



Project acronym: MycoFTE

Project title: Importance of trophic interactions for mycorrhizal dynamics across the Arctic

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Kilpisjärvi Biological Station (Finland), Kevo Subarctic Research Station (Finland), Toolik Field Station (USA)

The expansion of shrubs in the Arctic is likely to have global implications. However, the current ideas about the effects and feedbacks of shrub expansion are oversimplified, as they are based upon the ecological features of tall deciduous species only (such as reduced albedo and an increased input of high quality litter). The fact that several studies also show a strong increase of evergreen shrubs across the Arctic, in some cases aided by selective herbivory, has been largely overlooked. Unlike ectomycorrhizal (EcM) deciduous shrubs, a majority of arctic evergreen shrubs form ericoid mycorrhizal (ErM) associations, which has contrasting implication for C dynamics. By utilizing a Pan-Arctic approach using long-term herbivore exclusion experiments at multiple sites across the Arctic we will: 1) determine the production and turnover of extramatrical mycelia (EMM) biomass at multiple sites across the Arctic in relation to mammalian herbivory; 2) determine how mammalian herbivory affects soil fungal and EMM community dynamics across the Arctic. Thus, we will detect key linkages across trophic levels (from the large herbivore to the soil microbes) and test how these hypotheses hold on a circumpolar scale.