

Task 3

Project activity: Carbon and nutrient storage in Living Shoreline marshes

Objective: Our work will document the standing stocks of carbon (C), nitrogen (N) and phosphorus (P) in Living Shoreline marsh soils and plants, for comparison with natural fringing marshes. The accretion of organic matter and nutrients post-creation of Living Shoreline marshes will be examined in relation to marsh age and marsh composition/connectivity. The goal is to use soils and plant analyses to help quantify the functional comparison of Living Shoreline and natural fringing marshes along a continuum of shorescape settings.

Methods: From each Living Shoreline marsh and paired, natural fringing marsh, we collect triplicate soil cores from the lower marsh (dominated by *Spartina alterniflora*) and the upper marsh (dominated by *S. patens*). The soil cores are sectioned by depths 0-5 cm, 5-10 cm, 10-20 cm, and 20-30 cm. Bulk soil characteristics including water content, bulk density, percent organic matter (LOI), and total carbon, nitrogen, and phosphorus are determined using standard analytical methods. Near the end of the growing season we also collect leaf samples of the dominant plants for determination of total C, N and P.

Progress to date: To date, we have visited the 26 marshes currently included in the study and have collected soils from all of them. Plant samples will be collected August-September 2018. Processing and analysis of soils cores will be ongoing throughout the academic year.