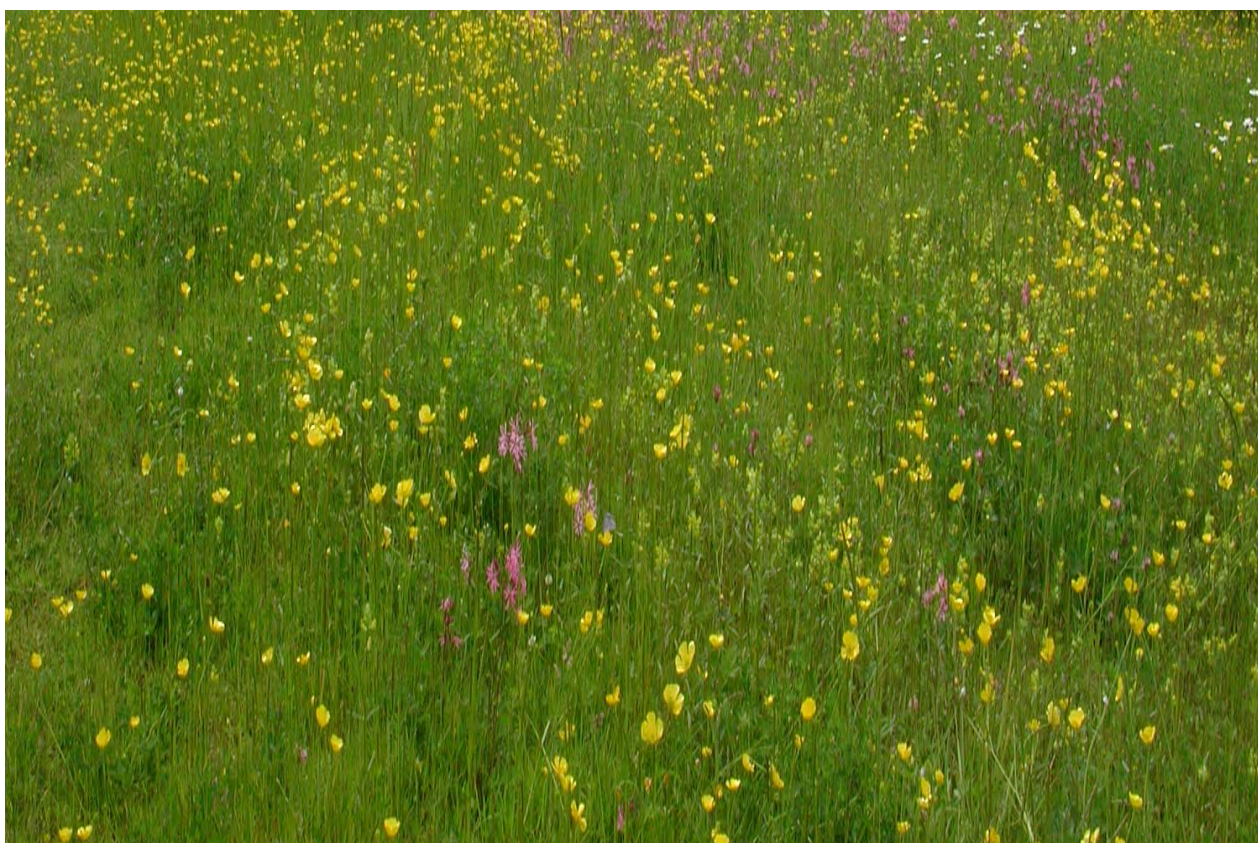


**LOWLAND DERBYSHIRE
LOCAL BIODIVERSITY ACTION PLAN**

GRASSLAND HABITATS IN LOWLAND DERBYSHIRE



Prepared by the Lowland Derbyshire Biodiversity Partnership



Last updated August 2005

**This document provides the background information for the Semi-Natural Grasslands
Habitat Action Plan**

Grassland Habitats in Lowland Derbyshire

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1.Introduction

1.1 Definition of semi-natural grassland

Semi-natural grasslands are plant communities where the vegetation consists of a mixture of native grasses, wild flowers, sedges and mosses. The species composition has not been substantially modified by cultivation or regular use of fertilisers or herbicides. These grasslands are kept open by the activities of grazing animals usually domestic livestock, but often complemented by wild herbivores such as deer and rabbits. More rarely fire can play a role in maintaining grassland vegetation. Grasslands tend to vary in height from a few centimetres to a metre or so depending upon the local physical conditions and the timing and intensity of grazing. Lowland semi-natural grasslands are generally enclosed meadow or pasture land occurring at altitudes of less than 300m in the UK. Today meadows and pastures are best viewed as semi-natural¹. They have developed in close association with pastoral farming practices which began in north-western Europe 6000 years ago. However, they have their origins in the natural grasslands of tundra, mountains, coastlines and woodlands that would have existed after the last ice age and been maintained by a combination of wild grazing animals, fire and harsh environmental conditions.

1.2 Grassland habitats in the European and UK biodiversity context

Semi-natural grasslands rich in wild flowers, comprising both grazed pastures and hay meadows, have historically dominated much of the farming landscape in north-west Europe. These grasslands, close to farms and settlements, were traditionally managed with extensive low input livestock and mixed farming systems that favoured the maintenance of diverse grasslands.

