

University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Advancing UBC Biodiversity Themes and Principles Through Campus Community Consultation

Prepared by: Brodie F. Smith & Fideline A. Mboringong

Prepared for: Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Course Code: RES 505

University of British Columbia

Date: February 2023

Disclaimer: "UBC SEEDS Sustainability Program provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions, and recommendations with the UBC community. The reader should bear in mind that this is a student research project and is not an official document of UBC. Furthermore, readers should bear in mind that these reports may not reflect the current status of activities at UBC. We urge you to contact the research persons mentioned in a report or the SEEDS Sustainability Program representative about the current status of the subject matter of a report".



SEEDS Sustainability
Program

UBC sustainability

EXECUTIVE SUMMARY

This research project was completed in the context and framework of the course RES 505 Qualitative Methods in Interdisciplinary Contexts with Dr. Leila M. Harris as instructor, and in collaboration with the Social Ecological Economic Development Studies (SEEDS) Biodiversity and Climate Principles project. The goal of this research project was to help inform the themes, principles, and related actions of the emerging University of British Columbia (UBC) Adaptation, Resilience and Biodiversity Strategy (ARBS). This research project complied with UBC Behavioural Research Ethics Board (BREB) application for RES 505.

A literature review of relevant documents was completed to help identify possible existing principles that could be applied to the UBC ARBS. The data collected in the literature review was compiled in a summary table listing the themes and principles relevant to biodiversity for each of the reviewed documents. Themes were grouped to establish broader themes that helped inform the coding and analysis of the interview and focus group data.

Interviews with campus experts and focus group discussions with UBC staff and faculty and student staff were completed to identify possible additional themes and principles that will increase understanding needed to inform UBC ARBS. Participants are currently working on biodiversity related projects and campus planning. All interviews and focus groups were one hour in duration and were conducted online using Zoom. The student researchers led the discussions, with support from SEEDS representative Georgia Stanley. The participants were identified and recruited by SEEDS representatives. The campus expert interviews were semi-structured using open, exploratory questions and participatory discussion. The focus groups discussions were based on five focal questions, followed by open discussion amongst the participants and follow up questions as needed.

The data from the literature review was combined with the data from interviews and focus groups and was analysed using deductive coding. A series of major biodiversity themes were developed and summarized in a table. Seven major themes with associated topics were identified. The themes identified in this research project will provide UBC with guidance on the themes, and eventually the principles, needed to proceed with creating the UBC Adaptation, Resilience, and Biodiversity Strategy.

Several project limitations were identified. There was a lack of diversity in the participants including no Musqueam representation. The number of participants, total number of interviews and focus groups, the coverage of the literature review, and depth of analysis was limited due to time constraints. Recommendations to incorporate biodiversity in future activities and policies include improving policy processes, integrating climate change and biodiversity actions, providing financial support for biodiversity initiatives, and protecting campus biodiversity. Recommendations for additional research include expanding the scope of consultation, exploring other themes, continued inclusion of the student body, Musqueam inclusion, the involvement of more campus experts, and an expanded literature review beyond UBC resources.

CONTENTS

Executive Summary 1

1. Introduction..... 3

1.1 Project Goals and Objectives..... 3

1.2 Conceptual Framework 4

1.3 Researchers and Positionality 5

2. Methods 6

2.1 Literature Review 6

2.2 Campus Expert Interviews 6

2.3 Campus Community Focus Groups 7

2.4 Data Analysis 8

2.5 Ethical Considerations 8

3. Results 9

3.1 Literature Review 9

3.2 Interviews and Focus Groups 14

4. Discussion 15

4.1 Biodiversity Themes 15

4.1.1 Conservation, Protection and Restoration 16

4.1.2 Land-Use Planning 17

4.1.3 Nature Based Solutions 18

4.1.4 Education and Community Involvement 19

4.1.5 Indigenous Knowledge 20

4.1.6 Regulation and Policy 21

4.1.7 Biodiversity Monitoring and Planning 24

4.2 Project Limitations 25

5. Recommendations 26

6. Conclusion 27

References 28

Appendix A: Participant Consent Form 30

1. INTRODUCTION

This research project was completed in the context and framework of the course RES 505 Qualitative Methods in Interdisciplinary Contexts with Dr. Leila M. Harris as instructor, and in collaboration with the Social Ecological Economic Development Studies (SEEDS) Biodiversity and Climate Principles project. The broad goal of the SEEDS project is to “inform the development of a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing (UBC, 2021c).” Georgia Stanley, the SEEDS Climate Response Applied Research Coordinator, provided context and support for this work. Rowan Waldron, UBC Climate Action Planner was the primary SEEDS partner for this project, with support from Georgia Stanley.

The goal of this research project was to help inform the themes, principles, and related actions of the emerging University of British Columbia (UBC) Adaptation, Resilience and Biodiversity Strategy (ARBS). A literature review of relevant documents (e.g., UBC Climate Action Plan (CAP) 2030 (2021c), previous SEEDs projects with relation to this topic, case studies from places) was completed to help identify possible existing principles that could be applied to the UBC ARBS. Interviews with campus experts and focus group consultations with UBC staff and faculty and student staff working on biodiversity related projects and campus planning were completed to identify possible additional themes and principles that will increase understanding needed to inform UBC ARBS.

The data collected in the literature review, interviews and focus groups was analysed using deductive coding, and themes were developed based on the repetition and grouping. A series of major biodiversity themes were developed and summarized in a table. This research project complied with UBC Behavioural Research Ethics Board (BREB) application for RES 505. The themes identified in this research project will provide UBC with guidance on the themes, and eventually the principals, needed to proceed with creating the UBC Biodiversity, Adaptation and Resilience Strategy.

1.1 PROJECT GOALS AND OBJECTIVES

The goal of this research project is to inform the development of a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing. The project objectives include:

- To help identify existing biodiversity related principles found in existing UBC policies, plans, programs, and initiatives (e.g., CAP 2030).
- To help identify principles and themes that could be applied to the emergent UBC ARBS.
- Complete a report and presentation for SEEDS outlining potential themes that could be used to develop the principles for the UBC ARBS.

To meet the project goals and objectives, the following research question was the focus of this project work:

- What biodiversity themes and principles can help inform the development of the UBC Adaptation, Resilience, Biodiversity Strategy?

1.2 CONCEPTUAL FRAMEWORK

There have been several projects and studies completed on the topic of biodiversity on the UBC Vancouver campus, including several UBC-led initiatives (e.g., UBC climate emergency planning, Campus Vision 2050, and CAP 2030) related to climate change and biodiversity. These initiatives have set the guiding framework for how UBC may approach biodiversity themes and principles for the UBC ARBS. There have also been many student lead studies completed as part of CAP 2030 and the SEEDS Biodiversity and Climate Principles project.

In 2019, UBC declared a climate emergency and renewed its commitment to climate leadership (UBC, 2021b). The UBC emergency response was completed in partnership and consultation with community members, students, and staff and faculty. Several themes were developed through community consultation, including protecting biodiversity in both built and natural environments on UBC campus. The Climate Action Plan 2030 was developed in response to the Climate Emergency Declaration and Climate Emergency Community Engagement process and provides direction to make informed climate related policies on campus (UBC, 2021c).

