Main Goal of Study

Why should I care about seagrass?

Seagrass beds provide a habitat for many marine species, participate in nutrient cycling and protect the coastline from erosion. However, seagrass is progressively affected by deleterious influences such as climate change, pollution and habitat destruction which can result in habitat fragmentation.

Why microbes?

The microbial community associated with seagrass aka the seagrass microbiome is important as microbes have been found to have significant effects on terrestrial plant fitness by increasing plant-available nutrients via processes such as nitrogen fixation and sulfate reduction.

Methods

16S rDNA amplicon sequenced

Soil Community Composition

Relative 16S rDNA taxonomic composition at the genus level for soil from different sampling locations (inside, edge, outside).

Results and Discussion

Initial analysis indicates that the seagrass microbiome does have edge effects. We also confirmed that there is distinct community composition for different substrates (leaf, root, soil). Moving forward, we have abiotic metadata to correlate with the seagrass microbiome. We hope that this analysis will help us understand the complicated interactions between microbes and their environments and microbes and their hosts.

Conclusions

Edge Effects

Edge effects are changes in community composition that occur on the edge of habitats. Previous work investigated changes in abiotic properties in beds of Zostera marina, a species of seagrass. Here we compare microbial communities obtained from the inside, on the edge and outside of these seagrass beds.

Principle coordinates analysis showing variation in microbial community composition by location and substrate. Here we see potential edge effects on seagrass root microbes and between soil locations.

Soil Community Composition

Two of the most abundant taxa are: Desulfovibulbaceae, a group of anaerobes known to reduce sulfates to sulfides. Chromatiales an oxygenic phototrophs that oxidize hydrogen sulfide to elemental sulfur.