

## Botanical indicator species to aid the selection of grassland Local Wildlife Sites

### Introduction

The species selected as indicators are all associated with good quality grassland within the Sheffield Local Planning Authority Boundary (SLPAB).

Species have been excluded from the list if they:

- occur too widely to be useful as indicators;
- occur too rarely to be useful as indicators (i.e. they have been recorded on just one or two sites within the SLPAB);
- are not known to occur on any sites within the SLPAB;
- occur within the Peak District National Park, but not within the SLPAB.

The selection process involved consultation with local ecologists and reference sources such as 'A Flora of the Sheffield Area' (Sorby Natural History Society, 1988), 'The South Yorkshire Plant Atlas' (YNU & YHEDT, 2011) and the RECORDER database at Sheffield Biological Records Centre.

### Local Red Data Book species

Appendix 3 of the Sheffield Nature Conservation Strategy contains a list of Local Red Data Book plants, many of which are associated with grassland. They have not all been included in the list of indicators because some of them are very scarce (or even absent) within the SLPAB. However, the presence of Local Red Data Book species (plants or animals) is taken into account elsewhere in the LWS selection process.

### Key to indicator colour codes

Species highlighted in pink are “**positive**” indicators.

Species highlighted in green are “**strong positive**” indicators.

### Key to soil codes

**A** = acidic soil; **C** = calcareous soil; **N** = neutral soil; **W** = wet or damp soil; **U** = urban; **R** = occurs across a range of soil types.

### Using the indicators

An area of acid grassland will be considered for selection if:

- it covers an area of at least **0.25** hectares (or is more than **50** metres in length if is a linear feature) and
- it holds a total of **8** or more indicator species, including at least **4** **strong positive indicators** (figures to be confirmed after testing).

An area of neutral/calcareous/mixed grassland will be considered for selection if:

- it covers an area of at least **0.25** hectares (or is more than **50** metres in length if is a linear feature) and
- it holds a total of **10** or more indicator species, including at least **5** **strong positive indicators** (figures to be confirmed after testing).

## **Acid grassland**

Within the Sheffield Local Planning Authority Boundary (SLPAB), acid grassland typically occurs:

- in upland pastures, mostly located to the west and north-west of the built-up zone;
- on steep slopes (e.g. valley sides) where the soil has been leached of nutrients;
- on urban and/or post-industrial sites where human activities (e.g. mining or vehicle erosion) have led to soil impoverishment and acidification.

Acid grassland does not generally hold as broad a range of vascular plants as neutral or calcareous grassland. For this reason the threshold for indicators is lower than that for neutral grassland.

The diversity of plants (and other organisms) within acid grassland is often increased by the presence of microhabitats such as:

- areas of impeded drainage, flushes, springs and ditches;
- boulders, scree and rubble (e.g. from collapsed dry stone walls).

Acid grassland sometimes occurs as a mosaic with dwarf shrubs (principally *Calluna vulgaris*). The relative proportion of each mosaic component varies. If ericaceous shrubs cover more than 25% of the ground, the habitat should be classed as heathland (JNCC, 1990).

## **Neutral grassland**

Within the SLPAB, neutral grassland occurs typically occurs:

- in lowland pastures and meadows, mostly located to the south and south-east of the built-up zone;
- in valley bottoms, often on alluvial soils.

The soils on which neutral grassland develops are generally deeper and more fertile than those that underlie acid grassland. This makes them more suitable for cultivation, so many areas of species-rich neutral grassland have been destroyed by ploughing and/or agricultural improvement.

## **Calcareous grassland**

The lack of limestone or chalk in the underlying strata means that there are no extensive areas of “natural” calcareous grassland within the SLPAB. However small areas of calcareous grassland do occur where the substrate has been modified by human activities. Examples include:

- where excavations (e.g. for pipelines) have been back-filled with crushed limestone;
- where the natural substrate is obscured by demolition rubble containing a high proportion of concrete and/or lime mortar;
- where crushed limestone has been used for as track ballast.

## Urban grassland

In this document, the term “urban” is used to describe grassland on soils that have been heavily influenced by human activities, such as mining, tipping, demolition, etc. Due to changes in soil pH, urban grassland may share some of the characteristics of acid and/or calcareous grassland (see notes above). The underlying soil may also be compacted and poorly drained, supporting species associated with wet grassland.

A distinctive feature of urban grassland is the presence of non-native species, such as Michaelmas daisy (*Aster* spp.) and fox-and-cubs (*Pilosella aurantiaca*). Such species have a strong visual appeal and may be important sources of nectar for bees, butterflies and other insects.

