

Personal Information

Name: Hugo de Moura Flávio

Address (CA): Unit 508, 50 Hickory Street West, N2L 0K4 Waterloo, Ontario, Canada

Address (PT): Rua Chaimite 67, 4050-194, Cedofeita, Porto, Portugal

Contact: +1 519 590 7057

Email: hflavio@wlu.ca

Date of birth: March 10th, 1992

Citizenship: Portuguese

ORCID: 0000-0002-5174-1197

Education:

2017 - 2020: PhD in Atlantic salmon migration and ecology - Technical University of Denmark, Denmark
 · Dissertation: *"Bottlenecks of Atlantic salmon smolt migration in freshwater and estuarine ecosystems"* [↗](#)

2014 - 2016: MSc in Ecology, Environment and Territory - University of Porto, Portugal
 · Dissertation: *"Reconciling Agriculture and Stream Restoration in Europe"* [↗](#)

2011 - 2014: BSc in Biology - University of Porto, Portugal

2008 - 2010: Professional course in Environmental Management - Professional School Conde S. Bento, Portugal

Short courses:

2018-11: *"Introduction to Regression Models with Spatial and Temporal Correlation"*
 · Provider: Highland Statistics Ltd.
 · Modelling using INLA

2018-10: *"Introduction to Linear Mixed Effects Models and GLMM with R - Bayesian and frequentist approaches"*
 · Provider: Highland Statistics Ltd.

2018-05: *"Laboratory Aquatic Animal Science Course - CAL-AQUA"*
 · Provider: CIIMAR, Porto University
 · FELASA Category B - "Persons carrying out animal experiments"

2018-02: *"Data Exploration, Regression, GLM & GAM with introduction to R"*
 · Provider: Highland Statistics Ltd.

2015-09: *"The use of trait based approaches in community ecology and stress ecology"*
 · Provider: IMAR - Instituto do Mar, Coimbra University
 · Module I - Key concepts and terrestrial ecosystems
 · Module II - Aquatic ecosystems

Professional Experience:

- 2020 - Present* Post-doctoral fellow, Wilfrid Laurier University, Canada
- Physiological effects of TFM on sea lamprey and non-target fishes (lake sturgeon and rainbow trout)
 - Intermittent flow respirometry, including design and setup of respirometry equipment.
 - Team coordination and student supervision.
 - Initial 2 year contract extended by 2 years.
- 2017 - 2020:* PhD candidate, Technical University of Denmark
- Study design for acoustic, radio and camera trap studies aiming to uncover Atlantic salmon smolt mortality rates across Europe
 - Analysis of complex data and presentation of the emerging conclusions arising from the multiple studies conducted under the SMOLTRACK project
 - Development of the R package *actel*
- 2017:* Student assistant, Technical University of Denmark
- Turbot acoustic telemetry in the Roskilde Fjord.
 - Maintenance and data extraction from Thelma[®] and Vemco[®] hydrophones.
 - Maintenance and data extraction from HOBO[®] environmental data loggers.
- 2017:* Short term researcher, Technical University of Denmark
- Conduct a review on the importance of hard-bottom reefs on commercially important fish species.
 - Conduct intermittent-flow fish respirometry on round goby.
- 2016 - 2017:* Student collaborator, CIIMAR, University of Porto
- Assisting on gene expression studies.
- 2015:* Supervisor of ecological conditions, EDP (Portuguese energy supplier)
- Ensuring favourable conditions to ichthyofauna during the construction phase of a hydropower dam.
- 2010 - 2016:* Student assistant, Faculty of Sciences, University of Porto
- Sampling of freshwater benthic macroinvertebrates.
 - Sampling of lentic Ichthyofauna (electric fishing and net fishing).
 - Fish (F-IBIP) and macroinvertebrate (IBMWP, IBB) biotic index calculation.

Teaching Experience:

- 2022* Coordinator/Lecturer of BI358 - Animals: Form and function
- 2022-2024* Coordinator of weekly study group "R hour"

Grants:

- 2023-01:* GLFC Sea lamprey control program grant (2023.FLA.541019)
"Physiological and behavioural effects of tagging post-metamorphic sea lamprey with a micro acoustic tag."

