School of Natural Resources and Environment

2024 SNRE Research Symposium

J. Wayne Reitz Union Grand Ballroom

October 15, 2024

UF IFAS
UNIVERSITY of FLORIDA

Table of Contents

Welcome 2

Agenda 3

Keynote Address 4

Invited Speakers 5

Affiliate Faculty Presentations 6

Student Oral Presentations 7

Student Poster Presentations 9

Acknowledgements and Sponsors 20

SNRE Partners 21

Welcome to the 2024 SNRE Research Symposium

Welcome to the 2024 Research Symposium sponsored by the School of Natural Resources and Environment (SNRE), the Institute of Food and Agricultural Sciences (IFAS), and the University of Florida (UF). The 2nd Annual SNRE Research Symposium aims to provide graduate and undergraduate students with a framework to showcase their interdisciplinary research in ecology, environment, and sustainability and enhance the interaction among students and faculty with participants from various groups.

The SNRE operates horizontally across UF's elaborate structure of academic disciplines (https://snre.ifas.ufl.edu/) and is built on existing strengths in the University by partnering with academic departments and interdisciplinary research centers and institutes. Approximately 300+ members of the UF faculty in 50+ departments of 12 colleges are formally affiliated with SNRE. In addition, SNRE graduate students conduct their research with faculty affiliated or physically located at 20+ interdisciplinary research centers and institutes. The SNRE offers degree programs, such as undergraduate environmental science BA and BS degrees and graduate-level interdisciplinary ecology MS and PhD degrees. At present, SNRE is home to approximately 120 graduate students and 200 undergraduate students. This unique program is supported by the IFAS-SVP and the CALS-Dean, along with funds from affiliate faculty grants and contracts, and their home departments. SNRE is grateful for the commitment of the IFAS administration and affiliate faculty.

The keynote speaker for this year's research symposium is **Dr. Sonia Altizer**, Martha Odum Distinguished Professor, Odum School of Ecology, University of Georgia. Her presentation is entitled ***"Animal Migrations in a Changing World: What Will the New Normal Look Like?"*** Dr. Altizer's biographical information is posted in this program brochure.

Research conducted by graduate and undergraduate students is the core of the SNRE. It is supported by affiliate faculty in multiple academic departments, research centers, and institutes across the UF campus. For this symposium, we offer select examples of research conducted by four early-career affiliate faculty members on ecology and environmental sciences topics. Student presentations include five oral and 58 poster presentations.

We are grateful for the generous financial support by UF/IFAS CALS, the UF Graduate School, and the 13 academic partners (see the sponsor list in the program brochure). These funds will support student oral and poster presentation awards and other related symposium expenses.

Thanks to the SNRE team, Lexi Bolger, Karen Bray, Patricia Escobar Torres, Alexandra Goetz, Jesse Jones, Christy LaPlante, and Natalia Teryda for their excellent work organizing the symposium. Finally, I want to thank all our students, staff, and faculty for actively participating in the symposium. The assistance of judges in selecting the best oral/poster presentations is greatly appreciated. We thank all our collaborators and partners for supporting our programs.

If you need any further information about the SNRE programs, please contact K. Ramesh Reddy at krr@ufl.edu.

Symposium Agenda

J. Wayne Reitz Union Grand Ballroom
October 15, 2024

8:00 - 9:00 am ..... ***Registration***
9:00 - 9:10 am ..... ***Introduction***
Dr. K. Ramesh Reddy, Director, School of Natural Resources and Environment
9:10 - 9:20 am ..... *Opening Remarks*
Dr. John Davis, Senior Associate Dean for Research, UF/IFAS
9:20 - 9:30 am ..... ***Opening Remarks***
Dr. Elaine Turner, Dean, College of Agricultural and Life Sciences, UF/IFAS
9:30 - 9:35 am ..... ***Introduction of Keynote Speaker***
Dr. Bette Loiselle, SNRE Faculty Advisory Council Chair and Director, Tropical Conservation and Development Program, and Professor, Wildlife Ecology and Conservation
9:35 - 10:30 am ..... ***Keynote Address: 'Animal migrations in a changing world: what will the new normal look like?'***
Dr. Sonia Altzier, Martha Odum Distinguished Professor
Odum School of Ecology, University of Georgia
10:30 - 10:45 am ..... **Break**

SESSION I - Faculty Oral Presentations

Session Chair: **Dr. Corey Callaghan**, Assistant Professor, Wildlife Ecology and Conservation, Ft. Lauderdale Research and Education Center
10:45 - 11:00 am ..... **Dr. Kotryna Klizentyte**, Assistant Professor, Forest, Fisheries and Geomatic Sciences
11:00 - 11:15 am ..... **Dr. Amanda Subalusky,** Assistant Professor, Biology
11:15 - 11:30 am ..... **Dr. Mark Hensel,** Research Assistant Professor, Nature Coast Biological Station
11:30 - 11:45 am ..... **Dr. Chang Zhao,** Assistant Professor, Agronomy
12:00 - 1:00 pm ..... ***Lunch Break***

SESSION II - Student Oral Presentations

1:00 pm - 1:10 pm ..... ***Introductory Remarks***
Dr. Heather McAuslane, Associate Dean, College of Agricultural and Life Sciences, UF/IFAS
Session Chair: **Hannah Gottesman**
1:10 pm - 1:25 pm ..... **Katie Schoenberger** (Major Advisor: Dr. David Kaplan)
1:25 pm - 1:40 pm ..... **Josue St. Fort** (Major Advisor: Dr. Carlene Chase)
1:40pm - 1:55pm ..... **Adam Searles** (Major Advisors: Dr. Charlie Martin & Dr. Laura Reynolds)
1:55 pm - 2:10 pm ..... **Sarah Steele Cabrera** (Major Advisor: Dr. Jaret Daniels)
2:10 pm - 2:25 pm ..... **Savannah Troy** (Major Advisors: Dr. Robert Fletcher & Dr. Benjamin Baiser)
2:25 pm - 2:45 pm ..... **Recognitions**
2:45 pm - 3:00 pm ..... **Break**

SESSION III - Student Poster Presentations

3:00 - 4:00 pm ..... **Poster Session I**
Students present even-numbered posters during this time
4:00 - 5:00 pm ..... **Poster Session II**
Students present odd-numbered posters during this time

Keynote Speaker

Dr. Sonia Altizer

Martha Odum Distinguished Professor
Odum School of Ecology, University of Georgia

Dr. Sonia Altizer is the Martha Odum Distinguished Professor of Ecology in the Odum School of Ecology at the University of Georgia, where she served as Interim Dean from 2021-23, and the Director of Public Service and Outreach for the School. She received her B.S. in biology from Duke University and Ph.D in ecology from the University of Minnesota, followed by postdoctoral work at Princeton and Cornell University. Her research interests center on animal behavior, environmental change, and pathogen transmission.

For the past 30 years, she has studied monarch butterflies and a debilitating disease that infects them, to better understand how animal migration affects the spread of pathogens, and to investigate how migrations are changing in response to environmental change. In 2020, Dr. Altizer was elected as Fellow of the American Association for the Advancement of Science (AAAS).

Animal migrations in a changing world: what will the new normal look like?

Migratory animals undergo seasonal and often spectacular movements and perform crucial ecosystem services. In response to human activities, many migratory animals now travel shorter distances, arrive earlier in the spring, or have formed resident populations. Changes in the abundance and movement behavior of migratory animals affect species interactions and ecosystem processes, including seed dispersal, food webs, nutrient transport, and the spread of infectious diseases. This talk examines the patterns and consequences of shifting animal migrations, with a particular focus on an iconic migratory insect, the monarch butterfly, and a debilitating protozoan parasite as a case study. Field, modeling and experimental work showed that climate warming and human planting of non-native milkweed now support year-round breeding of monarchs in the southern U.S., and that resident populations suffer high infection prevalence and pose risks to remaining migrants. Given that monarchs and many other migratory species face ongoing declines, it is vital to understand whether resident populations can act as sources or sinks for migratory populations, and to evaluate management strategies that sustain migratory behaviors in the face of ongoing environmental change.

Invited Speakers

Dr. John Davis

Senior Associate Dean for Research, UF/IFAS

Dr. John Davis helps lead the research enterprise at UF/IFAS, supporting faculty in Gainesville and at our research and education centers who address challenges facing agriculture, natural resources and human systems. He also oversees operations at the Plant Science Research and Education Unit and the Ordway-Swisher Biological Station. Dr. Davis specialized in forest ecosystem health, tree-pathogen coevolution, forest genomics, and is tenured in the School of Forest, Fisheries, and Geomatics Sciences. He earned his Ph.D. in plant breeding and genetics-forestry from Michigan State University in 1989 and has been a faculty member in UF/IFAS since 1992. He is an elected Full Member of Sigma Xi (scientific research honorary), Xi Sigma Pi (forestry honorary), and a Fellow of the American Association for the Advancement of Science.

Dr. R. Elaine Turner

Dean, College of Agricultural and Life Sciences, UF/IFAS

Dr. R. Elaine Turner serves as Dean of the College of Agricultural and Life Sciences (CALS) at the University of Florida (UF), providing leadership for academic programs across the 16 departments and schools that comprise UF's Institute of Food and Agricultural Sciences (UF/IFAS). CALS enrolls nearly 7,000 students in 22 undergraduate and 23 graduate majors and over 40 certificate programs. Dr. Turner holds a faculty appointment as a Food Science and Human Nutrition Department Professor. She has been recognized by the UF College of Agricultural and Life Sciences as both Undergraduate Teacher of the Year (2000-2001) and Undergraduate Advisor of the Year (2002-2003). She was named one of two UF Honors Professors of the Year in 2003. In 2004, USDA gave Dr. Turner the National Award for Excellence in College and University Teaching in the Food and Agricultural Sciences.

Dr. Turner has served in leadership roles with the Association of Southern Academic Programs, was elected to serve two terms on the APLU Board on Agriculture Assembly's Policy Board of Directors, and currently serves on the Agriculture Future of America Board of Directors. Dr. Turner earned her undergraduate degree in dietetics from Kansas State University and her M.S. and Ph.D. in nutrition from Purdue University.

