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## Making space for nature in Cornish towns



**Guidance for urban creation of  
urban meadows in areas of amenity grassland**

July 2020

## Making space for nature in Cornishtowns

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## Making space for nature in Cornishtowns

### Introduction

Wildflower meadows offer a diverse, and typically attractive, habitat for people and wildlife. The twentieth century saw a 98% decrease in the variety of wildflowers in the UK countryside. The recently published State of Nature report<sup>1</sup> states

“...statistics demonstrate that the abundance and distribution of the UK’s species has, on average, declined since 1970 and many metrics suggest this decline has continued in the most recent decade. There has been no let-up in the net loss of nature in the UK. Prior to 1970, the UK’s wildlife had already been depleted by centuries of persecution, pollution, habitat loss and degradation. “

Over the past two decades, renewed interest in wildflower habitats has grown with concerns for biodiversity protection and expansion. Introducing new habitats such as urban wildflower meadows in urban settings with grasses, wildflowers and flowering plants offer several advantages;

- Plant diversity attracts insects and other invertebrates (including butterflies, bees, spiders and millipedes), birds and mammals
- Urban meadows are cut less, providing colourful display in summer where the long vegetation provides homes and food for wildlife
- Flowering plants add a changing palate of colour to the urban environment throughout the seasons
- Active involvement of the local community in managing the site can foster and encourage a sense of community ownership and value
- Opportunities for education and recreation (ranging from nature studies to art lessons)
- Even small patches of wildflowers change the feel of a setting, bringing a little piece of countryside into towns

Establishing a mature urban meadow from seed takes 3-5 years. To establish a meadow on grassland from seed can take 5 years+ and depend on the vigour of the grassland species present, as the meadow plants will have to compete with the grassland. With perseverance, the results will be rewarding, and provide visual appeal and diversity whilst providing habitat and food sources for a wealth of wildlife. The diversity of a well-managed meadow will improve over 15-20 years. An investment now, will not only secure long term benefits for wildlife and people, within an urban setting; they also have the potential to mitigate risk against climate change.

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<sup>1</sup> State of Nature Report 2019

<https://nbn.org.uk/wp-content/uploads/2019/09/State-of-Nature-2019-UK-full-report.pdf>

## Making space for nature in Cornishtowns

### What is a Wildflower Meadow?

A meadow is a type of grassland where plants are allowed to grow until the end of summer, to flower and set seed. **Urban meadows** can be found in parks, gardens, on roadside verges, railway embankments, woodland rides and in some churchyards, where the grass and flowers have been allowed to grow and are usually of modest size.

While traditionally rural meadows were considered grasslands from which hay was made, this type of meadow is less suited to urban settings.

There are two types of flower rich meadows;

#### Annual meadows

Annual meadows are dominated by annual species, most of which are bright and colourful. Annual species, have a one season life span, are quick to flower (around 2 months after seeding) and have limited ecological value.

Annual meadows produce a visually appealing display in mid-summer that provide nectar and pollen for insects over their short flowering season. These 'pictorial' meadows are popular with the public and are often seen in the press along road verges and are often used in urban areas.

They are quick to flower – around 2 months after seeding – but have a limited flowering window. These cornfield annuals demand a completely different regime to a perennial wildflower meadow; They have a limited ecological value. Butterflies, for example, love the nectar from annual wildflowers but need perennials and grasses as food plants for their larvae. Pollinators generally need a longer flowering period. Other invertebrates need the protection of perennial plants to overwinter.

The management of annual meadows is far more labour intensive than perennial meadows (see below). Annual meadows need to be recreated every year, where after flowering and seeding, the plant material is cut and removed, the ground scarified (raked and disturbed) and the meadow reseeded.





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### Perennial meadows

Perennial or Traditional meadows are grasslands populated with wildflowers that flower year after year. They usually have a mix of native grasses, and combination of long flowering perennial (come back year on year) wildflower species. This is what makes them so attractive and good for wildlife.

