Species-rich Grasslands, Meadows & Pastures in Worcestershire

Creating a Living Landscape

A Landowner’s guide to Recognition, Management & Restoration
Introduction

This booklet is intended as a general handbook as well as a guide to web-based literature and other more technical publications.

Its aim is to provide advice to farmers, horse keepers, land-managers and others who are interested in preserving and maintaining Worcestershire’s important grassland heritage.

We possess in our county some of the very best ancient hay-meadows in England. Nevertheless, many are still in peril from agricultural improvement or simply from over-grazing. For the sake of future generations we have the responsibility to maintain these traditionally managed but vital grassland habitats within our local landscapes. After all, our future food production and the very survival of many important crop plants, fruit and vegetables may depend upon it: recent scientific studies and the media have highlighted the decline of the honey-bee, bumble-bees and many other pollinating insects. This decline is being accelerated by the loss of our flower-rich meadows and pastures.

Michael Liley
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BACKGROUND

History; value of grassland habitats; current status and threats

History

Most grasslands in Britain can be regarded as Semi-Natural; that is, they originated when forests were first cleared by Neolithic man.

In Worcestershire archaeologists believe this first started to happen when early agriculturalists and pastoralists first settled in the Vale of Evesham area about 3000 B.C. By Roman times most of the forests had been cleared, except on the heaviest unproductive soils, and grassland and arable landscapes developed.

In Saxon manorial times, the feudal open fields with their ridge & furrow strips became dominant in the countryside. These were originally created by the mouldboard plough and were largely in arable cultivation, though in rotation with short-term leys.

Though the open-field ridge & furrow strips persisted until as late as the 16th century, it was largely through wide-scale events such as the de-population of the countryside during the Black Death and the rise of the wool trade that many of the ridge & furrow fields converted to grassland and the semi-natural and species-rich pasture and meadow swards that we still see today developed. In fact, some of the surviving hay meadows in the Severn-Avon Vales and Forest of Feckenham may have an almost unbroken history of several hundred years.

The value of grassland habitats

Celebrated in science, art, music and literature wildflower and wildlife rich grasslands have long been regarded as timeless features of the English countryside. Our hay meadows in particular were the life-blood of British agriculture and commercial activity; providing vital winter food for livestock and draft animals alike.

Semi-natural or traditionally managed grasslands provide a sustainable method of forage production, which although lower yielding than modern short-term sown grasslands are rich in trace elements, can be lower in gut parasites, are more drought tolerant and are therefore likely to be considerably more climate change resilient than modern agricultural grasslands.

Traditional grasslands are important wildlife habitats, not just for their diversity of plants but also for their invertebrate, fungal and microbial diversity. They have considerable cultural importance and are more aesthetically pleasing than modern agricultural leys, adding colour and visual diversity to the landscape and contributing to the unique character of our countryside.
The 20th century witnessed dramatic losses and degradation of all semi-natural grassland types, including the near eradication of traditional lowland wildflower-rich hay meadows. Losses of this particularly iconic habitat were estimated by the Nature Conservancy Council in the mid-1980s to be 97% between 1930 and 1984 (NCC: 1984 figures).

Initially, many hay meadows fell to the plough as motor vehicles replaced draft animals. However, the Second World War “Dig for Victory” campaign followed by the unprecedented agricultural change and intensification of the post-war drive for food security and the effects of the Common Agricultural Policy saw the majority of our traditional grasslands disappear. Haymaking, massively vulnerable to the vagaries of the weather, was replaced by silage technologies and our traditional pastures were largely ploughed and converted to arable, re-seeded with agricultural grass mixes or their ecological value was reduced by application of agrochemicals and over-seeding to improve grazing and silage production.

Losses continued unabated throughout the 1980s and 1990s. In Worcestershire an estimated 45% of remaining semi-natural grasslands were damaged and 30% completely destroyed between 1975 and 2000, leaving only 25% of remaining unimproved grasslands intact.

In 2004 England’s remaining ‘unimproved’ grassland resource was estimated at less than 87,000 hectares.

In Worcestershire, the threats to old species-rich grasslands still continue. A recent 2009 survey found that, of 76 field units of species-rich grassland, 45 (or 59%) failed to meet favourable condition status. This was due largely to inappropriate management - a combination of intensive spring grazing of meadows (conversion to pastures) and year-round horse grazing.

Current Status and threats

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WHAT ARE THEY?
Grassland types, distribution, identification and management types

Lowland Neutral Meadows and Pastures
Worcestershire is renowned for its neutral grasslands on clay and clay-loam soils. The total remaining resource of mostly good quality unimproved species-rich neutral grassland is estimated to be approaching 1500ha - with more sites still being discovered. This represents over 20% of England’s total resource of 7280ha.

Grassland Types - distribution of the three main habitat types
There are three broad types of grassland which can be related to geology and soil type and, to a lesser degree, altitude and climatic conditions. Acidic grasslands normal occur on lighter sandy soils or in upland regions. Neutral grasslands occur on clay loams or alluvial floodplains, mostly lowland but some in upland situations. Finally, calcareous grasslands are normally free-draining and occur over chalk or limestone rocks.

All three are found in Worcestershire but because much of the county is a lowland basin of clay and keuper marls geology, the more widespread is the neutral soils sward which has been traditionally managed for hay and grazing.

Acidic types are found along the higher ground of the Malvern Hills and on sandstones around Kidderminster.

Calcareous grasslands are much more restricted, being more or less confined to the Cotswold edge and Bredon Hill – though they also occur on limestone in the far west and very locally on the clays where there are escarpments or along river valleys.

Where are they found? - Distribution Maps
Concentrations of unimproved species-rich grassland sites & distribution of the three major types

One of the largest surviving concentrations of ‘typical’ species-rich neutral hay meadow-type grasslands is to be found in the area around Feckenham – formerly the medieval Feckenham Hunting Forest - which is still a network of old hedgerows, relatively small fields, woodlands and ridge/furrow. An example map below shows the importance of this old landscape.

Forest of Feckenham Area: one of the identifiable ‘corridors’ of old grasslands
Grassland Identification

Have I got species-rich grassland?

On neutral soils, clays and clay-loams, but not acidic or alkaline, a useful flow-diagram key which can be used to identify the ‘improvement status’ of your grassland is as follows:-

At least 2 of the following may apply:-
- Cover of perennial rye grass, clovers, creeping buttercup <10%
- The sward is species-rich i.e. more than 15 species/m² including grasses
- There is high cover of wildflowers (>30%) excluding white clover, creeping buttercup and weed plants such as docks, nettle, creeping thistle, dandelions and injurious weed species

Yes

Grasses can include common bent, crested dogstail, sweet vernal grass, heath grass, yellow oatgrass, tall fescue, red fescue, meadow fescue, hairy oat-grass, upright brome & quaking grass]

No

At least 2 of the following may apply:-
- Cover of Rye-grasses and White clover less than 30%
- The sward is moderately species-rich (more than 8 species/m², including grasses
- Cover of wildflowers and sedges 10% or more, excluding White clover, Creeping buttercup and injurious weeds

[Typical grasses include: cocks foot, false oat-grass, Yorkshire fog, meadow foxtail, red fescue, crested dogstail, sweet vernal grass, creeping bent, rough meadow-grass. Sward may be locally grass-dominated at up to 90% cover]

No

Not QUITE AS ABOVE? The sward may be acidic or limestone grassland (Malvern Hills, Kidderminster or Cotswold edge/Bredon)

Refer to next page

Your sward is likely to be species-rich grassland and therefore a priority habitat

Indicator species of a neutral meadow include: common knapweed, bird’s-foot trefoil, agrimony, cowslip, salad burnet, orchid species, adder’s-tongue fern, saw wort, ladies bedstraw, ladies mantle, pepper saxifrage, dyer’s greenweed, betony, glaucous sedge, ox-eye daisy & yellow rattle.

Flood-meadow flora (rarer) can include: great burnet, meadowsweet, ragged robin, water dropwort species, marsh marigold and water mint as well as the neutral meadow ones above

Yes

At least two of the following apply:-
- Cover of Rye-grasses and White clover more than 30%
- The sward is species-poor (up to 8 species/m², including grasses
- Low cover of wildflowers and sedges (less than 10%), excluding white clover, creeping buttercup and injurious weeds

[Typical grass species are Cock’s-foot, Italian rye-grass Perennial rye-grass, Rough-stalked meadow-grass, Timothy, Yorkshire-fog. (Note sward may have a generally “shiny” appearance in strong sunlight, owing to the high % of rye-grasses, which are a darker glossy green on the leaf underside)]

No

Your sward is likely to be a semi-improved grassland It may have some potential for restoration.

