

Session 1: Symposium of studies funded by BC Parks Living Lab program

Session Moderator: Stephen Ban

Location: TBC

Date/Time: Tuesday, December 13, 10:30 am to 12:15 pm

- [Brenda Beckwith](#) - Building climate resilient butterfly habitat, year 2
- [Cassandra Elphinstone](#) - The influence of climate change and increased recreation on alpine plants in the Nch'kay region.
- [Courtney Mason & Carmen Massey](#) - Sewecpemic perspectives of climate change and resiliency in Tsutswecw Provincial Park.
- [Carly Hilbert](#) - Alpine plant responses to increases human trampling disturbance in the Nch'kay region.

Brenda Beckwith

Selkirk Innovates, Selkirk College, Castlegar, BC

Building climate resilient butterfly habitat, year 2

Abstract:

This presentation will report on activities and key findings in year 2 of our Building Climate Resilient Butterfly Habitat project. We continued monitoring our research sites, Syringa and Beaver Creek provincial parks, both located in the West Kootenay region of the BC Interior, building on the same survey methods in year 1. This fall we established ecological restoration sites within each of these parks and planted the sites with native seed that was locally collected, and native plants grown from previously collected ecotypic seed. Plant selection was based on survey results focusing on plants that are nectar and host plants for at risk and climate vulnerable butterflies. An experimental approach was adopted to determine best method for reestablishment of native plants (1) due to an abundance of non-native weeds that expanded their growth and extent in the seasonally wet and cool spring in 2022 and (2) to best track and record native plant establishment success. The presentation will conclude with an update on the exciting new Butterfly Habitat Interpretive Garden in Syringa Park. By this fall we will have planted the site and set the stage for further infrastructure development in 2023.

Contributors:

- Janice Arndt, Private contractor
- Valerie Huff, Kootenay Native Plant Society

- Terri MacDonald, Selkirk College

Acknowledgements: This project, made possible with funding from BC Parks Living Lab for Climate Change and Conservation, is supported by and administered by Selkirk Innovates at Selkirk College in Castlegar and by the Kootenay Native Plant Society (KNPS). Building Climate Resilient Butterfly Habitat is a subproject of a five-year KNPS program entitled Pollination Pathway Climate Adaptation Initiative.

Cassandra Elphinstone

Department of Botany, University of British Columbia

The influence of climate change and increased recreation on alpine plants in the Nch'kay region.

Abstract:

This summer, we created the first international tundra experiment site in BC's Coast Mountains. A unique location with its deep snowpack and large recently deglaciated valleys. Situated in the Nch'kay region (Garibaldi Park), this site is located on the traditional territories of the Skwxwú7mesh Úxwumixw and Líl'wat Nation. Used for hunting and gathering, it remains a culturally important region for both nations. To inform park users on the area's history and cultural traditions, educational signs of traditionally important plants and their uses will be created in collaboration with the Skwxwú7mesh Úxwumixw. We installed twelve open top chambers on the far side of Garibaldi Lake, warming tundra plants by 1-3 degrees Celsius during the day. Cameras, climate stations and root cores were installed in and out of the chambers to determine how the chambers affected flowering time, greenness, air and soil temperature, soil moisture, soil microbial and fungal biomass and root growth. As well, we set up a trampling study on three trails (Panorama Ridge, Black Tusk, Taylor Meadows) to investigate the effects of increasing recreational traffic on plant communities. These results may inform decisions about which plant communities are resilient to trampling and suited to future recreation sites and trails.

Contributors:

- Courtney Collins, University of British Columbia
- Nathalie Chardon, University of British Columbia
- Anya Boardman, University of British Columbia
- Allen Zhao, University of British Columbia
- Katie Goodwin, University of British Columbia

Acknowledgements:

We are guests on the traditional, ancestral, and unceded territory of the xwməθkwəyəm (Musqueam), Skwxwú7mesh (Squamish), Stó:lō, and Səlílwətaʔ/Selilwitulh (Tsleil- Waututh) and Lílwat Nations. As such we are communicating and learning from these Nations as much as possible during our studies. Primary funding for this project came from the BC Parks Living Lab for Climate Change and Conservation. Also supporting this research was the University of British Columbia's Work Learn Program and an NSERC Discovery Grant to G. Henry.

Courtney Mason & Carmen Massey

Thompson Rivers University and Little Shuswap Lake Band (LSLB)

Sewépmc perspectives of climate change and resiliency in Tsútswecw Provincial Park.

Abstract:

Currently, as Indigenous peoples in British Columbia consider the development of parks as tools for economic growth and the preservation of their cultural practices, it is imperative to assess the history of Indigenous peoples' experiences and how localized contexts can support the potential to build bridges, reshape relations with diverse stakeholders, and sustainable ecosystems. These land use developments are occurring simultaneously with rapidly shifting patterns of climatic conditions. Most notably, wildfires and watershed health related to climate change, are pressing concerns.

This study partnered with the Little Shuswap Lake Band (LSLB) on research in Tsútswecw Provincial Park. The park is located entirely within Secwépmc traditional territory along the shores of the Adams River. Oral history sharing circles and personal interviews with Elders were the primary methods of data collection. Key questions included: How do local Secwépmc peoples view climate change impacts in Tsútswecw?; How did Secwépmc peoples manage shifting environmental conditions historically; and, What adaptive capacities were employed at localized levels? Climate change and its impacts on local ecosystems have exacerbated livelihood issues and called into the question the sustainability of some rural Indigenous communities. This study assessed how they these changes are linked to contemporary conceptions of park development and land use management to support stakeholders in BC Parks, the health of local peoples and regional ecosystems.

Carly Hilbert

Biodiversity Research Centre, University of British Columbia

Alpine plant responses to increases human trampling disturbance in the Nch'kay region.

Abstract:

Despite a large increase in recreation at hiking destinations in the Coastal Mountains of British Columbia, how human trampling affects alpine plant communities, already impacted by warming, is unknown. To quantify this, we established a trampling study in Summer 2022 in the Nch'kay region (Garibaldi Provincial Park, British Columbia) as part of the International Tundra Experiment (ITEX). We established 14 paired disturbed (trail-side) and undisturbed (off-trail) transects along three major hiking trails in the Nch'kay region. At each transect, we measured maximum plant height and diameter (growth proxies), and recorded the number of flowers and fruits (reproduction proxies) for mountain heather, blueberry, and sedges. We took standardized photographs of each transect to compute greenness and buried tea bags at selected transects to measure litter decomposition rates. We hypothesize that plants at trail-side transects will show lower growth, reproduction, and greenness compared to off-trail transects and that this effect may be stronger on mountain heather and blueberry species than on sedges. Understanding which plant types are more susceptible to the effects of human trampling than others will help inform land managers on where to establish recreational sites and trails to minimize the effects of human trampling.

Contributors:

- Cassandra Elphinstone, University of British Columbia
- Courtney Collins, University of British Columbia
- Nathalie Chardon, University of British Columbia
- Anya Boardman, University of British Columbia
- Allen Zhao, University of British Columbia
- Katie Goodwin, University of British Columbia

Acknowledgements:

- Squamish Nation
- Lil'wat Nation
- Living lab
- UBC Work Learn
- NSERC