Perennial meadows in bloom are attractive and dynamic. The meadow colour and composition will differ from the start of spring throughout the season until the end of summer, as each of the different species comes into bloom and sets seed. The variety of plants, with their, different pollen and nectar sources provides a valuable habitat for all life stages of our pollinators.

To provide an initial splash of colour in the first year of a meadow a 'nursery' or one off sow of annual wildflower seeds. However, the following year the more long term species will flourish changing the look and feel of the area.



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### Considerations

#### Practical

Before embarking on the creation of urban meadow patches, the site needs to be appropriate for wildflowers in terms of the soil's depth, type and nutrient content. The management of a wildflower meadow is substantially different from that of a regularly mown garden lawn. A long-term management commitment is required to establish a flourishing wildflower meadow. The financial and labour costs of meadow creation and ongoing management must form part of the decision-making process.

#### Public perception

Despite the wildlife and aesthetic benefits offered by wildflower meadows; they are occasionally shunned by local communities for whom the urban greenspace is intended. Most likely, because of their untidiness in autumn (once they have flowered) and the physical height of the flower stands (in comparison with mown grassland). The tall flower stands may be seen to impede access for humans (not dogs) and the meadows once flowered can lead to visual interpretation of these areas that are abandoned and unmanaged, especially the case in more formal, heavily used greenspace settings. Where fears or negative perceptions are expressed, they are best managed locally through community engagement and education events together with signage on site.

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**This area is a wildflower meadow patch which will change with the seasons**

Creating wildflower meadows in urban areas is a great way to provide habitat which attract butterflies, bees, spiders, millipedes, birds and mammals.

Ahead of winter, the meadow is cut when the flowers have turned to seed pods and the seeds have dropped to the ground. This fallen seed will be part of next year's wildflower meadow.

Parts of the meadow have been deliberately left tall to provide winter wildlife shelters for pollinators and mammals.

Do come and visit this patch in early summer to see in the meadow at its blooming best.

Spacefornature@cornwall.gov.uk

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### Soil suitability

Most semi-natural grasslands in the UK, including wildflower meadows, exist on nutrient-poor or seasonally waterlogged substrates. The concentration of phosphates, nitrogen and potassium in these soils will be low, where there are not enough nutrients to support the needs of coarse, vigorous grass growth. On nutrient rich, fertile soils, wildflowers are rapidly smothered by stronger, faster-growing grasses and woody plants, where the high nutrient content of the soil supports rapid and continued growth. Consideration and exploration of soil properties<sup>23</sup> should be undertaken and/or sampled before attempting to establish a wildflower meadow. If the nutrient content of the soil is elevated, the grassland can be managed in a manner to lower the nutrient levels, to increase the chance of establishing a successful meadow.

An appropriate annual management regime should be adopted to encourage establishment of the wildflowers to prevent encroachment of grasses, brambles, weeds (such as dock and thistle) or shrubs and into the patches to secure long-term success.

### Meadow Management

There is a fundamental difference between cutting regimes for amenity grass and wildflower meadows.

The majority of amenity grass is cut, with the cut grass (arising) left on site – this management method is referred to as cut and drop. It is the composting of this cut and dropped grass on sites, which elevates the nutrient content of the soil and feeds the rapid and continued growth of coarse grass.

The management of wildflower patches and meadows requires removal of the cut material from the meadow area. This prevents the addition of nutrients to the soil, maintaining the nutrient poor status of the soils which is favoured by the majority of native wildflower species.

For continued establishment, it is recommended wildflower meadow areas are cut, with the arising collected and removed from the meadow areas, twice a year. The first cut would ideally take place in early spring and cut any winter growth to approximately 100mm. The second cut is to take place after Summer, and take the vegetation to 50mm. Some margins (in the region of approximately 20%) should be retained to provide a winter refuge for wildlife.



