Campus Urban Biodiversity Strategic Plan

Updated: Sept 1, 2020

Section 1: Context

Biodiversity and UBC

The global crisis of biodiversity loss, exacerbated by urbanization and climate change, is threatening the ecological, social, and economic systems that sustain us. In the past 500 years, humans have caused biodiversity declines that are comparable in rate and magnitude to the previous mass extinctions in Earth's history[1]. The last United Nations report of the Intergovernmental Science-Policy Platform of Biodiversity and Ecosystem Services (IPBES) stated that 1 million species are currently at risk of extinction[2]. The report indicated that climate change is in the top 3 drivers of biodiversity loss. Additionally, more than 50% of the global population is living in urban settings and by 2050 it is projected that more than 70% will be living in urban settings[3]. This underscores the importance of creating resilient urban areas that address human and ecological well being.

The University of British Columbia (UBC) Vancouver campus is host to a multitude of biodiversity assets and ecosystem services. We are located along the Pacific Flyway — an important bird migratory route; we neighbour 800 hectares of second growth forest at Pacific Spirit Park; are home to the UBC Botanical Garden, a living museum of local and international plant species, world renowned innovative research, education centres and faculties such as Biodiversity Research Centre, Centre for Sustainable Food Systems at UBC Farm, and UBC's Faculty of Forestry. As a leader in research and sustainability, UBC's engagement in the local and global movement towards biodiversity conservation and enhancement is critical.

Policy efforts today are needed to support adaptive landscapes for the future. The UBC Strategic Plan provides key guidance in enhancing ecological and human health in order to preserve the unique natural setting of the UBC Vancouver campus. Additionally, the UBC Board of Governors recently endorsed new commitments around climate action, sustainable cities and communities, health and wellbeing, and sustainable consumption and production. Looking forward, there are additional opportunities for our local policies, plans and stewardship practices to address the biodiversity crisis.

The complexity of conserving biodiversity in a changing climate demands new, interdisciplinary, and inclusive approaches to inform policies and initiatives. The University of British Columbia, with its Campus as a Living Laboratory and extensive local and global networks, serves as a societal testbed where research, learning and engagement create transformative impacts towards advancing socially just and ecologically sustainable cities.

About

The Campus Biodiversity Initiative: Research and Demonstration (CBIRD) serves as an interdisciplinary and multi-stakeholder hub for connecting academics, practitioners and the wider community in collaborative applied research to advance scalable urban biodiversity ideas, policies and actions on campus. CBIRD is UBC's platform for biodiversity partnership, enhancement, conservation and stewardship through applied research, community engagement, and the growth of a thriving biodiversity network. This initiative consists of a Steering Committee including cross-campus representation from 22 faculties and operational departments who together with the extended networks of the committee's individual members work to advance CBIRD's vision and mission. This initiative is embedded in the SEEDS Sustainability Program which employs a whole-university approach, drawing on principles of whole systems thinking to advance sustainability on the Vancouver campus through applied student research projects and interdisciplinary partnerships that use the Campus as a Living Laboratory.

Purpose

The *Campus Urban Biodiversity Strategic (CUBS) Plan* provides a **comprehensive framework that serves as a roadmap** to guide CBIRD activities towards achieving our vision to **enhance, conserve, and steward campus urban biodiversity.**

The Strategic Plan serves as a framework for the CBIRD Steering Committee, Core Team, and affiliated Action Teams[1] to:

- Identify specific policy levers, planning horizons and corresponding courses of action
- Advance priority areas and actions identified by CBIRD
- Support partnerships on and off campus
- Inform work-planning, prioritization and resourcing
- Communicate work of CBIRD with broader audiences

Vision

We aim to **enhance, conserve, and steward campus urban biodiversity through meaningful engagement and mutual learning**, and advance sustainability education and student-led research. Through applied whole-systems thinking, CBIRD serves as an interdisciplinary partnership platform to enable this vision to unfold for net positive outcomes for human and ecological health and wellbeing.

Mission

To **inform policies, plans and practices that enhance campus urban biodiversity through applied research, education, interdisciplinary partnerships, community engagement, and demonstration**. We will further our mission through the goals described below.

