

Billacombe Fields, Plymouth Meadow restoration plan

A proposal for encouraging biodiversity across the fields around the SSSI, with the aim of creating and developing a seed hub for Plymouth

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1. Site Information

Owner:	Plymouth City (Council	
Site Name:	Billacombe Road, Plymouth		
Site Location:	Main gate: Grid Reference: SX 51769 53861, Postcode: PL9 7HQ What Three Words: orders.prone.staple		
Ecological report & Soil type: See accompanying Botanical Survey Report & Soil Report			

Brief Description:

The eight fields are owned by Plymouth City Council. Field 1 is a SSSI. The Meadow restoration/Seed Hub Project aims to use the SSSI as a seed resource to improve the surrounding fields over a number of years, with the eventual aim of providing a local and varied seed source for meadows across the City of Plymouth

Currently, Fields 1 & 2 have been managed by cutting and baling, while the remaining fields 3-8 have been cut (arisings left) several times per year.

This management plan focuses on the delivery of a species-rich grassland habitat improvement/creation project on eight fields of Billacombe Road, to the east of Plymouth.

The plan is a proposal for Plymouth City Council to consider when looking at the longer-term management of this area by its Street Services team, which includes a field of high wildlife value with a SSSI designation.

2. DWT/Green Minds Project Information

DWT is a partner on the Green Minds Project. which is funded by the European Regional Development Fund's Urban Innovative Actions. Green Minds aims to put nature and wildlife at the heart of decisions made around Plymouth's green spaces.

3. Site Overview

The area known by locals as Billacombe Green is a holding of eight fields (approximately 10ha), all which support species-rich unimproved neutral, base-rich and calcareous grassland, known as Lowland Meadow Priority Habitat, with overgrown hedges and some areas of scrub.

The Site of Special Scientific Interest (SSSI), Field 1, is the best known for its floral diversity. It is perhaps the most important site for the Red Data Book (Critically Endangered) species Field Eryngo. However, all the fields support highly important species-rich grasslands. Indeed, Field Eryngo could well be encouraged to spread into the surrounding fields if with appropriate management.







Field Eryngo at Billacombe SSSI

It is well reported that approximately 98% of species-rich meadow was lost during the latter half of the 20th century.

This management plan focuses on the delivery of a species-rich grassland habitat improvement/creation project on 8 fields of Billacombe Road, to the east of Plymouth. This management plan is a proposal for Plymouth City Council to consider when looking at the longer-term management of this area by its Street Services team, which includes a field of high wildlife value with a SSSI designation.

Management until 2022 was cutting/baling in Fields 1-2, with topping/leaving arisings Fields 3-8. In future all arisings need to be baled and removed wherever possible to reduce fertility and increase biodiversity.

4. Habitat Description

Grasslands on site have closest affinities to the National Vegetation Classification MG5b – the Ladies bedstraw sub-community. This sub-community is especially rare in Devon as it tends to be confined to more calcareous substrates such as limestone.

74 vascular plants were recorded from within the grassland sward across the 8 fields during this survey – this is not including hedgerows and wooded areas. This included the critically endangered Field Eryngo. See





Appendix 1 for full list. The complete botanical survey report and soil sampling results can be viewed as accompanying documents.

Each field is surrounded by mature hedges, containing many species of native shrubs and trees, and providing a varied habitat for wildlife.

Current Management

The current management of the fields (apart from the SSSI and adjoining Field 2) is extremely detrimental to the overall biodiversity value of the site. The grass is cut, and arisings left in situ, smothering the cut areas. This will only promote growth of competitive species such as hogweed and coarse grasses. Indeed, this is evident in Field 4 where some areas that have cut and dropped in previous years have now been left uncut.

In a time when most councils are declaring climate emergencies, as well as recognising the declining state of our environment and ecological issues such as insect and habitat decline, it is vital to manage such an exceptional site to increase diversity, rather than reducing it.



Image showing cut area to left, with thatch left in-situ, and uncut area with abundant wild carrot, common knapweed and a vast number of other wildflowers and grasses.





