

# UBC VANCOUVER CAMPUS IN A CHANGING CLIMATE: URBAN FOREST EDITION

**A COMPILATION OF STUDENT RESEARCH**

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THE UNIVERSITY OF BRITISH COLUMBIA



## ACKNOWLEDGMENT

*We acknowledge that the Vancouver campus is situated on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam) people.*

s7i:ʔqəy̓ qeqən (Double-Headed Serpent Post)ʷ

Brent Sparrow Jr., Musqueam

**PHOTOGRAPHER:** UBC BRAND & MARKETING/HOVER COLLECTIVE

**Cover:** Aerial View of Main Mall

**PHOTOGRAPHER:** UBC BRAND & MARKETING/HOVER COLLECTIVE

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The authors and contributors of this report are fortunate to work and learn on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm Musqueam people.

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### DISCLAIMER

\* The UBC SEEDS Sustainability Program provides students with the opportunity to share the findings of their research, as well as their opinions, conclusions and recommendations with the UBC community. The reader should bear in mind that this report is a compilation of student research conducted on the topic of urban forests and should not be construed as an official position of the University. 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 project/report.

\*\* CBIRD is an interdisciplinary network of UBC biodiversity academics and practitioners who support biodiversity policies, plans and research on the UBC Vancouver campus.

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# Executive Summary

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## CONTEXT

Acting to enhance urban forests and biodiversity in the context of climate change provides a myriad of benefits for people, ecosystems and community partnerships. Across our planet and our campus, COVID-19 continues to alter human activities with increased public use and awareness of natural spaces. Healthy urban forests can help communities adapt and cope with climate change impacts, while contributing to the health and wellbeing of people and planet. However, urban forests around the world have not been prioritized in city design and development.

As urban areas expand and change, the conversion of natural habitats to urban spaces can degrade biodiversity through land-use change, habitat loss and fragmentation. With one million species facing extinction in a changing climate (IPBES, 2019), the way we take care of landscapes and develop urban policies and plans, must adapt to include biodiversity objectives.

The UBC Vancouver campus is located in a temperate rainforest, and is situated on the ancestral, traditional and unceded territory of the xʷməθkʷəy̓əm Musqueam people. In 1910, the Province of British Columbia allocated 400 hectares on western tip of the Point Grey Peninsula to create a university and hired a logging company to cut down the majority of trees to make way for campus development.

In recent decades, UBC has taken deliberate steps to improve the quality of the public realm and provide a diversity of open spaces, including plazas, courtyards, greenways and green infrastructure across campus. Concurrently, the university faces challenges in addressing the diverse needs and demands of a growing campus with limited land. Between 2012 and 2017, student enrollment at UBC Vancouver increased by over 30 per cent. Land use pressures due to population growth are complex in a university setting because of the responsibility to deliver community services and amenities, such as affordable housing, as well as facilities related to the academic mission, such as classrooms and research laboratories.

In addition to growth, climate change is increasing pressure on urban biodiversity and forests in Metro Vancouver. Integrating urban forest and biodiversity goals into future land use planning at UBC Vancouver can support climate action, as well as ecological and human health.

## PURPOSE

*UBC in a Changing Climate: Urban Forest Edition* is an applied research report that showcases recent student-led research and community efforts that have the common aim of establishing a baseline assessment of the campus urban forest. This baseline provides information that can guide urban biodiversity enhancements for increasing climate resilience for current and future generations.

*The Urban Forest Edition* also aims to increase awareness and understanding about the many ecological, social and cultural benefits provided by UBC's urban forest. Findings highlighted in this report can be used to inform a number of UBC policy priorities and other opportunities to enhance the urban forest in the context of campus growth.

This report uses the United Nations Sustainable Development Goal framework to provide context for policy considerations and future applied research opportunities. We also offer suggestions on improving ecological and human health on campus while optimizing land use to accommodate UBC's academic mission.

## REPORT APPROACH

*UBC in a Changing Climate* is a broader report series focusing on the climate crisis in the UBC context. The Urban Forest Edition highlights UBC Vancouver's urban forest and biodiversity efforts through the applied research lens. This report showcases a selection of student-led research, faculty initiatives, and community efforts completed between 2017-2020.

The research selected:

- exemplifies the [Campus as a Living Laboratory](#) approach by using our campus to explore and test new ideas in our local context;
- reflects the biophysical, cultural, and social pillars of sustainability for the campus urban forest;
- includes metrics commonly used to assess urban forests, such as canopy cover, species diversity, and spatial grey-green mapping;
- features inventories of trees and shrub species in different areas across campus; and
- offers a more holistic representation of urban forest research to include soil management practices, heritage tree landscapes, social value mapping, cultural storytelling and integrated valuations of ecosystem services.