## Mixed grassland

There have been dramatic changes in land-use on Sheffield’s urban fringe over the past century or so. Some sites have gone from agriculture to industry to amenity use. As result, they now have an unusual mixture of ecological characteristics.

The fields in the Shire Brook Valley provide good examples of mixed grassland. In the 20th century, the field known today as Sally Clark’s Meadow was subject to grazing, hay-cropping and small-scale opencast mining. On this one site it is therefore possible to find indicators associated with several different types of grassland.

## Newly-created grassland

A few of the selected indicators occur frequently in newly-created grasslands, but are scarce in long-established grasslands within the SLPAB. Examples include cowslip (*Primula veris*) and wild carrot (*Daucus carota* subsp. *carota*). Time will tell whether such species will persist as long term features of these new grasslands.

It may be appropriate to grant newly-created grasslands “candidate status”, then review their status once the species content has stabilised.

English Name	Scientific Name	Soil	Notes
Sneezewort	<i>Achillea ptarmica</i>	A, N, W	Indicator for lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> . Prefers <b>damp</b> soils <sup>7</sup> . Particularly abundant in the drawdown zones of some local reservoirs.
Velvet Bent	<i>Agrostis canina</i>	A, W	Restricted to infertile, acidic, peaty soils <sup>3</sup> . Found in damp or boggy acid grassland <sup>6</sup> , plus wet heathland and mires <sup>8</sup> .
Common Bent	<i>Agrostis capillaris</i>	A (R)	Occurs in a wide range of different grasslands <sup>2</sup> , but is most characteristic of upland pastures on moderately acidic soils <sup>3</sup> . Also a component of amenity grass seed mixes <sup>8</sup> .
Brown Bent	<i>Agrostis vinealis</i>	A	Frequent in dry, heathy grassland <sup>6</sup> . Also occurs under open scrub and woodland canopies <sup>8</sup> .
Early Hair-grass	<i>Aira praecox</i>	A	Occurs on thin, dry, acidic soils <sup>3</sup> . Colonises open ground where there is little competition from other plants <sup>8</sup> .
Bugle	<i>Ajuga reptans</i>	C, N	Indicator for ancient woodland <sup>1</sup> , lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> .
Marsh Foxtail	<i>Alopecurus geniculatus</i>	W	Occurs on fertile sites which are subject to seasonal inundation <sup>3</sup> . Typical of purple moor-grass and rush pastures <sup>2</sup> .
Meadow Foxtail	<i>Alopecurus pratensis</i>	C, N	Most characteristic of fertile meadows on moist soils <sup>3</sup> . Also typical of semi-improved grassland <sup>2</sup> .
Wood Anemone	<i>Anemone nemorosa</i>	R	Indicator for ancient woodland <sup>1</sup> . Also occurs in derelict grassland <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , upland hay meadows <sup>2</sup> and lowland meadows <sup>2</sup> .
Wild Angelica	<i>Angelica sylvestris</i>	N, W	Typically found on moist, relatively fertile soils <sup>3</sup> in damp meadows, rush pastures, streamsides, wet woodland, etc <sup>8</sup> .
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	A (R)	Occurs in a wide range of different grasslands <sup>2</sup> , but is most abundant on damp, slightly acidic soils of low to moderate fertility <sup>3</sup> .

