



Project acronym: TRAPP

Project title: Trait Responses in Arctic Plants and Pollinators

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Abisko Scientific Research Station (Sweden)

Plants and their pollinators represent a highly dynamic community of species that are fundamental to Arctic ecosystems, yet how such communities are affected by climate change is still little understood. To predict how plant-pollinator interactions will be impacted by climate change, we need to move towards developing mechanistic frameworks of species responses. This can be done by studying and incorporating functional trait responses within and across species, as this will determine not only an individual's response to climate change, but also its interactive role in the broader community network. Therefore, we request funds to support travel to Abisko Scientific Research Station for Cantwell-Jones and one research assistant to study the inter- and intraspecific spatiotemporal variation in traits and mutualistic interactions of a montane (Mt. Nuolja) plant-bumblebee community. Capitalising on a phenology transect spanning an 850 m elevational gradient, we will use the thermal cline to examine responses across vegetation zones representative of higher latitudinal habitats (a space-for-time approach). By sampling repeatedly over a 1.5-month period in 13 permanent plots along this elevational gradient, we will determine how changes in climatic conditions influence frequency distributions of floral functional traits. Additionally, we will couple individual plant-bumblebee interactions with the individual-level traits underlying each interaction (bees: body size, wing length, head width; plants: pollen & nectar chemistry and stamen, pistil & petal lengths), enabling us to elucidate how climatic variation can shape trait-mediated mutualistic networks.