. The octanol-water partition coefficient , as logP, is a useful parameter that serves as a predictive guide of chemical, physical, and biological properties. LogP is inversely related to the water solubility of a substance, directly related to the bioconcentration tendency, directly related to the lipophilicity , and so on. Unfortunately, there are many compounds of interest for which observed logP values are unknown. We used a Fujitsu CAChe software program to calculate values of log P and when possible compare them to observed values and to values calculated by other methods. Values calculated by two different procedures for different groups of compounds (esters, ketones, amines) correlate well, though agreement of values for individual substances is poor because of different sets of assumptions. In any event, calculating values of log P seems superior to determining them.

10:00 AM ENV-5 Air Quality Studies of Two Primary Eye Care Clinics. N. PATEL (1), S. SCHATZ (2,5), H. LAUBACH (4), H. HADA (4), A. ROGERSON (5), R. MATHEWS (1), E. KOSKE (6), AND D. ESIABU (6). Nova Southeastern University Colleges of (1) Farquhar Undergraduate Center (2), Optometry (3), Medical Sciences (4), Oceanography (5) Dept of Biology, Florida Atlantic University (6). The maintenance of air quality in health care facilities is a major priority due to the fact that poor air quality can lead to illnesses and prolonged recovery periods. We determined air quality in three areas each, of two primary eye care clinics by sampling 500 l of air in each location for microbial organisms. We found higher levels (CFU's) and greater species diversity of bacteria and fungi in the sites in which the ventilation system was older and

less efficient. The importance of air quality and modern ventilation systems in clinical settings will be discussed.

10:15 AM BREAK AND BUSINESS MEETING
ENVIRONMENTAL CHEMISTRY AND CHEMICAL SCIENCES
MELISSA DERBY, presiding

10:30 AM ENV-6 Synthesis of Muscarinic Agonists. J. BOULOS, C. STUJENSKE, C. PHILIP, Barry University, Miami, 11361. Oxazolyl-5- and furanyl-2- substituted morpholines have been synthesized via nucleophillic substitution reactions of morpholine with the corresponding oxazolyl and furanyl cholides. The oxazolyl chlorides were synthesized by first condensing formamide or acetamide with α-chloroethyl acetoacetate to furnish the corresponding oxazolyl esters which were then reduced to alcohols with lithium aluminum hydride. The alcohols were then converted to the chlorides with triphenyl phosphene in carbon tetrachloride. The furanyl chlorides were obtained directly from the chlorination of furanyl alcohols with triphenyl phosphene in carbon tetrachloride. Hydrochloride and methyl iodide salts were obtained by treating the morpholine bases with hydrogen chloride gas and iodomethane. All compounds were characterized by NMR, MS and elemental analysis and tested for muscarinic binding affinity and selectivity.

10:45 AM ENV-7 Isolation of the anti-tumor compound betulinic acid and preparation of derivatives. MELANIE CAMACHO (1), PAUL REESE (2), GLENROY MARTIN (2), (1) Barry Univ., Miami Shores, (2) Univ. of West Indies, Mona, Kingston, Jamaica. NIH GM08021-18 and TW00033-09 *Stemodia maritime* is known to produce the compounds stemodin, stemarin, and betulininc acid in good yield. Betulininc is a compound that has shown activitiy against malignant melanoma. The aim of the study was to isolate pure betulinic acid for further transformation into derivatives. Organic extracts derived from hexane and acetone percolations were chromotagraphed on silica gel to yield betulinic acid. A sample of the latter was converted to its methyl ester using diazomethane. A portion of this compound was reduced to the diol. Based on thin layer chromatographic analysis the isolation and chemical transformation were successful. Future biological assays will determine the antiviral potency of these two derivatives.

11:00 AM ENV-8 Analysis of the Total Phosphorus Results for Split Sampling in the Everglades Agricultural Area. BILL DONOVAN AND DAVID STRUVE, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406. The South Florida Water Management District initiated a split-sampling program for Total

Phosphorous in the Everglades Agricultural Area in 1996. Results of the program showed disagreement in results from the different laboratories. The SFWMD lab was used as a reference lab, analyzing all split samples, with the other different participating labs each analyzed only part of the split samples. An investigation to account for the differences was conducted. The investigation revealed that that Total Phosphorous Method in use at the SFWMD lab had a negative interference when samples were "over-preserved" in the field. As a result of the investigation, a joint effort was undertaken to resolve the negative interference from the over-acidification of the samples by initially adjusting sample pH to 2.0 and later by modification of the DEP Field Sampling Manual to preclude over-acidification.

11:15 AM ENV-9 Synthesis of an Analog of the Marine Alkaloid Shermilamine B. IVETTE LOPEZ (1), YVETTE JACKSON (2), NORMAN TOWNSEND (3), (1) Barry Univ, Miami Shores, (2) Univ. of the West Indies, Mona, Kingston, Jamaica. Shermilamine B is a metabolite produced by sessile marine organisms, for example, *Tridideminum sp.* Tunicates found in Pago Bay, Guam, and *Cystodytes sp.* Ascidians from Fiji. This compound has proven to be helpful in the fight against diseases because it has the abilitiy to intercalate DNA, inhibit topoisomerase II, and it exhibits anti-HIV and anti-tumor activities. We sought to synthesize a simple analog of Shermilamine B. (Supported by NIH MARC GM08021-18 and MIRT TW00033-09).

11:30 AM ENV-10 Extraction of Well Known Natural Products: New Applications of an Old Friend. MONIQUE CUNNIGHAM AND PAUL I. HIGGS. Department of Physical Sciences, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Investigations toward demonstrating the viability of illustrating the ethnobotanical drug discovery process in one semester of undergraduate research. Basil (*Ocimum* basilicum), from plant to pure compound and a fragrant application.

FRIDAY 2:30 PM POSNER 101
SESSION B
MELISSA DERBY, UNIVERSITY OF SOUTH FLORIDA, presiding

2:30 PM ENV-11 Synthesis of an Analgoue of Kuanoniamine A- a Pharmacologically Actice Marine Alkaloid. R. PERALTA (1), S. HEPBURN (2), AND Y. JACKSON (2). (1) Barry University 11300 NE 2nd Ave, Miami, Fl 33161, (2) Univ. of West Indies, Kingston Jamaica. Kuanoniamine A is the simplest member of a group of marine alkaloids-pyrido[2,3,4-m,n]thiazolo[4,5-b]acridines-which show strong antitumor activity *in vivo* and *in vitro* at an IC_{50} of 1-2 μg/mL. We are involved in

preparing a non-linear tetracyclic analogue of this marine alkaloid, with a view to investigating its cytotoxic activity. Supported by NIH-NIGMS MBRS RISE Grant (1R25GM59244) and NIH-FIC MIRT (5T37TW00033-99), Barry University.

2:45 PM ENV-12 Determination of D-aspartate and NMDA in the ring ganglia of *Aplysia*. K.B. PETERSON (1), AND A. D'ANIELLO (2), (1) Barry Univ., Miami, 33161, (2) Stazione Zoologica, Napoli, Italia. Many D-amino acids occur in plants and bacteria; their functions have been unknown until recently. D-Aspartic acid (D-Asp) an endogenous amino acid, was first found in the central and peripheral nervous system an in the endocrine glands, and is involved in hormone release and aynthesis. N-methyl-D-aspartate acid (NMDA) has been implicated in neuroendocrine functions and is biosynthesized from endogenous D-Asp. We determined whether D-Asp and NMDA are involved in learning and memory by measuring the amounts of theses two amino acids using the sea slug, *Aplysia limacine* and *A. californica*. The conentration of NMDA and D-Asp increased in the ring ganglia of the slug subjected to learning and memory experiments when compared to the control animals. (NIH-MIRT TW00033-09; MBRS GM59244-01A1 Barry University).

3:00 PM ENV-13 Spondias Mombin: The Trinidadian Healing Tree. SACHA SINGH AND PAUL I. HIGGS. Department of Physical Sciences, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Investigating the viability of illustrating the ethnobotanical drug discovery process in one semester of undergraduate research. *Spondias Mombin* (Hogplum) extracts and tinctures are well known folk healers in Trinidad. In fact, even today, mothers of newborns are recommended to bathe in water containing extracts of *Spondias Mombin* after delivery. We undertook to compare *Spondias Mombin* extracts from trees grown in South Florida with those of the Caribbean.

3:15 PM ENV-14 Synthesis of Two L-7-Deazaaristeromycin Analogues. K. L. SELEY (1), J. BOULOS (2), C. STUJENSKE (2) AND S. MOSLEY (1), (1) Georgia Institute of Technology, Atlanta, Georgia 30332, (2) Barry University, Miami, Florida 11361. L-Nucleosides are the unnatural enantiomers of the naturally occurring nucleosides. L-Nucleosides, including their carbocyclic congeners, have shown potent biological activity in recent years. In addition, the 7-deaza ring system has proven to be especially effective as a chemotherapeutic approach to treating parasitic diseases, such as trypanosomysis (sleeping sickness). The enantiospecific multi-step synthesis of two carbocyclic 7-deaza-L-nucleosides is described herein. Both L-Nucleosides were synthesized by coupling the carbocyclic moiety with 6-chloro-7-deaza adenosine and 6-

methoxy-7-deaza-8-aza adenosine, followed by aminolysis and deprotection. All compounds were characterized by NMR, MS and elemental analysis.