The indicator species of species-rich sward (above) may be rare or localised. Typically supports 8-15 species: autumn hawkbit, black medick, cuckoo flower, bulbous buttercup, common cat’s-ear, common sorrel, field woodrush, germander speedwell, lesser trefoil, ribwort plantain, common daisy, meadow buttercup, red clover, self-heal, yarrow, creeping cinquefoil

Yes

Your sward is a species-poor Improved Grassland It may have some potential for a grassland restoration or creation project, dependant on soil nutrient levels (available phosphates)

The field/sward could be a non-grassland habitat, for example, lowland heath, or if rushy/sedgey, then a marsh, fen or swamp habitat
If you farm or manage land on the lighter, sandier soils around Kidderminster or on the Birmingham edge, are located on Bredon’s slopes or the Cotswold escarpment, or on some of the clay-rhaetic ridges in eastern Worcestershire, you may find that your grass sward is rather less bulky, does not make good hay and is better for pasturing.

If you are lucky enough to own parcels of semi-natural and relatively unimproved grassland (the occurrence of these is rarer on sands and limestones) then the assemblage of grass and wildflower species will be rather different from that on neutral soils – clays, clay-loams, marls – which predominate in the core of the county.

The “typical” lists of plants to be found in both a calcareous grassland and an acidic grassland in this county are shown below, with approximate abundance levels (the precise lists may vary greatly).

**Calcaneous swards**

*limestones, some blue clays*

<table>
<thead>
<tr>
<th><strong>Grasses</strong></th>
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<tbody>
<tr>
<td>Tor grass</td>
<td>o - lf</td>
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<tr>
<td>Upright brome</td>
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<tr>
<td>Meadow oatgrass</td>
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<td>Yellow oatgrass</td>
<td>f</td>
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<tr>
<td>Quaking grass</td>
<td>o - If</td>
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<tr>
<td>Sheep’s fescue</td>
<td>o</td>
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<thead>
<tr>
<th><strong>Broad-leaved Herbs</strong></th>
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<tr>
<td>Common rock-rose</td>
<td>o/r</td>
</tr>
<tr>
<td>Hairy violet</td>
<td>o</td>
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<tr>
<td>Field scabious</td>
<td>o/lf</td>
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<tr>
<td>Milkworts</td>
<td>r</td>
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<tr>
<td>Pyramidal orchid</td>
<td>o/r</td>
</tr>
<tr>
<td>Salad burnet</td>
<td>f - la</td>
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<tr>
<td>Spiny restharrow</td>
<td>o/r</td>
</tr>
<tr>
<td>Common restharrow</td>
<td>o</td>
</tr>
<tr>
<td>Dwarf thistle</td>
<td>o</td>
</tr>
<tr>
<td>Carline thistle</td>
<td>r</td>
</tr>
<tr>
<td>Fairy flax</td>
<td>o - lf</td>
</tr>
<tr>
<td>Dropwort</td>
<td>o - f</td>
</tr>
<tr>
<td>Greater knapweed</td>
<td>r</td>
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<tr>
<td>Hoary plantain</td>
<td>lf</td>
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<th><strong>Other groups</strong></th>
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<tbody>
<tr>
<td>Mosses</td>
<td>la</td>
</tr>
<tr>
<td>Glaucous sedge</td>
<td>f</td>
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<tr>
<td>Spring sedge</td>
<td>o</td>
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**Acidic swards**

*bunter sands, some hard rocks*

<table>
<thead>
<tr>
<th><strong>Grasses</strong></th>
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<tbody>
<tr>
<td>Common bent</td>
<td>a - ld</td>
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<tr>
<td>Early hair-grass</td>
<td>o - If</td>
</tr>
<tr>
<td>Sheeps fescue</td>
<td>f</td>
</tr>
<tr>
<td>Wavy hairgrass</td>
<td>lf</td>
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<tr>
<td>Mat grass</td>
<td>r</td>
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<tr>
<td>Grey hair-grass</td>
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<th><strong>Broad-leaved Herbs</strong></th>
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<tbody>
<tr>
<td>Common storksbill</td>
<td>o/lf</td>
</tr>
<tr>
<td>Buck’s-horn plantain</td>
<td>o/vlf</td>
</tr>
<tr>
<td>Harebell</td>
<td>o</td>
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<tr>
<td>Heath bedstraw</td>
<td>lf – a (ld)</td>
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<tr>
<td>Tormentil</td>
<td>o - f</td>
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<tr>
<td>Sheep’s sorrel</td>
<td>f</td>
</tr>
<tr>
<td>Lousewort</td>
<td>r</td>
</tr>
<tr>
<td>Lesser hawkbit</td>
<td>f</td>
</tr>
<tr>
<td>Heath speedwell</td>
<td>o</td>
</tr>
<tr>
<td>Trailing St. John’s wort</td>
<td>o</td>
</tr>
<tr>
<td>Musk thistle</td>
<td>o (vlf)</td>
</tr>
<tr>
<td>Common cudweed</td>
<td>lf</td>
</tr>
<tr>
<td>Small cudweed</td>
<td>r</td>
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<tr>
<td>Least birdsfoot</td>
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<th><strong>Other groups</strong></th>
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<tr>
<td>Lichen species</td>
<td>lf</td>
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<tr>
<td>Heathers – bell heather and ling</td>
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**Key:**

- d = dominant; a = abundant; f = frequent;
- o = occasional; r = rare.
- ld/la/lf = locally dominant/abundant/frequent

Note of caution: some plant species – such as devil’s-bit scabious, mouse-ear hawkweed, fairy flax, common bent and milkworts may occur in all three.
Winter identification of unimproved species-rich pasture or meadow

The identification of herb-rich swards off-season and in the winter-time is notoriously difficult, as most of the key wildflower, sedge, grass species and others tend to lose their flowers, seed heads and most above ground foliage – so that only stems or vegetative parts remain. Only enlisting the services of a well trained and skilled botanist will determine whether a given field is agriculturally improved, semi-improved or unimproved. Even then the expert may be unable to conclude the exact level of diversity or rarity of the site and may need to re-inspect in spring/summer. However, a basic list of clues and prompts is shown below:-

1  Topography
Does the field show ridge and furrow patterns? If not, it’s much more likely that the sward has been tilled or otherwise agriculturally improved – fertilizer, re-seeding, spraying etc – in the recent past.

2  Slope/Aspect
Is there a marked change of slope within the same field enclosure?

3  Jizz! General colouration/texture of sward/sward structure & height
Does the general colour appear straw coloured (fine semi-deciduous grasses) or yellowish (under-felt of mosses)? This usually indicates lack of improvement (fertilizer applications, harrowing, spraying, re-seeding).

4  Sward Composition - extent of grasses, mosses, herbs, sedges
What does the dominant vegetation look like? Amounts of dogstail, sweet vernal and common bent grasses in the sward will show as an aggregation of straw-coloured vegetation mats; particularly the upper stems, foliage and seed-heads which are deciduous. These will often dominate the ridge tops in unimproved ridge & furrow fields.

5  Sward species composition – the number of key species present and cover/abundance
Caution: this is where botanical expertise is invaluable and where the sward recognition process requires the ability to identify herbs at vegetative and rosette stage.

In a winter unimproved pasture the key ‘indicator’ herbs which should be occurring at high cover (30 - 40%+) include: ribwort plantain, self heal bird’s-foot trefoil ox-eye daisy meadow vetchling, field wood-rush, common knapweed, glaucous sedge common cat’s-ear, crested dog’s-tail grass, common bent, cowslip, creeping cinquefoil, meadow buttercup, bulbous buttercup.
Management types: Hay-meadow Vs Pasture Vs Wet meadow/Flood-meadow & other grassland management categories.

A classically managed meadow grassland is one that is shut up for hay (grazing stock excluded) during the spring/early summer. In July the stock are returned to ‘aftermath’ graze, then light grazing continues until the end of the season – about November time. The best haymaking grasslands are normally found on neutral soils, as grass growth on thinner limestone and acidic soils is poorer, with finer swards better suited to pasturing. Particularly in dairy systems, many traditional meadows have been improved by addition of fertilisers to produce rapid grass growth for multiple-cropping and silaging.