5. Project Aim

In summary, the aim of this project is to:

- a) Increase the diversity of plant species across all the fields, eventually providing a local and varied seed source for new/existing meadows across the City of Plymouth
- b) Improve biodiversity, for example, the many hedges provide a wonderful resource for wildlife to find food, shelter and to link with other green spaces
- c) Put forward the fields as potential County Wildlife Site (CWS). In addition, consider designation as a Local Nature Reserve (LNR) to give statutory protection. Both could be the precursor to the expansion of the SSSI into other fields in future, as the meadow quality improves
- d) Ensure that the relevant grants are applied for

6. Project Description

The Meadow Restoration/Seed Hub Project will create a large area of species-rich grassland habitat, through a change in mowing regime, implementing green haying (from the SSSI field) and over-sowing. The result will be a free and genetically diverse source of seed for PCC to use on other meadow projects around Plymouth.

Baseline and ongoing monitoring will be key to determine the success of development into species-rich grassland over a period of years. A full baseline ecological survey was commissioned by DWT and was carried out in August 2022.

Opportunities

The proposal for improving the other fields by spreading green hay from the SSSI and neighbouring field directly onto them will increase biodiversity in a simple and cost-effective way.

Over time, all the fields have the potential to become fantastic wildlife meadows, providing a free seed supply for use all around Plymouth within a few years if managed sympathetically.

Together with the surrounding hedgerows, and woodland areas, this site offers many habitats and will support a whole range of wildlife including bats, birds, insects, and invertebrates

Access and engagement;

Public access could be managed through cutting pathways (in consultation with local users) through the species-rich wildflower meadows, with interpretation boards placed at entrance points to educate users on the incredibly diverse grasslands.

Further engagement activities can be organised to explain to people exactly what they have on their doorstep. A bat walk took place in September 202 to begin this process.

Grant opportunities;

If the entire site was registered with the Rural Payments Agency (RPA) it should all be eligible for mid-tier GS6 (£182/ha/yr) for managing it as species-rich grassland.

With the presence of Field eryngium, it might be eligible for higher-tier GS7 (£205/ha/yr.) for grassland/grassland restoration. (n.b. investigate criteria for public access land).





7. Project detail

The aim of the project is to introduce seed from the adjoining SSSI species-rich grassland to restore the surrounding fields. Hay-cutting in subsequent years will be aimed at allowing wildflower seeds to germinate, flower and then set seed successfully, to establish the various grasslands and then maintain them.

Natural England/DEFRA Derogations

Note that the removal of quantities of seed from the SSSI field (Field 1) to other sites is subject to applying for a derogation to DEFRA. This puts limits on seed harvesting/ methods and can result in a different set of species. Correct Animal and Plant Health Agency (APHA) rules must be followed if moving seed.

As the site is already managed through an annual hay cut, removal of a proportion of this as green hay will not alter management, so long as timing is not detrimentally altered. Where hay is harvested earlier in the year, only a proportion (e.g., a third) should be removed as green hay with the remainder being left to restock seed to the site.

8. Management of each field

Summary of fields and proposed management regime

Field	Area (Ha)
1	1.90
2	1.04
3	1.05
4	0.60
5	1.37
6	2.69
7	0.69
8	0.43
Total	9.78

The proposed regimes represent an ideal scenario for biodiversity. However, it is recognised that cutting for amenity use is also desired, so various wide path will be maintained. Note that even in these 'amenity' areas with more frequent mowing, if the mowing can be followed up with removal of arisings, then nature can benefit.





Field 1 (Billacombe SSSI)

Summary Excellent species-rich SSSI neutral/base-rich/calcareous grassland

Ongoing Management

- Continue rotational annual hay cut in Aug-Sept according to SSSI management plan
- Retain 2m margin alongside hedges cut and remove on 3-4 year rotation

Donor Site Management

- Use green hay from ongoing management for use on Billacombe and other sites. Where the cut is earlier (late July-mid August) then only remove a proportion as green hay with the remainder being left to re-stock seed to the site.
- Be careful not to take too much
- Cutting for green hay cut and spread same day
- Continue annual hay cut August-September. Where the cut is earlier (late July-mid August) then only remove a proportion as green hay.