Goals

CBIRD has the following overarching goals:

1. **Inform and advance policies and plans** which address and respond to key urban biodiversity issues
2. Advise and co-develop **scalable solutions that inform practices** for tackling the urban biodiversity crises through local research projects **applied student research and impactful learning opportunities** and **interdisciplinary partnerships** that utilize the Campus as Living Laboratory
3. **Cultivate biodiversity stewards** through increasing public awareness and knowledge, demonstration projects, citizen science and biodiversity celebrations
4. **Strengthen UBC's leadership** in urban biodiversity conservation and stewardship considering future climate conditions

Section 2: Focus Areas & Actions

Strategic focus areas, priority actions, objectives and deliverables necessary to achieve CBIRD's vision and advance our mission and goals are summarized below. A full description is provided in our **Action Plan** (see Appendix A)

[1] Action Teams are CBIRD sub-teams that are comprised of engaged experts from the Steering Committee. Teams are task based and support implementation of CBIRD priorities through engaged expertise. Action teams include: "Ecosystem Services Planning and Policy Action Team" and "Biodiverse Food Systems Action Team"

Focus Areas

Three focus areas along with corresponding actions guides CBIRD's work. A summary is provided in the table below:

Focus Area	Priority	Actions
A. Research Collaborations	Baseline, monitor and identify key threats to urban biodiversity assets, and demonstrate the critical value of biodiversity to ecological and human health and wellbeing	Develop a baseline of UBC Vancouver Campus biodiversity assets
		Identify carbon sequestration potential of UBC Vancouver Campus biodiversity asset
		Develop an integrated valuation of biodiversity on the UBC Vancouver Campus
		Identify key drivers of biodiversity loss on the UBC Vancouver Campus
	Landscape Stewardship	Inform decision-making tools, guidelines and practices for sustainable landscape stewardship
		Develop an Ecosystem Services Requirements (for capital projects)
B. Policy & Plans	Integrate urban biodiversity goals into current and emerging urban forestry, biodiversity, and climate related policies, plans and frameworks, and neighbourhood plans and guidelines.	Integrate urban biodiversity priorities into the Campus Vision 2050
		Integrate urban biodiversity priorities in the Climate Action Plan (CAP) 2030
		Inform and develop the UBC Green Building Action Plan (GBAP) biodiversity goals and actions, including Residential Environmental Assessment Program (REAP) 3.2, and future REAP 4.0
		Inform and develop the UBC Public Realm Plan Update (timing TBC)
C. Education, Engagement & Demonstration	Increase community awareness, knowledge and engagement in urban biodiversity to demonstrate UBC's leadership and cultivate	Pilot projects to increase community engagement in urban biodiversity on campus.

	biodiversity stewards.	Mobilize and foster knowledge exchange of urban biodiversity

Section 3: Governance Structure & Policy Alignment

CUBS Plan Roles and Responsibilities

CBIRD is responsible for advising on and implementing the CUBS Plan. Specific roles and responsibilities are described below:

Role	Responsibilities	Time Commitment
Steering Committee		
Provides strategic and advisory guidance to advance the CUBS Plan mission and priorities	- Interdisciplinary expertise and guidance on formulation of urban biodiversity, forestry and climate related planning and practices, feedback on strategic priorities and initiatives, input on initiative progression, and promoting the communication of outcomes.	~Quarterly meetings (60-90 mins) Periodic review of documents as needed
Core Team		
Support strategic planning, facilitation, implementation, and evaluation of the CUBS Plan	- Lead work on strategic planning and operationalization of focus areas in the CUBS Plan. -Members participate in a variety of campus committees and working groups. - Inform and engage others about the work of the Committee and link to the community and stakeholders.	~Monthly meetings (60 mins) ~4 hrs/ mth doc review
Action Teams		
Supports implementation of specific actions in the CUBS Plan through engaged expertise	- Engaged experts from the CBIRD Steering Committee are responsible for the scoping, development of content and research contributions that will inform CBIRD priorities. -New Action Teams will be recommended if necessary based on resourcing and priorities.	~Monthly meetings (60 mins) ~2 hours/mth for document review
Advisory Members		

Provides supportive role in content and/or context experience to the CUBS Plan	- Be informed about the committee's mandate, policies, and initiatives. - Review communications, documents and provide feedback and recommendations as appropriate.	~Variable - stakeholder and project specific

Policy & Plan Alignment

CBIRD will provide advisory guidance and support the integration and implementation of urban biodiversity within the following current and emerging policies and plans:

- ➔ Campus Vision 2050 (in development)
- ➔ Climate Action Plan 2030 (in development)
- ➔ Green Building Action Plan -> Biodiversity and Wellbeing Component Areas
- ➔ Public Realm Plan 20XX (TBC)
- ➔ UBC Technical Guidelines
- ➔ Water Action Plan
- ➔ Integrated Stormwater Management Plan
- ➔ Stadium Road Neighbourhood Design Guidelines
- ➔ Residential Environmental Assessment Program (REAP) 4.0 (2020 expected)
- ➔ Climate Action Plan 2020 (Complimentary Opportunities)
- ➔ Wellbeing Strategic Framework