In 2022, UBC launched Campus Vision 2050, which is a two-and-half-year consultation and engagement process with various campus stakeholders to help determine the long-term vision for UBC campus on (UBC, 2021a). Several topics including biodiversity were included in the process. During consultation for the Campus Vision 2050 initiative, one of the eight themes that was established was “managing growth and the preservation of green space and biodiversity (UBC, 2022).” Several strategies were determined for Campus Vision 2050 including “reinforcing and aligning with Climate Action Plan 2030, and to protect and enrich campus ecology and biodiversity (UBC, 2022).”

In 2021, the UBC Climate Action Plan (CAP) 2030 was released. In the CAP 2030, UBC established a clear Vision Statement for climate action that guides accelerated action in the Climate Action Plan 2030 (CAP 2030) for both the Vancouver and Okanagan campuses. The CAP 2030 will position UBC as a model of how universities can mobilize to address the climate emergency and Paris Agreement targets through bold, impactful actions to accelerate and deepen greenhouse gas reductions across campus operations and expand actions to reduce extended emissions. The CAP 2030 is the third CAP for UBC and builds on the initial two plans of 2010 and 2022. This document sets the pace for the overall campus guidance to reduce GHG emissions, to increase climate adaptation and increase climate resiliency.

While biodiversity is mentioned sparingly in the document, the CAP 2030 does briefly acknowledge the relationship between climate change and biodiversity. The necessity of incorporating biodiversity conservation into the future of UBC is highlighted and the CAP 2030 states that an Adaptation, Resiliency, and Biodiversity Strategy (ARBS) will

be developed in the next planning phase, as “a community-driven process to develop a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing (UBC, 2021c).”

1.3 RESEARCHERS AND POSITIONALITY

The student researchers for this project believe biodiversity is pivotal for our survival as it supports the processes necessary for life on Earth. Incorporating considerations for biodiversity in UBC campus policy will give a balanced approach to campus resilience and human well-being in the face of climate change. The two student researchers have a keen interest in biodiversity issues which was their motivation for pursuing this research project.

Brodie Smith is a biologist with an interest in biodiversity throughout both her personal and professional life. Her work with biodiversity has been through biological inventory and monitoring studies, mostly in wilderness settings but also sometimes in urban settings. She has spent most of her career working in northern and western Canada in a variety of habitats. Brodie is from the Yukon and has lived in Vancouver for the last 5 years. She completed her undergraduate degree at UBC and is now completing a graduate degree at UBC in the Masters of Land and Water Systems program. Between her undergraduate and graduate degree, she has spent many years at UBC and believes that biodiversity is an important part of campus. Brodie looks forward to being able to contribute to future biodiversity policy at UBC.

Fideline Mboringong is a policy analyst with an interest in environmental policy and governance and their implications on people and biodiversity. Her work with biodiversity includes looking at the drivers of biodiversity loss, land-use change and their impacts on people and the environment in the forest areas of Cameroon. Fideline has spent her career working with a Non-Governmental Organization in Cameroon. She has lived all her life in Cameroon with travels to over sixteen countries across Africa, America, Europe, and Latin America. She completed her undergraduate degree in Curriculum Studies and Teaching at the University of Buea in Cameroon and a master’s degree in International Relations at the International Relations Institute of Cameroon (IRIC) & University of Ca’ Foscari in Italy. She is currently enrolled in the Master of International Forestry Graduate program in UBC. She believes that biodiversity is an important part of every ecosystem.

2. METHODS

This research project included several data gathering methodologies including a literature review, campus expert interviews, and focus group discussions. The data was analysed using deductive coding, and themes were developed based on the repetition and grouping.

2.1 LITERATURE REVIEW

The literature review was completed to better understand existing themes and principles regarding biodiversity for the UBC Vancouver campus. Selected documents were reviewed to identify existing biodiversity principles and themes in UBC programs and documents, and to learn what other themes and principles exist in programs and policies outside of UBC. In particular, the UBC Climate Action Plan 2030 was reviewed to determine if there are existing biodiversity principles that may be applicable to the UBC ARBS. A further literature review was completed to identify additional themes and principles that are not included in CAP 2030 but may be integral for the UBC ARBS. The documents selected for the literature review were chosen based on recommendations from the SEEDS representatives, campus experts, and by searching the SEEDS library.

Once the literature review was complete, a summary table was compiled listing the themes and principles relevant to biodiversity for each of the reviewed documents. Themes were grouped to establish broader themes that helped inform the coding and analysis of the interview and focus group data. These grouped themes were based on physical aspects of biodiversity (e.g., green spaces and nature-based solutions), potential areas for policy development (e.g., policy and regulation development,), and actions to promote biodiversity (e.g., habitat conservation and connectivity).

2.2 CAMPUS EXPERT INTERVIEWS

Campus experts were interviewed during the literature review stage to gain guidance on potential biodiversity principles and themes, and how to approach the focus group discussions. The campus experts were also able to recommend additional documents to review in the literature review. Two campus expert interviews were conducted, and each interview was one hour in duration. The two experts were identified by SEEDS representatives as key participants to give direction to this project. The participants currently work on biodiversity related projects for UBC. The interviews were completed in November 2022 and were conducted by the student researchers with the assistance of Georgia Stanley.

The interviews were semi-structured and online using Zoom. The discussion used open, exploratory questions and participatory discussion. The semi-structured method allowed the conversation to flow naturally, and the participant was able to share what was applicable and helpful to the project. This method also allowed the discussion to go beyond the researchers' expectations, providing useful information and different perspectives that

would not have been included otherwise. While allowing for the interview to flow naturally, this method also allowed the researchers to direct the participant to some topics that were important to cover. The online format using Zoom allowed for flexibility in planning with the busy schedules of the participants. The main topics discussed during these interviews were UBC campus biodiversity, ongoing work regarding biodiversity, the expert's vision for the future of biodiversity on UBC campus, and what their expectations were for this research project.

2.3 CAMPUS COMMUNITY FOCUS GROUPS

Two focus groups discussions were completed in November 2022. Each focus group discussion was one hour in duration and conducted online using Zoom. The student researchers led the discussions, each taking the lead for one of the discussions, while the other provided support and kept track of the time. Georgia Stanley was present for both focus group discussions and acted in a support role, taking notes, and facilitating the Jamboard (see details below). As is standard practice for SEEDS, each participant was given a \$5 gift card for a coffee shop.

The focus groups discussions were organized to help provide insight into the perspectives and issues surrounding biodiversity on UBC campus. The participants were people that are engaged in climate and biodiversity work on the UBC Vancouver Campus. Two focus group discussions were completed, one with each participant group: UBC staff and faculty, and UBC student staff. The UBC staff and faculty participants are working on campus biodiversity initiatives and campus planning, and the UBC student staff participants are student staff from the Climate Hub. Recruitment for the focus groups was completed by Georgia Stanley, the SEEDS Climate Response Applied Research Coordinator. Invitations were sent to over fifteen potential participants, with the goal to have five to eight participants for each focus group. Eight participants joined the UBC staff and faculty focus group, but only three participants joined the UBC student staff focus group due to limited time and scheduling.

