

Memorandum 2/11/2018

KNO9: Herbivory in the Arctic – understanding large-scale patterns and processes of a key ecological interaction

This memo provides a summary of reports submitted on the session KNO9 organized at the Arctic Biodiversity Session in Rovaniemi, Finland, October 9-12 organized by the Agricultural University of Iceland and the Arctic University of Norway.

Attendance: 44

Arctic Biodiversity Assessment recommendation themes most prominently addressed in the session:

- Climate Change
- Ecosystem-based Management
- Improving knowledge and public awareness

Key points raised in the session that were important to note:

- Trophic interactions and climate drive diversity of vertebrate herbivore communities
- We know relatively little about invertebrate herbivores in the north except from what is contained in the Arctic Biodiversity Assessment. Although we do know invertebrate herbivory is nearly ubiquitous, but at a low intensity, this intensity is likely to increase with warmer temperatures. Therefore, standard protocols are needed to detect and monitor background changes.
- New conceptual models for high arctic vegetation are needed; and these models should be used to drive hypothesis generation.
- The session covered different approaches to studying patterns and processes related to herbivory, focusing on large-scale approaches and how these can contribute to disentangling the role of different drivers. Herbivory is a key biotic interaction in tundra ecosystems, but heterogeneity across the Arctic makes generalizations difficult. For example, the functional and phylogenetic diversity of herbivores varies across the Arctic and the composition of herbivore assemblages can determine nutrient and plant defence content.

Recommendations/actions identified for how to deal with the issues raised in the session:

- Collaborative efforts are needed in order to facilitate work on the heterogeneity of the chemical, physical, and functional variations in plant-herbivore interactions. The development of standardized measurement protocols can help these efforts. It is also important to conceptualize expectations of climate and herbivory impacts on tundra vegetation to guide research and monitoring efforts.

Take home message from the session:

- Plant-herbivore interactions vary across the Arctic, and this heterogeneity needs to be taken into account in the design of monitoring programmes.