English Name	Scientific Name	Soil	Notes
Kidney Vetch	<i>Anthyllis vulneraria</i>	C, U	Characteristic of dry grassland, often on calcareous soils <sup>5</sup> . Also found in open stony ground, waste areas, disused railway land, etc <sup>8</sup> . <b>LRDB</b>
Michaelmas-daisy	<i>Aster</i> sp.	U	Although an introduced species, Michaelmas daisy can be a valuable component of <b>urban</b> grassland. There are several species and hybrids, which are difficult to distinguish in the field.
Quaking Grass	<i>Briza media</i>	C (R)	An indicator of low fertility, most often found on calcareous soils <sup>3</sup> . Also occurs neutral and mildly acidic soils which are well drained <sup>8</sup> . <b>NB: Care should be taken not to confuse this species with the ornamental annual, <i>Briza maxima</i>, which sometimes occurs as a garden escape in urban areas.</b>
Heather	<i>Calluna vulgaris</i>	A	Indicator for lowland dry acid grassland when growing at <b>low densities</b> <sup>2</sup> . Typically found on acidic, well-drained soils <sup>3</sup> .
Harebell	<i>Campanula rotundifolia</i>	C, A	Occurs in a wide range of <b>infertile</b> , grassy and rocky habitats <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , upland calcareous grassland <sup>2</sup> and lowland calcareous grassland <sup>2</sup> . <b>NB: Occurs in both acidic and calcareous grassland, but is generally restricted to dry soils.</b>
Cuckooflower	<i>Cardamine pratensis</i>	C, N, W	Characteristic of wet grassland and mire on moderately fertile soils <sup>3</sup> .
Spring Sedge	<i>Carex caryophylla</i>	C, A	Indicator for upland calcareous grassland <sup>2</sup> , but also occurs on moderately acidic soils of low fertility <sup>3</sup> . Most frequent in short swards on well-drained soils <sup>8</sup> .
Glaucous Sedge	<i>Carex flacca</i>	C (R)	Most frequent on nutrient-deficient calcareous soils, but also occurs on non-calcareous soils <sup>3</sup> . Indicator for upland hay meadows <sup>2</sup> , lowland meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> . <b>The status of this species needs to be reviewed; it may need to be upgraded to “strong positive” indicator.</b>
Slender Sedge	<i>Carex lasiocarpa</i>	W (R)	Most frequent in infertile, moist grassland <sup>3</sup> . <b>The status of this species needs to be reviewed; it may be too scarce within the SLPAB to be an effective indicator.</b>
Common Sedge	<i>Carex nigra</i>	W (R)	Indicator for upland hay meadows <sup>2</sup> , lowland meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> . Widespread in moorland and heathland on wet, acidic soils; also occurs in drier acidic grassland and damp neutral grassland <sup>8</sup> . <b>The status of this species needs to be reviewed; it may need to be upgraded to “strong positive” indicator.</b>
Oval Sedge	<i>Carex leporina</i>	A, W	Formerly known as <i>Carex ovalis</i> . Found in a variety of habitats on acid soils that are wet, at least in winter <sup>6</sup> . Widespread in moderately acidic upland pastures <sup>8</sup> . <b>The status of this species needs to be reviewed; it may need to be upgraded to “strong positive” indicator.</b>
Carnation Sedge	<i>Carex panicea</i>	A, W	Characteristic of moist or waterlogged sites with low soil fertility <sup>3</sup> . Indicator for upland hay meadows <sup>2</sup> , lowland meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> . <b>The status of this species needs to be reviewed; it may need to be upgraded to “strong positive” indicator.</b>
Common Yellow-sedge	<i>Carex demissa</i>	A, N, W	Formerly known as <i>Carex viridula</i> subsp. <i>oedocarpa</i> . Occurs in non-calcareous flushes <sup>6</sup> and wet heathland <sup>8</sup> . <b>The status of this species needs to be reviewed; it may need to be upgraded to “strong positive” indicator.</b>
Common Knapweed	<i>Centaurea nigra</i>	R	Found in a wide range of grasslands on moderately fertile or infertile soils <sup>3</sup> . Indicator for lowland meadows <sup>2</sup> and upland hay meadows <sup>2</sup> .
Greater Knapweed	<i>Centaurea scabiosa</i>	C	Largely restricted to dry, calcareous soils <sup>3</sup> . Indicator for lowland calcareous grassland <sup>2</sup> . <b>NB: Within the SLPAB, this species is recorded most frequently in newly created grassland. Care should be taken not to confuse it with the ‘rayed’ form of <i>Centaurea nigra</i>.</b>
Common Centaury	<i>Centaureum erythraea</i>	A, C, U	Indicator for lowland dry acid grassland <sup>2</sup> , but also occurs on infertile calcareous soils <sup>3</sup> . Often occurs in disturbed habitats, such as quarry spoil and roadside verges <sup>8</sup> .
Marsh Thistle	<i>Cirsium palustre</i>	A, W	Typical of moist grassland on mildly acidic soils of moderate fertility <sup>3</sup> . Particularly characteristic of acidic upland rush pastures or reverting damp rough grazings <sup>8</sup> .
Pignut	<i>Conopodium majus</i>	N, A	Associated with infertile, mildly acidic soils <sup>3</sup> . Indicator for ancient woodland <sup>1</sup> , lowland dry acid grassland <sup>2</sup> , lowland meadows <sup>2</sup> and upland hay meadows <sup>2</sup> .
Common Spotted-orchid	<i>Dactylorhiza fuchsii</i>	C, N (U)	Indicator for lowland calcareous grassland <sup>2</sup> , lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> . Locally frequent in wide range of habitats on mildly acidic, neutral or calcareous soils <sup>8</sup> . Sometimes occurs on man-made substrates such as fuel ash <sup>8</sup> .
Heath Spotted-orchid	<i>Dactylorhiza maculata</i>	A, W	Occurs in wet acid grassland and in wet heath/grassland mosaic. <b>LRDB</b>