<sup>2</sup> <https://www.bgs.ac.uk/mysoil/>

<sup>3</sup> <https://www.bgs.ac.uk/iGeology/>

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### Wildflower Meadow Creation

The main steps for creation and establishment of a successful meadow are

1. Identify location
2. Design
3. Select meadow product
4. Select wildflower species mix
5. Ground preparation
6. New maintenance regime

Meadows mature over several years.

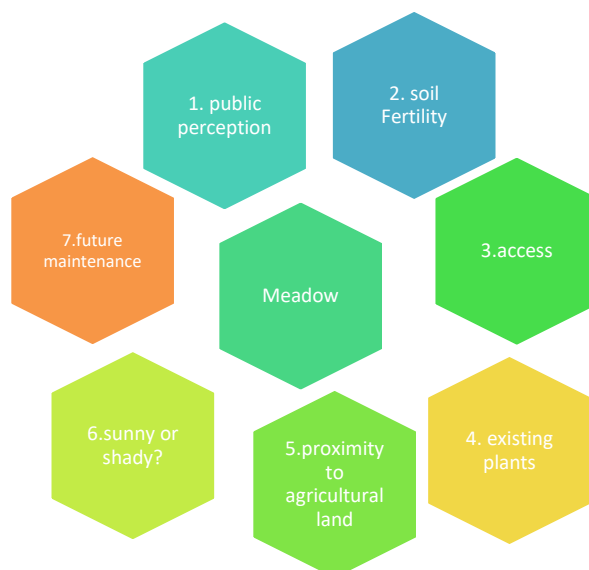
#### 1. Location

The conditions, use and influences of potential meadow sites must be considered and assessed ahead of before progressing with meadow creation.

If a site is open for public use it may be appropriate to undertake community consultation and engagement to either, steer design, or inform of site changes.

There may also be a need to undertake some testing and sampling, to determine suitable locations, products, wildflower species mixes and meadow creation methods. The depth of top soil in potential meadow locations can be explored and mapped at this stage to inform most suitable locations for meadow creation.

The following headings can be used as a guide to assist the location selection process





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### 2. Design

A scaled basemap of the site is required and the design can be drawn onto the map, so the meadow areas can be accurately calculated. This can be undertaken manually on paper, or digitally.

As much of the top soil as possible should be removed to aid the establishment of any meadow (except for yellow rattle sowing which is a different process altogether). The excavation and mounding of top soil can be costly, therefore the use of trial pits to establish top soil depth (as referenced in step 1) across the site, can help select the most suitable (that with less depth) in site location for meadow creation. The design should indicate where the top soil should be mounded on site to avoid transportation and disposal costs. The creation of mounds is also a good method to create new features and separate parts of a site to make it more appealing.

### 3. Select meadow product

A number of different meadow products can be used to create urban meadows. The table below lists some options used successfully within Cornwall Council projects.

Product	Impact	Cost	Suitability	Limitations
Meadow turf	High	High	small areas, patches and mound – costly product Smother's pernicious weeds Less susceptible to invasion of pernicious weeds	Seed mixes pre-determined by supplier Good ground preparation required Needs watering in
Wildflower earth (low fertility soil premixed with wildflower seed)	Slow	Medium	Smother's pernicious weeds, as spread to half an inch depth Less susceptible to invasion of pernicious weeds	Less ground preparation required as low fertility medium provided. Heavy to transport Needs watering in
Seed	Slow	Low	Wider selection of seeds	Extremely good ground preparation required Germination can be patchy Susceptible to invasion by grasses and weed if put on nutrient rich soil
Yellow rattle*	Slow but more natural	Low	Natural style meadow Reduces the need for frequent mowing as limits grass growth	Very slow impact. Dependent on seeds in the seed bank

\*Yellow rattle is an annual root-hemiparasite of moderate to low fertility grasslands which parasitizes the roots (links into the root systems, to draw nutrients from the host plant, reducing the growth of the host plant) of a wide range of meadow plants especially grasses and legumes and whilst capable of carrying out its own photosynthesis. Yellow rattle is dependent upon these hosts for additional supplies of carbohydrates and minerals. By drawing nutrients from surrounding vegetation it impedes their growth and helps maintain an open sward structure. Yellow rattle is intolerant of shade and on fertile sites where coarse grasses are present or on grasslands that are never cut or grazed it tends to get shaded out.