Field 2

Summary

Field recovering species-rich sward spreading from eastern side adjacent to SSSI. May require some further restoration if spread is slow. Some bracken encroachment.

Adaptive Management

- Continue rotational annual hay cut in Aug-Sept
- Retain 2m margin alongside hedges cut and remove on 3-4 year rotation
- Consider if other seed could/should be added.
- Monitor spread of bracken, consider intervention if becoming dense

Donor Site Management

- Use green hay from adaptive management for use on Billacombe and other sites. Where the cut is earlier (late July-mid August) then only remove a proportion as green hay with the remainder being left to re-stock seed to the site. Avoid using areas with dense bracken.
- For yellow rattle, brush harvest in early/mid-July leaving at least 2-3 weeks for sward to re-stand prior to hay cut. Harvest only one third of yellow rattle area leaving remainder to re-stock seed to the site
- In 2 years this could produce 50-70kg yellow rattle (for use in other fields at a sowing rate of 4kg/ha) n.b. Yellow rattle can impact trefoils, but this will diminish over time, allowing trefoils to re-establish

Field 3

Summary

Semi-improved sward with some areas of species diversity, particularly along northern margin





Restoration Management

- Cease regular cut and drop and establish rotational annual hay cut in Aug-Sept
- Retain 2m margin alongside hedges cut and remove on 3-4 year rotation
- Year 1 Oversow with yellow rattle rich seed mix harvested from northern margin of field OR spread green hay from northern margin onto prepared ground on rest of field
- Years 2-4 Once yellow rattle has established and limited grass growth, spread green hay from Fields 1/2 onto prepared ground

Donor Site Management

- Once yellow rattle is established (years 2-3), brush harvest in early/mid-July leaving at least 2-3 weeks for sward to re-stand prior to hay cut. Harvest only one third of yellow rattle area leaving remainder to re-stock seed to the site
- In 2 years this could produce 50-70kg yellow rattle (for use in other fields at a sowing rate of 4kg/ha) n.b. Yellow rattle can impact trefoils, but this will diminish over time, allowing trefoils to re-establish
- Once site has established species-rich sward, use green hay from restoration management for use on Billacombe and other sites. Where the cut is earlier (late July-mid August) then only remove a proportion as green hay with the remainder being left to re-stock seed to the site. Avoid using areas with dense bracken.

Fields 4,5,6,7,8

Summary Semi-improved sward with some small areas of species diversity. [n.b. initially field 8 will be retained by PCC as a full cut site for amenity use]

Restoration Management

- Cease regular cut and drop and establish rotational annual hay cut in Aug-Sept
- Retain 2m margin alongside hedges cut and remove on 3-4 year rotation
- Year 1 Oversow with yellow rattle rich seed mix harvested from Devon site immediately following hay cut. This mix will often contain eyebright, another beneficial hemi-parasitic plant.
- Years 2-4 Once yellow rattle has established and limited grass growth, spread green hay from Fields 1/2 onto prepared ground

Donor Site Management

- Once yellow rattle is established (years 2-3), brush harvest in early/mid-July leaving at least 2-3 weeks for sward to re-stand prior to hay cut. Harvest only one third of yellow rattle area leaving remainder to re-stock seed to the site
- In 2 years this could produce 50-70kg yellow rattle (for use in other fields at a sowing rate of 4kg/ha) n.b. Yellow rattle can impact trefoils, but this will diminish over time, allowing trefoils to re-establish
- Once site has established species-rich sward, use green hay from restoration management for use on Billacombe and other sites. Where the cut is earlier (late July-mid August) then only remove a





proportion as green hay with the remainder being left to re-stock seed to the site. Avoid using areas with dense bracken

9. Management of Hedges

The mature hedges and trees provide an important habitat around each field, giving shelter and food to wildlife as well as providing green corridors.

