

Heather utilization along paths by red deer and sheep in a natural heather/grass mosaic

INTRODUCTION

Many years of grazing by sheep and red deer in the uplands of Scotland has led to fragmentation and loss of dwarf shrub vegetation in some areas. Interpreting these processes requires an understanding of the interactions between the grazing behaviour of these herbivores and the spatial arrangement of the vegetation. Previous research has shown that heather utilization is greatest within 1 m of the edge of grass and declines rapidly with distance from grass. This research examined heather utilization by red deer and sheep along the edges of paths to enhance our understanding of herbivore use of this mosaic vegetation.



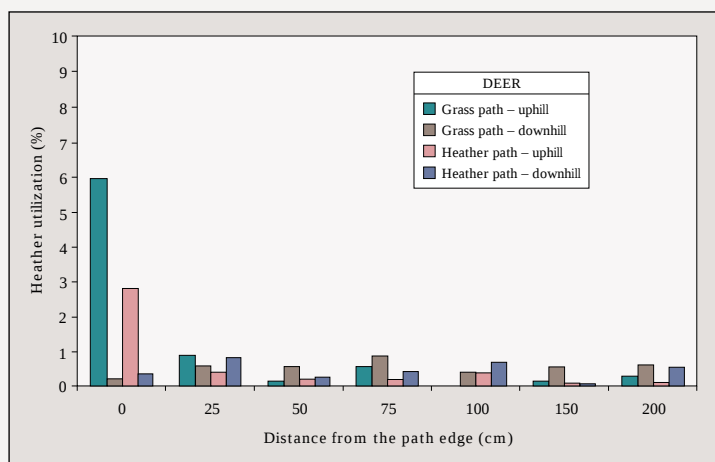
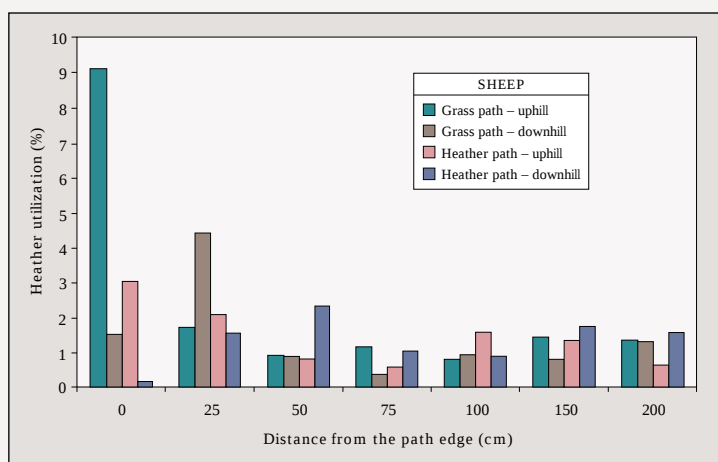
METHODS

Heather utilization (*i.e.* proportion of current year's growth removed) by red deer and sheep along the edges of paths was examined within 1 ha plots in a natural heather/grass mosaic in NE Scotland. Utilization was studied along the edges of bare paths ('heather paths') and paths colonised by grass ('grass paths').



RESULTS

- Utilization was greatest within the first 25 cm from the path edges ($P < 0.001$) and greater at uphill edges of paths than downhill edges ($P < 0.001$). Heather canopy heights were lower at uphill path edges ($P < 0.001$).
- Heather utilization was greater at edges of grass paths than heather paths ($P < 0.05$). Sheep browsed more heather at the path edges than did red deer ($P < 0.01$). Greater proportions of dead shoots (associated with trampling) were found at downhill edges of paths than at uphill edges ($P < 0.001$).



CONCLUSIONS

The rate of decline in utilization with distance from the path edge is greater than around grass patches. It is suggested that heather utilization and trampling along paths can play key, spatially contrasting, roles in the fragmentation of heather, especially under grazing by sheep as opposed to red deer.

NEW RESEARCH

To further investigate the interactions between herbivores and vegetation, a new experiment is set up to examining the *spatial distribution* of herbivore utilization across the whole heather/grass mosaic. The data will be used to create a spatially explicit foraging model.