# 39th Annual Meeting of
# The Florida Association of Aquatic Biologists
# September 17–18, 2026
# Christmas, Florida

## Orlando Wetlands Education Center
## 25155 Wheeler Rd, Christmas, FL 32709

# Agenda

Thursday September 17, 2026

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| 10:00 – 10:50 | Check in, poster set-up, snacks |
| 10:50 – 11:00 | Welcome, opening statements, and Announcements - Matt Scripter |
| 11:00 – 12:00 | Orlando Wetlands Keynote Address by Mark Sees, Wetlands Manager |
| 12:00 – 12:30 | A New Caddisfly Larval Morphotype Discovered at the Orlando Wetlands Outflow Stream Identified by Matt Scripter. |
| **12:30 – 2:00** | **Lunch** |
| 2:00 – 2:30 | Assessing Infaunal Biodiversity and Community Composition in Restored and Natural Salt Marshes in Perdido and Pensacola Bay by Elizabeth Garcia. |
| 2:30 – 3:00 | Evaluating fish species richness at artificial reefs in Lake Worth Lagoon, Florida through environmental DNA by Madeline Schuetze. |
| 3:00 – 3:30 | Evaluating Regional Prey Communities and Stable Isotope Signatures for Lake Okeechobee Wading Birds by Jennalie Lutes. |
| 3:30 – 3:45 | **Break** |
| 3:45 – 4:15 | Microplastics and Salinity Effects on Arm Regeneration in *Luidia clathrata* by Campbell C. Bonner. |
| 4:15 – 4:45 | Barriers to root gas exchange in tropical seagrasses by Alex Hoey. |
| 4:45 – 5:00 | Closing comments |

**6:00** **Social** @ Playalinda Brewing Company, 5220 S Washington Ave, Titusville, FL 32780

Friday September 18, 2026

08:00 – 8:30 Poster Set-up, Welcome, Announcements

8:30 – 8:35 Evidence on a recent introduction of a non-native nudibranch sea slug to Florida by Michael Middlebrooks.

8:35 – 8:40 Comparison of Opossum Pipefish (*Microphis lineatus*) abundance between high and low water years in the Kissimmee River by John Paul Everhart.

8:40 – 8:45 Seasonal patterns of diurnal migration of ichthyoplankton species in Lake Okeechobee and the Kissimmee River by Sean Donnelly.

8:45 – 8:50 Stream bioassessments in a changing climate by Craig Duxbury.

8:50 – 8:55 Drought and the effects on macroinvertebrate communities by Scott Duncan.

8:55 – 9:00 Spawning Seasonality of the White-tipped Mud Crab (*Rhithropanopeus harrisii*) in the freshwater Lake Monroe, Florida by Kayla Elkhay.

9:00 – 9:05 Resolving the Genus-level Identity of "*Harnischia* complex genus D" Epler by Matt Scripter.

9:05 – 9:35 New Georgia Caddisfly Records and Discussion of the Value of Published Geographic Range Information by Dana Denson.

9:35 – 10:05 Patterns in Phytoplankton Community Structure Across a Gradient of High Phosphorus Concentrations by Craig Duxbury.

**10:05 – 10:15 Break**

10:15 – 10:45 Drop It! Ceratal Autotomy as a Defense Mechanism in *Dondice jupiteriensis* and *Cyerce piercei* by Lea Hinsley.

10:45 – 11:15 Comparing the Light Preferences of Two Sacoglossan Sea Slugs: *Costasiella ocellifera* and *Costasiella nonatoi* by Brooke Marti.

10:45 – 11:15 Not Just a Fluke: Identification of a Parasitic Trematode in Tampa Bay Ladyfish by Liza Walker.

11:15 – 11:45 Lower Hillsborough River Estuarine Biota Featuring a Special Faunal Association by Doug Strom.

**11:45 – 12:30 Poster Session**

**12:30 – 1:30 Lunch (provided) and FAB Business Meeting**

**1:30 – 2:00 Student and FAB Awards**

**2:00 – 2:30 Closing Statements and Adjourn**

**OPTIONAL: Free guided tram tour of the Orlando Wetlands!**

ABSTRACTS:

**Microplastics and Salinity Effects on Arm Regeneration in *Luidia clathrata*.**

Presentation format: long-form oral

Campbell C. Bonner* and Christopher M. Pomory
University of West Florida, 11000-4 Campus Blvd, Cantonment, FL 32514

Due to their high versatility and durability, plastics are involved in almost all aspects of daily life including clothing, footwear, food packaging, and many other products. Microplastics (MPs) have become one of the most prominent environmental pollutants, threatening the biota within marine ecosystems. The biological effects of MPs, however, may be influenced by other environmental stressors, including fluctuations in abiotic conditions such as salinity. Salinity is one of the most crucial abiotic factors in estuarine ecosystems that influences biological structure, organismal physiology, and ecological relationships within a community. Together, exposure to MPs and salinity stress may affect energetically demanding physiological processes, including an organism's ability to recover from injury through regeneration. Regeneration can occur due to a wound from conspecifics or predators, or through autotomy, a process in which an animal detaches a body part as a defense mechanism.