Thank you, Dean Turner! We cannot thank you enough for your vision and leadership as the CALS Dean and for your extraordinary support of interdisciplinary undergraduate and graduate programs offered by SNRE. It has been a great honor for us to work with you, and we wish you all the best. Thank you!

Dr. Heather McAuslane

Associate Dean, College of Agricultural and Life Sciences, UF/IFAS

Dr. Heather McAuslane currently serves as Associate Dean for Graduate Programs in the College of Agricultural and Life Sciences. Her responsibilities include graduate student recruitment, retention, and professional development, graduate curriculum, and some aspects of faculty development, such as mentor training. Prior to serving as Associate Dean, she held a faculty position in Entomology & Nematology since 1990 after receiving her PhD from Texas A&M University. Her 80% research 20% teaching position focused on insect chemical ecology and host plant resistance. Her interest in graduate student mentoring and professional development evolved after serving as Graduate Coordinator in her department for 13 years (2009-2021). She has also served as Associate Chair (2016- 2021) and interim Department Chair on two occasions (2015; 2021-2023).

Affiliate Faculty Presentations

Dr. Marc Hensel | Research Assistant Professor, Nature Coast Biological Station

Causes and Consequences of Climate-Induced Species Shifts for Coastal Seagrass Management

Humans have been shaping our environment for thousands of years, scaling up our control of natural resources over time. Now, for ecologically and economically important coasts, management strategies and conservation successes of the past are becoming obsolete because climate and non-climate human impacts are pushing coastal ecosystems towards critical tipping points. Here, I will share examples from my research in coastal seagrasses that demonstrate how global change is moving the ecological goalposts for habitat managers. Because global change creates seagrass meadows with fundamentally different stressors and species than the past, ecologists must use creative and collaborative interdisciplinary approaches to mechanistically linking pattern and process across scales. By on-the-ground species and water monitoring, experimentally determining new ecological roles, and quantitatively evaluating proposed management strategies, we can begin to predict these unprecedented futures and chart a path forward for adaptive, proactive management of the changing ocean.

Dr. Kotryna Klizentyte | Assistant Professor, Forest, Fisheries, and Geomatic Sciences

Natural Resource Economics and Policy: A Player in Every Interdisciplinary Project

Natural resource economics and policy are critical for tackling complex environmental issues across diverse contexts. This presentation highlights how these disciplines help interdisciplinary projects, particularly in areas like water resource management, coastal areas, and outdoor recreation. Using the Upper Floridan Aquifer as a case study, we explore how agricultural data can inform economic analysis and shape effective policy solutions. Groundwater resources face increasing pressure due to population growth, climate change, and nitrate contamination. This study proposes a publicly funded Best Management Practice (BMP) program to mitigate these challenges. Through a discrete choice experiment, the study estimates residents' willingness to pay in Florida and Georgia, finding minimal support for the BMP program. Residents are willing to pay for indirect recreation opportunities and economic benefits for producers, prioritizing human-centered ecosystem services. These findings provide valuable insights for policymakers, emphasizing the importance of public engagement in sustainable aquifer management and economic incentive programs.

Dr. Amanda Subalusky | Assistant Professor, Biology

Pablo's Hippos – A Social-Ecological Mismatch Shapes the Trajectory of a Megaherbivore Introduction

Four hippos previously owned by Pablo Escobar have now grown into a population of over 100 individuals, spread across more than 100 kilometers of the Magdalena River Basin, Colombia. Early support for the hippos led to constrained management options that have enabled the hippo population to grow at a rate › 9% per year. Current population management options will cost at least 1-2 million USD per year, and costs will continue to increase each year that management actions are delayed. Social perceptions of the hippos continue to evolve, as some community members benefit financially from the hippos' presence, while others are exposed to increasing risks. Ecological consequences of this introduction are still unclear, but evidence from hippos' native range show they can have strong ecosystem impacts. Mismatches in the spatiotemporal dynamics of these social and ecological systems have led to substantial controversy over future management actions and contributed to the likely establishment of hippos in South America.

Dr. Chang Zhao | Assistant Professor, Agronomy

A Tiered Knowledge-Informed Machine Learning Modeling Framework for Spatially Explicit Ecosystem Services Assessments

Human health and well-being are connected to the environment, which provides essential goods and intangible benefits known as ecosystem services. Incorporating these services into policy and decision-making often requires assessments that extend beyond individual fields to broader landscapes. However, scaling local-level measurements to larger areas is challenging due to the variability in factors affecting the supply, demand, and flow of ecosystem services. In this talk, I will introduce a novel AI-based framework that integrates knowledge into machine learning pipelines for spatially explicit assessments of ecosystem services. I will outline a tiered modeling approach through case studies with varying levels of knowledge and data availability. These studies leverage emerging geospatial data, prior knowledge, and advanced AI models to produce comprehensive estimates of multiple ecosystem services across diverse landscapes. This framework has significant potential to enhance our understanding of large-scale ecosystem service dynamics, supporting informed decision-making in natural resource management.

Student Oral Presentations

Katie Schoenberger, M.S. Student
Advisor: Dr. David Kaplan, Environmental Engineering Sciences
Hydrodynamics of Submerged Aquatic Vegetation Motion: A Case Study in Florida Springs

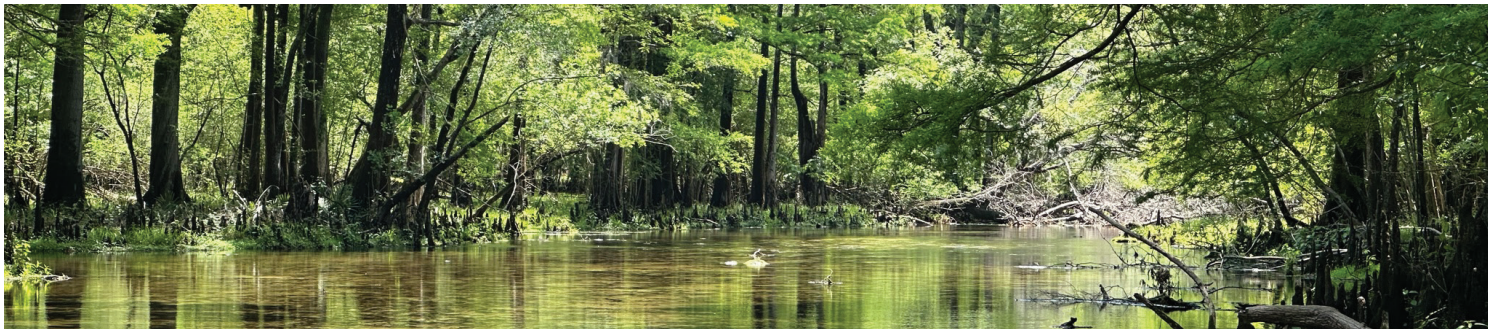
Submerged aquatic vegetation (SAV) plays a critical role in aquatic systems. However, in lotic systems, the relationships between structural properties of SAV canopies and their impacts on flow across different scales are not well understood. In this study, we hypothesize that SAV canopy structural properties significantly impact hydrodynamics above and within SAV canopies and control algal establishment and abundance through canopy motion and blade-to-blade interactions. This was tested by collecting hydrodynamic data and blade measurements in three spring-fed rivers in Florida. These field observations will be used to qualitatively validate a high-fidelity computational fluid dynamics model of SAV-fluid interactions. Preliminary results show that periodic waving motion in vegetation, known as monami, combined with certain plant structures, significantly influences the overall hydrodynamic conditions. This approach advances understanding of SAV effects on hydrodynamics which can be applied to key ecosystem processes, such as sediment transport and algae growth dynamics.

Adam Searles, Ph.D. Student
Advisors: Dr. Charlie Martin and Dr. Laura Reynolds, Soil, Water, and Ecosystem Sciences
Eutrophication-Driven Seagrass Die-Offs Moderate the Diets of Resident and Tropical Herbivores

Submerged aquatic vegetation (SAV) plays a critical role in aquatic systems. However, in lotic systems, the In response to warming temperatures, species worldwide are expanding their range poleward. As these species move into new ecosystems, they may alter local interactions. However, the effects of climate change rarely act in isolation. We investigate the dietary similarity of sheepshead and an expanding tropical congener, sea bream, in the Indian River Lagoon, Florida. We paired diet data with long-term macrophyte monitoring data to investigate the effects of eutrophication driven die-offs on the diets of these species. Sheepshead and sea bream had highly similar diets. Furthermore, tropical sea bream consumed more seagrass at locations with higher seagrass abundance. These results suggest that sea bream may compete with sheepshead for food and increase grazing pressure on seagrasses, which may impede future recoveries of these declining populations. We provide evidence that the indirect effects of climate change and other anthropogenic stressors can interact and influence ecological interactions in afflicted ecosystems.

Josue St. Fort, Ph.D. Student
Advisor: Dr. Carlene Chase, Horticultural Sciences
Improving Strawberry Production Sustainability with Micro-sprinklers

Florida's strawberry production has traditionally relied on high-volume impact sprinklers for bare-root transplant establishment and freeze protection. This study's objective was to assess whether micro-sprinkler systems could conserve water while maintaining crop performance. Four micro-irrigation systems—Mini-Revolver (MR), SuperNet Jet (NS), Mini-Wobbler (MW), and Xcel Wobbler (XW)—were compared with an impact sprinkler system over two seasons (2021–2023) in north-central Florida. Results showed significant water savings, with the MR system reducing water use by 67% during transplant establishment and 63% during freeze protection, without negatively affecting plant survival, growth, yield. On a commercial farm in Hillsborough County in 2022-2024, the MR system saved 58% of water for transplant establishment and 63% for freeze protection, compared to the grower's Rotator sprinkler system. No significant differences were found in crop performance between the systems, indicating that micro-sprinklers are a viable, water-saving alternative for strawberry growers.