A pasture grassland is one that is normally grazed year-round, spring included, and not hay-cropped. The pasture may be ‘rested’ in winter to allow sward recovery and while stock are housed. Confusion often arises when pastures are referred to colloquially as ‘meadows’ because they have been managed as such in the recent or historic past.

There are various types of wet meadow:

- rush pastures or “rhos” pastures which occur mainly in upland Britain. They are localised in Worcestershire and mainly confined to commons and rough grazings – such as Castlemorton.
- The more ‘managed’ type of wet meadow grassland is the riverside flood-meadow – in Worcestershire, often referred to as Ham meadows. Examples are Kempsey Ham, Upton Ham, Uckinghall Ham etc. These inundation grasslands on alluvial soils have historically been treated like hay-meadows but tended to be zero grazed for longer periods annually – between February and late July. They’re often called ‘Lammas’ meadow because they are often not cut until Lammas day, 1st August, after which stock are introduced to aftermath graze. The other feature of their management is that they were split up into permanent ‘hay lots’ or doles, often marked out by stones or stakes. Good unimproved flower-rich examples of this type of meadow are now rare in this county; partly due to 20thC agricultural improvement but also the impact of the increasingly high nutrient loads in river floodwaters.

There are other management contexts, besides conventional pastures and meadows, in which pockets of species-rich grassland may be found. Four of the main categories to be found in Worcestershire are traditional orchards, churchyards/graveyards, linear habitats – such as roadside verges and disused railway tracks – and tracts within registered commonland.

Traditional fruit orchards - apple, pear, plum and cherry - are found across the county but particularly so in west Worcestershire and along the Herefordshire border (most of those in the Vale of Evesham have been converted to intensively managed commercial orchards).

Many old non-commercial orchards, such as in and around Wyre Forest, and the Suckley Hills area north of the Malverns, are also grazed and some support attractive species-rich grass swards. Historically, they would have been managed as meadows and pastures long before the fruit trees were first planted. In many cases, the visual evidence of the pre-orchard history is clear to see, as the terrain beneath the fruit trees is that of medieval ridge & furrow. An old orchard with species-rich ridge & furrow grassland can be said to double or even treble the biodiversity interest in three dimensions: species-rich grass sward on the horizontal plane; tree trunks with lichens, rot holes, woodpecker cavities on the vertical plane and foliage, mistletoe, lichens on the depth plane.

Management types: Hay-meadow Vs Pasture Vs Wet meadow/Flood-meadow & other grassland management categories.
Churchyards often support old and species-rich grass cover in the main because they have never received inputs of manure or artificial fertilisers, as has surrounding farmland. Also, in certain cases, the mowing regimes remove biomass and deplete nutrient levels (though it is also the case that over-intensive mowing in churchyards reduces the botanical interest). Worcestershire has a scattering of churchyards which have been accorded county (Special) Wildlife Site status.

Roadside verges – again, these features have rather persisted in the absence of agricultural improvement, though they have been kept open from scrub invasion by frequent flail mowing. Because of the absence of grazing though, they tend to have coarser sward structures.

Although management isn’t always ideal on main highways - e.g. too many cuts, flail blades set too low, the cuttings left to form a ‘smothering’ mulch, over-use of blanket herbicides etc - some of the minor roads still exhibit excellent wildflower/grass swards as they have a long history of compatible management and, in many cases, may exist as part of the edge of an old meadow enclosure. There are currently 44 grassed roadsides in Worcestershire recognised as Road Verge Nature Reserves (RVNRs).

Disused railway track grasslands occur at far-flung locations. In Worcestershire, amounts of this linear habitat now tend to be small and declining as most disused tracks are not kept open and have scrubbed up as a result. The exceptions are where tracks are managed as part of a public right of way system. In a very few cases – where horse-riding combined with trampling combined with rabbit grazing produces a short, tight sward, they can form exceptionally rich grassland/edge habitats due to the soil influence of track-bed limestone clinker contrasting with the embankments – the result can be a rich flora including plants of both acidic and calcareous conditions.

Registered commons constitute an important element of ‘managed’ traditional grassland. In Worcestershire, they comprise 4203Ha or .024% of the total county land area.

The historical background has been a key influence on distribution of species-rich grass swards on commonland. From a Worcestershire/West-Midlands perspective the commons, such as those managed by the Malvern Hills Conservators and other commons associations, often have a long established tradition of extensive grazing by a variety of livestock which tend to move around at will in the absence of internal fences or enclosures. The long years of more or less ad-hoc grazing regimes combined with zero inputs of fertilizer and herbicide applications and other influences such as horse riding, public access, presence of rabbit populations have resulted in the commons landscapes of to-day: a patchwork of pasture grasslands with, where wet, rushy areas, drinking ponds for livestock and scattered brakes – such as gorse/thorn/bracken scrub.

While commons retain the most extensive areas of relatively unimproved grassland, they tend to be located on the poorer soils, are pastured, and therefore do not support the highest quality, diverse (but closely managed) classic meadow swards. Meadow management is not practical on most commons and they are subject to a whole range of problems and issues which constrain optimal management - e.g. unfenced main roads and lack of control on livestock movement and grazing (leads to both overgrazed and under-grazed areas); overuse by the public for recreation (car parking, horse riding, picnicking, dog walking (eutrophication), dogs worrying livestock and so on).

More detailed and specific information on management and stewardship of commonland and its habitats for Commoners Associations and other Interests can be found in the further reading and web-links section at the back of this handbook.
A year in the life of a Worcestershire hay meadow

Ideal management through the seasons

A typical meadow "somewhere" in the Forest of Feckenham near Redditch will have clay-loam soils, a fairly flat topography and a moderate ridge & furrow terrain. It may be free draining, though the furrows might be damper if they hit the clay subsoils. The unimproved or semi-improved sward will comprise grasses – the most abundant and widespread being common bent, sweet vernal grass, crested dog's-tail, red fescue. Locally it will contain some perennial rye-grass and false oat-grass, with damper areas/furrows supporting a little tall fescue and tufted hair-grass; hard rush if really wet.

Broadleaved herbs – mostly along the freer draining and nutrient poor ridge-tops - will include most commonly: common birdsfoot trefoil, common knapweed, self-heal, bulbous buttercup, ox-eye daisy, yellow rattle, cowslip, ladies' bedstraw, agrimony; with more locally – pepper saxifrage, burnet saxifrage, devil's-bit scabious, betony, saw-wort and common-spotted orchid; finally it may contain an understorey of mosses such as pointed spear moss and feather moss and other species of damper spots like adder’s-tongue fern and glaucous sedge.

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**January to early-April: resting**

The scene should look somewhat similar to this. There will generally be no stock grazing – cattle and horses will be housed. This will avoid poaching of the damp ground in winter and also over-grazing of the sward. Some light sheep grazing may be appropriate. The sward height should be between 3 and 10 cm.

**Mid-April to Mid-July: up for hay**

Probably the most crucial period if caring for and conserving old meadows. This is when the field is shut up for a hay crop and there is zero grazing. This allows the grass and herb species to flower and set seed, thus perpetuating and increasing botanical diversity.

Species visible: common knapweed, crested dog's-tail grass, Yorkshire fog grass, autumn hawksbit, common birdsfoot trefoil

The sward height should ideally be between 10 and 50cm in mid-late June.
| Mid-July (late August about 1 yr in 3): mowing | A meadow is mown, tedded and baled (cropping for hay) after the flowers and grasses have set seed. The action of mowing spreads the seed around the field and enhances genetic diversity of the plant communities.  
Mowing equipment (tractor) needs to be light and preferably using a side mounted cutterbar. Traditional square balers are preferable to modern big round baler machines.  
Sward height after cutting should be 5-10cm  
The meadow should not be cut all at once and corners should be left as wildlife refugia - crucial for invertebrates. |
| August through to November: grazing phase | This meadow is being grazed in November. The action of grazing produces a varied sward structure and further spreads seed around the sward via hooves and dung.  
After the biomass has been depleted by cropping the dunging by animals replaces lost nutrients (NP&K).  
Suckler cows are generally best for aftermath grazing and dealing with coarse or neglected grasslands. Sheep are important for maintaining a fine sward and a good balance of grass and herbs though they are selective and avoid potentially invasive species such as creeping thistle. Horses have a similar close bite, but can cause compaction and hoof damage and need to be carefully managed and rotation grazed. |
Management
The prescriptions for managing and conserving a given grassland to benefit its wildlife and biodiversity will vary greatly depending on a whole variety of factors, as follows:

- the type of grassland (acid/neutral/calcareous) as influenced by underlying geology and soil-type;
- the type of grassland community (sward type) – for example traditional hay meadow – crested dog’s-tail grass/knapweed; flood meadow – meadow foxtail grass/great burnet; water meadows – crested dog’s-tail grass/marsh marigold

Meadows: The ideal management state, a summary

Hay meadows should be ‘closed up’ (not grazed) for a minimum of eight weeks between late April and July into August, before cutting in mid or late summer.

