

## NEUTRAL GRASSLANDS (MEADOWS AND PASTURES)

### LOCAL HABITAT ACTION PLAN FOR CAMBRIDGESHIRE AND PETERBOROUGH

Last Updated: December 2008

#### 1 CURRENT STATUS

- 1.1** This Habitat Action Plan covers the broad range of unimproved (species-rich) traditionally managed grasslands in Cambridgeshire which occur on neutral clays, on mildly calcareous loams and on alluvial substrates in river valleys. The vast majority of these grassland types are dry during the summer months. The traditional management of these habitats was based around mid to late summer hay cutting, following by late summer / autumn grazing. Wet neutral grasslands (including rush pastures and mesotrophic inundation grasslands) are covered by a Floodplain Grazing Marsh and Marshy Grassland HAP.
- 1.2** Within Cambridgeshire and Peterborough the following mesotrophic grassland National Vegetation Classification (NVC) communities MG1, MG4, MG5, and MG6 (Rodwell, 1992) are known to occur. The MG1 *Arrhenatherum elatius* community is typical of roadside situations but also occurs on a range of other uncut and un-grazed sites throughout the county including Great Stukeley Railway Cutting SSSI. Although often floristically poor, the structure of this tall grassland community is of high value for invertebrates and some examples can be floristically species-rich, particularly where there is a calcareous influence. Dry neutral grassland of the MG5 (unimproved) or MG6 (semi-improved) communities are characterised by Crested Dogs-tail *Cynosurus cristatus* and a broad range of other species such as Common Knapweed *Centaurea nigra*, Red Fescue *Festuca rubra*, Red Clover *Trifolium pratense*, Ox-eye Daisy *Leucanthemum vulgare*, Yellow Rattle (*Rhinanthus minor*) as well as locally uncommon species such as Sulphur Clover *Trifolium ochroleucon*, Meadow Saxifrage *Saxifraga granulata*, Green-winged Orchid *Orchis morio*, Slender Tare *Vicia parviflora*, Adders-tongue *Ophioglossum vulgatum* and Crested Cow-wheat *Melampyrum cristatum*, though this latter species is more a woodland edge species. Additionally, many Cambridgeshire sites have developed on mildly calcareous substrates (chalky boulder clay) and have in places developed richer swards (NVC MG5b sub-community) with calcicoles such as Cowslip *Primula veris*, Lady's Bedstraw *Galium verum*, Downy Oat-grass *Helictotrichon pubescens*, Yellow Oat-grass *Trisetum flavescens*, Dropwort *Filipendula vulgaris* and Common Quaking-grass *Briza media*.
- 1.3** In the river valleys of the Ouse and Nene in particular, the free draining alluvial soils support the nationally significant MG4 flood meadow community. These grasslands support many of the species present in the MG5 community as well as those more tolerant of periodic flooding. Locally uncommon species include Greater Burnet *Sanguisorba officinalis* and Fritillary *Fritillaria meleagris*, though there is debate about the status of this latter species.
- 1.4** The key areas for the MG4 community are in the Ouse Valley between St Neots and St Ives in Huntingdonshire and upstream of Peterborough in the Nene valley. The largest

single example in England is present at Port Holme SSSI near Godmanchester, in the Ouse valley. Other examples are found at Brampton Meadow SSSI, Brampton Race Course, Godmanchester Eastside Common SSSI, Hemingford Grey Meadow SSSI, St Neots Meadow SSSI, West Common CWS, Brampton Flood Meadows CWS and Westside Common CWS. The remaining examples of MG5 grassland are much more widely scattered, though there are small concentrations in various parts of the boulder clay in Huntingdonshire, such as around Southoe, West Cambridgeshire, particularly on road verges and south-east Cambridgeshire, again mainly on road verges. Important sites include Upwood Meadows NNR, Houghton Meadows SSSI, Chettisham Meadows SSSI and Woodwalton Marsh SSSI. Other examples occur along ancient woodland rides.

