

Cole B. Brookson

PHD STUDENT, EPIDEMIOLOGY OF MICROBIAL DISEASE

Yale University, New Haven, CT, USA

+1 613-296-0001 | cole.brookson@gmail.com | www.colebrookson.com | [colebrookson](https://www.instagram.com/colebrookson)

Education

Yale University

New Haven, CT, USA

PHD EPIDEMIOLOGY OF MICROBIAL DISEASES - VERENA LIGHTHOUSE SCHOLAR

2023 - 2028 (expected)

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

Université de Montréal

Montreal, QC, Canada

VISITING PHD STUDENT

January 2024 - August 2024

- Advisor: Dr. Timothée Poisot

Georgetown University – Transferred Summer 2024 to Yale

Washington, DC, USA

PHD GLOBAL HEALTH & INFECTIOUS DISEASE

2023 - 2024

- Advisor: Dr. Colin Carlson
- GPA as of Transfer: 3.45

University of Alberta

Edmonton, AB, Canada

MSc ECOLOGY

2023

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

University of Toronto

Toronto, ON, Canada

H. BSc ECOLOGY & EVOLUTIONARY BIOLOGY

2019

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

Publications

PRE-PRINTS

1. **Brookson C.B.** & Greiner, A. (*In Review*). Coral restoration is only feasible when human pressures are low. *BioRxiv*

ACCEPTED OR IN-PRESS

1. Carlson, C.J., Stevens, T., ..., **Brookson C.B.**, et al. (*Accepted*). A minimum data standard for wildlife disease surveillance. *Scientific Data*

PUBLISHED

11. Poisot, T., Becker, D.J., . . . , **Brookson C.B.**, et al. (2025). Ten Simple Rules to build a Model Life Cycle. *PLoS Computational Biology*, 21 (2), e1012731
10. Carlson, C.J., **Brookson C.B.**, et al. (2025). Pathogens and planetary change. *Nature Reviews Biodiversity* . 1 (1), 32-49.
9. 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* . 11(1), 2
8. 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*.
7. Lewis, A., Rollinson, C., Allyn, A., Ashander, J., Brodie, S., **Brookson C.B.**, . . . , Wardle, G. (2022). The power of forecasts to advance ecological theory. *Methods in Ecology & Evolution*. 14 (3), 736-746.
6. 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.

5. 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
4. 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.
3. **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.
2. **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
1. 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

2. 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)*
1. **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)*

Research Experience

Scientific Consultant - Kitsoo 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.

Awards, Fellowships, & Grants

2025	Yale Planetary Solutions Doctoral Fellowship. , Yale Planetary Solutions	9,000 USD
2023	Postgraduate Scholarship-Doctoral , Natural Sciences & Engineering Research Council of Canada	101,000 CAD

2022	Canada Graduate Scholarship-Doctoral - <i>DECLINED</i> - Can only be taken up in CAN , Natural Sciences & Engineering Research Council of Canada	115,000 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

Teaching & Supervision

Teaching Fellow

Yale University

REAL WORLD ENVIRONMENTAL DATA SCIENCE

Winter 2025

- Assisted in teaching course material, managed the classroom, and graded assignments. Held weekly office hours to assist students, and ensured that all course materials were updated on various learning platforms (Canvas, GitHub Classroom) in a timely fashion.

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.

Presentations

* *presenting author*; + *mentored undergraduate*

INVITED TALKS

Summer 2024. **Delivered on behalf of Ellie Graeden.** *PHAROS: A global platform for wildlife disease..* Invited talk: Ecological Society of America, Long Beach, United States

Fall 2023. *A meeting of minds - ecology & math as surprising best friends.* Guest Lecture, Population Ecology, UC Davis.

Spring 2019. *The birds & the beads - microplastics in the diet of piscivores in Lake Ontario.* Invited talk: Boundless Research, University of Toronto, Canada

CONTRIBUTED PRESENTATIONS

Brookson, C.B.*. 2024. Two sides of the same coin: combining dynamical systems and network approaches to improve near-term prediction of host-virus dynamics. Inspire talk: Ecological Society of America, Long Beach, United States

Brookson, C.B.*. McLeod, A.M., Green, S.J. 2023. The effects of network shape on food web persistence. Contributed talk: Ecological Society of America, Portland, United States

Brookson, C.B.*. Godwin, S.C., Krkošek, M., . 2019. Differential infestation of juvenile Pacific salmon by parasitic sea lice in British Columbia, Canada. Poster: EEB Undergrad Colloquium, Toronto, Canada.

Brookson, C.B.*. Fortin, M-J. 2018. The effect of land-use change on the beta-diversity of breeding birds. Poster: EEB Undergrad Colloquium, Toronto, Canada.

Service & Professional Development

SERVICE, COMMUNITY, & LEADERSHIP

Steering Committee Member

2025-2027

CANADIAN ECOLOGICAL FORECASTING INITIATIVE

- Sat on the steering committee assisting with conference planning, overall organization direction, and web facilitation.

Student Grants Committee Evaluator

2024-2025

AMERICAN SOCIETY OF NATURALISTS

- Evaluated student research grants and made funding recommendations to ASN.

Session Co-Organizer

2024

ECOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING

- Co-organized a session on Ecological Forecasting and Ecological Theory

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

2023 - 2025

ECOLOGICAL SOCIETY OF AMERICA - THEORETICAL ECOLOGY SECTION

- The ESA Theoretical Ecology session promotes theory in ecology. My role involved liaising with the Student Executive as well as helping to prepare for the annual awards.

Code of Conduct Author

2024

ECOLOGY & EVOLUTION OF INFECTIOUS DISEASE MEETING

- For the annual meeting of EEID, until 2024 there had been no speaker code of conduct nor attendee code of conduct/code of ethics. Along with other students and post-docs, we wrote, enacted, and monitored the establishment of a first Code of Conduct for the meeting's attendees.

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 SORTEE'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 & Curriculum 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