

# Steven Frank Ross Brownlee

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## Education

### Doctor of Philosophy

Simon Fraser University (2019-TBD)

### Master of Geomatics for Environmental Management

University of British Columbia, Vancouver Campus (2018-2019)

### Bachelor of Science, General Studies with a Minor in English

University of British Columbia, Okanagan Campus (2011-2017)

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## Research Experience

### December 2021 – January 2022, sunflower sea star COSEWIC report preparation

Simon Fraser University, Burnaby campus

Worked with Dr. Isabelle Côté, Hannah Watkins and Elizabeth Oishi on preparing a report on the status of the sunflower sea star (*Pycnopodia helianthoides*) in Canada. Developed range and occupancy estimates for the species based on survey records and brought methods in alignment with IUCN best practices, as well as aided in the drafting of report language describing my results.

### May 2019 – TBD, PhD thesis

Simon Fraser University, Burnaby campus

Worked with Dr. Isabelle Côté and Dr. Jonathan Moore in developing a research plan for a project to model the invasion of zebra and quagga mussels in British Columbia. Conducted an initial lit review which then fed into a meta-analysis of the environmental variables that drive the distribution and establishment of zebra and quagga mussels on the landscape. This meta-analysis in turn will be used to collect environmental data that will inform a niche model for both species. Began development of a mechanistic niche model for zebra and quagga mussels based on literature response curves and a set of environmental data.

**September 2018 – May 2019, MGEM capstone project**

University of British Columbia, Vancouver Campus

Worked with Dr. Scott Hinch and Allison Hebert of UBC to develop a reproductive niche model for a rare ecotype of deepwater-spawning sockeye salmon in BC's Alouette Lake. Acquired field data from Allison Hebert and developed model in consultation with her, Dr. Hinch and technical advisors from the MGEM program.

**April 2017 – August 2017, Undergraduate research assistant**

University of British Columbia, Okanagan Campus

Continued fish infection study began in 2016 field season. Collected fish for sampling from lakes and rivers, preserved samples and brought back to lab for processing and examination for larvae under a microscope. Prepared report for provincial government on research findings.

**April 2016 – August 2016, Undergraduate research assistant**

University of British Columbia, Okanagan Campus

Began a field-based fish infection study for hosts of *Gonidea angulata*. Collected fish from lakes and rivers, euthanized fish and collected samples for processing and examination for larvae. Carried out surveys for further populations of *Gonidea angulata* in the Okanagan Valley using boats/snorkeling. Supervised a fellow undergraduate student in assisting with the project, as well as in organizing and deploying funds in service of the project's goals. Helped write report for provincial government on research findings.

**February 10-11 2016 – Contributor to Fisheries and Oceans Canada's Centre for Science Advice Pacific Regional Peer Review**

Fisheries and Oceans Canada

Called to participate in a group meeting among identified experts from the provincial and federal governments tasked with drafting a working paper on the identification of critical habitat for *Gonidea angulata*.

**April 2015 – August 2015, Undergraduate research assistant**

University of British Columbia, Okanagan Campus

Assisted in the development and running of a lab fish infection study for hosts of *Gonidea angulata*. Collected fish for experiment from the field and helped run the aquarium/care for the fish used in the study as well as carry out the infection experiment. Took part in additional surveys in the Okanagan Valley for further populations of mussels via boat and snorkeling.

**April 2014 – August 2014, Undergraduate research assistant**

University of British Columbia, Okanagan Campus

Took part in graduate research that modeled habitat suitability for *Gonidea angulata* in Okanagan Lake. Surveyed throughout Okanagan Lake via boat and snorkeling, assisted in development of assessment methodology and experiments to determine flow regimes, water chemistry, temperature and other physical characteristics in the lakes and rivers of the Okanagan Valley.

**April 2013 – August 2013, Undergraduate research assistant**

University of British Columbia, Okanagan Campus

Hired as part of research project exploring the life history and reproduction of the Rocky Mountain ridged mussel, *Gonidea angulata*. Assisted in grid survey work in sites throughout the Okanagan and identification of mussels in the environment. Conducted juvenile recruitment transect surveys in the Okanagan via substrate analysis and in the collection of fish for an initial fish host population study.

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**Non-Academic Experience**

**May 2021 – May 2022, Department Graduate Studies Committee Member**

Simon Fraser University, Biology Department

Elected by the Biology Graduate Student Caucus to be one of two grad student elected members of the DGSC. Duties of the DGSC include developing courses for graduate students in the department, evaluating applications to become graduate students, adjudicating student-supervisor conflicts and liaising with Graduate and Postdoctoral Studies to modify rules and regulations governing graduate studies.

**January 2021 – February 2021, Inter-Departmental Ecology of Aquatic Species Symposium Organizing Committee Member**

Simon Fraser University, Biology Department

Part of the organizing committee that ran the 2021 IDEAS Symposium, a one-day conference run jointly by the Faculty of Environment and the Biology Department. Put together the schedule of presenters and acted as liaison between presenters and organizing committee, as well as acted as co-MC during the event.

**July 2020 – July 2021, TSSU Contract Committee Member**

Simon Fraser University

Elected in May 2020 by the members of the TSSU (Teaching Support Staff Union) to the TSSU's Contract Committee. Duties include member consultation in determining their needs, drafting draft contract language for presentation to the employer and bargaining with the employer.

**May 2020 – May 2021, Biology Graduate Student Caucus TSSU Steward**

Simon Fraser University, Biology Department

Elected in May 2020 to be one of two TSSU Stewards for the department. Duties include liaising with the TSSU on issues and goings-on within the department and acting as an advocate for students and workers within Biology to the union.