3:30 PM ENV-15 Effects of Light Field upon the Chemotaxonomic Estimation of Cyanobacteria in Lake Okeechobee, Florida. K. SKOOG AND J. W. LOUDA. Organic Geochemistry Group, Florida Atlantic University, 777 Glades Road, Boca Raton, FL. 33431. Cyanobacteria form one of the major, if not the major, taxa of phytoplankton in Lake Okeechobee. Efforts to estimate community structure using pigment-based chemotaxonomy (see Louda, this meeting) have been fruitful but often fall short of 'near perfection'. Given that; unlike the diatoms (fucoxanthin), dinoflagellates (peridinin) and chlorophytes (chlorophyll-*b*); the cyanobacteria are estimated using pigments (zeaxanthin[ZEA], myxoxanthophyll[MYXO]) which are photoprotective rather than being in a stoichiometric amounts for photosynthetic light (energy) absorption, we are investigating the alteration of CHL*a*/ZEA and CHL*a*/MYXO ratios. High light has been found to induce added syntheses of these and results are now directing us to investigate alternate carotenoids, namely echinenone, for use in these studies when applied to Lake Okeechobee.

FAS POSTER SESSION (ENV)
FRIDAY 9:00 AM – 4:00 PM
POSNER HALLWAY

POS-1 Determination of D-aspartate and N-methyl-D-aspartate in the ring ganglia of *Aplysia* and their involvement in learning and memory. K. PETERSON (1), A. CHRISTIAN (1), J. RIOS (1), G. FISHER (1), AND A. D'ANIELLO (2), (1) Department of Chemistry, Barry University, Miami Shores 33161, (2) Laboratory of Neurobiology, Stazione Zoologica, Naples, Italy.

FLORIDA COMMITTEE ON RARE AND ENDANGERED PLANTS AND ANIMALS

FRIDAY 2:30 PM O'LAUGHLIN 112
LAURA FINN, FLY BY NIGHT, INC., presiding

2:30 PM REB-1 A Habitat Evaluation Model for the Federally Threatened Flatwoods Salamander (*Ambystoma cingulatum*) for Use in the Florida Panhandle. B. DAVIS (1), B. WHARTON (1), and H. COOPER (2), (1) HDR Engineering, 2202 N. Westshore Blvd, Suite 250, Tampa 33607, (2) USFWS, 1601 Balboa Ave., Panama City, 32405. The

flatwoods salamander (*Ambystoma cingulatum*) was recently listed as a federally threatened species. No critical habitat has been designated for this species. Because of the reclusive and fossorial nature of this species, little is known about its life history and biology except during breeding. Biological Assessments required under the Endangered Species Act are based on the effect of a proposed development on salamander habitat rather than on the salamander itself. A Habitat Evaluation Model was developed as an instrument for identifying and evaluating the quality of potential flatwoods salamander habitat.

2:45 PM REB-2 An Overview of Bat Research in Central America, the Caribbean, and Northern South America, with Comments on Technological Advances in Investigative Techniques. M. E. THOMAS, Dept. of Biology, Palm Beach Atlantic College, 901 So. Flagler Drive, P.O. Box 24708, West Palm Beach 33416. Important bat studies conducted in Central America, the Caribbean, and Northern South America are described, with emphasis on those carried out since 1960. The significant contributions to field research of the Smithsonian Tropical Research Institute (Panama), and the Organization for Tropical Studies (Costa Rica) are acknowledged. The change in the focus of bat research, from short-term field collections for faunal surveys and taxonomic studies, to long-term studies of behavior, reproductive cycles, activity periods, and feeding habits, is analyzed. Technological advances in bat field research, including the use of bat detectors, radiotelemetry, and infared photography, are discussed.

3:00 PM REB-3 Plasma Levels of Vitamins A and E in Three Marine Turtle Species Nesting in the Archie Carr National Wildlife Refuge. K. P. FRUTCHEY (1), (3), E. S. DIERENFELD (2), L. M. EHRHART (1), AND P. C. H. PRITCHARD (3), (1) University of Central Florida, Orlando 32816, (2) Wildlife Conservation Society, Bronx, NY 10460, (3) Chelonian Research Institute, Oviedo 32765. Gaining a better understanding of marine turtle ecological physiology is an urgent priority, considering the impact such information could have on conservation management plans and population health assessments. Vitamins A and E are fat-soluble organic compounds required for the survival of many higher animals by having integral functions in growth, reproduction and immune function along with many other physiological processes. The purpose of this study is to establish baseline blood values for vitamin A and vitamin E for 3 species of nesting marine turtles and to compare these values to those previously reported for other chelonians and other vertebrates.

3:15 PM REB-4 The Effects of Fire and Exotic Mammals on Rare Plant Habitat in a South Florida Pine Savanna. D. W. BLACK, South

Florida Water Management District, 23500 SW Kanner Hwy., Canal Point 33438. Twelve threatened or endangered plant species occur as part of the diverse groundcover vegetation in open places in the South Florida Slash Pine savanna habitat at the 8900 ha. DuPuis Management Area in Martin and Palm Beach Counties. Fire, wetland hydrology and feeding activities of animals tend to maintain openings by eliminating or decreasing the stature of various plant species. These factors were changed in different ways in different parts of the management area 15 years ago when the property was acquired by the South Florida Water Management District under the Save Our Rivers program. Recent changes in the vegetation of openings are interpreted in terms of the different roles of the different factors that maintain openings and how the system can be most effectively managed to continue to provide habitat for rare plants.

3:30 PM REB-5 Arbuscular Mycorrhizae and Restoration of Endangered Plants in Subtropical Florida. JACK B. FISHER AND K. JAYACHANDRAN, Fairchild Tropical Garden, Coral Gables, FL 33156 and Florida International University, Miami, FL 33199. Arbuscular mycorrhizal fungi (AMF) are reported in the roots of plants in the Anacardiaceae, Arecaceae (Palmae), Cactaceae, Convolvulaceae, Cycadaceae, Euphorbiaceae, Fabaceae, Lauraceae, Rubiaceae, and Simarubaceae that grow in the coastal maritime and inland hammocks. In greenhouse experiments, seedlings of the following genera: Amorpha; Coccothrinax; Gymnanthes; Hamelia; Jacquemontia; Licaria; Nectandra; Opuntia; Picramnia; Psychotria; Rhus; Sabal; Serenoa; and Zamia were inoculated with AMF and showed enhancement of growth and phosphorus uptake on local sandy, nutrient poor soils. Most native species depend on AMF under natural conditions. Restoration projects are now planned for endangered species of: Amorpha (Fabaceae); Jacquemontia (Convolvulaceae); Optunia (Cactaceae); and Pseudophoenix.

3:45 PM REB-6 Decline of the Southern Dusky Salamander in the Southeastern U. S. D. B. MEANS. Coastal Plains Institute and Land Conservancy, 1313 N. Duval Street, Tallahassee, FL 32303. Gully-eroded and steephead valleys were surveyed on Eglin Air Force Base in the Florida panhandle for the presence of an assemblage of seepage-inhabiting plethodontid salamanders that included *Eurycea cirrigera*, *Pseudotriton ruber*, *Desmognathus auriculatus*, and *Desmognathus* cf. *conanti*. Based on standardized collections made in 178 steepheads and ravines, results from 1997-1998 were compared with collections made by the author more than a quarter century earlier, 1969-1973. Populations of *Pseudotriton ruber* and *Eurycea cirrigera* were unchanged in 30 years, but in 21 steepheads in which 391 specimens of *D. auriculatus* were collected in the early 1970s, none were found in the late 1990s. The species was also absent from an

additional 37 steepheads in which *D. auriculatus* is endemic. The last verified specimen from Eglin Air Force Base was collected on 4/18/89. It would appear that *D. auriculatus*--once the most abundant salamander in steepheads--is extinct on Eglin Air Force Base. Declines in populations of *D. auriculatus* are also noted in North Carolina, South Carolina, Georgia, and Louisiana. Evidence is presented that population declines in all these states began in the mid-1970s. Potential causes of the decline are briefly discussed.

4:00 PM BUSINESS MEETING: FLORIDA COMMITTEE ON RARE AND ENDANGERED PLANTS AND ANIMALS
LAURA FINN, presiding

GEOLOGICAL AND HYDROLOGICAL SCIENCES

FRIDAY 2:30 PM O'LAUGHLIN 106
GARY MADDOX, FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, presiding

2:30 PM GHY-1 Water Sustainability Issues in Florida: Meeting the Demand of a Thirsty State. G.H. MEANS AND T.M. SCOTT, Florida Geological Survey, 903 W. Tennessee Street, Tallahassee 32304. Florida is a water rich state. However, increasing population is placing high demands on Florida's water resources. Floridians rely heavily on groundwater from its aquifers, primarily the Floridan Aquifer System (FAS). It is estimated that more than two quadrillion gallons of fresh water occupy the FAS. Each year it is estimated that four trillion gallons of water recharge the FAS. Annually, three trillion gallons of water naturally discharge from the FAS primarily via Florida's more than 600 known springs. Another one trillion gallons of water is pumped out for human consumption. Water resources in Florida are not distributed evenly. The major population centers of the state, which are located primarily in coastal areas, are struggling to meet their water demands. In order to meet this demand, alternative supplies from mineralized waters and subsurface storage of excess surface water are being used.

2:45 PM GHY-2 Water Quality Sampling of Florida's First Magnitude Springs: FGS Bulletin 31 Update. R. P. MEEGAN, R. C. MEANS, G. H. MEANS, AND T. M. SCOTT, Florida Geological Survey, 903 W. Tennessee St., Tallahassee 32304-7700. The 2001 Florida Legislature funded the Florida Springs Initiative to investigate springs in the state. The Florida Geological Survey (FGS) conducted water quality sampling of the state's first magnitude springs in response to the legislative

mandate. This study focused on the 33 known first order magnitude springs. Seventeen springs, eight spring groups/systems, seven river rises, and one karst window were sampled for water quality from September through November, 2001. Results from this investigation of Florida's largest springs, which are unique and treasured natural resources, provide data for use by scientists, planners, environmental managers and the citizens of Florida. With further support from the Legislature, the FGS will continue sampling lower order magnitude springs and will publish a revision of Bulletin 31, The Springs of Florida.

