

**New England Botanical Society  
Graduate Student Research Award  
2023 AWARD WINNER**

**Meredith Theus**  
Department of Ecology and Evolutionary Biology  
Cornell University  
Ithaca, NY

**Effects of plant photosynthetic pathway on greenhouse gas  
emissions from Northeastern wetlands**

Wetlands are large sources of greenhouse gases. Vegetation is an important driver of greenhouse gas emissions from these ecosystems, but we do not understand how the particular plant traits involved with ecosystem productivity and respiration influence emissions. Therefore, the purpose of this research is to determine the effect of photosynthetic pathway (C3 and C4 plants) on greenhouse gas emissions from wetlands in the Northeastern United States. We will grow two species of native plants of each photosynthetic pathway (C3: *Scirpus americanus*, *Typha latifolia*; C4: *Spartina pectinata*, *Panicum virgatum*) in growth chambers over five months and monitor greenhouse gas production and emissions, plant growth and photosynthesis, and sediment and water chemistry. Understanding what factors drive greenhouse gas emissions from wetlands can strategically be used to conserve, restore, and potentially build wetlands with lower emissions.

---

The New England Botanical Society offers awards of up to \$3,000 to graduate students to support botanical research. The awards encourage and support botanical research on the New England flora (plants, algae, and fungi), including support for field, lab, and herbarium work, as well as travel to New England by those who would not otherwise be able to work in the region. The awards are made to the graduate student(s) submitting the best research proposal dealing with systematic botany, plant ecology, genetics, plant conservation biology, or related fields pertaining to the New England flora.