Student Oral Presentations

Sarah Steele Cabrera, Ph.D. Student

Advisor: Dr. Jaret Daniels, Natural History

Long-term Population Dynamics of an Endangered Butterfly are Influenced by Hurricane-Mediated Disturbance

Long-term studies are valuable for improving conservation decisions and assessing population trends, but these data are challenging to collect and maintain. We use mark-recapture data collected over 36 years to examine weather drivers of population patterns for an endangered butterfly, Schaus' swallowtail (*Heraclides ponceana*). We show that the population size of Schaus' swallowtail butterfly was highly variable, ranging from under 100 to over 10,000 individuals. Population size is influenced by high wind events and population size in the previous year. Population size decreased immediately following high wind events but was positively influenced by high wind events four years prior, with notable population increases following tropical cyclone events. This study reveals the potentially beneficial role of hurricane-mediated disturbance on Schaus' swallowtail populations and highlights the need for further study of hurricane disturbance on insect populations. This remarkable data set represents one of the longest-term studies on a tropical insect.

Savannah Troy, Ph.D. Student

Advisors: Dr. Robert Fletcher and Dr. Benjamin Baiser, Wildlife Ecology and Conservation

Little Creatures Have Big Impacts: Investigating the Under-Explored Role of Insects, Rodents, and Birds as Herbivores in Southern-African Savanna Communities.

A taxonomic skew in the literature favoring study of megaherbivore contributions to savanna ecosystem function leaves the potentially significant role of insects, birds, and rodents under-explored. Our objective was to isolate the impacts of different herbivore taxa on the seeds and germinants of an abundant acacia, *Senegalia nigrescens*, to disentangle the effects of cryptic herbivores from large herbivores in savanna habitat. In a multi-scale experiment that excluded different taxa, we deployed seeds and germinants and monitored consumption rates daily for 10 days. We conducted three trials in this manner in the wet and dry seasons. Rodents had greater impacts than insects or birds, and excluding large herbivores increased the magnitude of rodent effects. The effect sizes of rodents and insects fluctuated seasonally corresponding to their phenology. Cryptic herbivores can limit *S. nigrescens* populations at seed and germinant stages and that their under-explored influence on savanna vegetation dynamics merit deeper investigation.

Student Poster Presentations

Orlando Acevedo-Charry, Ph.D. Student (Advisors: Dr. Miguel Acevedo and Dr. K. Scott Robinson) Poster #1

Monitoring Population Risk with Community Science Data

Developing quantitative methods to describe population trends is crucial in applied ecology and conservation. These modeling frameworks require long-term monitoring data that is absent for most species and systems. Community science data – citizen or participative – is emerging as a plausible alternative. We describe a framework to estimate risk-based population viability – local persistence probability – from community science data (eBird) using hierarchical models. To benchmark our risk estimation method, we compared persistence probability estimates from eBird with those from robust monitoring of an endangered raptor in Florida (Snail kite – *Rostrhamus sociabilis*). Our results show that the temporal trend of population persistence estimated from eBird closely matched the estimated trend from standardized monitoring. This resemblance persisted even when reducing the data to 50% of the original dataset. This highlights the potential of community science data to assess population dynamics of species or regions lacking systematic long-term data.

Sylvia Adisa, Ph.D. Student (Advisor: Dr. Kai Lorenzen) Poster #2

Contribution of Women to Artisanal Billfish Fisheries in Kilifi, Kenya

The involvement of women in fisheries is often overlooked. Specifically, women's participation in billfish fisheries is not well-documented. This study focuses on characterizing the roles of women in artisanal billfish fisheries in the Western Indian Ocean (WIO) using Kenya's coast as a case study. The findings highlight the significant but limited contributions of women in the billfish value chain, providing important insights for development practitioners and policymakers to promote gender equality and sustainable fisheries.

Jordan Bajema, Ph.D. Student (Advisor: Dr. William Patterson) Poster #3

Trophic Interactions of Range Expanding Common Snook in Coastal Western Florida

Common snook (*Centropomus undecimalis*, snook) are a subtropical fish species found throughout coastal waters of the western Atlantic. In Florida, their range has been expanding northward with climate change. Given that range-expanding species can have similar community-level effects as invasive species, we examined the effect of range-expanding snook on two other gamefishes, red drum (*Sciaenops ocellatus*) and spotted seatrout (*Cynoscion nebulosus*), in the Suwanee River Estuary (SRE). We tested for diet overlap, differences in trophic pathways and positions, and isotopic niche overlap among the three study species, sampling seasons, and sizes. We sampled the stomachs of 594 snook (n=214), red drum (n=236), and spotted seatrout (n=144) with visual and DNA barcoding approaches. A subset of these fish (n=224) were sampled using muscle stable isotope analysis of 13C, 15N, and 34S. Study results suggest snook compete directly with red drum and spotted seatrout for prey resources in the SRE.

Hannah Bokor, B.A. Student Poster #4

Living Shoreline Sentiments: Exploring Public Perception of Coastal Conservation in Cedar Key

Previous research suggests living shorelines are cost-effective and more resilient than traditional, grey infrastructure. Living shoreline restoration typically involves planting native grasses and installing oyster reefs to anchor sand, reduce erosion, and diffuse wave energy from storms. We are examining public perceptions of living shoreline restoration in Cedar Key along two living shorelines: Airport Road and G Street. Researchers collected pre-construction responses from 133 individuals from June 2018-March 2020. Post-construction surveys (n = 88) were completed during September 2020-April 2022, following living shoreline installation. The survey included 9 open-ended questions about use, opinions, and demographics and 28 Likert scale questions, with response values ranging from 1-5. Likert scale questions were placed in five groups and averaged to assign a score: usability, aesthetics, accessibility, protection, and environment. Each category's score increased at both sites, aside from the accessibility category, suggesting public perception of living shoreline restoration is positive.

Lexi Bolger, Ph.D. Student (Advisor: Dr. Jamie Loizzo) Poster #5

Women in Climate: Ethnography of a Student-Produced Podcast Series

In 2023, University of Florida undergraduate and graduate students interviewed six members of The Nature Conservancy's (TNC) Women in Climate Coalition (WiCC) for a course called Podcasting to Increase Science Literacy in the Department of Agricultural Education and Communication. The podcasts were produced for The Streaming Science Project, an online student-driven science communication platform. Our study examined the WiC podcasts through an ecofeminist framework to identify themes about the TNC WiCC interviewees' environmental relationships and roles, climate change outlooks, and calls to action. We used podcast ethnography methods to analyze the student-produced podcasts. The three stages of podcast ethnography include exploring, engaging, and examining. This poster presents the podcasting course design, ecofeminist framework, podcast ethnography methods, and thematic results. The presenters will engage audiences in dialogue about opportunities to leverage podcasting to engage students and audiences in critical climate change conversations and learn from women climate leaders.

Finella Campanino, Ph.D. Student (Advisors: Dr. Laura Reynolds and Dr. Savanna Barry) Poster #6

Linking Seagrass and Hard-Bottom Habitats – Investigations of Primary Productivity and Food Webs

Adjacent habitats can impact each other by altering resources and species assemblages. Seagrass meadows dominate the Nature Coast of Florida but can often be interspersed with hard-bottom habitats. I aim to further understand the flow of resources between hard-bottom habitats and seagrass meadows via stable isotopes with and without adjacent mangrove keys (i.e., a third connected habitat). If fish excretion, or sessile hard-bottom organisms, such as sponges, supply excess bioavailable nutrients, then I hypothesize that seagrass may grow faster closer (0-5m) to hard-bottom habitats than further away (~50m). Because of the larger range of food availability and structural complexity from two (or three) habitats, I hypothesize an increase in biodiversity of benthic invertebrates with an increase in habitats. Understanding how and in what context seagrass and hard-bottom habitats interact can provide insight into ecosystem dynamics that ultimately impact management decisions to allocate resources for protection of different habitats.

Haojie Cao, Ph.D. Student (Advisor: Dr. Jiangxiao Qiu) Poster #7

Accessibility Inequity of Cultural Ecosystem Services in Urban Greenspaces

Ecosystem services are fundamental for supporting human livelihoods, especially in densely populated urban regions. This study addresses gaps in understanding diverse cultural ecosystem services (CES) and their accessibility across different social groups in urban greenspaces (UGS). Using TripAdvisor reviews, we quantified 10 CES types in 426 UGS across Broward County, Florida. An enhanced two-step floating catchment area model analyzed CES accessibility for different social groups. We integrated the Gini index and spatial autocorrelation analyses to evaluate inequity and spatial disparity in UGS accessibility. Findings reveal significant disparities in CES provision and accessibility across demographic groups, identifying areas where high UGS accessibility coexists with limited CES provision. This research emphasizes CES quality, accessibility, and equity from UGS, offering insights for policymakers to address social inequalities. By integrating various analytical methods, our study provides a foundation for equitable UGS planning and management.

Amanda Castaing, M.S. Student (Advisors: Dr. Stefan Gerber and Dr. Chris Wilson) Poster #8

Modeling Carbon Dynamics in the Rhizosphere

Soil carbon models, which are key for climate prediction, have become more mechanistic as they started to incorporate explicit dynamics of microbial decomposers. Yet, the interaction of decomposers with plant roots remains unresolved in these models. Here, we modify a microbial decomposition model to specifically incorporate root exudates. We truncated the model using a unique data set in which root exudation was mimicked in a laboratory setting. The results show how microbes compete against the movement and dilution of root exudates into the bulk soil environment. The modeled gradient from root surface into the bulk soil is particularly sensitive to diffusion coefficients, carbon use efficiency, and uptake efficiency. The physical process of carbon diffusion away from the root surface is fairly constrained; hence, the spatial analysis of root-derived carbon helps improve key components of microbial decomposition models while also accounting for a critical process of plant-soil interactions.

