

Planting for Pollinators

## **Recommendations for restoring or creating a northern UK flower-rich meadow site**

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### **Is my site suitable?**

Taking a soil sample is a good starting point to determine whether your site is suitable for meadow restoration or creation. Meadows require low levels of fertility with phosphate levels (or P-index) of between 0 and 2 and a pH ideally between 5.3 to 6.3. Agricultural laboratories such as Lancrop laboratories <https://www.lancrop.com/#/> can help provide information on how to take a soil sample, they will also assess any soil samples that you send them. Please contact Lancrop Laboratories directly for further details.

If the pH is lower than 5.3 consider liming, further information can be found here: <http://adlib.everysite.co.uk/resources/000/264/812/TIN045.pdf>. If the fertility is higher than P-index 2.0 then the site is not yet ready to be restored. In this instance cut and remove arisings to reduce fertility over the next 2-3 years.

### **Site preparation and sowing**

1. Either graze, if you have livestock, or cut and remove arisings (grass clippings) to create a short sward (3-5cm) ready for harrowing. This is best done late summer/autumn time. It's not ideal but this can also be done over winter (latest end of January).
2. Harrow or scarify to expose 50% bare soil, ideally, this should be done on a dry/damp day with no extremity of weather forecast for the next few days.
3. Sow meadow seed at a rate of 4-6grams per square metre. This can be done by hand but needs to be completed within 3 days after harrowing.
4. Roll seed into ground to ensure best seed soil contact (or encourage a community group to jump up and down on the seeded area!). If you have livestock, introduce them back on to the site once there is a bite of aftermath – they will tread the seed into the soil, cattle are ideal for this.

### **Ongoing management (1-3 years)**

#### **Spring management:**

One 'cut and collect' is usually sufficient ideally in mid to late April (no later than 15 May). If the site is 'grassy', cut and collect the grass during this period when the grass reaches 15cm. Cut to a height of 5-10cm, remove arisings. If you have livestock, graze the site up until 30 April (no later than 15 May) to enable optimal flowering and seeding time of the meadow plants. Allow the grass sward to grow after this date until mid to late July, removing any livestock.

#### **Summer management:**

In mid-late July, cut the hay crop, and turn the grass (ted out) 2-3 times to allow wildflowers and grasses to shed seed, and then remove dried grass (hay) from field. Where possible, provide aftermath grazing with cattle or sheep, this enables seed to be trampled in. Alternatively 'cut and collect' the site a week or so after the hay cut, which will help do the same trick.

### **Autumn/winter management:**

Provide a minimum of one 'cut and collect' in autumn. Cut to a height of 5-10cm. If the site is grassy, you may need more cuts to keep the sward short (ideally 10-15cm). Always remove arisings, as this will help lower fertility. Alternatively, if you have livestock, graze with cattle or sheep to keep sward short but no lower than 5cm).

Continue a yearly cycle of:

- Allow grass to grow from 30 April – 31 July (hay crop)
- Cut and remove arisings or graze with livestock to keep grass short (between 5-15cm) from 01 August - 30 April.

### **Ongoing management (4-10 years)**

Between 1-3 years, the meadow will show early signs of restoration with the key functional species establishing i.e. yellow rattle, red clover, meadow buttercup and sweet vernal grass, and dominant rank grasses should be declining. Once this happens, this a good time to then add 'harder to establish' wildflower plug plants such as meadow or wood crane's-bill, great burnet, betony, melancholy thistle (non-invasive) and others. These can be added a rate of 5 plugs per metre, in groups at intervals across the meadow. The hay meadow cutting date can also be relaxed so that the meadow can be left uncut from 30 April up to the end of September or later, if desired. This will benefit pollinators. However, to maintain wildflower diversity, the site should be cut and collected at least twice per year – once in late winter/early spring and then after the hay cut. Keeping margins uncut is also highly beneficial in helping to provide undisturbed overwintering habitat and refuge for pollinators.