Our work is aligned also to Metro Vancouver policies, including:

- ➔ Urban Forest Climate Adaptation Framework
- ➔ Strategic Directions for Biodiversity Conservation
- ➔ Metro Vancouver 2040 Regional Growth Strategy

Our work is also guided by the Sustainable Development Goals:

Goal 3: Good Health and Wellbeing

➔ Key alignment areas: access to green space, mental health, social amenities

Goal 11: Sustainable Cities and Communities

➔ Key alignment areas: Green roofs, community wellbeing, urban food production

Goal 12: Responsible Consumption and Production

➔ Key alignment areas: Landscape stewardship

Goal 13: Climate Action

➔ Key alignment areas: Urban biodiversity in a changing climate, biodiverse food system

Goal 15: Life on Land

➔ Key alignment areas: Urban biodiversity and terrestrial ecosystems

Goal 17: Partnerships for the Goals

➔ Key alignment areas: Capacity building, local and regional partnerships and collaborations

References

[1] Dirzo, et al. (2014). Defaunation in the Anthropocene. Science, 345 (6195): 401-406.
[2] IPBES. (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondizio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff,

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[3] United Nations, Department of Economic and Social Affairs, Population Division (2019). World Urbanization Prospects: The 2018 Revision (ST/ESA/SER.A/420). New York: United Nations. https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf

Appendix A: Action Plan

Area A: Research Collaborations

Focus: *Baseline, monitor and identify key threats to urban biodiversity assets, and demonstrate the critical value of biodiversity to ecological and human health.*

Action 1: Develop a baseline of UBC Vancouver Campus biodiversity assets

Context & Rationale

A biodiversity baseline will contribute to understanding the existing campus natural assets, conditions, systems and connectivity. This work is directly linked to Area B: Policy & Plans Integration because baseline data is needed to inform campus decision making, policy targets, management regimes and future land-use planning.

Objectives

- To accelerate natural asset baseline inventory and mapping
- To refine current biodiversity monitoring criteria and focus areas

Deliverables

1. Student/faculty led research collaborations formed to contribute to the baseline, including:
    a. Multi-year academic partnerships formed (UFOR, Horticulture, UBC Farm, IRES, BRC)
    b. Inventory partnerships formed - Tree inventory (phases 1A complete)
    c. Bioblitz/Citizen Science model tested to contribute to baseline
2. Urban Biodiversity Data Resource Maps with campus urban biodiversity experts, research hubs, gardens, open spaces and links to citizen science biodiversity resources
3. Campus urban biodiversity baseline of priority assets (vegetation, species at risk/endangered, habitat, birds, pollinators others TBD in an ongoing basis) to inform policies, operations, and actions
4. Biodiversity Monitoring Framework informed by priority campus urban biodiversity assets
5. Regional research partnerships that have mutual benefits to UBC and regional strategic priorities

Time Frame

- Long term (2020-2025) with interim deliverables (i.e. tree inventory phases)

Action 2: Identify carbon sequestration potential of campus biodiversity asset baseline

Action 3: Understand the integrated valuation of biodiversity on the UBC Vancouver Campus

Context & Rationale

As UBC continues to develop and modify the landscape, there is a need to understand and demonstrate the integrated values that urban biodiversity intrinsically provides the campus communities. These include: ecological, social, cultural and economic values. Better understanding of these multiple streams of value for campus biodiversity assets will provide a case for stronger conservation and landscape stewardship practices at UBC.

Objectives

- Scope and develop interdisciplinary partnerships and research to contribute to a completed valuation of campus urban biodiversity natural assets.

Deliverables

1. Valuation scoped, including benefits of biodiversity defined including methods of ranking and valuation
2. Interdisciplinary applied research collaborations established to contribute to valuation components, including:
    a. Ecosystem services (supporting, provisioning and regulation)
    b. Socio-cultural services (student enrollment, wellbeing, faculty/staff recruitment and retention, institutional reputation, teaching, learning and research)
3. A completed valuation of natural assets, including ecosystem and social cultural services
4. A business case and report that demonstrates the value of urban biodiversity in developing resilient societies facing challenges exacerbated by climate change

Time Frame

- Medium term (2020-2023)

Action 4: Identify key drivers of biodiversity loss on the UBC Vancouver campus

Context & Rationale

As understanding grows about the global biodiversity crisis, it is important that UBC devote research resources towards understanding threats to biodiversity at a local scale. It is essential to identify vulnerable species and sensitive ecosystems at UBC to better understand how to protect and preserve them at the campus scale.