Pastures are typically grazed at various times through the year, the vegetation is often kept quite short and taller plants often found in meadows are absent. Species able to thrive and dominate the sward include various grasses and rosette or creeping herbs as well as small blue-green sedges. The choice of grazing animal affects plant composition of the sward, in the different characteristic heights of grazing and the selection of preferred species. Plants have different degrees of tolerance of repeated defoliation. Light, mixed grazing, (cattle and sheep) produces a variety of sward height, allowing some plants to flower and set seed, whilst most other plants spread vegetatively, by roots and runners. Very heavy grazing will damage or eliminate plants by overgrazing and trampling.

Management of hay meadows allows plants to grow tall, flower and set seed before cutting. Shorter plants of grazed pasture are less frequent in hay meadows. The process of making hay helps to ripen and release seed. Shedding of seed is essential for plants such as the annual yellow-rattle, which must grow from seed each year. After mowing, when re-growth is adequate, the hay meadow is grazed.

Hay meadow species including late summer invertebrates like bees and hoverflies, mammals such as the brown hare, birds such as skylark, grey partridge and tree sparrow, barn owls which need diverse grasslands for hunting prey and fungi like the pink waxcap are all dependent on unimproved grassland; all are key aspects of biodiversity. These species have all been adversely affected by the change from flower rich hay meadows to species poor 'improved' meadows cut for silage.

1.3 Landscape Character Assessment

The Countryside Commission (now Countryside Agency) in partnership with English Nature has produced the 'Map of England', a map that depicts the natural and cultural dimensions of the landscape. At the national scale this work has defined English Nature's Natural Areas and the Countryside Agency's 181 Landscape Character Areas.

There are ten national Landscape Character Areas within Derbyshire. Derbyshire County Council has undertaken a detailed landscape character assessment for the county outside the Peak District National Park, which has further subdivided these ten broad character areas into thirty nine distinct Landscape Character Types (LCT). These have subsequently been described in the 'Landscape Character of Derbyshire'².

As part of the assessment, the document has identified for each of the Landscape Character Types the habitats that naturally occur in these areas and the potential for protection and expansion of these habitats.

¹ The Lowland Management Grassland Handbook. Crofts A and Jefferson RG (Eds) English Nature/The Wildlife Trusts 1994.

Table 1 outlines appropriate semi-natural grassland habitats by Natural Area, Character Area and Landscape Character Type. This information can be used by a variety of interest groups including developers, planners, foresters and wildlife groups when considering the appropriateness of particular developments, planting and habitat creation schemes in a specific area.

Table 1 Semi-natural grassland habitats characteristic and appropriate within each Landscape Character Type

- P Primary habitat – prominent and key characteristic
S Secondary habitat – variable and local characteristic
L Locally significant, containing rare species

Natural area	Character Area	Landscape Character Type	Neutral grassland. Lowland meadows	Lowland calcareous grassland (including Magnesian limestone)	Lowland dry acid grassland
Derbyshire Peak Fringe and Lower Derwent	Derbyshire Peak Fringe and Lower Derwent	Enclosed Moorland	P		P
		Wooded Slopes and Valleys	P	L	S
		Wooded Farmlands	P		S
		Gritstone Heaths & Commons	P		P
		Settled Farmlands	P		
		Riverside Meadows	P		
Coal Measures	Notts, Derbyshire & Yorkshire Coalfield	Wooded Hills & Valleys	P		S
		Coalfield Village Farmlands	P		S
		Estate Farmlands	S		S
		Wooded Farmlands	P		S
		Coalfield Estatelands	P		
		Riverside Meadows	P		
		Plateau Estate Farmlands	S		S
Southern Magnesian Limestone	Southern Magnesian Limestone	Limestone Farmlands		P	
		Limestone Gorges	S	P	
Needwood & South Derbyshire Claylands	Needwood & South Derbyshire Claylands	Settled Farmlands	P		S
		Settled Plateau Farmlands	P		S
		Sandstone Slopes & Heaths			P
		Estate Farmlands	S		S
		Riverside Meadow	P		
Trent Valley and Rises	Trent Valley Washlands	Lowland Village Farmlands	P		
		Wet Pasture Meadows	P	S	
		Riverside Meadows	P		
Trent Valley and Rises	Melbourne Parklands	Estate Farmlands	S		P
		Wooded Estatelands	P		P
		Sandstone Slopes & Heaths			P
		Riverside Meadows	P		
Coal Measures	Leicestershire & Derbyshire Coalfield	Coalfield Village Farmlands	P		S
Trent Valley and Rises	Mease & Sence Lowlands	Village Estate Farmlands	P		
		Riverside Meadows	P		

1.4 Species associated with semi-natural grassland

There are many species associated with semi-natural grassland habitats, some of which are priority biodiversity action plan species. Appendix 1 lists priority and locally important species associated with grassland habitats.

1.5 The decline of semi-natural grassland

Between 1930 and 1984 semi-natural lowland grassland decreased by an estimated 97% in England and Wales². There are less than 15,000 ha of unimproved species-rich neutral grassland in the UK³. In Derbyshire it is estimated that there has been an 80 – 91% decline between 1984 and 1999⁴. Today most farmland grassland is species-poor, improved grassland - temporary (ley) or permanent grasslands resulting from ploughing and re-seeding, widespread use of inorganic fertilisers and slurry. Worming compounds adversely affect dung beetles and other species, which decompose dung. These grasslands are limited in terms of biodiversity. Where management has changed from hay making to silage, the crop must be consistent in quality to provide good winter fodder; therefore agriculturally improved grassland or re-seeded pasture containing only a few grasses like perennial rye-grass, Yorkshire fog and timothy with common herbs like dandelion, clover and buttercups are preferred. Early and frequent cuts reduce the value of grasslands for many species either through loss of shelter, breeding habitat or food sources. Ground nesting birds, for example, do not have sufficient time to breed successfully before the grass is cut.

