

**Title:**

Environmental factors may drive plant size differences between a restored and a natural marsh in the Housatonic River Estuary

Angelina Scarpello and Dr. LaTina Steele (faculty mentor)

Sacred Heart University, Department of Biology, 5151 Park Ave. Fairfield, CT 06825

**Abstract:**

*Spartina alterniflora* (smooth cordgrass) provides habitat for many species and prevents erosion along coastlines globally and is a common restoration target. However, restored and natural marshes often have different traits due to genetic or environmental differences. Previous data has shown that *S. alterniflora* from a restored marsh in Stratford, Connecticut are consistently smaller than those from a naturally occurring marsh in Milford, Connecticut. We aimed to determine whether environmental differences such as nutrients play a role in observed size differences by performing two greenhouse experiments in which we grew *S. alterniflora* shoots from each location 1) in identical conditions and 2) under nutrient enriched and unenriched conditions. Height and diameter were measured weekly for four weeks in each experiment. When grown in identical conditions, Milford plants were taller with larger diameters than those from Stratford throughout the experiment, but growth rates were similar in plants from the two sites. Although not statistically significant, nutrient enrichment seemed to increase growth rates in plants from Stratford more than plants from Milford, with no difference in growth in unenriched plants from the two sites. These results suggest that environmental factors do play a role in the observed *Spartina alterniflora* height differences between sites.