Allison Cauvin, Ph.D. Student (Advisors: Dr. Julie Meyer and Dr. Andrew Altieri) Poster #9

Evaluating the Role of Microbial Genes in Coral Disease Resistance

Stony coral tissue loss disease (SCTLD) has killed millions of coral colonies in Florida. Susceptibility is species-dependent and not every colony that is exposed develops signs of disease. To determine the role of coral-associated microbes in resistance to SCTLD, we performed comparative metagenomics on the microbiomes of 45 *Orbicella faveolata* colonies at three sites with varying disease histories in southeast Florida. Eighty-two percent of these corals were susceptible to SCTLD, while eighteen percent were resistant. A metagenomic library was co-assembled from all coral samples after in silico removal of eukaryotic reads, and the functional potential of microbial genes was predicted. The functional microbiome was not found to be different between coral colonies of varying resistance to SCTLD nor those with different lesion histories. Coral colony location significantly structured the functional coral microbiome, indicating that environmental factors may play a bigger role in shaping these microbial communities than disease history.

Taryn Chaya, Ph.D. Student (Advisor: Dr. Todd Osborne) Poster #10

Leveraging Mosquito Impoundments to Treat Eutrophic Waters in the Indian River Lagoon, FL

A pilot study is being conducted to determine the nutrient removing potential of mosquito impoundments managed with rotational impoundment management in the Indian River Lagoon. The initial phase of this project characterizes seasonal biogeochemical conditions in an impoundment. Soil cores and surface water samples were collected inside of the impoundment in the summer and winter seasons to compare internal nutrient dynamics. On a finer scale, surface water samples were collected frequently over the course of a year and were tested for total nitrogen, ammonium, NOx, and total phosphorus. Furthermore, YSI EXO2 multiparameter water quality sondes were placed in-situ at the inflow and two outflow sites to measure dissolved oxygen, pH, turbidity, temperature, salinity, chlorophyll-a, and fluorescent dissolved organic matter at 15-minute intervals. This preliminary data will guide subsequent project phases to understand the overall ability for impoundments to mitigate the nutrient loading situation occurring in the Indian River Lagoon.

Po-An Chen, Ph.D. Student (Advisor: Dr. Kathryn Sieving) Poster #11

Seets and dees: Exploring the Food-Related Vocalizations of the Tufted Titmouse (Baeolophus bicolor) and the Carolina Chickadee (Poecile carolinensis)

In North America, Paridae species, including the tufted titmouse (*Baeolophus bicolor*) and Carolina chickadee (*Poecile carolinensis*), play key roles in mixed-species groups and exhibit complex vocalizations during foraging. This study examines how their vocalizations convey information about food quality and competitor presence. Preliminary data from nine feeders at the University of Florida show both species frequently use “contact seet” and “chick-a-dee” calls during foraging. High-quality food increased soft seet calls in both species, suggesting responses to environmental certainty or uncertainty. Interestingly, titmice reduced ‘D-notes’ in their chick-a-dee calls with high-quality food, while chickadees increased them, indicating different foraging strategies. This research aims to enhance understanding of vocal communication in social bird groups. Ongoing experiments in natural forests and at UF will expand on these findings for a comprehensive analysis.

Minjin Choi, Ph.D. Student (Advisor: Dr. Stephen Enloe) Poster #12

The Influence of Triclopyr on Old World Climbing Fern (Lygodium Microphyllum) and Native Fern Spore Germination and Gametophyte Growth

Lygodium microphyllum is an invasive fern invading central and south Florida wetlands. Herbicides are primary tools for management, and triclopyr recently promises selective sporophyte control with good native fern recovery. However, its impact on native fern spore germination and gametophyte growth is unclear. Growth chamber studies were conducted to examine the effects of triclopyr on spore germination and gametophyte establishment of the native fern *Thelypteris interrupta* and the invasive fern *L. microphyllum*. Spores were treated with triclopyr 2.6 g a.e. L-1 and 5.2 g a.e. L-1 and then washed or unwashed and sown on agar plates. Spore germination percentage and subsequent prothallus size were evaluated after 35 and 42 days, respectively. Only triclopyr 1.5% without washing inhibited *T. interrupta* spore germination significantly. No treatment impacted either fern gametophytes’ prothallus growth considerably. This research may lead to novel restoration strategies to replace OWCF-dominated wetlands with desirable native ferns with further studies.

Andrew Cinquini, M.S. Student (Advisor: Dr. William Hammond) Poster #13

Thriving in Turbulent Times: Growth Responses of Loblolly Pine From a Range-Wide Provenance Trial

Loblolly pine, *Pinus taeda* L., is among the Southeastern US’s most ecologically and economically important tree species. Although past work has investigated *P. taeda* climate-growth relationships, little research has explored how genetic adaptation to specific climates impacts these relationships. Thus, our objective was to identify how climate signals influenced the growth of diverse *P. taeda* provenances from across its natural range. We established a network of environmental sensors to monitor soil moisture, soil temperature, and air temperature, and point dendrometers to monitor tree radial increment every 15 minutes in a common garden of *P. taeda* in Gainesville, FL. We installed 40 environmental sensors distributed evenly throughout the garden. Point dendrometers were installed on 72 trees across 17 provenances. Preliminary results indicate homogeneity in soil moisture across the common garden. Despite this environmental consistency, prominent differences in growth, tree water deficit, and daily water use metrics were found between provenances.

Isaac Coleman, M.S. Student (Advisor: Dr. Vanessa Hull) Poster #14

Integrating Remote Sensing to Dynamically Assess Avian Migratory Routes in Relation to Future Wind Lease Areas in the Gulf of Mexico

As of 2024, the Gulf of Mexico is the nation’s newest region of renewable energy development seeing its first wind sites being leased. Preconstruction assessments, which include biodiversity studies, have shown to be beneficial to Energy Management teams as regional participants weigh both socioeconomic and ecological factors to determine ideal site placement. Traditional biological assessments are built to model patterns based on historical data, however, with highly mobile organisms and an active environment within the Gulf, room is left for more dynamic assessments. Bird migration is within itself a vital ecological phenomenon with seasonal trans-gulf flight cycles being crucial to widespread ecosystem health. Conventional tracking methods are often limited in scope, making necessary advanced approaches to understand migration patterns better. Our findings show that there are opportunities for offshore wind planning to better account for biodiversity, with a particular emphasis placed on utilizing remote sensing techniques.

Ankita Datta, Ph.D. Student (Advisor: Dr. Patrick Inglett) Poster #15

Nutrient Dynamics and Phosphorus Accretion in the Everglades Storm Water Treatment Areas: A Long-Term Evaluation

The Everglades Stormwater Treatment Areas (STAs) are designed to reduce nutrient pollution from agricultural runoff. This study examines 23 years of nutrient accumulation—carbon (C), nitrogen (N), phosphorus (P), calcium (Ca), magnesium (Mg), aluminum (Al), and iron (Fe)—in four STAs (STA-1E, STA-2, STA-3/4, and STA-5/6). We analyzed nutrient buildup in the floc layer and recently accreted soil (RAS) across different flow sections (inflow, midflow, and outflow). Phosphorus retention varied, with STA-1E CFW at 0.85 ± 0.65 g/m^2/year and STA-2 FW4 at 0.45 ± 0.22 g/m^2/year. Significant interactions were found between phosphorus and elements like Ca, Mg, Al, and Fe, with STA-3/4 excelling in nutrient retention. This study underscores the roles of vegetation, microbial communities, and elemental interactions in nutrient retention, highlighting the effectiveness of STAs in improving water quality.

Silvia De Melo Futada, Ph.D. Student (Advisors: Dr. Karen Kainer and Dr. Joel Correia) Poster #17

"We Will Fight For Them": The Defense of the Uncontacted Piriti People by the Waimiri Atroari People in Brazilian Amazonia

The Pirititi, an uncontacted Indigenous group inhabiting a critically threatened area on Brazilian Amazonia, are facing severe risks due to encroachment on their territory. Although they have consistently rejected contact, the neighboring Waimiri Atroari people have become their primary protectors, driven by their own history of resistance and survival against forced contact, especially during the 1970s with the BR 174 highway's construction. This study utilizes focus groups, interviews, and document analysis to provide a comprehensive overview of the Pirititi, explore their evolving relationship with the Waimiri Atroari, and assess the current status of land protection efforts. It further highlights the essential role of Indigenous organizations in defending isolated groups and presents an overview of the national legal framework designed to protect uncontacted Indigenous peoples in Brazil. This work results from of collaboration between the Waimiri Atroari Community Association and Waimiri Atroari Program advisors.

Joseph Dyson, B.S. Student Poster #18

Examining the Origin, Identity, and Potential Hybridization of Non-Native Peacock Bass (Cichla sp.) Populations to Assess Potential Threats on Native Freshwater Ecosystems

The understanding of the freshwater gamefish genus *Cichla* has changed dramatically since *Cichla ocellaris* was intentionally introduced to Florida in the 1980s. The number of described species in the genus —though still a subject of debate— has grown substantially, and *Cichla* species are known to readily hybridize. The initial phase of the proposed research uses mtDNA barcoding approach to assign samples to known species. These markers may indicate that Florida's *C. ocellaris i*ntroductions may have unintentionally contained other *Cichla* species. Future work aims to detect evidence of hybridization while also clarifying the taxonomic makeup of established non-native *Cichla* populaitons in Florida, Hawaii, Puerto Rico, Guam, Panama, and Singapore to help guide future management decisions and provide a better understanding of the potential theats to the native ecosystems where these fishes have been introduced.

Madeline Estes, M.S. Student (Advisor: Dr. Carrie Reinhardt Adams) Poster #19

Exploring the Potential for Seed-Based Production of Spartina Alterniflora to Meet the Needs of Native Plant Growers and Restoration Practitioners in Florida

In Florida, restoration with *Spartina alterniflora* has become increasingly popular, however, the growing demand has resulted in shortages of appropriate plant material. Seed-based strategies offer opportunities to improve availability and genetic diversity, but gaps in scientific and practical knowledge have caused underutilization. We collected seeds from natural and restored *Spartina* populations across Florida's coasts. Filled seeds were stratified and germinated, and seedlings were grown in the greenhouse to mature size. Initial results show differences in fill and germination across accessions, with greatest results in those from restored populations. Seedlings required 4 months from germination to reach maturity, exhibiting significant differences in traits and biomass. We also distributed surveys to restoration practitioners and native plant vendors who work with *Spartina* to better understand current practices, needs, and challenges. The combination of these studies will inform the potential benefits of seed-based restoration and work to create practical propagation guidelines for practitioners.

