**Understanding Low-Arctic Tundra Community Plant Responses to Anticipated Climate Warming Using Long-Term Climatically Realistic Soil Nutrient Availability Enhancements**

Dominic Wood1, and Dr. Paul Grogan1.

1Department of Biology, Queen’s University, Kingston

Future tundra plant community composition and structure will be directly influenced by pronounced climate change already occurring in the Arctic. Furthermore, warming-induced increases in microbial activity enhance the supply of growth-limiting nutrients to plants and will indirectly influence plant community structure. Birch hummock tundra consists of evergreen and deciduous shrubs, sedges, forbs, mosses, and lichens; this widespread vegetation composition is already shifting in many locations across the Low Arctic as deciduous shrubs expand their cover and range. Warming will likely influence nitrogen (N) and phosphorus (P) differently due to their distinct biogeochemistry, so we must understand plant species’ responses to climatically-realistic enhancements of these nutrients separately. Hence, a factorial annual low nitrogen and phosphorus addition experiment commenced in 2012 at the Daring Lake research site in the Northwest Territories to simulate anticipated increases in soil fertility due to climate warming. Preliminary harvest analyses evidenced NP growth colimitation of birch shoot extension with low level additions, but total aboveground biomass of the evergreen shrub Rhododendron subarcticum is not significantly affected by low-level additions of N, P, or the combination. These separate nutrient additions may inform on future plant community shifts in response to climate warming and reveal species’ nutrient growth limitation.