Objectives

- Identify key threats and vulnerability factors to biodiversity loss at the campus scale.

Deliverables

1. Identification of species most vulnerable (e.g. flora and fauna species at risk, campus forests, habitat, green spaces and connectivity)

2. Identification of key threat factors to campus biodiversity
3. A completed threat and vulnerability assessment including identification of factors that lead or pose a risk to urban biodiversity loss at campus and in Metro Vancouver.

Time Frame

- Medium term (2020-2023)

Area B: Policy & Plans Integration

Focus: *Integrate urban biodiversity goals into current and emerging urban forestry, biodiversity, and climate related policies, plans and frameworks, and neighbourhood plans and guidelines.*

Action 1: Integrate urban biodiversity priorities into Campus Vision 2050

Context & Rationale

The Campus Vision 2050 provides the framework for where and how future academic and research activities, student housing and services will be accommodated at UBC's Vancouver Campus. It is the main roadmap for future growth on the Vancouver academic campus. This Vision 2050 is slotted for an update, beginning in 2020, and presents an immense opportunity for developing stronger requirements for enhancing biodiversity alongside campus growth.

Objectives

- To advise and integrate urban biodiversity priorities as part of the Campus Vision 2050 to inform scoping, planning scenarios and target setting.

Deliverables

1. New Ecosystem Services Planning Requirements to be integrated into, or accompany the Campus Vision
2. Policy Brief that identifies how biodiversity priorities could be embedded into the Campus Vision
    a. Ex. Campus endangered species management and guidelines (e.g. barn swallows, bats)
3. Updates to other relevant sections of the Campus Vision, including but not limited to:
    a. Urban Biodiversity Planting Guidelines
    b. Tree Protection Guidelines
    c. Landscape Edging and Forest Edges Guidelines

Time Frame

- Medium term (2020-2023)

Action 2: Integrate urban biodiversity priorities in the Climate Action Plan (CAP) 2030

Context & Rationale

It is imperative that the challenges and opportunities associated with urban biodiversity in a changing climate are reflected in our climate planning processes, and an opportunity exists to reflect this priority in a Climate Action Plan 2030 Update that is slated to begin in 2020. This opportunity is timely because UBC has also recently renewed its sustainability commitments to accelerate climate action through a UBC Declaration on Climate Emergency and commitment for the university to align its work with priority UN Sustainable Development Goals, such as Climate Action [SDG #13].

Objectives

- To provide insight and input into the Climate Action Plan 2030 planning process and plan update to ensure biodiversity is integrated with the plan and affiliated processes.

Deliverables

1. Advise and engage with the CAP 2030 planning process throughout UBC faculties, schools and departments to ensure biodiversity related targets are included
2. Policy Brief to summarize how urban biodiversity in a changing climate is integrated into the CAP 2030. Areas of focus could include:
    a. New focus areas, goals and targets etc.

Time Frame

- Short term (2020-2021)

Action 3: Inform and develop the UBC Green Building Action Plan (GBAP) biodiversity goals and actions, including Residential Environmental Assessment Program (REAP) 3.2

Context & Rationale

The UBC Board of Governors approved the Green Building Action Plan (GBAP) in September 2018, which included an update to the Residential Environmental Assessment Program (REAP) 3.1. The GBAP governs green building planning on the UBC academic campus, while REAP covers the UBC neighbourhoods. As part of the GBAP Biodiversity component there is an intention to develop additional policy guidance around enhancing UBC biodiversity. Additionally, work is underway to update REAP 3.1 to 3.2, which provides an opportunity to strengthen biodiversity priorities in UBC neighbourhood planning and design.

Objectives

- Contribute interdisciplinary expertise to inform the GBAP biodiversity component and subsequent goals, targets and indicators. This includes informing the Residential Environmental Assessment Program (REAP) 3.2 update, scoping and implementing research projects

