Paula Torres

Cheng Lab

BUEE 2019

**Saltwater Marshes: The Key to Carbon Sequestration**

**Abstract**

 With the rise of urbanization among natural ecosystems, there is increased threats to various habitats that provide a variety of ecosystem services. One of the habitats that have become increasingly threatened is saltwater marshes. Marshes provide a variety of ecosystem services including habitat for various organisms, buffers for storm surges, and carbon sequestration (Adams et. al). Carbon sequestration analysis within marshes are extremely important because of their significantly high storage of soil organic carbon (Amendola et, al. 2018). For this research project, we are particularly interested in looking at the carbon concentrations in various spots and to see if there are any differences in the carbon sequestration rates in Scotts Creek Marsh located in Davenport CA. This salt marsh has been chosen for analysis because of its unique swell activity that creates a sandbar turning the site into a short term, seasonal lagoon with increased microbial activity. The amounts of carbon in wetlands is highly attributed to overall microbial activity in the area. The samples for this location are derived from three spatial zones containing “Salt Grass,” *Distichlis spicata,* “Common Salt Rush,” *Juncus lesueurii,* and “Broad-Leaf Cattail” *Typha latifolia*. These three plants are located among three different zones within the marsh, all requiring different characteristics. Salt grass is usually located in higher elevations, Common salt rush is located in midrange of the marsh and cattail is located in lower elevations. Using a sampling composition of 150 soil core samples, in this study we hope to aid in determining the carbon sequestration rates in order to further contribute to the discussion on how important it is to preserve coastal wetlands. Furthermore, based on this study analysis, we hypothesize that the highest sequestration of carbon would be located in the flooded area of the marsh due to the decrease of microbial respiration in that area.

**Methods: Carbon Sequestration Rates Per site**

In order to determine the Carbon Sequestration rates for this site, 50 samples from each zone of the wetland should be analyzed. This includes 50 samples from the zones containing cattail, 50 from salt grass and 50 from common salt rush. In each site, dry samples will be crushed and sieved and weighed and analyzed for carbon rates using a CNH analyzer. Through this process, the below ground carbon levels will be focused on.