Benjamin Ryan LaFreniere

blafreniere@une.edu (518)605-6463

Education

University of New England, College of Arts and Sciences, Biddeford, ME 2022-Present

Degree: M.S. Marine Science

Committee: Dr. John Mohan, Dr. Richard McBride, Dr. Jeri Fox

Thesis: A Growing Concern: Investigating the Life of White Hake (*Urophycis tenuis*) within the Gulf of Maine

University of New England, College of Arts and Sciences, Biddeford, ME 2018-2022

Degree: B.S. Marine Science, concentration in Marine Biology

Minors: Applied Mathematics and Climate Change Studies

Cumulative GPA: 3.74

Publications

LaFreniere B., Sosa-Nishizaki O., Herzka S., Snodgrass O., Dewar H., Miller N., Wells R.J.D, Mohan, J. (*Accepted)* Vertebral chemistry distinguishes nursery habitats of juvenile shortfin mako (*Isurus oxyrinchus*) in the eastern North Pacific Ocean. Marine and Coastal Fisheries

Research Experience

Mohan Shark and Fish Ecology Lab Fall 2020 – Present

Undergraduate/Graduate Research Assistant

- Conduct research both as a graduate and undergraduate student on the life history of both elasmobranchs and teleosts using hard structure chemistry.
- Worked in collaboration with other researchers both within and outside the lab on multiple research projects with a range of fisheries applications.
- Perform husbandry on both elasmobranch and teleost species involved in the research studies involved in the lab.
- Estimate fish age and growth using otolith and vertebral increment counts
- Explore environmental drivers of fish distributions using Generalized Additive Models

Sulikowski Shark and Fish Research lab Fall 2018- Fall 2019

Undergraduate Research Assistant

- Conduct research as an undergraduate student on the use of ultrasounds to sexually mature Atlantic Cod to eliminate the need for lethal sex determination techniques.
- Assisted both undergraduate and graduate researchers in the lab with research involving elasmobranch life history.
- Performed husbandry on a wide range of elasmobranch and teleost species for various research projects.
- Research ranges in application to fisheries, surrounding questions regarding age, growth, population connectivity, post-discard mortality, and telemetry.

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Presentations

Oral:

LaFreniere B., Donahue B., Peters R., Cruz-Uribe A., Miller N., Price J., McBride R. Mohan J., Time Will Tell: Linking Otolith Geochemistry to Growth Ring Formation in White Hake (*Urophycis tenuis*), American Fisheries Society SNEC/NED Joint Meeting, Boston, January 2023

LaFreniere B., Donahue B., Peters R., Cruz-Uribe A., Miller N., Mohan J., Multidimensional Otolith Geochemistry: Enhancing Traditional Age and Growth Techniques of White Hake (*Urophycis tenuis*) within the Gulf of Maine, University of New England College of Arts and Sciences Research Symposium, University of New England, May 2022

Poster:

LaFreniere B., Donahue B., Peters R., McBride R. Mohan J., It's Getting Hot in Here: Forecasting Climate Change and Hake Abundance within the Gulf of Maine, American Fisheries Society SNEC/NED Joint Meeting, Boston, January 2023

LaFreniere B., Donahue B., Peters R., Cruz-Uribe A., Miller N., Mohan J., Chemical Clocks: Enhancing Age Estimates of White Hake Using Otolith Geochemistry, American Fisheries Society Annual Meeting, Spokane, WA, August 2022

LaFreniere B., Donahue B., Peters R., McBride R., Mohan J., Feeling the Heat: Forecasting the Effects of Climate Change on White Hake (*Urophycis tenuis*) Abundance in the Gulf of Maine, New England Artic Network Symposium, University of New England, ME, June 2022

LaFreniere B., Donahue B., Peters R., Price J., Mohan J., Preliminary Age and Growth Estimation of White Hake (*Urophycis tenuis*) in the Gulf of Maine, University of New England CAS Research Symposium, University of New England, ME, May 2022

LaFreniere B., Donahue B., Peters R., Cruz-Uribe A., Miller N., Mohan J., Geochemistry-based Age Validation: Enhancing Aging Techniques of White Hake (*Urophycis tenuis*) within the Gulf of Maine, Maine Sea Grant Biennial Research Symposium, University of Maine, ME, April 2022

LaFreniere B., Donahue B., Peters R., Mohan J., What the Hake? Predictive modeling of White Hake (*Urophycis tenuis*) abundance within the Gulf of Maine, University of New England Fall Art and Research Symposium, University of New England, ME, December 2021

LaFreniere B., Donahue B., Peters R., Miller N., Mohan J., Unraveling the life history of White Hake (*Urophycis tenuis*) within the Gulf of Maine using otolith geochemistry, University of New England Summer Undergraduate Research Symposium, University of New England, ME, October 2021

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LaFreniere B., Mohan J., Vertebral chemistry distinguishes nursery habitats of juvenile shortfin mako sharks (*Isurus oxyrinchus*), University of New England College of Arts and Sciences Research Symposium, University of New England, ME, April 2021

LaFreniere B., Sulikowski J., Sex Determination of Atlantic Cod (*Gadus morhua*) using Portable Ultrasounds, University of New England Summer Undergraduate Research Symposium, University of New England, ME, September 2019

Related Work Experience

Guest Lab Assistant, University of New England Fall 2022

Assisted in undergraduate lab activities, including backpack electrofishing, beach seines, and offshore fishing.

Saco Salmon Restoration Hatchery and Alliance Volunteer, Biddeford Maine Fall 2021

Assisted in the husbandry of Atlantic Salmon (*Salmo salar*) at various life stages, as well as assisted in electrofishing surveys for Atlantic Salmon parr.

Society Membership

American Fisheries Society	2021 – Present
American Elasmobranch Society	2021 – Present
American Fisheries Society Climate Ambassador	Fall 2022 – Present

Grants and Honors

AFS Estuaries Section Student Travel Award	June 2022
UNE CAS Spring Research Symposium Honorable Mention Award	May 2022
UNE Outstanding Research and Scholarship Award for Natural Sciences	2021-2022
Maine Sea Grant Undergraduate Scholarship	2021
UNE Summer Undergraduate Research Stipend	Summer 2019
UNE Dean's List	2018–2022

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Research Skills

Laboratory and Analytical Techniques

- Laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) of elasmobranch vertebrae & teleost otoliths
- Sectioning vertebrae and otoliths using a low-speed IsoMet saw
- Age determination of elasmobranchs and teleost using band counting
- Taxonomic identification of juvenile and adult freshwater, estuarine, and marine fish species
- Dissections of elasmobranchs, teleosts, and marine invertebrates
- OTC Injection
- Nucleic acid, eDNA and protein extraction, DNA barcoding, CRISPR, and Primer Design

Software

- iolite 4 (Intermediate)
- Ocean Data View (Intermediate)
- ImageJ (Intermediate)
- Prism (Intermediate)
- R Studio (Intermediate)
- Leica Imaging Software (Advanced)
- Microsoft Office (Advanced)

Field Techniques

- Research Vessel Hours: 400+
- Tag deployment: acoustic, radio, PIT, satellite, fin mount, conventional
- Management, use, and care of acoustic and radio receivers
- Commercial and recreational fishing methods: rod and reel, gillnet, , backpack electrofishing, lobster trap, otter trawl, beach seines, plankton tows
- Blood extraction and analysis
- eDNA water sampling collection
- Water quality sampling and measurement
- Open Water Dive Certified
- Small watercraft operation

Research Interests

- Fisheries Management
- Hard Structure Chemistry
- Climate Change
- Movement Ecology
- Highly migratory species
- Age and Growth