3:00 PM GHY-3 Use of Indices in Evaluating Florida's Ground-Water Quality. S.B. UPCHURCH (1) AND R.E. COPELAND (2), (1) SDII Global, 8405 Benjamin Rd., Tampa, 33634, (2) Florida Department of Environmental Protection, Florida Geological Survey, 903 West Tennessee St., Tallahassee, 32304-7700. In the late 1990's, Florida redesigned its statewide surface- and ground-water quality monitoring networks, based on random sampling. There was a desire to develop water quality indices for each resource that state, in defendable but simplistic terms, the overall quality of water in an individual sample and an entire basin. Currently, indices have only been developed for ground water. The Ground-Water Quality Index is based on whether one or more sampled analytes exceeds a Florida Guidance Concentration Level (GCL) in a sample. Each GCL is based on known or suspected human health hazards. The logic is that if *only one* such chemical exceeds its GCL, then the water cannot fully support its designated use. For ground water the designated use is drinking water. The Basin Resource Index is based on the proportion of ground-water samples from an area that have at least one analyte to exceed a GCL. The redesigned network commenced operations in 2000 and sampled approximately 25% of the state. It was found that 89% (±4%) of the wells in the sampled portion of Florida meet standards. For the first time Florida has a key indicator that can be used to estimate the overall quality of its ground water with known confidence intervals.

3:15 PM GHY–4 Florida Aquifer Vulnerability Assessment (FAVA): Development of a vulnerability model for Florida's aquifers. A. E. BAKER, J. R. CICHON, J. D. ARTHUR AND SUVRAT KHER, Florida Geological Survey, 903 W. Tennessee St., Tallahassee 32304-7700. FAVA is a developing methodology intended to use existing geographic information system (GIS) data to predict the vulnerability of Florida's major aquifers to contamination. Model development is currently in the preliminary stages, consisting of small-scale pilot mapping projects (Alachua, Hillsborough and Polk counties) using Weights of Evidence, which is a method for quantifying the relationship of layers in the FAVA model. The overall mission of the FAVA model is to develop a tool that

can be used by environmental, regulatory and planning professionals to facilitate protection of Florida's ground-water resources, and thus the health and safety of Florida's residents.

3:30 PM GHY-5 Landscapes of Haiti as Seen Through a Geologist's Eyes. D.W. LOVEJOY, Palm Beach Atlantic College, P. O. Box 24708, West Palm Beach, 33416. With mountaintops rising more than 10,000 feet above sea level, the island of Haiti has some of the most spectacular scenery to be found in the Caribbean area. "Notching" is common along the rugged coasts, which have white limestone cliffs and "stairways" of elevated marine terraces, rising at least 600 feet above the shore. These are mantled with fossilized coral debris. Inland the scenery varies from black landscapes of extinct volcanoes, to tropical rainforests & rain-shadow deserts bristling with cactus, to high limestone plateaus covered with brick-red laterite & reddish-brown dust blown in from the deserts of Africa. Both erosional and depositional landforms are well displayed, including jagged V-shaped valleys and giant alluvial fans. In addition, dramatic normal fault blocks rise at the Citadel & San Souci Palace near Cap Haïtien, as well as behind the modern Presidential Palace in Port-au-Prince. The fault breccias in the Port-au-Price area are actively mined for "road metal."

3:45 PM BUSINESS MEETING: GEOLOGICAL AND HYDROLOGICAL SCIENCES
GARY MADDOX, presiding

MEDICAL SCIENCES

SATURDAY 8:30 AM WIEGAND 234
ROSEANN S. WHITE, UNIVERSITY OF CENTRAL FLORIDA, presiding

8:30 AM MED-1 Diagnosis of Parasitic Infections Using Unifix, Proto-Fix and Parasafe Fixatives. H. E. LAUBACH (1), S. SCHATZ (2), C. J. PALMER (3), D. E. BURRIS (1), C. CRUZ (4), P. DIPATRIZIO (4), R. K. ZLAMAL (4), AND M. A. SILVERMAN (5), Nova Southeastern University, Colleges of (1) Medical Sciences, (2) Optometry and Oceanography, (3) Osteopathic Medicine - Public Health Program, Ft. Lauderdale, (4) 324th Combat Support Hospital, Perrine, (5) Martinsburg Veterans Affairs Medical Center, Martinsburg, WV 25401. Due to the variety of fecal fixatives that are available on the market, we performed the following study to determine the value of fecal parasite identification using Unifix, Proto-Fix, and Parasafe fixatives as compared to using fresh feces.

Our findings demonstrate that trichrome staining is a good method for the identification of E. histolytica/dispar in feces collected in all three fixatives and that zinc sulfate flotation is best for demonstrating A. lumbricoides eggs in fresh feces.

8:45 AM MED-2 Parasitic Infections of Mayan Indians Living in Rural Guatemala. C. Z. BENTLEY (1), J. S. SPALTER(1), E.L. GINTER (1), AND H. E. LAUBACH(2). Nova Southeastern University, Health Professions Division, Colleges of (1) Osteopathic Medicine and (2) Medical Sciences. Surveillance for gastrointestinal parasites among Mayan Indians was conducted in villages around Lake Atitlan, Guatemala. In January and July 2001, 234 patients with gastrointestinal symptoms were identified and examined for stool parasitic forms. Feces were collected from the rectums of patients and zinc sulfate flotation was performed on each specimen. Infections with Entamoeba histolytica/dispar, Giardia duodenalis, Hymenolepis nana, Ascaris lumbricoides, and Trichuris trichiura were found in most of the villages. Results are in agreement with previous studies showing that parasite transmission is mainly year-around and not completely a seasonal phenomenon. The practical implication of this research is that patient treatment should be a yearlong, continuous process.

9:00 AM MED-3 Western Blot Analysis and Deglycosylation of Bahia Protein Allergens. G. GHOBRIAL, S. NASER, M. J. SWEENEY, AND R. S. WHITE. University of Central Florida, Dept. Molecular Biology and Microbiology, Orlando, 32816. The crude extract proteins of bahia grass pollen, partially purified by isoelectric focusing and fractionated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), were electroblotted onto nitrocellulose membranes and probed with sera from patients skin test positive to bahia. Four allergenic proteins of bahia pollen with estimated molecular weights of 45, 33, 31 and 28 kDa were identified and characterized. The 33 kDa allergen (Pas n 1) was the most reactive to IgE and focused at a pI of 6.59. IEF fraction 11containing the 33 kDa and 45 kDa allergens was treated with deglycosylation enzymes using either a denatured or a non-denatured protocol. No changes in electrophoretic mobility were noted for the 33 and 45 kDa allergenic proteins treated with either protocol. The deglycosylated proteins retained their ability to react with IgE in bahia allergic patient sera.

9:15 AM MED-4 Cross-reactivity between Timothy and Bahia Grass Pollen Allergens. J. M. WHITE, A. MAJIDI, G. GHOBRIAL, S. NASER, M. J. SWEENEY, AND R. S. WHITE. University of Central Florida, Dept. Molecular Biology and Microbiology, Orlando, 32816. Approximately 70% of patients with type I allergy in America, Europe, and Australia

display IgE reactivity to grass pollen allergens. Timothy grass pollen is one of the most common in Europe. Bahia grass pollen is one of the more important grass aeroallergens in the Southeastern United States and is especially prevalent in the Gulf coast states. Cross-reactivity between the proteins of these two grass pollens has not previously been demonstrated. A 32 kDa protein allergen of bahia was sequenced and shown to share 63% homology with a Group I timothy grass pollen allergen. The purpose of the study reported here is to further evaluate bahia pollen proteins for their cross-reactivity with timothy using a series of monoclonal antibodies produced to Group I and XIII timothy grass allergens. The group I monoclonal reacted, not only with the timothy crude extract pollens, but also to a number of proteins in the crude extract and partially purified extracts of bahia. The group XIII monoclonals (AF 6, DF 11 and EG 9) reacted with a 55kDa protein of timothy and a protein of bahia of similar molecular weight. The amino acid sequence similarity and the ability of bahia proteins to react with monoclonal antibodies directed against timothy Group I and XIII allergens suggest that these two grass pollens share common epitopes and are cross reactive.

9:30 AM MED-5 Muscle Properties after Reinnervation by Embryonic Nerve Cells. S. SESODIA (1), R.M. GRUMBLES (2), H.J. BENNETT (2), M. RUDINSKY (2) AND C.K. THOMAS (2). (1) SGMS, Barry University, 11300 NE 2nd Avenue, Miami Shores 33161; (2) The Miami Project to Cure Paralysis, University of Miami, Miami 33101. Various hindlimb muscles in anesthetized adult Fischer rats were denervated by sectioning the tibial nerve at the hip. Embryonic day 14-15 ventral spinal cord cells were injected into the distal tibial nerve stump of one group of rats (transplant) to determine whether these cells would reinnervate the denervated muscles. A second group of rats (denervated) only had vehicle injected into the tibial nerve. Other rats underwent no surgery (controls). Ten weeks after transplantation, weak stimuli applied to the transplants evoked contractions in most lateral gastrocnemius (LG) muscles. No contractions were evoked in denervated muscles. All muscles had type I, IIA and IIB fibers. Muscle fiber size in transplant rats was greater than in denervated muscles. Thus, transplants prevented some muscle atrophy.