<table>
<thead>
<tr>
<th>Time of year</th>
<th>Desired outcome</th>
<th>Recommended management</th>
</tr>
</thead>
<tbody>
<tr>
<td>February and April</td>
<td>Ideal sward height of 2–5 cm* by mid-April; no significant areas of bare ground</td>
<td>Grazing between February and April, or until the field is closed up for hay. NB some sites may be too damp to tolerate spring grazing and this should be monitored to avoid poaching</td>
</tr>
<tr>
<td>Late April – mid/late July</td>
<td>Abundant hay meadow flowers. Common butterflies are frequently seen on sunny days</td>
<td>No grazing for minimum period of eight weeks between late April and end July</td>
</tr>
<tr>
<td>Late July–August</td>
<td>Hay removed – no visible flowers or standing crop</td>
<td>Cut and remove the hay between mid July and August, when the mid-summer flowers are setting seed</td>
</tr>
<tr>
<td>August–November</td>
<td>Ideal grassland height of 2–5 cm*</td>
<td>Graze the aftermath between August and November. Remove animals when vegetation is close-cropped and no longer growing, and before ground conditions become wet</td>
</tr>
</tbody>
</table>

*Important for enabling Yellow Rattle (an annual) to germinate.

NOTE: In ‘traditional’ agriculture, the timing of hay cuts and the duration of grazing has always varied according to weather patterns, and is also dependant upon local conditions such as drainage and soil type. Help and advice is available from specialist staff at Worcestershire Wildlife Trust, or other local agencies such as F.W.A.G.
Best Practice Tips 1]: Management of Hay Meadows

Given an ‘average’ neutral-soils hay-meadow with a high floristic diversity, on flat topography with little or no drainage problems and a past unbroken history of traditional management – see ‘a year in the life of’ above – it is advisable to continue with the previous patterns of management, since those are what will have produced the existing high quality. In other words, the manager should maintain this long term stability.

The following is a list of the “Dos” and “don’ts” for this “standard” meadow

**DO** :-
A] Shut the meadow up for hay between mid-late April and mid-July (zero grazing). A hay crop need not be taken every year if this is impractical (i.e. if it is difficult to obtain contractors etc), but should be at least one year in three. If up for hay annually then at least one year in five a late crop should be taken – i.e. August/September
B] Cut & bale for hay ideally mid-July onwards after most plants have flowered/set seed. Date may vary according to weather conditions
C] Aftermath graze the meadow commencing 2 weeks after hay crop taken. Suggested grazing period: mid-July to early November. Monitor the weather – if there is heavy autumn rain and attendant poaching risk, then remove stock early
D] Rest the meadow over the winter period – usually from December through to March to avoid damage to sward when there is no grass growth (though there are exceptions if restoration grazing is required in late winter in the case of neglected or undergrazed swards)

**DON’T** (a much longer list!):-
A] Apply any artificial chemical fertilizers NPK. Many grassland flowers only need low fertility soils. High nitrogen encourages a flush of grass growth especially of competitive species such as perennial rye grass, meadow foxtail, red fescue, cocksfoot and creeping bent which smothers out broadleaved herbs. Also certain groups such as the orchids rely on micorrhizal fungi in the soil which are destroyed by nitrate nitrogen. Phosphates have longer term effects reducing seed production and viability in broad-leaved species
B] Apply any boom spray herbicides and particularly broad spectrum compounds. The exceptions are topically applied systemics when used to control creeping thistle, ragwort or docks. Recommended techniques are by use of knapsack sprayer, tractor mounted weed wiper or wick wiper. Otherwise mechanical methods can be used to ‘pull’ tap-rooted plants such as common ragwort.
C] Chain harrow.
D] Put down supplementary fodder.
E] Top the meadow and leave. Cuttings need to be removed.
F] Graze repeatedly during the spring (main flowering) months of May and June. This will, over time, result in depletion of botanical diversity.
G] Overgraze or undergraze.
H] Leave dungheaps or create fire sites
I] Use chemical based worming drenches or boluses on livestock, particularly avermectin compounds (see also advice given under horse pasture management). These reduce the invertebrate fauna in dung and may in turn affect other wildlife which depend on it – such as bats.
J] Plant up with trees.

All of the activities in the ‘don’ts’ list can, to a greater or lesser degree, seriously damage and deplete the botanical diversity of an old species-rich unimproved meadow. Probably the greatest long-term damage can be done by applying artificial fertilisers. There are other issues related to grazing horses on meadows and/or pastures which are particularly relevant in a Worcestershire context - as equiculture accounts for an ever increasing proportion of land-use in the county. (*see section about horse pasture management*)
Best Practice Tips 2: Grassland Restoration

[A] Restoring improved / semi-improved or moderately species-poor swards:

- Augmenting floral diversity - hay spreading, green hay, slot-seeding and other techniques

The preliminary planning stages when considering improving the biodiversity of existing turf should always follow a logical sequence:

- Consider the existing resource – what is there to start with? If you are not sure of the current value of your sward, you need to assess this by botanical survey. A botanist or ecologist will need to visit your land, ideally from May onwards, to carry out a survey inspection.
- What are the fertility levels in the soil? You need to carry out both a pH test and a soil phosphorus test to assess the viability of any restoration project.
- Existing competition within the sward. You need to consider the dominance of competitive grass species – such as Yorkshire fog, meadow foxtails and cocksfoot – as well as broadleaved competitors such as creeping buttercup and white clover.
- What is the weed burden? (This will partly reflect nutrient levels). It is not worth pursuing sward enhancement if weeds are not controlled first.
- Location of the land/farm is important. How close is it to a local and viable seed or hay source?

Restoration management options could include one or more of the following:

- Assuming nutrient levels are sufficiently low, consider enhancing the sward diversity by simple management practices at first. For example, try a double hay cut or use of a forage harvester to reduce fertility. A short period of intensive winter grazing could also be effective – providing conditions are dry. The objective here is encouraging natural regeneration by using mowing and grazing methods alone.
- The spreading of species-rich hay from a nearby source e.g. haymeadow / wildlife site / nature reserve etc. This can be done by spreading dry hay (success less likely); or by spreading of green hay (most effective, if carried out correctly).

If this is unsuccessful or if conditions for hay spreading are unsuitable, a further stage could be:

- Over-sowing or slot seeding with seed sourced, ideally from a local grassland / wildflower site.

A degree of perseverance and patience is required to allow these methods to work. It may take 3-5 years for wildflower diversity to return to a semi-improved sward.
Derelict grasslands: restoration from rank condition and partial scrub cover.

Species-rich grasslands which have gone rank or have partially scrubbed up through neglect need to be restored in most cases through a combination of some mechanical scrub clearance followed up by short-period intensive grazing, normally with cattle.

On scrubbed sites which have succumbed to bramble, hawthorn, blackthorn or gorse encroachment, the advice in general terms would be to tackle scrub manually, rather than using large machinery such as JCBs, in order to minimise disturbance to ground flora and the grass swards. Remove the larger shrubs selectively by the use of chain-saws, while tackling smaller growth with brush cutters and/or employing teams of volunteer labour with hand-tools such as bill-hooks, slashers and bow-saws.

It is probably not worthwhile tackling stands of dense or long established scrub, since the chances of successfully restoring species-rich grassland here are low. The leaf litter and humic layers would have to be scraped back down to sub-soil layer and it is unlikely that the original grass sward seed bank will have survived. The result of such ground disturbance is likely to be colonisation by competitive weed species such as nettle, thistles, docks or, on more acidic sites, rosebay-willowherb.

