

Project acronym: BIH-Arctic

Project title: Background insect herbivory in Arctic ecosystems

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Discipline: Earth Sciences & Environment

Station(s): Greenland Institute of Natural Resources (GINR), Greenland

Studies addressing herbivory in the Arctic focus on vertebrate grazing, implicitly assuming a negligible role of invertebrate herbivory in high-latitude ecosystems. However, this impression is more likely to reflect the insufficient knowledge on insect herbivory rather than low importance of plant-feeding insects in Arctic ecosystems.

The goals of the proposed research are (i) to quantify background losses of Arctic plant communities to insects, including leaf-, sap- and root-feeders and (ii) to identify patterns in these losses, including variations between plant functional groups and between localities with different climates.

We plan to measure background insect herbivory at three research stations (Sverdrup, FINI, GINR) with the support of INTERACT project and three Arctic localities (Kevo, Naryan-Mar and Vorkuta) with the support of the Academy of Finland. At each site (three per locality) we will collect data on losses of foliar biomass of focal vascular plants to tissue-feeding insects; biomass of sap-feeding insects; total (i.e. community-wide) belowground plant biomass; and biomass of root-feeding insects.

During each visit, we will spend three days for collecting field data and four to five days for processing the samples. The proposed project, due to its integrative approach, may drastically change our understanding on the role of background insect herbivory in current and future tundra ecosystems. The obtained information will be used in at least three open access publications in high-impact, peer-reviewed international journals.