

Vita

Candidate's name: Nicholas Andrew Cameron

Universities
Attended: University of New Brunswick (2022)
Bachelor of Science, Honours

University of New Brunswick (2025)
Masters of Science

Simple, Scalable and Cost-Efficient Synthesis of the Bronze Birch Borer Kairomone (5S, 7S)-Conophthorin

UNIVERSITY OF NEW BRUNSWICK
THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment
of the Requirement for the Degree of
Master of Science

by

Nicholas A. Cameron

in the Department of Chemistry

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

**Friday, March 14th, 2025
2:00 p.m.**

Science Library, Room 107

Examining Committee

Dr. David MaGee	Supervisor
Dr. Ghislain Deslongchamps	Internal Examiner
Dr. Joe White	Int-Ext Examiner
Dr. Jan-Hendrik Carrols-Pöhls	Chair of Oral Examination

Abstract

Due to the increased usage of birch trees throughout North America, there has been a significant increase in bronze birch borer (*Agrilus anxius*) infestations. Although there are solutions to deal with these infestations, only a very limited number of approaches to proactively prevent them exist. (5S,7S)-7-Methyl-1,6-dioxaspiro[4.5]decane (5S,7S-conophthorin) has been identified as a kairomone which can attract the insect to the susceptible trees. This kairomone is emitted by birch trees and serves as a beacon to the bronze birch borer. These susceptible birch trees mainly include those which have been damaged or weakened. Traps placed on these trees using the kairomone as bait have proven to be effective. Although the compound has been synthesized using multiple routes, none are viable methods to produce the compound in a cost-efficient nor scalable manner which is the objective of this devised route.