- Leave 2-3 metres width of hedge/field margins uncut (3 metres)
- Active hedge management is only required if species such as hazel are dying, in this case some replanting would be of benefit

10. Other actions with Green Minds Project:

- An ecological survey and soil sampling were completed 2022 to establish baseline data for botany, soil pH, nutrients, organic matter and carbon levels.
- DWT Green Minds could fund the purchase of a seed harvester and recommend other management equipment
- Training/upskilling of relevant PCC employees so that implementing the management plan can be overseen by PCC staff who can become 'habitat managers' and gain specialised knowledge in what needs doing. For example, in Spring 2023
 - arrange harvesting demonstration at Billacombe, (or a visit to North Devon) led by Si Tomasso of DWT,
 - invertebrate and plant day with DWT
- Community engagement put up posters/design a leaflet to explain what is happening and why, manage expectations of local walkers, arrange events such as guided walks or seed harvesting and spreading event (end June/early July), find local 'champions' who support the activities





Appendix 1: Billacombe Fields Plant Species list (see separate full ecological survey document)

Taxon	Common name	Taxon group
Pteridium aquilinum	Bracken	fern
Achillea millefolium	Yarrow	flowering plant
Agrimonia eupatoria	Agrimony	flowering plant
Agrostis capillaris	Common Bent	flowering plant
Agrostis stolonifera	Creeping Bent	flowering plant
Allium vineale	Wild Onion	flowering plant
Anacamptis pyramidalis	Pyramidal Orchid	flowering plant
Anthoxanthum odoratum	Sweet Vernal-grass	flowering plant
Arrhenatherum elatius	False Oat-grass	flowering plant
Brachypodium sylvaticum	False-brome	flowering plant
Bromopsis erecta	Upright Brome	flowering plant
Bromus hordeaceus	Soft-brome	flowering plant
Carex flacca	Glaucous Sedge	flowering plant
Centaurea debeauxii	Slender Knapweed	flowering plant
Centaurea nigra var. radiata	Rayed Knapweed	flowering plant
Centaurea scabiosa	Greater Knapweed	flowering plant
Cerastium fontanum	Common Mouse-ear	flowering plant
Cirsium arvense	Creeping Thistle	flowering plant
Cirsium vulgare	Spear Thistle	flowering plant
Convolvulus arvensis	Field Bindweed	flowering plant
Crepis capillaris	Smooth Hawk's-beard	flowering plant
Crocosmia x crocosmiiflora	Montbretia	flowering plant
Cynosurus cristatus	Crested Dog's-tail	flowering plant
Dactylis glomerata	Cock's-foot	flowering plant
Daucus carota	Wild Carrot	flowering plant
Eryngium campestre	Field Eryngo	flowering plant
Festuca pratensis	Meadow Fescue	flowering plant
Festuca rubra	Red Fescue	flowering plant
Galium mollugo	Hedge Bedstraw	flowering plant
Galium verum	Lady's Bedstraw	flowering plant
Helictotrichon pubescens	Downy Oat-grass	flowering plant
Heracleum sphondylium	Hogweed	flowering plant
Holcus lanatus	Yorkshire-fog	flowering plant
Hypericum perforatum	Perforate St. John's-Wort	flowering plant
Hypochaeris radicata	Cat's-ear	flowering plant
Jacobaea erucifolia	Hoary Ragwort	flowering plant





Billacombe Fields – Meadow restoration plan



Taxon

Common name

Jacobaea vulgaris Knautia arvensis Lathyrus pratensis Leontodon hispidus Linum bienne Lolium perenne Lotus corniculatus Medicago lupulina Melilotus altissimus Ononis repens Orobanche minor Pastinaca sativa Phleum pratense Picris echioides Pimpinella major Pimpinella saxifraga Plantago lanceolata Plantago major Poa annua Poa pratensis sens.lat. Poa trivialis Poterium sanguisorba Ranunculus acris Ranunculus repens Rhinanthus minor Rumex acetosa Rumex crispus Stellaria graminea Tragopogon pratensis Trifolium campestre Trifolium dubium Trifolium pratense Trifolium repens Trisetum flavescens Veronica chamaedrys Vicia cracca Vicia hirsuta Vicia sativa