9:45 AM MED-6 Determination of D-aspartic Acid in Alzheimer Versus Normal Human Brain. J. RIOS (1), Y. REYES (1), C. STUJENSKE (1), T. EDWARDS (1), G. FISHER (1), AND A. D'ANIELLO (2). (1) Department of Chemistry, Barry University, Miami Shores 33161, (2) Laboratory of Neurobiology, Stazione Zoologica, Naples Italy. D-Aspartic acid (D-Asp) occurs in the neuritic plaques and neurofibrillary tangles of Alzheimer's disease (AD) brains. In a preliminary study, we found that the free form of D-Asp, however, is significantly reduced in Alzheimer versus normal

human brain. Using a sensitive and quantitative HPLC method, we have extended the determination of D-Asp to other regions of the brain to know if the reduction of D-Asp occurs in all brain regions or is limited to only some areas. The levels of free D-Asp were found to be lower in most areas of AD brains examined, particularly in those regions most affected by the disease. D-Asp is the molecular precursor for the biosynthesis of N-methyl-D-aspartate (NMDA), and NMDA receptors are involved in learning and memory. Thus, the reduction of free D-Asp in Alzheimer's brain could be related to the memory loss associated with Alzheimer dementia. (Supported by NIH MBRS-SCORE and NIH-FIC-MIRT grants)

10:00 AM MED-7 Scope and Limitations of Benzoyl Peroxide Mediated Amine Oxidation. A. NEMCHIK, V. BADESCU AND O. PHANSTIEL IV, Department of Chemistry, University of Central Florida, Orlando 32816. Several amine architectures were treated with benzoyl peroxide (BPO) under biphasic conditions previously developed to convert aliphatic amines to their N-(benzoyloxy)amine derivatives. Alpha aminoacids and alpha aminoamides did not react under these conditions (e.g., pH 10.5 aqueous carbonate buffer, methylene chloride, room temp). A series of amino-alcohols and tertiary amines were also evaluated. In summary, the scope and limitations of this improved BPO-mediated oxidation process will be discussed as a possible new entry to N-hydroxy containing peptides.

10:15 AM MED-8 Oxidation of Alpha-aminoesters to (Alpha-hydroxyamino)esters. R. D. PALUSAK, P. PIGNON, AND O. PHANSTIEL IV, Department of Chemistry, University of Central Florida, Orlando 32816. An efficient method to convert an alpha-aminoester to an alpha-hydroxyaminoester was developed. The free amino ester was generated from its ammonium salt using a sodium carbonate-hydrated silica gel mixture. The amine was oxidized to its hydroxylamine form using OXONE and microwave irradiation. A series of amino acid derivatives were converted to their hydroxylamine counterparts in good yield. Optimization of the OXONE-microwave process will be discussed.

10:30 AM BREAK

10:45 AM MED-9 Synthesis of DFO Conjugates for Use in Anti-Mycobacterial Drug Delivery. R. KINKADE (1), H. GUO(1), S. NASER (2), AND O. PHANSTIEL IV(1) , (1) Department of Chemistry, (2) Department of Molecular and Microbiology, University of Central Florida, Orlando 32816. Deferrioxamine B (DFO) is a naturally occurring iron chelator (a siderophore) biosynthesized by Streptomyces pilosus. One anti-tuberculosis strategy involves the use of the iron uptake pathway present in

mycobactteria to deliver toxic agents (antibiotics) to this cell type. Prior work has shown that iron chelators from one bacterial strain can cross-feed another unrelated strain. Using organic synthesis, the terminal pentyl amine unit of DFO was coupled to an anti-TB drug by an amide linkage. The resultant hexadentate ligand was then evaluated for anti-TB activity in M. paratuberculosis, a model system for the more virulent M. tuberculosis strain. The synthesis and biological evaluation of these bioconjugates will be discussed.

11:00 AM MED-10 Polyamines as Efficient Drug Vectors. O. PHANSTIEL IV, A. NEMCHIK, T. DASILVA, D. CHAKRABARTI, C. WANG AND P. PIGNON, Department of Chemistry, University of Central Florida, Orlando 32816. A structure-activity relationship was developed using a variety of polyamine scaffolds appended to biologically active agents. The synthesis and biological evaluation of new polyamine-drug conjugates will be discussed.

11:15 AM MED-11 Cell-by-Cell Comparison of Alcian Blue and Zirconyl Hematoxylin Staining in Extramammary Paget's Disease. A. A. SMITH, School of Graduate Medical Sciences, Barry University, Miami Shores, FL 33161. Alcian blue has long been the stain of choice for the acidic mucin in the pathognomonic Paget cells of Paget's carcinoma. Alcian blue breaks down to the insoluble monastral fast blue soon after staining . Toluenesulfonic acid forms an adduct with monastral fast blue that can be dissolved in a mixture of dichloromethane and diethyl ether. The acidic mucins are undamaged and can be restained with zirconyl hematoxylin. The zirconyl hematoxylin staining exactly matches the alcian blue staining. The zirconyl hematoxylin can be removed with acid alcohol and the Paget cells restained with alcian blue with the same result.

11:30 AM MED-12 Epithelial Cell Populations in Asthma: A Quantitative Assessment of the Bronchial Mucosa. A.T. MARIASSY AND B.A. HYMA. Nova Southeastern University, College of Medical Sciences and Dade County ME Office, Miami Fl. We hypothesized that the airway epithelial cell populations in severe asthmatics are quantitatively different from those of the non-asthmatics. We present here the quantitative assessment of bronchial epithelial cells in asthmatics and comparing them to non-asthmatic controls. None of the subjects had a history of chronic bronchitis. The asthmatics had approximately 30% more mucous and intermediate cells, and thicker basement membrane 7.8 ± 6.9 um (±SD) v.s. controls 3.0 ±2.3 um (±SD), ($p<0.05$). Preliminary data indicate nearly 10 fold larger epithelial infiltrate of inflammatory cells 2.2 ±3.4 % (±SD) v.s. controls 0.2 ± 0.6 (±SD), ($p<0.05$). Thus significantly altered airway epithelial mucosal cell population may profoundly influence the nature of

airway secretions and the epithelial interaction with the connective tissue in the airway remodeling process. NSU Faculty Research Grant.

11:45 AM MED-13 A Simple Surgical Procedure for the Treatment of Thoracic Outlet Syndrome. KHIN MAUNG TU MD, FRCS., Department of Anatomy, College of Medical Sciences, Nova Southeastern University, Fort Lauderdale. TOS is a fairly common condition due to abnormalities in the Thoracic outlet triangle resulting in upward pressure on the subclavian artery and the brachial plexus with subsequent neurovascular complications. The author describes a simple surgical procedure for those requiring surgery-with fewer complications as compared to other procedures.

12:00 AM MED-14 Perception of Helpfulness as a Factor Affecting Faculty Evaluations by Medical Students. Y. ZAGVAZDIN. College of Medical Sciences, Nova Southeastern University, 3200 S. University Dr., Ft. Lauderdale 33328. Teacher availability and helpfulness have been recognized as important factors that affect student's ratings. Teachers who are extensively involved with trainees are rated significantly higher in overall teaching effectiveness than those who are rated as moderately involved. We have observed an interesting disparity in ratings of the same lecturer by dental and optometry students. Three physiology instructors presented 12-20 lectures to both student groups simultaneously in the same auditorium. Both student groups took identical exams at the same time and received similar average grades (82% and 78%, respectively). Evaluations, which consisted of 12 questions about instructor performance, quality of lectures, and materials distributed by instructors, were collected upon completion of the course. Ratings of lecturers were made on a 5-point scale. There was substantial discordance (20% or more) between dental and optometry students in the assessment of instructors' performance and quality of lectures. We attribute this difference to a subjective perception of instructor helpfulness by two groups of students and potentially to some other factors.

12:15 PM BUSINESS MEETING: MEDICAL SCIENCES
ROSEANN WHITE, presiding

JOINT MEETING
PHYSICS AND SPACE SCIENCES SECTION
ENGINEERING SCIENCES SECTION

FRIDAY 2:30 PM O'LAUGHLIN 114
AL HALL, CITY OF TALLAHASSEE, presiding

2:30 PM PSS-1 A Neutrino Light to Photon Light Converting Matrix. ROBERT BECKWITH, Beckwith Electric Co., 6190 – 118th Ave. North., Largo 33773-3724. Theories of electrical engineering use far force lines between all atoms of the universe to explain apparatus for detecting neutrino light and forming a matrix of elements viewable in photon light. One application is a device for viewing deep underground from satellites. A second is a device using a liquid crystal display with backlighting for seeing through walls and other obstructions on the ground. A third is a neutrino light telescope for exploring the universe.

2:45 PM PSS-2 Predicting Trace Elements in Irradiated Hair Samples from Diet and Lifestyle: What Contributes to Higher Levels of Mercury, and How Can They be Prevented?(1) K. SARTORE (2) University of Florida Training Reactor (3) W. VERNETSON. This project began as an investigation of trace metals in hair samples with ten subjects, each tested for thirteen metals. This experiment further investigates the Mercury levels in those irradiated hair samples. There were two main groups of Mercury levels, a higher level, and those who had lower levels. Two house cats served as dividers of low from high. The two cats have high levels because of their daily seafood intake, and at first the others with high levels were assumed to eat a lot of seafood. This was true for Subject two and three, the two twins from St. Petersburg were Asian and consumed seafood on a daily basis. Their levels were higher than the two house cats, only after further research amalgam fillings were found in the teeth of both girls. Amalgam is fifty- percent mercury, this accounted for the level. The metal vaporizes at room temperature and is constantly in subjects' mouth's and eventually excreted by the hair and nails, like other metals. Subject one's high levels were unexplained until it was discovered that this subject has a large, red, heart tattoo on her body. A primary ingredient in tattoo dye (particularly red) is Mercuric Sulfide.

3:00 PM PSS-3 *The Digital World* (67 mins). This film, which was produced by the Institute of Electrical Engineers in the UK in 1999, highlights digital communications, and introduces the "Broadband" principle, which is now being developed commercially.