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### 4. Select wildflower Species mix

A wide variety of pre-mixed wildflower seeds are available from specialist suppliers. Species selection should take account of local environmental conditions climate, hydrology and shade. Most habitats have a landscape character and the local plant species are associated with underlying substrates and geology, climate, hydrology and ecological characteristics. A wildflower seed mix should contain species in keeping with the local flora to ensure the existing biodiversity is enhanced. Native and naturalised seeds of UK provenance should be used. Agricultural cultivars should be avoided.

Basic seed mix options to consider are;

- I. Perennial native wildflower – seek local, native seed sources and suppliers, opt for seed of English provenance native wildflowers
- II. Perennial native wildflower with addition of annual seeds – not for use where the site is adjacent to existing high quality habitat, or a designated site
- III. Shade: >80% shade use shade plants. Not suitable around scattered parkland trees
- IV. Wet – if indicators of wet species already on site e.g, meadow sweet, greater willow herb, fleabane, tufted vetch, greater birdsfoot trefoil, and purple loosestrife
- V. Low growing flowering lawn species for use near road junctions e.g. birdsfoot trefoil, selfheal, black medick, red clover and ladies bedstraw
- VI. Coastal mix for seaside locations

It may help to use this table as a guide to which species mix to select

Site conditions	Relevant mixes
1. Does the site offer existing biodiversity/habitat, or is it adjacent to a designated wildlife site? (SSSI, CWS, SAC, SPA)	mix I
2. Is it next to a rural area or link urban to rural?	mix I
3. Does the site require year round or instant impact?	mix II
4. Is there more than 80% shade and not fully shaded all year by canopy cover?	mix III
5. Are there more than 10% wet indicator species such as rushes present?	mix IV
6. Is it close to a road junction or area where short vegetation is required? (500mm vegetation height required for visibility)	Mix V
7. Is the site extremely close to the sea where salt could affect germination?	Mix VI

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### 5. Ground preparation options

Ground preparation is key to successful meadow establishment. Many types of wildflower and fine grasses struggle to compete with coarse grasses that grow on nutrient rich soils. The removal of the top 5 - 10cm of soil, reduces soil fertility and creates open patches of bare ground which will give your seeds a better chance at germination and plant subsequently seedling establishment.

Options include:

- **Mechanical**

Turf strip between 5cm – 10 cm dependent on top soil depth, rotovate the undersoil, harrow 2 – 3 times, 14 days apart to reduce weeds then rake soil to create a fine tilth.