- 1.5** Unimproved (species-rich) grassland has become a scarce and fragmented resource during this century. The reduction in this resource is estimated at over 98% since 1930, when losses accelerated mainly linked to changing agricultural practises such as increased use of fertilizers, conversion of pasture to arable land and introduction of ley cropping involving hybrid grass cultivars. There have also been structural changes to swards through increased use of silage and abolition of traditional grazing and hay cuts as well as the economic constraints of a changing local labour market. It has been estimated that less than 12,000 hectares of unimproved neutral grassland is left in England and Wales. Cambridgeshire has long been an intensive agricultural county and only approximately 350 ha of unimproved neutral grassland remain (see neutral grassland sites spreadsheet). This resource is well represented on Sites of Special Scientific Interest with statutory protection and the majority of the remainder is covered by the County Wildlife Sites system.
- 1.6** Unimproved neutral grassland meadows and pastures are typically herb-rich and have associated rich invertebrate assemblages. Rare Cambridgeshire species associated with this habitat include the marbled white butterfly, six belted clearwing, the meadow ant *Lasius alienus*, the fly *Pherbellia knutsonii*, soldier beetle *Hypera meles*, oil beetle *Moloe rugosus* and the weevils *Cionus longicollis* and *Apion rubiginosum*. Common but declining species include the common green grasshopper *Omocestrus viridulus* and meadow brown butterfly. In addition, traditional hay meadows are important for birds such as meadow pipit and were formerly very important for corncrake (last confirmed breeding in Cambridgeshire in 1952 and with calling birds recorded as recently as 1995).
- 1.7** Scrub is less frequently associated with neutral grasslands than with calcareous grassland, due to traditional meadow management. However, where it is present, most usually in the form of boundary hedgerows that have expanded, it can contribute to local biodiversity by providing a varied micro-climate, shelter and nectar for invertebrates and scrub edge conditions suitable for species such as Crested Cow-wheat *Melampyrum cristatum*. Some boundary hedgerows can be ancient landscape features and species-rich in their own right
- 1.8** Even as species poor isolated stands, scrub forms an important habitat resource for birds such as Song Thrush, small mammals such as mice and shrews and a host of invertebrates. In an intensively farmed landscape, small areas of scrub along with hedgerows, provide cover, shelter, nesting and feeding opportunities and are often associated with small areas of grassland and tall herbs. Long list birds such as Garden Warbler, Blackcap, Whitethroat, Lesser Whitethroat, Willow Warbler, Nightingale,

Goldfinch and Linnet all rely on various forms of scrub habitat. Scrub stands in close association with grassland, particularly where there is a naturally advancing scrub front, form complex mosaics which are particularly valuable for a wide variety of invertebrates including butterflies such as Brown Argus, Grizzled and Dingy Skippers

## **2 CURRENT FACTORS CAUSING LOSS AND DECLINE**

- 2.1** Historically, agricultural intensification by use of fertilisers, herbicides and other pesticides, re-seeding or ploughing was the main cause of the decline in this habitat.
- 2.2** The major threat today is the lack of appropriate management, particularly intensification of cutting regimes and the move from late hay cutting to early cutting for silage. Other threats relate to a lack of appropriate management, either hay cutting or aftermath grazing at many sites. The lack of cutting and / or grazing can result in the increasing dominance of coarse grasses and tall herbs leading to losses of neutral grassland flora and fauna. On other sites the switch to horse grazing can result in over-grazing and a loss of many typical species.
- 2.3** Spray drift and enrichment through fertiliser run-off may also be a problem on some sites. Atmospheric pollution, particularly eutrophication from nitrogen deposition and climate change are recognised as potentially significant issues for the future; however, the influence of these factors has not been fully assessed nationally and very little is known locally, though anecdotal evidence suggests that some road verges are becoming more rank, though this may be as a result of only being cut once per year in autumn. Salt spray is also having an impact on road verges.
- 2.4** Although not a significant local issue, most neutral grasslands do not have a statutory designation and there could still be loss of habitat due to development activities such as mineral extraction, road building, housing and landfill.
- 2.5** Road verges are particularly vulnerable to changes whether management or development related. A long list of factors adversely affecting road verges have been recorded; road improvement schemes, conversion of verge to hard surfaced footpaths or cycle paths, essential cable and pipe laying work, modification of verge for agricultural access to adjoining farm land, modification through introduction of new roadside ditch systems or widening of existing roadside drainage ditches, encroachment on verge by adjacent landowner (including ploughing of the verge), leachate run-off from adjoining agricultural land, spray drift from adjacent fields, lack of cutting and associated scrub encroachment, inappropriate cutting regimes and timing of cutting and even in some cases hedge and tree planting.
- 2.6** Changes to woodland management, in particular the cessation of management has resulted in the loss of many species-rich woodland rides, which were often managed for hay in the past and developed as species-rich neutral grassland communities.
- 2.7** Recreational pressure bringing about floristic changes associated with soil compaction or soil erosion, or eutrophication from dog faeces.
- 2.8** The factors currently affecting neutral grassland reduce the quality and quantity of the habitat, and its fragmentation brings increased risk of species extinctions in the small