Echinoderms contribute to the success of various ecosystems including coral reefs, kelp forests, and subtidal communities. Importantly, many types of echinoderms ingest MPs, and some species can help create them. However, few studies have examined asteroids for the presence of MPs, or the effects of MPs on function. This study aimed to determine how dietary MP exposure and changes in salinity affect arm regeneration rates in the asteroid *Luidia clathrata*, and whether ingested MPs translocate to the pyloric caeca. *Luidia clathrata* is one of the few starfish living in brackish waters and estuaries with variable salinities.

The first experiment tested MPs contamination and different levels of arm loss to determine if MPs changed arm regeneration in *L. clathrata*, while the second tested MPs contamination and different salinity levels. Both experiments used two-factor (2x3) completely randomized design, with six starfish randomly assign to each combination of factors, for a total of 36 starfish per experiment. Food models were created with agar agar, TetraMin tropical flake food (100 mg), and microplastic fragments (355-500 µm, 12 g -1 ) or none. Arms were removed at the disk edge, and pyloric caeca were examined in amputated arms at beginning of trials as well as in all arms post trials. Tissue was digested in 10% KOH and filtered through Whatman #1 filter paper, dried and observed under a dissecting microscope. Arm lengths and weights were analyzed using a two-factor analysis of variance (ANOVA), with further statistical comparisons conducted when differences were detected. Presence/absence of fragments between 355-500 µm in the pyloric caeca is presented as observational data. Preliminary results found that pyloric caeca already contained MPs such as fibers, films, and fragments that do not resemble the spiked plastics used in experiments. Results of statistical analyses on regeneration rates and translocation for both experiments are pending.

**Reduced mowing increases native plant diversity without impairing water storage function in dry detention ponds in Southwest Florida, USA.**

Presentation format: poster

Michael Bruder*, Sarah Dabees, Rebekah Hawkins, and James Douglass
Florida Gulf Coast University, 11010 FGCU Blvd S, Fort Myers, FL 33965

Dry detention ponds are a common stormwater infrastructure feature intended for flood control and reduction of nonpoint source pollution. Some dry detention ponds incorporate native vegetation to provide additional ecosystem services, but in Southwest Florida, USA, dry ponds are typically maintained as turfgrass by frequent mowing. We mapped 110 dry detention ponds on the Florida Gulf Coast University campus and categorized them by management type: high disturbance (mowed), intermediate disturbance, and minimal disturbance. Floristic surveys were conducted on three ponds of each management type, and on three natural wetland control areas. Additionally, volumetric displacement by plants in dry detention ponds of each management type was measured to explore landscapers' concerns that vegetation would reduce ponds' water storage capacity. Mowed ponds had lower species richness, lower Hill-Shannon diversity, and lower shrub and tree cover than other ponds and control sites, and had a higher cover of exotic vegetation than other ponds (57% vs. 10% exotic cover). Minimal disturbance detention ponds had similar diversity to natural wetland control areas, though species composition differed. Mowing gained ponds less than one mm of water storage capacity. Given the well-documented ecosystem services benefits of diverse wetland plant communities, we recommend that more dry detention ponds be managed without mowing to foster such communities.

**Continued methods to combat seagrass propellor scarring in Estero Bay, Florida.**

Presentation format: poster
Emmett Cullinan*, Collin Quinsey, Tess Shultz, and James Douglass
Florida Gulf Coast University, 11010 FGCU Blvd S, Fort Myers, FL 33965

Estero Bay Aquatic Reserve's shallow estuarine habitat makes it the perfect place for sea grass propagation. In recent decades, its popularity as a recreational spot has begun to degrade its natural habitat. Prop scarring is often inflicted onto seagrass beds by boaters who are unaware of the damage they are inflicting on marine habitats. To combat this, Florida lawmakers proposed No Internal Combustion Motor Zones (NICMZ): areas protected by law where gas-powered and diesel engines are banned. The problem is that many boaters are unaware of the fragile ecosystems that lay feet under their boat engines. Additionally, enforcement of NICM zones is quite lax in Estero Bay and its surrounding areas.

The health of seagrass is extremely valuable to the health of ecosystems as seagrass beds serve as primary producers providing energy for higher trophic levels. Seagrass provides sediment stabilization, shelter for juvenile animals/microfauna, water quality improvement, and coastline protection. Prop scars can inflict sustained damage for years after each incident, and that's only if the roots of the seagrass aren't irreversibly damaged. These scars fragment seagrass beds reducing function and reproduction, and in the process, sediment is churned up, not only killing grass, but also impacting greater ecosystem health.

Because of this, with funding from FGCU, we have been given the opportunity to install 5 new signs, warning boaters to stay out of areas where propellor scarring is occurring. along with these signs, we will be deploying buoys attached with anchors to further indicate NICM zones. It is not up for dispute that boaters in Estero Bay are unaware of the damage they are causing, but by continuing outreach methods, and putting clear signage and buoys to mark vulnerable areas, hopefully damage can be limited, and seagrass beds can be preserved.