4:15 PM BUSINESS MEETING: Joint Meeting of PHYSICS AND SPACE SCIENCES SECTION & ENGINEERING SCIENCES SECTION
AL HALL, presiding

SCIENCE TEACHING

FRIDAY 10:00 AM O'LAUGHLIN 111
SESSION A
ROBIN JORDAN, FLORIDA ATLANTIC UNIVERSITY, presiding

10:00 AM TCH-1 Promoting Research in the Undergraduate Curriculum. F.A. REDWAY AND J.K. FREI, Barry University, Miami Shores, FL 33161. Hands-on research provides opportunities for students to become more involved in active learning. They develop critical thinking skills as they learn new techniques, develop research skills and acquire research independence. Students begin the research experience as sophomores or juniors and continue into the senior year. They spend 3-10 hours/week/fall and spring semester in the mentored laboratory environment and receive credit or salary as compensation. During the summer students carry out research at intensive research laboratories. Students become apart of a research group, and maybe co-authors on publications. Students also present their findings at scientific meetings, and use the experience to strengthen their applications for graduate and professional schools. NIH-NIGMS MARC U*STAR, GM08021-18; NIH-FIC MIRT TW00033-09; and NIH-NIGMS MBRS RISE, R25 GM9244-01A1 grants, Barry University.

10:15 AM TCH-2 Using PowerPoint Slides in the Classroom. L.R. JORDAN, Palm Beach Community College, Eissey Campus, 3160 PGA Blvd., Palm Beach Gardens, FL 33410. The use of PowerPoint slides in General Physics courses provides the opportunity of making more efficient use of class time and actively involving students in the learning process, compared with traditional approaches. There is more time for live-classroom demonstrations, discussions and individual group activities. Students are more motivated to learn and enquire, leading to an overall improvement of conceptual understanding and problem solving-skills.

10:30 AM TCH-3 Beyond Slide Projectors and Overheads: Higher Technology in the Classroom. M. GOTTFRIED, Biomedical and Environmental Advancement Magnet, North Miami Beach Senior High School, 1247 NE 167th Street, North Miami Beach 33162. What do you really need to present using the latest technologies? Is the WWW worth it in the classroom? Can higher technology improve your teaching? Computers are slowly becoming teacher productivity tools. Difficult hardware and software choices need to be made as you incorporate a computer into your teaching. Outside of K-12 education the computer has become the presentation tool of choice, replacing overheads and slides. Yet teachers remain tied to their overheads. As more schools are putting computers in the

hands of teachers to enhance productivity, more teachers are looking into presentation technologies and ways of using the Internet. Dr. Gottfried has been using a computer in his classroom for presentations for over a decade and will share some practical advice.

10:45 AM TCH-4 Analyses of Retention Data for 1st-year and 2nd-year Undergraduate Biology Majors in a Small University. E.T. HAYS AND J.R. MONTAGUE, SNHS-Biology, Barry University, 11300 NE 2nd Ave., Miami Shores, FL 33161. We analyzed two cohorts of graduates from a small university's biology program (B.S. degree earned within six years; cohorts entering in Fall 1996 and Fall 1997). Within each cohort, our TBA (*to be accelerated*) students entered with generally lower SAT scores than non-TBA majors. The data suggest that roughly 40% of our 1st-year majors dropped out or transferred to other programs before the end of their 2nd-year. The TBA students were retained at the same rate as non-TBA students. External transfers (mainly from Community Colleges) were retained at a higher rate than internal transfers (from non-Biology programs at Barry).

11:00 AM BREAK

11:15 AM TCH-5 Project ChemBOND: Evaluation of New Activities for Introductory College Chemistry. H.J. DODSON, L.E. HOSTETTER, N.R. ROMANCE, C.E. CARRAHER, D.W. LOUDA, D. M. CHAMELY AND J.E. HAKY, Florida Atlantic University, Boca Raton, FL 33431. We have developed a series of activities for use in non-traditional recitation sections (BONDing sessions) of introductory chemistry courses. These activities employ cooperative, peer-led group learning focussing on fundamental chemical concepts. These new activities were employed in all of our Fall, 2001 introductory chemistry classes. As each activity was completed, students were surveyed on their understanding of the purpose of each activity and their opinions on the degree to which each helped them obtain a better understanding of chemical principles. Survey results significantly varied among the activities. The results indicate that the activities which employed models or visual representations were more effective at facilitating learning than those which were more abstract. Descriptions of the activities and an analysis of the survey results will be presented.

11:30 AM TCH-6 Toward a Knowledge-Based Framework for Teaching for Science Understanding. N.R. ROMANCE(1), M.R. VITALE(2), AND J. HAKY(1), (1) Florida Atlantic University, Boca Raton, FL 33431, (2) East Carolina University, Greenville, NC 27858. Research-based developments in cognitive science offer college science

teachers a potential framework for improving student understanding of science concepts. This framework is based on the idea that understanding science concepts is best considered a form of expertise defined as the different ways knowledgeable experts who understand science concepts are able to apply their understanding to the set of situations (domain) to which such concept applications are relevant. In developing student understanding as expertise, the goal is to engender the same knowledge-based capacity which experts use to analyze and solve different forms of problems by relating their conceptual understanding to the problem in a comprehensive and parsimonious fashion that novices cannot. The specific elements of a knowledge-based instructional model discussed are: (a) an explicit representation of the core science concepts and relationships (following the logical structure of the discipline), (b) an explicit set of relevant situations or events, (c) a set of instructional activities whose successful completion would imply understanding (i.e., demonstrated expertise), and (d) specific instructional/ teaching strategies for engendering in-depth student understanding.

11:45 AM TCH-7 Student Centered Activities for Large Enrollment Undergraduate Programs: The SCALE-UP Project. JEFFREY M. SAUL, Department of Physics, University of Central Florida, Orlando, FL 32816-2385, and ROBERT J. BEICHNER, Physics Department, North Carolina State University Raleigh, NC 27695-8202. The Student-Centered Activities for Large Enrollment Undergraduate Programs (SCALE-UP) Project offers instructors of large introductory science classes an economical and effective alternative to the lecture/laboratory format. North Carolina State University, the University of Central Florida, and a group of collaborating schools are utilizing the research-based instruction that works so well in smaller class settings and finding ways to economically accommodate studio-style classes of up to 100 students. Lecture and laboratory are blended together in an approach that uses technology and minimal lecturing to create a highly collaborative, technology-rich, hands-on, interactive learning environment. In addition to developing classroom designs and management techniques, the project involves the development, evaluation, and dissemination of curricular materials for introductory physics that support this type of learning. In comparison to traditional instruction we have seen significantly improved problem solving, increased conceptual understanding, improved attitudes, and dramatically reduced failure rates, especially for women and minority students.

12:00 PM TCH-8 Do Research-based Curricula Make a Difference in Introductory Physics? JEFFREY M. SAUL, Department of Physics, University of Central Florida, Orlando, FL 32816-2385. In the last twenty years, physics education researchers have identified many of the difficulties

students have in mastering the material in a multi-term introductory physics course, primarily preconceptions about physics, problem solving, and what they need to do to succeed in the course. This has led to the development of several research-based curricula that have been designed to address these difficulties, but these methods often require more resources or at least capital start-up expenses to implement. This talk will give an overview of improvements in student learning found from several research-based curricula compared with traditional instruction. Evidence will be presented that these approaches can significantly improve students' conceptual understanding, their problem solving ability, and their cognitive attitudes for learning physics.

FRIDAY 2:30 PM O'LAUGHLIN 111
SESSION B
ROBIN JORDAN, FLORIDA ATLANTIC UNIVERSITY, presiding

2:30 PM TCH-9 The Cavendish experiment; the Myth and the Truth. R.G. JORDAN, Department of Physics, Florida Atlantic University, Boca Raton, FL 33431. Almost every introductory physics textbook tells us that in 1798 Henry Cavendish measured G, the universal gravitational constant - introduced by Isaac Newton over a century beforehand - to within a few percent of today's accepted value. However, since a unit for force was not introduced until the late 19th century, there has to be more to the story! So, the question is ... what *did* Cavendish measure and more importantly, why did he make the measurements in the first place?

2:45 PM TCH-10 Telecommunications Laboratory Exercises for an Introductory Physics Course. ROBERT R. CRISS, St. Leo University, Saint Leo, FL 33574. Finding ways to illustrate the applicability of scientific knowledge to our students remains one of the great challenges of science educators. Though they make frequent use of them, most science students have no idea how telephone networks across the world perform their tasks. While much of the technology is sophisticated, many of the concepts are simple and can be easily modeled. Following a brief introduction to digital telephony in North America, this paper presents laboratory exercises that model the functioning of actual telecommunications systems. The labs are appropriate for students in introductory physics or electronics courses.

3:00 PM TCH-11 The Biology of Crime: A Model for Developing Laboratory-based College Science Course for Non-Science Majors. G.E. ELLIS, Barry University, Miami Shores, FL 33161. Inquiry based science courses are an essential component of an undergraduate liberal arts curriculum. With increased technology in our modern society it is essential

that all college graduates have a comprehension of the major scientific concepts that infiltrate their everyday lives. The development of such courses within the science curriculum is as essential as maintaining the undergraduate science curriculum itself. This course emphasizes an inquiry-based approach to address many concepts, which lead to improving scientific proficiency amongst undergraduate non-science majors.

3:15 PM TCH-12 Getting the Most from Quizzes. R.G. JORDAN, Department of Physics, Florida Atlantic University, Boca Raton, FL 33431. Instructors use frequent quizzes to monitor the progress of students and to (attempt to) ensure that students read, review and keep up-to-date with their course work. I use quizzes also in a rather different way. I have developed an online quiz generator and automatic grading system that is not used for credit but rather students can use it to check their own understanding of the course material. The questions are sufficiently well focused that students are able to identify their own weak points.

3:30 PM TCH-13 Mangrove Mitigation at Oleta River Park: Active Learning Through a Community Project. B. E. ROTHSTEIN AND K. D. MORRA, BEAM, North Miami Beach Senior High School. 1247 NE 167 St., North Miami Beach 33162. Student Researchers, teachers and park personnel join together to advance knowledge of mangrove environments. Comparisons of natural and mitigated mangrove environments are leading to increased understanding of the limitations of mitigated mangrove areas. Further studies will investigate methods of improving mangrove mitigation. This multiyear project has developed an understanding of the processes of science research, qualitative and quantitative analysis, technical writing skills, team work and career opportunities for the environmental student researchers. The research is supported by the BEAM Magnet Program, the "Parknership" grant and the extreme efforts of teachers, students and park personnel.