Isadora Fluck-Essig, Ph.D. Student (Advisor: Dr. Benjamin Baiser) Poster #20

Continental-Scale Drivers of Population-Level Intraspecific Trait Variation (ITV) in Salamanders, Birds, and Small Mammals

Functional traits are widely used to understand how species interact with their environment. In contrast to the traditional approach of using trait means for a species, intraspecific trait variability (ITV) provides a deeper understanding of individual responses to abiotic and biotic environments. To elucidate the mechanisms driving biodiversity distribution patterns, we investigated the drivers of population-level ITV of body size in salamander, bird, and small mammal species across North America. For all groups, we measured population-level ITV by calculating the coefficient of variation for individuals co-occurring at the same site, and examined the effects of environmental variables such as temperature, precipitation, moisture, and their interactions with species richness using phylogenetic generalized linear mixed models (PGLMM). Our results suggest that the effects of different predictors depend on the unique life history and strategies of each group, paving the way for further advances in the study of biodiversity patterns.

Oscar Godinez Gomez, Ph.D. Student (Advisor: Dr. Robert Fletcher) Poster #21

The Way Home: Assessing Habitat Connectivity in the Central American Tapir

Habitat fragmentation and loss are two of the greatest threats to large mammals. This situation is clearly exemplified by the Central American Tapir (*Tapirus bairdii*), the largest terrestrial mammal in the neotropical region. We modeled habitat connectivity for tapirs in southeastern Mexico. Habitat identification was carried out by integrating the opinions of a group of experts, variables associated with its habitat and potential threats, and a distribution model of the species. We applied a spatial absorbing Markov chain (SAMC) framework to assess the habitat connectivity and connectivity metrics based on graph theory. Optimal habitat represents only 15.6% of the study area. We identified areas with high connectivity restrictions between tapir habitat fragments between the habitat patches of the Sierra Madre de Chiapas and the Selva Zoque region. By combining different methodological approaches, it was possible to identify high quality habitat patches and perform a complete analysis of their connectivity.

Hannah Gottesman, Ph.D. Student (Advisors: Dr. Susan Lowerre-Barbieri and Dr. William Patterson) Poster #22

Impacts of Variable Spawner-Recruit System Traits on Reproductive Success for an Estuarine-Dependent Reef Fish, West Florida Gag (Mycteroperca Microlepis)

Marine fishes have evolved complex spawner-recruit systems to facilitate reproductive success and long-term resilience. Gulf of Mexico gag (*Mycteroperca microlepis*) make an excellent case study to investigate how spawning site selection and larval dispersal affect reproductive success, so we evaluated gag life cycle space use between their offshore spawning sites and estuarine nursery habitat. We developed accurate (82-97% classification accuracy) tags from juvenile otolith (i.e., ear stone) stable isotope values and found approximately half the adults sampled at northern spawning sites had estimated southern nursery origin (<28°N). We then updated a biophysical model to simulate 2011-2017 larval dispersal and compared it against juvenile abundance indices. Our simulations suggest northern spawning sites are major sources of offspring on average, but southern spawning sites are critical to stock resilience if reproductive success is decreased in northern sites, as seen in 2011. Complex connectivity between multiple nurseries and spawning sites promotes long-term resilience.

TJ Hafliger, Ph.D. Student (Advisor: Dr. Samantha Wisely) Poster #23

Ecological Factors Influencing the Variation of Pathogens in Florida Wild Turkeys (Meleagris gallopavo)

Wild turkeys are susceptible to lymphoproliferative disease virus and reticuloendotheliosis virus which can cause clinical illnesses that are potentially fatal. Little is known about the prevalence and drivers of these pathogens in Florida. Florida Fish and Wildlife Conservation Commission preliminary data found disparate prevalences of lymphoproliferative disease virus between DeLuca Preserve (4.3% (1/23)) and Okaloacoochee Slough State Forest (46.2% (6/13)). Lymphoproliferative disease virus detection was low compared to New York (72%-83%). Reticuloendotheliosis virus was not detected (0% (0/36)), in Florida, yet this virus is commonly detected at low prevalences elsewhere (4% Ontario, Canada and 16% Maine). The drivers of variability of pathogen prevalence in Florida are poorly understood. We propose sampling across Florida in varying habitats and land use management to gain insight on spatial and ecological factors driving prevalence variations of pathogens in Florida wild turkeys.

Tyler Hall, B.S. Student Poster #24

SNRE Graduate and Undergraduate Experience: Bridging the Divide

This is an ongoing project. SNRE undergraduates engaging in research often have difficulty knowing if research at UF is for them and finding the lab that aligns with their passions. Observational data indicates that this disconnect might happen as a consequence of limited exposure to positive role models engaged in interdisciplinary research, limited awareness of graduate students and faculty work, and limited confidence in performing well in a lab setting. This project aims to connect SNRE graduate students engaged in research with SNRE undergraduate students considering research. The project will facilitate discourse and conversation between undergraduates and graduates, creating a welcoming environment and platform for future shadowing and mentorship initiatives. The first phase of this project involves a networking lunch with facilitated discussions..

Catherine Hannan, M.S. Student (Advisor: Dr. Nia Morales) Poster #25

Feed Your Bees: A Landscaping Guide for Central Florida Backyard Beekeepers

Honey bees collect nectar from flowers, requiring two million flower visits to produce one pound of honey. In 2023, beekeepers in Florida harvested an average of 35 pounds of honey from each of the state's 210,000 honey-producing colonies. That's 70 million flower visits per colony in one year alone! High rates of honey bee floral visitation combined with the increased prevalence of backyard beekeeping since 2007 raises concerns about the potential for competition between honey bees and native pollinators, which could contribute to declines in native biodiversity. Conservation-minded beekeepers can balance honey bee provisioning and conserve native pollinators by landscaping for bees at their hives. In this guide, we will explore how landscape biodiversity benefits honey bees and native pollinators and offer landscaping solutions to increase on-site honey bee forage while supporting native plant diversity and pollinator populations, with a focus on central Florida.

John Harling, Ph.D. Student (Advisor: Dr. Esteban Rios) Poster #26

Genomic Prediction for Phenology in Cowpea Across Multiple Environments

Cowpea (Vigna unguiculata L. Walp) is an important legume for food security and climate change adaptation. Developing a days to flowering prediction model for cowpea enables predictions of genotype performance while lacking phenotypic data. We are developing a genomic prediction model for days to flowering in cowpea. Data was compiled for 208 accessions from eight environments. The cowpea accessions were derived from the University of California, Riverside (UCR) Minicore collection. We cross validated our model by predicting days to flowering under different scenarios of observed and unobserved genotypes and environments. Various training set sizes and compositions were also tested to evaluate predictive ability for flowering time in the remaining data. Improved predictions were observed with marker-incorporated models under some scenarios and a training size of 12.5% of all data had a predictive ability over 0.5 when all genotypes and environments were represented.

Jaiere Harlow, Ph.D. Student (Advisor: Dr. Raymond Carthy) Poster #27

A Coupled Human and Natural Systems (CHANS) Framework for Analysis of Current Manatee Research and Conservation Efforts in Florida

The Florida manatee (*Trichechus manatus latirostris*) has faced major environmental threats, impacting their population status. Necropsies have revealed signs of starvation, relating to lack of food resources due to algal blooms and cold stress. Management decisions have had major impacts on research efforts. This project will use a Coupled Human and Natural Systems (CHANS) approach to assess prominent factors affecting the population, by incorporating environmental and socioeconomic concerns into a Social-Ecological Systems framework. Surveys and interviews will be conducted to evaluate the effectiveness of research and citizen science initiatives, as well as the impacts these efforts have on public awareness and engagement. Indian River Lagoon (IRL) issues will serve as an initial case study, then subsequently applied state-wide to examine human-manatee interactions. Expected project findings aim to refine habitat modeling efforts and be placed into a decision-analysis framework to further conservation practices for continued protection of the population throughout Florida.

Drew Hiatt, Ph.D. Student (Advisor: Dr. S. Luke Flory) Poster #28

The Role of Local Adaptation and Post-Introduction Hybridization in Frost Avoidance

Better information is needed on mechanisms and traits that promote range expansion for invasive plants. Brazilian peppertree (*Schinus terebinthifolia*) is a highly problematic invasive plant species with a current range that is restricted by sensitivity to freezing temperatures. Separate haplotypes were introduced to Florida, haplotype B from northern Brazil and haplotype A from southern Brazil. The two haplotypes have hybridized extensively throughout the invaded range, and hybridization may be a mechanism that promotes range expansion. We collected individuals from 25 locations around the state of Florida (six haplotype A six haplotype B, and 13 hybrids). We applied experimental cold treatments to test for leaf level damage to variation in freezing temperatures (-2.5: -10°C). Haplotypes A and B constantly had higher LT50 and LT95 temperatures than the hybrid individuals, indicating that hybrid individuals can tolerate colder temperatures before experiencing leaf mortality.

Grace Hooker, B.S. Student Poster #29

Monitoring the Population and Health of Olive Ridley Sea Turtles in Ostional, Costa Rica

Olive Ridley sea turtles are keystone species in the waters off Costa Rica. In this field research course, we studied the number of sea turtles coming to lay during arribadas along with accessing their general health using hands-off observation techniques to understand when the highest concentration of nesting occurs. Data indicates that more sea turtles come to nest during the wet season, and changes in moon phase/weather patterns may indicate when arribadas occur. These results have important implications for future generations of nesting Olive Ridleys and to ensuring that this keystone species remains protected for years to come.