Deliverables

1. Develop new GBAP biodiversity targets
2. Support the implementation of current GBAP biodiversity component projects:
    a. Bird Friendly Building Design Guidelines
    b. Bird-Friendly Building Toolkit
    c. Bird Building Monitoring Project
3. Campus endangered species management and guidelines (e.g. barn swallows, bats)
4. Inform and develop updates to the REAP 3.2 biodiversity related components
5. Scope and support applied research projects that advance GBAP biodiversity related goals
    a. Key projects:
        i. Bird-friendly checklist to facilitate update of bird strike design prevention by UBC Building practitioners and engagement of citizens in bird strike prevention
        ii. Design of a practical bird monitoring project for the entire campus to determine hot spots and retrofit strategies
        iii. Create and inform campus endangered species management assessment and guidelines (e.g. barn swallows).
6. Scope and support applied research projects that advance REAP biodiversity related goals.
    a. Key projects:
        i. Study on culture of landscape design to determine the technical and societal changes needed to shift from ornamental to natural and ecologically based landscape.
        ii. Study of value UBC community puts on amenity space/ ecologically sound green areas.
        iii. Technical study of landscapes: over garage, green roof versus landscape areas
        iv. Strategies to promote food growing in neighbourhoods

Time Frame

- Short term (2020-2021)

Action 4: Inform and develop the UBC Public Realm Plan update

Context & Rationale:

UBC's public realm has a critical role in providing educational experiences, animating the campus, supporting and nurturing the physical and mental health of the campus communities. Urban biodiversity is of paramount importance in delivering this mandate, and an immense opportunity exists to integrate the urban biodiversity within the Plan.

Objectives

- Design and develop public realm projects (ex. public art, green spaces) that:
    - Connect people with place,
    - Demonstrate the importance of ecology and human wellbeing,
    - Bring the inside outside, and
    - Create public amenities with multiple values surrounding ecological and human health.

Deliverables

1. Climate resilient planting guidelines (overlap with Campus Vision 2050)
2. Spatial identification of green spaces on campus with cultural, heritage and/or social values

Time Frame

- Short term (2020-2021)

Area C: Education, Engagement and Demonstration

Focus: *Increase community awareness, knowledge and engagement in urban biodiversity to demonstrate UBC's leadership and cultivate biodiversity stewards.*

Action 1: Pilot projects to increase community engagement in urban biodiversity on campus

Context & Rationale

Demonstrative campus projects serve a critical role to connect UBC students, faculty, staff, residents and visitors with the campus natural environment and its inhabitants. Projects can raise awareness about the multitude of benefits biodiversity has on sustaining people and the planet. They can be evaluated and further scaled, serve as innovative pilots, and work to further enhance urban biodiversity.

Objectives

- To increase community connection with biodiversity on campus through demonstration projects, citizen science, signage, and biodiversity celebrations.

Deliverables

1. Ecological Corridor Pilot Project launched, including:
    a. Definitional work on effective ecological corridors for target species
    b. Identification of suitable campus ecological corridors
    c. Pilot of ecological corridor including demonstrative interventions
    d. Ecological corridors established
2. Bird Friendly Built Environments Project launched, including:
    a. Launch and monitoring for efficacy and perceptions of various bird-friendly installations
    b. Launch of a competition and pilot a Bird Friendly Toolkit that will reduce bird collisions and engage UBC practitioners, developers and community members
3. Community-engaged Citizen Science Framework that provides opportunities for campus community to engage and co-create knowledge to identify campus biodiversity assets.
4. Storytelling and Signage Strategy that can engage the campus community with place and biodiversity (e.g. Cultural and Heritage Tree Inventory and signage).

5. Tactile Urban Biodiversity Interventions that enhance biodiversity and connect people with place (e.g. Pollinator Gardens, Living Infrastructure, digital tree stories).

Time Frame

- Ongoing and long term (2020-2025)

Action 2: Mobilize and Foster Knowledge Exchange of Urban Biodiversity

Context & Rationale

Knowledge exchange is a critical component of UBC's Strategic Plan and is reflected in CBIRD's core values and goals. Biodiversity knows no borders, and the need to mobilize and exchange knowledge from our research and community efforts is of critical importance. Engaging in effective outreach can strengthen UBC's leadership in urban biodiversity conservation and stewardship and can contribute to partnerships that extend across campus and in the broader regions we are embedded within and contribute to greater collective impacts.

Objectives

- Create knowledge exchange initiatives to engage the campus and broader communities in the importance of urban biodiversity

Deliverables

1. Launch a "UBC in a Changing Climate" research series that aims to raise awareness of UBC's and Metro Vancouver's most valuable biodiversity assets, focusing on different assets each year
2. Form regional partnerships and demonstrate alignment with relevant UN Sustainable Development Goals with those partners
3. A Urban Biodiversity Resource Map with campus urban biodiversity experts, research hubs, SEEDS research projects, gardens, open spaces and links to citizen science biodiversity resources
4. Stories pertaining to CBIRD, including initiative successes and learnings, and research outcomes and experiences

Time Frame

- Ongoing and long term (2020-2025)