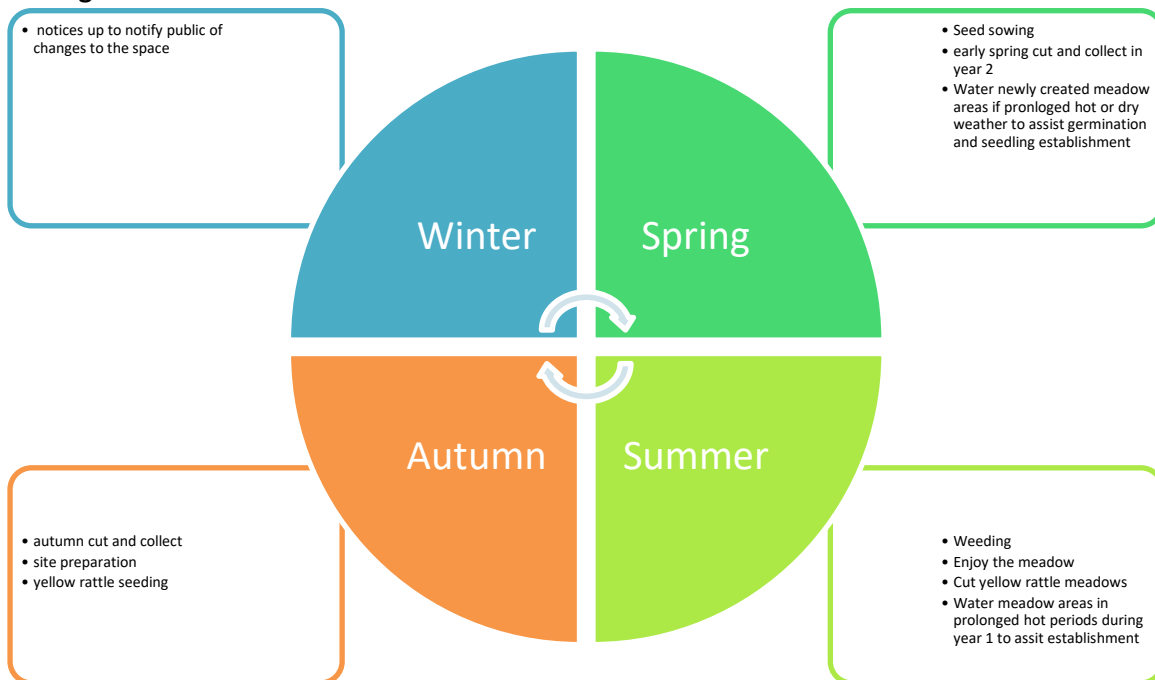
- **Biological - Yellow rattle on existing grassland**

Hard strim the existing grass and remove arisings, scarify the ground to create c. 40-50% bare ground to sow the yellow rattle seed.

- **Chemical**

Glyphosate existing grass with two applications then strip the top soil, rotovate and rake soil to create a fine tilth suitable for sowing. **Please note** Cornwall Council does not endorse the use of glyphosate.

#### Timing



- Autumn preparation would be first choice to get best weed control
  - 1<sup>st</sup> spray off in spring then leave through summer
  - 2<sup>nd</sup> spray of weed flush in the autumn.
  - Await weed germination, spray off final germination of weeds, before broadcasting new seed without disturbing soil surface and bringing up more weed seeds
- Early spring sowing in Cornwall is advisable due to potential wet winters when the seed may rot.

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- Yellow rattle **MUST** be seeded in autumn as it requires a period of chilling to break dormancy and germinates in early spring. Mowing must not be done in the spring if a yellow rattle meadow is being created.

### 6. Maintenance



The keys to successful meadow management are the **timing** of cuts and **removal** of the cut material. After the first winter of creating a meadow, two cuts are recommended, one in spring to take the vegetation to approximately 100mm to remove any winter growth and open the sward for seed germination. The cuts should be undertaken in strips to allow any residing wildlife to move. The second should take place in late summer, taking the sward to 50mm. During both cuts approximately 20% of the material should be left so to act as a refuge for wildlife. Ideally some of the meadow area should be cut in rotation so that there is an area for wildlife to overwinter.

#### I. **wildflower meadows;**

**Spring cut** - this is useful for meadows where grass growth is very lush, such as the first winter after sowing. Cut back to height of 7.5cm (3in) only and complete this cut no later than the end of April. It can also be used in conjunction with sowing yellow rattle in August (see Problems section) to help manage grass-dominant meadows. All arisings cut material must be removed from the meadow area.

**Main summer cut** - this is also referred to as the 'hay cut' and removes the bulk of the material to approximately 50mm. This cut is done between late June and the end of August; the earlier cutting favours spring flowers such as cowslips, fritillary, lady's smock, selfheal and bugle; the later cutting favours summer flowers such as knapweed, devil's bit scabious and lady's bedstraw. All cut material is to be removed. If seed harvesting, this would be the ideal time to gather seeds from the cut material.

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**Autumn cut** – can be useful for fertile sites, one or two cuts between the end of August and late November removes surplus growth and helps keep grasses at bay to allow the wildflowers to persist.

