

**New England Botanical Society  
Graduate Student Research Award  
2023 AWARD WINNER**

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**A sky island perspective: New England alpine plant distributions  
through 40 years of global change**

Alpine plant communities around the globe are at risk because of climate change, human disturbance, and habitat loss. New England alpine zones are small and fragmented, which could make them especially vulnerable to global change. Assessing the near-term vulnerability of alpine plant communities is made more difficult by a lack of standardized, repeat surveys and long-term monitoring data, which presents a challenge for the many agencies overseeing New England's alpine zones. In order to understand changes in alpine plant communities through time, I completed surveys across eight alpine sites throughout New England (including Mt. Mansfield, Camel's Hump, Mt. Lafayette, Mt. Guyot, Mt. Adams, Bigelow Avery Peak, Mt. Abraham, and Mt. Katahdin) during the summers of 2021 and 2022. Now, I will compare modern day alpine plant community data with data collected from past surveys for a region-wide analysis.

In particular, Mt. Katahdin in Baxter State Park is home to the largest alpine area in Maine with many rare and threatened alpine plant specialists. However, it remains unclear how threats like climate change and human disturbance have already affected Katahdin's alpine plant communities through time, because of a previous lack of repeat surveys. In 1989, biologists Charlie Cogbill and Don Hudson worked with Baxter State Park staff to complete a baseline survey of alpine plant distributions on Katahdin. They completed 16 transects across Katahdin's alpine zone, during which they recorded plant species presence and percent coverage. During the summers of 2021 and 2022, with the help of the original surveyors, a field assistant and I relocated and resurveyed these same transect locations, utilizing the same methods from 1989.

With these updated plant community data, I hope to assess how community metrics like alpine plant coverage, presence, richness, and diversity have changed across almost 40 years of climate change and human disturbance. I hypothesize that shrub coverage will have increased with increased warming, which has been demonstrated across other alpine and arctic ecosystems. I would also like to use these data to better understand how the location of krummholz and treeline on Katahdin has changed through time. This resurvey and associated analysis of change in alpine vegetation through time will provide agencies like Baxter State Park with critical information regarding the vulnerability and conservation of New England's high elevation plants.

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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.