



**PROCEEDINGS OF
THE FIRST ANNUAL SYMPOSIUM
ON COASTAL ECOLOGY
AND MANAGEMENT**

January 29, 2016
9:00 am – Noon
Southeast Georgia Conference Center

OVERVIEW

The Georgia coast supports diverse and productive ecosystems and provides natural resources of immense economic and cultural value. As the human population and our ecological footprint grow, it is important to understand and appreciate the connectedness of our coastal environment and communities, as well as to employ science-based management strategies to protect and sustain them.

The purpose of this symposium was to explore recent advances and outstanding challenges in ecological research and resource management along the Georgia coast. Invited speakers represented public and private agencies and academic institutions that are active in those areas. A poster session showcased research and service-learning by College of Coastal Georgia (CCGA) students and community partners. A concurrent information fair featured local organizations and opportunities for engagement in coastal conservation. The program and student abstracts are archived in this Proceedings.

Thank you to all who supported and participated in this inaugural symposium. We were encouraged by its success and look forward to continuing the tradition in the future.

Symposium Organizers:

Tate Holbrook, Holly Nance, Traesha Robertson, David Stasek, and Andrea Wallace

Supported by the Office of Academic Affairs

PROGRAM

Southeast Georgia Conference Center – Auditorium

- 9:00 am **Welcome**
Dr. Tracy Pellett (Vice President for Academic Affairs, CCGA)
Dr. Gregory F. Aloia (President, CCGA)
Symposium Organizers
- 9:15 am **Living Shorelines in Georgia: The Spat Awakens**
Jenessa Kay (The Nature Conservancy), Jan Mackinnon and Ben Maher (Georgia Department of Natural Resources – Coastal Resources Division), Tom Bliss (University of Georgia Marine Extension Service), Tate Holbrook (CCGA), and the Georgia Living Shoreline Work Group
- 9:35 am **Georgia’s Cannonball Jellyfish Fishery – Someone Actually Eats Those Things?**
James Page and Patrick Geer (Georgia Department of Natural Resources – Coastal Resources Division), David Stasek and Jeffery Tailer (CCGA)
- 9:55 am **Exploring Historic Landscape Change on Jekyll Island**
Ben Carswell (Jekyll Island Authority)
- 10:15 am **Keynote Address: The Georgia Coastal Ecosystems Long Term Ecological Research: Marsh Response to Long-term Change**
Merryl Alber (University of Georgia/UGA Marine Institute on Sapelo Island)

Southeast Georgia Conference Center – Lobby

- 11:00 am **Poster Presentations**
Information Fair
Light refreshments

POSTER PRESENTATIONS

1. Jenessa Kay (The Nature Conservancy), Tom Bliss (UGA MAREX), Jan Mackinnon (Georgia DNR-CRD), Scott Coleman (Little St. Simmons Island), Christi Lambert (The Nature Conservancy), Stephanie Knox (St. Simons Land Trust), Dorset Hurley (Sapelo Island NERR). **Metrics for Determining Conservation Success of Living Shoreline Pilot Projects in Coastal Georgia**
2. Mary Freund (CCGA; Satilla Riverkeeper) and Tate Holbrook (CCGA). **Water Quality and Plankton Communities of the Blackwater Satilla River**
3. Ben Carswell, Guy Moore, and Lydia Thompson (Jekyll Island Authority). **Monitoring Wilson's Plovers on Jekyll Island**
4. Breanna Ondich¹, Katie Mascovich¹, and Kimberly Andrews^{1,2} (¹Jekyll Island Authority, Georgia Sea Turtle Center, ²University of Georgia). **A History of Sea Turtle Tagging, Monitoring, and Conservation on Jekyll Island, GA, USA**
5. Merryl Alber (UGA/UGAMI) and Jacob Shalack (UGAMI). **The UGA Marine Institute on Sapelo Island**
6. Dontrece Smith¹, Ellen Herbert², Fan Li³, Sarah Widney², Jennifer DeSha¹, Joe Schubauer-Berigan, Steve Pennings³, Christine Angelini⁴, Patricia Medeiros¹, Jeb Byers¹, Merryl Alber¹, and Chris Craft² (¹University of Georgia, ²Indiana University, ³University of Houston, ⁴University of Florida). **Seawater Addition Long Term Experiment (SALTE_x)**
7. Nicole DeSha (CCGA). **Internship: Applied Wildlife Conservation Practices**
8. Nicole DeSha, McKenzie Bender, and Nicole Holt (CCGA). **Redbay and Butterfly Monitoring at Cannon's Point Preserve**
9. McKenzie Bender (CCGA). **The World of Birds Show: Where Education Creates Conservation**
10. Nicole Holt (CCGA). **Service-Learning Internship: Longlining for Sharks**
11. Shawna Armbruster, Becca Bartkovich, Brittni Brown, and Sarah McInnis (CCGA). **Service-Learning: Conservation Biology at Jekyll Island**

POSTER PRESENTATIONS

12. Brittni Brown (CCGA). **Drop Ring Survey of Southeast Georgia Salt Marsh: A Georgia DNR Internship**
13. Margaret Wheat (CCGA). **Service Learning Internship 2015: Department of Natural Resources**
14. Madeline Smith (CCGA). **Wildlife Conservation Internship at White Oak**
15. Jonathan Dance, Amanda Kline, and Madeline Smith (CCGA). **Service-Learning at Cannon's Point Preserve**

STUDENT POSTER ABSTRACTS

Listed alphabetically by the first presenter's last name.

