

GRICE LOGBOOK

A NEWSLETTER OF THE GRICE MARINE LABORATORY AND THE GRADUATE PROGRAM IN MARINE BIOLOGY, COLLEGE OF CHARLESTON

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Undergraduate Research at Grice Just Gets Better

The Grice Marine Lab has always been a haven for students, particularly in the summer. That's the time of year when faculty members are happy to be doing field or lab work as a break



CofC undergraduate researcher Kristen Greene studied the population biology of sharks.

from classroom teaching, graduate students can focus on honing their scientific skills and the Grice residence area is full of undergraduate students who come from near and far to do work with faculty mentors on independent research projects.

The summer of 2005 brought a new crop of ten undergraduates from 7 different states, including 4 students from the College of Charleston! The group enjoyed

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Grice Researchers in the Antarctic

In December of 2005, members of the **DiTullio lab** embarked on a research expedition to the Ross Sea, Antarctica on the polar ice breaker RV/IB Nathaniel B. Palmer. The group consisted of **Dr. Jack DiTullio** (chief scientist), **Dr. Peter Lee**, **Aimee Neeley**, Dr. Dave Jones, Brian Taylor, and Jay Francella. This cruise was part of an NSF-funded project named **CORSACS**, which stands for **Controls on Ross Sea Algal Community Structure**. The focus of this project is to examine the effects of various ecological and environmental factors, including carbon dioxide, iron, vitamins, trace-metals, and temperature, on algal community dynamics. In particular, they are interested in the community interactions and competition of 2 dominant algal

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Fisheries Management Informed by Science

Management decisions in fisheries everywhere and especially in South Carolina are informed by a basic understanding of population structure. **Dr. Erik Sotka** was recently funded by the South Carolina Sea Grant Consortium to examine the genetic structure of gag grouper (*Mycteroperca microlepis*). This fish comprises one of the most important commercial and recreational fisheries in the southeastern United States and the Gulf of Mexico. The results of studies by Dr. Sotka and his students will provide insight to policymakers in South Carolina and the South Atlantic Fishery Management Council on whether spawning aggregations from eastern Florida through North Carolina should be considered a panmictic single population or a series of relatively independent aggregations. If



Undergraduate researcher Hannah Giddens investigates seaweed feeding preferences.

the postlarval fish that enter South Carolina waters come from spawning aggregations in the waters off the coast of South Carolina, management decisions could protect local aggregations. If the postlarval fish are produced by aggregations outside of South Carolina, then management would require protection measures throughout the southeastern U.S. Atlantic area. This genetic research will utilize the talents of **Beth Cushman**, a marine biology graduate student, and several College of Charleston undergraduates.

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Bob Podolsky Joins Faculty

Bob Podolsky is an evolutionary ecologist who obtained his undergraduate degree in Biology from Princeton University. He earned his doctorate from the University of Washington studying the fertilization ecology and larval biology of free-spawning marine invertebrates. Most recently, he was on the faculty at the University of North Carolina at Chapel Hill.

In the fall of 2005, Bob and his wife Allison Welch moved to Charleston with their cat Chuva and dog Sienna. Allison also does research and teaches as a Research Associate and Adjunct Faculty member in the Biology Department. Bob and Allison were attracted to the Charleston area by its history, architecture, food and proximity to the ocean.

Bob currently teaches the Invertebrate Zoology (Biol 337) undergraduate course. Aside from teaching about invertebrate phyla and their evolutionary relationships, his course helps students to develop an understanding of the functional, ecological, and historical factors that have been responsible for generating invertebrate biodiversity. Students learn about how the anatomy and physiology of organisms change during their life cycles, as well as about invertebrate community interactions and species conservation.

Bob's research interests include the physiological ecology of invertebrate development in variable environments. In particular, he is studying how extreme



fluctuations of physical variables like temperature and oxygen in intertidal habitats affect the development and reproductive success of intertidal reproducers. At his main study site in Friday Harbor, Washington, egg masses deposited on tidal flats are regularly triggered by temperature fluctuations ($> 23^{\circ}\text{C}$) to express "heat shock proteins," which

protect the embryonic cells from heat damage. Integrating lab and field work, Bob will continue to build on his previous research, which has found that intertidal embryos typically experience environmental conditions at their physiological limits. He is ultimately interested in how ecological processes at different stages of the life cycle interact to determine reproductive success.

