

INVESTIGATING DRIVERS OF SEASONAL SHIFTS IN FISH HABITAT USE IN THE HOMOSASSA RIVER SYSTEM

Mike Allen¹, **Taylor Dluzniewski**¹, Eric Johnson², Adrian Stanfill², Phillip Stevens³ and Alexis Trotter³

¹University of Florida, Gainesville, FL, USA

²Florida Fish and Wildlife Conservation Commission, Lakeland, FL USA

³Florida Fish and Wildlife Research Institute, St Petersburg, FL USA

In the southeastern U.S., some subtropical marine fishes use thermal refugia during winter at the northern limits of their range. In the Gulf of Mexico, coastal water temperatures can fall to lethal levels for select marine fishes during winter months. Previous research found that marine species abundance (dominated by Common Snook and Grey Snapper) increased in several spring-fed rivers during winter, consistent with theoretical use of the warm water springs as thermal refugia. The Homosassa River, located centrally among several spring-fed rivers in north-central Florida, was chosen to investigate: 1) seasonal water quality parameters and their influence on the timing of marine species immigration, 2) the timing of the winter influx and subsequent habitat overlap between marine (Common Snook, Grey Snapper) and freshwater fishes (Largemouth Bass, Redear Sunfish), and 3) fish movement and habitat associations between marine and freshwater fish species in the mainstem and backwater habitats of the Homosassa River system. Acoustic telemetry, electrofishing, mark-recapture, habitat assessment and abiotic measurements were used to identify species interactions, distribution, and movement in the Homosassa River system. Results depict marine fish species abundance was nine times greater during cold periods (November–March). Peak abundance of marine fishes during cold periods indicated overwintering in the Homosassa River system. The majority of tagged marine fish emigrated from the study area in early spring (February–March). Electrofishing data showed freshwater fish abundance in backwater habitats was two times greater than the mainstem; a seasonal shift in distribution between winter and summer was not apparent. Acoustic telemetry results indicated that freshwater fish distribution was restricted by high salinities and likely influenced by some degree of habitat complexity. The data provided in this study can assist resource managers with enhancing aquatic habitat for resident freshwater fish species, while maintaining important refugia for migratory marine species.

PRESENTER BIO: Taylor Dluzniewski is a Fisheries Biologist for the Florida Fish and Wildlife Conservation Commission and a Masters student at the University of Florida. Taylor studies biological interactions and ecosystem change in coastal spring-fed river systems. She also has extensive experience with habitat and species conservation in freshwater and estuarine systems.