Climatic Setting and Phenology of *Braya longii* and *B. fernaldii* on the Limestone Barrens of Northwestern Newfoundland.

By

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Abstract

The endangered *Braya longii* and threatened *Braya fernaldii* are endemic to the Limestone Barrens of the Great Northern Peninsula of Newfoundland. This project determines the regional climate variability and change of the Great Northern Peninsula, and the phenology of both species of braya in response to the microclimate of the Limestone Barrens. Although mean air temperature decreases with increasing latitude along the Northern Peninsula, a consistent linear trend is not achieved. Summer and winter air temperature has been on the rise throughout the past decade (1991 to 2002). Mean winter air temperature since 1995 has been warmer than the time period from 1972 to 1995 but not as warm as the time period from 1951 to 1971. During the last 33 years, two periods of below average temperature and two periods of above average temperature can be attributed to a positive and negative NAO index respectively. The flowering phenologies of *Braya fernaldii* and *Braya longii* were significantly influenced by the date of snowmelt. Mean ground temperature was an indicator of first fruit for *Braya fernaldii,* but in natural substrate only. Latitude had a small influence on flowering and fruiting times of *Braya fernaldii.* Anthropogenically-modified substrate types favoured germination success. The results of this study provide guidance for the potential conservation management of both species of braya.