



Calcareous Grassland

Calcareous grasslands need to be grazed to maintain their biological diversity, in most cases as part of an agricultural grazing unit. However the grazing needs to be at an appropriate level, as too much or too little grazing can both be harmful to the grassland's biodiversity.

Current status

Calcareous grasslands are found on shallow, well-drained soils derived from a variety of lime or base-rich rock types. In general these comprise limestones (including the chalk of southern England), but there are smaller areas associated with other base-rich sedimentary rocks such as some shales and sandstones. Basic igneous rocks can also support calcareous grasslands including parts of the Borrowdale Volcanic Group in Cumbria.

In Cumbria, calcareous grasslands occur principally on the Carboniferous Limestones around Morecambe Bay, and the Orton Fells in the Cumbria Fells and Dales Natural Area and on the western flanks of the Pennines in the North Pennines Natural Area, with smaller outcrops occurring in a discontinuous and narrow ring around the Lake District. They also occur as very small stands associated with more base-rich outcrops of the Borrowdale Volcanic rocks in the Lake District, along the narrow outcrop of the Coniston Limestone that forms the southern boundary to the Borrowdale Volcanics and on

adjacent, more base-rich strata of Silurian shales. The Phase 1 habitat survey of Cumbria (Kelly and Perry, 1990) recorded approximately 2,200 ha of calcareous grassland in Cumbria.

There are four National Nature Reserves supporting calcareous grassland in Cumbria and 23 Sites of Special Scientific Interest are notified for their calcareous grassland interest. Calcareous grasslands are included within the *Festuco-Brometalia grassland and Juniperus communis formations on heaths or calcareous grasslands* identified in Annex I of the EC Habitats Directive. In Cumbria, eight SSSI fall within two candidate Special Areas of Conservation for these habitats.

Characteristic wildlife

The most extensive types of calcareous grassland in Cumbria are those dominated by blue-moor grass and include associates such as thyme, quaking grass, crested hair-grass, limestone bedstraw, salad burnet, bird's-foot trefoil, rock-rose and purging flax. Limestone grassland around Morecambe Bay supports extensive stands of juniper and other important components include limestone scrub and

limestone heath. The composition of these grasslands varies from the relatively warm and dry conditions of the southern limestones around Morecambe Bay to the cooler and wetter limestone areas further east on the Orton Fells and the Pennines. This community is restricted in Britain to the Carboniferous Limestone of the Morecambe Bay area, to the Craven District of North Yorkshire and to the borders of Cumbria, Durham and North Yorkshire.

The principal community of calcareous grassland associated with base-rich igneous and metamorphic rocks in the Lake District mountains is characterised by bent and fescue grasses with other plants such as thyme, purging flax, selfheal and ribwort plantain, mixed with more acid soil lovers such as tormentil and heath bedstraw.

The remaining community found in the County is the least extensive. These are found on deeper calcareous soils in lowland areas outside the range of blue moor-grass. Characteristic associates include downy oat-grass, salad burnet, bird's-foot trefoil, quaking grass, purging flax and small scabious.

Calcareous grasslands also support a variety of important animals and fungi including brown hare, skylark, butterflies (including high brown fritillary and Duke of Burgundy fritillary) and waxcap fungi.

Key species

The following rare or threatened species are associated with calcareous grasslands in Cumbria. Species were selected on the basis that they are UK BAP Priority Species (marked P) or species of County importance in Cumbria. Where species of County importance are *also* UK BAP Species of Conservation Concern, they are marked C.