Always remember that scrub can be a valuable wildlife habitat in its own right – in particular for nesting birds and invertebrates. The objective when clearing scrub from grassland should never be total eradication but pushing the scrub front back to a defined periphery or the corners of a meadow (leaving a scrub border). Also, any clearance should be confined to late autumn and winter to avoid risk of disturbance to breeding birds or destruction of nests. The latter, whether carried out on purpose or accidentally, is unlawful under the terms of the Wildlife and Countryside Act 1981 (as amended).

Once scrub has been cleared back, the next phase of grassland restoration, assuming the remaining grass sward has gone rank and overgrown, should be to introduce some hardy cattle – for example, Galloways or Welsh blacks. Mob-stocking could be considered – introducing animals at a temporarily high stocking rate. Again, this should be done in autumn/winter period or very early spring and in periods of relatively dry weather or frosts, to avoid risk of poaching the ground.

The above is only a generic prescription. The reader is recommended to refer to the Scrub Management Handbook published by FACT and English Nature; also sections of the Grassland Management Handbook.

Please refer to the following website links for detailed information on all of these procedures:

- [www.naturalengland.org.uk](http://www.naturalengland.org.uk) A series of Natural England Technical Information Notes:
  - TIN060 – 065, for example:
    - **TIN060** - The use of yellow rattle to facilitate grassland diversification
    - **TIN061** - Sward enhancement: selection of suitable sites
    - **TIN062** - Sward enhancement: choice of methods
    - **TIN063** - Sward enhancement: diversifying grassland by spreading species-rich green hay

- [http://www.floralocale.org/content.asp?did=23899](http://www.floralocale.org/content.asp?did=23899)
  Flora Locale’s website: knowledge zone → on line library → spreading forage harvested hay from a hay meadow

For restoring species-rich grassland from derelict condition, and scrub, refer to:-

- [www.naturalengland.org.uk](http://www.naturalengland.org.uk)
- The Lowland Grassland Management Handbook
  A Crofts and R G Jefferson. Chapt 10: Grassland Restoration
There will often be circumstances where a landowner, farmer or a gardener may wish to set aside a parcel of unused arable land or a building plot for the creation of a wildflower meadow – in other words, constructing a species-rich grassland from scratch.

In terms of general benefits to conservation and wildlife, this may well be a very laudable objective – especially if it is planned within the context of an urban development scheme or as mitigation work. Other important examples include those cases where it extends a block of existing unimproved grassland on to arable land, buffers an SSSI site, or joins up a grassland corridor.

There are three big caveats:

- Larger scale projects can be quite complex, involve such techniques as soil-stripping and on arable plots there is no guarantee of success. Ground preparation and purchase of seed can be quite expensive.

- In a Worcestershire context, where we are considered to be one of the best counties in England for the grassland heritage of traditional lowland flower-rich meadows and old pastures, the focus of landowners, conservation bodies and indeed the public should be to prioritise the protection, restoration and enhancement of the existing resource of grassland, as sites are still being lost through over-intensive management practices.

- A ‘constructed’ meadow, especially one created from a non-grassland substrate, will at first be low in botanical diversity and may take 10, 20, 30 years to reach optimum. In most cases it is never as good as the genuine article!

A summary list of tips for creation of new grassland on arable field sites is as follows (though for detailed information, follow the on-line links below or go to the reference list at the end of this guide):

1. **Site selection and preparation (environmental considerations)**

   Always choose an appropriate location for reversion to species-rich grassland. Other considerations may take precedence. For example: does the field already have significant populations of scarce arable plants; Is it of importance for farmland birds; is there archaeological interest beneath; what is the drainage like (could be more suitable for wetland/marshland reversion); how close is the field-parcel to existing permanent pasture or species-rich swards? And so on. You will need prior ecological survey to investigate and answer these questions.

   After this, site selection is determined by similar criteria applying to that of restoration/enhancement of species-poor grassland plots, as follows:-

   - What is the current soil nutrient status....available P, total N?
   - What is the pH status?
   - What is the existing weed population in the field?
   - What is the availability of livestock on the farm to graze the planned grassland (or hay-making machinery depending on whether the grassland will be pasture, or hay-meadow)?

   Assuming all of the criteria for appropriate selection of the site has been satisfied, field preparation may be the next stage. In situations where nutrient levels are too high for grassland establishment, preparation will entail some form of soil fertility reduction. Some options are:

   - Growing crops with limited inputs of fertiliser and removing nutrients with the harvest. This may take at least 3 years to deplete e.g. available P
   - Deep or inversion ploughing to expose nutrient poor soil horizons
   - Topsoil stripping to remove surface fertile layers
2] Methods – the most appropriate choices

Decisions will need to be made about the suitability of each method – advantages/disadvantages within the farming situation, timescales, and whether the objectives are being set within the context of an agri-environment scheme, such as Environmental Stewardship.

- Natural regeneration – leaving a sward to develop naturally. This will be most appropriate and effective on sites which have been under permanent grass in the recent past. It may take several years.
- Sowing a grass/wildflower seed mix – probably the best method on ex-arable. Preferably a local seed source should be used. Otherwise, recommend native seed from Emorsgate Seeds, Norfolk.
- Spreading hay or ‘green hay’- again, should be obtained from a nearby meadow. Cheapest option.

Please refer to the following website downloads and references for more information:-
www.defra.gov.uk/rds/publications/default.htm
www.wildseeds.co.uk
Emorsgate Wild Seeds—Suppliers of native British wildflower and wild grass seeds

3] Other Grassland Creation Scenarios

There are other contexts in which grassland habitat creation (and sward diversification) can increase local biodiversity. These are urban green spaces, public open spaces, road and highway verges/interchanges and in private gardens.

The general principles – considering the existing resource/habitat first, establishing whether or not the site is appropriate (site selection), preparing the site, selecting the most appropriate methods for creation/restoration – are similar to those applying to agricultural situations.

Since non-agricultural and other grasslands are not the main focus of this guide, the reader is referred to the list of references and website details below:-
www.naturalengland.org.uk/publications/
Wildflower Meadows: How to Create one in your Garden
www.floralocale.org
Flowers on the Verge: Planting on Countryside Road Verges
www.plantlife.org.uk/uk/
Plantlife: saving-species publications -Create your own Wildflower Meadow
Horse Ownership and equiculture has fast become one of the major rural land-use activities in Worcestershire and other West Midlands counties, in particular around the Birmingham fringes. [Holdings where the predominant economic activity is horse keeping account for 4,807 Ha, or 27% of land-use in this county – Source: DEFRA 2008 figures]

It has become an increasing trend throughout the end of the previous century and into the 2000s, an era which has seen many smaller livestock farms become uneconomic. The land has in many cases been bought up by non-farmers and families whose children ride for leisure and sport. This in turn has led to a rise in numbers of livery and riding stable businesses, as equestrianism becomes ever more popular.

Many of the county’s old grasslands including ridge & furrow fields are now exclusively grazed by horses or ponies. For the most part, horse grazing can be very beneficial for species-rich grass swards and vice-versa. The many broad-leaved herbs retain a high level of digestibility for longer in the season than grasses, and certain herbs such as ribwort plantain and self-heal have medicinal properties which can help build up resistance to parasites and diseases. Others, such as leguminous species are good sources of minerals and vitamins essential to horse health. Another important advantage of unimproved swards (as opposed to rye-grass re-seeds) is their high fibre but conversely low protein and sugar content. Hence the incidence of equine obesity and metabolic disorders such as laminitis is generally much reduced.

Horses and ponies, as well as other species of grazing animal, have various advantages and disadvantages for grazing herb-rich grasslands.

Inherent disadvantages as against other livestock are:-

- their very close bite, closer than sheep
- they are metal shod. Horseshoes can damage turf – especially with heavier breeds
- they have set latrine areas and avoid grazing near dung
- their dung and urine are very nitrogenous – both encourage weed and coarse grass growth around latrine areas. Hence the many horse pastures with dock / thistle / nettle problems

The advantages:

- they are not as selective as sheep and rabbits so graze off less flowers
- they do not need lush, high sugar content grasses and do well on ‘hungry’ pastures
- they need the trace elements found in herb-rich swards
- beneficial to acidic swards where hard grazing can be advantageous. Dung is also important in life cycle of rare invertebrates such as the hornet robber-fly. Patchy structure (grazing mosaics) produced by horses may be valuable in its own right, for instance by favouring key invertebrates.