The focus group method allowed for the participants to discuss the ideas and questions and build on each other's ideas and provide more detail and more depth on the topics that were introduced. This was evident when nature-based solutions were discussed - several participants had ideas triggered from the initial response of one participant. This method may have also made the participants more comfortable, knowing that they had peers with them in the group. For example, as the discussion proceeded, the students became more comfortable talking with one another and building on the ideas each of them shared. The online format using Zoom allowed for flexibility in planning with the busy schedules of the participants.

To support the focus groups discussion, a Jamboard was set up for each session. The participants were invited to add comments to the Jamboard throughout the discussion. Georgia Stanley facilitated the Jamboard and added the participants' comments to each page of the Jamboard to summarize the discussion. The Jamboard was also used by the student researchers to guide the follow up questions and discussions.

The focus groups discussed the biodiversity related principles from CAP 2030 and discussed additional themes and topics that should be included in the UBC ARBS. The student researchers asked probing questions, followed by open discussion amongst the participants. Five focal questions were used during the focus group discussions, with the addition of follow up questions as needed. The focal questions included the following:

- What are some themes that come to mind when you think of biodiversity on campus?
- What are the benefits biodiversity offers to the UBC community, ecosystems, and economy?
- What do you visualize when you think of a thriving, biodiverse, and climate resilient campus? What images come to mind?
- How has UBC incorporated biodiversity in Campus Planning to date?
- What role and responsibility does UBC have in maintaining and enhancing biodiversity?

2.4 DATA ANALYSIS

The interview and focus group data were analysed using deductive coding. Pre-established codes were based on what was found in the literature review and the initial impressions from the interviews and focus groups. Due to time constraints, each student researcher coded and analysed one interview and one focus group discussion each. They then compared the results through an active discussion and theme matching process.

2.5 ETHICAL CONSIDERATIONS

This research project complied with the UBC Behavioural Research Ethics Board (BREB) application for RES 505. Both student investigators completed the course Research Ethics Based on the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2: CORE 2022) prior to completing research. All participants signed or verbally agreed to a consent form (Appendix A). All participants were recruited through the SEEDS employee network. Participation was entirely anonymous, and no identifying information was collected. Only the student researchers and Georgia Stanley, the SEEDS Climate Response Applied Research Coordinator, have access to the interview transcripts and recordings. All electronic files will be kept on the investigator's computers in a password-protected file.

3. RESULTS

The results present the highlights that the researchers got from the literature review and the interviews sessions. It includes themes and principles drawn from documents related to the subject and interviewees perceptions of biodiversity principles and themes.

3.1 LITERATURE REVIEW

During the literature review, the researchers reviewed eleven documents including seven that were specific to the UBC Vancouver campus (Table 1). The documents that were chosen were recent, dating between 2014 and 2022. These documents were recommended by SEEDS representatives, campus experts and through the SEEDS library. Some documents encompassed a broad range of topics, while some, such as the student SEEDS reports, were more specific in scope.

After reviewing the various themes and principles found in the literature review, the following preliminary themes were established for the purposes of this research project:

- Land-Use Planning
 - Conservation, Protection, and Restoration (Wild Spaces)
 - Green Spaces and Nature Based Solutions (Urban Spaces)
- Indigenous Knowledge
- Education and Community Involvement
- Biodiversity Monitoring
- Policy and Regulation

These themes were used as a basis for the coding of the interviews and focus group discussions, and then incorporated into the major biodiversity themes in the final analysis.

Table 1. Summary of documents reviewed during the literature review and the biodiversity themes and principles found in each document.

Document	Authors	Year	Location	Biodiversity Themes and Principles
UBC Vancouver Campus Climate Action Plan 2030	UBC	December 2021	Vancouver	<ul style="list-style-type: none"> ● Climate resiliency, decarbonization, climate justice, adaptation, resilience, and biodiversity ● Contributors to human and ecological health (community wellbeing) ● Promoting nature-based solutions, green buildings, and green spaces ● Enhance urban biodiversity, urban forest, trees, and vegetation
UBC Climate Emergency Declaration Report and Recommendations	Morgan Guerin	October 2022	Vancouver	<ul style="list-style-type: none"> ● Climate justice ● Community resilience (human and ecological) ● Green spaces, gardens, and parks ● Human wellbeing
Redefining Resilience	UBC Climate Hub	Undated	Vancouver	<ul style="list-style-type: none"> ● Community resilience (human and ecological) ● Climate wellbeing
UBC Campus Vision 2050 Pre-Planning Focus Group Summary Report	UBC	October 2021	Vancouver	<ul style="list-style-type: none"> ● Green space, wellbeing, ecological sustainability, sustainable land-use planning, social wellbeing, ecology & Sustainability, ecosystem health ● Preservation of green spaces and forested areas on campus ● Protect and enrich campus ecology and biodiversity
Biodiversity Conservation	DIAMOND HEAD CONSULTING	January 2014	Surrey	<ul style="list-style-type: none"> ● Preserving and restoring habitat (natural areas) and natural corridors ● Develop a biodiversity checklist for the campus

Document	Authors	Year	Location	Biodiversity Themes and Principles
Strategy - Surrey				<ul style="list-style-type: none"> ● Protect critical habitat and features ● Enhance habitat connectivity ● Maximize the size of the natural areas ● Improve habitat quality ● Education and awareness regulation ● Community action ● Ecosystem services
The Importance of Biodiversity at UBC: Recommendations for Climate Action Plan 2030	Chester Chan, Blossom Cheng, Lauren Moody, Sarah Pudritz	April 2021	Vancouver	<ul style="list-style-type: none"> ● Human health: physical and mental wellbeing ● Green space ● Indigenous culture and conservation ● Identify and conserve complex landscapes ● Habitats and species ● Encourage student engagement ● Education of Indigenous Knowledge ● Regulation reconciliation ● Promote social cohesion
Biodiversity Business Case: Exploring the Attitudes of Undergraduate Students on Campus Greenspace	Charlotte Choi, Alicia Chow, Carol Hu, Amanda Kwan, Subinuer Paerhati	December 2019	Vancouver	<ul style="list-style-type: none"> ● Biodiversity ● Wellbeing ● Sustainability ● Green spaces
Draft Principles to	CleanBC	August 2021	British Columbia	<ul style="list-style-type: none"> ● Build a Shared Path to Climate Resilience with Indigenous Peoples: The Province

Document	Authors	Year	Location	Biodiversity Themes and Principles
<p>Guide the Province of B.C.'s work on Climate Preparedness and Adaptation</p>				<p>recognizes that our relationships with Indigenous peoples need to evolve, and we are committed to building a shared path to climate resilience in true partnership with Indigenous peoples.</p> <ul style="list-style-type: none"> ● Take an Equity-Informed Approach: Enhancing climate resilience for everyone in B.C., regardless of where and how they live, requires an adjusted approach that integrates equity considerations into climate adaptation responses. ● Enhance Health and Well-being for All: There are many opportunities to choose adaptation actions that reduce health risks, like increased asthma and mental health issues, related to climate change while also improving community resilience and well-being. ● Promote Nature-Based Solutions to Enhance Community Resilience: Nature-based solutions are actions that can protect, sustainably manage, and restore ecosystems in ways that benefit people as well as biodiversity and ecosystem function. ● Align Emissions Reduction with Climate Adaptation: Strategically aligning actions for climate adaptation and greenhouse gas emissions reduction can enhance the effectiveness of both while also avoiding risks and generating economic, ecological, and social benefits. ● Take a Proactive Approach: The Business Case for Adaptation: Managing climate risk is part of building an innovative and resilient economy and ensuring that B.C. maintains a competitive business environment in the climate of the future.