- Value: \$151335 (CAD) over two years
 - Role: PI
 - Host institution: Wilfrid Laurier University
 - Status: Awarded
- 2017-01: STSM Research Grant - COST Action CA15121
 “The importance of hard-bottom reefs for fisheries and marine conservation”
- Value: €2400 (EUR)
 - Location: Technical University of Denmark
- 2016: Merit Scholarship - University of Porto
- Value: €2525 (EUR)

Peer-reviewed works:

- Flávio, H.**, Seitz, R.D., Eggleston, D.B., Svendsen, J.C., Støttrup, J.G. (2023). Hard-bottom habitats support commercially important fish species: A systematic review for the North Atlantic Ocean and Baltic Sea. *PeerJ*, 11, e14681. doi: [10.7717/peerj.14681](https://doi.org/10.7717/peerj.14681)
- Baden, C., Christoffersen, M., **Flávio, H.**, Brown, E., Aarestrup, K., Svendsen, J.C. (2022) Using acoustic telemetry to locate flatfish spawning areas: Estuarine migrations of turbot *Scophthalmus maximus* and European flounder *Platichthys flesus*. *Journal of Sea Research*, 183, 102187.
doi: [10.1016/j.seares.2022.102187](https://doi.org/10.1016/j.seares.2022.102187)
- Gundelund, C., Arlinghaus, R., Birdsong, M., **Flávio, H.**, Skov, C. (2022) Investigating angler satisfaction: the relevance of catch, motives and contextual conditions. *Fisheries Research*, 250, 106294.
doi: [10.1016/j.fishres.2022.106294](https://doi.org/10.1016/j.fishres.2022.106294)
- Jiménez-Mena, B., **Flávio, H.**, Henriques, R., Manuzzi, A., Ramos, M., Meldrup, D., Edson, J., Pálsson, S., Ólafsdóttir, G. A., Ovenden, J. R., Nielsen E. (2022) Fishing for DNA? Designing baits for population genetics in target enrichment experiments: guidelines, considerations and the new tool supeR-baits. *Molecular Ecology Resources*. 22, 5, 2105-2119. doi: [10.1111/1755-0998.13598](https://doi.org/10.1111/1755-0998.13598)
- Flávio, H.**, Baktoft, H. (2021) actel: Standardised analysis of acoustic telemetry data from animals moving through receiver arrays. *Methods in Ecology and Evolution*. 12, 196-203.
doi: [10.1111/2041-210X.13503](https://doi.org/10.1111/2041-210X.13503)
- Niella, Y., **Flávio, H.**, Smoothey, A.F., Aarestrup, K., Taylor, M.D., Peddemors, V., Harcourt, R. (2020) Refined Shortest Paths (RSP): incorporation of topography in space use estimation from node-based telemetry data. *Methods in Ecology and Evolution*, 11(12), 1733-1742.
doi: [10.1111/2041-210X.13484](https://doi.org/10.1111/2041-210X.13484)
- Flávio, H.**, Caballero, P., Jepsen, N., Aarestrup, K. (2020). Atlantic salmon living on the edge: Smolt behaviour and survival during seaward migration in River Minho. *Ecology of Freshwater Fish*, 30(1), 61-72. doi: [10.1111/eff.12564](https://doi.org/10.1111/eff.12564)
- Rhodes, N., Wilms, T., Baktoft, H., Ramm, G., Bertelsen, J.L., **Flávio, H.**, Støttrup, J.G., Kruse, B.M, Svendsen J.C. (2020). Comparing methodologies in marine habitat monitoring research: An assess-

ment of species-habitat relationships as revealed by baited and unbaited remote underwater video systems. *Journal of Experimental Marine Biology and Ecology*, 526, 151315.

doi: [10.1016/j.jembe.2020.151315](https://doi.org/10.1016/j.jembe.2020.151315)

Flávio, H., Kennedy, R., Ensing, D., Jepsen, N., Aarestrup, K. (2020). Marine mortality in the river? Atlantic salmon smolts under high predation pressure in the last kilometres of a river monitored for stock assessment. *Fisheries Management and Ecology*, 27(1) 92-101. doi: [10.1111/FME.12405](https://doi.org/10.1111/FME.12405)

Flávio, H., Aarestrup, K., Jepsen, N., Koed, A. (2019). Naturalised Atlantic salmon smolts are more likely to reach the sea than wild smolts in a lowland fjord. *River Research and Applications*, 35(3) 216-223. doi: [10.1002/rra.3400](https://doi.org/10.1002/rra.3400)

Birnie-Gauvin, K., **Flávio, H.**, Kristensen, M.L., Rabideau, S.W., Cooke, S.J., Willmore, W.G., Koed, A., Aarestrup, A. (2019). Cortisol predicts migration timing and success in both Atlantic salmon and sea trout kelts. *Scientific Reports*, 9(1), 2422. doi: [10.1038/s41598-019-39153-x](https://doi.org/10.1038/s41598-019-39153-x)

Jepsen, N., **Flávio, H.**, Koed, A. (2019). The impact of Cormorant predation on Atlantic salmon and Sea trout smolt survival. *Fisheries Management and Ecology*, 26(2), 183-186. doi: [10.1111/fme.12329](https://doi.org/10.1111/fme.12329)

