



# **Carbon cycling, invasives, and restoration: An overview of current research on the tidal Patuxent**

**Poster**

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# Abstract

Carbon cycling in coastal wetlands is relevant to understanding climate change and can affect plant growth via its influence on nitrogen cycling. We are studying carbon sequestration in soil and methane release to the atmosphere in natural and restored Patuxent wetlands. Furthermore, we are investigating how carbon addition may immobilize nitrogen, thereby reducing the growth of the invasive lineage of *Phragmites australis* and potentially favoring its native counterpart. Understanding carbon cycling and its relationship to nitrogen and plant growth are relevant to improved management and restoration of coastal wetlands, which are subject to climate shifts, eutrophication, and invasive species colonization.



# Carbon cycling in restored and natural wetlands

## Objectives

- Develop and test a field bioassay for assessing carbon sequestration and loss in wetland soils
- Quantify carbon accumulation, storage, and release in a range of wetland habitats in Patuxent tidal freshwater wetlands





# Competition between native and invasive *Phragmites*: The role of carbon and nitrogen availability

## Objectives

- Determine if carbon additions (in the form of wood shavings) promote nitrogen immobilization in soil and favor the growth of native over invasive *Phragmites australis*
- Evaluate the effects of different Carbon:Nitrogen ratios on competition between native and invasive *Phragmites*





# Native *Phragmites* for wetland restoration: Optimizing growth conditions

## Objectives

- Explore the use of *Phragmites australis* ssp. *americanus* as a plant for wetland restoration
- Develop methods for propagation
- Test salinity tolerance in the field and greenhouse