brown hare	<i>Lepus europaeus</i>	P
great crested newt	<i>Triturus cristatus</i>	P
skylark	<i>Alauda arvensis</i>	P
corn bunting	<i>Miliaria calandra</i>	P
grey partridge	<i>Perdix perdix</i>	P
brown-banded carder bee	<i>Bombus humilis</i>	P
wall mason bee	<i>Osmia parietina</i>	P
high-brown fritillary	<i>Argynnis adippe</i>	P
northern brown argus	<i>Aricia artaxerxes</i>	P
pearl-bordered fritillary	<i>Boloria euphrosyne</i>	P

small blue	<i>Cupido minimus</i>	C
Scotch argus	<i>Erebia aethiops</i>	
Duke of Burgundy	<i>Hamearis lucina</i>	C
a hoverfly	<i>Dorus profuges</i>	
sandbowl snail	<i>Catinella arenaria</i>	P
Geyer's whorl snail	<i>Vertigo geyeri</i>	P
cistus forester	<i>Adscita geryon</i>	
least minor	<i>Photedes captiuncula</i>	P
barred toothed stripe	<i>Trichopteryx polycommata</i>	P
a bug	<i>Chlorita dumosa</i>	
pink meadowcap	<i>Hygrocybe calyptraeformis</i>	P
a waxcap fungus	<i>Hygrocybe spadicea</i>	P
a dog lichen	<i>Peltigera leucophlebia</i>	P
a liverwort	<i>Barbilophozia lycopodioides</i>	
a liverwort	<i>Plagiochila atlantica</i>	
a moss	<i>Antitrichia curtispindula</i>	
a moss	<i>Pleurochaete squarrosa</i>	
a moss	<i>Rhytidium rugosum</i>	
a lady's mantle	<i>Alchemilla minima</i>	P
leafless hawk's-beard	<i>Crepis praemorsa</i>	
lady's-slipper orchid	<i>Cypripedium calceolus</i>	*P
red hemp-nettle	<i>Galeopsis angustifolia</i>	P
juniper	<i>Juniperus communis</i>	P
perennial flax	<i>Linum perenne</i>	
alpine cat's-tail	<i>Phleum alpinum</i>	
dwarf milkwort	<i>Polygala amarella</i>	
knotted hedge-parsley	<i>Torilis nodosa</i>	
spiked speedwell	<i>Veronica spicata</i>	C
Teesdale violet	<i>Viola rupestris</i>	

*=locally extinct

Best management practice

Calcareous grassland requires appropriate management and, in particular, appropriate grazing regimes. These are required both to maintain the characteristic diversity of plants and animals present and to prevent succession to scrub and woodland. The nature of the conservation management will vary according to the specific objectives for any one site taking into account, for instance, the requirements of the plants, animals or fungi present. In some instances mosaics of grassland with scrub can be important for butterflies and juniper scrub is an especially important and characteristic feature of grasslands in Cumbria.

Current issues

The major issues associated with calcareous grasslands in Cumbria are related to habitat management but they also include mineral extraction, recreation and pollution:

- changes in grazing regime: overgrazing leads to a reduction in species diversity and the loss of species that are characteristic of taller grassland swards; undergrazing or a lack of grazing leads to scrub encroachment and a decline in species associated with open short calcareous turf. The type of stock is also important and a decline in cattle in the county is likely to result in a reduction in the diversity of some grasslands.
- the use of fertilisers, herbicides and other pesticides to increase productivity of the grasslands and reduce weeds results in a decline in, or loss of, species diversity, changes to other more widespread grassland types and the increasing fragmentation of the habitat.
- afforestation with conifers and to a lesser extent broadleaves has occurred on areas of calcareous grassland and while trees remain the grasslands continue to decline in species diversity. This has led, and will continue to lead, to their loss to species-poor habitats of non-native woodland.
- development activities, particularly mineral and rock extraction results in the loss and fragmentation of the habitat.
- recreational pressure and associated soil compaction can be a problem locally, particularly along the more open communities of cliff edges where rarer plant species are often located.
- calcareous grasslands are at risk from atmospheric nitrogen deposition leading to soil enrichment and losses to plant species diversity. Acid rain is less likely to affect calcareous grasslands as lime-rich soils are the least susceptible to this form of atmospheric pollution. However, the effect of sulphur deposition on the fauna, flora and fungi is not fully understood and so may be of concern.
- Climate change is likely to result in changes in species composition of grasslands, in particular the loss of 'northern' species at the edge of their range in the county and montane species. Conversely, there may be an increase in species with a southern distribution.