Liz Hurtado, Ph.D. Student (Advisors: Dr. Scott Robinson and Dr. Hannah Vander Zanden) Poster #30

Determining the Origin of Birds Killed by Window Collision Using Hydrogen Stable Isotopes

Collisions with buildings represent a major anthropogenic threat to avian populations. We assessed the geographic range of birds that died from a window collision on UF campus. The objectives of our study were 1) characterize the geographic footprint of window-killed birds at this site 2) determine if migratory species were represented from across the geographic range or constrained to a limited geographic origin. We collected feathers from museum specimens of 38 Cedar Waxwings, 20 Red-eyed Vireos, and 9 American Robins. We compared the isotopic values of the feathers with a spatially explicit model of hydrogen isotopes in precipitation across North America to estimate the likely geographic origin of the feathers. The results showed that for Cedar Waxwings, 50% of the birds showed a local origin. Vireos only 10% had a local origin, while the rest of the individuals came from states north of Florida. Robins had both southern and northern origin.

Yiyang Kang, Ph.D. Student (Advisor: Dr. David Kaplan) Poster #31

Mangrove Freeze Resistance and Resilience Across a Tropical-Temperate Transitional Zone

After an extreme winter storm in December 2022, we conducted a post-freeze field assessment (spring 2023) and ongoing recovery assessment (fall 2023) across 12 sites along Florida's Gulf of Mexico coast. We measured mangrove damage and recovery, finding Rhizophora mangle showed significant leaf damage threshold at -4.1 °C, while Avicennia germinans exhibited linear damage increase at lower temperatures (-6.4 °C), with varied responses near its northern range limit. Tall R. mangle showed temperature-dependent damage, contrasting with shorter individuals and A. germinans, suggesting regeneration mechanisms vary. Ongoing fall data may further clarify mortality and recovery rates, enhancing understanding of mangrove responses to freezes and predicting poleward expansion under climate change.

Medelin Kant, Ph.D. Student (Advisor: Dr. William Hammond) Poster #32

Can Acclimation to a Warming Climate Reduce Pine Tree Hotter-Drought Mortality Risk in the Anthropocene?

Anthropogenic emissions have increased hotter-drought intensity and frequency, driving pulses of forest mortality globally. In the US, hotter drought is increasing most in extent across the Southeast, the range of globally-important loblolly pine (*Pinus taeda*). We conducted heat-atop-drought experiments on 68 loblolly saplings by simulating a 7-day extreme heatwave to identify physiological mechanisms of mortality. Pre-stress, 34 trees grew in warmer conditions emulating a "future climate"; the remainder grew in "current climate" conditions. "Future climate" trees, having developed in warmer conditions, declined faster physiologically, with reduced leaf water content, and multiple decreasing vital signals, indicating rapid water loss and cell damage/dysfunction. All heatwaved well-watered trees survived. Although declining more rapidly, less mortality occurred in "future climate" trees experiencing hotter drought (~55%), compared to "current climate" trees (100%), indicating acclimation potential ameliorated mortality risk. Under projected increasing hotter drought, acclimation potential—and importantly, its limits—are likely key to predict future forest mortality.

Shelby Kucharski, Ph.D. Student (Advisors: Dr. Chris Wilson and Dr. Stefan Gerber) Poster#33

Dynamic Shifts Belowground: How Drought and Nutrient Interactions Reshape Soil Microbial Communities in Subtropical Pastures

Soil microbes play a crucial role in carbon and nitrogen cycling within agroecosystems, but their resilience under increasing early-season drought remains unclear. In this study, we investigated the effects of drought and nutrient management strategies on microbial community composition in subtropical pastureland soils using 16S and ITS amplicon sequencing. Our analysis revealed distinct shifts in bacterial and fungal community composition under drought conditions. However, it was primarily the bacterial community that responded to nutrient enrichment. Specifically, nutrient enrichment had the greatest influence on bacterial composition in the absence of drought. Ongoing research focuses on how these shifts impact microbial activity and nutrient cycling, offering insights into agroecosystem stability under changing environmental conditions.

Dakota Lewis, Ph.D. Student (Advisor: Dr. Andrew Altieri) Poster #34

Quantifying the Effects of Habitat Degradation on Trophic Niche Partitioning of Juvenile Fish

Competition can drive population trends and ultimately community structure. Determining the degree and magnitude of trophic niche partitioning among juvenile fish functional groups across a gradient of nursery habitat quality can 1) elucidate the strength of competition, 2) assess restoration success, and 3) predict effects of further restoration. As freshwater flow is returned to Florida Bay with Everglades restoration, and habitat quality improves, prey availability is expected to increase and thus trophic niche partitioning among juvenile fishes may also increase. To assess niche partitioning of fishes in Florida Bay 40 individuals of each model species, Bluestriped Grunt, Great Barracuda, and Gray Snapper were collected along with basal resources in 2023 and 2024. Carbon, nitrogen, and sulfur stable isotopic analyses were performed on white muscle tissue and basal resources. Trophic level, isotopic niche breadth, and niche overlap were compared among species and between sites with low or high seagrass coverage.

Meng Lin, M.S. Student (Advisor: Dr. H. Dail Laughinghouse) Poster #35

Biodegradation of Microcystin by Isolated Bacterial Strains

Cyanobacteria are organisms that can produce cyanotoxins, which have environmental impacts and lead to economic losses by threatening drinking water sources and affecting recreation. Microcystin is an example of a cyanotoxin produced by cyanobacteria which causes negative health effects and that normal water treatment can not mitigate. However, using bacteria with algaecidal compounds is a promising method for degrading microcystin. In this study, we isolated cyanobacterial associated bacteria and evaluated their potential to decrease microcystin. Specifically, 11 bacteria isolates were grown and were used to evaluate microcystin biodegradation by treating them with 75 ppb of microcystin in methanol. After a 72-hour treating period, microcystin concentration in each bacterium was determined using ELISA. *Chryseobacterium takoiae*, *Achromobacter ruhlandii*, and *Alcaligenes faecalis* showed significant potential to degrade microcystin, with an average microcystin reduction ranging from 47% to 60%. These results highlight the potential effectiveness of using these bacterial strains in degrading microcystin.

Sarah Lockhart, Ph.D. Student (Advisor: Dr. Tom Hoctor) Poster #36

Connectivity and Collaboration in Florida

Connectivity- both social and ecological- is essential for life-sustaining systems. My research aims to better understand and support regional conservation actors in making effective and efficient decisions around connectivity conservation planning and protection in Florida. This work will involve a Public Interest Communications campaign on statewide ecological connectivity called the "5 Spheres of Ecological Connectivity in Florida". Additional research includes a social network analysis and survey of land trusts working across Florida. This analysis is expected to provide insight into how land trusts are woven into the larger conservation network across the state. The land trust survey aims to understand the current and desired use of connectivity conservation science data and online tools in land trusts, as well as their primary objectives and defined working areas.

Samantha Lowe, M.S. Student (Advisors: Dr. Corey Callaghan and Dr. Nia Morales) Poster #37

Citizen Science Data Complements State Agency Data to Fill Gaps in Species Inventories of State Parks

State agencies conduct species inventories of state-managed land to generate data that informs management decisions and conservation goals. Lands that are open to the public are often rich in data from citizen science platforms. Despite the availability of such data, it is not known how these data compare to state-agency inventories. In our study, we investigate how species inventories conducted by the Florida Department of Environmental Protection for 39 state parks in Florida can be complemented by citizen science data generated from iNaturalist and eBird. Across all parks, citizen science data recorded novel species in multiple taxonomic groups, with the largest contribution being insects. However, the proportional contribution of citizen science data varied greatly by park, with an average of 30.37% of species in each park detected only by citizen science. Our work demonstrates the potential of citizen science data to improve the completeness of state agency species inventories.

Morgan Manning, Ph.D. Student (Advisor: Dr. Miguel Acevedo) Poster #38

Interspecies Dynamics in Human-Modified Landscapes: Multi-Species Occupancy Modeling in Indigenous Territories of the Ecuadorian Amazon

The Amazon rainforest, Earth's most biodiverse ecosystem, faces increasing anthropogenic pressures, yet species interactions in human-modified landscapes remain poorly understood, especially in indigenous territories. This study investigates relationships between habitat availability, extractive pressures, and species interactions in the Ecuadorian Amazon. Using multi-species occupancy modeling and camera trap data from four indigenous Cofán communities representing a gradient of habitat availability, we examine how these factors influence dynamics between predator-prey pairs, hunted species, and niche competitors. Models incorporate environmental variables like rainfall, temperature, and distance to water. We hypothesize that predator occupancy is more sensitive to habitat loss than prey, and hunted species' occupancy varies with habitat availability and hunting practices. This research will provide insights into Amazonian wildlife community resilience under anthropogenic change, informing conservation strategies and sustainable wildlife management in indigenous territories.

Miranda Mays, B.S. Student Poster #39

Vegetative Cover on the Cedar Keys Changing Over Time

Rapid shifts in the distribution of coastal vegetated ecosystems are major ecological effects of climate change. For example, in Florida's Gulf Coast, sea levels have risen over 9 inches in the last 100 years. In the Cedar Keys, climate change and extreme events have increased but the underlying effects on habitat cover have not been fully described. I used geographic information systems and satellite imagery to quantify habitat change (area in hectares) on five keys from 2017 to 2024. While large variations in marsh, mangrove, and dune plant areas over time were found, a significant difference was found in the reduction of forest cover. Examining the proportion of these habitats over time revealed consistent mangrove areas and marsh die-offs in select years. I found that island vegetation and their proportions of coverage are a product of their continuously changing environment, reaping the consequences of climate change events.

Jeffrey Mintz, Ph.D. Student (Advisor: Dr. Matthew Leibold) Poster #40

Are Wild Prey Sufficient for the Top Predators in the Lowland Protected Areas of Nepal?

