Dewees Island: Research Hot Spot

Dewees Island is a residential community on a barrier island just north of Charleston, and when it is completely developed over 95% of the island will remain in its natural state. Human development is often the enemy of the natural state of our environment, but Dewees seems to be the exception, as there are no cars on the island (other than maintenance) and golf carts are used by residents as a means of transportation. A ferry boat named the Aggie Gray runs every hour on the half-hour between the Isle of Palms and Dewees as a service for residents.

Dewees Island is a hot spot that currently keeps five MES students busy with research, studying a residential island that makes conservation a priority. Ryan Bollinger, Gretchen Coll, Chrissie Lanziere, Mike Sutherland, and Katie Luciano all have research projects associated with Dewees Island, covering a range of topics.

Gretchen and Chrissie are both wildlife interns and sea turtle technicians, and are employed by and make the island their home. They perform population surveys of differing species on the island, control invasive species, and participate in sea turtle nest and hatchling monitoring. Both Chrissie and Gretchen are concentrating their research on sea turtles and their conservation.

Ryan had his internship project approved this semester, and with his newly acquired status as the stewardship intern he is creating a land management plan for the island using GIS. The creation or definition of areas will be used in the future to help manage land use on the island.

Mike is also using GIS software, but his research concentrates on beach profiles and the tracking of sand bars onto the beach. Coastal erosion is clearly an area of great concern with global warming and rising seas. Management decisions made for the Island regarding their beaches will be based on data Mike provides.

Katie is studying the underlying geology of Dewees Island and how it compares with nearby islands for her thesis research. Age dating is being used to compare formation of dune ridges with that of the Isle of Palms. All of her efforts take place so that the geologic history of the area can be better understood, which again helps management in the future. She is also interested in studying the inlets, as well as the geology of the beach.

Throughout this newsletter, we focus on current students in the MES Program and their accomplishments, research, and contributions to the community. Unfortunately, the MES News can broadcast only a tiny proportion of the great work and research being done by current MES students.
From the Director

The MES Program is strong and vibrant at the end of the 2008/2009 academic year. I am honored and happy to highlight just a few of the accomplishments of our students and faculty over the past year.

Enrollments have remained strong this year with 84 students currently registered as degree seeking candidates. Of these, about 11 students should graduate in the spring semester and an additional five will graduate over the summer. We have sent letters of admission to 30 candidates. This year’s cohort of candidates have very strong academic backgrounds and have diverse backgrounds. I am certain that they will continue to maintain the high level of excellence and professionalism exhibited by our current students.

On the faculty front please welcome Annette Watson who is completing her first year in the program. Brian Fisher will be joining us in the fall semester 2009. Both Watson and Fisher come to us through the Department of Political Science. We are honored and happy to welcome them to the MES Program. In addition, David Hansen will teach Entrepreneurship and Brian Fisher will teach Global Climate Change. These courses are a significant addition to the usual course offerings that we have seen in the program. My thanks go out to all faculty who are currently teaching in the MES Program. The Departments of Economics, Management and Entrepreneurship, Biology, Physics, Political Science, and Geology have all made strong contributions the program. Many off campus agencies have continued to offer internship and academic support to the program. Your support both as professors and as advisors make the MES Program a success.

Our students have many significant accomplishments too. Sarah Latshaw has been awarded the National Science Foundation Graduate Research Fellowship. This Fellowship is one of the most prestigious awards that a graduate student can be awarded. She stands among peers from several research universities. Our hats are off to Sarah!

Four students entered the annual Graduate School Poster Session. Guinn Garrett, Tyler Lawson, Jennifer Scales, and Kelly Sloan all presented posters on their current research. Guinn Garrett took a First Place Medal in the Poster Session competition. My congratulation to all of them (more on the next page).

The MES Student Association, MESSA, has elected new officers who serve to promote the program. My personal thanks to last year’s officers as well as the officers of this year for your sacrifice both in time and effort. MESSA has sponsored several programs including the 8K for H2O Run, Adopt-a-Highway, and Earth Day programs. In addition, they have organized several social events to strengthen the ties with the Marine Biology and Public Administration Programs. They have also organized the annual Oyster Roast and the Spring Fling parties.
Spotlight on Student Research and Internships

Current MES students are engaged in exciting research and internship opportunities. The following articles highlight student academic achievements and contributions to the community in Environmental Studies.

