

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 January 29, 2023.

> This is a Fraser Estuary Research Collaborative Project <

The [Fraser Estuary Research Collaborative](#) (FERC) is focussed on advancing efforts to protect the Fraser River estuary in collaboration with key NGO and Indigenous partners. If you are interested in producing new knowledge and supporting Fraser estuary protection through scientific, technical, governance and policy innovations, the following project might be for you. Read on for more details.

Research on options to control small vessels to reduce threats to Southern resident killer whale habitat in the Fraser Estuary and enhance their ability to successfully forage

Background:

Southern resident killer whales (SRKW) are one of Canada's most endangered whale populations. The federal *Species at Risk Act* (SARA) protects their critical habitat. Critical habitat is defined in SARA as the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as such in the recovery strategy or action plan for the species. Critical habitat for SRKW has been identified and includes most of the transboundary waters of the Salish Sea. Further work to examine the key foraging sites within this critical habitat in the Canadian portion of the Salish Sea has identified several locations that are important for SRKW foraging and travel including Swiftsure bank, the west shore of the San Juan Islands, the mouth of the Fraser Estuary (DFO, 2021). The decline of the endangered Southern Resident killer whale population is linked to threats such as noise and disturbance from boats, and reduced availability of and access to their preferred prey, chinook salmon, as well as chum and coho salmon. Chinook salmon are a vital food source for Southern Resident killer whales but wild

populations have declined dramatically in recent years. To address these threats, Fisheries and Oceans Canada and Transport Canada are implementing management measures to protect salmon and to minimize disturbance from vessels that interferes with SRKW foraging and communication. The most recent measure put in place to address vessel disturbance of killer whales is a mandatory vessel approach distance of never closer than 400m for all killer whales, enacted through an Interim Order pursuant to the *Canada Shipping Act*, which will remain in effect until May 31, 2023, in southern BC coastal waters.

Purpose of the Project:

The purpose of the project is to assess the data available on small vessels at the mouth of the Fraser and research and propose a range of options to control small vessels to reduce threats to SRKW and better protect their habitat and enhance their ability to successfully forage.

Though management measures to protect SRKW have increased over the last five years on both sides of the border, the species are still declining. Recent research publication from National Oceanic and Atmospheric Administration (NOAA) indicates that SRKW exhibit less foraging behaviours when vessels are closer than 400yards than if they are greater than 400 yards (Holt et al. 2021a). Further, SRKW foraging behaviour is influenced by vessel distance/proximity, speed, echosounder use, and SRKW exhibit avoidance behaviours in the presence vessels close, with faster speed and echo-sounders turned on (Holt et al. 2021b). Empirical modeling from these papers predicts that such avoidance behaviour decreases, and foraging dives show more success when vessels remain farther away, are slower in approaching and have their echosounders turned off. The new research suggests that current measures may not be sufficient and that the vessel approach distances and speeds may need to be refined to need to catch up with the science.

In Canadian waters of the Salish sea there are seasonal measures to keep vessels away from whales as well as sanctuaries where vessel movements are restricted (Pender and Saturna) or where speeds must be voluntarily decreased (Swiftsure bank). To date, no measures related to vessel movements or speed have been implemented off the mouth of the Fraser river and in adjacent critical habitat.

Key questions for this work will include:

- 1) What measures for vessel movement, speed, distance are appropriate for consideration in the mouth of the Fraser estuary,
- 2) What options would be most effective and most feasible given the current level vessel traffic and use in the area.

Scope of Work

The scope of the projects includes :

- Research on data availability on vessel traffic in the Fraser estuary ,
- Depending on data availability, GIS mapping of the vessels, including their types and seasonal movements in the estuary.

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- A desktop literature review of the management measures now in use regarding vessels to protect SRKW habitat in BC and Washington State, using information available on government websites, academic reviews, and other publicly accessible sources.
- Research on other possible management measures that might be applied.
- Interviews with expert scientists from government and NGOs to inform the analysis of management measures.
- Preparation of a final report on options for potential management measures for small vessels in the Fraser to protect SRKW that includes the results of the data analysis, literature review, and interview results.

Deliverables

1. Presentation on the findings to WWF-Canada
2. A final report containing a summary of the work completed
3. A final report for the online public-facing [Scholars Project Library](#)

Time Commitment

- This project will take 260 hours to complete: 250 hours to be allocated to the research, and 10 hours to be allocated to participating in meetings and collaboration opportunities with the rest of the FERC cohort
- 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.
- The Scholar must live in the lower mainland to be available to attend FERC meetings and events in person.

Required/preferred Skills and Background

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Excellent public speaking and presentation skills
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Project management and organizational skills
- Strong interpersonal communication skills
- Passionate about environmental issues
- Familiarity with GIS mapping

References

DFO. 2021. Identification of areas for mitigation of vessel-related threats to survival and recovery for Southern Resident Killer Whales. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2021/025.

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- Holt, M.M., Tennessen, J.B., Ward, E.J., Hanson, M.B., Emmons, C.K., Giles, D.A., and Hogan, J.T. 2021a. Effects of vessel distance and sex on the behavior of endangered killer whales. *Frontiers in Marine Science* 7: 1211.
- Holt, M.M., Tennessen, J.B., Hanson, M.B., Emmons, C.K., Giles, D.A., Hogan, J.T., Ford, M. 2021b. Vessels and their sounds reduce prey capture effort by endangered killer whales (*Orcinus orca*). *Marine Environmental Research*. 170. 105429. 10.1016/j.marenvres.2021.105429.

Applications close **midnight Sunday January 29, 2023**

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 23, 2023. [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>