**New Georgia Caddisfly Records and Discussion of the Value of Published Geographic Range Information.**

Presentation format: long-form oral

Dana R. Denson
Aquatic Biologist (retired), Macon, Georgia

Thirty UV-light trap collections of adult caddisflies were carried out at several locations in Georgia between 2013 and 2026. Prior to this time, 236 caddisfly species occupying 21 different families had been recorded from the state. Surprisingly, this fairly limited sampling revealed 29 species not before collected in Georgia. Due to very limited broad-scale and statewide sampling efforts, the much broader and diverse geological and aquatic habitat range of the state compared to Florida, the patterns suggested by the limited sampling effort presented herein, as well as observed geographic gaps between collection records from surrounding states, it is believed that the actual Trichoptera taxa richness of Georgia is probably substantially higher.

This data points to the potential limitations of geographic range statements appearing in published works. While extremely valuable as aids for helping make identification decisions, the limitations of this information based on a paucity of collection/observation records, out of date publications, and confusing taxonomic changes over time must always be considered. As with many things, the taxonomist must take all factors into consideration when making a final determination.

**Seasonal patterns of diurnal migration of ichthyoplankton species in Lake Okeechobee and the Kissimmee River.**

Presentation format: short-form oral
Sean Donnelly
Ecological Associates, Inc., 3552 NE Candice Ave., Jensen Beach, FL 34957

Diurnal vertical migration is a phenomenon used to describe the movement of planktonic organisms through the water column during a 24-hour period. The organisms migrate towards the surface of the water column at night before returning to the lower levels during the day. Lake Okeechobee and the adjoining Kissimmee River are large bodies of water used primarily for recreational purposes and are home to a wide variety of fish species forming a complex ecosystem. Data was compiled from a total of 32 plankton sampling events across four years to analyze if the ichthyoplankton species found in the lake and river exhibits any form of diurnal vertical migration and if there were any seasonal variations.

**Quantifying the nutrient-pollution impacts of aquatic plant management in Florida.**

Presentation format: poster
Anthony Dues Jr.*, Serge Thomas, and James Douglass
Florida Gulf Coast University, 11010 FGCU Blvd S, Fort Myers, FL 33965

The Florida Fish and Wildlife Conservation Commission (FWC) manages invasive and nuisance aquatic plants in Florida waterways through extensive use of herbicides. This practice has raised concerns among anglers and environmentalists about herbicide impacts on non-target species, concerns about the contribution of decaying plant matter to eutrophication and harmful algal blooms, reductions in water quality, and impacts on human health and recreational activities. FWC keeps detailed records of amounts of each type of herbicide applied to each plant species treated in each Florida water body it manages, as required by the US Environmental Protection Agency (EPA). This makes it possible to estimate the amount of nutrients released after herbicide treatment through a tool we have developed. We hope this tool will help managers better balance habitat management and water quality concerns.

**Drought and the Effects on Macroinvertebrate Communities.**

Presentation format: short-form oral

Scott Duncan
Central FL Tourism Oversight District, 1900 Hotel Plaza Blvd, Lake Buena Vista, FL 32830

A large portion of the state of Florida experienced, and in some cases continues to experience, historical drought conditions. The Macroinvertebrate Biology at CFTOD has observed noticeable differences in macroinvertebrate data during drought conditions. While these differences seem clear and concise, are there patterns that others have documented or noticed that affect certain groups more than others? If so, why are certain groups more or less effected by these pressures?

**Patterns in Phytoplankton Community Structure Across a Gradient of High Phosphorus Concentrations.**

Presentation Format: Long-form Oral

Craig Duxbury[1]*, Jessica Schilling[2], and Laurie Smith[2]
[1]WSP, 301 E. Pine Street, Orlando, Florida, 32801
[2]City of Lakeland, Public Works, Lakes & Stormwater Division

Phytoplankton are a fundamental component of aquatic ecosystems, and phytoplankton biomass is widely used to assess lake water quality. While relationships between nutrient concentrations and phytoplankton abundance are well established across broad nutrient gradients, less attention has been given to phytoplankton community structure in lakes with consistently high phosphorus (P) concentrations. This study evaluated whether phytoplankton communities differ among lakes spanning a gradient of elevated P concentrations.

The City of Lakeland, Florida, maintains a long-term water quality monitoring program that includes phytoplankton identification and enumeration. The monitored lakes are unique because they occur within a region naturally enriched in phosphorus and include natural lakes, former phosphate-mining lakes, and constructed water bodies. The dataset also includes extensive water quality and lake morphometry information. Data from 15 lakes were analyzed to characterize phytoplankton community composition and identify relationships with environmental variables. TITAN (Threshold Indicator Taxa Analysis) was used to identify taxa associated with gradients in total phosphorus (TP) and total nitrogen (TN). Multivariate analyses were used to examine patterns in community composition and environmental drivers. Lake surface area ranged from 7 to 2,183 acres, and mean depth ranged from 3 to 16 ft. Median TP concentrations ranged from 29 to 313 µg/L, while chlorophyll-a concentrations ranged from 3 to 117 µg/L and increased with TP. Twelve of the fifteen lakes were classified as phosphorus-limited. More than 400 phytoplankton taxa were identified, and taxa richness was positively related to both TP and TN. Cyanobacteria dominated communities and were most abundant in lakes with the highest TP concentrations. Several taxa exhibited significant responses to TP and TN, suggesting potential value as nutrient indicator species. Phytoplankton communities differed among lakes, particularly between the lowest- and highest-phosphorus systems. Temporal β-diversity was greatest in lakes with the lowest TP concentrations. Community composition was significantly related to specific conductance, TN, TP, and mean depth, although the most parsimonious model included specific conductance as the primary explanatory variable. Specific conductance was also significantly related to taxa richness. Ordination results indicated that nutrient concentrations exerted a stronger influence on community structure than lake morphology. Additionally, phytoplankton communities in lakes with TP and TN concentrations below Florida's Numerical Nutrient Criteria differed significantly from those in lakes meeting or exceeding the criteria.