Service-Learning: Conservation Biology at Jekyll Island

Shawna Armbruster, Becca Bartkovich, Brittni Brown, and Sarah McInnis

Mentor: Tate Holbrook

During the fall semester of 2015, Conservation Biology (BIOL 4020) participated in service-learning at Jekyll Island, GA. The goal was to assist the Jekyll Island Authority (JIA) with conservation efforts. Conservation biology is the practice of documenting biodiversity, investigating anthropogenic effects on ecosystems, and developing methods to prevent the extinction of native species. Jekyll Island holds Georgia's largest public golf resort. Unfortunately, the manicured and monoculture turf grass landscapes, typical of golf courses, can diminish local plant biodiversity, create habitat fragmentation, and alter water and soil chemistry. The JIA conservation program has recently banned mowing on some sites located near golf courses. This was done to potentially increase native plant biodiversity. We investigated the impacts of the moratorium on mowing by collecting data from both mowed and un-mowed sites near a golf course. Two un-mowed sites were chosen for data collection. Data was also collected from an adjacent mowed site to use as a control. Quadrants were used to visually observe percentage of native and non-native plant cover. Percent cover and species richness were observed and recorded. The results showed that the un-mowed sites contained both a higher species richness and percent coverage of native plants when compared to the control site. The results supported a recommendation to continue the moratorium on mowing in certain areas to allow for an increase in native plant richness and abundance.

The World of Birds Show: Where Education Creates Conservation

McKenzie Bender

Sponsor: Minnesota Zoo

I worked as a bird show intern at the Minnesota Zoo during summer 2015. There I learned the basic care for many bird of prey and parrot species. I also learned how to handle the birds. While there, I was able to help out with the bird shows that went on every day at the zoo as well as lead backstage tours for the public. The most important thing that I helped with was conservation. For every show, donations were taken that were then used to save endangered bird species. Recently, the Minnesota Zoo World of Birds Show was able to use the donations to team with the World Parrot Trust Fund and fund the creation of a Hyacinth Macaw Reserve in Piaui, Brazil. Because of their action, Hyacinth Parrots were taken off of the endangered species list in 2014.

Drop Ring Survey of Southeast Georgia Salt Marsh: A Georgia DNR Internship

Brittini Brown

Sponsor: Georgia Department of Natural Resources

I participated in an internship with the Water Quality section of the Coastal Resources Division of the Georgia Department of Natural Resources during the summer of 2015. I worked with Ben Maher, Jan Mackinnon, and other DNR employees on a drop ring survey of 30 sample sites in the marshes of Joyner Creek near Brunswick, Georgia. The survey was conducted to gather data on what specific areas of marsh were utilized by different organisms, with a specific concentration in sites with oyster reefs versus sites without oyster reefs. The data from this multi-year survey will be analyzed by the Water Quality and other divisions of DNR. The information will be applied to current and future ecological management practices, enhancing what is currently understood about coastal marine ecology.

Service-Learning at Cannon's Point Preserve

Jonathan Dance, Amanda Kline, and Madeline Smith

Mentor: Tate Holbrook

Living shorelines are an alternative to bulkheads as a means to stabilize banks, while also providing habitat for oysters and fish. One was installed at Cannon's Point Preserve on St. Simons Island. Our Conservation Biology class collected data on the preliminary results of the construction of the living shoreline. We laid out eight transects with three quadrats each, one in the upper, middle, and lower tidal area. We counted and measured the oysters in each quadrat. We also observed the number of *Spartina* stems on the upland. Our early findings suggest that there are more oysters present at the site than there were before construction, and they were spread out over the entirety of the area. The oysters are smaller now but that is because most of them are still young. *Spartina* was sparse but planting was not finished at the time of data collection.

Internship: Applied Wildlife Conservation Practices

Nicole DeSha

Sponsor: Georgia Sea Turtle Center

My internship with the Georgia Sea Turtle Center allowed me to experience conservation management at the species level and the habitat level. Every year, thousands of loggerhead sea turtle (*Caretta caretta*) nests are laid on Georgia's sandy beaches. Nightly encounters of nesting

females along with genetic sampling help to establish a better understanding of the population size, trends, and distribution of this endangered species. As urban sprawl and development encroaches into coastal regions, it becomes increasingly important to manage vulnerable species and maintain unique habitat types. Maritime grasslands are increasing in rarity and are often home to many species whose numbers are declining throughout their range. The use of prescribed fire to maintain low vegetation and prevent hardwoods from creating a canopy has the potential to save an imperiled habitat and the increasingly rare animals that depend upon it.