English Name	Scientific Name	Soil	Notes
Marsh-orchid (any species)	<i>Dactylorhiza</i> sp.	C, N, W	According to the South Yorkshire Plant Atlas <sup>8</sup> , the most frequently occurring species in Sheffield is the southern marsh-orchid ( <i>Dactylorhiza praetermissa</i> ), a <b>Local Red Data Book Species</b> . <i>D. incarnata</i> and <i>D. purpurella</i> also occur locally, but are very scarce.
Heath-grass	<i>Danthonia decumbens</i>	A	Restricted to unproductive grassland and heathland, but occurs on both mildly acidic and calcareous soils <sup>3</sup> .
Wild Carrot	<i>Daucus carota</i> subsp. <i>carota</i>	C, N	Characteristic of calcareous soils, but also occurs widely on other well drained but infertile soils <sup>3</sup> . <b>NB: Within the SLPAB, this species occurs most frequently in newly created grassland. It is often a component of meadow seed mixes, but rarely persists beyond the first few years.</b>
Tufted Hair-grass	<i>Deschampsia caespitosa</i>	A, W	Widespread on damp or marshy moderately acidic, neutral and basic soils <sup>8</sup> . Most frequent on poorly drained, slightly acidic soils <sup>3</sup> . Typical of semi-improved grassland <sup>2</sup> .
Wavy Hair-grass	<i>Deschampsia flexuosa</i>	A	Characteristic of acidic, nutrient poor soils <sup>3</sup> . Typical of lowland dry acid grassland <sup>2</sup> . Widespread in acid heathland, moorland and upland rough pastures, except on soils that are subject to waterlogging <sup>8</sup> .
Marsh Willowherb	<i>Epilobium palustre</i>	A, W	Grows in a range of wetland habitats, especially those with moderately fertile soils <sup>3</sup> .
Common Cottongrass	<i>Eriophorum angustifolium</i>	A, W	<b>LRDB</b> (lowland sites). Occurs in bogs and wet heaths (including wet heath / acid grassland mosaics).
Hare's-tail Cottongrass	<i>Eriophorum vaginatum</i>	A, W	<b>LRDB</b> (lowland sites). Occurs in bogs and wet heaths (including wet heath / acid grassland mosaics).
Sheep's-fescue	<i>Festuca ovina</i>	A, C	Characteristic of infertile pasture on both acidic and calcareous soils <sup>3</sup> . Typical of lowland dry acid grassland <sup>2</sup> , lowland calcareous grassland <sup>2</sup> and upland calcareous grassland <sup>2</sup> .
Meadow Fescue	<i>Festuca pratensis</i>	R	Also known as <i>Schedonorus pratensis</i> Typical of semi-improved grassland and lowland meadows <sup>2</sup> . Found on fertile neutral soils in pastures, hay meadows, roadside verges, etc <sup>8</sup> .
Meadowsweet	<i>Filipendula ulmaria</i>	W	Widespread on damp or marshy fertile habitats on mildly basic, neutral and mildly acidic soils <sup>8</sup> . Indicator for lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> .
Hedge Bedstraw	<i>Galium album</i>	C	Formerly known as <i>Galium mollugo</i> . Found on neutral or calcareous hedgebanks, roadside verges and well-drained rough or unmanaged grassland <sup>6</sup> . <b>NB: Within the SLPAB, this species occurs most frequently in newly created grassland.</b>
Heath Bedstraw	<i>Galium saxatile</i>	A	Indicator for lowland dry acid grassland <sup>2</sup> . A calcifuge, found in a wide range of rocky habitats on acidic soils <sup>3</sup> .
Lady's Bedstraw	<i>Galium verum</i>	C, U (R)	Found on well-drained and moderately infertile neutral and calcareous soils <sup>8</sup> . Characteristic of leached calcareous soils, sandy soils and rocky habitats <sup>3</sup> . Also occurs in disused quarries and on limestone ballast <sup>8</sup> . <b>LRDB</b>
Dyer's Greenweed	<i>Genista tinctoria</i>	N	A declining species of unimproved neutral to mildly calcareous grassland <sup>8</sup> . Indicator for lowland meadows <sup>2</sup> . <b>LRDB</b>
Meadow Crane's-bill	<i>Geranium pratense</i>	C	Usually found on calcareous soils <sup>5</sup> . Occasionally occurs in newly-created grasslands, but is scarce elsewhere within the SLPAB.
Hawkweed (any species)	<i>Hieracium</i> sp.	R	Hawkweeds are associated with a wide range of less fertile, often rocky habitats <sup>3</sup> . Several species of leafy-stemmed hawkweeds occur in acid grassland, including <i>Hieracium vagum</i> and <i>H. umbellatum</i> .
Trailing St John's-wort	<i>Hypericum humifusum</i>	A	Indicator for ancient woodland <sup>1</sup> , but also found in short turf on acid soils <sup>5</sup> . Occurs in drier acidic grassland on thin soils where competition from other species is reduced <sup>8</sup> . <b>LRDB</b>
Imperforate St John's-wort	<i>Hypericum maculatum</i>	N (W)	Characteristic of damp, heavy soils <sup>7</sup> . Found in moderately acidic rough ruderal grassland <sup>8</sup> .
Slender St John's-wort	<i>Hypericum pulchrum</i>	A, C	Indicator for ancient woodland <sup>1</sup> and lowland calcareous grassland <sup>2</sup> . Also occurs on heaths <sup>6</sup> and in rocky places in acidic grassland.
Square-stalked St John's-wort	<i>Hypericum tetrapterum</i>	N (W)	Characteristic of damp grassland in meadows and woodland clearings <sup>5</sup> on soils of varying pH <sup>8</sup> .
Cat's-ear	<i>Hypochaeris radicata</i>	A (R)	Characteristic of dry, slightly acidic soils <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Sharp-flowered Rush	<i>Juncus acutiflorus</i>	A, W	Usually found on wet, acidic soils <sup>6</sup> . Widespread and locally frequent in marshy grassland and wet heathland <sup>8</sup> . <b>The status of this species needs to be reviewed; it may be too widespread to be an effective indicator.</b>
Jointed Rush	<i>Juncus articulatus</i>	A, W	Typically found in base-rich mires which are subject to disturbance <sup>3</sup> . <b>The status of this species needs to be reviewed; it may be too widespread to be an effective indicator.</b>
Bulbous Rush	<i>Juncus bulbosus</i>	A, W	Typical of infertile wetland habitats on acidic, peaty soils <sup>3</sup> . Grows in wet mud on the edge of water, in ditches and ruts <sup>8</sup> . <b>The status of this species needs to be reviewed; it may be too widespread to be an effective indicator.</b>
Compact Rush	<i>Juncus conglomeratus</i>	A	Mainly restricted to acid soils <sup>6</sup> . Grows in wet grassland and other habitats, preferring slightly drier and more neutral soils than <i>Juncus effusus</i> <sup>8</sup> . <b>The status of this species needs to be reviewed; it may be too widespread to be an effective indicator.</b>

