

Vita

Candidate's name: Alexandre Philip Caouette

Universities
Attended: MacEwan University (2020)
Bachelors of Biological Science
Honours

University of New Brunswick (2023)
Masters of Science
Biology

Publications / Conference Presentations:

Caouette, A., E. Bayne, K. Judge. (2023). Large-scale bioacoustic monitoring to elucidate the distribution of a non-native species of katydid. *Ecological Entomology*. DOI: 10.1111/een.13285.

Caouette, A. (2020). Elucidating the Distribution of a Non-Native Species of Katydid in Alberta Using Bioacoustics. BSc Honours thesis, Faculty of Biology, MacEwan University.

Caouette, A., D. Pureswaran, S. Heard. Gaps in data could limit the predictive potential of invasive species establishment models. SERG-I International conference. February 8, 2023.

Caouette, A., D. Pureswaran, S. Heard. Gaps in data could limit predictive potential of invasive species establishment models. Joint meeting Entomological Society of America and Entomological Society of Canada. November 13, 2022

Caouette, A., D. Pureswaran, S. Heard. Spatio-temporal network modelling of emerald ash borer establishment in campgrounds and cities across Maritime Canada. North American Forest Ecology Workshop. June 24, 2022.

Caouette, A. Risk assessment of invasive species movements: Emerald ash borer transportation. Biology 414 class MacEwan University. Invited guest lecture. March 24, 2022.

Ecology of emerald ash borer spread in Maritime Canada

UNIVERSITY OF NEW BRUNSWICK
THESIS DEFENCE AND EXAMINATION
in Partial Fulfillment
of the Requirement for the Degree of
Master of Science

by

Alexandre P. Caouette

in the Department of Biology

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

**Wednesday, December 20th, 2023
11:00 a.m.**

Bailey Hall, Room 22

Examining Committee

Dr. Steve Heard

Dr. Deepa Pureswaran

Dr. Amy Parachnowitsch

Dr. Graham Forbes

Dr. Jason Addison

co-Supervisor

co-Supervisor

Internal Examiner

External Examiner

Chair of Oral Examination

Abstract

Only a small fraction of introduced species become established and invasive in new habitats, necessitating an increased understanding of the ecology of species establishment. The Allee effect is an ecological phenomenon characterized by a correlation between population density and average individual fitness in a population and is important in the establishment success of invasive species. My thesis examines the establishment dynamics of emerald ash borer (EAB), by analyzing establishment characteristics in models using sensitivity analyses and empirically measuring Allee effects early during EAB establishment. We found that the Allee effect threshold, the number of introductions required for establishment, provided the greatest variation in establishment models. Empirical measures of mating success revealed no evidence for strong mate-finding Allee effects in EAB. These findings highlight important characteristics in establishment models of invasive species and underscore the importance of

understanding the strength of Allee effects in invasive species to increase risk model accuracy.