Document	Authors	Year	Location	Biodiversity Themes and Principles
UBC Climate Emergency Engagement Final Report and Recommendations.	UBC	January 2021	Vancouver	<ul style="list-style-type: none"> ● Campus land-use planning ● Protect campus biodiversity ● Nature garden and trees ● Indigenous Knowledge ● Community wellbeing and resilience ● Sustainable campus operations ● Climate resilience ● Research

3.2 INTERVIEWS AND FOCUS GROUPS

The campus expert interviews and focus group discussions provided extensive and valuable information regarding biodiversity on UBC Vancouver campus. Several key topics emerged from the discussion that may be used to create biodiversity themes and principles (Table 2). Further investigation into each biodiversity topic is covered in the Discussion section (Section 4.1).

Table 2. Summary of biodiversity discussion topics from the campus expert interviews and focus group discussions.

Method	Participant(s)	Biodiversity Discussion Topics
Interview	Campus Expert	<ul style="list-style-type: none"> ● Ecological significance (ecological significant species) ● Climate resilient and adaptive choices ● Habitat value and ecological connectivity ● Place-based urban design (Green spaces) ● Nature based solutions ● Protecting habitat and biodiversity ● Research (explore UBC asset as a research institution)
Interview	Campus Expert	<ul style="list-style-type: none"> ● Decarbonization ● Matrix to assess biodiversity and campus resilience ● Land-use decision ● Climate mitigation
Focus Group	UBC Staff and Faculty	<ul style="list-style-type: none"> ● Species ● Nature based solutions ● Ecological/systems connectivity ● Ecosystems ● Health and wellbeing for humans & nature ● Indigenous Knowledge ● Incorporating biodiversity in building designs ● Putting in place interconnected systems ● Promoting green spaces/innovation in green infrastructure to ● Support biodiversity ● Promoting native vegetation ● Policies promoting biodiverse landscapes
Focus Group	UBC Student Staff	<ul style="list-style-type: none"> ● Raising awareness ● Urban biodiversity ● Species types/selection ● Promoting green spaces ● Promoting biodiversity on campus ● Policies that promote biodiversity ● Development that supports urban biodiversity

4. DISCUSSION

4.1 BIODIVERSITY THEMES

All the themes and principles discovered in the literature review, campus expert interviews and focus group discussions were grouped into final major biodiversity themes (Table 3). Many of the themes that came out of the interviews and focus groups aligned with those that came out of the literature review. Overall, there were seven major biodiversity themes: Conservation, Protection and Restoration, Land-use Planning, Nature Based Solutions, Education and Community Involvement, Indigenous Knowledge, Regulation and Policy, and Biodiversity Monitoring and Planning. The major biodiversity themes remain broad and include a lot of crossovers between themes.

Table 3. Summary of major biodiversity themes based on the results from the literature review, campus expert interviews, and focus group discussions.

No.	Biodiversity Themes	Topics
1	Conservation, Protection, and Restoration	<ul style="list-style-type: none"> ● Preservation of forested areas ● Protect and enrich campus ecology and biodiversity ● Preserve and restore habitat/natural areas and corridors ● Protect critical habitat and features ● Conserve complex landscapes, habitats, and species
2	Land-Use Planning	<ul style="list-style-type: none"> ● Enhance habitat connectivity ● Maximize the size of natural areas ● Improve habitat quality ● Mitigation for habitat loss ● Use of native species
3	Nature Based Solutions	<ul style="list-style-type: none"> ● Incorporate green spaces and green infrastructure, including the preservation of existing green spaces ● Choose natural solutions whenever possible (e.g., native grassland over turf)
4	Education and Community Involvement	<ul style="list-style-type: none"> ● Raise awareness of biodiversity issues and why biodiversity is important (e.g., signage, nature walks, and biodiversity related events.) ● Expand biodiversity research at UBC, explore research for the benefit of biodiversity ● Include citizen science and NGO affiliated research

No.	Biodiversity Themes	Topics
		<ul style="list-style-type: none"> ● Involve student body in discussions and decision making
5	Indigenous Knowledge	<ul style="list-style-type: none"> ● Education of Indigenous Knowledge ● Reconciliation ● Work with the Musqueam people to explore Indigenous Knowledge for the benefit of the campus and people
6	Regulation and Policy	<ul style="list-style-type: none"> ● Policies in place that promote biodiversity choices that enhance climate resilience ● Create policies and regulations that help fund biodiversity-based decision making ● UBC as a leader in biodiversity policy (research experience)
7	Biodiversity Monitoring and Planning	<ul style="list-style-type: none"> ● Develop a biodiversity checklist ● Create a matrix to assess biodiversity and resilience ● Using native and climate change adaptive species in planning

The CAP 2030 states that an Adaptation, Resiliency, and Biodiversity Strategy (ARBS) will be developed in the next planning phase, as “a community-driven process to develop a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing (UBC, 2021c).” The campus consultation methodology used in this research, and the inclusion of UBC staff and faculty and UBC student staff, will help fulfil the requirement for a community-driven process. The major biodiversity themes described in this research may provide a starting point to help inform the development of a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing.

4.1.1 CONSERVATION, PROTECTION AND RESTORATION

The terms conservation, protection and restoration came up frequently during the literature review, interviews, and focus group discussions. The main topics discussed around conservation, protection and restoration included:

- Preservation of forested areas
- Protect and enrich campus ecology and biodiversity
- Preserve and restore habitat/natural areas and corridors
- Protect critical habitat and features

- Conserve complex landscapes, habitats, and species

The participants described the need for more conservation, protection, and restoration of biodiversity on the UBC Vancouver campus. ““When I think of biodiversity, I think we need to create or enhance habitat, aquatic ecosystems, and systems connectivity”” (Participant, 2022). They agreed that these actions should be taken as a fundamental priority and not just as a commodity benefit. It was acknowledged that these issues are not prioritised enough on campus currently.

Some of the participants stated they thought that biodiversity was declining on campus, based on the existing natural areas left on campus. One example was the forested area beside the Biodiversity Museum, which is slated to be removed in favour of expanding the museum. The participants thought there was less effort to protect these habitats or provide mitigation for the loss of the habitat and species. The participants agreed that this should be made a priority when determining policies and regulations regarding biodiversity (see Section 4.1.6 for further discussion). An important factor for UBC biodiversity will be to protect the natural areas that already exist and restore those that have been removed or altered. Conservation efforts will go a long way to maintain biodiversity at the UBC Vancouver campus.