remnant areas. Many of the county's remaining areas of neutral grassland are so small and isolated that chance extinctions due to unfavourable conditions, even if temporary, mean that the sites' diversity becomes impoverished over time. The less mobile fauna species are particularly at risk in this way.

### **3 CURRENT ACTION**

#### **3.1 Legal status**

**3.1.1** Lowland neutral grassland features prominently in the SSSI series in Cambridgeshire; a rough estimate suggests that approximately 60% of the unimproved neutral grassland resource has been designated.

**3.1.2** The County Wildlife Site designation covers virtually all the remaining unimproved neutral grassland in the county in addition to those sites containing a mosaic of unimproved and semi-improved grassland or the better examples of semi-improved neutral grassland.

**3.1.3** Several plant, invertebrate and bird species of neutral grassland are protected under the Schedules of the Wildlife and Countryside Act 1981.

**3.1.4** There is a range of national, regional and local planning policies that, along with other legislation, set out requirements for biodiversity conservation. Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation (ODPM, 2005) is the key national planning policy document for biodiversity in England. It sets out the key principles that regional planning bodies and local planning authorities should adhere to in order to ensure that biodiversity is fully considered in the development of planning policy and determination of planning applications. The seven policies within the Environment chapter of the Regional Spatial Strategy for the East of England (GO-East, May 2008) set out the requirements for proper consideration to be given to the potential effects of development on the natural, built and historic environment of the East of England. At the local level, the planning policy documents of local planning authorities should take account of BAP and HAP targets and priorities, setting overarching policies for the protection and enhancement of biodiversity.

#### **3.2 Management, research and guidance**

**3.2.1** Initiatives such as Environmental Stewardship (and Countryside Stewardship and the English Nature Wildlife Enhancement Scheme beforehand) have played a significant role in effective management of neutral grassland sites.

**3.2.2** The condition of neutral grassland SSSIs is regularly monitored by Natural England.

**3.2.3** A significant contribution has been made by various non-governmental organisations to the conservation of calcareous grassland in the county through the establishment of nature reserves. The local Wildlife Trust has 10 nature reserves in Cambridgeshire & Peterborough that are SSSIs with neutral grassland a major or significant feature of their interest and a further 5

woodland reserves with species-rich rides.

**3.2.4** Sympathetic management is also undertaken by landowners on several sites. The Wildlife Trust in partnership with the County Council, Peterborough City Council, the district councils, Natural England, FWAG and the Environment Agency and established “partnership” to run the local County Wildlife Sites system. The Wildlife Trust employs a Wildlife Sites Officer, whose role is to co-ordinate surveys and provide management advice and support to landowners of CWS. FWAG also provide advice on some sites and help landowners to apply for the Environmental Stewardship scheme.

**3.2.5** The Wildlife Trust regularly organises walks / talks to publicise the wildlife interest of grassland sites and to explain management activities undertaken thereon. Regular work parties involve members of the public in practical measures for grassland conservation.

## **4 OBJECTIVES AND TARGETS (Revised 2007)**

### **4.1 Objectives**

- Halt the loss of unimproved neutral grassland.
- Re-habilitate unimproved neutral grassland on known sites, bringing all significant stands of these habitats on SSSIs and CWSs into favourable condition.
- Buffer unimproved grassland sites to prevent damage by external factors, such as agricultural spray drift.
- Create new areas of unimproved neutral grassland, aiming to enlarge and link existing sites wherever possible.

