Benjamin L. Hlina, PhD

Quantitative Ecological Scientist

benjamin.hlina@gmail.com | http://benjaminhlina.com/ | US and Canadian Citizen

Professional summary

Accomplished quantitative ecologist, researcher, and data scientist with 8 years of specialization in large data (100+ million rows), Bayesian modeling, and ecological applications of advanced statistical methods. Skilled in developing reproducible, open-source tools and interactive applications that translate complex ecological data into actionable insights for conservation and resource management. Passionate about bridging academic research, resource management, and applied data science, to support evidence-based decision-making for aquatic ecosystems. Proven ability to manage complex research projects.

Areas of expertise

- Fish Ecology
- Aquatic Biology
- Animal Physiology
- Publishing peer-reviewed scientific literature
- Grant writing
- Writing grey literature, reports, and other written documents
- Oral communication
- Project management
- Statistical analysis
- Bayesian modeling
- Software packages
- Database management
- Geospatial analysis
- Git & CLI
- GitHub

Education

Doctor of Philosophy (PhD) Biology | Fish spatial ecology, Trophic Dynamics, Bioenergetics | Carleton University (2023)

- Supervisor: Dr. Steven J. Cooke - FECPL.ca
- Co-Supervisor: Dr. Michael Power - University of Waterloo
- Recipient of $25,000 in scholarships
- Finalist for Best Student Paper at American Fisheries Society (2022)
- Thesis: “Investigations of Lake Trout *Salvelinus namaycush* ecology and behaviour in relation to fragmented thermal habitats to inform a multifaceted management strategy”

Master of Science (MSc) Integrated biology | Fish physiology, aquatic toxicology | Wilfrid Laurier University (2015)

- Supervisor: Dr. Michael Wilkie
- Recipient of $5,000 in scholarships
- Thesis: “The influence of abiotic factors on the uptake and elimination of 3-Trifluoromethyl-4-Nitrophenol by larval Sea Lamprey (*Petromyzon marinus*)”

Bachelors of Science (BSc) Specialization in Fisheries Management | University of Wisconsin – Stevens Point (2013)

- UW-Stevens Point – Chancelor’s Leadership Award Recipient 2013

Publications

1. **Hlina, B.L.*,** Rous, A.M.*, Piczak, M.L., Midwood, J.D., Brownscombe, J.W., Portiss, R.J., Sciscione, T.F., Wells, M.G., Doka, S.E., Cooke, S.J. (2026). Seasonal Effects on the Acceleration of Largemouth Bass and Northern Pike in Toronto Harbour. Animal Biotelemetry. 14: 1-14. https://doi.org/10.1186/s40317-026-00444-6

2. **Hlina, B.L.,** Fisk, A.T., Metcalfe, B.W., Johnson, T.B. (*In Review*). Accounting for spatial variation in trophic processes of fishes in large lakes: An ecoregion approach. Freshwater Biology.

3. **Hlina, B.L.,** Robinson, R.L., Bloomfield, E.J., Metcalfe, B.W., Johnson, T.B. (2025). Monthly differences in the movement ecology of lake whitefish (*Coregonus clupeaformis*) in eastern Lake Ontario. Journal of Fish

Biology. https://doi.org/10.1111/jfb.70269. (PDF available).

4. Cooke, S.J., Stoot, L.J., **Hlina, B.L.**, Zhang, J., Macleod, C. (2025). Is clean growth really all that clean? A review of the cumulative effects associated with renewable energy clean growth initiatives in Canada and beyond. Environmental Reviews. 33: 1-22. https://doi.org/10.1139/er-2025-0064. (PDF available).

5. Glassman, D.M., **Hlina, B.L.**, Donaldson, L.A., Abrams, A.E.I., Bergman, J.N., Chhor, A., Stoot, L.J., and Cooke, S.J. (2024). Gravel washing as a lacustrine spawning habitat restoration method for smallmouth bass. Aquatic Living Resource 37: 1-9. https://doi.org/10.1051/alr/2024010. (PDF available)

6. **Hlina, B.L.**, Glassman, D.M., Lédée, E.J.I., Nowell, L.B., Claussen, J.E., Philipp, D.P., Marsden, J.E., Power, M., and Cooke, S.J. (2024). Habitat-dependent metabolic costs for a wild cold-water fish. Aquatic Sciences 86(2): 36. https://doi.org/10.1007/s00027-024-01052-3. (PDF available).