For more information about Dr. Podolsky's research, teaching and publications, you can visit his website at www.cofc.edu/~podolskyr.

Alumni Notes

Mark Caldwell (1986): After obtaining his degree, Mark began his career with the South Carolina Coastal Council (now Ocean and Coastal Resource Management) in Myrtle Beach. He served as their biologist until 1989 and then as their Regional Permit Administrator. In 1998 Mark returned to Charleston to serve as the Permit Coordinator and Senior Biologist for OCRM. In June 2003 he transferred to the US Fish and Wildlife Service. As a Fish and Wildlife Biologist, he serves as the Service's transportation liaison for South Carolina. His primary duties are to review proposed, federally funded transportation projects for impacts to sensitive habitat or threatened and endangered species. Mark met his wife, Joan, when he was a student at Grice and has been married 19 years. They have one child, Lindsey, who is now in high school.

Tim Zimmerman (1992): Tim recently received his Ph.D. from the University of California, Berkeley in Science Education. His dissertation research focused on the design and testing of marine science curricula that help learners apply scientific concepts to marine conservation problems. Incorporating both formal (classroom) and informal (aquarium) learning components, his research sheds light on techniques for promoting learning across classroom and museum contexts. Tim has developed curricula and provided educational support to multiple organizations including the National Geographic Society, NOAA, the Monterey Bay Aquarium, the Tagging of Pacific Pelagics program, the Monterey Bay Aquarium Research Institute, the Global Footprint Network, the Coral Reef Alliance, and the Massachusetts Audubon Society. Prior to entering Berkeley, Tim worked for the U.S. Environmental Protection Agency in Washington, D.C where he oversaw the national wetlands enforcement program. He currently holds a position at the University of California, Berkeley's Lawrence Hall of Science where he conducts research on communicating ocean science and is the program manager of the COSIA project. When not in the office, you can find him rock climbing, birding, fly fishing, leading elephant seal walks at Ano Nuevo State Reserve, or hiking/camping somewhere in the vast California wilderness.

Jim Wessel (1997): Jim married Ms. Christel Logan this past summer at the Fernbank Museum of Natural History in Atlanta GA. They are currently building a home in Seabrook TX, on Galveston Bay. Jim works for Wyle Life Sciences at NASA's Johnson Space Center, as an environmental physiologist. His primary role

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Other aspects of population biology are of interest to Dr. Sotka. Did you know that seaweeds have defenses against being eaten? Dr. Sotka was recently funded by the National Science Foundation to study the chemical and morphological mechanisms that seaweeds use to protect themselves from being consumed by herbivores and the tolerance of the animals that overcome these protections. This work is especially important because it will allow scientists to understand the long-term responses of marine organisms to increasing frequencies of toxic algal blooms. Dr. Sotka states that, "This work will help us predict the responses of local marine communities to human-induced perturbations, such as the introduction of non-native species."

As an example, there is a mountain of evidence that tropical seaweeds produce greater types and quantities of seaweed chemical defenses than temperate seaweeds. In contrast, there is little direct evidence on whether tropical herbivores have evolved greater feeding preferences for and performance on tropical seaweeds relative to temperate herbivores. Using a combination of field-sampling, laboratory rearing assays, and DNA phylogeography, the Sotka lab will directly compare the genetically-based

feeding responses of tropical and temperate populations toward chemically-rich tropical seaweeds. Also of interest is whether evolving feeding tolerance for a chemically-rich seaweed comes at an energetic cost to the animal consuming them. This work will be spearheaded by marine biology graduate student **Amanda McCarty**.

Hannah Giddens (B.S. in Marine Biology at the College of Charleston) recently presented her work on the herbivore *Ampithoe longimana* "Thermal stress alters the feeding preferences for chemically-rich seaweeds among northern, but not southern, herbivores" at the Benthic Ecology Meeting in Quebec City, Quebec (March 2006). This work is being prepared for publication.



