Vegetation composition and microform distribution in a blanket peatland

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Introduction

Blanket peatlands are globally rare ecosystems, which distribution is restricted to maritime climatic conditions. In Ireland, Atlantic blanket peatlands are found less than 200 m, OD, and cover about 240,000 ha (Hammond, 1981). Only 21% of all blanket peatlands of Republic of Ireland have remained relatively pristine (Foss *et al*., 2001).

The surface pattern of a blanket peatland is often a mosaic of undulating microforms: hummocks, lawns and hollows. Due to the differences in water table level, each microform has a different vegetation composition (Beleya & Clymo, 1998). Although blanket peatland ecosystems are important habitats for global biodiversity, little is known about their vegetation and its composition.

The aims of this study were (1) to describe plant communities typical to pristine blanket peatland microforms and (2) to relate spatial variation in vegetation to water table level within a typical blanket peatland.

Materials and methods

The study was conducted at an extensive Atlantic blanket peatland in Glencar, Co. Kerry. The site is 150 m, OD, and its surface is a mosaic of microforms (Fig. 1). Measurements were divided into two parts: (1) vegetation composition and water table and (2) microform distribution.

For the vegetation analysis, 18 sample plots (60*60cm) were located in the study site to represent the main variation in vegetation, six around hummocks, high lawns and low lawns respectively. No sample plots were located in hollows. Projection cover was estimated for each plant species (vascular plants and mosses) within the sample plots, during summer 2003. Water table level was measured biweekly during July – November using perforated tubes, which were set next to each sample plot.

Microform distribution was surveyed along 16 radial transects extending from the chosen middle point of the peatland at 22.5° intervals. The proportion of each microform along a 2 m line, set perpendicular to the transect, at 5 m intervals was estimated. The transect length was usually 50 m; however, in two directions (WSW and SSW) 200 m was used and in the SW, the length was 300 m. The total number of investigations was approximately 250.

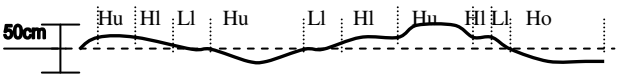

Figure 1. Microform topography (solid line) in relation to water-table (dashed line); hummock (Hu), high lawn (Hl), low lawn (Ll) and hollow (Ho).

Results and discussion

Microforms differed from each other by vegetation composition and water table. Although the dominant vascular species were the same in all microforms, their abundance differed (Table 1). Species well adapted to wet conditions: *Rhynchospora alba* (L.) and *Eriophorum angustifolium* (Honck) were more abundant in low lawns and the coverage of shrub species, *Erica tetralix* (L.) and *Calluna vulgaris* (L.) was higher in hummocks than in other microforms. The *Sphagnum* carpet was most extensive in hummocks.

Table 1. Average projection cover (%) of the four most dominant vascular plant species including *Sphagnum* sp. in each of three microform types.

Hummock	High lawn	Low lawn
Molinia caer ulea 5.8 ± 0.8	*Rhynchospora alba* 4.5 ± 0.8	*Rhynchospora alba* 8.3 ± 1.3
Narthecium ossifragum 3.9 ± 1.1	*Molinia caer ulea* 4.2 ± 0.5	*Molinia caer ulea* 1.3 ± 0.2
Calluna vulgaris 2.8 ± 0.4	*Narthecium ossifragum* 2.3 ± 0.4	*Narthecium ossifragum* 0.7 ± 0.1
Erica tetralix 2.8 ± 0.3	*Erica tetralix* 2.1 ± 0.2	*Eriophorum angustifolium* 0.5 ± 0.1
Sphagnum sp. 60 ± 9.1	Sphagnum sp. 5.4 ± 1.6	Sphagnum sp. 12 ± 5.3

The most abundant microforms in the study area were high and low lawns (Table 2), although there were differences between the transects. Hummocks were the least common microform in most transects. Moreover, the distribution of microforms was uneven. High and low lawns were the most common microforms. Hummocks averaged 14 cm in height and hollows 4 cm deep. The water-table variability between microforms was confirmed by depth measurements (Table 2).

Table 2. Median, minimum and maximum percentage coverage of microforms in transects and median water table level (WT) (cm) during July – November 2003.

Microform	Median	Min	Max	WT
Hummock	3	0	11	-14
High lawn	56	31	92	-6
Low lawn	24	3	50	-2
Hollow	9	0	42	4

Conclusions

The study demonstrated that microforms of blanket peatland exhibit spatial variation in vegetation composition and depth to water table. This variation should be considered when making assumptions and establishing studies regarding peatland functioning.

Acknowledgement

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References

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