Summer 2022 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 to confirm your eligibility before applying.

Applications close at midnight on Sunday January 30, 2022.

>> This is a Fraser Estuary Research Collaborative Project >>

Project title: Monitoring guidelines to assess the long-term success of invasive species removal by Naturalist Clubs in natural and restored riparian habitat in the lower mainland

Project Background & Overview:

Some of the riparian and marsh habitats found in the lower Mainland are the product of habitat compensation programs[1] that aim to compensate for habitat losses at an impact site by creating ecologically equivalent gains elsewhere. Because of their early succession state and their location in an urban matrix, the newly created habitats are particularly vulnerable to invasive species. A recent study found that 50% of the marsh compensation projects were colonized by a few cosmopolitan, invasive species such as reed canarygrass (*Phalaris arundinacea*), lesser cattail *(Typha angustifolia*), or blue cattail *(Typha x glauca*)[2]. Colonization by these invasive species resulted in homogenized habitats with less value for biodiversity. For example, one of the most pervasive invasive species in riparian habitats is the Himalayan blackberry (*Rubus armeniacus*) which can prevent the establishment of native trees and shrubs, inhibit natural colonization by other native species, and can become the sole understory species on some waterways.

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[1] Maron, M, Hobbs ,RJ, Moilanen , et al. Faustian bargains? Restoration realities in the context of biodiversity offset policies. Biological Conservation. (2012) 1;155:141-8. http://dx.doi.org/10.1016/j.biocon.2012.06.003

[2]Lievesley, M, Stewart, D, R, Knight, B. Mason. Marsh and Riparian Habitat Compensation in the Fraser River Estuary: A Guide for Managers and Practitioners. Community Mapping Network (2017). 42pp + vii

[3]Kehoe, LJ, Lund, J, Chalifour, L, et al. Conservation in heavily urbanized biodiverse regions requires urgent management action and attention to governance. Conservation Science and Practice. (2021); 3:e310. https://doi.org/10.1111/csp2.310

Removal of invasive species is one of the most common conservation activities carried out by BC Nature clubs in the lower mainland. BC Nature is a federation of over 50 naturalist clubs across the province, 13 of which are in the lower mainland. The removal of invasive species is a cost-effective way to protect the diversity and functionality of the Fraser estuary[3]. However, there are currently no standardized guidelines for BC Nature clubs to produce baseline quantitative data and to document the success/lack of success of their removal programs in either natural or habitat compensation sites. This can limit the effectiveness of conservation efforts as it does not allow for the identification of failures or the adaptation of approaches based on the results of previous work. BC Nature is therefore seeking a UBC Sustainability Scholar to develop user-friendly guidelines for the long-term monitoring invasive species at both, natural and restored aquatic habitats in the lower mainland.

The guidelines developed by the scholar will serve three main purposes. First, they will address the need for long-term quantitative data on monitoring of invasive species in habitat compensation sites. A recent poll (2016) of practitioners and government agencies found that 78% of respondents stated that marsh compensation monitoring periods should be greater than the current five-year standard[2]. Second, the guidelines will address some of the uncertainties associated with habitat restoration programs[1] by producing local, long-term quantitative data. Thirdly, the guidelines will provide the naturalist clubs with a tool to produce reports with quantitative information that can be used in public consultations and to engage with decision-makers.

Project description

The scholar will be in charge of developing guidelines to produce quantitative data to monitor the BC Nature naturalist clubs' invasive species removal. In addition to natural habitats (for a baseline), the guidelines should be applicable in habitats created by habitat compensation programs. The standardized information generated by naturalist clubs following the monitoring guidelines could produce local evidence about the vulnerability of restored sites to invasive species. This evidence will allow for adaptive management, not only by BC Nature clubs in their invasive species removal programs but also by agents (i.e., the port authority) involved in the riparian habitat compensation program.

Project scope

The project seeks to develop a standardized monitoring protocol that can be applied at a low cost at a large geographical scale. The guidelines should be user-friendly, allow for the production of trend information by users with little or no statistical background and work with different target species.

The first part of the project will consist of a literature review on the best practices for monitoring the previously mentioned invasive species in the Pacific Northwest riparian and marsh habitats. The scholar will then interview (virtually or in-person) knowledge holders from the seven BC Nature clubs most directly involved in invasive species control and removal. The interviews will allow the scholar to get familiar with the BC Nature clubs in the Mainland their goals, capabilities, and needs.

The scholar will translate the acquired knowledge from the literature review and the interviews into the first draft of guidelines to monitor invasive species in restored and natural habitats. The guidelines should have specific metrics of success, standardized protocols, ideally including mapping protocols with simple geospatial tools (i.e. Google Earth). The scholar will then organize and conduct a workshop with all the BC Nature clubs in the lower mainland. The workshop will have three main goals: 1- Introduce the BC Nature clubs to the guidelines for the long-term monitoring of invasive species, 2- engage more Naturalist clubs in the Lower Mainland in monitoring invasive species, 3- organize field trips with the club members to test the monitoring guidelines.

After the completion of the field trips, the scholar will finalize the guidelines incorporating the feedback from the field trips and the scholar's insights. If necessary, the scholar could organize a final field trip to implement and further refine the monitoring guidelines.

The monitoring guidelines will allow BC Nature clubs to assess the success of their conservation activities and produce local evidence of the vulnerability of restored sites to invasive species. Furthermore, the evidence produced can be used to evaluate the extent to which restored sites restore ecosystem services. Riparian habitats have a long establishment time and progress through various successional stages before reaching maturity. Because of their long establishment time, aquatic habitat compensation projects should be monitored utilizing adaptive management for 20 years or more. With 50 years of history and clubs operating from Chilliwack to Boundary bay, BC Nature is well-positioned to implement a long-term monitoring effort of compensation activities.

Deliverables

- A final report containing a summary of the work completed
- A final report for the online public-facing Scholars Project Library.
- 1 workshop to introduce clubs to the project, and to invite them to provide their feedback at the beginning of the project
- A few field trips with club members to implement and to demonstrate the protocol and to get their feedback
- A document that outlines the protocol and guidelines for the standardized monitoring of invasive species.

Time Commitment

- This position is for 270 hours of work.
- This project must be completed between May 2 and August 12, 2022
- The scholars are to complete hours between 9 am and 5 pm, Monday to Friday, approximately 19 to 22 hours per week.

Required/preferred Skills and Background

☒ Excellent research and writing skills
☒ Demonstrated interest in sustainability
☒ Experience conducting stakeholder engagement events, including facilitation skills, is an asset
☒ Familiarity with research methodologies and survey techniques
☒ Excellent public speaking and presentation skills
☒ Community engagement experience
☒ Familiarity conducting focus group research
☒ Strong analytical skills
☒ Ability to work independently
☒ Deadline oriented
☒ Comfortable interacting with strangers to conduct public/in person surveys
☒ Familiarity preparing feasibility studies
☒ Familiarity with invasive species management, interest in biodiversity, an asset

Applications close **midnight Sunday January 30, 2022**
Apply here: Click here to apply
Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

We are holding a special **resume preparation workshop for prospective Scholars** on January 19. Click here for details and to register.

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