Diving is a part of the job for Dr. Erik Sotka.

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Molecular Manager at GML

Who is that guy in the field playing Frisbee? It is David Wheeler, the new Lab Manager for the Molecular Core Facility (MCF); he is practicing for his upcoming disc golf tournament. David joined the staff of the Grice Marine Lab in August of 2005. He moved to Charleston with his wife, Emily, who is currently enrolled in the physician's assistant program at MUSC. In addition to disc golf, David enjoys college football and taking Captain, their retired racing greyhound, to the beach.

David earned his bachelor's degree in Biochemistry in 1997 from Texas Tech University. In 2002, he obtained his master's in microbiology working on the plant pathogen bacterium, *Erwinia chrysanthemi*. He was previously employed by the Agricultural Research Service, a department of the USDA, in Lubbock, Texas. He investigated gene silencing in plants, primarily studying the effects of viral proteins that inactivate gene silencing.

As the MCF lab manager, David is responsible for supervising all lab activities. The Molecular Core Facility offers DNA sequencing services to local scientists on a fee per service basis. He runs these samples on the Beckman Coulter CEQ8000. David maintains, calibrates,

operates and repairs all of the lab equipment including image analysis system, fluorometer, thermalcycler, and mutation detection system. He also trains CofC faculty and students to use the complex instrumentation and associated computer software in the lab. David troubleshoots problems with samples and equipment and schedules use of lab facilities and equipment.

For more information regarding the MCF, please visit the molecular core facility link on the Grice website www.cofc.edu/~grice.



Student & Faculty Awards

Agnes Ayme-Southgate - (Assoc. Prof.) Received the College's Distinguished Advising Award.

Tiffany Baker – Received the McLeod-Frampton Scholarship from the South Carolina Agricultural Society. Awarded the Byrd Dunn award for best student presentation at the annual meeting of the Southeastern Society of Parasitologists (SSP) held March 29-31 in Gatlinburg, TN. Received support for summer research from the Joanna Deep Water Fellowship. Nominated to Sigma Xi Scientific Research Society.

Lou Burnett - (Prof.) Received the College's Distinguished Research Award.

Kristen Mazzarella - Best Student Conservation Poster for “Analysis of Stranded Loggerhead Sea Turtles (*Caretta caretta*) in North and South Carolina

Using Mitochondrial DNA and Stranding Records,” 26th Annual Symposium on Sea Turtle Conservation and Biology in Crete, Greece.

Lindy Thibodeaux – Nominated to Sigma Xi Scientific Research Society.

Heidi Williams – Nominated to Sigma Xi Scientific Research Society.

Debra Zdankiewicz – Received the Best Student Oral Presentation Award, 2006 Marine Biology Graduate Student Research Colloquium (Feb 2006) and received support from the Joanna Fellowship for summer research.

Marcus Zokan – Nominated to Sigma Xi Scientific Research Society.

Recent GPMB Degrees

Patricia Blair – The Microbial World of the Florida Red Tide Dinoflagellate *Karenia brevis*: Algicidal and Antagonistic Interactions (Advisor: Greg Doucette)

Gaëlle Blanvillain – Using Diamondback Terrapins (*Malaclemys terrapin*) as Sentinel Species for Mercury Monitoring in Estuaries Along the Southeast Coast of the U.S. (Advisor: David Owens)

Stephanie Brunelle – Circadian Control in the Dinoflagellate *Karenia brevis*: The Role of Blue Light and Characteristics of a Blue Light Receptor. (Advisor: Fran VanDolah)

Cara Fiore – Characterization of Macrofaunal

Assemblages Associated with Sponges and Tunicates off the Southeastern United States (Advisor: Pam Jutte)

Elizabeth Jones – Comparative Phylogeography, Population Structure, and Extended Maternal Care in Three Intertidal Haustoriid Amphipods from the Western North Atlantic (Advisor: Scott France)

Eric Pante – Temporal Variation in a Bahamian Patch Reef Community: The Decline of Rainbow Gardens Reef (Advisor: Phil Dustan)