The perceived drawbacks with grazing horses on swards of high biodiversity importance often do not relate so much to the animals themselves as to the way they are managed. For example, timings and periodicity of grazing, numbers of stock, management of problem weeds, removal of dung and so on.

One of the more prevalent problems which has been noted from survey/research work carried out in Worcestershire is the stocking of field parcels YEAR ROUND with animals, particularly if there is no alternative pasturing, and where the flower pasture can be ‘rested’ during the spring growing and flowering period.

Horse Pasture Management
Whether managed as a summer pasture or a hay meadow, the suggested do’s and don’ts list for managing a typical horse field or pony paddock is as follows (some of this advice may repeat that given in the previous section under meadow management):

DO:-

- Find alternative grazings nearby or rest the sward in your horse paddock between mid-April and July or, at the very least, May/June, when the sward flora needs the window to complete a flowering and seeding cycle.
- If this is not possible and you only own a single enclosure: parcel off sections of the field (eg. using electric tapes) and rotate the horses around the area so that at least some sections of the field get the chance to recover from grazing pressure.
- Remove dung from latrine areas – this will reduce grazing avoidance and lessen the risk of injurious weed invasion around dunging areas.
- Graze with other stock species if possible (eg. Sheep). May reduce worm burden, and also produces a more structurally varied sward.

DON'T:-

- Put down supplementary fodder - use a set feeding area or hard-standing for this
- Over-graze or cause poaching.
- Install manège or gallop area – this should be in separate field where there is no conservation/biodiversity value (manèges can also subject to change of use planning restrictions)
- Chain harrow, especially in grasslands with bulbiferous or tuberous plants such as wild daffodil or orchid species. It can also damage anthills in old pastures. There can though, be viable grass-care reasons for chain harrowing such as soil aeration. Seek further advice if necessary.
- Roll. Can damage anthills; not advised on ridge & furrow. Potential hazard to ground nesting birds such as skylark
- Use blanket herbicides to control ragwort. Use of a spot spray is recommended. Alternatively, use of a mechanical puller – such as a 'lazydog' tool, will avoid damage to non-target plant species.
- Use avermectins or worming compounds which will deplete grassland invertebrates (eg. this could potentially eliminate larvae of the hornet-robber fly, a nationally scarce species which completes its life cycle in dung and relies on dung beetles for prey). Try to find suitable substitutes.

NOTES:

- **Wormers** – include a group of chemicals called avermectins which have adverse effects on some dung-living invertebrate populations and subsequently on bird and mammal populations on wildlife sites. To avoid damage to vulnerable wildlife, animals removed from sensitive sites for worming should only be returned after a sufficient time period has elapsed to ensure the product has cleared from the animals’ system. New alternatives to avermectins are being developed. Internal parasites may show degrees of resistance to the drugs used to control them.

  - **Cleaner grazing systems** may be achievable through low stocking densities and/or rotational grazing practices; also resting the pasture can reduce worm burdens by more than 50%

  - **Regular dung sampling** of individuals (faecal egg counts) and analysis of pasture contamination of favoured grazing areas provide useful mechanisms for determining the existence of a parasite burden or the likelihood of one developing.

In summary, three main approaches can be taken in the control of internal parasites:

- Adopt a clean grazing system with 4-8 week sampling of dung, worm burden analysis (faecal egg count) and assessment of resistance to wormers, followed by treatment of individuals as necessary.
- Target the use of wormers within a clean system to control the main types of parasite within the type of stock being used.
- Routine, regular administration of worming drugs, according to manufacturers’ advice. Current research suggests this may lead to parasite resistance and is no substitute for good pasture management.
## Summer neutral (horse) pastures - Summary of the ideal management state

<table>
<thead>
<tr>
<th>Time of year</th>
<th>Desired outcome</th>
<th>Recommended management</th>
</tr>
</thead>
<tbody>
<tr>
<td>February/March</td>
<td>This will vary between sites. Some early-spring grazing is normal on well-drained sites.</td>
<td>The grassland will have no significant patches of open muddy ground. If dry, rolling/harrowing possible in March to aerate - but beware Provisos relating to bulb/corm plants and ground nesting birds</td>
</tr>
<tr>
<td>April-May</td>
<td>Abundant spring wild flowers, such as cowslip, bird’s-foot trefoil, agrimony</td>
<td>No grazing during April to May, to allow spring flowers to bloom and set seed (or if no alternative grazings, tape off an area and leave ungrazed)</td>
</tr>
<tr>
<td>Mid-May to Mid-July</td>
<td>Summer wild flowers frequent throughout the pasture</td>
<td>Light grazing (e.g. between 0.4–1 Livestock Units) per hectare. Grazing can start in the spring and continue for part or all of the spring and summer. The pastures can be rested (not grazed) for some of this period and then grazed again later in the year (if no alternative grazing space available try to rotate animals around meadow by dividing into parcels and leaving some ungrazed)</td>
</tr>
<tr>
<td>June to September</td>
<td>A mosaic of grazed, and lightly or ungrazed vegetation. Frequent flower-heads of later summer flowers provide a habitat for common butterflies, which are often seen on sunny days</td>
<td>Animals will eat the standing vegetation. Too few animals and the vegetation will get too long; too many will eat all the wild flowers and reduce the value of the meadow for butterflies, bees and other buglife.</td>
</tr>
<tr>
<td>By mid-October</td>
<td>Much of the vegetation has been grazed, leaving sparse patches of ungrazed vegetation. Suggested height of vegetation: 5–15 cm</td>
<td>Livestock are removed when vegetation is sparse and no longer growing, or before if the ground becomes wet and liable to damage. See Butterfly Conservation leaflet for specific advice on grazing damp pastures holding marsh fritillary butterfly</td>
</tr>
</tbody>
</table>

*Management of Meadows and Pastures – Sources of Reference; relevant websites; downloads*

1] [www.floralocale.org](http://www.floralocale.org) – advice note on ‘Paddocks for Ponies and Biodiversity’

2] [www.plantlife.org.uk](http://www.plantlife.org.uk) – leaflet on ragwort “Ragwort – friend or foe?”

3] [www.wildmeadows.org.uk](http://www.wildmeadows.org.uk) – advice note on “Grazing for Wild Plants and Biodiversity”

4] [www.naturalengland.org.uk](http://www.naturalengland.org.uk) – IN52 – Horses, Grasslands and Nature Conservation  
IN92 - Old meadows and pastures  
IN170 - The importance of livestock grazing for wildlife conservation
Where to see the best examples of old meadows & pastures in Worcestershire and the Region: nature reserves and other sites

A list of Worcestershire and other grassland nature reserves in the West Midlands with examples of acidic, neutral, calcareous and floodplain grassland types, managed both as meadow and pasture, several with historic ridge & furrow terrain, is shown below.

Some are open at various times and some have public footpaths crossing them but many are restricted access and some require visitors permits. You are advised to check on the individual visiting arrangements with the local wildlife trust or relevant managing body - websites and contact details supplied. A grid reference and/or postcode is shown in some cases otherwise please check access arrangements with individual owners.

The best time of year to visit any wildflower grassland and to see the floristic displays at their best is between late-April and mid-July. In particular, meadows will be mown in late July so you are advised to visit before then. Always keep to marked access routes or public rights of way to avoid risk of trampling hay crops and disturbing wildlife. Preferably, and again because of the disturbance factor, it is advisable not to bring your dog. If this is unavoidable please keep it on a lead at all times.

WORCESTERSHIRE


[8] Windmill Hill (WWT) Calcareous pasture, cattle grazed. Public footpath only. SP070471


[12] Corse Lawn Common Neutral grassland, some as pasture, some meadow. Open access (registered common). SO834312


(WWT) Neutral ridge & furrow. Restricted access.

[13] Burlish Top
(Wyre Forest DC) Acidic grassland with heath, some grazing. Local Nature Reserve. SO809738

[14] Randan meadow
(WWT) Neutral/acid. Pasture with anthills. Restricted access.

[15] Castlemorton / Coombgreeen
Common complex Open access (registered commonland managed by Malvern Hills Conservators). Parts are SSSI. SO788392

WARWICKSHIRE
[1] Draycote Meadows
(Warwickshire WT)
SSSI. Open access via public bridleway through first meadow only. Access to hay meadow limited to Guided Walks only. SP448706

[2] Loxley Church Meadow
(Warwickshire WT)
SSSI Just north of Old Rectory, Loxley. Access restricted to Trust members - keep to the path around the edge of the field.