² Fuller, R.M., 1987. The changing extent and conservation interest of lowland grasslands in England and Wales: a review of grassland surveys 1930 – 1984. *Biological Conservation* 40: 281 – 300.

³ Jefferson R.G & Robertson, H.J. 1996. Lowland Grassland. Wildlife value and conservation status. Lowlands Team. English Nature Research Reports No. 169.

⁴ Derbyshire Wildlife Trust. 2001. Changes in the extent of semi-natural grassland in lowland Derbyshire between 1983 and 1999 and recommendations for future conservation action.

2. Semi-natural grassland types in Lowland Derbyshire

Underlying geology has an important influence on the location of semi-natural grassland types.

Table 2: The national priority habitats occurring in the Lowland Derbyshire LBAP area.

National broad habitat type	National Priority Habitat (for which national HAPs prepared)	National Priority Habitats occurring in Lowland Derbyshire	Lowland Derbyshire HAP
Neutral grassland	Lowland Meadows	Lowland Meadows	Semi-natural grasslands HAP
Calcareous grassland	Lowland Calcareous grassland	Lowland Calcareous grassland	
Acid grassland	Lowland dry acid grassland	Lowland dry acid grassland	

The Lowland Derbyshire Habitat Action Plan for Semi-natural Grasslands covers all three national Priority Habitats, (Table 2 and 3) though it identifies targets for each Priority Habitat. The uniting factors enabling grouping these habitats together in one plan are that all three grassland types:

- are Priority Habitats
- are essentially reliant on maintenance through farming practices;
- are essentially grasslands that are not classed as floodplain grasslands
- will have very similar objectives and actions.

Grassland occurs elsewhere as a major component of other habitats, including in the national broad habitat types of Improved Grassland, Fen, Marsh and swamp. Some of these include national priority habitats. Revised HAPs may be produced for them at a later date.

Table 3: Derbyshire Lowland BAP Grassland types – definitions

National Broad Habitat types and Priority Habitats	Definition	Lowland Derbyshire HAP	National Vegetation Classifications occurring in Lowland Derbyshire
Neutral grassland Lowland Meadows & Floodplain grazing marsh	On soils neither too acid nor alkaline or on limestone & gritstone if sufficient depth of soil to mask chemical character of underlying rock.	Semi-natural grassland	MG4, MG5, MG8 MG 6,7,9-13 *
Calcareous grassland Lowland Calcareous grassland (includes magnesian limestone grasslands)	Developed on basic soils; may contain a percentage of bare soil and rock and an open sward.		CG2, CG3, CG4, CG5 GC7
Acid grassland Lowland dry acid grassland	On acidic soils with pH lower than 5.5 and on areas where leaching creates acid conditions.		U1, U2, U4

* in certain sites MG6 and 9 may be of importance where they still contain elements of national priority communities – they may be managed to revert to national priority habitats and should be a priority for such management.

2.1 Extent of semi-natural grassland in Lowland Derbyshire

Derbyshire Wildlife Trust's audit of semi-natural grassland in Lowland Derbyshire (1997-2003), estimates that in 2003 the area of semi-natural grasslands in Lowland Derbyshire was 1746 ha. within a survey area of 152318ha; thus this

habitat now covers only 1.14% of the land area. Figure 1 shows the distribution of semi-natural grassland in Lowland Derbyshire.

Table 4 The extent of semi-natural grassland in Lowland Derbyshire's Natural Areas

Natural Area	Estimated area within survey area (ha)	Area of semi-natural grassland (ha)	No of sites	% of NA covered by semi-natural grassland.	% of remaining grassland resource located in NA
Derbyshire Peak Fringe and Lower Derwent	37650	1083.5	374	2.87	62.05
Coal Measures	45,444	398	126	0.87	22.80
Southern Magnesian Limestone	9744	97	31	0.99	5.55
Needwood and South Derbyshire Claylands	32330	88.1	52	0.27	5.04
Potteries and Churnet Valley	580	3.1	2	0.53	0.17
Trent Valley and Rises	26570	76.3	29	0.28	4.37
Totals	152318	1746	614	1.14%	

Lowland Derbyshire still retains a grassland assemblage important in regional terms⁵ and probably in England. It has a wide variety of types of semi-natural grassland but the extent of all types has declined rapidly in recent years with changes in farming practices.

Throughout Lowland Derbyshire semi-natural grasslands of different types can occur in close proximity to one another, whatever the underlying substrate; major influences being the position on a slope, the type of management, aspect and altitude. Semi-natural grasslands may also grade very quickly into wetter grassland and mire habitats, where rushes are often characteristic.

