

## Priority Habitat Definition Statement Lowland Meadows v1.3

### 1. Introduction

#### 1.1 General description

The lowland meadows habitat definition is taken to include most forms of unimproved neutral grassland found in the enclosed lowland landscapes of the UK, including pastures. The definition includes areas of lowland neutral grassland that are not managed as meadows or pastures such as churchyards, road verges and recreational sites that tend to be cut or mown.

The definition adopts a vegetation community based approach. Specifically the definition includes all areas of *Cynosurus cristatus* - *Centaurea nigra* (MG5) grassland, *Alopecurus pratensis* - *Sanguisorba officinalis* (MG4) floodplain meadow and *Cynosurus cristatus* - *Caltha palustris* (MG8) flood-pasture as defined by the National Vegetation Classification.

In some cases more species rich examples of other grassland types may be recorded as “close to” the lowland meadow definition and captured as such in inventories. For further guidance see section 4 below.

The lowland meadows habitat action plan suggests that there are less than 15,000 ha of species-rich neutral grassland left in Britain and Northern Ireland.

#### 1.2 Summary of existing information

##### 1.2.1 Existing inventories

The main sources of survey information are likely to be:

- English Nature grassland inventories, which index rather than contain the survey information.
- Wildlife Trust/Records Centre Wildlife Site surveys.

##### 1.2.2 Information sources

A list of document used to compile this definition statement is included as **Appendix 1**.

#### 1.3 Key issues with mapping and discriminating from other habitats

- Excluded are maritime grassland communities, *Anthoxanthum odoratum* – *Geranium sylvaticum* grassland (dealt with in the upland hay meadows plan) and *Molinia* - *Juncus* pastures dealt with in the purple moor-grass and rush pasture plan (see Section 9).
- Please refer to Section 9 for instructions on dealing with relationships with other habitats, and Section 11 for size of mappable units.

- Areas of semi-natural or artificial habitat totally within an area of this priority habitat should be included in the polygon for this priority habitat polygon, if <0.25ha.

## **2. Physio-graphical description**

### **2.1 Structural/physical components**

Further details are available in ENRR 315: Monitoring the condition of lowland grassland SSSIs.

### **2.2 Applicability of aerial photos and other remote sensing technologies**

Can't be used to identify this habitat absolutely, but can be used to identify grassland versus other habitats, such as arable and scrub, when they can be very useful. Also useful for giving an indication of whether a grassland is improved or unimproved. This is however by no means a reliable method on its own.

## **3. Altitudinal limits**

Generally confined to the limit of enclosed land, below moor walls.(usually below 300m.) Lowland meadow can occur on the upland margins of the Welsh borderlands and northern England. They can occasionally occur in the same zone as MG3 in Northern England. On the ground judgment will often be required on what to include as upland versus lowland when mapping in the upland fringes of England.

## 4. Habitat classification

The categories in these classifications are not totally synonymous and the comparisons below attempt to be the best approximation.

CLASSIFICATION and version date	CODE	(IHS CODE)	DESCRIPTION	RELATIONSHIP *	COMMENTS
Priority Habitat Type (1995)		GN1	Lowland Meadows	=	
Broad Habitat Type (1998)			Neutral Grassland	>	
Phase 1 (1990)	B.2.1 B.5		Neutral grassland – Unimproved / Marshy grassland	>	MG8 may correspond with phase 1 B5 Marshy grassland
NVC (1992)	MG4  MG5 MG8  (MG11 MG13 MG6)		<i>Alopecurus pratensis</i> - <i>Sanguisorba officinalis</i> grassland <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland <i>Cynosurus cristatus</i> - <i>Caltha palustris</i> grassland	< < <	<p><b>MG11 / 13</b> related grasslands should not be included in the inventory <b>except</b> where there is clear indication that they are of a more species rich type . Such types would include the <i>Agrostis – Carex (Ag/Cx)</i> grassland from the Somerset Levels.</p> <p><b>MG6</b> grasslands should not be included <b>unless</b> there are clear indications such as meadow species records to indicate species richness beyond that normally associated with MG6.</p> <p>In the cases above qualifying land parcels should be mapped as “<b>close to</b>”.</p>
EC Habitats Directive (1997)			Lowland hay meadows	?	

