



HERBIVORY NETWORK

An International Research Network to Study Herbivory in Northern and Alpine Ecosystems

AUTHORS: Ingibjörg Svala Jónsdóttir¹, Isabel C Barrio² and Herbivory Network Team

¹Institute of Life and Environmental Sciences, University of Iceland, Askja, Sturlugata 7, Reykjavik IS-101, Iceland

²Department of Natural Resources and Environmental Sciences, Agricultural University of Iceland, Árleyni 22, Reykjavik IS-112, Iceland

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

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 vary over space and time, leading to **different impacts of herbivory** at different sites and times. The causes of this are presumably related to ecosystem-specific conditions, such as human management, variations in geological substrate or productivity among others. To accurately forecast the future of tundra ecosystems under changing environmental conditions, we need to understand the drivers of the spatial and temporal variation that influence the outcomes of plant-herbivore interactions.



PHOTO: ISABEL C BARRIO



PHOTO: EEVA SOININEN

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. The implementation of these collaborative research efforts will improve our understanding of traditional human-managed systems that encompass significant portions of the sub-Arctic and alpine areas worldwide.

DEVELOPING PROTOCOLS

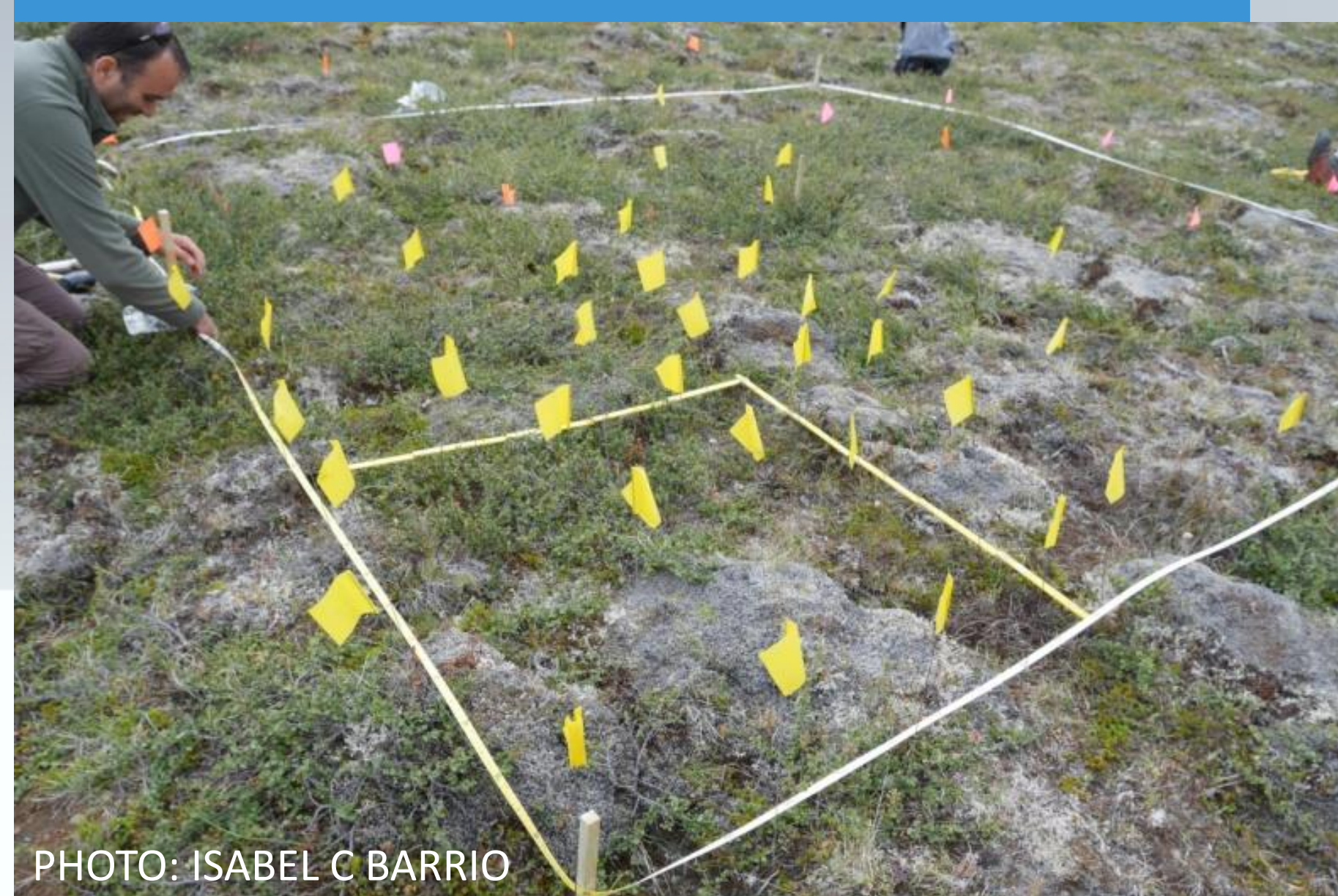


PHOTO: ISABEL C BARRIO

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 but we still lack basic understanding on how much biomass is actually removed by invertebrate herbivores in tundra

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

Some of 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 their resilience

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. Several workshops and meetings have been organized, posters have been presented at numerous conferences, three papers and a global data synthesis have been published, drafts of common field protocols have been developed, students have been recruited, and the member list includes 125 enthusiastic colleagues from 17 countries interested in contributing to new work.

The **HERBIVORY NETWORK** was initiated with the support of the Terrestrial Working Group of IASC.