New England Botanical Society
Graduate Student Research Award
2021 AWARD WINNER

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What role do top-down and bottom-up enemy release play in exotic plant invasion of New England forests?

In New England forests, invasive plants such as Japanese barberry, garlic mustard, and honeysuckle are growing aggressively and crowding out native species. These plants are able to take over wooded areas and dramatically decrease native biodiversity. Despite the danger that these plants pose to New England forests, we still do not fully understand why these plants are able to invade and how they are so effective at outcompeting native plants. One proposed reason is the enemy release hypothesis, which posits that these plants are so successful because nothing in this new range (New England) eats them, and, without herbivores to control these plants' populations, they can grow indefinitely. In this study, I will investigate the interactions between these invasive plant species and the native leaf-eating caterpillars of New England to determine whether or not caterpillars are eating these plants. Furthermore, I will test two hypotheses on why caterpillars are not eating the invasive plant species: either (a) the plant species are unpalatable to all New England caterpillar species, or (b) the caterpillars themselves are more likely to be eaten (by parasitoid wasps and flies) if they eat invasive plant species. Findings from this study can inform management practices that control invasive plant species.

The New England Botanical Society offers awards of up to $3,000 to graduate students to support botanical research. The awards encourage and support botanical research on the New England flora (plants, algae, and fungi), including support for field, lab, and herbarium work, as well as travel to New England by those who would not otherwise be able to work in the region. The awards are made to the graduate student(s) submitting the best research proposal dealing with systematic botany, plant ecology, genetics, plant conservation biology, or related fields pertaining to the New England flora.