A balanced equilibrium between carnivores and their prey is crucial for maintaining ecosystem sustainability. We applied the predator-prey power law to assess the balance between biomass densities of carnivores and their wild prey within Nepal's lowland protected areas during 2013, 2018, and 2022. The estimated power-law exponent k for predator-prey biomass was 0.71 (95% CI = 0.39-1.05), indicating a bottom-heavy biomass pyramid with about three kg/km^2 of predator biomass for every five kg/km^2 prey biomass. This finding, consistent with the k=3/4 trophic biomass scaling across ecosystems, suggests predator biomass is proportionally sustained by prey biomass, indicating a balance between top predators and their wild prey in Nepal's lowland protected areas. We further demonstrated it is possible to retain the overall power law exponent while jointly measuring intraguild competition between two predators with canonical correlation analysis.

Gulchiroy Mirzajonova, Ph.D. Student (Advisor: Dr. Sarah McKune) Poster #41

Impact of Livestock, ASF Consumption on Child Nutrition in Rwanda

Livestock-derived animal source foods (ASF) provide macro and micronutrients required for child growth and development, yet are under-consumed in many parts of the world where undernutrition persists. Using Demographic and Health Survey (DHS) data from 3,438 children aged 6-59 months, we investigate these interrelationships nationally, then focus on the Eastern Province and Nyagatare district. Findings reveal that livestock ownership is significantly negatively associated with stunting (-0.056,p=0.048) and underweight (-0.047,p=0.003); no significant association was found with wasting. No direct relationship between ASF consumption and child undernutrition was identified at the national level, though children who consumed ASF and lived in households with livestock were 6% (-0.063,p=0.048) less likely to be stunted and 3.6% (-0.036,p=0.047) underweight. The effect of livestock ownership was particularly pronounced in the Nyagatare district, where children in households with livestock were 35% (-0.355,p=0.032) less likely to be stunted than children in the household without livestock.

Emily Perry, Ph.D. Student (Advisor: Dr. William Hammond) Poster #42

Burnt Kernels: Assessing Heatwave Impacts on Silage Corn in Florida

In August 2023, Florida experienced a record-breaking heatwave that damaged crops, resulting in economic losses. With climate change projected to increase the frequency and intensity of heatwaves, understanding how these events affect plant growth and yield is critical. Models predicting planting times assume consistent thermal thresholds across ontogeny, but this assumption has not been empirically tested. Further, impacts of heatwave timing on aboveground biomass production are uncertain. Here we investigate effects of heatwaves on silage corn varieties, each with varying thermal tolerance, across five growth stages. We imaged leaf chlorophyll fluorescence to measure vitality across growth stages, quantifying key thermal tolerance traits. Additionally, we subjected plants at each developmental stage to heatwaves and collected biomass at maturity. By identifying impacts of heatwaves across plant developmental stages and crop yield, our research to improve phenology models could better inform growers on optimal planting times and risks of heat-induced damages.

Liliane Poincon, Ph.D. Student (Advisor: Dr. Mickie Swisher) Poster #43

National Women in Agriculture Association Us Chapters: Evaluating the Process and the Outcomes of Women's Empowerment

Women's groups are a critical source of social capital that can improve the roles that women professionals play in the food and agriculture sector and these groups make it possible for women responsible for farm management gain access to information and resources that will allow them to make better decisions for themselves, their families, their farming, and their entrepreneurial activities. Participating in training and interacting with women farmers' organizations can help women be more confident and competent in their agricultural practices. This study's primary purpose is to assess how women's membership in the National Women in Agriculture Association chapters contributes to their leadership and economic empowerment. Secondly, I want to understand how collaborations between USDA and women farmers' groups, like the NWIAA, might increase access for women in agriculture to knowledge more robustly than unilateral interventions with the USDA or the women's groups.

Varshitha Prasanna, Ph.D. Student (Advisor: Dr. Vivek Sharma) Poster #44

Impact of Irrigation and Nitrogen Application Rate on Potato Crop Coefficients, ETc, and Water Use Efficiencies in North Central Florida

Adjusting crop coefficient values (Kc) to local climatic conditions is crucial for effective irrigation scheduling. This study aims to enhance water use efficiency and yield through optimized water and nitrogen application. A two-year field study conducted at IFAS-NFREC-Suwannee Valley, Live Oak. The study utilized soil moisture sensors for irrigation scheduling. Kc values for various developmental stages were determined by the ratio of crop evapotranspiration (ETc) to reference evapotranspiration, calculated using the Penman-Monteith FAO 56 method. The average Kc values obtained were 0.17, 0.49, 0.65, and 0.43 for vegetative, tuber initiation, tuber development and maturation stages respectively. The average seasonal ETc during the 2022 and 2023 growing seasons were 358 mm and 287 mm, respectively. Significant variability was observed in both waters use efficiency and irrigation water use efficiency in relation to different irrigation and nitrogen rates. The quantified Kc values provide critical insights for farmers to improve water management decisions.

Phillip Rodgers, Ph.D. Student (Advisor: Dr. Raelene Crandall) Poster #45

Practitioner and Public Preferences for Smoke Impacts from Prescribed Fire

Prescribed fires are essential for forest management and reducing wildfire hazards. They also create smoke that adversely affects public health. This dissertation explores the preferences of prescribed fire practitioners and the public regarding smoke impacts from prescribed fires in the Southeastern U.S. The study has three main objectives: 1) Understanding how private landowners' decisions about prescribed fires are shaped by their concerns about smoke, 2) Assessing public and practitioners' preferences for the frequency and intensity of smoke impacts from prescribed fires, and 3) Developing an undergraduate-level online educational game to simulate decision-making and smoke impacts from prescribed fires. Data will be collected using online surveys, interviews with professional practitioners, and games played in undergraduate courses. Results from this study will provide insights to enhance prescribed fire education, planning strategies, policy, and outreach.

Bruno Rozzi, Ph.D. Student (Advisors: Dr. Zachary Brym and Dr. Jehangir Bhadha) Poster #46

Agricultural Carbon Sequestration and Land Restoration on Clay Settlement Areas in the Central Florida Phosphate District

Florida contains over 100,000 acres of reclaimed phosphate mines. The objective of this study is to develop a cropping system on these unused mining sites that optimizes soil carbon sequestration, crop productivity, and biomass offtake, in conjunction with land restoration. Soil tests are taken multiple times per year and analyzed for changes. Land restoration is measured by increasing soil organic carbon (SOC) while reducing phosphorous concentrations after sustainable land management practices. Sorghum-sudangrass has been determined as an ideal crop for high biomass production, especially when paired with a legume like cowpea. Plant biomass yields are measured at harvest in the fall and incorporated back into the soil for the benefits of green manure. Results are showing increases in SOC and variable changes in phosphorous, correlating with spatial soil variability. The results show promise for meeting the objectives and will be used to further develop an ideal cropping system.

Suyash Sawant, Ph.D. Student (Advisor: Dr. Kathryn Sieving) Poster #47

Habitat Structure and Avian Interactions: Exploring the Impact of Urbanization on the Social and Vocal Complexities of Mixed-Species Flocks

Urbanization reshapes natural habitats, creating novel environments that challenge traditional ecological dynamics. Mixed-species bird flocks offer a unique model to explore how species adapt to these urban green spaces. This study investigates the information landscapes of mixed-species flocks across a gradient of habitats, from natural forests to urbanized areas, focusing on the Paridae family. We systematically collected field data on species diversity, flock composition, and vocal communication, quantifying social and vocal complexities. By modeling these complexities against environmental variables such as habitat structure, vegetation density, anthropogenic disturbance, and resource availability, we aim to understand how urbanization influences flock dynamics. Preliminary results suggest that human-altered landscapes significantly impact interspecies interactions, vocal complexity, and flock cohesion. This research contributes to urban ecology, offering insights into how avian communities adapt to the evolving dynamics of urban green spaces, enhancing our understanding of the ecological implications of human development on bird behavior and communication.

Madison Self, M.S. Student (Advisor: Dr. Lynn Gettys) Poster #48

Plant Productivity Surveys Between Pontederia Crassipes and P. Cordata and Crossbreeding of Megamelus Scutellaris

Megamelus scutellaris (Berg) (Hemiptera: Delphacidae) is the most recently released biological control agent used to control water hyacinth, Pontederia (= Eichhornia) crassipes (Mart.) Solms (Pontederiaceae). Two populations of *M. scutellaris* are used in biological control, one is sourced from Argentina and the other from Paraguay. In a 2016 study, thermal differences were found between these two populations (Foley, Minteer, & Tipping 2016). For this project, we propose conducting crossbreeding experiments between the two populations to determine if they are reproductively isolated, and therefore cryptic species. Another aspect of this project will include comparing light response curves between *P. crassipes* and its congener, *Pontederia cordata* L. to determine if there are differences between photosynthetic productivity across regions. Measurements will be compared between Florida, California, South Africa, and Argentina.

Megan Siemann, Ph.D. Student (Advisors: Dr. David Chagaris and Dr. William Patterson) Poster #49

Coupling Ecopath with Ecosim Mass-balance models with Non-Equilibrium Stable Isotope Signature Simulation for Model Validation

Mass-balanced food web models such as Ecopath with Ecosim (EwE) can be a powerful tool for ecosystem based fisheries management. Ecosim models allow managers to consider potential management or environmental scenarios and the resulting impacts to species within the food web beyond the target species. Evaluating the reliability of the models has been a challenge. Diet data is needed to initialize EwE models and would ideally be sampled again to confirm predictions. Correlation of Ecopath estimated trophic levels with measured stable isotope signatures has been used to validate the quality of the diet data and resulting equilibrium state model. This study aims to consider the use of stable isotope signatures to validate non-equilibrium models, as well. EwE model output was coupled with calculation of trophic isotopic transfers and fractionations through the food web to simulate changes in the stable isotope signatures over the modeled scenario.

