

Endangered, Endemic and almost Invisible – Rare *Braya* on the Limestone Barrens of Newfoundland, Canada



Standing less than 10cm in height, being the width of a quarter, and occupying a small stretch of limestone barrens on the island of Newfoundland, Canada means the endangered *Braya longii* (Fernald) (Long's braya) and the threatened *Braya fernaldii* (Abbe) (Fernald's braya) (Figure 1) went unnoticed by almost everyone; even the botanists! That is, until 1997 when the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed *B. longii* as endangered and *B. fernaldii* as threatened and they were legally designated as such under the Newfoundland and Labrador Endangered Species Act and the Canadian Species at Risk Act. Since 1998 an intense research and stewardship program has helped their survival and increased the awareness of these rare plants by local citizens and tourists alike.

The limestone barrens in Newfoundland are unique and are a threatened ecosystem globally. While these outcrops of calcareous bedrock represent only 1.7% (1,820 km²) of the land area of Newfoundland, they are a hotspot for plant diversity; containing 114 of Newfoundland's 271 rare plant species (Bouchard et al. 1991). Three of these, *B. longii*, *B. fernaldii*, and *Salix jejunata* (Fernald) (Barren's willow) are endemic to the limestone barrens. Within the limestone barrens, *B. longii* is found in five populations within a range of 6 km, and in one isolated population 14 km to the south, and *B. fernaldii* is found

in 16 populations within a range of 190 km (Hermanutz et al. 2002, 2009).

B. longii and *B. fernaldii* are taxonomically closely related and have similar life histories and ecology. Both species are small (1–10 cm), herbaceous perennials with linear-spatulate leaves and white, four-petaled flowers, arranged in a raceme. *B. longii* differs from *B. fernaldii* in having larger petals, smaller sepals, and pubescent fruit (Parsons and Hermanutz 2006). They both begin to flower in mid June and have mature fruits by mid August. *Braya* have contractile taproots for secure anchorage in frost-heaved substrates and die back to the crown during winter.

The limestone barrens are characterized by a cool, wet and windy climate that supports tundra-like vegetation. *Braya* grow in limestone substrate that has been fragmented and disturbed by both natural and anthropogenic processes. Under natural processes, both species exploit gaps in the vegetation produced by small-scale disturbances, such as frost action and wind erosion, to survive (Hermanutz et al. 2002). Frost action, through the regular freezing and thawing of the limestone barrens, has led to the formation of patterned substrate, such as sorted circles, a phenomenon that is common in polar, subarctic, and alpine regions, but is rare this far south. Anthropogenically disturbed habitats have undergone larger scale disturbance to the substrate and vegetation and contain homogenous gravel

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