

Cole B. Brookson

PHD STUDENT, EPIDEMIOLOGY OF MICROBIAL DISEASE

Yale University, New Haven, CT, USA

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Education

Université de Montréal

VISITING PHD STUDENT

- Advisor: Dr. Timothée Poisot

Montreal, QC, Canada

January 2024 - August 2024

Yale University

PHD EPIDEMIOLOGY OF MICROBIAL DISEASES - VERENA LIGHTHOUSE SCHOLAR

- Advisor: Dr. Colin Carlson
- Thesis: "On the predictability of disease dynamics"
- Current GPA: 3.45

New Haven, CT, USA

2023 - 2028 (expected)

University of Alberta

MSc ECOLOGY

- Advisor: Dr. Stephanie Green
- Thesis: "The effects of network shape and perturbation on food web persistence"
- GPA: 4.0

Edmonton, AB, Canada

2023

University of Toronto

H. BSc ECOLOGY & EVOLUTIONARY BIOLOGY

- Advisors: Drs. Martin Krkošek, Dr. Chelsea Rochman, Marie-Josée Fortin

Toronto, ON, Canada

2019

Publications

PRE-PRINTS

Poisot, T., Becker, D.J., . . . , **Brookson C.B.**, et al. (*In Review*). Ten Simple Rules to build a Model Life Cycle *EcoEvoRxiv*

PUBLISHED

Gleiber, M.R., Hardy, N.A., . . . , **Brookson C.B.**, et al. (2024). The pelagic species trait database, an open data resource to promote trait-based fisheries research *Scientific Data*

Crystal-Ornelas, R., Edwards, B.P.M., . . . , **Brookson C.B.**, et al. (2023). Not just for programmers: How GitHub can accelerate collaborative and reproducible research in ecology and evolution. *Methods in Ecology & Evolution*.

Lewis, A., Rollinson, C., Allyn, A., Ashander, J., Brodei, S., **Brookson C.B.**, . . . , Wardle, G. (2022). The power of forecasts to advance ecological theory. *Methods in Ecology & Evolution*. 14 (3), 736-746.

Green, S.J., **Brookson C.B.**, Hardy, N., Crowder, L.B., (2022). Trait-based approaches to global change ecology: from description to prediction. *Proceedings of the Royal Society B: Biological Sciences*. 289 (1971) , 20220071.

Bodner, K., Rauen Firkowski, C., Bennett, J., **Brookson C.B.**, Dietze, M., Green, S. . . . Fortin, M.-J. (2022). Bridging the divide between ecological forecasts and environmental decision-making. *Ecosphere*. 12(12), e03869

Linardich, C., **Brookson C.B.**, Green, S.J. (2021). Trait-based vulnerability reveals hot spots of potential impact for a global marine invader. *Global Change Biology*. 27(18). 4322-4338.

Brookson C.B., Krkošek, M., Hunt, B.P.V., Johnson, B.T., Rodgers, L.A., Godwin, S.C. (2020). Differential infestation of juvenile Pacific salmon by parasitic sea lice in British Columbia, Canada. *Canadian Journal of Fisheries and Aquatic Sciences*. 77(12), 1960-1968.

Brookson, C.B., de Solla, S.J., Fernie, K.J., Cepeda, M., Rochman, C.M. (2019). Microplastics in the diet of an obligate piscivore, double-crested cormorants (*Phalacrocorax auratus*), in a freshwater ecosystem. *Canadian Journal of Fisheries and Aquatic Sciences*. 76(11): 2156-2163

Rochman, C.M., **Brookson, C.B.**, Bikker, J., Djuric, N., Earn, A., Bucci, K., Athey, S., . . . , Borrelle, S. (2019). Rethinking Microplastics as a Diverse Contaminant Suite. *nvironmental Toxicology & Chemistry*. 38(4): 703-711.

NON-PEER REVIEWED REPORTS

Brookson, C.B., Atkinson, E.M., Bateman, A.W., Peacock, S.J., Godwin, S.C. 2023. Sea lice are associated with reduced survival of pink salmon populations in the Broughton Archipelago: An updated analysis. *A report for the Broughton Aquaculture Transition Initiative (BATI)*

Humenny, R., Brookson, C.B., Bateman, A.W., Godwin, S.C. 2024. Findings from BATI's five-year juvenile salmon monitoring program *A report for the Broughton Aquaculture Transition Initiative (BATI)*

Research Experience

Consultant - Kitasoo Xai'xais First Nation

British Columbia, Canada

ADVISORS: DRS. SEAN GODWIN & ANDREW BATEMAN

Oct. 2022 - Present

- Statistical modelling consultant, working on a project to build a model for the effect of sea lice from farmed salmon on juvenile salmon on the central coast of British Columbia. Tasks include building reproducible software tools, acquiring and cleaning data, and fitting statistical models.