3:45 PM BUSINESS MEETING: SCIENCE TEACHING
ROBIN JORDAN, FLORIDA ATLANTIC UNIVERSITY, presiding

SOCIAL SCIENCE

FRIDAY 8:00 AM POSNER 103
MARIBETH DURST, SAINT LEO UNIVERSITY, presiding

8:00 AM SOC-1 Construct Validity of the Mayer, Salovey and Caruso Emotional Intelligence Test (MSCEIT), S. CHAPLIN AND F. MUSCARELLA, Barry University, 11300 NE 2nd Ave., Miami Shores

33161. Emotional intelligence is a theoretical construct that refers broadly to our ability to reason with emotions. Specifically, this term has been defined in a number of ways. There have been several attempts to measure emotional intelligence, each reflecting the theoretical perspective of the creators of the tests in question. The Mayer, Salovey and Caruso Emotional Intelligence Test (MSCEIT) measures emotional intelligence through assessment of the ability to use emotional reasoning to find the correct solution to specific emotion-related problems. This paper will address the model of emotional intelligence upon which the MSCEIT is based and supporting evidence of reliability and validity for the test itself.

8:15 AM SOC-2 Effectiveness of an Art-based Assessment to Rate Depression in ECT Patients. B. JIMERSON(1), K. BURNS(1), AND M. KUESTER(2). (1)Barry Univ., 11300 NE 2nd Ave., Miami Shores, 33161, (2) Mercy Hospital, 3663 S. Miami Ave., Miami, 33133. This study will compare an art-based assessment tool (FEATS) with two established measures of clinical depression. Fourteen adult females who are inpatients in a psychiatric unit and prescribed ECT treatment for depression will participate in the study. Participants will receive all assessment tools at least three times during the course of ECT treatment. The assessment battery will include: FEATS, Beck Depression Inventory Second Edition (BDI-II), Hamilton Depression Rating Scale (HDRS), and Mini Mental Status Exam (MMSE). It is hypothesized that variation in the FEATS depression subscale will significantly correlate with variation in scores from the BDI-II and the HDRS. It is also hypothesized is that high scores on the MMSE will correlate with high scores on Logic and Problem-Solving content areas from the FEATS.

8:30 AM SOC-3 College Students and Sex: Perceptions, Attitudes, and Behaviors. F. TAYLOR AND F. MUSCARELLA, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Research with college students has shown that there is wide variation in the determination of what constitutes "sex." A number of studies have shown that most college students agree that penile-vaginal intercourse is sex, but a majority of students do not consider oral contact with the genitals to be sex. Studies have also shown that there are gender differences in the sexual attitudes and behaviors of college students as measured by the Sexual Attitudes Scale (SAS) (Hendrick & Hendrick, 1987). For example, men score higher on the subscale *permissiveness* while women score higher on the subscale *communion*, a measure of emotional commitment. The purpose of this study is to expand the studies on what behaviors constitute sex and to examine differences in individual sexual attitudes and behaviors (as measured by the SAS) as a function of ethnic group, year in college, and gender.

8:45 AM SOC-4 Do Personality and Year in School Play a Role in the Academic Achievement of College Students? E. RAIZEN AND F. MUSCARELLA, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Numerous studies have examined the relationship between various personality dimensions and academic achievement. The literature on the association between neuroticism and academic achievement is mixed, with some studies showing a significant relationship and other studies showing no relationship. It appears that extraverts do not perform as well academically as do introverts. Consistently, the research has shown that high levels of conscientiousness are associated with high levels of academic achievement. Superego strength appears to be a very significant factor of personality affecting academic achievement. There is no published research on college year and academic achievement. This study examines the relationship between all of these personality dimensions and academic achievement, as measured by grade point average.

9:00 AM SOC-5 The Psychosocial Impact of Acculturation in Immigrants to the United States, S. FLORES AND F. MUSCARELLA, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Acculturation is a process of adaptation that occurs when one experiences direct contact with a foreign culture. This process is multidimensional because it involves changes in behavior, attitudes, social norms, social skills, language, values, and identity. Immigrants to the United States inevitably encounter difficulties, such as inadequate social support, in acculturating to the host culture. Consequently, they become vulnerable to acculturation stress. A large body of literature suggests that the stress associated with acculturation negatively impacts the psychological functioning of immigrants. They are likely to suffer from heightened anxiety and depression. The psychosocial implications of poor acculturation in immigrants to the United States are discussed with particular emphasis on the relevance to crime.

9:15 AM SOC-6 Self-Boxes and Personality. R. FARRELL-KIRK, F. MUSCARELLA, AND M. DUNN-SNOW. Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Boxes have figured prominently throughout art history from ancient sarcophagi to modern art. They are widely used in many art therapy techniques, including self-boxes, which clients decorate to represent their personalities. The Myers Briggs Type Inventory (MBTI) is a personality measure based on Jung's typology of personality. It contains four scales: introversion-extroversion, sensing-intuition, thinking-feeling, judgment-perception. This study attempted to demonstrate that self-boxes portray stable personality traits by comparing subjects' self-boxes with their scores on the MBTI.

9:30 AM SOC-7 Neurohormonal Brain Differentiation and Preferred Partner Characteristics. V.A. ELIAS AND F. MUSCARELLA. Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. The neurohormonal theory of sexual orientation development maintains that sexual orientation is partly due to patterns of brain differentiation that contribute to preferred partner characteristics. It is postulated that characteristics associated with masculinization of the brain are attraction to partners younger and more feminine than self, sexual mounting, pelvic thrusting, and seeking multiple partners. In contrast, a feminized brain will yield behaviors such as attraction to partners older and more masculine than self and discrimination in mate selection. For example, it is speculated that the brains of homosexual men are masculinized and undefeminized predicting attraction to individuals younger and more masculine than self. Patterns of sexual differentiation and preferred partner characteristics for four gender/sexual orientation combinations are discussed.

9:45 AM SOC-8 The Perception of Male Homosexual Behavior: An Evolutionary Interpretation. A.M. CEVALLOS AND F. MUSCARELLA, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Much research shows that male homosexual behavior is perceived particularly negatively by heterosexual males. The social psychological interpretation holds that male homosexuality is associated with femininity. This is associated with loss of status, which evokes a strong negative reaction in males who adhere to the traditional male gender role. An evolutionary psychology interpretation holds that males may have an evolved psychological mechanism making them particularly sensitive to loss of status. This study examined the perceptions of male homosexual behavior under varying conditions of impact on status. It was hypothesized that male homosexual behavior would be perceived less negatively under conditions where the outcome was closely associated with increased status and benefits to the male reproductive strategy.

10:00 AM SOC-9 The Perception of Sexual Harassment: Same Gender versus Opposite Gender Dyads. Y.C. ANDRADE AND F. MUSCARELLA, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Sexual harassment is prevalent in American culture. The literature indicates that women are more likely than men to see sexual advances as harassing. Further, individuals with non-traditional gender-role attitudes are more likely than those with traditional gender-role attitudes to see sexual advances as harassing. Most research on sexual harassment has looked at opposite sex dyads where the initiators are men and the targets are women. There is almost no literature on the perceptions of harassment in same-sex dyads. This study examines the effects of gender and gender-role

attitudes on the perception of sexual harassment in same-sex and opposite-sex dyads.

10:15 AM BREAK

10:30 AM SOC-10 Women with HIV and AIDS: Measuring Quality of Life through Utilization of Coping Skills and Social Support. T. X. HEPBURN AND D. JONES, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. For the past twenty years, acquired immunodeficiency syndrome (AIDS) has been a topic at the forefront of research. The research has focused on the major physical, psychological and social consequences of the disease. Research on the effects of HIV/AIDS suggests that the disease impacts the domains of psychological, physiological, and social functioning as they pertain to quality of life (QoL) of the individual afflicted with the disease. This study will examine the relationship among QoL, coping skills, and social support in a sample of women in the U.S. who are infected with HIV/AIDS using QoL as a measure of disease status. Archival data will be used in this proposed study, and was drawn from the SMART /EST Women's Project, which recruited 465 women with AIDS, over the age of 18.

10:45 AM SOC-11 The Effects of Education, Employment and Control of Finances on the Psychological Well Being of Bengali women. S. HOSSAIN (1), Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Strict Islamic doctrines like *purdah* have prevented women in Bangladesh from seeking education and employment in the past. Current economic conditions, women's movements throughout the world and three consecutive female prime ministers have led to important changes in the government's policies, and in the attitudes and beliefs of women. This has resulted in the creation of greater education and employment opportunities, which have had a direct effect upon women's mental health e.g. psychological well being (pwb) of women from all sectors of society. Pwb in Bengali women was measured using the independent variables: education, employment and perceived control of finances. Three dependent variables were measured using three subscales from the Bangla Psychological Well Being Questionnaire (Khatun, Wadud, Bhuiya, & Chowdhury, 1998) -- Self Esteem, Life Satisfaction and Knowledge of Social Environment. Two additional questions regarding perceived control of finances and agreement with the practice of *purdah,* i.e., female seclusion and segregation from male society, were also assessed. 185 Bengali women between 16-60 years from Dhaka City and Faridpur were questioned orally. A 3X3X3 ANOVA revealed that participants level of: a) self-esteem significantly increased with an increase in the level of education, type of employment and increase in the level of perceived control of finances; b)

level of life satisfaction significantly increased with an increase in level of education, decreased with type of employment (lowest for self employed) and varied with different levels of perceived control of finances and; c) knowledge of social environment significantly varied with different levels of education (mid-level lowest), significantly decreased with type of employment (highest for no employment) and significantly increased with increased level of perceived control of finances. Recommendations were made for: a) government funding for education and b) greater accessibility to financial resources for women.