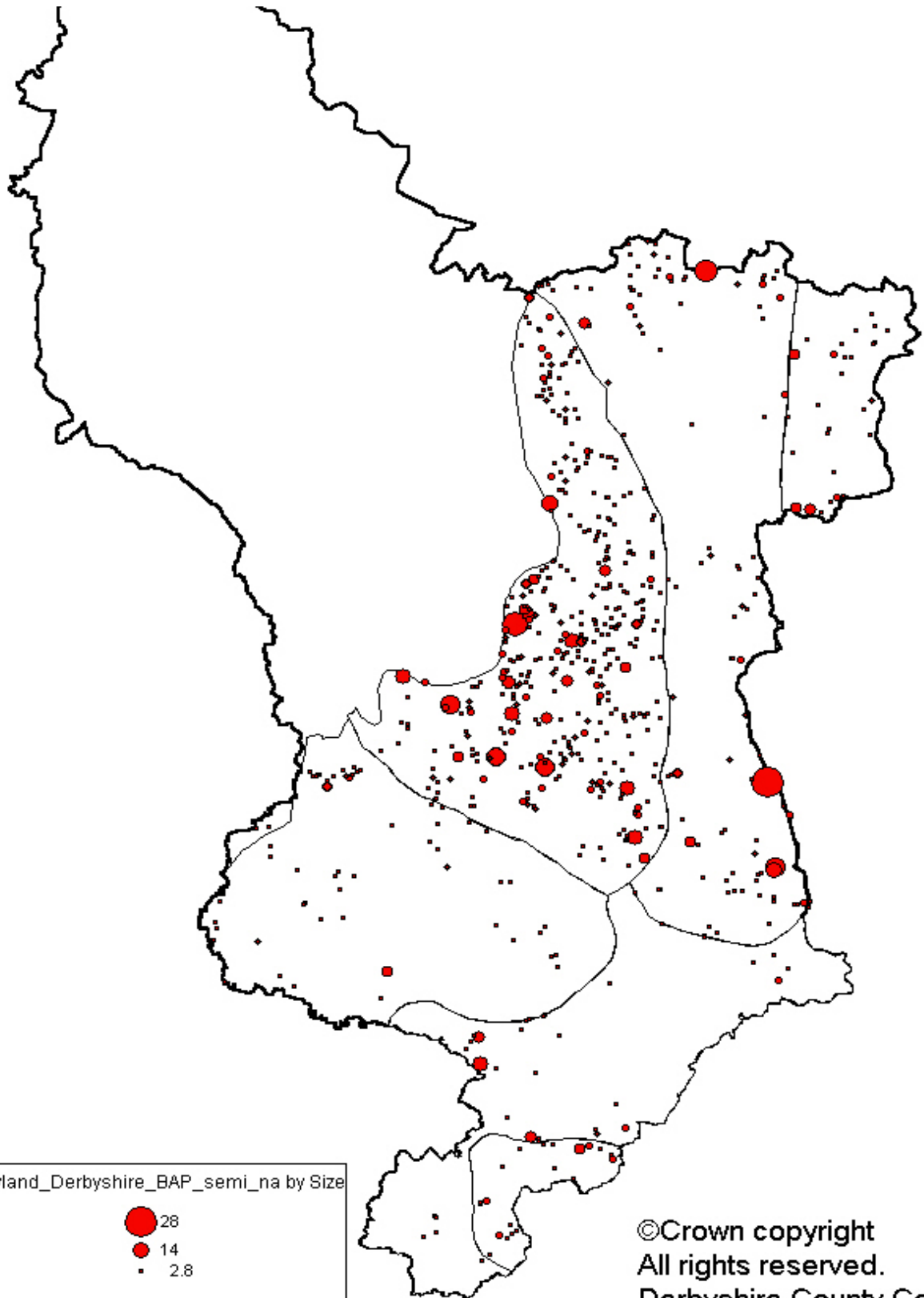
2.2 Distribution of semi-natural grassland in Lowland Derbyshire

Very few extensive areas of semi-natural grassland remain, the rest are small, often isolated remnants, such as:

- where access is difficult or where improvement would be uneconomic, e.g. on wet ground and on steep slopes (even small banks in otherwise improved fields may retain a diverse flora although fertiliser drift may eventually affect them); a few sloping grasslands are of considerable size, but most are small.
- Within farms still managed along traditional lines.
- small fields severed by railway lines, rivers, canals or roads or in predominantly urban areas may escape improvement, although the threat of development or grazing by horses is always present, as is isolation from the agricultural system.
- brown field sites where more recent semi-natural communities have developed.
- churchyards, enclosed from species-rich fields centuries ago, contain excellent examples of unimproved grasslands but inappropriate management tends to a reduction in species. They often become rough grassland.
- a few greens and commons that occur but are often poorly managed.
- roadside verges, which are also poorly managed.
- On the calcareous outliers around Ashover and Crich tiny areas of callaminarian grasslands still exist.

Figure 1: The thematic distribution of semi-natural grassland sites by size (ha) within the natural areas included within the Lowland Derbyshire BAP. (Source DWT, 2004)

⁵ East Midlands Regional Biodiversity Forum



Lowland_Derbyshire_BAP_semi_na by Size

- 28
- 14
- 2.8

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3. Neutral grasslands in Lowland Derbyshire

Traditionally managed as hay meadows or pastures, neutral grasslands, especially areas undisturbed for long periods, contain a high proportion of broad-leaved flowering species relative to grasses. Characteristically these grasslands are composed of the grasses crested dog's-tail, red fescue, Yorkshire fog, yellow oat grass, meadow foxtail, sweet vernal grass and creeping bent. Distinctive and frequently encountered herbs include common knapweed, oxeye daisy, cat's-ear, meadow vetchling and bird's-foot-trefoil (MG5a National Vegetation Classification sub-community type). Where neutral grasslands overlie calcium enriched soils species like lady's bedstraw, salad burnet and quaking grass may occur (MG5b). Over calcium deficient more acidic soils heath grass, devil's-bit scabious, tormentil, betony and bitter vetch are to be found (MG5c). There is therefore a degree of overlap both with acid and calcareous grassland types. On deeper soils growth can be quite luxuriant with many herbs prominent. Typically lowland Derbyshire's neutral grasslands contain many species of rare or local occurrence including greater butterfly orchid, adder's tongue fern, pepper saxifrage, water avens, cowslip, sneezewort, meadow barley, twayblade and lesser hawkbit. In valley bottoms and wet north facing slopes where soils are still relatively neutral a number of rarer grassland communities may occur. The MG4 community is characterised by great burnet, meadowsweet, autumn hawkbit and meadow foxtail whilst the MG8 community has ragged robin, marsh marigold, lady's mantle, marsh bedstraw and a variety of sedges.