These results demonstrate that phytoplankton communities remain responsive to environmental gradients even among lakes with elevated phosphorus concentrations. The findings improve understanding of phytoplankton ecology in nutrient-rich systems and provide information that may be useful for assessing lake condition, evaluating restoration success, and guiding long-term management of aquatic resources.

**Stream Bioassessments in a Changing Climate.**

Presentation format: short-form oral

Craig Duxbury
WSP, 301 E. Pine Street, Orlando, Florida, 32801

Freshwater invertebrates are widely used to assess the biological integrity of aquatic ecosystems, and in Florida, the Stream Condition Index (SCI) provides a biological framework for evaluating impairment in streams and rivers. The SCI is grounded in the premise that shifts in invertebrate assemblages reflect changes in habitat, water quality, hydrology, or other environmental stressors, because these organisms differ in their sensitivity, life histories, and ecological requirements. And as climate change alters water temperature and precipitation patterns, stream invertebrate communities may be exposed to environmental conditions that differ from those represented in historical bioassessment datasets. But the rate, magnitude, and biological consequences of these changes remain uncertain, particularly in warm regions such as Florida where aquatic organisms may already be living near upper thermal or hydrologic tolerance limits. Will freshwater invertebrates adapt to changing stream conditions, or will assemblage composition shift in ways that complicate interpretation of biological assessments? Do we have sufficient information on Florida stream invertebrate tolerances to distinguish climate-related community change from other forms of impairment? Therefore, the goal of this talk is to encourage discussion about this topic, specifically monitoring needs, tolerance information, and future interpretation of SCI results under changing environmental conditions.

**Spawning Seasonality of the White-tipped Mud Crab (*Rhithropanopeus harrisii*) in the freshwater Lake Monroe, Florida.**

Presentation format: short-form oral

Kayla Elkhay[1]*, Peter Palmiotto[1], Ashley Spring[2], and Matthew J. Scripter[3]
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The white-tipped mud crab, *Rhithropanopeus harrisii*, is a small xanthid crab with a maximum carapace length of 20 mm. *Rhithropanopeus harrisii* has a native range along the Atlantic coast from Canada to Mexico. Studies have reported *R. harrisii* along the coast of Florida, but none have documented the reproductive patterns of this marine crab in the freshwater Lake Monroe, a lake connected to the ocean by the St. Johns River watershed. Twelve months of weekly depth-integrated plankton collections from four stations within Lake Monroe will be sorted to calculate the abundance of larval *R. harrisii*. This abundance data will be used to determine seasonality of *R. harrisii* spawning in a subtropical freshwater lake.

**Comparison of Opossum Pipefish (*Microphis lineatus*) abundance between high and low water years in the Kissimmee River.**

Presentation format: Short-form oral

John Paul Everhart
Ecological Associates, Inc., 3552 NE Candice Ave., Jensen Beach, FL 34957

Opossum Pipefish (*Microphis lineatus*) have become more evident in the lower Kissimmee River in recent years, but recent collections of adult and juvenile pipefish have shown variability. This may reflect fluctuations in water levels due to drought and the use of locks on the Kissimmee River for navigation and flood control. Water-level fluctuations in the area alter suitable habitat for Opossum Pipefish, which are known to inhabit submerged aquatic vegetation (SAV) and emergent vegetation (EMV) along the river's banks. During average-to-high water-level years in 2023 and 2024, the average collection of Opossum Pipefish in the lower Kissimmee River was about 140 specimens each year. In 2025, when the lower Kissimmee River rain gauge (S154) recorded about 12 inches less than average for the area, we collected only 20 specimens. Although collections are limited to recent years, this suggests that low-water years may limit the presence of Opossum Pipefish in the lower Kissimmee River.

**Assessing Infaunal Biodiversity and Community Composition in Restored and Natural Salt Marshes in Perdido and Pensacola Bay.**

Presentation format: long- form oral

Elizabeth Garcia* and Viktoria E. Bogantes
University of West Florida, 11000-4 Campus Blvd, Cantonment, FL 32514

Coastal salt marshes are wetlands that are flooded and drained by salt water brought in by the tides. They provide important ecological functions such as nutrient cycling, shore stabilization, and habitat support. Due to a widespread wetland loss, restoration projects have been conducted throughout the Gulf of Mexico. Although restored marshes provide multiple benefits, their recovery of functional infaunal communities remains unclear. The purpose of this study is to assess infaunal biodiversity and community composition in restored and natural salt marshes within the Pensacola and Perdido Bay region by using morphological identification and DNA metabarcoding. Sediment samples were collected from six sites during the summer of 2025 and processed for both morphological identification of infaunal organisms and molecular analysis. Species richness, Simpson diversity, and total abundance were compared between marsh types, while Bray-Curtis dissimilarities, PERMANOVA, SIMPER, and non-metric multidimensional scaling (NMDS) were used to evaluate differences in community composition.