English Name	Scientific Name	Soil	Notes
Hard Rush	<i>Juncus inflexus</i>	W	Most commonly found in damp grassland on heavy clay soils <sup>6</sup> . <b>The status of this species needs to be reviewed; it may be too widespread to be an effective indicator.</b>
Heath Rush	<i>Juncus squarrosus</i>	A	Confined to infertile acidic soils, occurring frequently in upland sheep pastures <sup>3</sup> .
Field Scabious	<i>Knautia arvensis</i>	C (N)	Generally found on dry, calcareous soils <sup>5</sup> . Also occurs in neutral grassland <sup>8</sup> .
Bitter-vetch	<i>Lathyrus linifolius</i>	N (A)	Characteristic of neutral grasslands on relatively poor soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> and lowland meadows <sup>2</sup> .
Meadow Vetchling	<i>Lathyrus pratensis</i>	R	Typically grows amongst tall vegetation on soils of moderate fertility <sup>3</sup> . Indicator for lowland meadows <sup>2</sup> and upland hay meadows <sup>2</sup> .
Rough Hawkbit	<i>Leontodon hispidus</i>	C (R)	Grows in a range of unproductive grasslands, particularly on calcareous soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , upland calcareous grassland <sup>2</sup> , lowland meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> .
Oxeye Daisy	<i>Leucanthemum vulgare</i>	R	Prefers soils on low to moderate fertility <sup>3</sup> . Indicator for lowland calcareous grassland <sup>2</sup> and lowland meadows <sup>2</sup> .
Common Toadflax	<i>Linaria vulgaris</i>	U	Often found where soils are overlain by coarse debris <sup>3</sup> .
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	R	Occurs on a wide range of soils of low to moderate fertility; acid, neutral and calcareous. Indicator for lowland dry acid grassland <sup>2</sup> , lowland calcareous grassland <sup>2</sup> , upland calcareous grassland <sup>2</sup> , lowland meadows <sup>2</sup> and upland hay meadows <sup>2</sup> .
Greater Bird's-foot-trefoil	<i>Lotus pedunculatus</i>	W	Most frequently found on damp soils (e.g. in the drier parts of mires) <sup>3</sup> . Indicator for lowland meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> .
Field Wood-rush	<i>Luzula campestris</i>	A	Typically found in pasture on mildly acidic soils of relatively low fertility <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Ragged Robin	<i>Lychnis flos-cuculi</i>	W	Indicator for lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> .
Black Medick	<i>Medicago lupulina</i>	C (R)	Characteristic of relatively disturbed, infertile sites, particularly on calcareous soils <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Mat Grass	<i>Nardus stricta</i>	A	Typically found on free-draining acidic soils in areas of high rainfall <sup>3</sup> . Often abundant in upland sheep pastures <sup>3</sup> .
Common Restharrow	<i>Ononis repens</i>	C (N)	Indicator for lowland calcareous grassland <sup>2</sup> . Found in well-drained neutral or calcareous grassland <sup>5</sup> .
Adder's-tongue	<i>Ophioglossum vulgatum</i>	W	Found in damp grassland <sup>4</sup> . A species of basic to neutral and mildly acidic grassland, damper pastures and open woodland <sup>5</sup> . <b>LRDB</b>
Reed Canary-grass	<i>Phalaris arundinacea</i>	W	Associated with wetland habitats which tend to dry out in summer <sup>3</sup> .
Smaller Cat's-tail	<i>Phleum bertolonii</i>	C	Often found in unimproved grassland, especially on limestone and chalk <sup>6</sup> . Occurs in unmanaged, species-rich meadows and pastures on neutral or calcareous soils <sup>8</sup> . Prefers less fertile and drier soils than <i>Phleum pratense</i> <sup>8</sup> .
Timothy	<i>Phleum pratense</i>	R	Typical of semi-improved grassland <sup>2</sup> . Occurs on mildly acidic to basic soils, favouring dampish to well-drained conditions <sup>9</sup> .
Fox-and-cubs (Orange Hawkweed)	<i>Pilosella aurantiaca</i>	U	Although an introduced species, fox-and-cubs can be a valuable component of <b>urban</b> grassland.
Mouse-ear-hawkweed	<i>Pilosella officinarum</i>	A, C	Occurs on dry, infertile soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , upland calcareous grassland <sup>2</sup> and lowland calcareous grassland <sup>2</sup> . <b>NB: Occurs in both acidic and calcareous grassland.</b>
Burnet-saxifrage	<i>Pimpinella saxifraga</i>	C (N)	Typically found on dry, calcareous soils of low fertility <sup>3</sup> . Indicator for lowland meadows <sup>2</sup> and upland hay meadows <sup>2</sup> . <b>LRDB</b>
Smooth Meadow-grass	<i>Poa pratensis</i>	R	Occurs in grasslands on a wide range of soil types; tolerant of grazing and trampling <sup>3</sup> . Found in meadows and pastures on mildly acidic, neutral and calcareous soils <sup>8</sup> .
Rough Meadow-grass	<i>Poa trivialis</i>	R	Occurs in a wide range of grasslands on fertile soils <sup>3</sup> . Typical of upland hay meadows <sup>2</sup> . Also found in damper habitats <sup>5</sup> .
Common Milkwort	<i>Polygala vulgaris</i>	C, A	Occurs most frequently found in short, unproductive calcareous turf <sup>3</sup> but also occurs in acid grassland <sup>7</sup> . Regarded as an indicator of ancient grassland <sup>3</sup> . <b>NB: Occurs in both acidic and calcareous grassland.</b>
Trailing Tormentil	<i>Potentilla anglica</i>	A	Prefers drier acidic soils <sup>8</sup> . Found on heaths, woodland edges and banks <sup>7</sup> .
Tormentil	<i>Potentilla erecta</i>	A	Found in a wide range of grassland and heathland habitats on acidic soils; most abundant in pastures of intermediate fertility <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , upland hay meadows <sup>2</sup> . and purple moor-grass and rush pastures <sup>2</sup> .
Barren Strawberry	<i>Potentilla sterilis</i>	N, C	Typically found in relatively infertile pastures on neutral to moderately calcareous soils <sup>3</sup> . Indicator for ancient woodland <sup>1</sup> .