Stephanie Rexing – Structure and Trophic Importance of Benthic Macroinfaunal Communities Around Live-bottom Reefs at Gray's Reef National Marine Sanctuary (Advisor: Jeff Hyland)

Christina Schobernd – Submersible Observations of Southeastern U.S. Deep Reef Fish Assemblages: Habitat Characteristics, Spatial and Temporal Variation, and Reproductive Behavior (Advisor: George Sedberry)

Zeb Schobernd – Species Assemblages, Distribution and Abundance of Serranids in the South Atlantic Bight, 1973-2004 (Advisor: George Sedberry)

Lorimar Serrano – Water Quality Restoration for Coastal Subdivision Stormwater Ponds (Advisor: Marie DeLorenzo)

Jacque Shapo – An Evaluation of Antimicrobial Activity of the Western Atlantic Octocoral, *Leptogorgia virgulata* (Lamarck) (Advisor: Sylvia Galloway)

Julie Vecchio – Catch and Release in South Carolina's Red Drum Recreational Fishery (Advisor: Charlie Wenner)



Mud Minnow Workshop

The humble mud minnow or mummichog, *Fundulus* spp., has been used by researchers in many parts of the world to study evolution, physiology, toxicology, and even human health. In 2005, the Grice Marine Lab hosted the first of two NSF-supported workshops to facilitate development and sharing of modern “genome-enabled” tools for *Fundulus*. Workshop coordinator **Dr. Karen Burnett** brought together a group of 12 scientists from Woods Hole Oceanographic Institution, University of Miami, Mount Desert Island, and other laboratories to identify ways to share existing molecular resources and capabilities. At a second workshop in 2006, scientists will discuss how to apply modern techniques to address a variety of environmental questions using *Fundulus*. The group will explore the establishment of a *Fundulus* Genomics Consortium and will issue recommendations for developing and distributing molecular tools to researchers.



Best Oral Presentation Award 2006 recipient, Deb Zdankiewicz, with her faculty advisor John Kucklick.

Research Colloquium

The 9th annual Marine Biology Student Research Colloquium celebrated student research on February 24 and 25, 2006. The keynote speaker of the event was **Dr. Jeffrey Levinton**, Distinguished Professor in the Department of Ecology and Evolution at Stony Brook University. Dr. Levinton is a scientist and a teacher with broad interests in the sciences and the intersection of science and society. The focus of his present research is on evolutionary responses to toxic substances and on sexual selection and natural selection in the morphological evolution of fiddler crabs. He is examining their relationship to phylogeny based on molecular data. The title of Dr. Levinton's

keynote address was "Fiddler Crabs as a Model System for Integrating Functional Biology and Evolutionary History." Saturday was devoted to student research as 15 students highlighted their research accomplishments. The final talk in the Saturday session was by Dr. Levinton who spoke on "The Hudson River and the Birth of the Environmental Movement." A pig roast and veggie burger cookout capped the weekend's activities. Pictures from this colloquium and past events are available at www.cofc.edu/~marine.



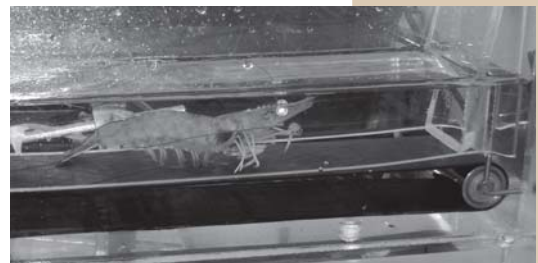
Faculty Notes

The **Craig Plante lab** continues to study the effects of non-equilibrium processes that structure microbial communities in marine sediments. Upcoming work will focus specifically on the role of biotic disturbance and its effects on both heterotrophic bacteria and benthic microalgae. Two additional areas of research include 1) the study of quorum sensing (a means of communication in bacteria) in sedimentary bacteria and 2) prospecting for surfactant-resistant bacteria in marine habitats, which hold promise for bioremediation of contaminated sediments. Dr. Plante will again be teaching a study-abroad ecology course in Panama (May 10 - June 2) at the Institute for Tropical Ecology & Conservation.

