

Attack of the clones: Understanding the invasion potential of the seagrass (*Halophila stipulacea*) in Culebra, Puerto Rico

It is hypothesized that climate change can facilitate the invasion of exotic species into degraded habitats. However, species interactions and environmental conditions can limit a species' potential to become invasive. Thus, environmental changes may be linked to phenotypic plasticity and invasive traits. This is because the genes that control these traits can be modified depending on the organism's environment. There is great debate over whether local adaptation or phenotypic plasticity drives invasive traits and whether they facilitate the establishment and persistence of biological invasions in novel environments. This research tests the hypothesis of whether species interactions in a novel environment induce epigenetic signatures of the seagrass invasion. To investigate this, we conducted a reciprocal transplant experiment of invasive *Halophila stipulacea* mixed with native *Syringodium filiforme* seagrasses to assess how species interactions affects their local acclimation and adaptation along a nutrient gradient. Seagrass cores were extracted from mixed seagrass communities and transplanted into areas with bare sand devoid of seagrasses. Preliminary transplant experiments indicate that the invasive seagrass outperforms the native seagrass, but invests less in vegetative shoots. Further steps will test the hypothesis of whether these species interactions induce epigenetic signatures that may promote an invasive phenotype. We will also test for changes in sediment microbial communities to explore the role of below-ground processes that may support invasion success. The outcomes of this research will determine which factors and habitat characteristics promote invasion success. This is particularly important as it informs the management and recovery of seagrass communities, which support a wide variety of fauna (e.g., fish, sea turtles, manatees and birds); thus, this has a societal implication that alters ecosystem services on which people depend.

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