

Summer 2023 Sustainability Scholars Program Internship Opportunity

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- Visit the [Sustainability Scholars Program website](#) to learn [how the program works](#) and to [apply](#).
- Be sure to review the application guide on the Apply page to confirm your eligibility before applying.

Applications close at midnight on Sunday March 12, 2023.

Project title: Research to map seasonal tree leaf debris accumulation scenarios in a changing climate

Project Background & Overview

Keeping catch basins free of leaf litter is critical for flood prevention as we work toward adapting city services to ensure assets are resilient to Climate Change, and ensuring bike lanes are free from hazards such as wet cherry blossoms or high volumes of walnuts.

Every year, the City of Vancouver operates a program to clear residential streets and bike lanes of leaf debris to decrease residential flood risks and improve safety.

The schedule for clearing vegetative debris from key locations was developed many years ago; since then, over 150,000 trees have been planted across the city. Currently, the leaf removal program focuses on ease of movement across the city, allowing a systematic deployment of operational crews. It is unknown if vegetation and environmental details are included within the deployment pattern.

The Leaf Removal Program aims to increase the efficiency of moving through the city and clear leaves from streets. We would like to strategically target areas with leaf fall earlier in the season to maximize the amount of leaf litter we collect while minimizing backtracking and non-productive travel.

Project description

The purpose of this project is to understand how changing environmental variables, vegetation cover, and urban forestry efforts might influence street cleaning programs to improve bicycle safety and reduce flood risks.

We are specifically interested in identifying tree species with different rates of leaf senescence and abscission (leaf fall), categorizing local species based on the timing of abscission, and understanding climatic variables that can alter the timing of leaves falling from the trees. We also want to identify opportunities to optimize sanitation operations based on leaf debris patterns and high-risk flood areas using geographic information systems (GIS) data. Ultimately to develop maps to inform crews of locations of high vegetative debris based on tree types and season.

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Project scope

Key Research Questions:

- Can the City of Vancouver develop a categorization/classification scheme for grouping tree species across Vancouver to identify locations where vegetative debris might be higher than others?
- Are there spatial groupings in these categories? Can we see the impacts of microclimates across the City on categorized species?
- Can the City use the categories and spatial distribution to improve how service is provided?

Primary Activities:

- Literature review and/or jurisdictional scan of methods used by other municipalities to predict when and where high volumes of vegetative debris will fall based on changing climate conditions.
- Review City of Vancouver Tree GIS file to develop a prioritised list of trees to research, (available via Open Data: <https://opendata.vancouver.ca//street-trees>)
- Develop a geospatial datafile that categorizes vegetative debris by season and debris type – which can be used to classify hazards by season and proximity to the street and/ or bike lane
- Review the spatial distribution of categorized trees to determine if there are communities around the City that will experience heavier vegetative debris on streets based on season
- Develop seasonal maps to identify areas of high-volume vegetative debris

Secondary Activities (based on time allowance):

Deliverables

- A final report containing a summary of the work completed
- A final report for the online public-facing [Scholars Project Library](#).
- Seasonal maps to indicating areas of high-volume vegetative debris areas for operations

Time Commitment

- This project will take 250 hours to complete
- This project must be completed between May 1 to August 15, 2023
- The Scholar is to complete hours between 9 am and 5 pm, Monday to Friday, approximately 17 to 20 hours per week.

Required/preferred Skills and Background

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Familiarity with research methodologies and survey techniques
- Familiarity with Geographic Information Systems
- Familiarity with Shapefiles and geodata
- Spatial analysis
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Familiarity with ESRI (ArcGIS)
- Demonstrated experience in biology, plant science and tree identification
- Demonstrated understanding of the effects of climate variables on different types of vegetation

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The successful candidate should have education in one of the following programs: Botany, Ecology, Forestry, Geography (with a focus on Ecology, Biology or Botany), Urban Forestry Leadership or Plant Science. Candidates from other disciplines would be considered if they are able to display adequate knowledge of the project scope.

Additional project requirements

ESRI (ArcGIS) software may be required to complete the analysis of vegetative species cover. The City of Vancouver will provide a GIS capable computer and access to all required GIS datasets.

Applications close **midnight Sunday March 12, 2023**

Apply here: [Click here to apply](#)

Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

<https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae>

<https://www.grad.ubc.ca/current-students/graduate-pathways-success>

<https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services>