<b>Corine (1991)</b>	<b>Corine Biotope (1991):</b> 3.8.2.1 38.2 38.112 37.21 (37.24 – for LM/CFPG M combined entry) <b>Corine land cover (1991):</b> 3.2.1 2.3.1		Mesophile pastures - <i>Cynosurus - Centaurea</i> pastures Mesophile pastures - Ditch-broken pastures ?????????? Lowland hay meadows - Atlantic hay meadows	? ? ?	
<b>Annex 1 type (1999 Interpretation manual)</b>	6510		Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> )		
<b>Paelearctic classification</b>	37.21 38.11 38.2 (37.24 – for LM/CFPG M combined entry)				
<b>EUNIS</b>	E2.2/P-38.21 E2.1/P-38.11 E3.4/P-37.21 (E2.14)  And for LM/CFPG M combined entry:  E3.4/P-37.24 E2.1/P-38.12				

**\* relationship of classification type to priority habitat:  
= equal, < narrower, > wider, # overlap, ? not determined**

## 5. Species composition

### 5.1 Flora

Please see **Appendix 2a** for details of vegetation communities

### 5.2 Fauna

Please see **Appendix 2b** for a full list of priority species associated with this habitat (from Biodiversity – Making the links, English Nature Biodiversity series).

## 6. Geographical restrictions

### 6.1 Geographical coverage and restrictions in the UK

*Cynosurus cristatus* - *Centaurea nigra* grassland is widespread throughout the lowlands, with the claylands of the Midlands the main centre. It is even found on some upland margins, such as the Welsh borders and northern England. Estimates in BAP Volume 2 give 5000-10,000ha remaining in England and Wales. There are particularly fine and extensive examples in Worcestershire, although recent survey estimates only c500ha survives here (ref BAP vol2 p280). Somerset, Dorset, Wiltshire, Leicestershire, Northamptonshire, Cambridgeshire and Suffolk also hold important areas.

*Alopecurus pratensis* - *Sanguisorba officinalis* grassland is less widely distributed, with estimates of <1500ha. It occurs in scattered sites through the Thames valley, Midlands, Welsh borders and Ouse catchment. A fine example occurs at North Meadow NNR, Cricklade, one of the surviving Lammas meadows.

*Cynosurus cristatus* - *Caltha palustris* is widespread but scarce throughout the lowlands, with probably less than 1000ha in England and Wales and c600-800ha in Scotland. Chalk valleys in Wiltshire, Dorset and Hampshire still contain examples of this habitat still managed as traditional water-meadows.

### 6.2 Climate requirements

See Rodwell for further details.

## 7. Geology and soils

MG4 is found on seasonally inundated alluvial soils.. MG5 is found on circumneutral brown soils, generally freely-draining. MG8 soils are typically gleyed brown earths with a silty texture.

## 8. Hydrology

The three different lowland meadow communities have different hydrological regimes, MG5 is generally found on free draining soils with no form of water management present. MG4

and MG8 are both subject to seasonal flooding. The flooding of the grassland in MG8 was traditionally managed with a series of channels and sluices to allow flooding of land that would not normally flood. MG8 can also occur below springs flushes and seepage lines. The seasonally inundated alluvial soils on which MG4 is found remain waterlogged for many months, gradually drying out throughout the summer.

## 9. Relationships with other habitats

	<b>Lowland meadows</b>
<b>Ancient and /or species rich hedgerows</b>	Allowable overlap. Hedges will be mapped as linear features and should not artificially sub-divide contiguous areas of lowland meadow.
<b>Fens</b>	Separate by NVC.
<b>Coastal and floodplain grazing marsh</b>	Unavoidable overlap.
<b>Lowland calcareous grassland</b>	MG5 and <i>Festuca – Avenula</i> CG2 grassland can prove difficult to separate particularly where the soil is relatively nutrient rich, deep and less drought-prone.
<b>Lowland dry acid grassland.</b>	Separate by NVC. Soil data may be useful where this is absent.
<b>Lowland heathland</b>	Separate based on broad habitat distinction. Heath must be 25% or more Erica or small Ulex cover.
<b>Lowland wood-pasture and parkland</b>	Unavoidable overlap.
<b>Maritime cliff and slopes</b>	Unavoidable overlap.
<b>Purple moor grass and rush pastures</b>	Separate by NVC.
<b>Upland hay meadows</b>	Separate by NVC
<b>Coastal vegetated shingle</b>	Separation needed. Further guidance needed where there is a transition from vegetated shingle to lowland meadow. Could possibly use presence of maritime plant species to separate coastal and inland grassland. Also sediment as surface .

## 10. Management

Lowland MG4 meadows are traditionally managed for hay with aftermath of winter grazing. Flooding providing nutrients. Typically cattle are removed in spring, perhaps as early as February, with the subsequent hay crop harvested in July. Stock would then be put on, in the case of Lammas fields on Lammas day (1st August). Some of the meadows were, and some still are, common land with parcels of land allocated individually.