SHROPSHIRE
[1] Melverley Farm
(Shropshire WT)
Part hay meadow part grazed. Working farm so visitors requested to keep to the paths SJ583407 Postcode: SY13 4EA

HEREFORDSHIRE
[1] Lugg Meadow SSSI
(Herefordshire NT)
Lammas flood meadows. Access to Upper Lugg Meadow is unrestricted, but visitors requested not to walk in growing hay between April and July. No Access to Lower Lugg Meadow between March and May. Meadows not accessible and hazardous during winter flood periods. SO539405

[2] Hampton Meadow SSSI
(Herefordshire NT)
Lammas flood meadow in Lugg valley. Access generally unrestricted but keep to rights of way in haymaking season - April to late July. Not accessible during flood periods SO560390

GLOUCESTERSHIRE
[1] Wingmoor Farm Meadow
(Gloucestershire WT).
Ridge/furrow meadow Access currently restricted

[2] Vell Mill Daffodil Meadow
(Gloucestershire WT).
Cars can be left near Dymock, and the reserve approached along Poet's Way public footpath SO710314.
Financial Assistance: Packages of Grant Aid for Traditional Management of Old Grasslands

There is currently (2011) only one main funding source to support management of meadows and pastures in the West Midlands area. This funding is available through Natural England’s Environmental Stewardship (ES) grant.

Environmental Stewardship is a government scheme open to all farmers, land managers and tenants in England. Through it landowners and farmers can be financially rewarded for good stewardship of the land and managing it to improve the quality of the environment.

Funding and advice through Environmental Stewardship is helping land managers to conserve, enhance and promote the countryside by: looking after wildlife, species and their many habitats; ensuring land is well managed and retains its traditional character; protecting historic features and natural resources; ensuring traditional livestock and crops are conserved; providing opportunities for people to visit and learn about the countryside.

Within the Higher Level Stewardship (HLS) part of the scheme, landowners have the opportunity to enter areas of already species-rich grassland into a maintenance prescription (or areas of semi-improved sward into restoration management). This can attract payments of between £235 and £275 per ha per annum, if grazing or hay making supplements are included.

Agreement packages under combined ELS/HLS can translate to a sizeable proportion of farm income; to quote the case of one Worcestershire farmer with a 132 Ha mixed farm who entered an ES agreement in 2006 that currently earns a total annual return of nearly £25,000.

Contact your local NE Officers: Natural England [Worcs & Warks Land Management Team], Block B, Government Buildings, Whittington Road, Worcester, WR5 2LQ
www.naturalengland.org.uk

Advice – FWAG, Wildlife Trusts, other bodies.

FWAG’s local farm conservation advisers offer confidential, independent and impartial conservation advice on all aspects of the farm business. For further information and quotes contact your local county group: County FWAG adviser (the Worcestershire FWAG offices are based at Block B, Government Buildings., Whittington Road, Worcester, WR5 2LQ). Some of the more popular services offered, in particular relation to grasslands management, include: Farm Environment Plans and preparation of Entry Level and Higher level Scheme applications; 1:1 visits and follow up reports – e.g. whole farm plan, biodiversity action plan, basic environmental report, Environmental Management service. For website, go to www.fwag.org.uk

Local Wildlife Trust staff/Worcestershire Wildlife Trust: we can offer free advice relating to the management of any county wildlife site, including meadows and pastures. Also, this may include identification of new sites. County Wildlife sites (…..in Worcs. now known as LWS ‘Local Wildlife Sites’ or previously as SWS “Special” Wildlife Sites) are non-statutory, so involve no legal obligations or special conditions on the part of the landowner. However, the existence of such a Local site of importance on a farm holding can increase the chances of a successful grant application. The Trust employs staff with a range of expertise, such as Field Botanists, agronomists, and water and wetlands specialists, and in Worcestershire, we run four farms including a demonstration farm. In addition, Wildlife Trusts run commercial-based consultancies which can often carry out a range of on farm professional services including ecological surveys and farm conservation plans. The Worcestershire Wildlife Trust and Worcestershire Wildlife Consultancy’s online addresses are:-
www.worcswildlifetrust.co.uk
www.worcestershirewildlifeconsultancy.org

SOURCES - technical advice & grant assistance for livestock farmers and land managers in the region

Financial and grant sources: Natural England - Environmental Stewardship
Local advice sources: Worcestershire & Herefordshire FWAG; The Wildlife Trusts (Worcestershire, Warwickshire, Herefordshire); Wildlife Trust consultancies
Free national advice: Flora Locale, Grasslands Trust, Plantlife International
Other relevant bodies: Grazing Advice Partnership; Floodplain Meadows Partnership; Worcester-shire Biodiversity Action Plan (BAP) Partnership; Worcestershire Wildlife Trust (the identification of Grasslands as Special Wildlife Sites)
Free National Advice: Flora Locale, Grasslands Trust, Plantlife

These national charities offer a great range of technical expertise in habitat and grassland management.

Flora Locale is a registered charity which aims to promote good practice in the use and sourcing of British and Irish wild flora; and also encouraging good practice among suppliers, land managers and plant specifiers involved in large-scale habitat creation and restoration projects.

A list of Flora Locale’s remits is as follows:— It produces a regular newsletter, Flora Update and project newsletters Flora North and Wild Meadows; It maintains an extensive website including an on-line library and publishes advisory notes; FL organise an annual training programme for land managers; Hosts a native seed network news group; Works with plant nurseries, land managers, farming and countryside agencies throughout the British Isles and Ireland; Puts machine owners, land managers and operators in touch with each other, (go to the Machinery ring); it collates a list of seed donor sites and registers. Website: www.floralocale.org

The Grasslands Trust is an independent charity that helps save and restore threatened sites and raise awareness of the importance of grasslands for their wildlife, cultural, historic and landscape value. It gives advice to individuals, local communities, businesses, other charities, government and landowners on how to manage and restore grasslands nationwide. It also lobbies decision makers to ensure grasslands are better protected. Website: www.grasslands-trust.org

Plantlife International (UK) is the leading charity working to protect wild plants and their habitats with national offices in England, Scotland and Wales. It conserves sites of exceptional botanical importance, works to rescue wild plants on the brink of extinction and ensures that currently common plants don’t become rare in the wild. It is a lead partner in the Government’s Biodiversity Action Plan (which targets the UK’s Priority Species and Habitats for conservation action) and is responsible for conserving over 100 of the UK’s most threatened plants and fungi. Website address: www.plantlife.org.uk

Other Useful Advice Sources – Professional/Independent Organisations

The Grazing Advice Partnership or GAP (formerly the Grazing Animals Project) is a partnership of farmers, land managers and conservation organisations that are committed to promoting the benefits of grazing with the natural environment and our cultural heritage in mind.

GAP exists to provide a first point of contact for information, advice and networking support to anyone with an interest in grazing with our natural environment and our cultural heritage in mind.

It does not duplicate work undertaken by the many individuals and organisations involved in farming, conservation and land-management. Instead GAP provides the means by which that knowledge, experience and good practice can be easily sign-posted, accessed and made available to as many people as possible.

Stock Keep is a practical database that allows users to register the details of their animals or the availability of their land for grazing. The web pages are free and easy to use. Website: www.grazinganimalsproject.org.uk

NOTE ON PROCUREMENT OF SPECIALIST MACHINERY FOR SMALL-SCALE AND TRADITIONAL HAY MAKING:— There is currently no specialist ‘Machinery Ring’ with purpose-built equipment for hay cropping and meadow management in Worcestershire and the Region. Examples of appropriate kit are alpine balers, brush harvesters for meadow seed, light tractors with square balers (see below), drum wick wipers to deal with ragwort problems—and so on.

The Worcestershire Wildlife Trust holds a directory of farmers in the county and further afield who can loan out such equipment or contract their services. The list is in the process of being updated and can be supplied upon request.
The Floodplain Meadows Partnership is an innovative project focusing on research, management, promotion and restoration of rare and declining floodplain meadows in England and Wales.

The Partnership is bringing site managers, conservation practitioners, landowners, local communities, and policy makers together to develop a shared objective of protecting and enhancing these beautiful but rare and threatened meadows.

The partnership undertakes long term monitoring on some of the best remaining sites across England and Wales to improve knowledge about plant community responses to environmental change. It also runs short courses, and workshops and provides helpful publications and advice sources.

