

The Tale of Two Underdogs: Mycorrhizal Fungi and the Endangered Eastern Mountain Avens (*Geum peckii* Pursh)(Rosaceae)

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Background

Geum peckii (Rosaceae) and mycorrhizal fungi are two small but mighty contributors to the biodiversity of Nova Scotia. *Geum peckii*, a flowering herbaceous perennial, is an endangered plant located in only two areas: the mountains of New Hampshire, and sea-level bogs in Digby County, Nova Scotia. Arbuscular mycorrhizae are fungi that form a specialized symbiosis with plant roots, allowing plants to obtain more nutrients and water while the fungus receives carbohydrate sugars. This very common symbiosis occurs in 80% of land plants, but has been understudied in wetland plants. With the Nova Scotian *G. peckii* population declining, our studies are documenting the benefits that mycorrhizae may have on plant establishment in *G. peckii*'s natural environment.



Preliminary Study

A population of *Geum peckii* germinated from the Acadia University seed bank (Fancy, 2017) underwent the following three treatments:

- Commercial mycorrhizal fungi
- Native mycorrhizal fungi (Brier Island soil), and;
- A non-treated control group

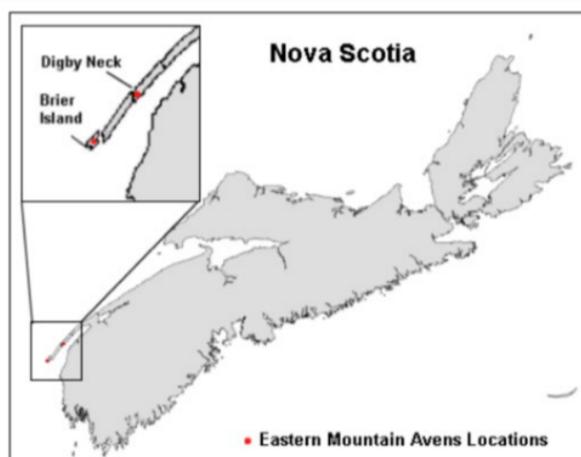
Plants were out-planted into a peatland on Long Island, Nova Scotia and all plants survived.



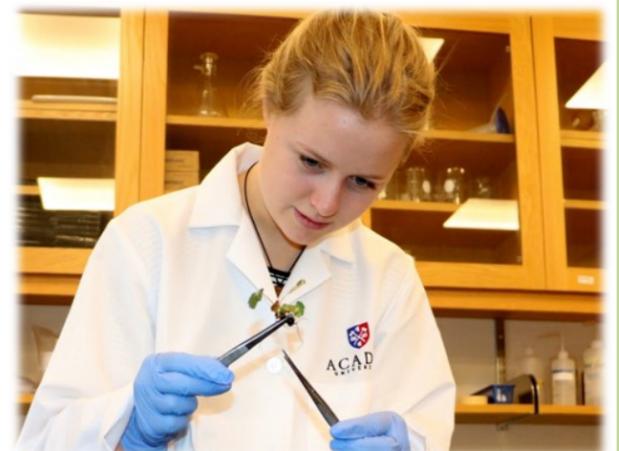
Plant roots of *Geum peckii* were collected from the research plot on Long Island, NS. All samples were analyzed for presence of mycorrhizal associations using root staining techniques, microscopy, DNA extractions and metagenomic analyses. The goals of the project were understanding the role of fungal colonization in *G. peckii*; identifying species of fungi present in root tissue, and determining whether *G. peckii* was able to form mycorrhizal associations upon being out-planted to its natural environment. This information will inform future restoration projects and provide a greater understanding of the role fungi play in the growth and establishment of *Geum peckii* in Nova Scotia.



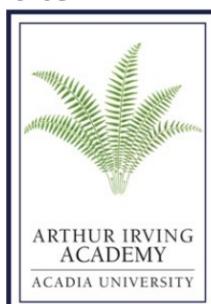
Bushwhacking to the field site



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