Restoration Potential of Phragmites-Dominated Wetlands in Chesapeake Bay: Interactions between Disturbance, Nutrients, and Genetic Diversity. Progress Report to Garden Club of America.

I am participating in a large-scale, 5-year study that looks at the impact of herbicide treatments on *Phragmites australis* across Chesapeake Bay. We are looking at how management impacts recovery of native plant communities, as well as many aspects of *Phragmites'* biology (reproduction, herbivory, population genetics, among others). We have been monitoring permanent quadrats in 8 watersheds and are comparing plots where *Phragmites* is removed, plots with no herbicide, and reference plots of native vegetation.

In the fall of 2013, we finished our third and final year of herbicide treatments on *Phragmites*, and will continue to monitor recovery through 2015. In June of 2014, we relocated our permanent transects, and installed resins to determine soil nutrients. We sampled the vegetation, *Phragmites* vigor, collected leaf samples for genetic analysis, and retrieved the resins in July and August. I will return to Maryland in October to record flowering and herbivory rates, and tidal inundation.

Our preliminary results show that *Phragmites* decreases the amount of nitrogen available in the soil, and that this effect persists even after herbicide treatment. We are still in the process of analyzing our 2013 nutrient resins, and will complete them, along with the 2014 samples, this coming winter. We will have results for our molecular study in Spring 2014 and will know if herbicide impacts population genetics. This year we noticed a disappointing lack of vegetation recovery in our several of our sprayed plots. It appears that the vegetation recovery is more dependent on site-choice than other factors. Marshes that have intact native plant communities surrounding the *Phragmites* are more likely to recover some native communities. On the other hand, marshes that are solid monocultures of *Phragmites* are more likely to degrade completely after herbicide treatment.