

# Herbivory Network: collaborating to study herbivory in northern and alpine environments



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## HERBIVORY NETWORK

STUDYING HERBIVORY IN ARCTIC AND ALPINE ECOSYSTEMS

### ...why HERBIVORY?

- key biotic interaction in tundra ecosystems, through effects on biodiversity, energy flows and nutrient cycling
- herbivores seem to influence the responses of tundra plant communities to environmental changes
- outcomes of herbivory vary regionally and often depend on site-specific characteristics, e.g. productivity, human management, geological substrate or species diversity

### Ongoing HN activities

One of the priorities of the HN is to integrate study sites, **methodologies** and metrics used in previous work, homogenize data collection and ensure meaningful comparisons across studies

A main goal of HN is to address **research questions** and synthesize knowledge on the role of herbivory in northern and alpine ecosystems. And of course, to serve as **communication platform** for researchers and stakeholders

### ...why a NETWORK?

Understanding the role of herbivory in tundra ecosystems at a global scale, and what drives its spatial and temporal variation requires **coordinated research efforts**.

The Herbivory Network covers this gap, by fostering collaborations within and across disciplines and facilitating synthesis and multi-site comparisons through the use of common standardized protocols.



### Development of **standardized protocols**



#### ITEX herbivory protocol

In collaboration with the International Tundra Experiment, these measurements will allow understanding the combined effect of warming and herbivory on tundra plants



#### Soil protocol

Soils are a key element of tundra ecosystems, limiting the survival, growth and reproduction of plants, but the effects of herbivory on tundra soils are still largely unknown.



#### Invertebrate herbivory protocol

Invertebrate herbivory is often overlooked in tundra ecosystems but we still lack basic understanding on how much biomass is actually removed by invertebrate herbivores?



#### Vertebrate herbivory protocol

Co-occurring vertebrate herbivores feed at different intensities, frequencies and spatial scales. We are developing a set of measurements of *common herbivory currency* to make vertebrate herbivory comparable among different sites.

### Design of a **coordinated experiment**

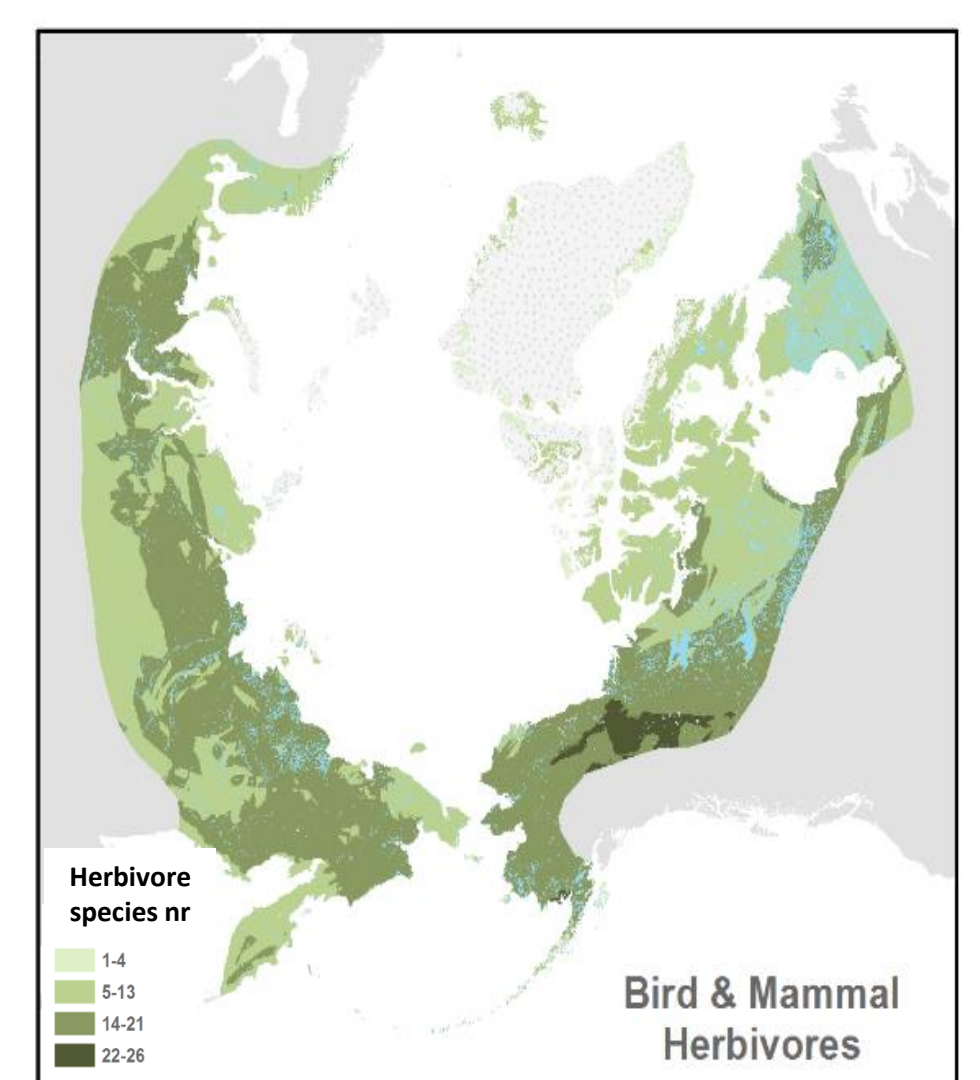


The implementation of a geographically-balanced, coordinated experiment will ultimately enhance our understanding of the role of herbivory in northern and alpine environments.

### Answering **research questions**

#### What drives herbivore diversity in the Arctic?

The composition of herbivore communities can affect the outcomes of plant-herbivore interactions. Analysing the larger scale patterns of herbivore diversity in the Arctic will clarify the drivers of variation in herbivory at a broad pan-Arctic scale.



#### Can we identify explicit procedures that increase comparability between different studies of herbivory?

Study designs for sampling plant-herbivore interactions, where both mobile and sessile organisms are involved, remain a challenge. We need common tool-sets to increase reproducibility and comparability of studies that evaluate the role of herbivory in different tundra sites.



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