Software Package Developer

University of Toronto

ADVISOR: DR. MARIE-JOSÉE FORTIN

2022-2023

- Consulted building a package to perform spatial statistics in R, specifically to implement developed algorithms to detect boundaries. Duties included writing methods and developing a package for CRAN that implements Wombling method to identify local variation for the detection of spatial boundaries in raster data.

Software Developer & Teaching Content Creator - Dept. of Ecology & Evolution

University of Toronto

ADVISORS: DR. SHELBY RISKIN & DR. JACQUELINE SZTEPANACZ

2022-2023

- Software developer and teaching content creator, building a department-wide resource "The R Manual" to transform the computational curriculum in the department. Tasks include building a website to house the content, creating teaching and learning content for students between 1st year undergrad and beginning graduate students to learn R and statistical programming. Also participated in developing and implementing a pedagogical study investigating the effectiveness of such a tool on computational literacy in undergraduate students.

Statistical Consultant - Mamalilikulla, 'Namgis, and Kwikwasut'lnuxw Haxwa'mis First Nations

British Columbia, Canada

ADVISORS: DRS. SEAN GODWIN, STEPHANIE PEACOCK & ANDREW BATEMAN

2022 - 2023

- Statistical & computing consultant, working on a project to update stock-recruit models investigating the effect of sea lice on wild juvenile salmon in the Broughton Archipelago. Tasks include building reproducible software tools, acquiring and cleaning data, and fitting statistical models.

Teaching & Supervision

Teaching Assistant

Bamfield Marine Sciences

Centre

MARINE POPULATION ECOLOGY & DYNAMICS

Fall 2021

- Developed course materials including lectures, computer labs, and field trips alongside the course instructor, for a three-week intensive population ecology course. I also built a course website with an automatic autograder and facilitated a plan to film and edit all lectures/field trips with the purpose of putting all course content online, freely available for anyone interested.

Graduate Student Advisor

University of Alberta

UNDERGRADUATE THESIS SUPERVISION

2021-2022

- Conceptualized a topic and project for an undergraduate research thesis and then supervised the completion of that thesis, assisting with timeline planning, method development, writing and presentation, and skills development. This included advising the student in statistics, programming techniques, scientific philosophy, and writing.

Teaching Assistant

University of Alberta

PRINCIPLES OF ECOLOGY

2021

- Ran lab sections for 12 separate sections of students, instructing on general ecological principles as well as specific lab skills. Grading responsibilities included marking >80 final lab reports.

Workshop Series Instructor

University of Alberta

REPRODUCIBLE METHODS FOR BIOLOGICAL RESEARCH

Spring 2021

- Developed content and individual lesson plans for a 7-week workshop series introducing graduate students and professionals to methods for making biological research reproducible. Instruction was given on the use of version control (i.e. Git/GitHub), script management, container software (i.e. Docker, Singularity), parallel/distributed computing, and cloud computing.

Workshop Series Instructor

University of Alberta

INTRODUCTION TO PROGRAMMING IN R/RSTUDIO FOR BIOLOGY

Winter 2019 & Fall 2020

- Developed content and individual lesson plans for a 5-week workshop to teach undergraduate students tools for data management and manipulation, best practices in script management, foundational programming skills, and data visualization. Delivered and co-taught a mixed asynchronous/synchronous remote lecture mixture to accommodate students. Built and maintained a website for course website. Created stand-alone reference documents and live-coded videos for the series.

Workshop Series Instructor

University of Alberta

INTRODUCTION TO PROGRAMMING IN PYTHON FOR BIOLOGY

Fall 2020

- Developed content and individual lesson plans for a 5-week workshop to teach undergraduate students tools for data management and manipulation, best practices in script management, foundational programming skills, and data visualization in Python. Delivered and co-taught a mixed asynchronous/synchronous remote lecture mixture to accommodate students. Built and maintained a website for course website. Created stand-alone reference documents and live-coded videos for the series.