English Name	Scientific Name	Soil	Notes
Cowslip	<i>Primula veris</i>	C (N)	Occurs predominantly on moist calcareous soils, but can be found occasionally on dry soils over non-calcareous strata <sup>3</sup> . <b>LRDB NB: Within the SLPAB, this species is mainly found in newly created grassland.</b>
Common Fleabane	<i>Pulicaria dysenterica</i>	W	Found in damp, grassy places <sup>7</sup> on a variety of soil types from moderately acidic to basic <sup>8</sup> .
Meadow Buttercup	<i>Ranunculus acris</i>	R	Prefers moist, but not waterlogged soils; particularly abundant in overgrazed, moderately fertile pastures <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Bulbous Buttercup	<i>Ranunculus bulbosus</i>	C, N	Particularly common in older, species-rich pastures on free-draining soils <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Lesser Spearwort	<i>Ranunculus flammula</i>	A, W	Characteristic of infertile and/or disturbed wetlands, usually on mildly acidic soils <sup>3</sup> .
Celery-leaved Buttercup	<i>Ranunculus sceleratus</i>	W	Characteristic of bare, fertile mud on the edges of ponds and ditches <sup>3</sup> . Often in nutrient-rich or disturbed or cattle poached situations, on mildly acidic to neutral soils <sup>8</sup> . <b>LRDB</b>
Yellow-rattle	<i>Rhinanthus minor</i>	R	Found in a wide range of grassland habitats on soils of moderate to low fertility <sup>3</sup> . Indicator upland hay meadows <sup>2</sup> and lowland meadows <sup>2</sup> . <b>LRDB. NB: Occurs in calcareous, neutral and mildly acidic grassland.</b>
Common Sorrel	<i>Rumex acetosa</i>	A (R)	Characteristic of meadows and pastures on mildly acidic soils <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Sheep's Sorrel	<i>Rumex acetosella</i>	A	Characteristic of relatively infertile, sandy or peaty soils; most abundant on disturbed acidic soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> .
Clustered Dock	<i>Rumex conglomeratus</i>	W	Found in damp grassy habitats, which are often subject to winter flooding <sup>6</sup> . <b>The status of this species needs to be reviewed; it may be too widespread to be an effective indicator.</b>
Salad Burnet	<i>Poterium sanguisorba</i>	C	Formerly known as <i>Sanguisorba minor</i> . Characteristic of species-rich pastures on both dry and moist, relatively infertile calcareous soils. <b>NB: Within the SLPAB, this species occurs most frequently in newly created grasslands. Care should be taken not to confuse this species with fodder burnet, <i>P. sanguisorba</i> ssp. <i>balearicum</i>, an agricultural variety which occurs on field margins and waste ground. LRDB</b>
Great Burnet	<i>Sanguisorba officinalis</i>	N (W)	Indicator for lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> and purple moor-grass and rush pastures <sup>2</sup> . Occurs in dry to dampish unimproved neutral grassland, marshy meadows and hay meadows <sup>8</sup> . <b>LRDB</b>
Meadow Saxifrage	<i>Saxifraga granulata</i>	C (N)	Prefers limey soils <sup>7</sup> . Scarce within the SLPAB, but not a Local Red Data Book species.
Marsh Ragwort	<i>Senecio aquaticus</i>	W	Typical of seasonally wet habitats <sup>6</sup> . Occurs in wet meadows, marshy grassland, streamsides, etc <sup>8</sup> .
Goldenrod	<i>Solidago virgaurea</i>	A (R)	Occurs across a wide range of in soil pH values <sup>3</sup> , but often occurs locally on infertile acidic soils.
Betony	<i>Stachys officinalis</i>	A (C)	Most commonly found on mildly acidic, infertile soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , lowland calcareous grassland <sup>2</sup> and lowland meadows <sup>2</sup> .
Bog Stitchwort	<i>Stellaria alsine</i>	W, A	Found in a range of damp habitats <sup>6</sup> on moderately acidic to neutral soils <sup>8</sup> .
Lesser Stitchwort	<i>Stellaria graminea</i>		Found in grassy, often heathy, places on acid soils <sup>7</sup> . Widespread and frequent in damp to drier meadows and pastures on moderately acidic to neutral soils <sup>8</sup> .
Devil's-bit Scabious	<i>Succsia pratensis</i>	R (N)	Occurs on a wide range of soil types, but is often associated with moist, infertile, neutral soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> , lowland calcareous grassland <sup>2</sup> , upland calcareous grassland <sup>2</sup> , lowland meadows <sup>2</sup> , upland hay meadows <sup>2</sup> . and purple moor-grass and rush pastures <sup>2</sup> .
Wood Sage	<i>Teucrium scorodonia</i>	A	Restricted to infertile, well -drained soils (e.g. on scree and steep slopes) <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> .
Upright Hedge-parsley	<i>Torilis japonica</i>	C (R)	Grows in a range of habitats, often on calcareous soils <sup>3</sup> , but occasionally on soils that are neutral or moderately acidic <sup>8</sup> . Found in rough grassland, often along hedgerows and woodland edges <sup>8</sup> .
Goat's-beard	<i>Tragopogon pratensis</i>	R	Indicator for lowland meadows <sup>2</sup> . Often found in ranker grassland in pastures and meadows, plus roadside verges, field margins, etc <sup>8</sup> . Prefers well-drained, moderately acidic to basic soils <sup>8</sup> .
Hop Trefoil	<i>Trifolium campestre</i>	C (R)	Found in dry grassland, especially on lime <sup>7</sup> . Occurs in bare or waste ground, open short swards on mildly calcareous but infertile soils <sup>8</sup> .
Lesser Trefoil	<i>Trifolium dubium</i>	R	Found in a wide range of relatively infertile grasslands <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Zigzag Clover	<i>Trifolium medium</i>	N (R)	Associated with heavy soils of intermediate fertility <sup>3</sup> . Prefers neutral to moderately calcareous soils <sup>8</sup> . Often a good indicator of species-rich neutral grassland <sup>8</sup> .
Red Clover	<i>Trifolium pratense</i>	R (A)	Associated with slightly acidic, moist soils <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup> .
Yellow Oat-grass	<i>Trisetum flavescens</i>	C (R)	Occurs in dry grassland, particularly on calcareous soils <sup>3</sup> . Locally frequent in well-drained mildly acidic, neutral and calcareous pastures, meadows and roadside verges <sup>8</sup> .
Bilberry	<i>Vaccinium myrtillus</i>	A	Strongly associated with acidic, often peaty soils <sup>3</sup> . Indicator for lowland dry acid grassland when growing at <b>low densities</b> <sup>2</sup> .