### **4.2 Lowland Neutral Grassland Targets for Cambridgeshire & Peterborough**

1. Maintain the current extent of neutral grassland in Cambridgeshire & Peterborough (estimated to be 350 Ha, 2006).
2. Maintain at least the current condition for neutral grassland within SSSIs & County Wildlife Sites in Peterborough.
3. Achieve favourable or recovering condition for 57% by area of neutral grassland within SSSIs & County Wildlife Sites, by 2010 (75% by 2015 and 85% by 2020).
4. Restore 180 Ha of neutral grassland from semi-improved grassland, scrub and plantation on existing sites, by 2015 (and 300 Ha by 2020).
5. Create 150 Ha of neutral grassland from arable, improved grassland, or former minerals extraction sites, on, adjacent to and linking existing sites, by 2015 (250 ha by 2020 and 350 Ha by 2025).

## 5. ACTIONS

<b>NEUTRAL GRASSLAND: Habitat management, restoration &amp; creation</b>					
<b>BAP TARGET</b>	<b>PROGRESS TO 2006</b>	<b>ACTION</b>	<b>LEAD PARTNER</b>	<b>PRIORITY / DATE</b>	<b>RESOURCES</b>
1. Maintain the current extent of neutral grassland (estimated to be 350 Ha, 2006).	Although no losses from herbicide or fertiliser application have been recorded since 2000, many CWS are continuing to decline from intensification of management (grazing or earlier cutting)	1.1 Ensure that all landowners and managers of SSSIs & County Wildlife Sites supporting neutral grassland habitats are aware of their importance, through provision of site information	NE (SSSI) WT / CCC (CWS)	High On-going	This is the role of Natural England for SSSIs.  A local Wildlife Sites partnership is being formed to address the needs of County Wildlife Sites (see below). This will require support from all local authorities, including financial backing.
	Plans published recently all have site protection policies	1.2 Ensure all planning policy documents (LDF, Minerals & Waste Plans, etc.) have strong policies protecting SSSIs and County Wildlife Sites	CCC	High On-going	Existing staff resources
		1.3 Continue to assess planning applications that may affect neutral grassland sites and comment on those that may have an adverse impact	CCC	Medium On-going	Existing staff resources
		1.4 Alert Natural England if a landowner is proposing / thinking of undertaking agricultural improvement activities on a site supporting neutral grassland, so that the provisions of the EIA Regulations for Uncultivated Land can be implemented	NE, WT, FWAG	Medium On-going	Existing staff resources

<p>2. Maintain at least the current condition for neutral grassland within SSSIs &amp; County Wildlife Sites.</p> <p>3. Achieve favourable or recovering condition for 57% (by area) of neutral grassland within SSSIs &amp; County Wildlife Sites, by 2010 (75% by 2015 and 85% by 2020)</p>	<p>31.2% (106.71 out of 341.95 ha) SSSI &amp; CWS favourable</p>	<p>2/3.1 Implement appropriate grazing and / or cutting regimes on all neutral grassland sites</p> <p>Ensure that all landowners and managers are provided with information, advice and support regarding management of their sites to enable them to achieve this action</p>	<p>NE (SSSIs) WT / CCC (CWS)</p>	<p>High 2010</p>	<p>This is the role of Natural England for SSSIs.</p> <p>A local Wildlife Sites partnership is being formed to address the needs of County Wildlife Sites (see below). This will require support from all local authorities, including financial backing.</p>
	<p>Current contract for rural road verge maintenance, starting in 2007, includes clauses dealing with "Protected Road Verges"</p>	<p>2/3.2 Introduce and maintain a conservation mowing regime for all neutral grassland Protected Road Verges, to include two cuts per year</p>	<p>CCC</p>	<p>High On-going</p>	<p>A new conservation management regime for Protected Road Verges is being introduced in 2007.</p>
	<p>The Wildlife Trust has secured funding for advisory work through the Rural Enterprise Scheme until March 2009 and both the County Council &amp; PCC have committed staff time.</p>	<p>2/3.3 Establish and support a local Wildlife Sites partnership to ensure monitoring &amp; assessment of County Wildlife Sites and to provide information, advice &amp; support to landowners</p>	<p>CCC / WT / PCC / other biodiversity partners</p>	<p>High 2007</p>	<p>This will require support from all local authorities, including financial backing.</p>
		<p>2/3.4 After March 2009, secure alternative funding to support County Wildlife Site advisory work and management of the local Wildlife Sites system</p>	<p>LAs / Biodiversity Partnership</p>	<p>High 2009</p>	<p>It is estimated that the cost of one full-time officer to manage the system on behalf of the partners would be £30,000 - £35,000 per year for both Cambridgeshire &amp; Peterborough (2007 prices)</p>