Lydia Soifer, Ph.D. Student (Advisor: Dr. Brett Scheffers) Poster #50

Microclimate Impacts on bromeliad diversity in Cerro Chucanti, Panama

In response to climate change, epiphytes (i.e., plants living non-parasitically on trees) are expected to experience upslope range shifts and range contractions. However, microclimate variation and intraspecific trait variation (ITV) may reduce vulnerability to climate change by reducing exposure to extreme climate conditions or increasing resilience through local adaptation. To improve our understanding of range dynamics for epiphytic bromeliads in Cerro Chucanti, Panama, we will examine 1) how microhabitat occupation and ITV of epiphytic bromeliads vary across elevations and 2) whether greater microhabitat use and ITV translates to broader elevational range sizes. We expect that species will occupy more shaded microhabitats lower in the canopy toward their lower elevation range edges, exhibit structure ITV with microclimate exposure, and have larger range sizes when microhabitat use and ITV exhibit greater variation. This work will help inform how climate change may impact the distribution of montane epiphytes.

Yukti Taneja, Ph.D. Student (Advisor: Dr. S. Luke Flory) Poster #51

Multiple Biotic Interactions and Plant Invasions

Invasive success is often attributed to the change in biotic interactions across ranges, including release from antagonists (herbivores, pathogens etc.) or acquiring mutualist partners (mycorrhizae, pollinators etc.). However, the outcome of such pairwise interactions can be altered in the presence of multiple species, complicating predictions based solely by combining traditional pairwise models. For instance, belowground mutualists can impact plant defenses against aboveground enemies, but the effects of these interaction modifications on invasion remain understudied. Invasive plants, with their high phenotypic plasticity, may experience shifts in their defenses and reliance on mutualists across native and non-native ranges due to change in composition of biotic partners and abiotic environmental context. In this study, we explore the potential ecological and evolutionary mechanisms that influence plant invasions using current knowledge on ecology of multiple biotic interactions and leading invasion hypotheses. Further, we highlight requisite studies to incorporate the multiple biotic interactions in invasion ecology.

Natalia Teryda, Ph.D. Student (Advisor: Dr. Raymond Carthy) Poster #52

Surface Detection Probability of Leatherback Turtles at the Rio de La Plata

The Río de la Plata Estuary and its maritime front (RdLPEMF) in the Southwestern Atlantic Ocean has been highlighted as a crucial feeding ground for leatherback sea turtles. However, in-water population estimates for leatherback turtles are outdated globally, hindering effective conservation efforts. Furthermore, parameters such as the probability of detecting an individual at the surface (G0) have not been previously published. This parameter is essential for relative density estimates and is region-specific in terms of turtle aggregation behavior and environmental conditions. Consequently, we estimated the G(0) for the leatherback turtle aggregation in the RdLPEMF, using diving behavior data from satellite tag information of 6 turtles in the area. With our analysis, we obtained a G(0) value of 0.3183 for the area. Our estimation is critical for the species' future relative density estimation studies, providing valuable insights for conservation efforts.

Jessica Tittl, Ph.D. Student (Advisor: Dr. Julie Meyer) Poster #53

Genomic Approaches for Unveiling Antimicrobial Potential of Coral Bacteria

Streamlining the identification of natural products from marine microorganisms is of interest to biotechnology companies. Utilizing genomics tools could help to decrease development times and cost by eliminating strains with lower antimicrobial potential earlier in the development pipeline. However, as bacteria often have genes that are not expressed in all conditions, it is necessary to understand the relationship between the bacterial genome and the bacteria's phenotypic response. A genome mining analysis and antimicrobial assays were performed on thirty-three coral-associated Pseudoalteromonas strains to determine if there are indicators in the strain's genome that are predictive of the strength of its antimicrobial phenotypic response. Pigment production was recorded and biosynthetic capacity was determined for each strain. Both pigment and biosynthetic capacity are predictive of the antimicrobial activity of the strain. Pigmented strains and those with higher biosynthetic capacity are more likely to produce antimicrobial chemicals and should be prioritized in product development.

Kaitlyn Tucker, Ph.D. Student (Advisor: Dr. William Patterson) Poster #54

Age, Growth, and Longevity of Blackbelly Rosefish in the U.S. Atlantic

The blackbelly rosefish (*Helicolenus dactylopterus*, Family: Scorpaenidae) is an upper slope (300-600 m) benthic species vulnerable to overfishing due to its longevity and slow growth. The deepwater snapper-grouper fishery in the U.S. Atlantic captures blackbelly rosefish but little is known about its age and growth in that region, and no estimates of natural or fishing mortality exist. The goal of this research is to estimate age, growth, longevity, and mortality of blackbelly rosefish via analysis of otolith thin sections. A sample of 1,366 Atlantic blackbelly rosefish otoliths has been processed for ageing, with 409 fish aged currently. Preliminary maximum longevity is determined to be 113 y. Next steps include 1) epigenetic validation of age estimation, 2) von Bertalanffy growth model estimation, and 3) total, natural, and fishing mortality estimation. Results should inform fisheries managers about the vulnerability of and historical fishing mortality experienced by this species.

Akshay Vinod Anand, Ph.D. Student (Advisors: Dr. Robert Guralnick and Dr. Bette Loiselle) Poster #55

A slippery slope: Precipitation and wind speed tolerance drives elevational migration of resident birds of the Western Ghats of India.

This work quantifies elevational migration of resident passerine birds across three seasons in the Western Ghats of India, and tests body size, dispersal ability, environmental tolerance and diet as drivers of elevational migration distance. We used eBird data between 2013 - 2023 to quantify elevational migration. We calculated seasonal bias-adjusted median elevational quantiles for 164 resident species, and quantified distance as the difference between seasonal median elevations per species. We found 71 species (43%) to be elevational migrants in at least one season. Species predominantly shifted downslope (87%) during the monsoons (June - October), and upslope (83%) in the summer (March - May), with differing patterns in the winter. Phylogenetic Generalized Least Square models suggested that precipitation and wind speed tolerance were positively associated with elevational migration distance in the monsoon and winter season. These findings add support to the reduced foraging opportunity hypothesis and contradicts the physiological tolerance hypothesis.

Rachel Walsh, Ph.D. Student (Advisors: Dr. Akito Kawahara and Dr. Jaret Daniels) Poster #56

New high-Quality Genome for the Imperiled Loammi Skipper Butterfly (Atrytonopsis Loammi: Hesperiidae)

The Loammi skipper (*Atrytonopsis loammi:* Hesperiidae) is an imperiled Florida butterfly that occurs in prairies and pine flatwoods and has faced significant declines over the past century. While most Atrytonopsis are univoltine, including the closely related dusted skipper (*Atrytonopsis hianna*), the Loammi skipper is bivoltine. Despite this ecological distinction and morphological differences, some authors consider *A. loammi* to be a subspecies of the more widespread but allopatric *A. hianna*. Taxonomic uncertainty combined with imperiled status and lack of genetic studies make A. loammi an important subject for genomic research. Here we report a high-quality genome produced using PacBio HiFi sequencing. Future work will annotate genes that may be associated with habitat preference and climate sensitivity. The genomic data produced in this study will fill critical knowledge gaps, aiding future work and informing conservation efforts for this species, while establishing methods that can be applied in conservation research for other taxa.

Derya Yesilkusak, Ph.D. Student (Advisor: Dr. Tom Hoctor) Poster #57

Coastal Storm Protection Model

Florida's coastline, surface water sources and wetlands are facing challenges such as water pollution, flooding, and storm surges due to factors like precipitation, sea level rise, and human activities. Entities involved in responding to these challenges include local and regional governments, environmental organizations, and scientific institutions. The Center for Landscape Conservation Planning at the University of Florida is one such institution that has been working to inform agencies about land protection priorities. They have developed the CLIP 5.0 Surface Water Restoration dataset, which focuses on enhancing and preserving surface water quality and quantity in significant areas across the state. The storm protection model has been in development since CLIP 4.0. CLIP version 4.0 was developed with a hierarchical structure, comprising 20 fundamental natural resource data layers categorized into five Resource Categories.CLIP 5.0 Surface Water Restoration focuses on enhancing and preserving surface water quality and quantity. It specifically targets areas where restoration or conservation efforts can reduce non-point source water pollution and enhance flood resilience.

Ana Yoko Ykeuti Meiga, Ph.D. Student (Advisor: Dr. Denis Valle) Poster #58

Impacts of Converting Pastures to Soybean Plantation on the Movement of Giant Anteaters in the Brazilian Savanna (Cerrado)

Land Use and Land Cover (LULC) change can substantially impact biodiversity and ecosystem service due to fragmentation, biodiversity reduction, and changes in microclimatic conditions. Most studies have focused on the impact of converting native vegetation to agricultural use, and little is known about the impact of anthropogenic-to-anthropogenic changes. Our goal was to analyze the impact of land use conversion from pasture to soybean on giant anteaters' movement patterns and to verify if isolated trees within pastures can act as thermal shelters for the species. We used telemetry data from giant anteaters in the Cerrado, Brazil. We calculated the anteaters' home ranges before and after soy plantation. Soybean intensification seems to impact the anteater home range. This is probably because soybean is less permeable to anteaters, with fewer options to seek thermal shelter compared to pastures. Additional analyses are ongoing to enhance understanding of the role of agricultural intensification for wildlife.

Ran Zhi, Ph.D. Student (Advisor: Dr. Jiangxiao Qiu) Poster #59

How Soil Legacy Phosphorus Vertical Distribution Impacted by Agricultural Management in Subtropical Grasslands

Phosphorus (P) loss from agricultural fields significantly impacts downstream aquatic ecosystems through eutrophication. This study investigates P transport dynamics, controlled by the mineralization and mobilization of organic matter in soil profiles up to 100 cm deep, across two beef cattle production grassland management systems in Florida: intensive and semi-native. We sampled 47 deep soil cores, analyzing Total P, Mehlich-1 P, Mehlich-3 P, Al, Fe, organic matter, pH, nitrogen, and carbon at various depths. Results indicated higher P concentrations in the top and bottom layers, with mid-depths showing lower levels. Intensive management led to lower P concentrations at the surface, increasing with depth. High organic matter, nitrogen, and carbon were concentrated in the top layer in both systems. Most sites had negative Soil Phosphorus Storage Capacity, highlighting risks to water quality from reduced P retention and emphasizing the importance of effective soil management to mitigate P loss and protect water quality.

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