4.1.2 LAND-USE PLANNING

Land-use planning is a pivotal part of every community, city, landscape, and country. It can encourage desirable social and environment outcomes and be a guide for efficient use of its resources for its inhabitants. Land-use planning is a key part of UBC’s development and can be done in a way to benefit and enhance biodiversity. As was noted by the participants, it is imperative to move towards sustainable land-use planning on the UBC Vancouver campus.

““We need landscapes that strike a balance between restoration, innovation, and observation. In terms of restoration, we need to look at cultural lands, determine what is significant from that is what is native land and what we can restore. On Innovation, move towards green infrastructure that can highlight modern technology for biodiversity and sustainable health. Try to find a balance between all three within our context”” (Participant, 2022).

The main topics discussed around land-use planning included:

- Enhance habitat connectivity
- Maximize the size of natural areas
- Improve habitat quality
- Mitigation for habitat loss
- Use of native species

The participants acknowledged the need to maximise the size of natural areas, improve habitat quality and mitigate habitat loss. The participants noted that it would be important to enhance habitat connectivity between infrastructure and preservation of forested areas on campus. They imagined greenery and more biodiversity at the edge of the campus, where nature meets the campus infrastructure. To move towards this, the participants believed protecting and enriching campus ecology and biodiversity and preserving and restoring habitat/natural areas and corridors were important factors.

Most action plans on Campus do not clearly include biodiversity choices. The group recognised that “ biodiversity is definitely a new topic and there have been discussions just in the past years. Due to lack of awareness, even with the COPs and media it is always about carbon emissions, climate change and not much about biodiversity” (Participant, 2022). This has changed people's view of biodiversity and how it affects climate change.

“The UBC strategic long term plan gives a view of the University’s path for the next century and points to different ways of talking about land, but no one has done it in a way that speaks to how we strengthen the way we speak of biodiversity on campus and our land” (Participant, 2022). As such UBC land-use planning approaches need to support and promote social and environment outcomes for the community by ensuring that design planning encourages interaction and incorporation between the community and the landscape.

The participants stated that it is challenging to monetise or show the natural capital valuation of biodiversity. Monetization can often be a motivation for investment by leaders. A participant stated that it is easier to work on climate change goals where it is easier to monetise things like carbon offsets.

“There is a lot of awareness that could be done in the different parts of the campus to initiate discussions or conversations and build connections to health and wellbeing and biodiversity. We have not made enough connections. If we have something to point to, it would really be helpful. There is so much more awareness and organisation that can be done” (Participant, 2022).

4.1.3 NATURE BASED SOLUTIONS

Nature-based solutions (NBS) are actions and infrastructure that protect, sustainably manage, and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits (IUCN, 2016). Examples of NBS include building greener cities or roofs, maintaining forest stands, and rain gardens. From the research and discussions, the main topics discussed around nature-based solutions included:

- Incorporate green spaces and green infrastructure, including the preservation of existing green spaces
- Choose natural solutions whenever possible (e.g., native grassland over turf)

The participants acknowledged the “Importance of incorporating green spaces and green infrastructure, including the preservation of existing green spaces and envisioned a campus with more green spaces including shrubs, more trees, lots of tunnels with trees like in other universities in the world” (Participant, 2022). Recognising UBC as an urban area, there is a need to reflect on how to incorporate all the aspects or components of biodiversity on the campus (student). Having infrastructure that is less engineered and mimics or incorporates natural systems is important: “The campus energy centre, Hinge Park, ..., memorial road, sustainability street, rain gardens that can handle rainwater within a tank are all demonstrations of natural systems” (Participant, 2022).

Biodiversity improves people's mental health, and biodiversity can become more accessible to people through NBS. The participants noted that there are studies that have found that when people are exposed to a larger diversity of species, it can improve their physical and mental health. They also noted that the amount of greenery a person is exposed to can facilitate faster recovery from diseases. One participant described the green spaces they visited on campus when they needed some recovery time: “[I visit] buildings that have a biodiverse function. When I want to go for a walk I turn towards the Asian centre or the Nitobe Gardens in and around the forest edge” (Participant, 2022). Another participant added that, “Being surrounded by greenery relaxes you from the stress from school” (Participant, 2022).

One participant noted “that we can have a much different paradigm in terms of how we think about biodiversity that is sensitively nested within nature, supports nature and interfaces with nature” (Participant, 2022). Another participant stated that they “Would love to see more green roofs and good practices, more pollinator corridors. [There are] great examples in East Fraser lands, and Portland.” (Participant, 2022). The participants suggested that UBC can draw from these examples when planning NBS on UBC Vancouver campus.

The importance of NBS cannot be overemphasized, and that is why as a campus it is important to choose natural solutions whenever possible (e.g., native grassland over turf) to improve the social and environmental capacity of our landscapes and buildings thereby enhancing community resilience and improving biodiversity.

4.1.4 EDUCATION AND COMMUNITY INVOLVEMENT

Education and community involvement was a broad topic and there were many suggestions from the participants as to how these factors could be improved with regards to biodiversity on the UBC Vancouver campus. The main topics discussed around education and community involvement included:

- Raise awareness of biodiversity issues and why biodiversity is important (e.g., signage, nature walks, and biodiversity related events.)
- Expand biodiversity research at UBC, explore research for the benefit of biodiversity
- Include citizen science and NGO affiliated research

- Involve student body in discussions and decision making

Participants recommended that the university could raise awareness of biodiversity issues and why biodiversity is important (e.g., signage, nature walks, and biodiversity related events.). One participant noted, “When I think of biodiversity themes, I think of how do we get more people interested in protecting the remaining biodiversity’ “(Participant, 2022). This was followed by a discussion on how to increase awareness of biodiversity on campus for staff, students, and visitors. “Lots of people visit campus and we can talk of signage as a way of educating people on biodiversity’ “(Participant, 2022).

“You can learn all about biodiversity, species by just walking around UBC with lots of trees around the botanical gardens, etc. For example, the community walks, the garden does a lot of tours and walks for people that want to. It is a good education piece.’ “(Participant, 2022).

The participants noted that there is a lack of awareness on biodiversity on campus. While science-based students may hear and discuss biodiversity, students from other faculties may not be as familiar. Many students may not be aware or understand why it is important to protect biodiversity. For example, “students do not understand the ecological and cultural benefits of Pacific Spirit [Park] and that it is an area that we can improve on. In the environment fields or faculty there is discussion or more awareness on biodiversity” (Participant, 2022).

Participants also discussed how biodiversity research on campus could be expanded to include more citizen science, community initiatives, and work with NGOs. This expansion would provide education for community members and students, while also expanding the knowledge base of campus biodiversity, and may aid in creating the biodiversity inventory (see Section 4.1.7). “Because the University is a research institution it is important to have something here on the connection between teaching, research and learning that will not exist in other documents’ “ (Participant, 2022).