Common Ragwort Field Scabious Meadow Vetchling Rough Hawkbit Pale Flax Perennial Rye-grass Common Bird's-foot-trefoil Black Medick Tall Melilot **Common Restharrow** Common Broomrape Wild Parsnip Timothy **Bristly Oxtongue** Greater Burnet-saxifrage Burnet-saxifrage **Ribwort Plantain Greater Plantain** Annual Meadow-grass Smooth Meadow-grass Rough Meadow-grass Salad Burnet Meadow Buttercup Creeping Buttercup Yellow-rattle Common Sorrel **Curled Dock** Lesser Stitchwort Goat's-beard Hop Trefoil Lesser Trefoil **Red Clover** White Clover Yellow Oat-grass Germander Speedwell **Tufted Vetch** Hairy Tare Common Vetch

Taxon group

flowering plant flowering plant







Taxon	Common name	Taxon group
Insects noted during survey Colias croceus	Clouded Yellow	insect - butterfly
Maniola jurtina	Meadow Brown	insect - butterfly
Melanargia galathea	Marbled White	insect - butterfly
Pararge aegeria	Speckled Wood	insect - butterfly
Polyommatus icarus	Common Blue	insect - butterfly
Pyronia tithonus	Gatekeeper	insect - butterfly
Vanessa atalanta	Red Admiral	insect - butterfly
Bombus lapidarius	Red-tailed Bumblebee	insect - hymenopteran
Bombus pascuorum	Common Carder Bee	insect - hymenopteran
Bombus terrestris	Buff-tailed Bumblebee	insect - hymenopteran
Pyrausta despicata	Straw-barred Pearl	insect - moth
Zygaena filipendulae	Six-spot Burnet	insect - moth
Chorthippus brunneus	Field Grasshopper	insect - orthopteran
Chorthippus parallelus	Meadow Grasshopper	insect - orthopteran
Conocephalus fuscus	Long-winged Cone-head	insect - orthopteran
Dolycoris baccarum	Hairy Shieldbug	insect - true bug (Hemiptera)
Liocoris tripustulatus	N/A	insect - true bug (Hemiptera)
Nabis flavomarginatus	Broad Damselbug	insect - true bug (Hemiptera)
Ectophasia crassipennis	N/A	insect - true fly (Diptera)





Appendix 2 – Location Map







Appendix 3 - Ground Preparation Guidance for Green Haying

N.B. not relevant to Field 1 which is the SSSI and does not need green haying.

Removing Vegetation

Before a field is applied with green hay (or any oversowing takes place), the grassland must be tightly mown and cuttings collected (i.e. take a hay-cut immediately prior to harrowing/spreading).

Harrowing

Harrow the ground using a power harrow before spreading onto a less species rich field (unless on good existing sward).

Harrowing aims to create areas of bare ground (the ideal being 50% bare ground of the whole area receiving treatment).

The presence of bare ground gives the seeds opportunity to germinate. Insufficient bare ground is one of the main reasons why green hay operations fail.

Note that where Basic Payment Scheme or agrienvironment payments are received, Cross Compliance will be relevant. Although Cross Compliance states (under GAEC 4) that there must be minimum soil cover, it is worth noting that an 'agronomic reason for not providing soil cover' is stated as 'areas created for agrienvironment schemes or greening schemes, or for wildlife or biodiversity'. As such there are no risks of breaking Cross Compliance rules in



preparing sites for green haying / over sowing through harrowing.

Green Haying

The fields will be spread with green hay collected and baled from Field 1 (SSSI) and part of Field 2. <u>The</u> <u>spreading must be done within a few hours of cutting/baling</u>. The amount of coverage will depend on the hay bale harvest, so the areas treated may need rotating each year to achieve the recommended spreading rate.

Spreading the green hay bales:



Billacombe Fields – Meadow restoration plan



Green hay bales need to be spread across the sites at a rate of between 5 and 8 large round bales per hectare, on all parts of the receptor fields that ground conditions allow. Bales are best spread using a bale chopper. Leave the hay spread on the ground for at least one week. An additional option, though not essential is to use a roller to 'trample' the seeds in.