11:00 AM SOC-12 Projective and Cognitive Assessments of Eating Disorders in Two Groups of College Students: Normal Versus Eating Disorders. L.K. DIGIORGIO, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. This study investigated whether college students with eating disorders would display a distorted body image on cognitive and projective instruments compared to normal students. The participants in this study were 73 male and female college students from Barry University, Miami Shores, Florida, with a mean age of 21.4 years. All participants were given the Eating Attitudes Test-26 (EAT-26) (Garner & Garfinkel, 1982). The EAT-26 significantly differentiated a normal (70%) from an eating disorder population (30%). All participants were given a Human Figure Drawing Test of Self (HFD-S), Human Figure Drawing Test of Other (HFD-O), a Tree Drawing test (TD), and the Body Satisfaction Scale (BSS) (Slade, et al., 1990). The difference between the human figure drawings of the eating disorder group and the normal group was not significant. There was, however, a significant difference in the projective tree drawings between the eating disorder group and the normal group. Scores on the BSS were significantly different for the normal group versus the eating disorder group. Significant correlations were found within groups for the HFD-Self and HFD-Other. It was concluded that projective drawings are a better diagnostic measure of eating disorders than human figure drawings.

11:15 AM SOC-13 From Risk to Resiliency: Determinants of Resiliency in High-Risk Adolescents in a Dropout Prevention Program. J. BYRON, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. Previous research has shown that resiliency can be defined as those real life situations where protective factors outweigh risk factors. Dropout prevention programs assist high-risk adolescents in gaining the protective factors that promote resiliency. To test this hypothesis, 48 students (ages 11-14) from a middle school in south Florida, 36 of whom were enrolled in an Alpha dropout prevention program, were empirically assessed for protective factors promoting resiliency. When assessed for protective factors, students were administered Nowicki-Stickland Locus of Control

Scale for Children, Coping Response Inventory-Youth, and Individual Protective Factor Index. Resiliency was operationally defined as maintaining a minimum G.P.A. of 2.0 in mainstream academic classes. The students were divided into four groups: Resilient (R), students completing the dropout prevention program and being successful in mainstream academic classes; Non-resilient (NR), students completing the dropout prevention program and failing to maintain G.P.A.; Pre-At-Risk (PAR), sixth grade students who were beginning the dropout prevention program; and Non-At-Risk (NAR), the control group, academically superior students from the general eighth grade population. Data analysis: a) failed to confirm that Resilient students had a higher internal locus of control; b) partially confirmed that Resilient students had superior conflict resolution skills, one out of eight CRI-Y scales were significant; c) partially confirmed that Resilient students scored higher on protective factors and lower on risk factors, eight protective factor and risk scales on the IPFI were significant; and d) failed to confirm that Resilient students scored significantly higher on all measures compared to Pre-At-Risk students. The results of the investigation lend empirical support to the conception that the shift from risk to resiliency involves protective factors.

11:30 AM SOC-14 Extraversion as a Determinant of Judgmental Ability. E. BRAUTIGAM (1) AND D. FUNDER (2), (1) Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, (2) University of California, Riverside, 900 University Avenue, Riverside, CA, 92521. There are individual differences in the ability to make accurate personality judgments. Accuracy in personality judgments refers to how well personality descriptions match an individual's actual personality traits. Data obtained from 240 participants were analyzed to determine if extraversion was related to accuracy. Extraversion and accuracy were significantly correlated, $r = .13$, $p = .037$. The more extraverted the judges, the more accurate they were in making personality judgments. It is likely that because extraverts generally engage in more social interactions they are more perceptive about information used to make personality judgments. (Supported by NIH-NIGMS MARCU*STAR Grant, GM08082-18, Barry University and MSRIP, University of California, Riverside).

11:45 AM SOC-15 Factors Predicting Preference for Advice Exchange with Sibling, Friend and Parent. E. BRAUTIGAM (1) AND L. SZUCHMAN (1), (1) Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. The study examined differences between solicited and unsolicited advice from siblings, friends, and parents. An advice questionnaire was administered to male ($n = 14$) and female ($n = 58$) college students. The scale for the items measuring frequency of advice ranged from 1 (*Never true*) to 5 (*Always true*). A within-subjects analysis of

variance (ANOVA) comparing frequency of solicited advice from siblings (M = 3.98), friends (M = 4.63), and parents (M = 4.52) was significant, F (2, 61) = 14.05, p < .001. Tukey post hoc tests (p < .05) indicated that the sibling mean for solicited advice was significantly different from friend and parent means. A within-subjects ANOVA comparing frequency of unsolicited advice from siblings (M = 3.98), friends (M = 3.79), and parents (M = 4.21) was not significant, F (2, 61) = 2.54, p = .083. (NIH-MARC U*STAR GM08021-18, Barry Univ.).

12:00 PM SOC-16 An Analysis of the Relationship between Personality and Substance Abuse. S. VALENTINO (1) AND C. STARRATT (2). (1) 9601 S.W. 142 Ave., Apt 618, Miami, FL. 33186, (2) Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161. The relationship between personality variables and substance abuse is to be examined from a neuro-psychological perspective using Cloninger's Unified Biosocial Model of Personality. A review of the relevant literature will be presented followed by an explanation of Cloninger's model which links the three personality temperaments of Novelty Seeking, Harm Avoidance, and Reward Dependence with the three neurotransmitters: dopamine, serotonin, and norepinephrine. In accordance with this model, the neurophysiological effects of alcohol, benzodiazapines, and cocaine will be discussed as they relate to these three temperaments and neurotransmitters. Substance use patterns will be examined in terms of two different motivations for drug use: self-medication and sensation seeking.

FRIDAY 2:30 PM POSNER 103
SESSION B
MARIBETH DURST, SAINT LEO UNIVERSITY, presiding

2:30 PM SOC-17 Citizens and Science in the Everglades: Contesting Expert Narratives of Aquifer Storage and Recovery. WILLIAM E. O'BRIEN, Honors College, Florida Atlantic University, Jupiter 33458. Everglades restoration, and in particular the debate over aquifer storage and recovery (ASR) technologies around Lake Okeechobee, provides an excellent case study of social conflict over the authority of experts in environmental issues. While project scientists and planners see ASRs as a key element in the long-term success of everglades restoration, environmental justice activists, largely from minority communities, in particular have objected, suggesting that ASRs subject such communities to disproportionate environmental risk. Such suspicions have roots in part in an ambivalent perception of scientific experts as both creators and solvers of environmental problems, and in an historical experience with science as an exploitative force in minority communities. Environmental justice activists, through concerted action and effective coalition building, have

been somewhat successful in challenging these expert discourses in the policy arena.

2:45 PM SOC-18 Defining and Measuring Interpersonal Integrity. D.S. MOORE, D. KAHL, M. FISTER, AND R. BRYAN, Saint Leo University, PO Box 6665, St. Leo, FL 33574. Integrity has been offered as a prerequisite to happiness in the metaphysical/new age popular literature. While the authors do not disagree with such an assessment, integrity as a personality construct has rarely been defined and has never been adequately measured. Popular authors talk about integrity often, but the usual assumption is that integrity can be equated with honesty. The research described was designed to adequately define integrity and to develop a measure that explores the wide range of possible factors subsumed under the construct. It is proposed that integrity consists of honesty, authenticity, self-knowledge, self-esteem, self-protection and clarity of communication. The Interpersonal Integrity Scale (IIS) is described, and evidence is presented that such an attribute, by virtue of its importance in relationships should be explored more fully. Regarding applied fields of inquiry, integrity is also discussed in terms of its potential utility as a predictor of employment success.

3:00 PM SOC-19 Violent Times: a Case Study of the Ybor City Historic District. T.A. DANNER, Saint Leo University, PO Box 6665, St. Leo, FL 33574. This case analysis of an urban historic district tracked the demographic, economic, and public policy trends that influenced its violent crime volumes. Constructs from routine activities theory and environmental criminology were used to explain these crime trends. Findings were: a) macro-structural forces influence crime volumes; b) populations drawn to the area's nightlife had an impact on crime; c) considering the number of people who visited the area, the victimization risks there were greater than was average for all Tampa; d) the demographics of the areas surrounding the district had less impact on crime there than has been assumed; and e) the high density of bars probably facilitated the occurrence of violent crime beyond what would have been generated with other land uses. Recommendations were presented for guiding the formation of public policy that will affect the future crime trends in the district and may also be generalized to similar areas undergoing economic revitalization.

3:15 PM SOC-20 Current Economic Conditions in the Florida Sugar Industry. A.J. CRISS, University of South Florida at St. Petersburg, 140 Seventh Avenue South, St. Petersburg, FL 33701. Since 1990, two separate developments have had the potential to significantly impact the sugar industry in Florida. First, as a result of a GATT panel ruling, on Sept. 13, 1990, absolute quotas for raw cane and refined sugar entering the

United States were converted to tariff-rate quotas. Second, Florida's sugarcane harvesting today is nearly fully mechanized, although as late as 1991 over one-half of such harvesting was still being done by hand. The extent to which these developments have led to increased U.S. production of sugar and declining prices will be examined, as will the particular way in which the sugar industry in Florida has been affected.

3:30 PM SOC-21 A Comparison Between Freshmen and Seniors in Relation to Dependency and Consumption of Alcohol, B.D. DAIGNAULT (1), Saint Leo University, PO Box 6665, St. Leo, FL 33574. The purpose of this study was to compare alcohol consumption and dependency between freshmen and seniors. The hypothesis of the present study was that freshmen would consume more than seniors, but seniors would be more dependent on alcohol than freshmen. Fifty-four undergraduate students participated in this study; half of the participants were freshmen and the remaining participants were at the senior undergraduate level. The results of the present study were congruent with findings of past research dealing with consumption among undergraduate students.