English Name	Scientific Name	Soil	Notes
Common Valerian	<i>Valeriana officinalis</i>	W (R)	Indicator for purple moor-grass and rush pastures <sup>2</sup> . Occurs in a range of damp habitats, including marshy grassland, ditches and streamsides <sup>8</sup> .
Germander Speedwell	<i>Veronica chamaedrys</i>	C (R)	Most abundant on moist, calcareous soils of relatively low fertility <sup>3</sup> . Indicator for semi-improved grassland <sup>2</sup>
Heath Speedwell	<i>Veronica officinalis</i>	A	Indicator for lowland dry acid grassland <sup>2</sup> . Found in a range of habitats on well-drained and moderately acidic soils, including acidic grassland, heathland and sparsely vegetated ground <sup>6</sup> .
Tufted Vetch	<i>Vicia cracca</i>	R	Found on relatively fertile, moist soils <sup>3</sup> . Occurs in a range of habitats on soils of varying pH, including rough grassland, pastures and meadows <sup>8</sup> .
Bush Vetch	<i>Vicia sepium</i>	R	Most abundant on semi-shaded sites <sup>3</sup> . Indicator for ancient woodland <sup>1</sup> .
Common Dog-violet	<i>Viola riviniana</i>	C, A (R)	Generally restricted to infertile habitats, but equally common on highly calcareous and mildly acidic soils <sup>3</sup> . Indicator for lowland dry acid grassland <sup>2</sup> .