4.1.5 INDIGENOUS KNOWLEDGE

The UBC Vancouver campus is located on the Unceded Territory of the Musqueam People. The Musqueam will be key members in the discussion on the future of biodiversity at the UBC Vancouver campus. This biodiversity theme focuses on the Indigenous components of biodiversity, but it is likely that Indigenous contribution and knowledge will need to be included in all themes. The main topics discussed around Indigenous knowledge included:

- Education of Indigenous Knowledge
- Reconciliation
- Work with the Musqueam people to explore Indigenous Knowledge for the benefit of the campus and people

According to Environment and Climate Change Canada (2022) the leadership and guidance of Indigenous people have been recognised as being critical in achieving Canada’s domestic and international biodiversity goals. The participants highlighted the importance of recognising the UBC Vancouver campus land is stewarded and inhabited by Indigenous people, and that they will play an important role when discussing biodiversity. It was highlighted in the discussions that decolonization is a way to reach a thriving and biodiverse climate and it cannot happen without Musqueam engagement and presence in governance. The participants acknowledged that UBC’s relationships with Indigenous People needs to evolve. It was highlighted that the Vision 2050 presents an opportunity for UBC to move towards building a mutual path to climate resilience in true partnership with Indigenous People.

“When we talk of enhancing biodiversity, we must think of the land on which we sit which is still stewarded and inhabited by Indigenous People - collaborative governance of the land. Decolonization is a way to reach a thriving and biodiverse climate and I do not think that can happen without Musqueam engagement and presence in governance” (Participant, 2022).

“The Indigenous People did a good job maintaining the land and it has changed with UBC taking over. We need to work more with the Musqueam in contributing to protect the land” (Participant, 2022).

“The power of story is so important, the lessons we have learnt from our host is really how we steward the land but something about storytelling and the interventions that we are making on campus, there is a lot going on and there is a lot more to do. We need to weave that into a strong narrative about our ambition to do more quickly. The challenge is how to bring all these different pieces into one narrative. We see bits and pieces of that. It is a systems approach to how we communicate” (Participant, 2022).

4.1.6 REGULATION AND POLICY

Including biodiversity when establishing and promoting regulations and policies will be important for UBC when addressing biodiversity on the UBC Vancouver campus. Policies and regulations will provide the foundation for the work that needs to be done regarding the other biodiversity themes discussed in this project. The main topics discussed around regulation and policy included:

- Policies in place that promote biodiversity choices that enhance climate resilience.
- Create policies and regulations that help fund biodiversity-based decision making
- UBC as a leader in biodiversity policy (research experience)

The participants emphasised the lack of any key policy or regulation on biodiversity, including protecting green spaces and enhancing wildlife at UBC. The participants suggested that the biodiversity principles that will be developed should provide enough detail so that they can guide regulations and policies. These principles should be

enforced and complied with by UBC but should also be flexible enough to provide room for growth and evolution and can lay the groundwork to begin reflections on these issues.

“The administration needs to put in place policies that support biodiversity, identify hotspots that need to be maintained or untouched and not developed, and provide small green spaces with vegetation and not just turf grass’ “(Participant, 2022).

The participants all acknowledge that UBC does not have specific regulations and policies that promote biodiversity. However, the conversation around enhancing biodiversity on campus is gradually becoming more common and present in discussions. For example, the first version of the CAP was focused on mitigation with a recognition of the importance of adaptation, resilience, and biodiversity. The CAP 2030 does address biodiversity and it is imperative for UBC to not lose sight of these issues. The CAP 2030 should encompass most of the potential themes under that umbrella based on different initiatives happening in UBC. The participants also noted that UBC has an opportunity to include biodiversity principles in work coming out of CAP 2030 and Vision 2050.

UBC is recognised as a leading research institution and can become a leader and role model when it comes to developing biodiversity policies and regulations. The participants agree that UBC should move beyond doing the bare minimum and step up into a leadership role. The lack of information and effort in biodiversity monitoring has led to global biodiversity loss. The participants noted that it was a common perception to think progress was being made because the situation was less bad than it was 10 years ago, when UBC should be focusing on a net positive change.

One participant noted that the landscapes are being asked to do much more in terms of contributions to the public realm, urban design, biodiversity enhancement. However, to do this work, approval for funding is still needed, whether the project is big or small. Because there are no policies and regulations in place that put a priority on biodiversity when it comes to the stewardship, maintenance operation of those landscapes, getting the funding or enough funding to complete these projects can be limited. In terms of funding, more emphasis is being put on simple and easy-to-maintain projects that do not prioritise biodiversity, as these approaches often cost less. This is a flawed model because it focuses on the first incremental capital cost and not all the associated benefits of biodiverse landscapes.

The image and brand of UBC is associated with a beautiful campus situated in nature, but there needs to be more policies and regulations that support making the beautiful campus also a biodiverse campus. “Grey infrastructure is a physical asset that depreciates each year, leading to significant costs, and at the end of life for this type of infrastructure, it will need to be replaced. Natural assets grow in appreciation,” (Participant, 2022) while also maintaining UBCs brand and can provide biodiversity. New policies and regulations supporting this change in

infrastructure and emphasis on choices that support biodiversity need to be adapted to improve campus. The accounting models need to be updated to show the benefits of the natural assets over grey infrastructure.

UBC has a role to play on campus, community, and global scale. The participants had several suggestions on how UBC could become a biodiversity leader:

- As a research institution UBC can provide research on how to enhance biodiversity around BC and Canada.
- Faculty can work with NGOs that contribute to biodiversity enhancement. For example, using the UBC campus as a lab for research based on all our biodiversity - for education and research purposes. Participants stressed that there has been some push back on doing these, by not contributing to grants and papers, which discourages students. Policies could be put in place to encourage such initiatives.
- Include provisions of budget for biodiversity enhancements projects.
- The university needs to compensate for changes to the campus caused by construction. For example, for the extension being built for the Biodiversity Research Centre - trees needed to be cut down. While the cutting of the trees is covered in the funding in the project the replacement of the trees is not. Participants noted that this was not uncommon.
- Incorporate biodiversity into policies for teaching, research, and learning. This is what will set UBC apart as a university and urban community while recognising the campus as a moving lab.
- “UBC needs to act as a leader when it comes to biodiversity protection and work with other universities to advance this in the province rather than competing all the time for grants” (Participant, 2022).

One of the participants had a vision of UBC as a leader in biodiversity. UBC has the opportunity to be an example of green campus landscape development. The UBC Vancouver campus’ location and access to resources and research create a unique opportunity and ability for UBC to take on this biodiversity leadership role. This can be supported by incorporating sustainability as a part of UBC culture, student action, and structural design. UBC currently has a strong focus on climate change mitigation and adaptation. UBC can build on these efforts and reduce environmental impacts through promoting green and biodiversity initiatives.