II. For meadows with yellow rattle

**Main summer cut** - This cut is done between late June and the end of August; the earlier cutting favours spring flowers such as cowslips, fritillary, lady's smock, selfheal and bugle; the later cutting favours summer flowers such as knapweed, devil's bit scabious and lady's bedstraw. All arisings to be removed.

Yellow rattle populations fluctuate annually, in meadows and 'move about' from year to year so care must be taken when determining where to cut and when.

III. Road verges

Special maintenance for road verges within visual splays – vegetation height ideally 500mm for visibility 2-5 m back from intersection: mow several times (as many as required to maintain height) up to mid-June.

Following the last cut of the season, all meadows can be kept mown to keep the grass short and neat through the winter. Any cut that produces substantial clippings should have the clippings removed from the meadow area.



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### Suppliers

#### Seed

Specify ratio of wildflowers to grass as 80:20 if planting into previously dense grasses

Boston Seeds

<https://www.bostonseeds.com>

Emorsgate

<https://wildseed.co.uk>

Landlife

<https://www.wildflower.co.uk>

Habitat Aid

<https://www.habitataid.co.uk/>

Heritage Seeds

<https://www.heritageseeds.co.uk/>

Naturescape

<https://www.naturescape.co.uk/>

#### Meadow turf and seeded earth

Meadowmat

<https://www.turfonline.co.uk/meadowmat/>

Wildflower turf Ltd

<https://www.wildflowerturf.co.uk/>

Pictorial Meadows

<https://www.pictorialmeadows.co.uk/>

Lindum Turf Ltd

<https://turf.co.uk/wildflower-turf>

Other suppliers can be found via search engines.

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## Difficult conditions – some suggestions

Potential issue	Low cost option	High cost option
>30% <i>Lolium perenne</i> (perennial rye grass)	Add in patches of larger plants or plug plants Then yellow rattle followed by scarification	<ul style="list-style-type: none"> <li>Replace grass with low maintenance fescues, then add yellow rattle, followed by wildflower seed</li> <li>Wildflower turf/earth</li> </ul>
>30 <i>Holcus lanatus</i> (Yorkshire fog)	Add in patches of larger plants or plug plants Add yellow rattle (has dormant seed bank), followed by wildflower seed (high risk of establishment failure)	<ul style="list-style-type: none"> <li>Replace grass with low maintenance fescues, then add yellow rattle, followed by wildflower seed</li> <li>Wildflower turf/earth</li> </ul>
>15% <i>Trifolium repens</i> (white clover)	Add in patches of larger plants or plug plants	Turn turf over to create mounds and dips (to depth of ~15 cm): buries shallow, stoloniferous root system; then add either wildflower turf, wildflower earth or wildflower seed.
>10% dock ( <i>Rumex</i> spp)	Persistent seed so best not to disturb topsoil: <ul style="list-style-type: none"> <li>Consider planting native shrubs</li> <li>Consider small areas of plug plants/ 9cm pots away from the docks.</li> </ul>	Spray with glyphosate Potentially use wildflower earth as soil surface less disturbed and buried under the earth. Wildflower turf may also smother emerging seeds.
>10% creeping thistle ( <i>Cirsium arvense</i> )	Spray with glyphosate Seed bank not too persistent; but can regenerate from root fragments Add another year to site preparation.	
>10% nettle	Small clumps can be eliminated by mowing. Seed not very persistent but take care if producing a nice seed bed right next to it.	Large infestations either left as Butterfly larvae habitat or wildflower earth used
Slope greater than 1:3	Use patches of plug plants or pot plants Add yellow rattle to surrounding area; can just sprinkle in edges and tread in, 1g/m <sup>2</sup> Management via strimmer once per year (autumn) Rake cut material to bottom of slope	Wildflower turf can be pegged down onto a slope. Management via strimmer once a year (autumn). Rake material down to bottom of slope