Morphological identification showed similar species richness and diversity between restored and natural marshes, with no significant differences in species richness, Simpson diversity, or total abundance. Community composition differed between marsh types, with Foraminifera contributing the most on observed dissimilarity and occurring at a greater abundance in natural marshes. DNA metabarcoding showed no significant differences in Amplicon Sequence Variant (ASV) richness or Simpson diversity between marsh types, and PERMANOVA indicated a relatively weak separation in molecular community composition. Procrustes' analysis indicated a significant but moderate correspondence between morphological and DNA-based community patterns ($r = 0.494$, $p = 0.027$). The results suggest that restored marshes support infaunal communities with levels of diversity comparable to natural marshes, although community composition has not fully converged with that of natural marshes. The greater abundance of Foraminifera in natural marshes may reflect differences in sediment characteristics, organic content, sediment accumulation, or marsh development. Differences in dominant taxa between restored and natural marshes may reflect differences in habitat development and environmental conditions rather than differences in overall biodiversity. Although overall community composition is similar, future taxonomic identification is needed to evaluate species-level differences.

**Drop It! Ceratal Autotomy as a Defense Mechanism in *Dondice jupiteriensis* and *Cyerce piercei*.**

Presentation format: long-form oral

Lea Hinsley*, Elizabeth Wilson, and Michael L. Middlebrooks
The University of Tampa, 401 W. Kennedy Blvd., Tampa, FL 33606

Shell-less gastropods, known as sea slugs, must rely on non-shell defenses against predation. Autotomy, the self-induced loss of a body part, is a possible physical defense mechanism in some sea slugs. The objective of this study was to evaluate the effectiveness of autotomy as a defense mechanism in two sea slugs, the recently described nudibranch *Dondice jupiteriensis* and the recently described sacoglossan *Cyerce piercei*. Species of the *Dondice* and *Cyerce* genera can autotomize cerata, small appendages on their dorsal surface, under stressful situations. *Dondice jupiteriensis* and *C. piercei* were introduced to predatory peppermint shrimp *Lysmata* spp. for ten-minute interactions. Nearly all slugs autotomized when attacked. *Dondice jupiteriensis* was significantly more likely to be consumed by predators while *C. piercei* was significantly more likely to survive when attacked. A clear-white mucus accompanied autotomy in both *D. jupiteriensis* and *C. piercei*. The mucus from both species acted as an irritating adhesive. However, the mucus from *C. piercei* triggered a more extreme negative reaction from the shrimp. We found that ceratal autotomy is not an effective defense in *D. jupiteriensis*, but is effective in *C. piercei*. We hypothesize toxic secondary metabolites from algal food may be present in the mucus of *C. piercei*, acting as an additional chemical deterrent against predators. Future studies should analyze the chemical composition of the mucus from both *D. jupiteriensis* and *C. piercei*.

**Barriers to root gas exchange in tropical seagrasses.**

Presentation format: long-form oral

Alex Hoey[1]*, Lauren Eve Simonitis[1], Marguerite Koch-Rose[1], Ole Pedersen[2], and Christopher Madden[3]
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[2]University of Copenhagen, Nørregade 10, DK-1165 Copenhagen K, Denmark.
[3]South Florida Water Management, 3301 Gun Club Road, West Palm Beach, FL 33406

Root barriers to radial oxygen loss (ROL) in aquatic plants have been observed to restrict gas exchange across the root-sediment interface or rhizosphere. Suberin has been identified in aquatic plant cell walls as a key compound comprising the barrier to ROL. Tropical seagrass species may have evolved extensive suberin deposition as a mechanism to conserve internal root oxygen and prevent $H_2S$ intrusion in highly reduced carbonate sediments with minimal sulfide sequestration potential. We examined suberin deposition within the roots of two tropical seagrass species, *Thalassia testudinum* and *Halodule wrightii*, collected from Florida Bay, a subtropical estuary with highly organic carbonate sediment. Roots were embedded in agar and sectioned at defined positions along the root prior to histochemical analysis. Cross sections were stained with Fluorol Yellow, imaged by confocal microscopy, and fluorescence intensity at 511-519 nm was quantified as a proxy for relative suberin concentration between species. Deposition of suberin within the exodermal secondary cell walls was observed closer to the root tip than previously observed in the literature for both species, indicating an extensive, well-developed barrier to ROL. These results support our previous findings in which $O_2$ flux was minimal (<1 kPa) at the root surface in multiple positions along the root in these two tropical species.

**Evaluating Regional Prey Communities and Stable Isotope Signatures for Lake Okeechobee Wading Birds.**

Presentation format: long-form oral

Jennalie Lutes* and Michelle Petersen
Florida Atlantic University, 777 Glades Rd., Boca Raton, FL 33431

Anthropogenic modifications in the Greater Everglades Ecosystem have led to declining habitat quality and wildlife populations, including wading birds. Wading birds are food-limited predators that rely on aquatic fauna to support nesting efforts. They are sensitive to changes in hydrology and prey availability and thus are good indicators for Everglades restoration. Lake Okeechobee supports approximately 10% of South Florida's nesting wading birds, despite containing <2% of regional nesting habitat. Nesting birds will travel up to 30 km to forage with flight distance correlated to lake stage, which influences overall foraging habitat availability. Although foraging habitat on the Lake has been well studied, off-lake wetlands have never been systematically studied.