Current action

- Local Authority Structure and Local Plans include policies that contribute to the safeguarding of habitats and species within the County including calcareous grassland and some associated species.
- Agri-environment schemes such as the Lake District Environmentally Sensitive Area scheme and the Countryside Stewardship scheme provide financial incentives to manage calcareous grassland in a way that is sympathetic to its nature conservation interest.
- Some calcareous grasslands are managed for nature conservation objectives by organisations including English Nature and Cumbria Wildlife Trust.
- The Forest Enterprise Endangered Habitat Plan covering Limestone Pavement on Forestry Commission land also benefits calcareous grassland. Large areas of limestone pavement and grassland are to be restored by conifer removal on one SSSI and there is a commitment to remove conifers from other sites where they are having an adverse affect on the habitat.
- The habitat is included in County Wildlife Sites and there is a programme of survey and identification of sites which is due to be completed by 2005.
- A number of organisations across the County provide farm conservation advice and/or carry out practical management for nature conservation which will benefit calcareous grassland.

Context in relation to other plans:

UK Habitat Action Plans

There are UK Biodiversity Action Plans for lowland and upland calcareous grassland in the UK Biodiversity Group Tranche 2 Action Plans Vol. 2 (lowland calcareous grassland) and Vol. 6 (upland calcareous grassland). The UK Biodiversity Group Tranche 2 Action Plans Vol. 3 contains an action plan for juniper which is an important component of calcareous grasslands, particularly around Morecambe Bay (see juniper species action plan for details).

The lowland calcareous grassland BAP sets the following UK objectives and targets:

- Arrest the depletion of unimproved lowland calcareous grassland throughout the UK.

- Within SSSIs, initiate rehabilitation management for all significant stands of unimproved lowland calcareous grassland in unfavourable condition by 2005 with the aim of achieving favourable status wherever feasible by 2010.
- For stands at other localities, secure favourable condition of over 30% of the resource by 2005, and as near to 100% as is practicable by 2015.
- Attempt to re-establish 1000 ha of lowland calcareous grassland of wildlife value at carefully targeted sites by 2010.

The upland calcareous grassland BAP sets the following UK objectives and targets:

- Maintain the current distribution and extent of upland calcareous grassland. Achieve favourable condition for at least 75% of upland calcareous grasslands through sympathetic management and monitoring. Where possible, restore or re-create upland calcareous grasslands, especially through buffering and linking small, vulnerable or discontinuous sites.
- Achieve favourable condition for at least 15,000 ha of upland calcareous grassland (7000 ha in England, 7000 ha in Scotland, 500 ha in Wales and 500 ha in Northern Ireland) through sympathetic management by 2010.
- Undertake pilot attempts to restore or re-create at least 200 ha of new upland calcareous grassland by 2005, with a particular emphasis on reducing fragmentation through improving quality of degraded grassland.

National Lead Agency

Upland calcareous grassland: Countryside Council for Wales

Lowland calcareous grassland: English Nature

Local contacts

Agriculture Focus Group of the Cumbria Biodiversity Partnership.

Associated plans in the Cumbria BAP

The following Cumbria species/habitat action plans are of relevance to calcareous grasslands:

Phase I

- limestone pavement
- upland mixed ash woodland
- Geyer's whorl snail
- juniper
- high brown fritillary
- pearl-bordered fritillary
- sandbowl snail

Phase II

- scrub communities (other than juniper)

References

Kelly and Perry 1990, *Wildlife Habitat in Cumbria*. Nature Conservancy Council.

Objectives, targets and proposed actions for calcareous grassland in Cumbria

Broad Objective A		Ensure no further loss of calcareous grassland in Cumbria		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
I Arrest the depletion of all types of unimproved calcareous grassland throughout its distribution in Cumbria	1 Keep the extent of SSSI coverage under review and notify sites as necessary to fill gaps in coverage.	EN	O	SS
	2 Designate as Special Areas of Conservation all calcareous grasslands which meet selection criteria as soon as is practicable.	DETR, EN	M	SS
	3 Carry out a review of the need to manage further key sites as National Nature Reserves by 2002.	EN	M	SS
	4 Identify as Wildlife Sites the most important areas for wildlife in the County outside of statutory sites, including areas of calcareous grassland, by 2006.	CWT, LAs	L	SS