3:45 PM SOC-22 Correlation of Alcohol Consumption and Adverse Behavior Among Resident College Students. K.E. MAULDIN, Saint Leo University, PO Box 6665, St. Leo, FL 33574. The behaviors of resident college students while under the influence of alcohol are examined. Using a survey created by the researcher, data was collected in classrooms at Saint Leo University's daytime courses. Data included all class standings, from freshman to senior. Resident college students were the participants included in analysis of data. The survey included questions that allowed the researcher to distinguish class standing and status of residency. The survey included questions determining the frequency of specific adverse behavior while under the influence of alcohol, as well as frequency and rates of consumption of alcohol. Results of data collection are discussed.

4:00 PM SOC-23 The Effect of Pressure to Conform and Class Standing on Conformity Behavior in a College Sample. K. LUKASIEWICZ. Saint Leo University, PO Box 6665, St. Leo, FL 33574. There are many situations in which individuals tend to conform to others. The purposes of the present study were to determine if participants would be influenced by the conforming behavior of others, and if class standing would influence behavior. Participants were 60 undergraduate students from a small liberal arts university. Participants were asked to judge the size of a geometric figure under three different conditions, to see if they would conform or not conform to the answers of others. The participants were divided into three groups, experimental A (n=20), experimental B (n=20) and control (n=20) group. The participants in the experimental A group

were exposed to 20 other answers, which were all wrong. Participants in the experimental B group were exposed to 18 wrong and 2 right answers. Participants in the control group were not exposed to any answers. As predicted, results showed that only participants in the experimental A group conformed, as four of the students in that group conformed. No participants in the experimental B or the control group conformed. Results also indicated that underclassmen tend to conform at a higher rate than upperclassmen. Results from this study suggested that the conformity behavior does have an influence on the individual when answering a question, and that conformity might tend to decrease with age.

4:15 PM SOC-24 The Effect of Bibliotherapy as an External Factor in Student Motivation. L. COMPAS, Saint Leo University, PO Box 6665, St. Leo, FL 33574. Previous research has found that bibliotherapy is a valid source of motivation. The theory of using self-help books as a form of facilitating motivation is the focus of this study. In this study, ninety-six (N=96) undergraduate freshman participants were asked to read a motivational excerpt and then asked to complete a motivation scale. The findings in current study supported the hypothesis that the bibliotherapy method increased motivation in the participants. Statistical analysis suggested the participants were highly motivated by the excerpts, which would lead to a temporary form of motivation. Motivational excerpt 2 was the highest reported source of motivational influence. This study has supported the prediction that bibliotherapy can be used as a source of external motivation.

4:30 PM SOC-25 The University Professor's Mind-set Versus Student Satisfaction. S. A. MIHALIC (1) Psychology, Saint Leo University, St. Leo 33574. The predominant focus for students with disabilities has mainly been on the elementary and secondary level students and the quality of education that they have been receiving. Past research has examined the quality of education provided for college level students with disabilities. The purpose of the present study was to provide an awareness of the need of quality education concerning students with disabilities. A 25 item questionnaire was developed to measure two scales: (a) faculty's willingness to work with students with disabilities; and (b) the student's level of comfort in approaching faculty members. Results indicated that there was not a statistically significant difference, but group accounted for 12.8% of the variance in disabilities perception. Implications for the use of the SDAS are offered.

4:45 PM SOC-26 U.S. Foreign Policy Decision-Making in Theory & Practice: The White House, State Department, Pentagon & CIA. M. RIMANELLI, Saint Leo University, Florida 33574. This paper briefly

explores the theoretical underpinnings of U.S. Foreign Policy in history and in the public's eye, and how decision-makers develop it in practice. The analysis will focus mostly on the bureaucratic and political roles of the White House, State Department, Pentagon and CIA on specific case studies and internal bureaucratic interaction. The author worked in the U.S. government twice in 1991-92 and 1999-2001, and is currently tenured Associate Professor of U.S. Foreign Policy, European Affairs & International Security at Saint Leo University, near Tampa, Florida.

5:00 PM BUSINESS MEETING: SOCIAL SCIENCE
MARIBETH DURST, presiding

URBAN AND REGIONAL PLANNING

FRIDAY 11:00 AM O'LAUGHLIN 114
DANIEL MOSS, SOUTH FLORIDA WATER MANAGEMENT DISTRICT, presiding

11:00 AM URP – 1 VIIDEO (11:28 minutes): "Safe Ways to School." L. B. CRIDER, Urban and Regional Planning Dept., University of Florida, P.O. Box 115706, Gainsville, FL 32611. Safe Ways to School is a state-wide project administered by the Florida Traffic and Bicycle Safety Education Program. The program's goal is to improve conditions that affect children walking and bicycling safely to and from school. The project is committed to helping reduce traffic speed and congestion around schools and to increase the number of children that actually walk or bicycle to school. Safe Ways to School is modeled after the award-winning project, "Safe School Routes" which originated in the city of Melville, Australia. Safe School Routes combines traffic calming techniques with school initiatives and an education program that has fostered a safer environment for children to walk and bicycle to school.

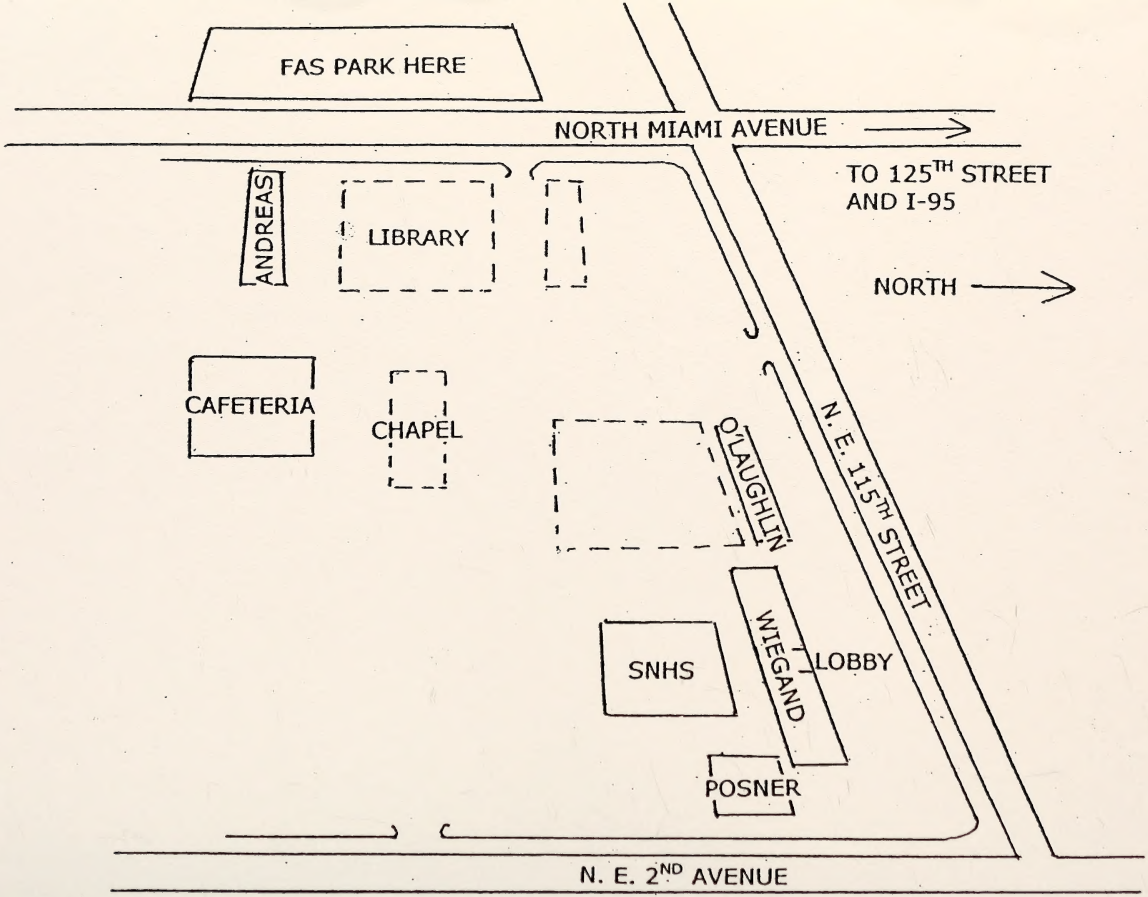
11:15 AM URP-2 Know the Flow. D. J. MOSS, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406. Planning and providing for the path of stormwater from neighborhoods and cities for flood protection. The regional network of canals and water control structures that criss-cross central and southern Florida, along with the thousands of man-made lakes and smaller canals that dot the landscape, serve a much greater purpose than merely providing scenic, waterfront views. Without them, rainwater would simply gravitate toward the lowest areas and leave standing water for weeks. Working in concert with city, county and local drainage district systems, which must coordinate with developer/property-owner managed facilities, the South

Florida Water Management District is responsible for safely conveying excess waters into regional storage areas or out to the ocean.

ALL DAY URP-3 VIDEO (18 minutes) "Restoring the Everglades: the Advanced Treatment Technology Research Program." South Florida Water Management District, 2001. The video explores the cutting edge research involved with the Advanced Technology Program. The technologies discussed are: submerged aquatic vegetation/limerock; periphtyton-based stormwater treatment areas; low-intensity chemical dosing; chemical treatment/solids separation; and managed wetlands treatment systems.

11:30 AM BUSINESS MEETING. URBAN AND REGIONAL PLANNING
DANIEL MOSS, presiding

AUTHOR INDEX


FAS PARK HERE
NORTH MIAMI AVENUE
TO 125TH STREET
AND I-95
NORTH
ANDREAS
LIBRARY
CAFETERIA
CHAPEL
O'LAUGHLIN
N. E. 115TH STREET
WIEGAND
LOBBY
SNHS
POSNER
N. E. 2ND AVENUE

FLORIDA ACADEMY OF SCIENCES
ORLANDO SCIENCE CENTER
777 E. PRINCETON STREET
ORLANDO, FL 32803

NONPROFIT ORG.
U.S. POSTAGE
PAID
ORLANDO, FL
PERMIT NO. 2800