This research assesses stable isotope signatures and characterizes aquatic prey communities in off-lake wetlands and wading bird chick bolus. In 2024 and 2025, throw-trap sampling was conducted in subregions around the Lake to characterize aquatic prey communities in natural and anthropogenic wetlands. Wading bird chick bolus was collected on Lake Okeechobee in 2025. All samples were analyzed to quantify community metrics. Eastern Mosquitofish (*Gambusia holbrooki*) were extracted from samples for carbon and nitrogen stable isotope analysis.

Preliminary results showed that wetland type has the strongest influence on aquatic fauna community assemblages in off-lake wetlands. Results also suggest that carbon and nitrogen signatures from all samples are influenced by wetland type and region and can be predicted with a moderate to strong degree of confidence. Further analysis is necessary to fully understand variation in isotopic signatures and off-lake foraging habitat, which can inform landscape-scale management and restoration for the Greater Everglades Ecosystem.

**Comparing the Light Preferences of Two Sacoglossan Sea Slugs: *Costasiella ocellifera* and *Costasiella nonatoi*.**

Presentation format: long-form oral

Brooke A. Marti* and Michael L. Middlebrooks
The University of Tampa, 401 W. Kennedy Blvd., Tampa, FL 33606

Studies on the phototactic behaviors in sacoglossan sea slugs have been limited to the members of Superfamily Plakobranchoidea. These behaviors in the ceras-bearing Limapontioidea superfamily remain widely unknown. *Costaseilla ocellifera* and *Costasiella nonatoi* are Limapontioidean sea slugs that live and feed on the green macroalgae *Avrainvillea* sp. and can be found co-inhabiting the same algal thallus. *Costasiella ocellifera* is known for its ability to photosynthesize by sequestering chloroplasts from *Avrainvillea*, while *C. nonatoi* is a non-photosynthetic species. These photosynthetic differences offer an opportunity to compare the light preferences of these species. We examine their phototaxis before and after a period of starvation. Food deprivation may increase the need for energy from retained chloroplasts in *C. ocellifera*, therefore influencing its preference of different light intensities. Individuals were placed in experimental jars containing high (250 µmol photons $m^{-2}$ $s^{-1}$) and low (30 µmol photons $m^{-2}$ $s^{-1}$) light intensities. Positions were recorded every 3 hours over a 12-hour period. *Costasiella ocellifera* spent 71% of control and 65% of experimental observations under high light intensity. Control *C. nonatoi* spent 74% of observations under high light intensity. Light preference did not differ significantly ($p = 0.264$) between starved and non-starved *C. ocellifera*, suggesting that starvation does not affect their phototactic behavior. *Costasiella nonatoi* did not endure a period of starvation and was only compared with the control group of *C. ocellifera*. This comparison did not show a significant difference ($p = 0.604$), suggesting that light preference does not differ between the two species under non-starved conditions. This study provides further insight into the phototactic behavior of Limapontioidean sea slugs and contributes to the baseline knowledge of their light preferences.

**Evidence on a recent introduction of a non-native nudibranch sea slug to Florida.**

Presentation format: short-form oral

Michael Middlebrooks*, Lea Hinsley, and Kirsten Banks
The University of Tampa, 401 W. Kennedy Blvd., Tampa, FL 33606

A small nudibranch sea slug was discovered inhabiting coral propagation raceways at a public aquarium. All live rock and coral specimens in the aquarium were collected from the Florida Keys, suggesting that these arrived as bycatch from that area. Morphological examination of live slugs found a high level of similarity between these animals and the genus *Vayssierea*, which is only native to the Indo-Pacific. All known *Vayssierea* feed on Serpulid annelids and these specimens were observed feeding on Serpulid annelids on settlement plates. Although these slugs are not native to Florida, a 2024 publication reported them in the Canary Islands, so they are already known in the Atlantic. Molecular sequencing will be required to further confirm the identity.

**Application of conservation paleobiology methods to inform southern hard clam (*Mercenaria campechiensis*) restoration in Southwest Florida.**

Presentation format: poster

Zoe Risley*, Melissa May, James Douglass, and Michael Savarese
Florida Gulf Coast University, 11010 FGCU Blvd S, Fort Myers, FL 33965

The southern hard clam, *Mercenaria campechiensis*, provides important functions to marine ecosystems, including filtration which increases water clarity and transfers nutrients to the sea floor. Additionally, the southern hard clam was a valued resource to indigenous people like the Calusa prior to western colonization before it was a commercially exploited fishery in the first half of the 20th Century in Southwest Florida (SWFL). Today the species is virtually extinct in local waters due to unsustainable clam dredging from early 20th century clam fisheries, but restoration efforts by Florida's Department of Environmental Protection (FDEP) and the Gulf Shellfish Institute (GSI) are currently planned. This, however, is occurring without an understanding of the local population's demography through pre- and post-Columbian history. My investigation will employ methods and concepts from the powerful but still unappreciated discipline of conservation paleobiology to determine the effects of human harvest on *M. campechiensis* populations over time and at varying intensities of exploitation, from before human habitation to the present day, as well as identifying the natural baseline clam densities and demographics prior to exploitation. Restoration targets are commonly based on recent conditions, often prior to a collapse or the onset of industrial harvesting. Unfortunately, these targets are plagued by the shifting baseline phenomenon, where the assumed natural state of a population has already been altered by centuries of harvest. Conservation paleobiology uses fossil and historical data to identify natural baseline conditions prior to human alteration, resolving this problem. Using prehistoric clam data, my investigation will identify the natural baseline population conditions of the southern hard clam in SWFL to develop more effective wild clam recovery.

