

Investigating lousewort species for parasitism and mycorrhizal associations

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Louseworts (genus *Pedicularis* L.) are hemiparasitic flowering plants with Arctic/alpine distribution. Certain Arctic species are traditionally harvested and eaten by Inuit. Communities in Nunavut are interested in cultivating louseworts in greenhouses to increase their availability and aid food security, however, louseworts have proven difficult to grow outside their natural environment. We hypothesise that mycorrhizal fungi mediate lousewort germination and survival. This study examined *Pedicularis langsдорffii* subsp. *arctica* and aimed to answer these questions: 1) what type of mycorrhizal associations and species are present?; 2) which factors influence germination?; 3) what are its parasitic relationships? Roots of *P. l. arctica* and associated plants were stained and examined under compound microscope for fungal association. Fungal DNA was extracted from roots, soil, and cultures. Germination experiments were conducted to assess germinability with different substrates (Arctic soil, potting soil, filter paper), and treatments (scarification, light, moist chilling, host presence). *P. l. arctica* haustoria were examined under dissecting microscope. Arbuscular mycorrhizal fungi and dark septate endophytic fungi were observed in roots of both *P. l. arctica* and *Salix arctica*. Fungal DNA was present in all soil extractions and most root and culture extractions, and has been sent for analysis. Seeds did not germinate in any treatments. Haustoria were documented on *S. arctica* roots. Results suggest *P. l. arctica* is both parasitic and mycorrhizal, but further research should examine additional factors affecting germination. This study improves our understanding of lousewort ecology, and could aid future conservation studies of *Pedicularis palustris*, a rare species in Nova Scotia.

Keywords: hemiparasitism, mycorrhizal fungi, *Pedicularis langsдорffii*, seed germination

Poster presentation