William D. Anderson, Jr. in 2005 coauthored with Victor G. Springer of the Smithsonian Institution a review of the fish genus *Symphysanodon*, in which three new species were described. Dr. Anderson has in press a number of accounts that will be included in the **SOUTH CAROLINA ENCYCLOPEDIA** (scheduled for publication later this year) and accounts of three groups of fishes that will appear in the species identification guide for the living marine resources of the eastern central Atlantic (will be published by the Food and Agriculture Organization of the United Nations). He recently submitted a manuscript describing a new species of the serranid fish genus *Meganthias* to the *Proceedings of the Biological Society of Washington*. Dr. Anderson continues working on a large manuscript (coauthored with Phillip C. Heemstra, South African Institute for Aquatic Biodiversity, Grahamstown) reviewing Atlantic and eastern Pacific anthiine fishes (family Serranidae) and is beginning work on a history of ichthyological studies in South Carolina that will be a chapter in a book on the freshwater fishes of South Carolina (book currently in

preparation by Joseph M. Quattro, University of South Carolina, and Fred C. Rohde, North Carolina Division of Marine Fisheries).

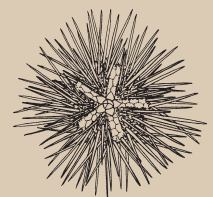
The **Burnett lab** is now running shrimp and crabs on treadmills! Using underwater treadmills CofC summer student Monica Mack and visiting faculty member David Scholnick (Eckerd College) found that penaeid shrimp take well to treadmills, sometimes running for hours. Studies in this laboratory center on mechanisms of defense against infection in a variety of marine organisms including shrimp, crabs, oysters, and fishes. Everyone knows that humans don't perform well when they are sick. In the marine environment, poor performance could result in a shrimp or a crab being eaten. Treadmill studies will help gauge how these animals perform under stress when they are fighting a bacterial infection.



Tony Harold recently published a description of a new species of coral goby (*Gobiodon prolixus*) from the Indo-Pacific. During his spring semester sabbatical leave (2006), Tony has prepared a manuscript for publication on the phylogenetic relationships of coral gobies based on molecular and morphological evidence. The Fish and Invertebrate Collection database project continues, as part of the Southeastern Regional Taxonomic Center (SERTC), with funding from NOAA. Undergraduate marine biology student **Allison Chandler** worked as collections assistant this academic year, through funding from the Department of Biology.

Gorka Sancho has been involved with monitoring spotted seatrout spawning aggregations in Charleston Harbor with marine biology graduate student **Chris Bradshaw**. A

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Antarctic Research - Cont. from page 1

classes in the Ross Sea: diatoms and the haptophyte *Phaeocystis antarctica*. On a global scale, this competition could ultimately affect the levels of the greenhouse gasses carbon dioxide and dimethylsulfide (DMS) and has important implications with regard to the phenomenon of Global Warming. More information about this project can be found by visiting the website www.who.edu/sites/corsacs.



During this adventure, the DiTullio lab traveled to many destinations while in the Ross Sea. The first stop was near Beaufort Island, where they spent New Years Eve. Their research also took them to various other places including Cape Washington, Lady Newnes Bay and the Bay of Whales.

In fact, while in the Bay of Whales, they broke the world record by traveling farther south (78° 40.891'S) than any other ship in history. They also saw lots of animals, including seals and Adelie penguins and were lucky enough to catch a glimpse of some whales.

In February 2006, one member of the DiTullio lab, Aimee Neeley, traveled to the other side of Antarctica to participate in an NSF-funded Biocomplexity project at Palmer Station, Antarctica. Palmer Station is located on Anvers

Island off the coast of the Palmer Peninsula (68° 46'S, 64° 03'W). The focus of this research was to examine the biogeochemical cycling of DMS. The project was a collaboration of 6 institutions that sent personnel to monitor DMSP and DMS production and consumption over the course of the entire spring/summer season (October 2005 to February 2006).