**Evaluating fish species richness at artificial reefs in Lake Worth Lagoon, Florida through environmental DNA.**

Presentation format: long-form oral

Madeline Schuetze
Florida Atlantic University, 777 Glades Rd., Boca Raton, FL 33431

Artificial reefs (ARs) are human-made underwater structures used to increase biodiversity and abundance for conservation and for recreational and commercial uses. There has been an increase in AR projects in recent decades; however, research that investigates the potential benefits of many of these projects is lacking, making it difficult to know whether these ARs are effective. One such area is Lake Worth Lagoon (LWL), Florida, where 2.3 acres of ARs have been installed since the 1990s, but which lacks a regular, cost-effective AR monitoring program that minimizes field effort. Analyzing environmental DNA (eDNA) from collected water samples is an emergent method for assessing biodiversity and abundance in marine environments. Collecting water samples for eDNA analyses requires less time and effort in the field, and total study costs are often less than other assessment methods, especially in areas with high biodiversity. For this study, eDNA was isolated from water samples collected at two ARs and one unrestored sandy bottom within LWL to assess fish species richness at each location. The goal of the project is to create a baseline AR monitoring program that can be continued into future studies. Preliminary findings identified 75 unique species at both ARs. These findings also identified a critical gap in the availability of published DNA sequencing data for many Atlantic species, especially small benthic species. Nonetheless, preliminary results show that eDNA analyses can be a useful method for assessing species richness in a lagoon ecosystem. Once fully implemented, this monitoring program can be used to identify temporal and spatial patterns that will help guide restoration efforts.

**Niche partitioning in generalist benthic fish predators in the Indian River Lagoon.**

Presentation format: Poster

Klara Scripter[1]* and Matthew J. Scripter[2]
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[2]Ecological Associates, Inc., 3552 NE Candice Ave., Jensen Beach, FL 34957

Based on decades of ecological research, fish are theorized to have complex competitive interactions and niche partitioning. Testing these assumptions at the scale of individual fish species feeding in a lagoon habitat provides an opportunity to understand space and resource use in a diverse habitat such as the Indian River Lagoon. Gut contents of ninety-one fish considered part of the benthic feeding guild were analyzed in detail to determine the prey diversity and feeding overlap between species. Eight fish species were analyzed: Western Atlantic Seabream (*Archosargus rhomboidalis*), Silver Perch (*Bairdiella chrysoura*), Pinfish (*Lagodon rhomboides*), Spot (*Leiostomus xanthurus*), Mangrove Snapper (*Lutjanus griseus*), Southern Kingfish (*Menticirrhus americanus*), Atlantic Croaker (*Micropogonias undulatus*), and Pigfish (*Orthopristis chrysoptera*). Seventy-seven taxa of prey in the stomach contents were condensed to 29 consumption categories. Prey of the four most common predator taxa—*B. chrysoura* (24*), L. rhomboides* (11), *M. americanus* (23), and *M. undulatus* (16)—were compared statistically. The Shannon-Weiner diversity index value calculated for each fish was compared using a Welch's ANOVA followed by a post-hoc Games-Howell test. The test indicated that *L. rhomboides* and *M. americanus* have significantly higher prey diversity than *M. undulatus* and *B. chrysoura*. Prey consumed by all four fish taxa only overlapped in the two most frequently-occurring categories—gammarid amphipods and tanaids—while polychaetes were only consumed in numbers by two fish taxa. Mysids and fish scales were only commonly consumed by a single fish taxa (*B. chrysoura* and *M. americanus*, respectively). The results suggest that the four fish taxa are opportunistic on the most abundant categories of prey, but still exhibit significant differentiation in feeding selectivity. Feeding niche partitioning in these generalist fish can therefore be viewed as the utilization of abundant resources plus a specialized rarer resource, and not as a non-overlapping set of prey taxa that might be consumed by a specialist fish taxa.

**A New Caddisfly Larval Morphotype Discovered at the Orlando Wetlands Outflow Stream Identified.**

Presentation format: long-form oral
Matthew J. Scripter
Ecological Associates, Inc., 552 NE Candice Ave, Jensen Beach, FL 49577

On February 17, 2022, Stream Condition Index (SCI) samples were collected from the Orlando Wetlands outflow stream as part of Numeric Nutrient Criteria (NNC) reporting. While working through the samples, an unusual Hydroptilidae caddisfly larva was discovered that keyed out to *Neotrichia* based on the abdominal lateral fringe of hair. However, the larvae had an unusual feature—prominent lateral cranial spines. In consultation with John Morse, a single species from Puerto Rico was the only known *Neotrichia* taxa that had lateral cranial spines. This sparked the effort to determine the identity of this undescribed larva. Over the next four years, *Neotrichia* specimens from the Orlando Wetlands outflow stream have been DNA barcoded, pupae have been sorted, and the identity of this unusual caddisfly larvae has been confirmed.