7. **Hlina, B.L.**, Birceanu, O., Robinson, C.S., Dhiyebi, H., Wilkie, M.P. (2021).The relationship between thermal physiology and lampricide sensitivity in larval sea lamprey (*Petromyzon marinus*). Journal of Great Lakes Research 47 (Supp. 1): S272-S284. https://doi.org/10.1016/j.jglr.2021.10.002. (PDF available)

8. **Hlina, B.L.**, Glassman, D.M., Chhor, A.D., Etherington, B.S., Elvidge, C.K., Diggles, B.K., Cooke, S.J. (2021). Hook retention but not hooking injury is associated with behavioral differences in Bluegill. Fisheries Research 242: 106034. https://doi.org/10.1016/j.fishres.2021.106034. (PDF available).

9. Marsden, J.E., Blanchfield, P.J., Brooks J.L., Fernandes, T., Fisk, A.T., Futia, M.H., **Hlina, B.L.**, Ivanova S.V., Johnson, T.B., Klinard, N.V., CC Krueger, C.C., Larocque, S.M., Matley, J.K., B McMeans, B., O'Connor, L.M., Raby, G.D., Cooke, S.J. (2021). Using untapped telemetry data to explore the winter biology of freshwater fish. Reviews in Fish Biology and Fisheries 31: 115–134. https://doi.org/10.1007/s11160-021-09634-2. (PDF available).

10. Bergman, J.N., Bennett, J.R., Binley, A.D., Cooke, S.J., Fyson, V., **Hlina, B.L.**, Reid, C.H., Vala, M.A., Madliger, C.L. (2019). Scaling from individual physiological measures to population-level demographic change: Case studies and future directions for conservation management. Biological Conservation 238: 108242. https://doi.org/10.1016/j.biocon.2019.108242. (PDF available).

11. Muhametsafina, A., Birceanu, O., **Hlina, B.L.**, Tessier, L.R., Wilkie, M.P. (2019). Warmer waters increase the larval sea lamprey's (*Petromyzon marinus*) tolerance to the lampricide 3-trifluoromethyl-4-nitrophenol (TFM). Journal of Great Lakes Research 45(5): 921-933. https://doi.org/10.1016/j.jglr.2019.07.011. (PDF available)

12. **Hlina, B.L.**, Tessier, L.R., Wilkie, M.P. (2017). Effects of water pH on the uptake and elimination of the piscicide, 3-trifluoromethyl-4-nitrophenol (TFM), by larval sea lamprey. Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology 200: 9-16. https://doi.org/10.1016/j.cbpc.2017.05.005. (PDF available)

13. Johnson, N.S., Tix, J.A., **Hlina, B.L.**, Wagner, C.M., Siefkes, M.J., Wang, H., Li, W. (2015). A sea lamprey (*Petromyzon marinus*) sex pheromone mixture increases trap catch relative to a single synthesized component in specific environments. Journal of Chemical Ecology 41(3): 311-321. https://doi.org/10.1007/s10886-015-0561-2. (PDF available).

Awarded Grants

14. Fisk, A.T., Johnson, T.B., **Hlina, B.L..,** Ivanova, S.V., Larocque, S.M., Midwood, J.D., Brownscombe, J.W., O'Malley, B.P. 2025. Quantifying changes in spatial and temporal behaviours of alewife in Lake Ontario. Great Lakes Fisheries Commission - $418,114.20 CAD for 3 years.
15. Johnson, T.B., Chipps, Steve Chipps, S.R., Deslauriers, D., Kershner, M.W., Madenjian, C.P., Pothoven, S.A, Rennie, M. D., **Hlina, B.L.,** Great Lakes Biological Tissue Database. Great Lakes Fisheries Commission - $24,499.65 CAD for 1 year.

Presentations & Posters

16. *Estimating Detection Efficiency of Acoustic Receivers Using {glatos}*
    - Ocean Tracking Network – Symposium – 2024, Hallifax, CAD – *Workshop*

17. *Spatial variation in trophic dynamics for multiple fish species in Lake Ontario*
    - The International Association for Great Lakes Research 2024, Windsor, CAD – *Presentation*

18. *Habitat-dependent bioenergetic costs for a wild cold-water fish*
    - Ocean Tracking Network – Symposium – 2024, Hallifax, CAD
    - International Conference on Fish Telemetry 2023, Sète, France - *Poster*
    - American Fisheries Society – 2022 – Annual Meeting - Spokane, USA - *Presentation (award finalist)*

19. *Spatial ecology and niche partitioning of lake trout and smallmouth bass in a multibasin lake*
    - Canadian Conference for Fisheries Research 2022, Vancouver, Canada - *Presentation*
    - Great Lakes Acoustic Telemetry Observation System 2020, Ann Arbor, USA – *Presentation*
    - *Kenauk Research Institute 2019, Montebello, Canada - stakeholder engagement – Presentation*