MG8 was traditionally managed as water-meadow, grazed by cattle and horses but not usually sheep because the land is often too wet. A hay cut was occasionally taken. The method of working water-meadows in the traditional fashion is now rare.

MG5 can be meadow or pasture. Meadows usually receive light farm-yard manure applications.

A non traditional treatment of lowland meadows and pastures is cutting with no aftermath grazing. Cutting is the main form of management in non-agriculturally managed examples of lowland meadow such as in churchyards and roadside verges.

## **11. Size of mappable units**

**Minimum mappable unit (MMU): 0.25ha**

Meadows >0.25ha should be mapped as polygons.

## **12. Regional differences**

The Northern Pennines, Yorkshire Dales and Cumbrian Dales have an MG8 community related to upland hay meadows (MG3) (see English Nature Research Report 315, MG3 section for further details).

The Somerset levels has a type of MG8 which shows some relationship to MG2 (see ENRR 314 wet grasslands section, and Rodwell et al (2000) for further details).

## **Appendix 1**

### **Information Sources**

Dargie, T.C. 1993. The distribution of lowland wet grassland in England. Peterborough: English Nature Research reports No 49. English Nature

English Nature (1999) Biodiversity : making the links. English Nature

Anon. (1998). UK Biodiversity group: Tranche 2 Action Plans. Volume II – terrestrial and freshwater habitats

UK Biodiversity Steering Group, 1995. Biodiversity, The UK Steering Group Report, English Nature

Jefferson et al (1997). Inventories of lowland grassland in England: Rationale and methodology. Peterborough: English Nature Research Reports No. 215.

NCC (1990). Handbook for Phase 1 habitat survey: a technique for environmental audit field manual NCC, Peterborough

Rodwell, J.S. (ed) (1992). British Plant Communities. Vol. 3: Grasslands and montane communities. Cambridge University Press, Cambridge

Robertson, H.J., Jefferson, R.G. (2000) Monitoring the condition of lowland grassland SSSIs- English Nature Research Report No 315

## Appendix 2

### Species

#### 2a Details of vegetation communities

(From Rodwell, 1992)

##### ***Alopecurus pratensis* - *Sanguisorba officinalis* grassland**

This community has a species-rich and varied sward of grasses and herbaceous dicotyledons. There is generally no dominant grass; red fescue (*Festuca rubra*), meadow foxtail (*Alopecurus pratensis*), crested dog's-tail (*Cynosurus cristatus*) and perennial ryegrass (*Lolium perenne*) can all be abundant. Many other grasses can be locally frequent, some, including false oat-grass (*Arrhenatherum elatius*), tufted hair-grass (*Deschampsia cespitosa*) and tall fescue (*Festuca arundinacea*), creating a dense tussocky habitat. Lesser pond-sedge (*Carex acutiformis*) is occasional but other sedges (and rushes) are never prominent.

Herbaceous dicotyledons are an important component of the herbage. In spring the short sward contains rosette species such as autumnal hawkbit (*Leontodon autumnalis*), ribwort plantain (*Plantago lanceolata*), daisy (*Bellis perennis*) and dandelion (*Taraxacum* sp.). By July the vegetation comprises a tall herbage of 70cm or more, with rosette herbs and grasses generally overtopped by great burnet (*Sanguisorba officinalis*) and meadowsweet (*Filipendula ulmaria*), with a lower layer of herbs in which red clover (*Trifolium pratense*), white clover (*Trifolium repens*), common sorrel (*Rumex acetosa*) and yellow-rattle (*Rhinanthus minor*) may all be prominent. There may be small amounts of common mouse-ear (*Cerastium fontanum*), common bird's-foot-trefoil (*Lotus corniculatus*), cowslip (*Primula veris*) and field wood-rush (*Luzula campestris*). Meadow vetchling (*Lathyrus pratensis*) is a constant and sometimes abundant sprawler. A colourful show may be provided by common knapweed (*Centaurea nigra*), pepper-saxifrage (*Silva silaus*), oxeye daisy (*Leucanthemum vulgare*) and devil's-bit scabious (*Succisa pratensis*). Bryophytes are almost always present. *Brachythecium rutabulum* and *Calliargon cuspidatum* can occur as extensive patches over soil and litter.

##### ***Cynosurus cristatus* - *Centaurea nigra* grassland**

This community has a dicotyledon-rich sward of variable appearance. Grazed swards have a tight low-growing sward, whereas hay meadows have a lush growth up to 60cm. The most frequent grasses are red fescue, crested dog's-tail and common bent (*Agrostis capillaris*), with sweet vernal grass (*Anthoxanthum odoratum*), cock's-foot (*Dactylis glomerata*) and Yorkshire-fog (*Holcus lanatus*) less abundant. Sedges, including spring sedge (*Carex caryophylla*), glaucous sedge (*Carex flacca*) and hairy sedge (*Carex hirta*) can be abundant.