Neutral grasslands are estimated to comprise 54% of the remaining semi-natural grassland resource. Unimproved neutral grassland covers an estimated 250ha, located mainly in Derbyshire Peak Fringe and Lower Derwent and the Coal Measures Natural areas. In addition there are 695ha of species rich semi-improved neutral grasslands that retain sufficient floristic diversity to be of nature conservation value. Together these grassland types represent an important regional resource.

Some neutral grassland was previously cultivated, as ridge and furrow remnants indicate, but may have remained as pasture for several centuries. Modern ploughing has removed much ridge and furrow in the past thirty years.

In Lowland Derbyshire many neutral grasslands are semi-improved, but still retain many plant species indicative of more unimproved grasslands. They remain of high value and importance as they have the potential for enhancement and act as reservoirs for genetic diversity and potentially facilitate the colonisation of adjacent countryside.

3.1 Distribution of neutral semi-natural grassland in Lowland Derbyshire

The distribution of neutral semi-natural grasslands between the five Natural Areas in Lowland Derbyshire is shown in Table 4:

Needwood and South Derbyshire Claylands

Permanent pasture occupies much of this area but due to agricultural improvement very little is 'semi-natural'. The remaining sites are scattered and small, and have often survived due to sympathetic management regimes or on steep slopes and within inaccessible areas. There are few concentrations, but several sites occur near Ashbourne and others near Brailsford, Kirk Langley and Rodsley. There are several churchyards which retain species-rich grassland, and one or two commons and greens e.g. at Ashbourne Green.

There are areas of ridge and furrow, especially around Ashbourne, though these have declined recently. A feature of this Natural Area are the isolated hay meadows on small traditional family farms; farmers value the high herb content and hay in seasons when silage yields are poor. In some locations there are mosaics of grasslands, some managed as hay meadows, with yellow rattle in abundance, and others as pasture, with uncommon species such as bumet saxifrage and great bumet.

Derby, in the east of the Natural Area, contains small areas divorced from agriculture and threatened by grazing by horses and development. There are also small areas on canal banks, allotments, cemeteries and derelict land. Disused railway lines, such as Friargate and Mickleover railway cutting, have developed areas of neutral grassland. Markeaton and Allestree Park contain areas where agricultural land has been incorporated, but appropriate management is needed to retain the interest. One of the best areas of grassland in the City is within Allestree Park and has recently had adders tongue fern, moonwort and a number of different waxcaps recorded there.

Derbyshire Peak Fringe and Lower Derwent

The Derbyshire Peak Fringe supports over 60% of the remaining semi-natural grassland in lowland Derbyshire. The varied topography and geology of the area together with a moister and cooler climate promotes a more intimate landscape with typically smaller farms and fields. Neutral grassland is well represented occurring in valley bottoms, and

across plateaus or where deeper soils are present. Both hay meadows and pastures are present and in places relatively large sites still exist e.g. west of Carsington, south of Wirksworth, Brackenfield, South Wingfield and near Ambergate.

Even though many of these grasslands are semi-improved they still retain botanical diversity and they provide an important area for potential enrichment/enhancement and provide a variety of opportunities for colonisation. Neutral grassland often occurs in a mosaic with acid and calcareous grasslands and mire communities and hence can be both dry and wet.

Southern Magnesian Limestone

The deeper soils of the plateau are all improved for arable production, only in the grips and on areas such as railways embankments and derelict land where deeper soils have not masked the underlying rocks, can tiny areas of semi-natural grasslands be found.

Coal Measures

In this area of intensive agriculture and extensive opencast coal extraction, most species-rich grassland occurs only as remnants in areas which are difficult to access.

There are a number of urban fringe fields which are semi-natural but subject to mismanagement, neglect or development. Along the Erewash and Nutbrook canals some semi-natural fields have become isolated and dry and wet grasslands combine in important mosaics.

In the north of the Natural Area the best semi-natural herb-rich fields are near Eckington in the Moss Valley and Renishaw bordering the River Rother. At Bolsover there is semi-natural grassland around the Castle, just inside the Natural Area, although it is fairly calcareous.

Trent Valley and Rises

There are very small areas on the south side of the River Trent along lanes, and on steep scarps and on the north of the Trent near Twyford with remnants of semi-natural grassland along the river, where flooding discouraged improvement until recently.

Large areas in the valley have been lost to gravel workings, horticulture and to housing, with the largest remaining area north of the Trent lost to and fragmented by recent road construction.

There are areas on disused railway lines and canal towpaths but these have been affected by recreational development and lack of recent management. The few remaining fields are adjacent to areas of arable and are very isolated.

