

March 10, 2022

Living Lab Program for Climate Change and Conservation - Final Report



Project title:

Lead researcher(s): Dr. Pam Shaw

Research findings

[Please include key quantitative and qualitative research accomplishments. Bullets are acceptable]

- During the 2021/2022 project year, the research team completed a preliminary microclimate data and red huckleberry leaf onset and fall phenology comparison between the BC Parks sites and non-BC Parks sites.
- We also established two more research sites; one at the VIU Woodlot and one at Maple Mountain. The two new study sites are at a mid-point between the currently established BC Parks study sites. The addition of the new study sites fulfills our statistical sampling design; three research plots in the CDFmm and three in the CWHxm, which will allow us to begin our analysis of shifts in plant survival and productivity across climatic gradients.

Methods summary

[Please be brief - bullets are acceptable]

- Deployed field cameras and downloaded microclimate data for both 2021 and 2022 growing seasons at BC Parks sites (Koksilah River Provincial Park and Bowser Ecological Reserve).
- Hired two Vancouver Island University students to analyze and interpret data.
- Expanded database that includes daily phenology and microclimate observations.
- Produced a summary report that includes plot establishment (site description, equipment installation), data collection and analysis methodology, and summary of phenology and microclimate data.

Key outcomes for BC Parks

[e.g., what are the consequences of your research for park values (conservation, recreation, and/or cultural)?, bullets are acceptable]

Our project aims to increase understanding of ecosystem resilience to climate change to provide practical scientific information to contribute to maintaining and restoring dry coastal ecosystems on southeastern Vancouver Island. We will deliver data and reports for the BC Parks and Protected Areas research sites as well as the other comparative plant phenology research sites on Vancouver Island to build a broader landscape understanding of climate change impacts to coastal ecosystems.

Relevance to BC Parks management

[Provide any recommended steps BC Parks can take to incorporate your project's findings in our day-to-day management of the park system]

Research sites in BC Parks were established in 2020, and we continue to collect baseline data to determine climatic and phenological trends. Over time, we expect that the data collected will begin to illustrate shifts in the timing of the growing season and timing of plant development phases on Vancouver Island, and to project potential impacts of climate change in the study area. Increased understanding of species and ecosystem shifts will contribute to protected areas management into the future. As BC Parks moves forward with climate change research to inform management planning, this research approach may be implemented more broadly to complement/verify projected climate change impacts.

Project's challenges/opportunities

[List challenges/lessons learned or opportunities here]

- The greatest challenge was navigating student supervision during the COVID-19 pandemic. Due to pandemic related restrictions, many students were working remotely. Our team did not have adequate equipment (e.g., laptops) to support remote project work. Similarly, our field laptop presented many challenges when downloading microclimate data. This year we were awarded additional funding to purchase both student laptops and a field laptop, which allowed us to complete project work more effectively.
- The project team also experienced technical challenges with field cameras. We conduct regular maintenance and quality checks after the cameras are deployed in spring. At this time, we found data gaps due to camera failure on a couple of specimens.
- Preliminary results based on the 1.5 years of data from BC Parks research sites are showing interesting trends across and between research sites. More data collection will be crucial to develop baseline microclimate – phenology relationships and to project potential impacts to plant growth and survival with climate change. The study is now fully implemented so we are set up to continue data collection to reach the project goals.

Conclusions/next steps

- Thanks to BC Parks, we were awarded funding for a third year. Year three will consist of data collection to ensure we have another full season of data to add to our existing sites. Now that we have a more robust study design, we can enhance our results generated across southeastern Vancouver Island ecosystems and help to assist with land management of parks over time. Furthermore, Vancouver Island University student involvement will be critical for longer-term data retrieval on site, and to help with microclimate data and photo analysis and interpretation.
- For 2022, we have already deployed the cameras to capture a second full year of data. We will also focus on preliminary analysis of climate and phenology data, and determining early trends. Once we have three full years of data, we will begin the longer-term analysis phase of this project, including projecting potential impacts of climate change.

References and links

[Optional - Provide any other links or information related to the project, including existing blogs, related publications, or other media]

- See attached 2021 Year-End Report and blog for BC Parks' website.

Checklist

- Have you submitted a short blog for BC Parks' website? If not, a blog summarizing your project in no more than 400-600 words is due no later than 30 days after the end of the term of your agreement. We welcome photos or images too to support the blog.
- Have you added any relevant Living Lab project data or reports to the BC Data warehouse and/or EcoCat? Please contact Jen Grant or Stephen Ban for assistance.
- Invoice submitted? An invoice is required to receive the final instalment of your Living Lab transfer agreement funds. The invoice should include:
 - the university address,
 - the Transfer Payment number (as per your agreement),
 - a one-line description of what the project is about,
 - the amount due (you may need to send this via your financial arm) and indicate that this is the final instalment. The invoice should follow or accompany the completion of this final report template of which both are due on or before March 21st, 2022. **If we do not receive an invoice from you by this date, we will not be able to issue your final payment.**