2024-2025 Forage Fish Research Program Fellowship and Data Workshop Update

On May 22nd, 2024 the Florida Forage Fish Coalition, made up of the IGFA, Pew Charitable Trusts, Wild Oceans, Fish Florida, Florida Wildlife Federation, Angler Action Foundation, American Sportfishing Association, and the Tampa Bay Estuary Program, hosted the 8th Annual Forage Fish Research Program Data Workshop. The Workshop is an annual opportunity for the Forage Fish Research Program (FFRP) to update interested stakeholders and the academic community on the work being done on Florida's forage fish by the Florida Fish and Wildlife Conservation Commission's (FWC) Fish and Wildlife Research Institute (FWRI), FFRP data partners, and FFRP graduate student Fellows. The 2024 Workshop included a presentation on the history of the FFRP Fellowship program, presentations on FWRI's research priorities and data availability, as well as presentations from participating data partners including Southwest Florida Water Management District (SWFWMD) and Tampa Bay Estuary Program (TBEP).

For the 2024-2025 Fellowships, we welcomed Florida Department of Environmental Protection's Aquatic Preserve Program and the Statewide Ecosystem Assessment of Coastal and Aquatic Resources Data Portal as new data partners, which will allow Fellows to conduct traditional forage fish research as well as expand water quality and habitat-based research into broader environmental and climate impacts that affect forage fish productivity and ecosystem functioning among Florida's 42 aquatic preserves.

The highlights of the Workshop each year are the presentations by current FFRP Fellows. The first Fellow to present was Hallie Repeta, from the University of South Florida in Dr. Cam Ainsworth's lab. Hallie

presented her project, titled, “Exploring the Ecosystem Services of Forage Fish with an ‘end-to-end’ Ecosystem Model” which worked to address the following questions: 1) Does the health of forage fish impact the variability of reef-associated and pelagic predators under environmental stochasticity? 2) How does the biomass of forage fish affect ecosystem carrying capacity and safe harvest rates for reef-associated and pelagic predator fish species? 3) How does seagrass restoration affect forage fish biomass and the delivery of these ecosystem services?

Next, Christopher Crowder, from Dr. Geoff Cook’s lab at the University of Central Florida, presented his research, titled, “Applying a Habitat Mosaic Approach to Better Understand Fish Community Dynamics in Tampa Bay” which worked to address the following questions: 1) What habitat characteristics and environmental factors best predict changes in the forage fish community? 2) What habitat, environmental, and forage fish factors best predict changes in the sportfish community? 3) How can the knowledge regarding these predator-prey-habitat mosaic relationships be used to develop more effective management strategies for moving sportfish toward sustainability?

We would like to congratulate Hallie and Christopher on a successful fellowship year and look forward to watching them publish their findings and move forward in their research careers.

Following the 8th Annual Data Workshop and Fellowship proposal deadline, the FFRP Coalition selected the 2024-2025 Fellows, Megan Siemann from University of Florida’s School of Natural Resources and Mack White from Florida International University, who will present the results of their Fellowship projects at the upcoming 9th FFRP Data Workshop on May 29th, 2025.

Megan's project will advance our understanding of scientific sampling within aquatic preserves by developing directed, cost-effective recommendations for trophic monitoring. Megan's work has two objectives that will work on coupling ecological and trophic data to better incorporate temporal diet shifts into ecosystem models: *Objective 1)* Synthesize existing stable isotope data from repositories with long-term Fisheries Independent Monitoring (FIM) stomach content data to examine inter- and intra-annual diet variability, identify data gaps, and characterize the dominant prey items of key predators in the aquatic preserves*, Objective 2)* Develop integrated stomach content analysis and stable isotope analysis mixing models and provide recommendations for trophic data collection and incorporation into ecosystem models.

Mack's proposed research aims to explore the spatiotemporal dynamics of forage fish community biomass across seven major Florida estuaries (Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, Southern Indian River Lagoon, Northern Indian River Lagoon, Northeast Florida) in response to varying types and severity of disturbance events (e.g. cold snap, drought, heat wave, etc.). His investigation proposes to address how community stability and its intrinsic properties, resilience and resistance, interact to influence responses to environmental stressors. By comparing estuaries across the state, Mack's research seeks to understand how differences in anthropogenic impacts, climatic conditions, and evolutionary histories across a latitudinal gradient affect the ecological stability and plasticity of these vital coastal systems. This understanding is important for maintaining biodiversity and supporting coastal fisheries in the face of increasing hydroclimatic variability as a result of climate change and water management decisions in the state of Florida.

The FFRP Fellowship program has been a major success over the years with 15 fellowships funded from five universities, $240,000 raised to support the fellowships, and 10 peer-reviewed publications with more on the way. Fellows have gone on to work in academia and at numerous federal and state agencies including USGS, NOAA, and FWRI. In fact, Dakota Lewis, the only Fellow to receive the fellowship twice while studying at two different universities, is quoted as saying, "The Forage Fish Research Program Fellowship has given me the freedom to be scientifically creative during my PhD. Ultimately, I have been able to leverage the support of the FFRP to expand the scope of my dissertation research across a broader geographic region and explore cutting edge machine learning methodologies."

Looking forward, we are gearing up for our upcoming 9th annual FFRP Data Workshop, on May 29th, 2025. This year, FFRP data partners will include FWRI, TBEP, SWFWMD, and FLDEP/FL Aquatic Preserve Program. FFRP data partners provide vital fishery and environmental datasets for Fellows to utilize as they research the broader environmental and climate impacts on forage fish habitat and productivity around Florida's aquatic preserves.

Following the 9th Annual Data Workshop in May, a request for proposals will be published and will include FWRI and data partner research priorities to be used as guidelines for project proposals. We are pleased to announce an increase in the fellowship award, thanks to the generosity of Fish Florida, from $15,000 to $20,000 per Fellow, to support the great research that will be done by the next round of FFRP Fellows. For more information about the Fellows and the program go to https://floridaforagefish.org/ or email Jackson Martinez (jmartinez@igfa.org), IGFA's Conservation Programs Manager.