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**Resolving the Genus-level Identity of "*Harnischia* complex genus D Epler."**

Presentation format: Short-form oral
Matthew. J. Scripter
Ecological Associates, Inc., 552 NE Candice Ave, Jensen Beach, FL 49577

A chironomid larval morphotype described in John Epler's Chironomids of North and South Carolina was designated "*Harnischia* complex genus D." This frequently-encountered chironomid larvae was finally found in association with a pupae, which allowed further identification. The genus of this common chironomid has now been updated.

**Flat Tree Oyster's (*Isognomon alatus*) Expansion Towards the North.**

Presentation format: poster

Megan Scully*, James Douglass, and Holly Kelly
Florida Gulf Coast University

The Flat Tree Oyster, also known as *Isognomon alatus*, seems to be experiencing a northward shift in their population range. These oysters tend to live on Red Mangrove (*Rhizophora mangle*) roots and man-made structures like dock pilings and rip rap. Historically, this species has been predominantly found in the Caribbean and the Florida Keys. However, continued surveys have found *Isognomon alatus* living well above those ranges. This includes a strong presence in the Tampa Bay region, which was previously thought to be their northernmost location on Florida's West coast. Using a collaboration of student and faculty researchers, general population surveys were used to clarify where around Florida's coastline these oysters can now be found. The surveys include identifying *Isognomon alatus* and determining their percent coverage present at a given site. This is done alongside the coverages of other common species of organisms like *Crassostrea virginica*. This project helps to reclassify the population range for Flat Tree Oysters and identify key environmental parameters. Smaller, more localized surveys will be completed to determine the salinity tolerance of *Isognomon alatus* within a designated estuary. Moving forward, historical sea surface temperature data will be utilized to monitor if there is any potential correlation between the temperature changes and where *Isognomon alatus* can now be found.

**Lower Hillsborough River Estuarine Biota Featuring a Special Faunal Association.**

Presentation format: long-form oral
Doug Strom
Water & Air Research, Inc., 6821 SW Archer Road, Gainesville, Florida 32608

The Lower Hillsborough River is a highly managed estuarine system which has faced challenges meeting Minimum Flows and Levels (MFLs) requirements. Florida Statutes requires development of a recovery or prevention strategy when an adopted minimum flow or minimum water level is not being achieved or is projected to not be achieved within 20 years. Consistent with this statutory requirement, the Southwest Florida Water Management District Governing Board adopted revised minimum flows for the Lower Hillsborough River (LHR) and the associated Recovery Strategy on November 25, 2007. Water & Air Research, Inc. (Water & Air) conducted benthic macroinvertebrate sampling in the LHR on May 12, 2026, in support of the ecological monitoring required for these revised MFLs. Sampling was conducted in the spring, after at least 30 days of continuous minimum flows.

Benthic macroinvertebrate data were collected from a 5.6-river kilometer (RKm) section of the LHR between Sligh Avenue (RKm 10.6) and the Hillsborough River Dam. Sampling sites were among predetermined lower, middle, and upper estuarine regions, and sampling was conducted at the same sites as for several previous studies. Samples were collected using a petite Ponar dredge. The samples were processed in the Water & Air benthic laboratory, where they were sorted in their entirety. Abundance data were entered into the Water & Air taxonomic database to create a species site matrix, and species richness and diversity indices were calculated.

This presentation will discuss the macroinvertebrate trends and communities found in the LHR and will relate them to estuarine salinity regions. Notable species found will be discussed. An unusual association of two macroinvertebrate species will be featured.

**Not Just a Fluke: Identification of a Parasitic Trematode in Tampa Bay Ladyfish**

Presentation format: long-form oral

Liza Walker*, Kathleen Gillis, Emily Durkin, Carlos Santamaria, and John Ambrosio
The University of Tampa, 401 W. Kennedy Blvd., Tampa, FL 33606

Within Florida waters, the species richness of parasitic worms, specifically trematodes, has not been cataloged since the early 20th century. There have been few updates in recent years, leaving space for the question of existing host-parasite relations for the Gulf of Mexico and the Atlantic. In a 2022 study, a new genus and species of parasitic trematode in the family Didymozoidae was discovered in the fins of ladyfish, *Elops hawaiensis*, and named *Saccularina magnacetabula*. A genetic and anatomical analysis was performed, laying the groundwork for new comparisons to this established species. In the fall of 2024, yellow parasitic worms were discovered within the fins of *Elops saurus*, a species of ladyfish in the Tampa Bay area. Since this initial discovery, we have performed thorough data collection, anatomy comparison, and genetic analysis of our unidentified worm and compared it to *S. magnacetabula*.

This project explores the ecological, genetic, and anatomical aspects of this parasitic trematode. Here, we have performed DNA analysis on two specific genes and used an image analysis software for anatomical measurements. With this knowledge, we contribute to the newly developing list of parasite species inhabiting Florida and the geographical distribution of possible *S. magnacetabula*, which opens the floor for further study on host specificity for this trematode.