



Hay meadows and Lowland Pastures

Species-rich hay meadows and lowland pastures are dependant on the continuance of traditional agricultural practices. Most of the loss of this habitat has been the result of changes to modern, more productive agricultural systems, such as the use of modern fertilisers and, in the case of hay meadows, switches from single cut hay systems to multiple cut silage systems.

Current status

Hay meadows, as defined by this plan, are species-rich neutral grasslands that are cut for hay which is used as food for livestock in the winter months. In Cumbria these are broadly considered as falling into two categories: upland and lowland, each containing characteristic communities of plants. This plan also covers lowland pastures: neutral grasslands grazed through most of the year, which are not cut for hay.

Upland hay meadows comprise a type of grassland community that is restricted in Britain to upland valleys between 200 and 400m in the north of England with outliers in Scotland. The most important centres are the North Pennine valleys in Durham, the Yorkshire Dales and around Tebay, Orton and Ravenstonedale in Cumbria. In Cumbria, upland hay meadows also occur in suitable locations throughout the rest of the Cumbria Fells and Dales Natural Area.

Lowland hay meadows and pastures include both dry and seasonally flooded grassland and these are found in lowland areas such as the Eden Valley, West Cumbria Coastal Plain and the lowland parts of the Cumbria Fells and Dales Natural Areas.

Neutral grasslands have undergone a remarkable decline in the 20th century, almost entirely due to changing agricultural practice. It is estimated that by 1984 in lowland England and Wales, species-rich grassland had declined by 97% over the previous 50 years. Past cover data are not available for the upland meadows, but recent estimates indicate that there are less than 1,000 ha in the whole of northern England, with perhaps less than 500ha in Cumbria. Of this only a proportion is traditionally managed as hay meadows, the rest being along roadside verges, river banks, streamsides and in churchyards. In Cumbria around 10% of the total extent of the northern hay meadow grassland is along roadside verges.

Estimates for the extent of lowland hay meadows and pastures are not available but it seems likely

that the area remaining is smaller than that of upland hay meadows. Unimproved seasonally flooded grasslands are less widely distributed in Britain and are even scarcer in Cumbria than meadows.

There is one National Nature Reserve in Cumbria supporting lowland hay meadows and two supporting upland hay meadows. Nine Sites of Special Scientific Interest are notified for their lowland hay meadows and pastures and 17 for their upland hay meadows. Upland hay meadows are included within the mountain hay meadow type identified in Annex 1 of the EC Habitats Directive. In Cumbria, 12 SSSIs fall within a candidate Special Area of Conservation for this habitat. A number of sites supporting this habitat are owned or managed by conservation organisations.

Characteristic wildlife

Upland hay meadows are characterised by a dense growth of grasses and flowers. No single grass species is consistently dominant and the most striking feature of the vegetation is the variety and abundance of flowers, including wood crane's-bill, pignut, great burnet and lady's-mantles. They frequently include small areas of species-rich wetland and flush with plants such as globe flower, water avens and bird's-eye primrose.

Lowland meadows and pastures are characterised by species such as crested dog's-tail, black knapweed, rough hawkbit, ox-eye daisy, meadow vetchling and yellow rattle as well as less common plants such as greater butterfly orchid, pepper saxifrage and adder's-tongue fern.

Unimproved seasonally flooded grasslands support many of the plants already mentioned, but are characterised by great burnet and can include plants of damper ground such as cuckoo-flower and northern marsh orchid.

Hay meadows and pastures can be of importance for breeding birds such as redshank, curlew and yellow wagtail. Brown hares also use hay meadows and pastures. Hay meadows are especially important as feeding areas for insects including butterflies and bees, and for insect-feeding bats.

Key species

The following rare or threatened species are associated with hay meadows and lowland pastures 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
skylark	<i>Alauda arvensis</i>	P
linnet	<i>Carduelis cannabina</i>	P
reed bunting	<i>Emberiza schoeniclus</i>	P
yellow wagtail	<i>Motacilla flava</i>	C
tree sparrow	<i>Passer montanus</i>	P
grey partridge	<i>Perdix perdix</i>	P
black grouse	<i>Tetrao tetrix</i>	P
redshank	<i>Tringa totanus</i>	C
barn owl	<i>Tyto alba</i>	C
lapwing	<i>Vanellus vanellus</i>	C
great crested newt	<i>Triturus cristatus</i>	P
pink meadowcap	<i>Hygrocybe calyptraeformis</i>	P
northern hawk's-beard	<i>Crepis mollis</i>	
leafless hawk's-beard	<i>Crepis praemorsa</i>	
small white orchid	<i>Pseudorchis albida</i>	
wood bitter-vetch	<i>Vicia orobus</i>	

Best management practice

Hay meadow management varies considerably between, and even within, farms. However, it generally comprises the spreading of low levels of well-rotted farmyard manure, rather than artificial fertilisers, and excluding stock from fields from mid-May through to July or August, to allow the grassland to grow up and flower. Following the harvesting of the grass, the aftermath is grazed by sheep and (ideally) cattle, with light sheep grazing through the winter and early spring. Lime may be applied when required, if this is part of traditional practice, to prevent reversion to acid grassland. Roadside verges and churchyards require similar cutting regimes, but are not generally grazed, nor do they receive farmyard manure or lime.

