

Herbivory Network:

studying herbivory in Arctic and alpine ecosystems

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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 changing ecosystems.

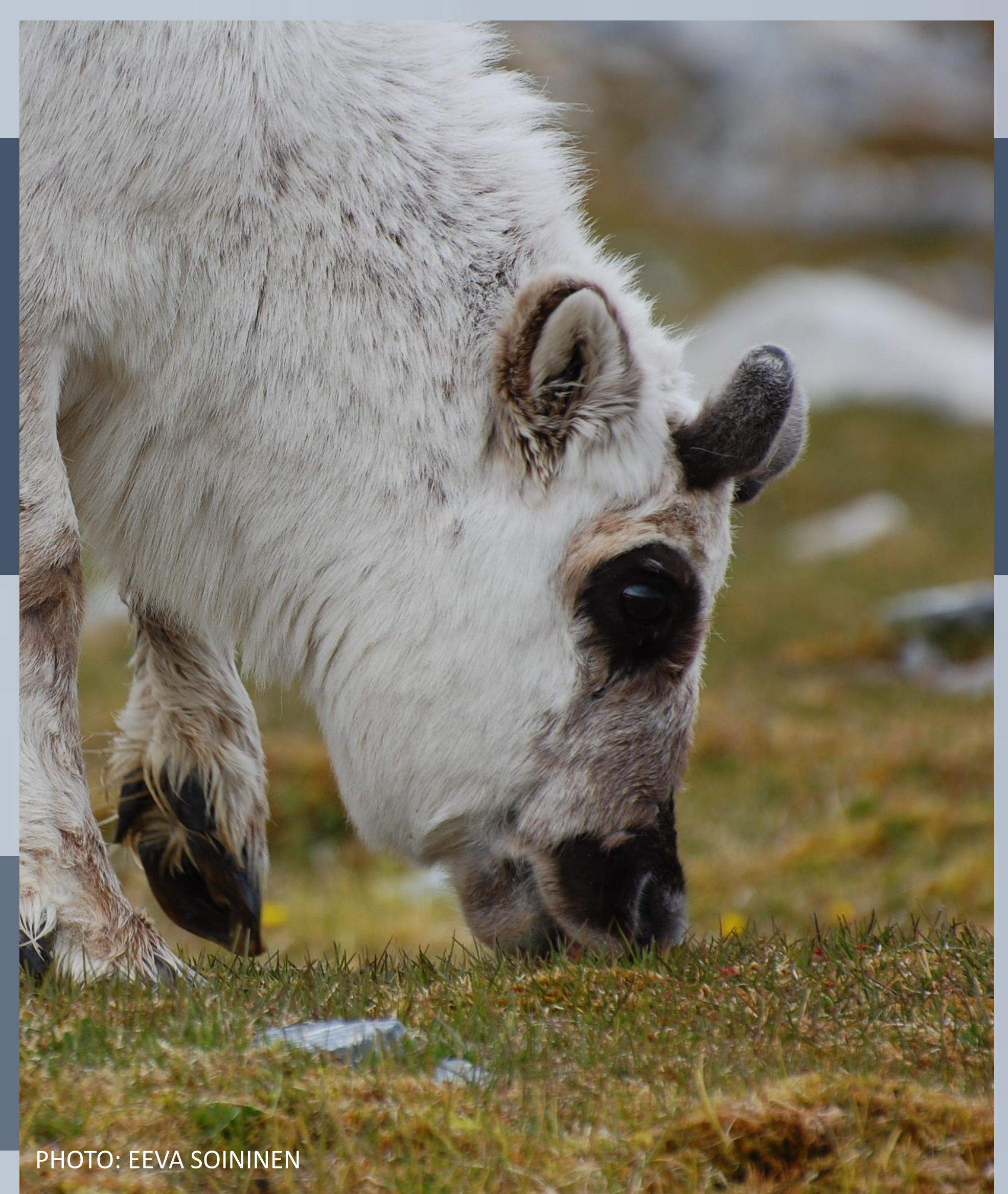


PHOTO: EEVA SOININEN

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

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 implementation of these collaborative research efforts will 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, 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 and we lack basic knowledge, like how much biomass is actually 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 we need measurements of a common herbivory currency

ANSWERING QUESTIONS



PHOTO: JESPER BRUUN MOSBACHER

The ongoing 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 will increase our understanding of context-dependence of herbivory research carried out at many Arctic sites

MAPPING HERBIVORE DIVERSITY

- Functional and phylogenetic diversity of herbivores can ultimately influence their role in tundra ecosystems, and the resilience of these ecosystems

INVERTEBRATE HERBIVORY IN TUNDRA

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

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 a global data synthesis. 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 different countries interested in contributing to and developing our work

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

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



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