In the 2009 Graduate School of the College of Charleston’s annual poster session, Guinn Garrett was honored with first-place in the science category for her poster, “Application of Geochemical End-Member Mixing Analysis to Delineate Water Sources in a Lowland Watershed”. “I was pretty excited,” she says, “It is definitely an honor given the quality of research and posters that were present at the session.”

Guinn’s poster is an extension of her own thesis research, which uses end-member mixing analysis to investigate the different hydrologic processes that impact a pair of lowland watersheds, especially focusing upon how seasonality and storm events affect stream flow. Under the guidance of Vijay Vu lava and Timothy Callahan, Guinn is exploring the use of a technique called end-member mixing analysis to delineate water source contribution to stream flow.

These sources, or end-members, can include example such as precipitation or deep groundwater. Sources will vary with different regional geology and topography and can be unique from study to study. The end-member mixing analysis technique assumes that each source has a unique chemical composition. Once identified, these compositions can be compared to the composition of stream water to determine each sources’ unique contribution to flow.

For her work, Guinn is studying two undisturbed lowland watersheds located with the Francis Marion National Forest, north of Charleston. Data collection has been ongoing since late spring of 2008 and includes both field and lab research.

Every month, or around storm events, Guinn grabs samples from a series of different wells, rain gauges, and stream locations within the two watersheds. She then extensively analyzes the samples in the laboratory for major ion concentrations.

“Currently,” she says, “we are still doing a lot of sample collection but have been able to refine our lab analysis technique so that we can identify a few ions that we think would be excellent in our application of end-member mixing analysis. Things are definitely moving forward!”

When you ask Guinn what makes her research important, she says, “Understanding how watersheds of the Lowcountry function is imperative. Very few studies have explored the complex groundwater and surface water interactions taking place here. We are definitely filling a gap in the research. With the rapid development occurring in the region, we need to start considering what type of best management practices need to be put in the place to account for the impacts of an urbanized watershed upon local hydrology. Excess storm water runoff and other modifications to the hydrologic cycle can significantly impact the health of our Lowcountry fresh and estuarine water bodies. It is necessary to know how these watersheds function in their natural state to understand the important hydrologic processes that might be governing them.”

Guinn has also had the opportunity to present her research at several other venues, including the Geological Society of America’s Annual meeting in Houston, Texas in October 2008 and also at the Turkey Creek Watershed Initiative’s 8th Cooperatives’ Meeting in February 2009. Guinn is looking forward to continuing her research this coming summer.
Keep Charleston Beautiful is a not-for-profit organization dedicated to promoting the cleanliness and beautification of the City of Charleston. With the help of the MES Program’s own Jennifer Scales, the organization works through education, public awareness and community cleanups to achieve its goal.

Jennifer works as the program coordinator/assistant for Keep Charleston Beautiful, but her job is not part of her thesis project. Jennifer’s passion is environmental education and working with animals, including Clara the giant, furry pelican. Clara can currently be one of five different MES students, depending on who volunteers alongside Jennifer that day. Jennifer assists with the planning, coordination and implementation of programs like Clean City Clara, Clean Cities Sweep, and spends the majority of her time focused on getting local schools involved with litter prevention and environmental awareness.

Clean City Clara presentations are held free of charge for elementary school students K-2nd grade, and for this program Jennifer gives an hour long presentation about taking personal responsibility for cleaning up litter, and learning how easy it is to recycle.

A subset of the Clean Cities Sweep program is Colorful Cans, where schools decorate large trashcans that are then placed in city parks to encourage the public to put trash where it belongs. Many of these cans are in fact placed in Marion Square after the Bridge Run each year. Jennifer says Keep Charleston Beautiful is a unique program because, “We do not clean up other people’s messes, but instead we teach them to take responsibility and to understand the deeper role everyone plays in a community to keep it clean.”

Jennifer’s amazing interactive litter-lectures are wonderful at engaging school children and, although she is sometimes upstaged by Clara the Pelican, let it be known that she is the brains, brawn and feathers behind the operation. Jennifer will be defending her thesis this summer, and her research explores male song bird territorial aggression (the full title of her thesis can be found on page seven).