Species-rich lowland pastures do not receive farmyard manure and are not shut up and cut for hay, but are generally grazed throughout the year.

Current issues

The major issues associated with hay meadows and lowland pastures in Cumbria relate to the use of artificial fertilisers, ploughing and reseeded of species-rich hay meadows and pastures, and improved field drainage which leads to a decline of wetland plants and animals on damper grasslands.

- the use of fertilisers to allow multiple cutting of the grass for silage or higher yields of hay (this practice increases the growth of a small number of grass species at the expense of the large diversity of flowers) results in a decline in or loss of species diversity, changes to other more widespread grassland types and the increasing fragmentation of the habitat.
- the use of herbicides and other pesticides to reduce weeds.
- ploughing and re-seeding with species-poor agricultural seed mixes.
- drainage dries out areas of damper grassland and results in the loss of characteristic wetland plants and invertebrates.
- grazing levels and the type of stock are important factors for maintaining plant species diversity. Cattle are the most appropriate animals for aftermath grazing and the reduction of their numbers in Cumbria is of concern. Heavy spring grazing by sheep also appears to reduce plant species diversity.
- the application of farmyard manure at high rates and/or manure that has not been allowed to stand for a time and rot.
- roadside verges are vulnerable to roadside activities such as compaction of soil by parked vehicles, laying of cables and pipelines, road widening or improvement works, inappropriate cutting regimes and dumping of materials for road works or storage of road salt in winter. Occasionally, when wet weather prevents tractors from entering fields to spray slurry, spraying may be done over the hedge with unintentional 'drift' of slurry onto the road verge.

Current action

- Local Authority Structure and Local Plans include policies that contribute to the safeguarding of habitats and species within the County including hay meadows and unimproved lowland pastures and some associated species.
- Cumbria County Council, in partnership with English Nature, Cumbria Wildlife Trust and the Lake District National Park has carried out a survey and evaluation of roadside verges in the County and now carries out cutting regimes that reflect the importance of roadside verges for their flora and fauna.
- Agri-environment schemes, such as the Lake District and Pennine Dales Environmentally Sensitive Area schemes and the Countryside Stewardship scheme, provide financial incentives to manage land in a way that is sympathetic to its nature conservation interest, and provide specific hay meadow options. The Lake District National Park Authority provides management agreements for the conservation management of some hay meadows.
- A small number of hay meadows and lowland pastures are managed for nature conservation objectives, by organisations including English Nature and Cumbria Wildlife Trust.
- A number of organisations fund research into hay meadow management, including The Ministry of Agriculture Fisheries and Food and English Nature.
- The habitat is included in County Wildlife Sites; there is a programme of survey and identification of these sites that 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 hay meadows and unimproved lowland pastures. These include the Arnsdale and Silverdale Countryside Management Service, Agriculture Development and Advisory Service, Farming and Wildlife Advisory Group, East Cumbria Countryside Project, Solway Rural Initiative, West Cumbria Groundwork Trust and Cumbria Farm Link.

Context in relation to other plans:

UK Habitat Action Plans

There are UK Biodiversity Action Plans for both upland and lowland meadows in the UK Biodiversity Group Tranche 2 Action Plans, Vol. II (1999), which set the following UK objectives and targets:

Upland hay meadows:

- Arrest the depletion of unimproved upland hay meadow throughout its UK distribution.
- Within SSSIs, initiate rehabilitation management for all significant stands of unimproved upland hay meadow in unfavourable condition by 2005, with the aim of achieving favourable status wherever feasible by 2010.
- For stands at other localities, secure favourable condition over 30% of the resource by 2005, and as near to 100% coverage as is practicable by 2015.
- Attempt to re-establish 50 ha of upland hay meadow of wildlife value at carefully targeted sites by 2010.

Lowland meadows:

- Arrest the depletion of unimproved lowland hay meadow throughout the UK.
- Within SSSIs and ASSIs, initiate rehabilitation management for all significant stands of unimproved lowland hay meadow in unfavourable condition by 2005, with the aim of achieving favourable status wherever feasible by 2010.
- For stands at other localities, secure favourable condition over 30% of the resource by 2005, and as near to 100% as is practicable by 2015.
- Attempt to re-establish 500 ha of lowland hay meadow of wildlife value at carefully targeted sites by 2010.

National Lead Agency

Upland hay meadows: Ministry of Agriculture Fisheries and Food.

Lowland meadows: Countryside Council for Wales.

Local contacts

Ian Slater, English Nature, Juniper House, Murley Moss Business Park, Kendal LA9 7RL. 01539 792800.

