Loss of hydric hammock to sea-level rise - determining current rate of loss, ground water connection, and trajectory of vegetative community transition.

Sea-level rise is already affecting the Florida coast. Along the Gulf of Mexico, low-lying patches of hydric hammock forest are being lost, leading to dramatic changes in coastal communities. Hydric hammock support a diverse ecological community, which provides habitat for several threatened and endangered species (USFWS, 1989), coastal area flood control, and storm protection (Vince et al. 1989).

Hydric Hammocks, are unique and distinct ecological community that are very rare outside Florida. cabbage palm (*Sabal palmetto*), southern redcedar (*Juniperus virginiana*), several hardwood species, and often loblolly pine (*Pinus taeda*) are the primary tree species of hydric hammocks (Williams et al. 2007). Within Florida, hammocks are found north of Lake Okeechobee and typically punctuate the fire-adapted upland forests that dominate North Florida through their association with low-lying wet area (Vince et al. 1989). Though hammocks can be found inland, the vast majority are along the Big Bend region of the Gulf coast (Vince et al. 1989). In this region, hammocks are limited to the ecotone between salt marshes and upland pine forests (Vince et al. 1989). Big Bend hydric hammock have been reduced by coastal development and primarily remain today in conservation areas (Williams et al. 2007). The threat from sea-level rise has been documented as the main driver recent forest lost (Williams et al., 1999; DeSantis et al., 2007). In addition to direct forest loss, the remaining forest are currently being lead into a non-analog state, as witnessed by a lack of regeneration of tree seedlings (DeSantis et al., 2007). The suit of understory species is expected to be moving in a unique direction and the entire ecosystem may not provide the function and structure of the original habitat. The potential for the loss and functional change to hydric hammock could have devastating impacts on species on conservation concern, flood and storm protection along the Big Bend coastline.

We propose to resample hydric hammock sites in Turtle Creek, located in Wacassassa Bay that were first established in 1992. These sites have been periodically resampled but not in the last 10 years. Building on this long term data set adds value to this study as it is rare to have data spanning ~20 years in the same locations. Because the health of hydric hammock results from the balance between salt water intrusion and fresh water input into each remnant stand, we would like to add water monitoring information to help describe current conditions and vegetation community trajectories. In obtain this information, would like to deploy several water monitoring stations to assess water levels, salinity and origin in hydric hammock plots of in several stages of decline. Origin will be identified using stable isotope analysis.