4. Calcareous grasslands in Lowland Derbyshire (including Magnesian Limestone grasslands)

Semi-natural calcareous grassland is species-rich both for plants and animals, especially invertebrates. Calcareous grasslands are threatened by poor management on many sites often due to the small isolated nature of the sites. Typically calcareous grasslands are characterised by a diversity of grasses including sheep's fescue, tor grass, upright brome, meadow oat grass and quaking grass. Associated herbs include, common rock-rose, wild thyme, lady's bedstraw, quaking grass, greater knapweed, fairy flax, cowslip, hoary plantain and salad burnet. These are typical of the shallow soils, often with bare soil/rock interspersed. These grasslands are covered by the NVC communities CG2 CG3, CG4 and CG5.

The resource is tiny, only 52.55ha, located mainly within the Southern Magnesian Limestone Natural Area. It represents an important regional resource. In addition there are 17.87 ha of semi-improved calcareous grasslands. There are an estimated 25 – 30 sites supporting these calcareous grasslands.

Calcareous grassland is an important habitat because of the wide range of plant and animal species which it supports, although increasing isolation and fragmentation works towards a reduction in species diversity. Some species require bare earth for germination and some of the invertebrates need mosaics of open ground and short turf.

4.1 Distribution of semi-natural calcareous grassland in Lowland Derbyshire

The distribution of calcareous semi-natural grasslands between the five **Natural Areas in Lowland Derbyshire** is shown in Table 4.

Needwood and South Derbyshire Claylands

The only areas of calcareous grassland are small remnants surviving on areas of downwash or glacial drift to the south of the Peak District. Most have been improved as surrounding grasslands have been altered and their specific species lost.

Derbyshire Peak Fringe and Lower Derwent

There are some similar downwash areas, but the inliers at Crich and Ashover are the main location. At Crich, some of the most species rich fields in this Natural Area remain around the village. There are also remnants surviving within the Tramway Museum and around Crich Quarry.

Southern Magnesian Limestone

The majority of calcareous grasslands in Lowland Derbyshire are in the Magnesian Limestone Natural Area. The landscape is characterised by plateaux intersected with steep sided valleys ('grips'). The deeper soils of the plateau have all been converted to arable production. There is extremely little grassland left on farmland and most is improved or of very low species diversity.

Much of the remaining species-rich grassland is in small areas in the grips, at field edges, within the large woodlands, beside railway lines, (used and disused), or in roadside verges, on coal mine tips and in quarries. Some of the most diverse grassland occurs on edges of towns and villages, sometimes associated with other features such as railways, for example at Clowne and at Pleasley. There are also small remnants in Pleasley Vale on both sides of the River Meden.

Most remnants are inaccessible, sites where management is impossible or inappropriate. Further losses continue to occur as grassland reverts to scrub as a result of a lack of cutting or grazing. Even where scrub control is undertaken on nature reserves it does not replicate the effect of grazing and changes in species content and losses inevitably happen.

Magnesian Limestone grassland in Derbyshire is important for a number of species including yellow-wort (notable because in Derbyshire it occurs almost exclusively on the Magnesian Limestone and not on the Carboniferous limestone), bee orchid, fly orchid, dropwort, soft-leaved sedge and rare spring sedge. Rare and/or declining invertebrates such as the short-haired bumblebee, *Chrysolina violacea* (a leaf beetle), *Amara lucida* (a ground beetle) and dingy skipper are all associated with limestone grassland in the Southern Magnesian Limestone Natural Area.

Coal Measures

As with other Natural Areas there are small pockets developed on railway lines where imported limestone ballast has brought the necessary seeds for its establishment.

Trent Valley and Rises

There is a Carboniferous limestone outlier at Ticknall. Calcareous grassland developed on ballast on the disused railway line and embankment near King's Newton but poor management has resulted in the loss of the species-rich habitat.

5. Lowland dry acid grasslands in Lowland Derbyshire

Semi-natural acid grassland develops mainly on acidic soils with a pH of 5 or lower but may develop on areas where leaching has created acid conditions. Though species-poor compared to other semi-natural grasslands, it contains important communities with species that are rare and characteristic. Acid grasslands are transitional to other grassland types (neutral and calcareous) as well as other vegetation communities such as mires and lowland and upland heathland.

Derbyshire's lowland acid grasslands usually comprise the grasses sheep's fescue, common bent and wavy hair grass although mat grass is sometimes present. The more acidic sites can be quite poor with sheep's sorrel, heath bedstraw, tormentil, hawkbit and mouse-ear hawkweed amongst the commoner herbaceous associates. But richer sites can support a diverse range of species including heath milkwort, heath speedwell, violets, smooth hawk's-beard, common spotted orchid, pill sedge, devil's-bit scabious, field scabious, common restharrow, dyer's greenweed, burnet-saxifrage and common bird's-foot-trefoil. The grasslands resemble the NVC communities U1 *Festuca ovina* – *Agrostis capillaris* – *Rumex acetosella* grassland, U2 *Deschampsia flexuosa* grassland and U4 *Festuca ovina* – *Agrostis capillaris* – *Galium saxatile* grassland. Where acid grasslands are derived from former heathland or occur in association with heaths bilberry, heather and cross-leaved heath may occur. Where there has been limited agricultural improvement, Yorkshire fog, yarrow, white clover, meadow buttercup, daisy, and smooth-stalked meadow grass may occur.

Dry acid grasslands are estimated to comprise 40% of the remaining semi-natural grassland resource. Unimproved acid grassland covers an estimated 150ha, located almost exclusively in Derbyshire Peak Fringe and Lower Derwent and the Coal Measures Natural areas. In addition there are 558.77ha of semi-improved acid grasslands. The resource is scattered within an estimated 180 – 220 sites.

Though limited in plant species diversity, acid grassland is an important habitat because it supports other species, particularly ground nesting birds and invertebrates.

