INVESTIGATING HYDROLOGIC ALTERATION AS A MAIN DRIVER OF FOREST COMPOSITION SHIFTS IN A FLORIDA RIVER FLOODPLAIN

John Tracy[1]*, Daniel Johnson*[2]*, Matthew Deitch*[1]*, Stephanie Bohlman*[2]*, and Ajay Sharma*[3]

[1]University of Florida- WFREC, Milton, FL, USA

[2]University of Florida, Gainesville, FL USA

[3]Auburn University, Auburn, AL, USA

Mounting evidence of shifting forest species composition in the Apalachicola River floodplain of Florida's panhandle indicates a response to decades of altered river hydrology. Construction of dams and increased water demands throughout the Apalachicola-Chattahoochee-Flint River Basin and poorly executed dredging operations in the Apalachicola have impacted flow regimes and exacerbated drought conditions. Previous research suggests that longer and more frequent periods of dry conditions are driving a decrease in dominance of highly flood tolerant tree species at low elevations and promoting an increase in dominance of less flood tolerant species. However, new data from a study of the first-year development of competing floodplain tree species suggests that changes in the frequency of early-season stresses such as flood pulses may be a more important driver behind shifting species composition. Less flood tolerant species in this floodplain can be heavier-seeded and more tolerant to early season stresses, thus promoting their ability to survive and compete for resources. Shifts in tree species composition can indicate changes to nutrient transport laterally and downstream to bay estuaries where important fisheries rely on river inputs such as freshwater, dissolved oxygen, detritus, and nutrients. This research helps to inform floodplain flow restoration efforts in focusing not only on increasing the amount of water distributed throughout the floodplain but also restoring the seasonality of flooding.

PRESENTER BIO: John Tracy is a 4th year PhD student and practicing forestry consultant. Before joining University of Florida, he was a private forestry consultant in Louisiana mostly managing industrial timberlands of the bottomland hardwood forest type in the lower Mississippi River alluvial valley.