UArctic Thematic Network on Herbivory

facilitating research across scales

Isabel C BARRIO[1] and Herbivory Network Team

[1]Faculty of Environmental and Forest Sciences, Agricultural University of Iceland, Árleyni 22, Reykjavík IS-112

The **HERBIVORY NETWORK** is an international research network that brings together scientists from Arctic and alpine regions around the world to investigate the role of herbivores in these rapidly changing ecosystems.


PHOTO: EEVA SOININEN


PHOTO: ISABEL C BARRIO

Plant-herbivore interactions are central to the functioning of tundra ecosystems, through their effects on biodiversity, energy flows and nutrient cycling. Herbivores can influence the resilience of these ecosystems to ongoing environmental changes and are also important to the subsistence of northern communities.

However, the outcomes of plant-herbivore interactions can vary over space and time, leading to a wide variety of **impacts**. The causes of this variation are presumably related to ecosystem-specific conditions, such as human management, differences in geological substrate, species diversity or productivity.

To accurately forecast the future of tundra ecosystems under changing environmental conditions, we need to understand what drives the spatial and temporal variation in the outcomes of plant-herbivore interactions.

Effectively addressing these questions at a global scale requires **coordinated research efforts**. The Herbivory Network covers this gap, by fostering collaborations and facilitating multi-site comparisons through the use of common experimental protocols and data synthesis.

The Herbivory Network was endorsed as a **UArctic Thematic Network** in 2020 and counts with partners in 11 UArctic universities and more than 200 members. The network coordinates research across the Arctic to improve our understanding of both natural and traditional human-managed systems that encompass significant portions of the sub-Arctic and alpine areas worldwide.

DEVELOPING PROTOCOLS

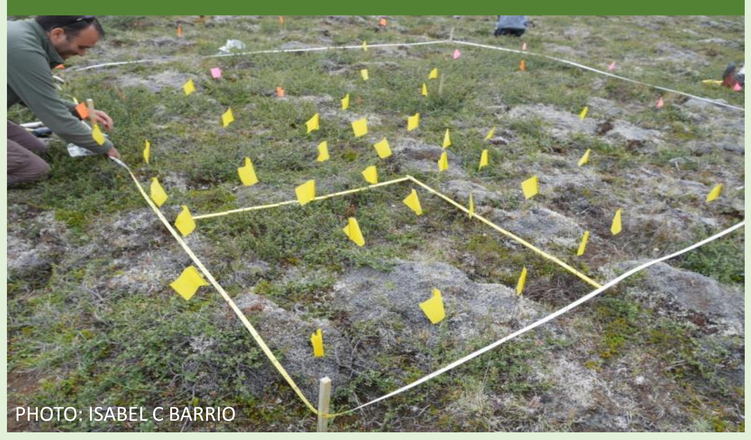
PHOTO: ISABEL C BARRIO

ITEX HERBIVORY PROTOCOL

- In collaboration with the International Tundra Experiment (ITEX), 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 but the effects of herbivory on tundra soils are still largely unknown.

INVERTEBRATE HERBIVORY PROTOCOL

- Invertebrate herbivory is often overlooked in tundra ecosystems and we know little on how much biomass is removed by invertebrate herbivores or how variable it is.

VERTEBRATE HERBIVORY PROTOCOL

- Co-occurring vertebrate herbivores feed at different intensities, frequencies and spatial scales. To compare vertebrate herbivory among different sites.

ANSWERING QUESTIONS


PHOTO: JESPER BRUUN MOSBACHER

The ongoing and past projects of the Herbivory Network address research questions related to herbivory in alpine and arctic ecosystems.

MAPPING KNOWLEDGE ON HERBIVORY

- Synthesizing knowledge on herbivory using systematic maps increases our understanding of context-dependence of herbivory research carried out at many Arctic sites.

MAPPING HERBIVORE DIVERSITY

- Functional and phylogenetic diversity of herbivores will influence their role in the resilience of tundra ecosystems.

INVERTEBRATE HERBIVORY IN TUNDRA

- Investigating patterns of invertebrate herbivory across the tundra biome will allow estimating biomass losses at the plant community level.

For a full list of publications visit:
https://herbivory.lbhi.is/hn-papers-and-conference-presentations/

COORDINATING RESEARCH


PHOTO: HERBIVORY NETWORK

SINCE 2013 the Herbivory Network has been contributing to making research on tundra herbivory more global. We have organized several workshops and meetings, presented posters at numerous conferences, and published several papers including global data syntheses. We have also developed drafts of common field protocols, recruited students, and produced an online course! Our member list includes over 200 enthusiastic colleagues from 18 countries and 11 UArctic institutions.

The **HERBIVORY NETWORK** has received support from the Agricultural University of Iceland, the Terrestrial Working Group of IASC, the Fram Centre and the Spanish Ecological Society. The Letterstedtska fund supported attendance to the AOS meeting 2022 in Tromsø.

For more information: http://herbivory.lbhi.is

@HerbivoryN herbivory.network@gmail.com