Remaining areas are located on steep valley sides and ridges and small parcels where agricultural improvement is uneconomic or difficult and locations such as road cuttings, where bedrock is not masked by more basic soil. In many cases without appropriate management it is progressing to scrub, especially gorse. In the Lowland Derbyshire LBAP there are some 'upland' areas, including those covered by Less Favoured Area status.

5.1 Distribution of dry acid grassland in Lowland Derbyshire

The distribution of acid semi-natural grasslands between the five *Natural Areas in Lowland Derbyshire* is shown in Table 4.

Needwood and South Derbyshire Claylands

The band of Permian sandstone in the centre of this Natural Area provides suitable conditions for acid grassland. As a result of large-scale disruption due to quarrying only small fragments remain and some of these are wet grassland or marsh as a result of soil compaction and a lack of drainage. A belt of sandstones run east of Ashbourne in the Henmore valley, supporting acid-neutral grasslands.

Derbyshire Peak Fringe and Lower Derwent

This Natural Area contains the majority of acid grassland within the Lowland Derbyshire Local BAP, most located in the west adjacent to the Peak District, on gritstone and shales, where dry grassland/heaths occur. However much of the grassland in the Natural Area has been improved.

There are some neutral to acid grasslands further south; particularly interesting are a series of acid grasslands/grass heaths which occur on ridges and high points west of Belper in a series of small fields but reverting through neglect to bracken/'gorse dominated grassland.

There is dry acid grassland in neglected fields on the east side of the Derwent valley and some acid grassland on pastures around Tansley.

There is some dry acid grassland mixed with mire on Wessington Green.

There is dry acid grassland at Mercaston Marsh and Muggington Bottoms and west of there to Brailsford Brook.

Southern Magnesian Limestone

This Natural Area has only a very few small patches of acid grassland, created as a result of impeded drainage and acid soil conditions around colliery spoils.

Coal Measures

There are small areas developed on spoil heaps and around old coal workings and examples around the river valleys.

Trent Valley and Rises

There are small areas of acid grassland on outcrops on the south side of the Trent Valley, but although the Natural Area has suitable substrate in the form of free draining gravels and sands, other factors including silt deposited during floods may mask the underlying geology.

In addition to the above there is a ridge of bunter sandstone in the coal measure series, which cuts across the various Natural Areas, between Breadsall Moor and Stoney Clouds. This ridge has a mixture of ancient woodlands interspersed with acidic grasslands with species such as lousewort, and heath bedstraw. This area is also known for its waxcap grasslands.

Appendix 1 Species for which semi-natural grassland is a key habitat in Lowland Derbyshire

Priority Species

Vascular Plants

Pennyroyal	<i>Mentha pulegium</i>
Red Hemp-nettle	<i>Galeopsis angustifolia</i>

Fungi

Pink waxcap	<i>Hygrocybe calyptriformis</i>
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Amphibians

Great Crested Newt	<i>Triturus cristatus</i>
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Birds

Grey Partridge	<i>Perdix perdix</i>
Skylark	<i>Alauda arvensis</i>
Tree Sparrow	<i>Passer montanus</i>

Mammals

Brown Hare	<i>Lepus europaeus</i>
Pipistrelle bat	<i>Pipistrellus pipistrellus</i>

Invertebrates

Moths

Argent and sable	<i>Rheumaptera hastata</i>
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Locally Important Species

An important feature of Local BAPs is the selection of locally important, threatened, declining or rare species which add local distinctiveness. Using Endangered Wildlife in Derbyshire (Elkington and Willmot 1996) and with the help of county recorders the following species have been selected for this category.

Reptiles

Slow worm	<i>Anguis fragilis</i>
Viviparous lizard	<i>Lacerta vivipara</i>
Grass snake	<i>Natrix natrix</i>
Adder	<i>Vipera berus</i>

Birds

Buzzard	<i>Buteo buteo</i>
Kestrel	<i>Falco tinnunculus</i>
Golden plover	<i>Pluvialis apricaria</i>
Lapwing	<i>Vanellus vanellus</i>
Snipe	<i>Gallinago gallinago</i>
Curlew	<i>Numenius arquata</i>
Redshank	<i>Tringa totanus</i>
Barn owl	<i>Tyto alba</i>
Meadow pipit	<i>Anthus pratensis</i>
Yellow wagtail	<i>Motacilla flava</i>
Whinchat	<i>Saxicola rubetra</i>
Stonechat	<i>Saxicola torquata</i>
Wheatear	<i>Oenanthe oenanthe</i>

Mammals

Serotine bat	<i>Eptesicus serotinus</i>
Brandt's bat	<i>Myotis brandtii</i>
Whiskered bat	<i>Myotis mystacinus</i>
Noctule	<i>Nyctalus noctula</i>
Brown long-eared bat	<i>Plecotus auritus</i>
Harvest mouse	<i>Micromys minutus</i>
Common shrew	<i>Sorex araneus</i>
Pygmy shrew	<i>Sorex minutus</i>
Badger	<i>Meles meles</i>

Invertebrates

Coleoptera – Beetles

Glow worm	<i>Lampyrus noctiluca</i>
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Diptera – Hoverflies

Cheilosia mutabilis
Cheilosia praecox
Triglyphus primus
Xylota florum

Hemiptera – Bugs

Magalonotus chiraga

Lepidoptera – Butterflies

Dark Green Fritillary	<i>Argynnis aglaja aglaja</i>
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Lepidoptera – Macro-moths

The Forester	<i>Adscita statices</i>
Six-belted clearwing	<i>Bembecia scopigera</i>
Grey scalloped bar	<i>Dyscia fagaria</i>

Mollusca – slugs and snails

Leiostylu anglica

Appendix 2 Derbyshire Red Data Book 2002 plant species relevant to Lowland Derbyshire grasslands

Conservation Status:

- Category 1 Nationally Rare or Scarce: National Conservation Status of some sort (as defined in our Plant Checklist 2002)
- Category 2 Locally Rare: no national status, but is present in three 1km squares, of fewer across the county;
- Category 3 Locally Scarce: no national conservation status, but is present in four to ten 1km squares.