Website: www.floodplainmeadows.org.uk

Worcestershire Biodiversity Partnership. Worcestershire has a rich flora and fauna, including many national rarities. The Worcestershire Biodiversity Partnership is an alliance of organisations working within the county who have the common aim of achieving the targets set out in the Worcestershire Biodiversity Action Plan (BAP), the document that outlines the action it will take to conserve and enhance the habitats and species of conservation importance. The Partnership is committed to the protection and enhancement of the county's natural environment now and for the future.
GLOSSARY OF TECHNICAL TERMS (in A-Z order)

ACIDIC (GRASSLAND)
Acidic grasslands normally occur on acid rocks such as sandstones, acid igneous rocks and on superficial deposits such as sands and gravels, over which soils with a pH below 5 have developed. In Worcestershire, they occur in association with heathland in the north of the county, and on the hard-rock geology of the Malvern Hills. Usually pastured

AFTERTHUGHT (GRAZING)
The 'aftermath' is the grass regrowth after the cutting of a crop of hay or silage, which can subsequently be used for grazing, or a second grass crop.

BIOINDICATOR
The Convention on Biological Diversity (CBD) defines biodiversity as: "The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."

CALCAREOUS (GRASSLAND)
Normally, these occur on pervious bedrocks - chalk or limestone - Soils are usually shallow, typically with a pH range of between 6.5 and 8.5, and often free draining and on steep sites, such as escarpments, where agricultural improvement has historically been impractical. In Worcestershire, calcareous grassland types are also to be found on soils on clay geology. Usually pastured.

GRASSLAND (IMPROVED)
Swards which are dominated by only a few competitive grass species - in particular, perennial rye-grass; and are low in botanical diversity, having few broadleaved herbs except those tolerant of high nutrient status — such as creeping buttercup, white clover and dandelion. These swards have normally been agriculturally improved, for example by re-seeding or by application of artificial chemical fertilizers.

GRASSLAND (SEMI-IMPROVED)
Swards which have been partially agriculturally improved - such as by intensive grazing, or by light applications of artificial fertilizer. The total diversity of plant species.

GRASSLAND (UNIMPROVED)
May be defined as swards which are most closely approaching the 'semi-natural' state - that is, they may have been grazed, but have only ever received organic inputs in the form of animal dung. They will not have been ploughed or tilled for at least 50 years.

INDICATOR (SPECIES)
One of a collective suite of key plant species within a habitat, vegetation type or plant community. For example:- if a given sward includes a high frequency and abundance of grass species such as red fescue, common bent, crested dogs-tail, sweet vernal grass, Yorkshire fog and meadow fescue with the commoner broadleaved herbs including birds-foot trefoil, creeping cinquefoil, self heal, lady's bedstraw, ribwort plantain, common sorrel ox-eye daisy, yarrow, agrimony and common knapweed, these are all indicative that the broad vegetation type is that of neutral grassland. A detailed botanical survey may define this more specifically down to a grassland plant association or community type.

JIZZ
From the military term GIS (“general impression and shape”). In ornithology it can be defined as “The unique characteristics of a bird species that enable it to be immediately identified by an experienced bird-watcher who has seen that bird before and is familiar with its appearance and behaviour. Used in this context.....it is the general appearance... of a winter grass sward eg more straw-coloured than bright green; composed of fine bladed grass species, such as fescues and bents, with an underlay of mosses; slightly tussocky; small broadleaf-herb content etc....all of which marks it out as unimproved .

LAMINITIS
Laminitis is a disease of the digital laminae of the hoof (foot of an ungulate). It is best known in horses and cattle. One of the more common causes is carbohydrate overload caused by eating too much lush grass, or sudden exposure to this. Too much carbohydrate in the gut leads to lactic acid build up and increase inacidity, which in turn kills favourable gut bacteria. Because fibre being digested in the gut cannot be fermented, endotoxins are released into the bloodstream. The endotoxaemia results in impaired circulation, particularly in the feet, leading to separation of the hoof laminae form the hoof wall and build up of infection.
MEADOW
Traditionally, this describes any block of grassland, normally enclosed, which is shut off from grazing at the start of spring, allowed to grow up until early/mid-summer, then harvested for a hay crop when it is between 30 and 40cm sward height. The hay is cut tedded, left to dry and baled. Two weeks or more after hay-cropping, the field may be aftermath grazed. Stock are normally grazed through to the end of the season in October/November (See pasture)

NEUTRAL (GRASSLAND)
A.k.a. ‘Mesotrophic’ grassland. This is the classic hay/grazing type of sward found in lowland England on soils which are not free draining but not waterlogged or gleyed, and of moderate neutral status, in pH range 5 to 6.5—often on clays or clay-loams. However, these grasslands are most often found on flatter terrain and on more fertile soils; and were therefore the first in recent history to be agriculturally improved and/or turned over to arable. Hence, the unimproved neutral hay-meadow swards are now the rarest and the most fragmented in the farmed countryside.

NPK (FERTILISER)
The three most important nutrients required from inorganic fertilisers for grassland production are nitrogen (N), phosphorus (P) and potassium (K). These are available singly (‘straights’), or as a combination of N, P and K in compound fertilisers. The application of inorganic fertilisers is associated more with intensively managed swards. If applied to unimproved semi-natural grasslands, it can result in detrimental changes to species composition and a reduction in sward diversity.

NUTRIENT (BUDGET)
[as used in the context of meadow management and/or restoration] Refers to nutrient inputs versus the outputs—for example inputs could be past nitrogenous fertiliser use, inputs from animal dung, drainage influence—inflow (of nutrients) and runoff from neighbouring fields. Output could include removal of biomass via hay-making, leaching due to heavy rainfall through pervious underlying geology—and so on.

RIDGE & FURROW
Micro-topography seen in many enclosed grasslands, especially in the Midlands. The deeper, taller examples seen in Worcestershire meadows may originate from medieval open field systems, where in feudal strip farming, single lengths of ridge furrow were managed under individual ownerships. Some of the shallower examples of ridge/furrow originate from post 18thC parliamentary enclosures. The ridges were thrown up by repeated mould-board ploughing, in a clockwise direction around one long rectilinear strip. Local Worcestershire farmers often refer to these ridges as “Lands”.

PASTURE
A pasture grassland is generally one that is open for grazing any time of the year (as opposed to a hay meadow which is shut off from grazing livestock in the spring/early summer months). Pastures are normally grazed from spring through to autumn—often through the flowering season, which means that many species characteristic of hay meadows which cannot tolerate close grazing, such as orchids, hay rattle, pepper saxifrage etc are missing or in reduced abundance, in pastured swards. Grassland on acid or calcareous sites, such as chalk downland is normally too impoverished or fescue/bent dominated to produce viable hay crops, so this is mostly pastured.

SEDGE
This plant group includes all members of the family, Cyperaceae. Though looking superficially similar to grasses, they are differentiated by (mostly) having triangular stems instead of round, and having leaves arranged spirally in threes - whereas grasses have leaves arranged alternately in only two planes up the main stem. In most drier grassland types, dwarf species occur, the commonest being hairy sedge, glaucous sedge, spring sedge. Only wet or marshy grasslands tend to include the bulkier species.
REFERENCES


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DEFRA: RDS., 2005 Environmental Stewardship Farm Environment Plan Guidance 008: 1st Edn


Rodwell. J.S., 1992 British Plant Communities, Volume 3: Grasslands and Montane Communities


SELECTED FURTHER READING & OTHER SOURCES

Conservation Land Management 2010 Vol. 8, No. 3, 15 - 17. [Conservation Land Management journal - www.conservationlandmanagement.co.uk]


Natural England (available as pdf download) NE 285: Common Land Tool Kit

Natural England (available as pdf download) NE296: Stimulating Action on Local Commons

Page. M., 2000 The Plant Ecology of British Agricultural Grasslands


Surrey Horse Pasture Management Project - www.surreycc.gov.uk/sccwebsite/sccwpages.nsf
There are more than 70 Worcestershire Wildlife Trust nature reserves across the county that form part of our vision for a Living Landscape for Worcestershire. By working with other landowners, managers and communities we aim to restore, recreate and reconnect fragmented natural habitats to achieve a landscape where wildlife can flourish and people can lead happier, healthier lives.

WANT TO GET INVOLVED?
Become a member - Volunteer - Make a donation
Adopt a Species - Rent a Nest - Leave a gift in your will

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