

## VEGETATION CONDITION AND THE IMPACT OF GRAZING ON LUNDY 2005-2008

by

DAVID APPLETON, MARK DARLASTON AND ANDY NISBET

Natural England, Level 8 Renslade House, Bonhay Road, Exeter, EX4 3AW

*e-mail: david.appleton@naturalengland.org.uk*

### INTRODUCTION

Natural England carried out a vegetation survey on Lundy in April 2008 to assess the condition of the vegetation following a reduction in both the domestic sheep numbers and the crash of the rabbit population. This survey followed a baseline survey in April 2005.

### METHOD

During this survey 143 randomly distributed sampling points were visited using a variation on the survey technique used for moorland sites. Of these randomly generated points those that fell within the in-bye fields were excluded as these pastures have little floral conservation value. At each site a 1m×1m quadrat was placed and a range of information including the following recorded:

- Cover (%) of dwarf shrubs, heather, western gorse *Ulex gallii*, purple moor grass *Molinia caerulea*, bracken litter *Pteridium aquilinum*, rock and bare ground;
- Height of all of dwarf shrub, heather and grass sward;
- Heather growth forms indicating heavy grazing pressure (MacDonald 1990);
- Presence of dung from grazing animals.

The vegetation was assigned to a vegetation type from an amended standard key previously adjusted for use on Lundy. Records were also taken for the Lesser Adder's-Tongue Fern *Ophioglossum azoricum* and the cast produced by Minotaur Beetle *Typhaeus typhoeus*. Samples of heather were removed and analysed in the laboratory to assess the proportion of shoots browsed (heather grazing index).

### RESULTS

Data on key vegetation attributes and other variables are shown in Table 1. There were highly significant increases between the surveys ( $P<0.01$ ) in the sward height overall and the heights of all vegetation types, which correlates with anecdotal observations of many of the returning visitors to the island. There was little change in heather cover, an increase in heather height (not significant) and very significant decrease in the heather grazing index.

Palatable Grassland remained the most frequent vegetation type between the two surveys. The next most frequent class was Rough Grassland which showed a significant ( $P<0.05$ ) increase although overall distribution remained similar between the two surveys with this being the dominant vegetation type between Quarter and Halfway Wall. This coincides with the areas that were historically most intensively grazed by the large number of domestic sheep on Lundy.

**Table 1:** Relative abundance of vegetation types on Lundy, 2005 and 2008

Stand Vegetation Type	2005		2008	
	Number of samples	% of samples	Number of samples	% of samples
Palatable Grassland <sup>1</sup>	63	45	58	41
Rough Grassland <sup>2</sup>	28	20	40	28
Heath <sup>3</sup>	28	20	27	19
Bracken	14	10	15	11
Valley Mire	5	4	0	0
Other (wood, scrub, rock, scree etc.)	2	1	1	1
Total	140	100	141	100

<sup>1</sup> Includes classes Bent-fescue, Mesotrophic (including semi-improved) and Maritime Grassland

<sup>2</sup> Includes classes Rough Acid grassland, Purple Moor-grassland and Rank Grassland or Rush Pasture

<sup>3</sup> Includes classes Western Heath, Heather Heath and Wet Heath

Bryophytes or lichens were found in 83% of samples in 2005 and 74% in 2008, representing an overall significant ( $P < 0.01$ ) reduction in frequency. However, the most significant change in these groups ( $P < 0.001$ ) occurred on the unenclosed grassland south of Quarter Wall, where 81% of samples contained bryophytes or lichens in 2005 compared to 41% in 2008. On the grassland and heathland areas north of Quarter Wall there was no significant change, where 83% and 87% samples contained bryophytes or lichens in 2005 and 2008 respectively.

## CONCLUSION

There have been significant changes in vegetation structure, particularly grass sward height, between 2005 and 2008 and these have been seen across the island. Although there has been no change in heather cover this is likely to respond more slowly and a further survey would be required to demonstrate the response of this species to the changes in grazing pressure.

This resurvey provides objective evidence of the recovery of vegetation on Lundy since the reduction in grazing pressure and the information will prove invaluable in developing grazing and management strategies for the island for the next 10 years.

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## REFERENCES

Macdonald, A. (1990). *Heather damage: a guide to types of damage and their causes*. NCC (Research & Survey in Nature Conservation 28), Peterborough.