



Hay Time

Working with farmers to restore meadows across the Dales

The Hay Time project aims to enhance and restore at least 200 ha of upland and lowland meadows throughout the Yorkshire Dales. It aims to do this by providing advice on meadow management and by actively restoring meadows using seed harvested from species-rich donor meadows to increase the plant diversity of suitable receptor sites.

Hay Time is a partnership between the Yorkshire Dales Millennium Trust and the Yorkshire Dales National Park Authority. The project runs for five years and started in 2006. A sister project is being run in the North Pennines by the North Pennines AONB Partnership.



Why is the project needed?

Over the past 75 years there has been a dramatic decline in the extent and quality of grassland of nature conservation value throughout England and Wales. This decline is due largely due to changes in agricultural practice including:

- ploughing-up of grasslands for re-seeding or crop production
- intensification of production, principally through inorganic fertiliser addition
- heavy grazing pressure
- change from hay to silage management
- abandonment
- drainage

Why do meadows matter?

Traditional species-rich hay meadows, such as those found in the Dales, are of indisputable nature conservation value:

- botanic value
 - more than 30 species per square metre
 - up to 120 species per field
 - rare and scarce plant species
- habitat value
 - feeding areas for invertebrates, bats and other mammals
 - feeding and nesting sites for birds e.g. yellow wagtail, twite, curlew, black grouse, grey partridge

Dales meadows are also an iconic component of our rural heritage and, together with drystone walls and field barns, are a highly recognisable and valued feature of the Dales landscape. Many visitors are attracted to the Dales in the early summer months to see the varied, colourful display of flowers and all the associated fauna that feed, bask and nest in the meadows.

Upland meadows

The Dales are host to a special type of meadow that is almost entirely restricted to the upland valleys of North Yorkshire, Cumbria, County Durham and Northumberland. This type of meadow, termed an MG3 *Anthoxanthum odoratum*-*Geranium sylvaticum* grassland, occurs in upland areas where traditional hay meadow management has been applied in a harsh sub-montane climate, at altitudes between 200-400 m. MG3 grasslands are one of the rarest grassland types in the UK - it is estimated that less than 1000 ha remain. Their scarcity and value has been recognised by their classification as a priority habitat in the UK Biodiversity Action Plan and an Annex 1 habitat of the EU habitats directive. It has been estimated that there are 100 ha of upland meadow in the Yorkshire Dales, with 440 ha in the North Pennines.



A particular feature of these meadows is the density and variety of flower species that they contain. Wood crane's-bill is a characteristic species, together with species associated with damper parts of upland meadows, such as globeflower, melancholy thistle and common bistort.

As well as upland meadows, two species-rich lowland meadow types are also found throughout the Dales, termed MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland and MG8 *Cynosurus cristatus*-

Caltha palustris grassland. While these meadow types are more widely distributed throughout England and Wales, they have also been subject to massive decline and are of very high nature conservation value, recognised by their classification as UK BAP priority habitats.

How are meadows traditionally managed?

While some think that meadows are the result of leaving nature to 'do its own thing', hay meadows are in fact the product of human intervention. Species-rich meadows are the result of long-term traditional management, involving a single annual hay cut and aftermath grazing. It has been shown that any alteration from the traditional management of a species-rich meadow is likely to affect its species composition. The usual components of a traditional management regime are:

- a single annual hay cut in mid-late July, with the crop left to dry, baled and then stored for winter fodder
- aftermath grazing with sheep or cattle through autumn, winter and spring
- 'shut up' (stock removed) in April-early May to allow the hay crop to grow
- no inorganic fertiliser addition
- no or minimal use of farmyard manure
- occasional liming to maintain neutral pH

Meadow restoration - the problems

Bringing back the species-rich meadows that were once prevalent across the Dales is a complicated task. Re-instating traditional management will not automatically restore a species-rich meadow. This is because seeds of most traditional meadow species are very short lived, so where a field has been in unfavourable condition for more than a few years, there is not a 'bank' of desirable seeds in the soil from which the meadow can re-generate under favourable management.

The other problem restricting meadow restoration is the poor input of seeds of traditional meadow species from surrounding land. Whilst traditional, flower-rich meadows used to be widespread, the dramatic loss of these meadows means that the few that remain are highly fragmented and isolated. As meadow species have relatively low dispersal ranges (e.g. 1-2 m a year), species are unlikely to spread to sites where traditional management has been re-instated.

In most cases it is therefore necessary to introduce seed to restore a meadow. This brings its own considerations - use of locally obtained seed is really important as genetic diversity between dales also needs to be protected.

Meadow restoration - why is it needed?

Meadow restoration is important for a number of reasons. Firstly, restoring meadows should help to buffer the few species-rich meadows that remain. Surrounding a traditional meadow with similar vegetation should help it to persist, as it is not subject to bombardment with seed of inappropriate species from, for example, adjacent improved grassland.

Restoration can be targeted so that remaining traditional meadows are linked, allowing exchange of seeds and movement of fauna between sites. Of course the restored meadows also extend the meadow resource and provide additional habitat for the variety of fauna that use meadows for feeding and nesting. It is hoped that, in time, restored meadows will develop the undeniable conservation value of the many meadows lost over the last 75 years.

How are we doing it?

The project relies upon using seed from existing species-rich meadows (termed donor meadows) to diversify meadows that need restoration (receptor meadows). Working closely with farmers and other land managers is an integral part of the project, as they will be managing their meadows for many years to come. Meadow restoration and management provides additional income for farmers with donor or receptor meadows: donor farmers are paid for the seed harvested from their meadows and receptor farmers qualify for higher management payments under agri-environment schemes, as well as having up to 100% of the restoration costs reimbursed.

Seed is harvested from a donor meadow by taking a cut of 'green hay' using special machinery at the time the meadow is normally cut. This hay is then quickly transported to the receptor meadow before it starts to heat up, to ensure maximum transfer of viable seed. The hay is then spread out over the receptor and the seeds fall from the hay as it dries, as normally occurs in hay management. Receptor sites are prepared by harrowing or intensive grazing before seed is introduced, to create gaps in the sward for seeds to establish in. The project has its own machinery and trained contractors to undertake restoration work for farmers/land managers.

Donor sites are selected to have a good variety of traditional meadow species, including species such as yellow rattle, sweet vernal grass, meadow buttercup, red clover and other legumes. These species need to be introduced to facilitate the later colonisation by a wider range of species. Receptor sites must be able to be managed traditionally for the foreseeable future and have low soil fertility - low levels of phosphate (less than index 3) are particularly critical.



It is important to recognise that even where seed is introduced, meadows won't become species-rich overnight - it can take many years. Indeed, the remaining species-rich meadows that we have in the Dales are the result of many decades of traditional management. Introducing seed is therefore just the start - appropriate management is essential to the successful restoration and maintenance of a species-rich meadow in the long term.

Hay Time Project Officer

The Hay Time Project Officer's role is to:

- provide specialist advice to land managers
- identify and monitor seed donor and receptor sites
- co-ordinate seed harvesting, receptor site preparation and seed sowing
- liaise with partners, land managers, agricultural advisors and contractors
- encourage land managers to upgrade or enter into agri-environment schemes
- run seed harvesting and meadow management training
- implement or support community and education initiatives

For further information, the Hay Time Project Officer can be contacted on **015242 51002** or email **info@ydm.org**

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