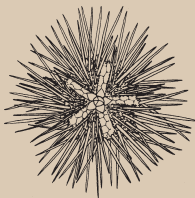


Christmas at Sea: Pictured in the front are Dr. Jack DiTullio, Dr. Peter Lee, and Aimee Neeley. Back l to r: Dave Jones, Jay Francella, Brian Taylor.

Approximately 45 people live at Palmer Station during the "summer" season. Various birds and mammals also live on and around Palmer Station, including many species of seals, birds, and penguins. On occasion even whales make a visit. More information about this project can be found at the following website: www.bigelow.org/arctic/matrai05/index.html.

Undergrad Research - Cont. from page 1

many of the now-traditional summer activities, including a boat trip to Capers Island, overnight "Ethics in Science" trip to the ACE Basin, and oral presentations of their research accomplishments. They added some new events, including a visit to the International Center for Birds of Prey. The interns learned and accomplished a lot over the summer, with



Kolo Rathburn's poster is reviewed by Congressman Henry Brown.

two particularly notable accolades. **Kristin Greene** from the College of Charleston, who worked with mentor **Dr. Tom Greig** of NOAA, took first place for oral presentation the Biological Science II division of the Louis Stokes South Carolina Alliance for Minority Participation Undergraduate Research Symposium in Orangeburg, SC last July. **Charles Kolo Rathburn**, a native Hawaiian from Chaminade University of Honolulu, who worked with postdoctoral fellow **Dr. Brett Macey** and members of the Burnett Lab, was one of 60 students from around the country selected by the National Council on Undergraduate Research to present his work at the "Posters on the Hill" event in Washington DC on April 25, 2006. While he was on Capitol Hill, Kolo visited the offices of Senators and local Congressmen from South Carolina and Hawaii, drawing attention to the importance of federal funding for undergraduate research. The National Science Foundation has supported the Summer Program for six years, since 1999. In April 2006, NSF recognized the successes of the undergraduate research program by awarding another three-year round of support. Our web page: www.cofc.edu/~reu.

Alumni Notes - Cont. from page 2

is to conduct metabolic rate measurements on the astronauts training in the Neutral Buoyancy Laboratory's pool for their upcoming extra vehicular activities (EVA) while on the International Space Station (ISS) or the Space Shuttles. He will also be assisting in a series of tests to help optimize the spacesuits for use on the upcoming Moon missions and the Mission to Mars. Jim recently visited Grice and worked with Dr. Bernard Zahuranec in Dr. Tony Harold's laboratory in an effort to identify a significant portion of the remaining unsorted *R/V TYRO* lanternfishes.

Michelle Hardee (2000): After graduating from the College of Charleston, Michelle taught Oceanography, Marine Geology, and Environmental Geology at Coastal Carolina University. She is currently earning a Ph.D. in Marine Science at the University of South Carolina in paleoceanographic and climate change research using sediment trap and downcore samples from the Santa Barbara Basin. Her research involves using foraminiferal Mg/Ca ratios, oxygen isotopes, and phytoplankton alkenone ratios as paleotemperature proxies, for determining the reliability of the climate signal preserved in the sediment trap samples by examining these proxies' inter-correlation and preservation in recent sediments. In 2004, she published two Introductory Oceanography Lab Manuals for the MSC1 101-102 course series at USC through Kendall/Hunt Publishers. Michelle plans to finish her degree in 2007 and will soon be looking for a teaching/research position in Marine Science, Paleoceanography, or other related fields.

Marine Biology Alumni
Tell us what you are up to!
marine@cofc.edu

Karen (Stahl) Tuerk (2002): After graduating from the College of Charleston, Karen married Matt Tuerk and moved to Columbia, SC. Karen worked as a research technician at the University of South Carolina investigating microbial nutrient cycling and biodegradation processes while Matt worked on getting his MBA in international business at USC. They have a daughter, Amelia, who will be two years old in July. They recently moved to Panama, Central America, for Matt's job and are loving it - beautiful weather, ocean views, cheap food & beer. Karen is hoping to be employed soon at a non-profit and is also contributing to an article about parenting abroad that she plans to submit to *Mothering* magazine.

