

## Vita

Candidate's name: Erin McCavour

Universities  
Attended: University of New Brunswick (2022)  
Bachelors of Science

University of New Brunswick (2025)  
Masters of Science  
Biology

### Publications / Conference Presentations:

McCavour, E.E., Gillis, C.A., & Sacobie, C. F. D. February 2023. Stable Isotopes assessment of outmigration Atlantic salmon smolt [Conference Presentation]. Restigouche River Watershed Science Advisory Committee (Campbellton, NB)

McCavour, E.E., Gillis, C.A., & Sacobie, C. F. D. October 2023. Stable isotope and lipid assessment of Atlantic salmon (*Salmo salar*) smolts across regional populations in Eastern Canada [Conference Presentation]. American Fisheries Society – Atlantic International Chapter (Saint John, NB).

McCavour, E.E., Gillis, C.A., & Sacobie, C. F. D. February 2024. - Stable isotope assessment of Atlantic salmon (*Salmo salar*) smolt across regional populations in Eastern Canada [Conference Presentation]. Restigouche River Watershed Science Advisory Committee (Campbellton, NB)

McCavour, E.E., Gillis, C.A., & Sacobie, C. F. D. August 2024. - Stable isotope assessment of Atlantic salmon (*Salmo salar*) smolts across regional populations in Eastern Canada. [Poster Presentation]. International Conference on the Application of Stable Isotope Techniques in Ecological Studies (Fredericton, NB)

McCavour, E.E., Gillis, C.A., & Sacobie, C. F. D. October 2024. Regional assessment of Atlantic salmon (*Salmo salar*) smolt body size and resource use in Eastern Canada [Conference presentation]. Atlantic Salmon Research Joint Venture Meeting (Moncton, NB)

# Regional Assessment Of Atlantic Salmon (*Salmo Salar*) Smolt Resource Use And Body Size In Eastern Canada

UNIVERSITY OF NEW BRUNSWICK

THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of  
Master of Science

by

**Erin McCavour**

in the Department of Biology

U.N.B., Fredericton, N.B.

**Wednesday, December 18<sup>th</sup>, 2024**  
**1:00 p.m.**

Bailey Hall, Room 146 & via MS TEAMS

Examining Committee

Dr. Charles Sacobie  
Dr. Carole-Anne Gillis  
Dr. Tillmann Benfey  
Dr. Janet Blackadar  
Dr. Mike Duffy

co-Supervisor  
co-Supervisor  
Internal Examiner  
External Examiner  
Chair of Oral Examination

## Abstract

Atlantic salmon (*Salmo salar*) are ecologically, economically, and culturally significant, particularly for many Indigenous Peoples, providing sustenance and holding spiritual, ceremonial, and relational importance. They play a vital role in linking freshwater and marine ecosystems through nutrient transport and trophic interactions. Populations across Eastern Canada are at risk, with many designated as endangered, threatened, or of special concern. This thesis examines resource use and body size relationships of smolts from multiple Eastern Canadian rivers, using archival samples (2000-2016) and new accidental mortalities (2022-2023) collected collaboratively. Carbon ( $\delta^{13}\text{C}$ ) and nitrogen ( $\delta^{15}\text{N}$ ) stable isotopes were analyzed to assess resource use prior to migration, across sites, and as a predictor of smolt body size. Tissue analyses revealed individual dietary

specialization, with a decrease in  $\delta^{15}\text{N}$  from long to short-term diets. Resource use was generally consistent across rivers within the same assigned population and was found to have a weak influence on body size.