**August 2019 – February 2020, Pacific Ecology and Evolution Conference 2020 Organizing Committee Member**

Simon Fraser University, Biology Department

Assisted in preparation for the PEEC 2020 conference in Bamfield, BC. Helped lead development of the conference's first diversity and inclusion policy, including a mandatory Code of Conduct for participants, Statement of Diversity and disclosure training for organizers. Prepared materials for next year's committee with the aim of ensuring continuity of diversity initiative in future years.

**November 2019 – January 2020, Inter-Departmental Ecology of Aquatic Species Symposium Organizing Committee Member**

Simon Fraser University, Biology Department

Part of the organizing committee that ran the 2020 IDEAS Symposium, a one-day conference run jointly by the Faculty of Environment and the Biology Department. Developed the conference's Code of Conduct and

Statement of Diversity and was part of the sub-group that arranged for food and drink during the event.

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## Publications

- S. Brownlee, I. Côté, J.W. Moore. 'Predicting the invasion success of zebra and quagga mussels' Presentation delivered at the Inter-Departmental Ecology of Aquatic Species (IDEAS) Symposium. April 1 2022. Burnaby, BC.
- Brownlee, S.F., Côté, I.M., Moore, J.W. A comprehensive framework for modeling freshwater mussel invasion. Presentation delivered at the Canadian Society for Ecology and Evolution (CSEE) 2021 Conference. August 15-20 2021. Vancouver, BC.
- Brownlee, S. Nature doesn't repeat itself, but it does rhyme: parallel invasions in freshwater mussels. Presentation delivered at the Inter-Departmental Ecology of Aquatic Species (IDEAS) Symposium. January 29 2021. Burnaby, BC.
- Karen E. Mock, James A. Walton, Steven F. R. Brownlee, Jon H. Mageroy, Greg Wilson, Ian R. Walker. 2020. Genetic variation at the species and population levels in the Rocky Mountain ridged mussel (*Gonidea angulata*): Biogeographic and conservation implications. bioRxiv, accepted November 16 2020. 1-45. <https://doi.org/10.1101/2020.11.16.385195>
- Brownlee, S.F., Côté, I.M., Moore, J.W. Towards building range-wide suitability models for aquatic invasive species. Presentation delivered at the Western Society of Naturalists Annual Meeting. November 6-8, 2020.
- Brownlee, S., Côté, I., Moore, J. Modelling the invasion of zebra and quagga mussels in British Columbia. Poster presented at the American Fisheries Society, Southern Division conference. February 20-23 2020. Little Rock, Arkansas, US.
- Brownlee, S., Côté, I., Moore, J. Modeling the invasion of zebra and quagga mussels in British Columbia. Talk delivered at the Inter-Departmental Ecology of Aquatic Species (IDEAS) Symposium. January 25 2020. Burnaby, BC.
- Brownlee, S., Côté, I., Moore, J. Modelling the invasion of zebra and quagga mussels in BC '. Poster presented at the Eco-Evo Retreat 2019. October 25-27 2019. Squamish, BC.
- Brownlee, S., Hebert, A. and Hinch, S. Do the reproductive niches of anadromous and resident sockeye salmon in Alouette Lake differ significantly from one another?. University of British Columbia. 2019. Web. URL: [https://www.stevenbrownlee.ca/publication/sockeye\\_2019/](https://www.stevenbrownlee.ca/publication/sockeye_2019/)

Brownlee, S., Hebert, A. and Hinch, S. Reproductive niche modeling of a novel ecotype of deepwater-spawning sockeye salmon (*Oncorhynchus nerka*) in Alouette Lake, BC, Canada. Poster presented at Pacific Ecology and Evolution Conference 2019. February 22 - 24 2019, Bamfield, BC.

Brownlee, S. Mageroy, J. and Walker, I. 2017. Rocky Mountain Ridged Mussel (*Gonidea angulata*) in the Okanagan Valley, British Columbia: Host fish field sampling and mussel surveys in 2017. University of British Columbia – Okanagan. URL:  
<http://paleolab.ca/Mussel/Rocky%20Mountain%20ridged%20mussel%20Final%20Report%202017.pdf>

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### **Practical Skills and Languages**

**Software:** Microsoft PowerPoint, Word and Excel, R, MySQL, Python, ArcGIS, QGIS, ENVI, Conefor, FRAGSTATS, MaxEnt.

**Language:** English, Grade 11 French.

**Miscellaneous:** Canadian Pleasure Craft Operators' Card, Level 5 BC drivers' license, UBC-O Biological Safety Certification, CCAC/NIAUT Animal Care Certificate in the care of fish.

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### **Awards and Scholarships**

#### **President's PhD Scholarship, Spring 2022**

- \$7000 CAD, awarded on academic and research merit.

#### **CSEE 2021 Conference Best 20 Minute Talk**

- \$500 CAD, awarded on the quality and academic merit of the talk.

#### **SFU Graduate Fellowship – 2020**

- \$7000 CAD, awarded based upon academic and research merit.

#### **Pacific North West Shell Club Scholarship – 2020**

- \$750 USD, awarded based on topic and merit of research proposal.

#### **SFU's Big Data Graduate Scholarship – 2019**

- \$6500 CAD, awarded during first year of Doctor of Philosophy program.

**UBC Special University Bursary – 2019**

- \$1050 CAD, awarded during Master of Geomatics program.

**Special UBC Academic Scholarship – 2018**

- \$10 000 CAD, awarded upon entry to Master of Geomatics program.

**President’s Entrance Scholarship - 2011**

- \$2500 CAD, awarded based upon high school grades.

**British Columbia Government Scholarship - 2011**

- \$1000 CAD, awarded based upon high school grades.