		2/3.5 Undertake site condition monitoring of all neutral grassland SSSI sites at least once every 6 years to record the extent and condition of habitats	NE (SSSI)	High On-going	This is the role of Natural England for SSSIs.
		2/3.6 Undertake site condition monitoring of all neutral grassland CWS sites at least once every 5 years to record the extent and condition of neutral grassland habitats. All local authorities to fund a rolling programme of site re-surveys / site condition monitoring through an SLA with the Wildlife Trust until 2009 (beyond 2009 this could become part of the broader support of the local Wildlife Sites system – see action above)	CCC / HDC / SCDC / ECDC / FDC / PCC / WT	High On-going	In Peterborough, an SLA for the period 2007-2010 has been agreed at £3500 per year (covering all CWS in Peterborough).  The cost for all the other neutral grassland CWS over the period 2007-2011 is estimated to be £18,600 (at 2007 prices).
4. Restore 180 Ha of neutral grassland from semi-improved grassland and scrub / plantation on existing sites, by 2015 (and 300 Ha by 2020)		4.1 Identify and implement opportunities through individual site management plans for restoration of neutral grassland on existing sites  Key sites for action: Brampton Racecourse SSSI; Port Holme SSSI; Soham Meadows SSSI; Brampton Flood Meadows CWS; Brockley End Meadows CWS; Bucket Hill Plantation Grassland CWS; Cambridge-Bedford disused railway CWS; Caxton Moats CWS; Chettisham Meadows CWS; Chippenham Park CWS; Church Farm / Old Rectory Meadows CWS; Dernford Farm grassland CWS; East Fen Common CWS; Eastfield Cemetery; Mereside Grasslands CWS; Nene Valley Railway CWS; Qua Fen Common CWS; Ring & Bailey Meadows CWS; Sibson Flood Meadows; Sutton Meadows North; Spring Close CWS; West Meadow CWS; Westside Pollard Willows CWS	NE, WT, CCC, HDC, PCC, Nene Park Trust, private landowners	High 2015	This is the role of Natural England for SSSIs.  A local Wildlife Sites partnership is being formed to address the needs of County Wildlife Sites (see above). This will require support from all local authorities, including financial backing.

<p>5. Create 150 Ha of neutral grassland from improved grassland, arable, or former minerals extraction sites, on, adjacent to and linking existing sites, by 2015 (250 Ha by 2020 and 350 Ha by 2025)</p>	<p>The Wildlife Trust has undertaken an analysis and in 2005 prepared a report of opportunities in the Ouse valley, many of which are included in this action plan.</p>	<p>5.1 Identify opportunities for the creation of neutral grassland habitats in the Nene valley, Cam valley and adjacent to other SSSIs / CWSs</p>	<p>WT, EA</p>	<p>High 2009</p>	<p>This forms part of the role of the Water for Wildlife Project Officer, based at the Wildlife Trust and funded by the Environment Agency and Anglian Water.</p>
	<p>Partnership established &amp; Hunts DC secured funding for wet meadow creation project</p>	<p>5.2 Implement a selection of the meadow creation opportunities in the Ouse Valley identified in the Wildlife Trust 2005 report</p> <p>Key locations for action include:          Bromholme Lane meadows;          Godmanchester Eastside Common;          Hemingford Abbots Meadow CWS;          Hemingford Grey Meadow CWS;          Holywell Front Pollard Willows CWS;          Houghton Meadow Pollard Willows CWS;          Houghton Meadows (non SSSI / non CWS);          Little Paxton to the Offords;          St Ives Meadows; West Meadow CWS;          Westside Common Pollards Willows CWS</p>	<p>HDC, FWAG, WT, landowners</p>	<p>High 2010</p>	<p>Hunts DC have resources for the next few years to support the creation of wet meadows and wet woodlands in the Ouse Valley. The Wildlife Trust is contributing staff time to the project, through their Water for Wildlife Project.</p>
		<p>5.3 Create species-rich grassland from areas of improved grassland on the following CWS in the Peterborough area:</p> <p>Ailsworth Meadow South; Deeping Gate Meadows; Follybank Croising Meadows; Hermitage Field</p>	<p>WT, PCC, private landowners</p>	<p>High 2015</p>	<p>The Wildlife Trust has some staff time to contribute to this through the Water for Wildlife Project and Wildlife Site Project (until 2009)</p>

