

Origin and successional status of heath in Newfoundland

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Heathlands cover approximately half a million hectares or 25% of the land surface in eastern Newfoundland. However, only a very small proportion of these heaths represents climax vegetation. Alpine heaths are localized on the highest inland ridges and the most wind-exposed coastal areas. Moss heaths dominated by *Racomitrium lanuginosum* occur in areas experiencing extreme fog frequency. These latter heaths have close floristic affinity to similar oceanic heaths in the European-north Atlantic region.

Other heath types in this region originated on sites that once supported productive forests dominated by *Abies balsamea* and *Picea mariana*. Repeated cutting and burning during nearly four centuries of European settlement are considered to be the primary causes of extensive heathland development. The Empetrum Heaths and Kalmia Heaths are anthropogenic vegetation types each of which has a distinct physiognomy and history of development. Analysis of relic trees preserved in the humus of the Empetrum Heath, clearly demonstrates that forests, comparable in productivity to extant trees in

lowland valleys, occupied these upland sites in the last century. It appears that the widespread destruction of the forest landscape by European settlers has caused a 100 m depression in the natural forest treeline.

The Kalmia Heaths are an ericaceous dwarf-shrub thicket dominated by *Kalmia angustifolia*. These heaths occupy the lowland in close association with continuous tracts of boreal forest. This study tested the hypothesis that the Kalmia Heath could naturally reforest by a mechanism of seed relay from surrounding forest stands. The experimental design incorporated a small black spruce forest island in a heath landscape and a small island of heath in a forest landscape to test the stability of the forest-heath ecotone. Results from the study clearly demonstrate that after 20 years of succession the levels of tree recruitment, total establishment and regeneration growth were extremely low. Therefore, it was concluded that the Kalmia Heath, although at one time forested, now represents a stable vegetation.