Vita

Candidate's name: Michael Arsenault

Universities Attended:

University of Maine (2016)
Bachelors of Science
Wildlife Ecology

University of New Brunswick (2020)
Masters of Science
Biology

Conference Presentations:

Arsenault, Michael. Identifying stream crossings in forested landscapes using a LiDAR and GIS model. Presented at The Atlantic Salmon Ecosystems Forum (ASEF), 18 January 2018, Orono, ME, USA

Arsenault, Michael. High resolution LiDAR and GIS model reveals extent of stream fragmentation across a forested landscape. Presented at the Atlantic Society of Fish and Wildlife Biologists (ASFB), 21 October 2018, Corner Brook, NL, Canada.

Arsenault, Michael. High resolution LiDAR and GIS model reveals extent of stream fragmentation across a forested landscape. Presented at The Atlantic Salmon Ecosystems Forum (ASEF), 12 March 2019, Quebec City, QC, Canada.

Arsenault, Michael. High resolution LiDAR and GIS model reveals extent of stream fragmentation across a forested landscape. Presented at the Atlantic Salmon Habitat Restoration Workshop (WWF), 28 May 2019, St. Johns, NL, Canada

Landscape-scale barrier analysis: a novel framework approach in analyzing stream fragmentation using high resolution LiDAR

UNIVERSITY OF NEW BRUNSWICK

THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of
Master of Science

by

Michael Arsenault

in the Department of Biology

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

Monday, November 9th, 2020
2:00 p.m.

Via MS TEAMS

Examining Committee

Dr. Allen Curry	Supervisor
Dr. Mike Duffy	Internal Examiner
Dr. Ian Church	External Examiner
Dr. Shawn MacLellan	Chair of Oral Examination

Abstract

Fragmentation of stream networks by anthropogenic structures such as road culverts can affect the health of a catchment by negatively affecting the ecosystem's biota, their movements, abundances, and species richness. The challenge for resource managers is the prohibitive costs of locating, evaluating, and remediating problem structures at landscape-scales. There is a need for a framework to perform a desktop, landscape-scale evaluation and prioritization process using existing data that allows managers to make cost and ecologically effective decisions. I present a framework using publicly available LiDAR and orthophotography to locate and identify road crossings and evaluate fragmentation and passability for various fish species at the landscape-scale. My approach provides a valuable and cost-effective means of identifying potential stream crossing issues for multiple management objectives, e.g., fish passage, and thus the approach is an important step in the development of prioritization tools for restoration decisions by resource managers.