One participant highlights that UBC has all it takes to set an example as a campus rich in biodiversity by making the most of all the resources at our disposal:

“UBC has a leadership role in the community; our situational context in a biodiversity hotspot surrounded by Pacific Spirit Park, the pacific flyway, the foreshore lands, the Salish Sea. These are all rich ecosystems, so we are kind of

the whole in a doughnut to say that we have an opportunity in a systems approach to it. It is my belief that we should be modelling how. As a global populace, we have seen this year a threshold of eight billion people on planet earth. Most of these people are living in the urban setting so that we can demonstrate a model of making simultaneous improvement to ecological and human health. Not to say we cannot grow but how do we decouple growth with the impact such that we are seeing enhancement in the quality of life of biodiversity that we are providing. And we are seeing restoration of damaged habitats and interventions that contribute to it. It is the same kinds of arguments that we can get criticised for. UBC you are investing so much for climate action on campus to mitigate and reduce greenhouse gas emissions on the scale of global emissions. As a university we can be a model of accelerating green, an ambitious greenhouse gas emission reduction and at the same decouple that from growth in a way that is responsible and that is kind of setting a new model for municipalities across BC. In the same way, what we are doing in UBC is not going to solve the global biodiversity issue, but it will be a kind of model on how we develop responsibly. That is the positioning here” (Participant, 2022).

UBC is advanced in its work on combating or dealing with climate change while progress on biodiversity falls short. People often talk of climate change as disconnected from biodiversity. “One of the reasons we have a climate crisis is because it is being driven by a biodiversity crisis and the kind of behavioural consumptive paradigm that we find ourselves in, especially in advanced societies like ours” (Participant, 2022). The participants stated that the connection between the choices and decisions in terms of biodiversity and the impact around carbon are missing. For example, the work on creating new embodied carbon guidelines with requirements to reduce impacts, looks at the extraction, processing of materials, the production, assembly, and delivery. All of these have a significant impact on biodiversity. We recommend that UBC approaches these two issues as part of whole and not as separate entities.

4.1.7 BIODIVERSITY MONITORING AND PLANNING

The participants discussed the importance of understanding existing biodiversity on the UBC Vancouver campus and to use this information to help plan for climate change, resilient ecosystems and diverse native habitats. The main topics discussed around biodiversity monitoring and planning included:

- Develop a biodiversity checklist
- Create a matrix to assess biodiversity and resilience
- Use native and climate change adaptive species in planning

Other municipalities have created biodiversity checklists to better understand the existing biodiversity and see how biodiversity changes over time. Participants noted that UBC is currently lacking anything like this, and it would be very beneficial to have. Additionally, the participants noted that it would be important to create a matrix to assess biodiversity and resilience that could be used to measure progress on biodiversity commitments. It was stated that “Documents and principles will be like a reference point for UBC to see if they are doing the

things that they were committed to do,” (Participant, 2022) and these biodiversity principles could be used to help develop or inform the biodiversity matrix. It was also suggested that the “matrix can be used to track biodiversity and resilience on the campus aligning the Vision 2050” (Participant, 2022).

It was noted that campus biodiversity could be monitored through research programs. There was emphasis on using a variety of native and climate resilient species as part of biodiversity planning; these species could be determined through the biodiversity checklist/inventory. One participant noted that UBC should try to procure campus supplies from areas/sectors that support biodiversity.

4.2 PROJECT LIMITATIONS

This research project had several limitations. The interview and focus group participants were a specific and targeted group of individuals, based on their work on or around biodiversity on UBC campus, and all had some connection to SEEDS due to the BREB requirement to recruit within the SEEDS network. Because of this, a more diverse group of participants was not included for this research. While Musqueam interests were discussed, there was no Musqueam representation in the interviews and focus groups. The final participant selection was also restricted on who could attend the discussions given the brief time frame.

There was limited time to conduct the research and analysis due to the constraints of completing the project during the Fall 2022 semester. This included not being able to interview all the suggested campus experts, limiting the number of documents that were reviewed as part of the literature review, and limiting how many interviews and focus groups discussion that could be conducted. The SEEDS coordinators suggested several other experts and students that could have been interviewed or included in the focus groups had there been more time to schedule in additional interviews and focus groups. These people could provide additional and valuable perspectives and ideas regarding biodiversity at UBC. The literature review only included a selection of documents that were recommended by the SEEDS representatives, campus experts, and by searching for a few key documents in the SEEDS library. There are likely several more relevant documents that could be investigated. For the analysis, the time restriction resulted in limiting the amount of coding that could be completed and the number of themes that could be investigated.

The online format of the interviews and focus group discussions made it difficult to fully interact with the participant in the same way had the discussions been in person. It was more difficult for the student researchers to read body language and reactions, and to provide encouragement throughout the discussion, due to the online format. For example, it was difficult to know when a pause in conversation was needed for thought, and when it was appropriate to move onto the next question. Had the interview been in person, it may have been easier to interact with the participants and make them feel more comfortable.

5. RECOMMENDATIONS

As UBC moves towards incorporating adaptation on biodiversity and resilience The following recommendations may support the integration of biodiversity into UBC Vancouver campus actions and policies:

- **Improve policy processes:** Incorporate biodiversity considerations in policy processes. This could include a detailed action plan on raising awareness on the importance of biodiversity on campus and mainstreaming biodiversity in campus development.
- **Integrate climate change and biodiversity actions:** Take an integrated approach to promoting biodiversity and climate change action on campus. In many cases, these two issues are related and overlapping. UBC may be able to achieve more if the interconnection between climate change and biodiversity loss are explored together.
- **Provide financial support for biodiversity initiatives:** Promote investment in biodiversity research, testing of new innovations, and the incorporation of biodiversity consideration in architectural designs on campus. UBC leadership could consider being open to investing in biodiversity research with a larger scope that goes beyond short term benefits.
- **Protect campus biodiversity:** UBC could begin to take stronger actions protecting, conserving, and restoring biodiversity on campus. Biodiversity could be made a primary consideration when considering land-use changes on UBC Vancouver campus.

This study could be expanded to include more campus community consultation when developing the UBC Vancouver Campus biodiversity principles. Due to time constraints, the list of themes and topics provided earlier in this report is not exhaustive, and the following actions are recommended to further this preliminary work:

- **Expand the scope of consultation:** Conduct further campus community consultation through more focus groups. This work was limited to a small number of participants as we have mentioned. It will be key to consult a wider group of participants going forward, including students, Indigenous people, UBC Neighbours, and faculty, for a wider view on the path UBC needs regarding biodiversity.
- **Student body inclusion:** Continue to involve the student body and include more than just students working with biodiversity. This work was limited to a few students who work on biodiversity and does not necessarily give a harmonized view of the student body perception. More students need to be engaged and guided in identifying their role and contributions on improving biodiversity on campus.
- **Musqueam inclusion:** Specific interviews and focus groups with Musqueam people should be conducted. A whole society approach is pivotal when looking at policies and sustainability. It is important for UBC to explore opportunities of learning and sharing with the Musqueam people during this process.

- Involve more campus experts: More one-on-one interviews with specific campus experts could be conducted to get a full range of knowledge (planning, maintenance, carbon sequestration, UBC Farm, green space developers, etc.).
- Expand the literature review: The literature review completed for this research project was not exhaustive, and many more resources could be investigated.