The hay from the donor sites needs to be cut, baled and spread within a few hours. If there is a delay between baling and spreading the hay will heat up which negatively affects the seeds. (N.B. The cut hay can be left on the ground overnight before baling. Cutting should not happen more than 24 hours before baling, to prevent a loss of seed from the cut hay.)

Over-sowing

Over-sowing of species such as yellow rattle and eyebright in Fields 3-8 will help the process of improving these fields.

The seed should be spread using a quad-towed fertilizer spreader. Seed drills will not cope with the amount of chaff in the harvested seed.

Bracken bashing/rolling?

Roll the bracken areas annually to prevent the bracken from spreading. Currently it is starting to dominate certain areas of the grassland





Appendix 4 - Operation Guidelines

Buffer-zones

10 m buffer-zones should be maintained from the edge of any water course. No vehicle refuelling should take place within these buffer zones to prevent any accidental spills impacting on the watercourse. If other maintenance is required which may result in the spilling of fluids or lubricants, this must take place outside of the restoration compartment, in a location agreed by the landowner.

<u>Wildlife</u>

Ensure there are no impacts on any legally protected species. Check for nesting birds prior to any field operations during the bird nesting season (early March – early September). Do not carry out works if ground nesting birds are seen.

<u>Access</u>

Track off Billacombe Road, includes crossing a bridge over the old railway line. Ensure wight/use limits not breached. Assess potential other management access routes (via housing?) as works progress.

Health and safety

Any contractors are responsible for ensuring that their employees, agents and sub-contractors comply with all health and safety legislation and approved Codes of Practice of Plymouth City Council.





Appendix 5 - Management of donor field

Hay management (green hay)

- The donor field must be closed for hay each year from the end of Feb onwards, until early August. The ideal timing for the green hay operation will depend on weather conditions over the spring/summer. A good indicator to use would be to take the hay-cut once most of the greater bird's-foot trefoil has mostly finished flowering. This is likely to be between late July and late-August.
- The cut hay can be left on the ground overnight before baling. Cutting should not happen more than 24 hours before baling, to prevent a loss of seed from the cut hay.
- Baling should happen on the same day as spreading, to prevent seed from cooking within the bale. Baling must not happen the day before spreading or there will be a considerable loss of seed viability.

Field management (for future years once fields improved - seed harvesting)

- The donor field must be closed from the end of Feb onwards, until early August.
- Seed will be harvested using a quad-towed seed harvester. Two operations may be required to collect early and late-flowering plants.
- Seed will need drying and riddling to remove some of the chaff
- Once seed has been collected, the field can be grazed or a hay-cut taken, although quad tracks do cause some flattening of the crop.





Appendix 6 - Future Management of Receptor Fields

The receptor fields should be managed with an annual hay cut (cut and bale):

Long-term management

Aftermath grazing can be used. However, it may not be appropriate on a publicly accessible like this. In any case, DWT have found that managing the receptor fields as hay meadows for several years creates better results than a grazing only regime.

If grazing becomes feasible/desired, follow this guidance:

- After this initial phase of hay cutting (for several years following works), manage the sward of the grassland by grazing (preferably cattle) to achieve an average sward height throughout the growing season (May to September) of between 8cm and 30 cm.
- Grazing can start no earlier than 1st May and be no later than 30th September. Flexibility in timing of grazing and density of livestock is desirable and should be varied each year where possible.
 Generally speaking stock density should be between 0.5 1 livestock units per hectare if grazing continually during the five months between May and September.
- No artificial fertiliser or farmyard manure can be applied at any time.
- Supplementary feeding of forage / conserved grass brought to the site should not take place at any time. Mineral licks should not be used.
- Do not install new drainage or modify existing drainage systems.
- Ploughing, sub-surface cultivation and reseeding should not occur.
- Field operations and stocking must not damage the soil structure or cause heavy poaching; though small areas of bare ground up to approx. 5% of the field are acceptable. Take particular care when the land is waterlogged after a prolonged period of wet weather.
- Maintain stock proof fencing by making good any breaches and clearing scrub, bracken etc within 1m of fence line.