20. *The seasonal differences in the TFM tolerance and TFM detoxification capacity in larval sea lamprey*
    - *The International Association for Great Lakes Research 2015, Burlington, USA – Presentation*
    - *American Fisheries Society, 2014, Quebec City, CAD – Presentation*

Accomplishments and Honours

21. 2022-2023 – Ontario Graduate Scholarship, Carleton University
22. 2022 – Finalist for Best Student Paper at American Fisheries Society Annual meeting
23. 2021-2022 – Queen Elizabeth II Graduate Scholarship, Carleton University
24. 2014 – Brule River Sportsman's Club Scholarship ($5,000), Wilfrid Laurier University
25. 2013 – Chancelor's Leadership Award, University of Wisconsin – Stevens Point

Programming

Maintain and authored the following packages:

26. {trps} – Bayesian trophic position models using Stan (pronounced tropes) by leveraging {brms}. Equations for trophic position models are derived from Post (2002), Vander Zanden and Vadeboncoeur (2002), and Heuvel et

al. (2024) and are to be used with stable isotope data.

27. {nichetools} – is a complementary package to {nicheROVER} and {SIBER} which are both focused on evaluating stable isotope niches and food web community metrics.

28. {ecotox} – uses a simple approach to analyze data from toxicology studies to find lethal concentrations (LC) or time (LT) for a given reagent.

Contributed to the following packages:

29. {glatos} — acoustic telemetry data processing
30. {pathroutr} — rerouting animal movements around landmasses
31. {soapcheckr} — efficiently making soap-film smoothers for GAMs in {mgcv},
32. {tRophicPosition} — addresses estimating trophic position using equations found in Post et al., 2002 using a Bayesian framework in JAGS
33. {TelemetrySpace} – Bayesian detection probability models in Stan
34. {rvdat} – R API to interface with vdat from Innovasea's Fathom Connect
35. {rvdat-docker} – Docker container to interact with vdat from Innovasea's Fathom Connect.

Created and maintain the following database:

36. GLATAR – Great Lakes Aquatic Tissue Analysis Repository

Professional experience

Postdoctoral Fellow-Research Associate, Ontario Ministry of Natural Resources & University of Windsor | November 2023 - Present

- Statistical analyses using GLMMs, GAMMs, Bayesian models (Stan and JAG), detection probability models, point process models, and machine learning, mostly focused in R
- Package development and maintenance: {nichetools} – trophic niches and {trps} – Bayesian trophic position modeling in Stan
- Geospatial analyses using ESRI ArcGIS Pro, QGIS, and R
- Mentoring PhD and MSc students and OMNR staff on various topics including data management, statistical analysis, writing, and defining research objectives
- Project management of the following scientific research that has resulted in peer-review publications or grants:
    - Lake whitefish movement and vertical behaviour on Lake Ontario (*published)*;
    - Understanding spatial variation in trophic dynamics in Lake Ontario *(in review)*;
    - Seasonal environmental effects on fine-scale position acoustic telemetry arrays (*in prep);*
    - *Seasonal movement of lake trout and burbot in relation to net-pen aquaculture (in prep);*
    - Alewife movement in Lake Ontario (in progress; CAD$400,000 grant through Great Lakes Fisheries Commission)

Database Developer and Maintainer, Lakehead University | January 2025 - present

- Developing several databases for animal energy density data (Great Lakes focused) using PostgresSQL
- Interfacing with databases using Python and R
- Creating interactive Shiny dashboard to allow users to easily query and view summary data from databases

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Research Technician, Canada Centre for Inland Waters, ECCC | February - May 2018

- Led laboratory work assessing the impacts of Alberta oil sands on reproductive capacities (e.g., gonadocorticoids) of fish using enzyme immunoassays (EIA) and enzyme-linked immunosorbent assays (ELISA)
- Created standard operating procedure for sample collection, steroid extraction, EIA, and data analysis
- Analyzed laboratory results using statistical models in R
- Drafted a report on the results of laboratory work subsequently published within Environment and Climate Change Canada

Laboratory Technician, Wilfrid Laurier University | June 2016 - January 2018

- Assisted graduate students with their research in the lab of Drs. Deborah MacLatchy and Mark Servos
- Built toxicity exposures systems, running toxicity exposures and conduct laboratory work for hormone analysis
- Drafted reports for multiple projects related to NSERC funded research

Technical skills

- Quarto – see R blog for examples
- Experienced scientific writing
- 10 + years of experience in R
- 2 years of experience in Python
- Docker
- VS Code
- Microsoft Office suite
- Presentations

Strengths

- Taking initiative, self-starting
- Analytical skills and critical thinking
- Leadership, interpersonal skills, and teamwork
- Problem solving
- Written and oral communication
- Sound judgment, values, and ethics