The goal of the UBC ARBS is to develop a set of campus biodiversity and climate principles. It is recommended that the major biodiversity themes uncovered in this research be used to help inform the biodiversity principles and future work developing the UBC ARBS.

6. CONCLUSION

The goal of this research project is to inform the development of a set of campus biodiversity and climate principles to advance climate change mitigation and adaptation, ecological health, and human health and wellbeing. The literature review, campus expert interviews and focus group discussions helped to identify biodiversity related themes and principles found in existing UBC policies, plans, programs, and initiatives and identify other principles and themes that could be applied to the emergent UBC ARBS. The resulting major biodiversity themes will help inform future work developing biodiversity principles for the UBC ARBS. This research project has resulted in this report and a presentation that will be provided to SEEDS. While the project encountered several limitations, it can provide a base of information for future work related to biodiversity on the Vancouver UBC campus.

REFERENCES

- Chan, C., Cheng, B., Moody, L. & Pudritz, S. (2021). SEEDS Program Student Research Report: The Importance of Biodiversity at UBC: Recommendations for Climate Action Plan 2030. https://sustain.ubc.ca/sites/default/files/seedslibrary/ASIC_220_The%20Importance%20of%20Biodiversity%20at%20UBC_Recommendations%20for%20Climate%20Action%20Plan%202030_FinalReport.pdf
- Choi, C., Chow, A., Hu, C., Kwan, A., & Paerhati, S. (2019). SEEDS Program Student Research Report: Biodiversity Business Case: Exploring The Attitudes of Undergraduate Students on Campus Greenspace. https://sustain.ubc.ca/sites/default/files/seedslibrary/SOCI_380_Biodiversity%20Business%20Case%20Exploring%20The%20Attitudes%20of%20Undergraduate%20Students%20on%20Campus%20Greenspace_%20Final%20Report.pdf
- CleanBC. (2021). Draft Principles to Guide the Province of B.C.'s work on Climate Preparedness and Adaptation. [guiding_principles_climate_preparedness_and_adaptation.pdf \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/speical/cleanbc/guiding_principles_climate_preparedness_and_adaptation.pdf)
- Diamond Head Consulting. (2014). City of Surrey Biodiversity Conservation Strategy. https://www.surrey.ca/sites/default/files/media/documents/Surrey_BCS_Report.pdf
- IUCN (2016). Guidance for Using the IUCN Global standards for Nature-based Solutions. A User friendly framework for the verification, design and scaling up of Nature-based Solutions. First Edition. Retrieved from <https://portals.iucn.org/library/sites/library/files/documents/2020-021-En.pdf> on 15/01/2022
- Participant (2022). Campus expert interview, November 15, 2022. Zoom interview facilitated by Brodie Smith and Fideline Mboringong.
- Participant (2022). Campus expert interview, November 18, 2022. Zoom interview facilitated by Brodie Smith and Fideline Mboringong.
- Participant (2022). Focus Group 1, November 23, 2022. Zoom interview facilitated by Brodie Smith and Fideline Mboringong.
- Participant (2022). Focus Group 2, November 23, 2022. Zoom interview facilitated by Brodie Smith and Fideline Mboringong.
- Saldaña, J. (2016). The coding manual for qualitative researchers (3rd ed.). Sage.
- Stanley, G. and Johnstone, Z. 2022. *RES 505 + SEEDS Sustainability Program* [PowerPoint slides]. Social Ecological Economic Development Studies (SEEDS). <https://docs.google.com/presentation/d/16hREHmW149vBxaGZyYqt4tGESKTM-DV6/edit#slide=id.p1>
- The University of British Columbia. 2021b. UBC Climate Emergency Engagement Final Report and Recommendations. https://bm-climate-emergency-2020.sites.olt.ubc.ca/files/2021/02/4_2021.02_Climate-Emergency-Engagement.pdf
- The University of British Columbia (UBC). 2021c. UBC Vancouver Campus Climate Action Plan 2030. https://planning.ubc.ca/sites/default/files/2021-12/UBCV_CAP2030_FINAL.pdf

The University of British Columbia (UBC). 2022. UBC Campus Vision 2050. <https://campusvision2050.ubc.ca/engagement-summary-needs-and-aspirations>

UBC Climate Hub. (2022). About Us. UBC Climate Hub. <https://ubccclimatehub.ca/about/>

UBC Sustainability. (2022). CAMPUS BIODIVERSITY INITIATIVE: RESEARCH & DEMONSTRATION (CBIRD). <https://sustain.ubc.ca/teaching-applied-learning/seeds-sustainability-program/campus-biodiversity-initiative-research>

Appendix A: Participant Consent Form



Consent to take part in research Advancing UBC Biodiversity and Climate Themes and Principles Through Campus Community Consultation

Principles investigators:
Brodie Smith and Fideline Mboringong
UBC RES 505 Graduate Students

Introduction

This research project is being completed in collaboration with the University of British Columbia (UBC) SEEDS Sustainability Program and Campus and Community Planning to help inform the policies, principles, and related actions of the emerging UBC Biodiversity, Adaptation, Resilience Strategy outlined in the Climate Action Plan 2030. Several principles have been identified through a review of the UBC Climate Action Plan 2030. Additional themes have been identified through a literature review of climate and biodiversity related documents. The goal of this research project will be to help inform the policies, principles, and related actions of the emerging UBC Biodiversity, Adaptation, Resilience Strategy through participant consultation.

Study data and results

Only the investigators (Brodie Smith and Fideline Mboringong), and the Instructor/ Principal Investigator (Leila Harris) will have access to the interview transcripts. All hard copies will be kept secure by the investigators, and all electronic files will be kept on the investigator's computers in a password-protected file. The main findings will be summarized and submitted as a graduate course assignment for RMES 505 (Qualitative Methods in Interdisciplinary Contexts) at the University of British Columbia.

Is there any way being in this study could be bad for you?

Participation in this study simply involves answering questions about your experiences with campus climate change policy and biodiversity. The risks associated with completing this survey are not greater than what would be experienced as part of everyday life.

What are the benefits of participating?

Your responses will contribute to the generation of knowledge that may inform future research.

How will your privacy be maintained?

Your participation is entirely anonymous. No identifying information will be collected.



Will you be paid for taking part in this research study?

You will not be paid for taking part in this study.

Who can you contact if you have questions or concerns about the study?

If you have any questions or concerns about what is being asked of you, please contact the graduate student investigators Brodie Smith (smithb@student.ubc.ca or 867-336-0911) or Fideline Mboringong (mboringf@student.ubc.ca). You may also contact the instructor, Leila Harris, lharris@ires.ubc.ca if you have any questions or concerns about the work.

If you have concerns about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line at the UBC Office of Research Ethics at 604-822-8598 or if long distance, email mail RSIL@ors.ubc.ca or call toll free 1-877-822-598.

Participant consent and signature

Participating in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without giving a reason and without any negative consequences.

- Your signature below indicates that you have received a copy of this consent form for your own records.
- Your signature indicates that you consent to participate in this study.

Participant signature

Date

Printed name of the participant signing above