

JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/ Conference Title:	Team Shrub
Travel Dates:	14/6-22/8/15
Location:	Kluane National Park, Qikiqtaryuk-Herschel Island, YT, Canada
Group member(s):	Isla Myers-Smith, Sandra Angers-Blondin, Jakob Assmann, Haydn Thomas, Santeri Lehtonen, Joe Boyle
Aims:	<p>The aim of the group overall is to investigate vegetation change in the Arctic. This involves common garden experiments, root-collar sampling, mapping, ground-truthing of satellite data, decomposition experiments, genetic sampling, and dendroecology. My fieldwork was supplementary to the aims of the group, measuring seed herbivory along an altitudinal gradient in Kluane, and carrying out herbivory transects on Qikiqtaryuk. By investigating herbivory at different altitudes we can appreciate the influences of differing vegetation types on herbivore activity. This may allow for some prediction of herbivory of new vegetation communities brought about by warming, which are often similar to the communities present at lower altitudes. The scat transects are part of the long-term ecological monitoring on Qikiqtaryuk, allowing analysis of the relationship between plant and animal communities and their abundances.</p>

OUTCOME (not less than 300 words):-

Introduction

Outlined in 'aims' above.

Methods

The seed herbivory experiments were set at four altitudes, spanning approximately 800m of elevation gain. At each experimental site, a series of 30 seed 'depots' were set, each containing a number of seeds, alternating between oat seeds and sunflower seeds. We returned to each site 24 hours after it was set and counted the remaining seeds, as well as taking photos of each depot and recording further signs of herbivory (scat, chewed flagging tape, etc.). This took two days, but gave us some useful insight into herbivory patterns in the area, and tied into an international experiment running along the Pacific coast of the Americas, with our data point being the furthest north.

The herbivory transects were 1 ha visual counts of herbivore sign. Typical signs were scat, footprints, rodent tunnels and nests, bear digs, and muskox wool (qiviut). The abundant herbivores are caribou, muskox, lemmings, and ptarmigan. Bears were also included. Dividing the hectare into ten 10 m channels 100 m long, two people walked along one channel each them calling out any observed sign. A third observer walked between them, recording their calls. This is a very quick way to get a snapshot of the relative herbivore abundance, and may be used to compare with other years' data.

Results

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The highest seed predation was observed at the site of second-lowest elevation. This agrees with the increased abundance of other herbivore sign at this site. The lowest-elevation site had considerably less seed herbivory and fewer signs of herbivore presence. The site of second-highest elevation had very little herbivory. The highest-elevation site had no seed herbivory.

The herbivory transects are at an early stage of a long-term monitoring program, and so have little in the way of results. However, it is clear that they are comparable to last year's and capture the full range of the island's herbivores.

Discussion

We expected herbivory to decrease with altitude; however, the site with the most herbivory was not at our lowest elevation. This may be due to the flatter topography and absence of talus at the lowest elevations, leaving herbivores more exposed to predation. This increased risk reduces the optimal time to spend foraging in the more exposed areas, and therefore reduces seed herbivory. The site of second-highest elevation had very little herbivory as it was above shrubline and had little vegetative cover. The highest-elevation site had no seed herbivory and minimal flora (mosses and lichens) due to its high exposure and absence of significant soil depth. This experiment was relatively simple; thorough marking of sites and repeating cycles of seed types made finding the depots and sites relatively easy. One problem we did encounter was the ambiguity of the term 'hulled' in the protocol, and without internet we took a gamble on whether that meant shells on or off. We got it wrong. However, a subsequent experiment showed no difference in rates of predation between shell-on and shell-off seeds.

The herbivory transects were comparable to last year's indicating that they have some use for long-term monitoring of herbivore abundances in the area. That they include all the island's vertebrate herbivores is essential to their utility in monitoring, and this year's transects showed this to be the case.

Personal Statement (outlining the skills and experience you expect to gain from the project)

Through no other ten-week period in my studies have I learnt as much about what it takes to be a field ecologist. The practical experience of conducting studies in the field while living out of a backpack in that same field was invaluable, and the learning curve was more of a brick wall (that took a few attempts to vault!). The experience has given me confidence in my studies, and in approaching potential dissertation supervisors, knowing that I can bring in some of the expertise I gained from those I worked with.

Summary

The seed herbivory experiments in Kluane were successful; and though our monitoring of herbivore presence on Qikiqtaryuk is at an early stage, it will become part of the long-term studies which make the island an even more special place to study.

Acknowledgements

I couldn't have done any of this without the continuing support of Isla Myers-Smith and her PhD students, they've taught me and borne with me throughout and either side of the trip. Financial assistance from the Weir Fund and James Rennie Bequest was also vital to my participation, and both present fantastic opportunities to many students looking to push their education beyond lecture theatres.