		<p>5.4 Identify and implement opportunities for the creation of species-rich grassland from areas of improved grassland on the following CWS within Nene Park Trust's stewardship:</p> <p>Castor Village Meadows; East Holmes; Nene Park; Normangate River Meadows; Water Newton Island (part of River Nene CWS)</p>	Nene Park Trust, WT	High 2015	The Nene Park Trust and Wildlife Trust will meet to explore the opportunities during 2007
		<p>5.5 Create species-rich grassland from areas of improved grassland on the following CWS or Cambridge City Wildlife Sites in Cambridgeshire:</p> <p>Bottisham Park; Chettisham Meadows; Coldham's Common; Croxton Park; Ditton Meadows; East Fen Common; Granchester Meadows Lattenbury Hill Parkland; Qua Fen Common; Sheep's Green / Coe Fen; Stourbridge Common; Water Newton Meadows; Water Newton Pollard Willows; Wimpole Park</p>	WT, Cambridge City Council, landowners	High 2015	The Wildlife Trust has some staff time to contribute to this through the Water for Wildlife Project and Wildlife Site Project (until 2009)
	Minerals plan includes these policies	5.6 Ensure Minerals & Waste planning policy documents have strong policies promoting biodiversity after-use and habitat creation	CCC / PCC	Medium On-going	Part of the work of current staff including the Minerals Planning officers and Biodiversity Officer
		5.7 Identify and secure neutral grassland creation opportunities through the minerals restoration plan for Little Paxton gravel pits	HDC / CCC	Medium On-going	Part of the work of current staff including Hunts DC countryside team and the Minerals Planning officers
		5.8 Monitor and record the extent of neutral grassland being created through restoration of minerals extraction sites	CCC	Medium On-going	Should be achievable through the work programme of the Minerals Planning Officer and LDF process
		5.9 Monitor and record the extent of neutral grassland being created through agri-environment schemes	NE	Medium On-going	This should form part of government monitoring of agri-environment schemes

		5.10 Monitor the condition of newly created neutral grassland, assessing sites against the County Wildlife Sites criteria every 10 years	NE / PCC / WT	Medium On-going	No resources are currently made available for this.  Ideally it would become part of the rolling programme of CWS re-surveys and the work of the CWS partnership in reviewing the CWS criteria.
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## Abbreviations

BSG	Cambridgeshire Biodiversity Steering Group
CCC	Cambridgeshire County Council
CPBRC	Cambridgeshire and Peterborough Biological Records Centre
CWS	County Wildlife Site
EA	Environment Agency
ECDC	East Cambridgeshire District Council
FDC	Fenland District Council
FWAG	Farming & Wildlife Advisory Group
HDC	Huntingdonshire District Council
HLS	Higher Level Stewardship
LAs	Local authorities
LDF	Local Development Framework
NE	Natural England, Local Team
PCC	Peterborough City Council
RES	Rural Enterprise Scheme
RSPB	Royal Society for the Protection of Birds
SCDC	South Cambridgeshire District Council
SSSI	Site of Special Scientific Interest
WT	Wildlife Trust for Bedfordshire, Cambridgeshire, Northamptonshire and Peterborough

## 6 LINKS TO OTHER PLANS

Lowland Calcareous Grassland HAP, Floodplain Grazing Marsh HAP, Hedgerows HAP, Fenland Drainage Ditches HAP.

List of priority BAP species associated with this habitat & found in Cambridgeshire & Peterborough:

- Crested Cow-wheat *Melampyrum cristatum* (grasslands at woodland edges)
- Dingy Skipper *Erynnis tages*
- Grizzled Skipper *Pyrgus malvae*
- Tubular Water-dropwort *Oenanthe fistulosa* (flood meadows & associated ditches)

The list of invertebrates and lower plants have not been assessed.

For plant indicator species associated with calcareous grassland see Appendix 1.