Dicotyledons account for a substantial proportion of the herbage, in exceptional circumstances accounting for 95% of the cover. Legumes and rosette hemicryptophytes are prominent. Common bird's-foot-trefoil, ribwort plantain, red clover, white clover and common knapweed are generally the most frequent, along with meadow buttercup (*Ranunculus acris*), bulbous buttercup (*Ranunculus bulbosus*), sorrel, cat's-ear (*Hypochaeris radicata*), dandelion, yarrow (*Achillea millefolium*), selfheal (*Prunella vulgaris*) and autumnal hawkbit. In some stands abundant yellow-rattle (*Rhinanthus minor*) reduces grass vigour and produces a sward in which rosette species are dominant. Woodland species such as bluebell (*Hyacinthoides non-scripta*) and wood anemone (*Anemone nemorosa*) are often a feature of long-established swards free of improvement and disturbance. Also present in these meadows are many species of restricted distribution, such as meadow saffron

(*Colchicum autumnale*), adder's-tongue (*Ophioglossum vulgatum*), dyer's greenweed (*Genista tinctoria*), green-winged orchid (*Orchis morio*) and frog orchid (*Coeloglossum viride*). Bryophytes are generally present and can be abundant in some swards.

### ***Cynosurus cristatus* - *Caltha palustris* grassland**

This is a species-rich community with no consistently dominant species. Five constant grasses (sweet vernal grass, crested dog's-tail, red fescue, Yorkshire-fog and rough meadow-grass) generally comprise most of the cover. A variety of other grasses occur and can be locally prominent. Sedges are almost always present, with carnation sedge (*Carex panicea*) and brown sedge (*Carex disticha*) the most frequent, with occasional records for glaucous sedge, common sedge (*Carex nigra*), common yellow sedge (*Carex viridula*), oval sedge (*Carex ovalis*) and hairy sedge.

A good variety of dicotyledons are found. Some, notably marsh-marigold (*Caltha palustris*) and meadowsweet, can give the community a distinctive appearance. Generally frequent are meadow buttercup, creeping buttercup (*Ranunculus repens*), white clover and red clover. Species of other unimproved meadow and poor-fen communities occur occasionally, including great burnet, meadow vetchling, common knapweed, yellow-rattle, cuckoo-flower (*Cardamine pratensis*), sneezewort (*Achillea ptarmica*), ragged robin (*Lychnis flos-cuculi*), marsh valerian (*Valeriana dioica*), common spike-rush (*Eleocharis palustris*) and common marsh-bedstraw (*Galium palustre*). Bryophytes are rather patchy but *Calliergon cuspidatum* can be conspicuous.

### ***Alopecurus pratensis* - *Sanguisorba officinalis* grassland**

Rare species include fritillary (*Fritillaria meleagris*) and many *Taraxacum* species (dandelions), some of which are confined to this community type.

## **2b BAP priority species associated with lowland meadows**

(From "Biodiversity - Making the Links" - 28 June 2000 version)

Scientific name	Common name	Taxon	Priority list	Importance of habitat to the species *
<i>Crex crex</i>	Corncrake	Bird	SAP	P
<i>Triturus cristatus</i>	Great crested newt	Amphibian	SAP	P
<i>Alauda arvensis</i>	Skylark	Bird	SAP	S
<i>Carduelis cannabina</i>	Linnet	Bird	SAP	S
<i>Myotis myotis</i>	Greater mouse-eared bat	Mammal	SAP	S
<i>Passer montanus</i>	Tree sparrow	Bird	SAP	S
<i>Pipistrellus pipistrellus</i>	Pipistrelle bat	Mammal	SAP	S
<i>Rana lessonae</i>	Pool frog	Amphibian	SAP	S
<i>Rhinolophus ferrumequinum</i>	Greater horseshoe bat	Mammal	SAP	S
<i>Streptopelia turtur</i>	Turtle dove	Bird	SAP	S
<i>Bombus distinguendus</i>	Great yellow bumblebee	Bee	SAP	x
<i>Bombus ruderratus</i>	Large garden bumblebee	Bee	SAP	x
<i>Bombus subterraneus</i>	Short-haired bumble-bee	Bee	SAP	x
<i>Perdix perdix</i>	Grey partridge	Bird	SAP	x

\* (P) primary, (S) secondary or (x) less