

# Brett C. Pauli, MSc

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brettp99@hotmail.ca | 705-984-2433 | [LinkedIn](#)

## Profile

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Early-career aquatic ecologist with extensive field experience and over 8 years of data wrangling and statistical analysis of large ecological datasets. Independent and skilled in ecological modelling, project coordination, and translating science into actionable outcomes. Passionate about sustainable management of aquatic resources and bringing rigorous, data-driven insights to conservation and development.

## Education

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### MSc Integrative Biology, U of Guelph, McCann Lab (Sept 2022-Apr 2025)

- Thesis: *Context-dependency in environmental correlates across scales in coral reef communities*
- GPA: 96%; Braithwaite Travel Grant recipient (\$4,500).
- Developed large datasets and implemented advanced models in R (Structural equation modelling, meta-analyses, cross-scale meta-regression, RDA, mixed models, NMDS, regression trees, PERMANOVA, variance partitioning, switch point analyses, etc.).
- Experienced in data integration across databases & remote sensing platforms (MODIS, Ocean Colour, AGRRRA, WDPA, Copernicus, FishBase).
- Experienced using various geospatial tools (ArcGIS, ESRI, raster and terra R packages, Moran eigenvector mapping).
- Extensive knowledge in theoretical ecology with a focus on freshwater and marine ecosystems.
- Produced high quality tables and figures and effectively communicated findings to various audiences (scientific, landowners, private industry, public).

### BSc Wildlife Biology and Conservation (Honours), Minor: Ecology, U of Guelph (Sept 2017- 2022)

- Dean's Honours List (five consecutive semesters).
- Undergraduate Thesis: *Shifting functional trait composition in boreal freshwater fish communities across gradients of anthropogenic stressors*.
- Coursework in natural resource policy analysis, marine ecological processes, climate change biology, population genetics, and forest biodiversity.
- Conducted comprehensive report evaluating the role of legislation (e.g., Fisheries Act) and the effects of pulp mill effluents on White Sturgeon in British Columbia.

## Field & Analytical Experience

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### Aquatic Research Assistant, Dr. Kevin McCann Lab, U of Guelph (May – Sept 2022/23)

- Assisted PhD projects at Algonquin Park (Harkness Fisheries Research Lab).
- Conducted extended periods of remote fieldwork ensuring safe completion of tasks while adapting to challenging weather conditions.
- Extensive experience implementing many sampling techniques in creeks, rivers and lakes: electrofishing, weirs, seine, fyke, gillnets, tooth nets, zooplankton hauls, acoustic telemetry and more.
- Operated, towed, launched various sized boats (12-21ft) under challenging weather conditions.
- Conducted stable isotope tissue sampling and processing, otolith extraction, and water chemistry analysis.
- Used RBR loggers, YSI meters, GPS tools, trail cameras, Secchi depth, telemetry array installation

- and acoustic tagging.
- Implemented invasive species prevention protocols.
- Identified and handled freshwater fish (e.g., *cyprinid*, *salmonid*) and benthic invertebrates.

### **Restoration Technician, Nottawasaga Valley Conservation Authority (2021)**

- Carried out Nottawasaga River Restoration Program including river realignment and floodplain creation to restore key river habitat parameters (e.g., temperature, structure, nutrient inputs).
- Conducted electrofishing fish rescues including relocation of dozens of at-risk Northern Brook Lamprey (*Ichthyomyzon fossor*).
- Implementing standardized benthic invertebrate sampling (e.i. kick net surveys),
- Worked instream around large machinery.
- Monitored water quality and conducted longitudinal hydro-morphological surveys before, during and after project.
- Planted more than 5,000 trees along riparian habitats to stabilize banks and reduce erosion and temperature.
- Installed spruce tree revetments for habitat creation and reduce energy flows.
- Restored native prairie grassland
- Conducted acoustic and visual bird surveys.

### **Research and Teaching Experience**

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#### **Graduate Teaching Assistant, U of Guelph (2023 – 2024)**

- Led weekly seminars and tutorials for three different courses: Populations, Communities & Ecosystems, Introduction to Aquatic Ecosystems, and Discovering Biodiversity.
- Guided students through R-based data analysis and ecological concepts in both lab and field settings.
- Earned “Perfect” teaching team scores and “Excellent” student evaluations.

#### **Lab Assistant (Volunteer), Dept. of Integrative Biology, U of Guelph (2022)**

- Assisted in Vertebrate Zoology lab with dissection, anatomy, and safety protocols. Handled reptiles and amphibians.

### **Publications & Presentations**

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- Gutgesell et al. (2024). *The productivity-stability trade-off in global food systems*. Nature Ecology & Evolution.
- In prep: Pauli, B., Guzzo, M., O'Connor, R., McCann., K. (2025). *Shifts in slow-fast functional trait composition in boreal freshwater fish communities across gradients of anthropogenic stressors*.
- In prep: Pauli, B., Vallès, H., O'Connor, R., Ward., C., McCann., K. (2025). *Environmental drivers of coral reef benthic communities across scales*.
- In prep: Bieg, C., et al. (2025). *Global connectivity drives ecological imbalances*.
- Speaker at American Fisheries Society conference, Honolulu (2024); Canadian Society of Ecology & Evolution conference, Winnipeg (2023); and “Meet the Researcher Day,” Algonquin Park (2022).
- Pauli (2022). *Effect of pulp-mill effluents on White Sturgeon (*Acipenser transmontanus*) recruitment in Kamloops Lake and the Thompson River watershed*.
- Pauli (2021). *Algae for Mars: Literature Review*.
- All documents available upon request.

## Certifications & Additional Information

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- Fluent in French & English (currently learning Spanish).
- Experience building machine learning models (YOLOv8) for identifying coral reef imagery (CVAT).
- Member of Deep Space Food Challenge (Phase 1) in coordination with the Canadian Space Agency and NASA (2022).
  - Developed biological life support systems for future Mars missions.
- PADI Open Water Diver
  - Over a dozen dives spanning Honduras, Barbados, Hawaii, and Colombia.
- Immediately eligible for certification with the College of Applied Biologist.
- Pleasure Craft Operator, G class license, WHMIS, Standard First Aid CPR/AED.
- Owner of reliable all-season vehicle and comfortable travelling long distances.
- Marathon runner, strong swimmer and experience operating large machinery (ATV, UTV, tractors, JCB 400 series).
- Lab Safety and Biosafety training (U of Guelph) and Fish Handling training – Division of Comparative Medicine (U of Toronto).
- Organizer, Evelyn Pielou Discussion Group (U of Guelph; 2023-2024).
  - Coordinated weekly journal discussions on ecology, evolution, and physiology, engaging graduate students and faculty in scientific dialogue.
- Willing to obtain CABIN and/or Electrofishing Certification