Grice Lab Merchandise

The Marine Biology Graduate Student Association sells a variety of items to raise money to support student presentations at scientific meetings as well as funding some social and community-related activities throughout the year. Items for sale include t-shirts, coffee mugs and pint glasses, koozies, and hats. For more information, see www.cofc.edu/~marine.

Behavioral Biologist at Grice

The Grice Marine Lab is happy to have **Allison Welch** as a Research Associate and adjunct faculty member. She received her B.S. from Truman State University in 1993 and her Ph.D. in Biological Sciences from the University of Missouri in 2000. Her research focuses on the behavior, ecology and evolution of frogs with emphasis on the evolution of mating behaviors in gray tree frogs. Allison teaches Biodiversity (BIOL 211), Herpetology (BIOL 334) and Ecology (BIOL 341). Allison shares an office and research space at Grice with her husband, Bob Podolsky. She was drawn to the college by its "excellent colleagues, good students, and the College's focus on both undergraduate education and research". South Carolina, and the southeast in general, was particularly interesting to Allison because of the abundance of frogs.

A key part of Allison's research involves undergraduate students. This semester **Amy Glass** (junior, marine biology) and **Brian Kennedy** (sophomore, marine biology) have analyzed digital recordings of gray tree frog mating calls. These data will be used to test whether male frogs in better physical condition are able to produce vocalizations that are more attractive to female frogs. Amy is hoping to continue her research this summer by recording and analyzing calls of the original males' sons. They will then be able to compare the calls of fathers and sons in order to test the heritability of calling behavior in these frogs. **Nicki Witkowski** (senior, marine biology), **Kyle Palmquist** (senior, biology) and **Morgan Helms** (sophomore, biology) are working on a morphometric study of gray tree frogs. They are currently preparing frog specimens and in the fall, Nicki will take various measures of body length from frogs of known parentage in order to test the heritability of body size and physical condition in these frogs. Allison's web site: www.cofc.edu/~welcha.





Faculty Notes - Cont. from page 5

variety of gears were used to monitor the aggregations including hydrophones to listen to males calling. Spotted seatrout were also monitored with ultrasonic telemetry using Vemco VR2 receivers and ultrasonic tags which were surgically implanted into the fish. The receivers were placed in the harbor to monitor two known spawning aggregations and the surrounding areas. Data were analyzed to investigate how the fish used the habitat and how their behavior was affected by environmental conditions.

In April each year hundreds of adult male loggerhead sea turtles *Caretta caretta* arrive in the Cape Canaveral Ship Channel right under the nose of the US Rocket Station. They migrate in from unknown areas to take part in the largest breeding aggregation of loggerheads in the hemisphere. **Gaëlle Blanvillain** (research associate), **Dave Owens** (professor) and **Kristen Mazarella** (graduate student) teamed up with scientists from SCDNR to trawl up some of these males to evaluate their reproductive condition and place satellite transmitters on their backs to learn more about their wanderings and mating habits. The turtles were captured, ultrasounded for gonad condition and surgically prepped for a testicular biopsy. All turtles did well and swam away immediately sporting their new transmitters. For more information on the

turtle tracks, see http://www.seaturtle.org/tracking/?tag_id=64548. The turtles are given names for classroom identification. Gonadal histology, hormone data, population genetics and migratory tracks will be analyzed over the next year.

The **Allan Strand lab** is currently conducting three investigations. An ongoing project is characterizing genetic variation in shortnose sturgeon among watersheds in the southeastern US. This project is funded by the US Fish and Wildlife Foundation in collaboration with Dr. Connie Keeler-Foster, a USFWS scientist and supports one Masters of Environmental Studies student, **Miranda McManus**. The second project is an investigation of the demography and landscape-level population dynamics of beach vitex, an invasive plant that has expanded its range on beaches in the Carolinas over the past 15 years. This project currently supports an undergraduate biology major and will support a graduate student in the coming months. A third project continues research into the dispersal dynamics of another beach plant, searocket. Graduate student **David Couillard** is resolving rates of seed dispersal among beaches in the South Atlantic Bight using cpDNA-based genetic markers. Analytical tools are being developed to model dispersal curves within individual beaches using genetic markers and spatial locations of plants.

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