Associated plans in the Cumbria BAP

The following Cumbria species/habitat action plans are of relevance to the hay meadows and lowland pastures:

Phase I

- ancient and/or species-rich hedgerows
- purple moor-grass and rush pasture
- bats
- barn owl

Phase II

- farmland birds
- black grouse
- small white orchid
- pink meadowcap fungus
- springs and flushes

Objectives, targets and proposed actions for hay meadows and lowland pastures in Cumbria

Broad Objective A	Ensure no further loss of hay meadows and lowland pastures in Cumbria			
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
I Arrest the depletion of unimproved hay meadows and lowland pastures throughout their distribution in Cumbria	1 Keep the extent of SSSI coverage under review and notify sites as necessary to fill gaps in coverage.	EN	○	SS
	2 Designate as Special Areas of Conservation all upland hay meadows which meet selection criteria as soon as is practicable.	EN, DETR	○	SS

Broad Objective A		Ensure no further loss of hay meadows and lowland pastures in Cumbria		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
	3 Assess the need to undertake vegetation survey and assessment of hay meadows and lowland pastures in areas with poor survey coverage by end 2000.	EN, LDNPA	S	RM
	4 Carry out a review of the need to manage further key sites as National Nature Reserves by end 2000.	EN	S	RM/SS
	5 Identify as Wildlife Sites the most important areas for wildlife in the County outside of statutory sites, including areas of hay-meadows and lowland pastures, by 2006.	CWT, LAs,	L	RM/SS
	6 Seek opportunities to present hay meadow and lowland pasture conservation to the general public through the media and by onsite interpretation where appropriate.	EN, CWT, NT, FWAG, MAFF, ECCP	O	CP

Broad Objective B		Ensure the favourable condition of all sites		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
I Within SSSI, initiate rehabilitation management for all significant stands of unimproved hay meadows and lowland pastures in unfavourable condition by 2005, with the aim of achieving favourable status wherever feasible by 2010	1 Assess the condition of all hay meadow grassland within SSSI using standard criteria by 2002.	EN	M	RM
	2 Where necessary, secure the uptake of positive management agreements with owners and occupiers of all hay meadow SSSI by 2005.	EN, MAFF	M	SS
	3 Establish at least two sites (one upland, one lowland) to demonstrate good management practice (taking into account linking with land management schemes) by 2000.	EN, MAFF, NT	S	A

Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
2 For stands at other localities, secure favourable condition over 30% of the resource by 2005, and as near to 100% as practicable by 2015	1 Ensure hay meadows and lowland pastures are 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, EN	M/L	SS/A
	2 Review and where necessary modify or develop agri-environment schemes to take account of local needs and target local concentrations of the habitat or those which support, or could contribute to, the conservation of Key Species by 2001.	MAFF, EN	S	SS/A
	3 Provide advice on management and grants to owners and occupiers of Wildlife Sites with hay meadows and lowland pastures, by 2008.	CWT	L	A/SS
	4 Within the constraints of road safety requirements ensure that roadside verges are managed to prevent further depletion of the biodiversity resource.	CCC, HA, EN, LDNPA, CWT	O	SS
3 Monitor changes in the extent and condition of hay meadow grassland in order to assess the effectiveness of conservation action	1 Collate available information on the extent and condition of hay meadows and lowland pastures into a database by 2002 and consider the need for further survey.	EN, CWT, LDNPA, MAFF, NT	M	RM
	2 Devise a strategy for monitoring the extent and condition of hay meadow grassland and implement by 2002.	EN, LDNPA, CWT	M	RM
	3 Develop a strategy for monitoring the condition of roadside verge grasslands by end 2000, implement by end 2001 and repeat thereafter at intervals which links to the issue of verge management contracts.	CCC, CWT, EN, LDNPA, CEH	S/O	RM/SS

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 practice of hay meadows and lowland pastures	1 Produce guidelines for the identification, condition assessment and best practice management of hay meadows and lowland pastures (in particular the integration of conservation management into agricultural practice) by end 2000.	EN	S	A
	2 Carry out two demonstration days on the condition assessment and management of hay meadow grassland by end 2002.	EN, MAFF, FWAG, ECCP, NT, LDNPA, ADAS	M	A
	3 Produce leaflet interpreting roadside verge management approach, by end 2001.	CCC, CWT, HA	S	CP/A

Broad Objective C		Increase the extent of hay meadow grassland		
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
I Attempt to re-establish upland and lowland hay meadows of wildlife value targeted at areas with existing concentrations of the habitat where possible by 2010 divided between Natural Areas as shown below	1 Develop and implement a strategy to restore and expand the cover of unimproved hay meadows and lowland pastures, taking into account the need to ameliorate the negative effects of isolation, fragmentation and small patch size by 2003.	EN, MAFF, NT, LDNPA	M	RM/SS
	2 Produce and disseminate guidelines for appropriate methods and approaches to establish new stands of hay meadows and lowland pastures of wildlife value by 2002.	FWAG, EN, MAFF, NT, LDNPA, ECCP	M	CP/A

Natural Area targets:

* shared with adjacent county.

Upland:

Border Uplands	*7 ha
North Pennines	*15 ha
Yorkshire Dales	*15 ha
Cumbria Fells and Dales	10 ha

Lowland:

Solway Basin	2 ha
North Pennines	*8 ha
Yorkshire Dales	*8 ha
Eden Valley	2ha
Cumbria Fells and Dales	8ha
West Cumbria Coastal Plain	2 ha

Key to Tables

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

ADAS = Agriculture Development and Advisory Service; 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; 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.