## 7 REFERENCES

An **Appendix of Cambridgeshire and Peterborough site specific actions** on neutral grassland SSSIs and CWSs is available from the Biodiversity Partnership Coordinator. This complements this Neutral Grassland Habitat Action Plan.

Buglife: Managing priority habitats for Invertebrates, 2<sup>nd</sup> edition. For Neutral Grassland see <http://www.buglife.org.uk/conservation/adviceonmanagingbaphabitats/lowmeadows.htm>

Clark J S 1996. *The Birds of Huntingdon and Peterborough*.

Colston A, Gerrard C & Parslow P 1997. *Cambridgeshire's Red Data Book*.

English Nature. 1994 *The grassland inventory*.

Ewen AH, Prince CT (eds) 1975 *Ray's flora of Cambridgeshire*. Hitchin: Wheldon & Wesley.

Planning Policy Statement 9 Biological and Geological Conservation, available on [www.communities.gov.uk/publications/planningandbuilding/pps9](http://www.communities.gov.uk/publications/planningandbuilding/pps9)

Rodwell, J. S. 1992. *British plant communities volume III. Grasslands and montane communities*.

## **8 LIST OF INDIVIDUALS AND ORGANISATIONS CONSULTED**

ADAS  
Anglian Water  
Beetle Specialists  
Biodiversity Partnership Co-ordinator  
Bird specialists  
Buglife  
Butterfly Conservation  
Cambridge City Council  
Cambridge Preservation Society  
Cambridgeshire County Council  
Cambridgeshire and Peterborough Biological Records Centre  
CLA  
Countryside Restoration Trust  
East Cambridgeshire District Council  
Environment Agency  
Farming and Wildlife Advisory Group  
Fenland District Council  
Flies specialists  
Flowering plants specialists  
Friends of Roman Road and Fleam Dyke  
Froglife  
Fungi specialists  
Highways Agency  
Huntingdonshire District Council  
Huntingdonshire Fauna and Flora Society  
Landowners  
Langdyke Trust  
Moth specialists  
Natural England  
Nene Park Trust  
Opportunity Peterborough  
Peterborough City Council  
RSPB, East Anglia  
RSPB, Fowlmere Nature Reserve  
South Cambridgeshire District Council  
The National Trust  
The Wildlife Trust

## APPENDIX 1: CAMBRIDGESHIRE GRASSLAND INDICATORS

Nomenclature follows *New Flora of the British Isles* 1st Edition C.A.Stace CUP 1991

\*signifies a strong indicator

### Neutral Grassland

Achillea ptarmica\*  
 Agrimonia eupatoria  
 Ajuga reptans  
 Alchemilla filicaulis ssp. vestita\*  
  
 Briza media\*  
 Bromus commutatus\*  
  
 Caltha palustris\*  
  
 Cardamine pratensis  
 Carex caryophyllea\*  
 Carex disticha\*  
  
 Carex flacca\*  
 Carex hirta  
 Carex nigra\*  
 Carex panicea\*  
 Carex spicata\*  
  
 Centaurea nigra  
  
 Centaurium erythraea  
 Cirsium acaule\*  
  
 Conopodium majus  
 Dactylorhiza fuchsii\*  
 Dactylorhiza incarnata\*  
 Danthonia decumbens\*  
 Eleocharis palustris

Man Orchid  
 Sneezewort  
 Agrimony  
 Bugle  
 Lady's-mantle  
 Pyramidal Orchid  
 Kidney Vetch  
 Squinancywort  
 Purple Milk-vetch  
 Yellow-wort  
 Tor Grass  
 Quaking Grass  
 Upright Brome  
 Meadow Brome  
 Great Pignut  
 Marsh-marigold  
 Clustered Bellflower  
 Harebell  
 Cuckooflower  
 Spring Sedge  
 Brown Sedge  
 Rare Spring Sedge  
 Glaucous Sedge  
 Hairy Sedge  
 Common Sedge  
 Carnation Sedge  
 Spiked Sedge  
 Carline Thistle  
 Black Knapweed  
 Greater Knapweed  
 Common Centaury  
 Dwarf Thistle  
 Woolly Thistle  
 Basil-thyme  
 Wild Basil  
 Pignut  
 Common Spotted Orchid  
 Early Marsh Orchid  
 Heath Grass  
 Common Spike-rush