English name	Scientific name	RDB Category	Comments
Rare Spring sedge	<i>Carex ericetorum</i>	1 (National Status)	1 tetrad record in the Southern Magnesian Limestone Natural Area
Soft-leaved sedge	<i>Carex montana</i>	1 (National Status)	1 tetrad record in the Southern Magnesian Limestone Natural Area
Red hemp nettle	<i>Galeopsis angustifolia</i>	1 (National Status)	Pre 1987 records from the Coal Measures and the Southern Magnesian Limestone Natural areas
Spring sandwort	<i>Minuartia verna</i>	1 (National Status)	Records from the Derbyshire Peak Fringe and Lower Derwent and pre 1987 records from the Needwood and South Derbyshire Clayland natural area.
Burnt Orchid	<i>Orchis ustulata</i>	1 (National Status)	One pre 1987 record from the Southern magnesian Limestone Natural area and scattered location from the border between the Peak District and Lowland Derbyshire LBAP areas.
Jacob's-ladder	<i>Polemonium caeruleum</i>	1 (National Status)	Present in all Natural areas but probably planted and recorded as 'Casual'.
Spring sandwort	<i>Potentilla neumanniana</i>	1 (National Status)	One record from the Needwood and South Derbyshire Claylands and one pre 1987 record from the Southern Magnesian limestone Natural Area.
Chamomile	<i>Chamaemelum nobile</i>	1 (National Status)	Records from the Coal Measures Natural Area.
Prickly sedge	<i>Carex muricata</i>	2	Records from the Trent and Valley Rises and pre 1987 records from the Needwood and South Derbyshire Claylands and Derbyshire Peak Fringe and Lower Derwent Natural Areas.
Meadow saffron	<i>Colchicum autumnale</i>	2	Pre 1987 records from Derbyshire Peak Fringe and Lower Derwent and Needwood and south Derbyshire Claylands Natural Areas.
Hound's tongue	<i>Cynoglossum officinale</i>	2	One record from the Trent Valley Rises and pre 1987 records from the southern Magnesian Limestone Natural Area
Early marsh orchid	<i>Dactylorhiza incarnata</i>	2	One record from the border of the trent and valley rises and Needwood and south Derbyshire Claylands natural Area
An eyebright	<i>Euphrasia anglica</i>	2	Pre 1987 records from the Southern Magnesian Limestone and Needwood

			and South Derbyshire Natural Areas.
Heath cudweed	<i>Gnaphalium sylvaticum</i>	2	Old records from Derbyshire Peak Fringe and Lower Derwent, Needwood and South Derbyshire Claylands and Trent valley Rises Natural Areas
Grass vetchling	<i>Lathyrus nissolia</i>	2	One record from the Coal Measures and one pre 1987 record from the Derbyshire Peak Fringe and Lower Derwent and one unconfirmed record from the Trent and valley rises.
Green-winged orchid	<i>Orchis morio</i>	2	Pre 1987 records from the Derbyshire Peak Fringe, Coal Measures, Trent and Valley Rises, and Needwood and South Derbyshire Claylands Natural Areas.
Common broomrape	<i>Orobanche minor</i>	2	Records from the Trent valley Rises and Needwood and south Derbyshire Claylands and pre 1987 records from the Coal Measures.
Subterranean clover	<i>Trifolium subterraneum</i>	2	Records from the Trent valley rises Natural Area.
Leer's sedge	<i>Carex divulsa ssp. leersii</i>	3	Records from the Derbyshire Peak Fringe and pre 1987 records from the Southern magnesian Limestone Natural Area.
An eyebright	<i>Euphrasia nemorosa</i>	3	Records from the Southern magnesian Limestone, Derbyshire Peak Fringe and Needwood and south Derbyshire Claylands.
Sheep's-bit	<i>Jasione montana</i>	3	Records from the Coal measures and Derbyshire Peak Fringe Natural Areas.
Hoary cinquefoil	<i>Potentilla argentea</i>	3	Records from the Need wood and South Derbyshire Claylands and pre 1987 records from the Coal Measures and Derbyshire Peak Fringe Natural Areas.
Slender trefoil	<i>Trifolium micranthum</i>	3	Records from Trent valley Rises and pre 1987 records from the Needwood and south Derbyshire Claylands Natural area.

A weakness of the 2002 RDB revised plant list is that it only identifies species extant within the county since 1987. Some species (eg *Orobanche purpurea* and *Chamaemelum nobile*) were not included because they had not been seen anywhere in the county since that time. For completeness this is an exercise that we ought to undertake, and I'm not suggesting that we should remove such taxa from our HAP species list, providing they are, or have been, native in the county.

Notes:

- *Aceras anthropophorum* is now regarded as having been planted in Derbyshire, and is extinct, so probably should not be on our list at all.
- *Phyteuma spicata* is regarded as long established at one site, where it was regarded as having been planted. It has not been recorded since 1975.