**References:** <sup>1</sup> Jones, M. (1993) **Sheffield's Woodland Heritage** Green Tree Publications.

<sup>2</sup> Anon (2008) **Farm Environment Plan Features Manual (Second Edition)** Natural England.

<sup>3</sup> Grime, J. P. et al (1990) **The Abridged Comparative Plant Ecology**. Chapman & Hall.

<sup>4</sup> Phillips, R. (1980) **Grasses, Ferns, Mosses and Lichens of Great Britain and Ireland**. MacMillan.

<sup>5</sup> Blamey, M & Grey-Wilson, C. (1989) **The Illustrated Flora of Britain and Northern Europe**. Hodder & Stoughton.

<sup>6</sup> Rose, F. (1989) **Colour Identification Guide to the Grasses, Sedges, Rushes & Ferns of the British Isles & North-western Europe**. Viking.

<sup>7</sup> Fitter, R. et al (2003) **Wild Flowers of Britain & Ireland**. A & C Black.

<sup>8</sup> Wilmore, G. et al (2011) **The South Yorkshire Plant Atlas**. YNU, Yorkshire & Humberside Ecological Data Trust.

#### Other reference material

Bownes, J.S. (et al) (1991). Sheffield Nature Conservation Strategy. Sheffield City Council.

JNCC (1990) Handbook for Phase 1 habitat survey. JNCC.