Broad Objective B		Ensure the favourable condition of all sites		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
I Within SSSIs, initiate rehabilitation management to achieve favourable condition status wherever feasible	1 Assess the condition of all calcareous grassland within SSSIs using standard criteria by 2002.	EN	M	RM
	2 Where necessary, secure the uptake of positive management agreements with owners and occupiers of all SSSIs with lowland calcareous grassland which is in unfavourable condition by 2005, with aim of achieving favourable status by 2010.	EN, MAFF	M	SS

Broad Objective B	Ensure the favourable condition of all sites			
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
	3 Where necessary and possible, secure the uptake of positive management agreements with owners and occupiers of SSSIs so that at least 75% of upland calcareous grassland which is in unfavourable condition in SSSIs is under agreement by 2005, with aim of achieving favourable status by 2010.	EN, MAFF	M	SS
	4 Where appropriate and desirable seek to restore calcareous grassland to all areas currently under conifer plantation, achieving removal of 130 ha of plantation by 2005.	FC, EN	M	SS
	5 Establish at least two sites (one upland, one lowland) to demonstrate good management practice (taking into account calcareous grassland species for which local actions are required) linking with land management schemes by 2002.	EN, MAFF	M	SS/A
2 Initiate rehabilitation management to achieve favourable condition status of non-SSSI calcareous grassland: lowland: 30% by 2005 and 100% by 2015 upland: 75% by 2010	1 Ensure calcareous grassland is considered in the setting up of new agri-environment agreements and in any revision of existing agreements to ensure that, where possible, the habitat is brought into favourable management to contribute to national BAP and local Natural Area targets for the habitat.	MAFF, CWT	M/L	SS
	2 Provide advice on management and grants to owners and occupiers of Wildlife Sites with calcareous grassland, by 2008.	CWT, FWAG	L	A
3 Monitor changes in the extent and condition of calcareous grassland in order to assess the effectiveness of conservation action	1 Collate available information on the extent and condition of calcareous grassland into a database by 2002 and consider the need for further survey.	EN, CWT, LDNPA, MAFF	M	RM
	2 Devise a strategy for monitoring the extent and condition of calcareous grassland and implement by 2002.	EN, LDNPA, CWT	M	RM

Broad Objective B		Ensure the favourable condition of all sites		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
4 Promote awareness and understanding and best management practise for calcareous grassland	1 Produce guidelines for the identification, condition assessment and management of calcareous grassland by end 2000.	EN	S	A/ RM
	2 Carry out two demonstration days on the condition assessment and management of calcareous grassland by end 2002.	EN, MAFF, FWAG, ECCP, NT, LDNPA	M	A

Broad Objective C		Increase the extent of calcareous grassland		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
I Attempt to re-establish calcareous grassland of wildlife value, targeted on areas with existing stands by 2010: 25ha lowland in Cumbria Fells & Dales NA 10ha upland in either Cumbria Fells & Dales or North Pennines NA	1. Identify former limestone grassland sites that are suitable for re-creation, and draw up a strategy to meet the target by 2003.	EN, MAFF, NT, LDNPA	M	RM

Key to Tables

Suggested organisational involvement: Key Deliverers in bold type; Partners in plain type.

CA = Countryside Agency; CLA = Country Landowners Association; CWT = Cumbria Wildlife Trust; DETR = Department of Environment, Transport and the Regions; ECCP = East Cumbria Countryside Project; EN = English Nature; FRCA = Farming and Rural Conservation Agency; FWAG = Farming and Wildlife Advisory Group; LAs = Local Authorities; LDNPA = Lake District National Park Authority; MAFF = Ministry of Agriculture, Fisheries and Food; NFU = National Farmers' Union; NT = National Trust.

Timescale: O=ongoing; S=short term (2000-2001); M=medium (2002-2005); L=long (2006-2010).

Type: Type of action; PL=Policy & Legislation; SS=Site Safeguard & Management; SP=Species Management and Protection (species plans only); A=Advisory; RM=Research & Monitoring; CP=Communications and Publicity.