### What is an Urban Forest?

Urban forests are “trees, forests, greenspace and related abiotic, biotic and cultural components in areas extending from the urban core to the urban-rural fringe” (Tree Canada, 2019).

## FINDINGS

The baseline assessment of the campus urban forest suggests gaps in the current natural resource knowledge, management, and policy landscapes at UBC Vancouver. These gaps offer opportunities for creative solutions to protect and enhance biodiversity to be considered in future policy and planning work on campus. Key findings include:

- the importance of equitable access to green space and increasing connections between green spaces on campus;
- the benefits of strengthening inclusive community engagement around our campus forest and its ecological, social and cultural services; and
- key opportunities for addressing and filling urban forest data gaps to inform future research policy and planning initiatives.

## NEXT STEPS

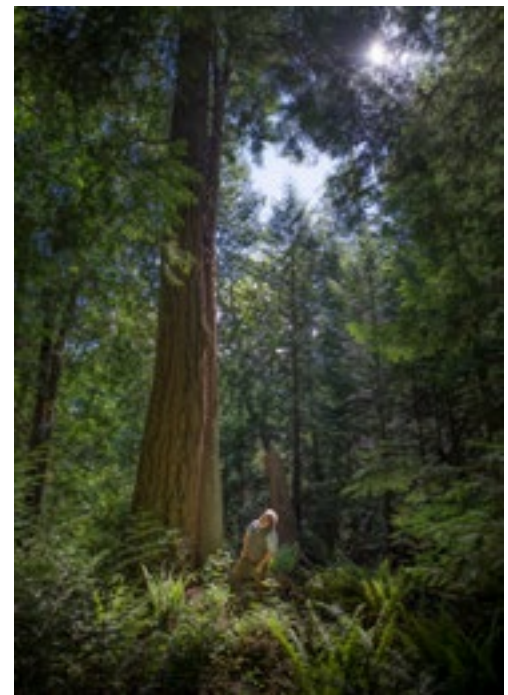
The research highlighted in this report identifies the following next steps for enhancing the campus urban forest:

### Enhance and integrate biodiversity and urban forests into UBC policies and plans

Beginning in 2021, UBC will embark on a comprehensive process to update UBC's two key policy documents, the *Land Use Plan* and the *Vancouver Campus Plan*. This process, done approximately every 10 years, will guide how UBC will face the challenges and opportunities of future growth and other transformations. The findings from this research report can be used to inform this policy update about how the campus can grow while also enhancing the campus urban forest and urban biodiversity.

### Complete a baseline inventory of trees and urban forest data on campus to advance research, engagement, and planning

In order to identify urban forest and biodiversity policy goals, there is a need to develop an updated, campus-wide urban forest inventory that integrates biophysical and cultural data. This inventory could inform several policy and planning initiatives, including tree care and planting guidelines centered on climate change adaptation. Research on urban forests and biodiversity could focus on expanding place-based research to explore the history of the land and increase our understanding of UBC's urban forest while filling the gaps identified in this report.



UBC Botanical Garden staff member Egan Davis  
admiring the Garden's urban forest  
PHOTOGRAPHER: PHILIPPE ROBERGE

### **Better understand the social and cultural value of urban trees and green spaces on campus**

The UBC Vancouver campus is defined by its natural setting and beauty. UBC students, faculty, staff, residents and other communities derive benefits from working, visiting and living near campus green spaces. These benefits include social and recreational opportunities, physical and mental wellbeing, and greater connection to nature and the land. It is important to facilitate teaching, learning, research and partnership opportunities to better understand how UBC communities' value urban forest and biodiversity from the socio-cultural perspective. Understanding how UBC communities use and value green spaces could inform future urban design and planning decisions that shape UBC public spaces and landscapes.

### **Coordinate to enhance community engagement with campus trees, urban forest and biodiversity**

The UBC Vancouver campus's urban forest and biodiversity are central to student, faculty, staff and residents' connection to place. Our campus community serves a critical role in supporting and engaging with the urban forest including: getting involved with on- and off-campus sustainability organizations, conducting place-based research, and enjoying the mental and physical health benefits of UBC's unique green spaces.

Ways for the campus community to get involved include: contributing to citizen science databases, joining a sustainability group or student club, increasing understanding about the Indigenous history of the land, exploring and enjoying campus green spaces, and engaging in campus public consultations or engagement activities to ensure that all voices are heard. Community action taken today to support urban forests and biodiversity on campus will provide a myriad of benefits for UBC in the years to come.



∴ Student enjoying a hammock hanging from one of the Main Mall Oak trees

∴ **PHOTOGRAPHER:** UBC BRAND & MARKETING/HOVER COLLECTIVE