Awards, Fellowships, & Grants

2023	Postgraduate Scholarship-Doctoral , Natural Sciences & Engineering Research Council of Canada	63,000 CAD
2022	Canada Graduate Scholarship-Doctoral - DECLINED - Can only be taken up in CA , Natural Sciences & Engineering Research Council of Canada	105,000 CAD
	D Alan Birdsall Memorial Scholarship , University of Alberta	7,000 CAD
2021	Alberta Graduate Excellence Scholarship , University of Alberta	12,000 CAD
	Excellence in Teaching Award , University of Alberta	non-monetary
	Donald M. Ross Excellence Scholarship , University of Alberta	3,000 CAD
	Martin J. Paetz Memorial Graduate Award in Fisheries Management , University of Alberta	6,100 CAD
2020	Peter A. Larkin Award for Excellence in Fisheries , American Fisheries Society	400 CAD
	Alexander Graham Bell Canada Graduate Scholarship-Masters , Natural Sciences & Engineering Research Council of Canada	17,500 CAD
	Walter H Johns Graduate Fellowship , University of Alberta	5,800 CAD
2019	Alberta Graduate Excellence Scholarship , University of Alberta	12,000 CAD
	University of Alberta MSc Recruitment Scholarship , University of Alberta	22,900 CAD
	Dept. of Biological Sciences Recruitment Scholarship , University of Alberta	5000 CAD
	Best Conservation & Ecology Poster , university of Toronto	non-monetary
	Undergraduate Research Fund , University of Toronto	2000 CAD
2018	Edwin J. Crossman Undergraduate Scholarship , University of Toronto	500 CAD
	Best Conservation & Ecology Poster, Runner Up , University of Toronto	non-monetary
	Jack O'Hara Memorial Forestry Scholarship , University of Toronto	500 CAD

Service & Professional Development

SERVICE, COMMUNITY, & LEADERSHIP

Abstract Reviewer

2024

ECOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING

- Performed abstract review for the annual meeting, clearing >90 abstracts for appropriateness and content.

Student Representative

2021 - 2023

ECOLOGICAL SOCIETY OF AMERICA COUNCIL

- The ESA Council is a representative body that includes leadership from the disciplinary and geographic units and reflects the diversity of ESA's members. I represent the student section to the council, and promote student participation in advancing ESA's mission.

Diversity, Equity, & Inclusion Committee Member

2021 - 2021

SOCIETY FOR OPEN AND REPRODUCIBLE ECOLOGY & EVOLUTION

- The DEI committee focuses on advancing SORTEEE's mission to make science a more equitable place. My role is as the consultant to the Membership Committee, helping to identify groups that are not equitably represented in the membership, and make recommendations to the membership committee.

Courses & Curriculums Committee Member

2020 - 2021

DEPT. OF BIOLOGICAL SCIENCES, UNIVERSITY OF ALBERTA

- Served on committee that oversees and directs the course offerings in the department of Biological Sciences at the University of Alberta. I reviewed proposed course and curricula changes, and provided feedback and development of program development overall.

Graduate Student Organizer

2019 - 2020

QUANTITATIVE ECOLOGY GROUP, UNIVERSITY OF ALBERTA

- Initiated and organized a bi-weekly meeting of quantitative ecologists for discussions surrounding methods, best practices, and general ideas in mathematical and statistical ecology

OUTREACH

- 2019-2021 **First Peoples House, UAlberta**, Graduate Student Peer Tutor
- 2019-2023 **Skype a Scientist Foundation**, Outreach Scientist
- 2019-2023 **Skype a Scientist Foundation**, Outreach Scientist
- 2019/20 **University of Alberta - RE Peter Biological Science Conference**, Organizer
- 2019 **University of Toronto Dept. of Ecology & Evolution - Atwood Colloquium**, Organizer
- 2018 **University of Toronto Dept. of Ecology & Evolution - Atwood Colloquium**, Organizer

PEER REVIEW

Ecology Letters - Conservation Biology - Journal of Fish Biology - Proceedings of the Royal Society, Biology - Canadian Journal of Fisheries & Aquatic Sciences - Ecography

PROFESSIONAL MEMBERSHIPS

Ecological Society of America, Canadian Society for Ecology & Evolution, Ecological Forecasting Initiative