### Calcareous Grassland

Aceras anthropophorum\*  
  
 Agrimonia eupatoria  
  
 Anacamptis pyramidalis\*  
 Anthyllis vulneraria\*  
 Asperula cynanchica\*  
     Astragalus danicus\*  
 Blackstonia perfoliata\*  
 Brachypodium pinnatum\*  
 Briza media\*  
 Bromopsis erecta\*  
  
 Bunium bulbocastanum\*  
  
 Campanula glomerata\*  
 Campanula rotundifolia\*  
  
 Carex caryophyllea\*  
  
 Carex ericetorum\*  
 Carex flacca\*  
  
 Carlina vulgaris\*  
 Centaurea nigra  
 Centaurea scabiosa\*  
 Centaurium erythraea  
 Cirsium acaule\*  
 Cirsium eriophorum\*  
 Clinopodium acinos\*  
 Clinopodium vulgare\*  
  
 Dactylorhiza fuchsii\*

APPENDIX 1 CONTINUED

**Neutral Grassland**

Euphrasia nemorosa\*  
  
Filipendula vulgaris\*  
Fritillaria meleagris\*  
Galium uliginosum\*  
Galium verum  
Genista tinctoria\*  
  
Geranium pratense  
  
Helictotrichon pratense\*  
Helictotrichon pubescens\*  
  
Hordeum secalinum  
  
Hypericum tetrapterum  
  
Juncus compressus  
Knautia arvensis\*  
Koeleria macrantha\*  
Lathyrus nissolia\*  
Lathyrus pratensis  
Leontodon hispidus\*  
Leontodon saxatilis\*  
Leucanthemum vulgare  
Linum catharticum\*  
  
Lotus corniculatus  
Luzula campestris  
Lychnis flos-cuculi\*  
Lysimachia nummularia  
Oenanthe fistulosa\*  
Oenanthe lachenalii\*  
Oenanthe silaifolia\*  
  
Ononis repens\*  
Ononis spinosa\*  
Ophioglossum vulgatum\*  
Orchis morio\*

Eyebright  
Chalk Eyebright  
Sheep's Fescue  
Dropwort  
Fritillary  
Fen Bedstraw  
Lady's Bedstraw  
Dyer's Greenweed  
Autumn Gentian  
Meadow Crane's-bill  
Fragrant Orchid  
Common Rock-rose  
Meadow Oat-grass  
Downy Oat-grass  
Lizard Orchid  
Horseshoe Vetch  
Meadow Barley  
Perforate St.John's-wort  
Square-stemmed St.  
John's-wort  
Spotted Cat's-ear  
Ploughman's-spikenard  
Round-fruited Rush  
Field Scabious  
Crested Hair-grass  
Grass Vetchling  
Meadow Vetchling  
Rough Hawkbit  
Lesser Hawkbit  
Oxeye Daisy  
Fairy Flax  
Perennial Flax  
Bird's-foot-trefoil  
Field Woodrush  
Ragged-Robin  
Creeping-Jenny  
Tubular Water-dropwort  
Parsley Water-dropwort  
Narrow-leaved  
Water-dropwort  
Sainfoin  
Common Restharrow  
Spiny Restharrow  
Adder's-tongue Fern  
Green-winged Orchid

**Calcareous Grassland**

Euphrasia nemorosa\*  
Euphrasia pseudokernerii\*  
Festuca ovina\*  
Filipendula vulgaris\*  
  
Galium verum  
Genista tinctoria\*  
Gentianella amarella\*  
  
Gymnadenia conopsea\*  
Helianthemum nummularium\*  
Helictotrichon pratense\*  
Helictotrichon pubescens\*  
Himantoglossum hircinum\*  
Hippocrepis comosa\*  
  
Hypericum perforatum  
  
Hypochaeris maculata\*  
Inula conyzae\*  
  
Knautia arvensis\*  
Koeleria macrantha\*  
  
Leontodon hispidus\*  
Leontodon saxatilis\*  
Leucanthemum vulgare  
Linum catharticum\*  
Linum perenne\*  
Lotus corniculatus  
  
Onobrychis viciifolia\*  
Ononis repens\*  
Ononis spinosa\*

