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Shrubbification of the Canadian Arctic

Climate change in the Arctic tundra is progressing quickly compared to other biomes and a dramatic result of this warming has been the expansion of shrub species, both northwards and to higher elevations. I joined a research team in Canada over the summer to carry out a variety of field experiments, aiming to answer many different questions about how the tundra is changing as it becomes more shrubby, and what this might mean for future climate change.

Our work was split between Kluane National Park in the Southern Yukon and Qikiqtaruk (Herschel Island) in the Northern Yukon. At both sites, we collected plant samples from various willow and birch shrub species to see how their traits differ across latitude and elevation. These data might be used in the future to predict how further shrubbification will occur. We also buried and collected hundreds of teabags to investigate how decomposition differs between shrub and non-shrub sites. Finally, we conducted species cover surveys at a series of 1 m^2 plots on Qikiqtaruk that have been studied since the early 1990s, to gather data on how species composition is changing. We found that various grass species are growing taller and some wildflower species appear to be declining in abundance, with shrubs encroaching into these areas.

Working with the research team taught me a variety of novel scientific methods, including point framing to monitor ecosystem species composition, drone imagery to answer questions about the accuracy of satellite imagery, and time-lapse photography to investigate seasonal greening.

The trip also taught me a lot about the logistics of organising a two-month field campaign, and some of the things that can go wrong, such as grizzly bears digging up the tea bag samples! This will undoubtedly help me to anticipate similar problems in the future as I look to planning my own fieldwork.

Without the funding provided by RSB, I would not have been able to travel between the Northern and Southern sites and I would not have experienced the full scope of a large-scale research expedition. I would never have seen the dramatic results of climate change in the Arctic, and I would never have experienced the amazing Canadian Arctic ecosystems.