Keep Charleston Beautiful is always looking for people to get involved, and the organization has worked closely with the MES Program for many years. In fact, they look for a new person to take over the education programs each fall.

For more information you can visit their website at www.keepcharlestonbeautiful.org
MESSA News

MESSA 8K for H2O

The Seventh Annual MESSA 8K for H2O was an enormous success! The mission of the 8K Run and 5K Family Fun Walk is to preserve and improve water quality in the Charleston area, and as always, the proceeds from the race are donated to a local non-profit to achieve this mission. This year the funds were donated to the Coastal Conservation League (CCL) - http://coastalconservationleague.org

MESSA made the race as green as possible, and there were recycle bins out for all materials including a bin for used running shoes! The race shirts were organic cotton and the awards were recyclable USA made water-bottles. In addition, the paper race packet bags were collected prior to the race to eliminate the cost and waste of buying new bags. CCL representative Nancy Cave was present, and she talked with participants about CCL’s mission as well as topics like the I-526 expansion through James Island.

The big news is that MESSA was able to make a donation to CCL in the amount of $3,500, a hefty donation considering the economic downturn. Thanks and congratulations once more to Sarah Mooney and her team of organizers for making this event a great success.

New Officer Elections:

This past December new officers were voted into MESSA:

- President - Aaron Petty
- Vice President - Paul Haywood
- Secretary - Lindsey Graham
- Treasurer - Amy Petersen Gutierrez
- Social Chair - Katie Snipes
- Public Liaison - Stefanie Simpson
- Volunteer Coordinator - Kelly Sloan

AAG Student Research Grant

Congratulations to MES second-year student Kate Skaggs, who has been awarded a student research grant from the Qualitative Research Specialty Group of the Association of American Geographers. This national-level award will assist Kate with her research project: “Implications of Emerging Neoliberal Politics on Conservation Governance in the South Carolina Lowcountry”.

Summer Statistical Genetics Awards

Congratulations to MES second-year student Chris Henson and first-year student Tessa Rattenbury, who have been awarded prestigious scholarships to attend Summer Statistical Genetics workshops at the University of Washington. These modules are taught by the leaders in this field. Participants in the modules include graduate students from around the world, post-docs and faculty.
Volunteering and Public Outreach:

**Adopt a Highway** – In March, eight MESSA volunteers came out to clean our designated stretch of highway along Route 61 in West Ashley. Four gigantic bags of garbage/recyclables were collected in a couple hours work. The location of the pickup area is one that MESSA has had for some time now, and we can be certain there is always plenty of garbage to pick up. We are fortunate to be just down the road from the gauntlet of fast food restaurants, and we are never in shortage of hamburger wrappers and drink cups. Our designated area is important because it is flanked by marsh which leads to the Ashley River. Cleaning up the garbage prevents its integration into the marsh habitats as well as further pollution of the harbor. MESSA does three pickup events a year, and the next two will be in the fall.

MESSA was part of an *Earth Day Celebration* at Park Circle on April 18th. Four MESSA volunteers staffed a booth and helped kids of all ages plant sunflowers in take home paper cups. The event was a great success and turn out was extremely high.

Social Events:

MESSA hosted a holiday welcome back party at Southend Brewery off of East Bay Street downtown. Lots of new and old students and faculty came together for an evening of food and drinks. This spring MESSA competed against MPASA (*Masters of Public Administration Student Association*) in the first ever graduate program kickball game for bragging rights. Let’s just say that it was not very pretty for the other guys, and we are entitled to a lot of bragging.

For the last event of the spring semester, MESSA hosted the annual Spring Fling on April 24th at Fort Johnson. At this event students and faculty got together to enjoy some food provided by Whole Foods Market, play some corn toss, and get in a little relaxation before finals.

**MESSA Events for Fall ’09:**

MESSA will be meeting with all incoming MES students this August to welcome them into the program. Each MESSA officer will be mentoring new students to help transition them into the program.