Redbay and Butterfly Monitoring at Cannon's Point Preserve

Nicole DeSha, McKenzie Bender, and Nicole Holt

Mentor: Tate Holbrook

The redbay tree (*Persea bobonia*) is a broadleaved evergreen tree that was once commonly found in coastal woodlands. In recent years there has been widespread mortality of redbay trees due to a fungus that is harvested by an invasive exotic insect known as the redbay ambrosia beetle (*Xyleborus glabratus*). The beetle was first detected near Savannah, GA in 2002 and has since been detected in many additional counties along the coast of South Carolina, Georgia, and Florida. The large scale loss of redbay trees is especially concerning because it is an ecologically important species that serves as the primary larval food source for the palamedes swallowtail butterfly (*Papilio palamedes*). The BIOL 4020 Conservation Biology class, in collaboration with the Georgia Department of Natural Resources, St. Simons Land Trust, and the University of Florida, has collected valuable data for future monitoring efforts of new and old growth redbay trees at Cannon's Point Preserve, St. Simons Island, GA. We have also established fixed route transects for butterfly monitoring to better understand how the increasing decline of redbay trees might affect the palamedes swallowtail population.

Water Quality and Plankton Communities of the Blackwater Satilla River

Mary Freund

Mentor: Tate Holbrook

Blackwater rivers in south Georgia have naturally low dissolved oxygen (DO) levels during the summer months. How can we recognize when we are observing naturally low DO levels or when we are observing low DO levels caused by various point and non-point influences? Are there planktonic organisms that can indicate excess nutrients, high turbidity, or low DO? To answer this, we must first understand the basic planktonic community composition in blackwater rivers. This study examined differences between two locations on the Satilla River (Woodbine and Burnt Fort) in relation to physiochemical parameters (e.g., DO, pH, salinity, conductivity,

temperature, and secchi disk depth) and plankton communities (taxa richness, evenness, and diversity). Both Woodbine and Burnt Fort showed mean DO levels that fell below the state standard of 4.0 mg/L, even though only Woodbine is classified as a part of a DO-impaired segment. Results indicated that Woodbine had lower DO, higher turbidity, higher temperatures, and a greater salinity influence than Burnt Fort. Woodbine also had a greater number of plankton taxa, but the taxa were not as evenly distributed as at Burnt Fort, which therefore had a greater diversity index. The relative abundance of phytoplankton vs. zooplankton and five other subgroups differed significantly between the two sites; these should be further studied to better understand how plankton abundance and diversity change with the influx of nitrates, phosphates, and organic matter.

Service-Learning Internship: Longlining for Sharks

Nicole Holt

Sponsor: Georgia Department of Natural Resources

During the summer of 2015, I participated in a service learning internship at the Coastal Resources Division of the Department of Natural Resources. My biggest responsibilities were on the longlining boat collecting data on various shark species and Red Drum. Once the sharks were on the boat I measured their length, weight, and maturity as well as determined their sex and species. Several of the shark species received a tag in their dorsal fin in order to track their movement and add to the acquirable data. The data collected will contribute to a database for long-term monitoring of abundance and stock assessments. The remaining portion of the internship not on the longlining boat was spent assisting other DNR projects such as banding oyster catchers, helping with the drop ring survey, and cutting and mounting otolith bones of fish in the drum family.

Wildlife Conservation Internship at White Oak

Madeline Smith

Sponsor: White Oak Conservation

The mission of White Oak Conservation Center is to “save endangered wildlife and habitats through sustainable conservation breeding, education, and responsible land stewardship.” Their summer internship program in wildlife conservation is designed to provide interns with hands-on experience in animal care. Interns at White Oak learn many of the skills and techniques required for a successful captive breeding program; such as diet preparation, animal handling, and animal husbandry. My internship was focused in the birds department where I gained experience in avian egg incubation and behavioral observation. Through extra volunteer hours I was also able

to gain lab experience by assisting with a research project on the blue-billed curassow, an endangered bird species from Colombia.

Service Learning Internship 2015: Department of Natural Resources

Margaret Wheat

Sponsor: Georgia Department of Natural Resources

For my internship, I worked with the Department of Natural Resources mainly on the Research Vessel Anna. Here, I helped with the monthly trawl survey around Jekyll, St. Simons, Cumberland, and Savannah. On the trawl survey, we collected a great deal of data on the different types of shrimp found off the Georgia Coast, particularly Brown and White Shrimp. My main responsibilities were testing the water quality at each station as well as helping to identify the species we caught. When I was not on The Anna, I was also able to help out with other projects around the DNR such as a Gill Net survey and different classroom excursions. Working with the DNR helped me to increase my knowledge of the different marine species in Georgia and why they are important to coastal ecosystems.