

Project Spotlight



Shelby Ziegler

PhD Student
Advisor: Dr. Joel Fodrie
UNC—Chapel Hill

What is the topic of your research within the CWC?

I am a part of a group of scientists from LSU, Rutgers, and UNC studying marsh fish ecology. My research focuses on how the environment affects food webs in salt marsh habitats. I am interested in how predator-prey interactions may vary as salinity or tidal range changes or with other changes caused by environmental stressors such as oil.

What methods are you using to answer your questions?

In one of my experiments, I glue marsh periwinkle snails to tethers (like a dog leash) and place them in the marsh at 5 meters and 10 meters from the edge. Later I go back and see if any of them have been eaten. This allows me to estimate predation rates of fish and blue crabs on periwinkles. I have run this experiment in marshes of varying salinity, water levels and within previously oiled and unoled sites.

What results have you gotten thus far?

My research shows that tidal gradients - or the amount of water above the marsh surface and the length of time that the water is on the marsh - is extremely important in how many snails are eaten. My work also suggests there is currently little difference in the amount of predation occurring at sites that were affected by oil versus sites that were not affected. There is also little difference being shown in differing levels of salinity.

Did any of these results surprise you?

I was surprised that there is not more of a difference in the number of snails eaten along a salinity gradient. Previous work shows that the saltier the water is the more predation occurs. The tides in Louisiana are mainly driven by the wind and it is possible that water level above the marsh (driven by tides) is more important than salinity in terms of marsh predator-prey interactions.

What are the next steps in your research?

Currently, experimental tanks are being built in which we can create salt marsh habitats to run oiling experiments. These tanks will either be exposed to oil or remain unoled just like my marsh sites. Once built, I hope to run similar predation experiments in these actively oiled habitats. I also hope to determine how water levels influence the ability of fish and crabs to move between the marsh and adjacent open water.

What are the "big picture" implications of your study?

Marshes are considered important nursery habitats for many economically important fish and crustaceans. It is believed that the marsh is directly linked to offshore fisheries through food webs. My research will provide insight into how food resources for fish may differ across marsh habitats. It is important to determine which marsh habitats may provide the most resources to offshore fisheries for both restoration and conservation purposes.