Graduate Student Association budget allocations are expected to be a somewhat smaller in fall 2009 due to economic troubles, however there are still new and important events planned. MESSA is organizing a student and faculty get-together to introduce students with potential academic and thesis advisors. This should be a great opportunity to network and make great partnerships.

At the beginning of the fall semester, a welcome back party is in the works for new and returning students. A mid-semester camping trip to the upstate is also planned, as MESSA members will take to the wilderness and leave the car-camping behind. Charleston Riverdogs’ baseball games are also a great way to socialize and get to know fellow members, as well as catch a fly ball or two, so MESSA will organize a take-me-out-to-the-ballgame event.
Congratulations to the Spring / Summer 2009 Graduates!

Craig Bachman (Internship) "Enhancing the Educational Components of a Nature-Based Tourism Business"
Sarah Cech (Thesis) "Invasive Plants in Private Neighborhoods: Does Neighborhood Governance Make a Difference?"
Maegan Cooper (Internship) "Development of a Volunteer Recruitment and Retention Program for Loggerhead Sea Turtle Nest Management Activities at Edisto Beach State Park"
Tyler Lawson (Thesis) Habitat Effects on Chytridiomycosis Infection in the Critically Endangered Agalychnis moreletii
Emily Long (Internship) "Methods and Technologies for Reducing Particulate Matter Pollution from Port Facilities in Charleston, South Carolina"
Anna Martin (Internship) "Stakeholder Analysis of the ACE Basin Coastal Training Program: Evaluating Program Impacts within Coastal Decisionmakers’ Communities in Southern Coastal Counties of South Carolina"
Jennifer McCarthy Tyrrell (Internship) "Program Coordinator for the Citizen Science for Swallow-tailed Kites Program"
Christopher McCoslin (Internship) "The Execution of the Environmental Management Standard ISO 14001:2004, and the Professional Certification for the Medical University of South Carolina, University Risk Management"
Jeffrey Medves (Thesis) "Use of Enhanced NEHRP Soil Maps for Hazus-MH Analysis in Charleston, South Carolina"
Jennifer Scales (Thesis) "Is Territory Quality Correlated with Aggressive Territorial Defense in Male Song Sparrows, Melospiza melodia?"
Nikki Seibert (Internship) "From Discourses to Doorknobs: The 'Construction' of Green Affordable Housing"
Gregg Swanson (Internship) "Stakeholder Participation and Public Outreach in the Fisheries Management Process"
Bree Tomlinson (Thesis) "Foraging Habitat Used by Wood Storks"
Tim Willard (Internship) "Testing the Efficiency of Residential Energy Conservation Kits in Reducing Monthly Consumption of Water and Energy"
Rachel Worthen (Internship) "Marine Spatial Planning in the Carolinian Ecoregion: An Assessment of Federal and State Management"

New Representation

José Goncalves was elected the new Vice President of the Graduate Student Association (GSA), alongside the new President, Rachel Collins. It was official when the polls closed on March 31, 2009. José is a first-year student who comes to the MES Program from Central Michigan University, and he became the second MES representative in the newly formed GSA. Maegan Carsey Cooper formerly held the Secretary position, but her historic term has ended, and now she is ready for graduation. The MES Program is in fact the largest graduate program at the College of Charleston with 84 enrolled students, and José brings much needed representation to the governing body.

Having José in a high ranking position in the GSA definitely helps with MES interests, future development, and exposure for the program. We look forward to hearing about the work José and the Executive Board will be able to accomplish in their terms. José is interested in the Policy aspects of Environmental Studies, and he is currently honing in on a potential research project.
Congratulations to MES first-year student Sarah Latshaw, who has been awarded a 2009 National Science Foundation Graduate Research Fellowship!

Fellows are awarded an annual stipend of $30,000, a $10,500 cost-of-education allowance for tuition and fees, and a one-time $1,000 travel allowance. Sarah is one of three students in South Carolina to receive the NSF Graduate Research Fellowship this year, along with Clemson University student Lauren Cairco (Human Computer Interaction) and Clemson University student Laura Datko (Bioengineering and Biomedical Engineering).

Sarah is working on her project “Restoration of Maritime Habitats on a Barrier Island Using the Painted Bunting (Passerina Ciris) as a Flagship Species”. Sarah’s primary academic advisor is Paul Nolan.