### **Sourcing seed and plugs**

Since 1940's we have lost 97% of species rich hay meadows including upland and lowland meadows across the UK, these are one of the best habitats for wild pollinator species including bumblebees, bees, hoverflies, butterflies, flies, beetles and moths. Many pollinators have adapted their life cycle to the flowering seasons of the wild plants within their local area. By choosing species native to Cumbria when creating a meadow or other habitat, not only are you benefitting pollinators, you are also boosting populations of plants that are otherwise declining in our countryside.

**Seed recommendation:** Yellow rattle is a key restoration species – see page 3, adding additional quantities of yellow rattle (up to 40% of seed mix) will help increase the rate of restoration.

- Neutral meadow mix 4g/metre<sup>2</sup> purchased from: [Neutral Meadow Mix \(1 gram\) - Cumbria Wildflowers](#) or [Northern Hay Meadow Mix – Scotia Seeds](#)
- Yellow rattle 1g/ metre<sup>2</sup> purchased from: [Yellow Rattle \(Rhinanthus minor\) Partially cleaned. - Cumbria Wildflowers](#) or [Search Results for "yellow rattle" – Scotia Seeds](#)

Wetter areas:

- [Wet Meadow Mix – Scotia Seeds](#)

### **Meadow mix and meadow plug plant selection rationale**

Species-rich Upland and Lowland hay meadows are a part of the UK's cultural landscape and provide vital habitat for important and rare species. The very richest meadows can support 120 plant species, providing important food and nesting sites for a wide range of

invertebrates, mammals and birds, including up to 206 UK Biodiversity Action Plan (UK BAP) priority species.

Over the last century, unprecedented changes to our landscape have resulted in major loss, fragmentation and deterioration of these habitats. Since the 1930's we have lost 97% of our Lowland meadows, and only 1% of Upland hay meadows remain. Due to their rare and threatened status species-rich Upland (UK habitat classification G3b: Upland meadows) and Lowland hay meadows (UK habitat classification G3a Lowland meadows) are of national and international importance; both are priority (UK BAP) habitats, and Upland meadows are also Annex 1 habitat in the EU Habitats directive.

Whilst Cumbria is one of the few strongholds in the UK for our remaining Lowland meadows and Upland meadows, even here fragmentation of these habitats into small isolated sites has resulted in a significant reduction of species. In addition to this, 60% of England's flowering plants are decreasing and overall, a staggering 60% of UK wildlife is declining, including our pollinating species.

Flower rich grasslands are one of the best habitats for pollinators and provide an abundance of nectar and pollen at a key time during a pollinating insect's life cycle during the summer months. A species-rich meadow can contain up to 30 different wildflower and grass species per square metre and up to 120 within a meadow, which in turn supports a wide range of insects and other wildlife.

Whilst intensive farming practices have driven these flower rich grassland habitats to the brink of extinction in the agricultural landscape. Many relic meadow communities and their species have been able to persist in roadside verges and a handful of isolated meadows, where they have been able to survive due to the low soil fertility and lack of intensive management, such as the addition of inorganic fertiliser.

Re-instating flower – rich grassland habitats will not only benefits pollinators, it also increases the biodiversity of landscape, and helps to connect people to iconic and valuable heritage and ecological assets.

### **Restoration species and meadow establishment**

Meadow habitat restoration involves adding seed to introduce or greatly increase populations of key functional species such as yellow rattle *Rhinanthus minor*, red clover *Trifolium pratense*, sweet vernal grass *Anthoxanthum odoratum* and meadow buttercup *Ranunculus acris* in meadow habitats that have declined. Yellow rattle is a parasitic species that is especially useful in meadow restoration as it suppresses the growth of undesirable, vigorous species, particularly coarse grasses, by using their root systems to obtain water and nutrients.

By reducing the vigour of competitive species, the sward is able to become more open, allowing desirable species to establish. Applying a flower rich seed mix allows for a high frequency of nectar and pollen rich species to be added to the site. Where possible locally harvested seed is sourced, to include eyebright and yellow rattle species.

Some wildflower species are slow to establish from seed, by adding plug plants of 'harder to establish plants' the sward diversity can be increased further. Restored meadow habitat should then be managed sympathetically with an annual hay cut (removing all arisings), where possible an early cut and collect in mid- April is encouraged, especially during the early stages of restoration, as this will help to suppress spring growth of vigorous grasses.