Flávio, H.M., Ferreira, P., Formigo, N., Svendsen, J. (2017). Reconciling agriculture and stream restoration in Europe: a review relating to the EU Water Framework Directive. *Science of the Total Environment*, 596-597, 378-395. doi: [10.1016/j.scitotenv.2017.04.057](https://doi.org/10.1016/j.scitotenv.2017.04.057)

Talks, workshops, interviews, etc.:

- July 2023:*
- [Talk]** The importance of a broad thermal tolerance in the sea lamprey's successful invasion of the Laurentian Great Lakes
 - Location: SEB Annual Conference. Edinburgh, Scotland.
 - [Poster]** Exposure to an uncoupler of oxidative phosphorylation increases whole-animal consumption in the invasive larval sea lamprey
 - Location: SEB Annual Conference. Edinburgh, Scotland.
- May 2023:*
- [Talk]** The effect of Acclimation Temperature and TFM Concentration on the Oxygen Consumption of Larval Sea Lamprey
 - Location: IAGLR's 66th Annual Conference on Great Lakes Research. Toronto, Canada.
- January 2023:*
- [Talk]** Warmer water increases sea lamprey tolerance to TFM
 - Location: 24th Sea Lamprey Annual Workshop. Green Bay, USA.
- November 2022:*
- [Workshop]** Data management in acoustic telemetry
 - Part 1: How to keep your data under control
 - Part 2: Navigating an ocean of data
 - Location: 2022 Ocean Tracking Network Symposium. Halifax, Canada.
 - [Poster]** Acoustic Data Analysis, Simplified.
 - Location: 2022 Ocean Tracking Network Symposium. Halifax, Canada.
- September 2022:*
- [Interview]** Warming Waters Help Invasive Lamprey Survive Lampricide Treatments

- Outlet: International Joint Commission Newsletter.
- Available online [↗](#)
- July 2022:* **[Poster]** Acclimation temperature affects thermal performance in larval sea lamprey
 - Location: SEB Annual Conference. Montpellier, France.
- June 2022:* **[Talk]** Larval sea lamprey don't mind the heat. Could tolerance to lampricides increase in warming climate?
 - Location: International Conference on the Biology Fish. Montpellier, France.
- May 2022:* **[Talk]** Larval sea lamprey don't mind the heat. Could tolerance to lampricides increase in warming climate?
 - Location: Joint Aquatic Sciences Meeting in Grand Rapids, Michigan, USA.
- Nov. 2021:* **[Workshop]** Data Analysis Packages discussion panel
 - Location: Ocean Tracking Network (OTN) symposium, online.
 - Available online [↗](#)
- Jan. 2021:* **[Workshop]** Standardized analyses of acoustic telemetry data using the R packages actel and RSP
 - Location: European Tracking Network (ETN), online.
 - Available online [↗](#)
- Jul. 2014:* **[Talk]** Taxonomic standardisation of the benthic macroinvertebrate main sources for the calculation of the Portuguese official water quality indexes
 - Location: XVII Congress of the Iberian Association of Limnology, Santander, Spain

Mentorship:**Undergrad Students [n = 2]**

- 2022-07 - 2023-04 **Leonard D'Souza** (Completed) - Wilfrid Laurier University
Honours thesis: The effect of 3-trifluoromethyl-4-nitrophenol (TFM) on the oxygen consumption of larval sea lamprey (*Petromyzon marinus*)
- 2022-07 - 2022-12 **Wade Genter** (Completed) - Wilfrid Laurier University
Directed studies: Feeding temporarily reduces brain water content in rainbow trout (*Oncorhynchus mykiss*)

Master Students [n = 3]

- 2023 - ... **Evan Bellhouse** (In progress) - Wilfrid Laurier University
Thesis title (tentative): Metabolic costs of micro-acoustic tag implantation and burden in juvenile sea lamprey.
- 2023 - ... **Julia Xení** (in progress) - Wilfrid Laurier University
Thesis title (tentative): Stress responses to tagging juvenile sea lamprey with a micro-acoustic tag.

2020 - 2021

Olga Trela (completed) - Technical University of Denmark (IMBRSea)

Thesis title: Using fish telemetry to compare migration and survival of juvenile brown trout (*Salmo trutta*) released at different times of day into the Roskilde Fjord, Denmark. [↗](#)

Last known occupation: Fisheries and Oceans Canada

Reviewed for:

- Aquatic Conservation: Marine and Freshwater Ecosystems
- Animal Biotelemetry
- Canadian Journal of Fisheries and Aquatic Sciences
- Freshwater Biology
- Fisheries Management and Ecology
- Fisheries Research
- Journal of Environmental Management
- Journal of Fish Biology

View more details in [my Web of Science profile](#).