

Vita

Candidate's name: Ada Marie Campbell Clarke

Universities
Attended: Dalhousie University (2023)
Bachelors of Science
Honours Biology

University of New Brunswick (2025)
Masters of Science
Biology

Conference Presentations:

Clarke A. 2024. Impacts of pollen limitation on reproductive fitness and selection on floral traits in fireweed (*Chamerion angustifolium*). The Annual Conference of the Biological Sciences (COBS) at the University of New Brunswick, Fredericton, New Brunswick (Oral Presentation).

Consistent selection for earlier flowering in fireweed (*Chamerion angustifolium*) is not influenced by pollinators or artificially earlier spring timing

UNIVERSITY OF NEW BRUNSWICK
THESIS DEFENCE AND EXAMINATION

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

by

Ada M. C. Clarke

in the Department of Biology

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

**Wednesday, August 20th, 2025
10:00 a.m.**

via MS TEAMS

Examining Committee

Dr. Amy Parachnowitsch
Dr. Katy Hind
Dr. Robert Colautti
Dr. Shawn MacLellan

Supervisor
Internal Examiner
External Examiner
Chair of Oral Examination

Abstract

Anthropogenic climate change is causing temperatures to increase and seasons to shift, altering the phenology of many plant species. With these changes, organisms may need to adapt to new environmental conditions. Previous work has measured selection on phenology and found widespread selection for earlier flowering. Pollinator-mediated selection is also common in many species, and plants often flower earlier to secure pollinators and minimize competition within and between species. Experimental warming manipulations which assess responses to higher temperatures, however, are very few and no consensus on common effects on phenology and selection has been reached. I performed both a pollinator-mediated experiment using supplemental pollen to remove pollen limitation as a selective force, and an early spring manipulation to assess agents of selection on phenology and associated floral traits in *Chamerion angustifolium*. I found that earlier flowering

time is selected for independent of both pollinators and earlier spring, which means there is a further underlying mechanism which influences selection on phenology in this species. Additionally, a lack of pollinator-mediated selection and no cost to flowering earlier indicates that flowering may only be limited by growing time and life-history characteristics in this species.