



BUMBLEBEE CONSERVATION TRUST

Management Recommendations for Rolvenden

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The Short-haired Bumblebee Reintroduction Project

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Background

Plants provide protein-rich pollen and sugar-rich nectar which bumblebees use exclusively for their source of nutrition. Whilst feeding on nectar and collecting pollen they help pollination by transferring pollen from one flower to another. Certain flowers have evolved so they can only be pollinated by bumblebees, for example, long tubular flowers such as foxgloves, can only be pollinated by long-tongued bumblebees.

Bees are responsible for a large part of pollination. We have three types of bees in the UK: honeybee (one species), solitary bees (250 species) and bumblebees (24 species). Different species pollinate different plants so it is important to conserve all of our bees and other insect pollinators. Many of our bumblebees have suffered serious long-term declines, largely due to the loss of 97% of wildflower rich habitat; resulting in a huge loss of suitable forage and nesting habitat.

Therefore, it is so important that we create new areas of habitat as well as protect and enhance existing sites. The key is having a wide variety of plants which flower at different times, to provide a steady supply of nectar and pollen throughout the bumblebee lifecycle (March-October). In addition, different species have different tongue lengths and so will visit different flowers, so again a wide variety of plants is vital.

Site Details

With five of the seven UK BAP (Biodiversity Action Plan) schedule 41 species, Kent is the most important county in the UK for bumblebee diversity. In close proximity to the village of Rolvenden, four of the UK BAP species have been recorded: ruderal bumblebee (*Bombus ruderatus*), brown-banded carder bee (*Bombus humilis*), moss carder bee (*Bombus muscorum*) and red-shanked carder bee (*Bombus ruderarius*) (Figure 1, See Appendix). Great Dixter House and Gardens (4.9 miles away from Rolvenden) and Hole Park (1.3 miles away from Rolvenden), are two sites which have had one or more rare bumblebee species recorded.

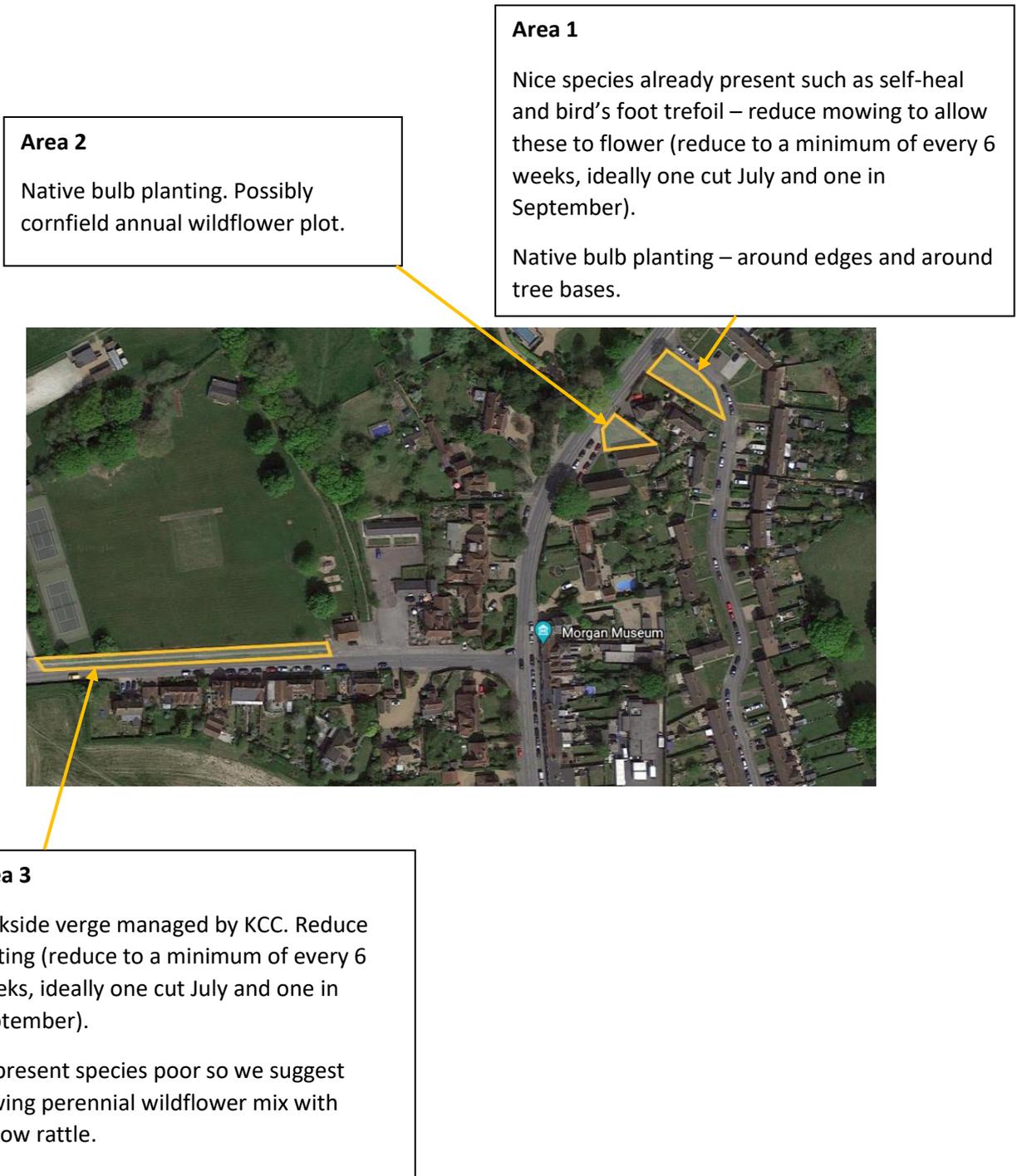


Figure 1. The four rare bumblebee species which have been recorded in areas close to Rolvenden. See appendix for more details on these species.

Management Suggestions

- Reduce cutting regime where possible and good species diversity
- Consider native bulb planting, primroses and cowslips to provide early forage for insects and beautiful spring displays for villagers to enjoy
- More formal planting in places – plants such as lavender, rosemary and other herbs
- Creating wildflower plots – these could be either cornfield annuals or perennial wildflowers – yellow rattle would be needed to control grass density

Maps 1 & 2. Annotated maps of Rolvenden with areas for suggested management.



Area 4

Phone box restoration – cornfield annual wildflower display alongside this would work well.

Area 5

Roadside verges:

Perennial wildflower sowing. Yellow rattle would be good here to help compete against the grasses and allow more wildflowers to flourish.

Native bulb planting and primroses/cowslips for early spring display.

Formal planting of herbs such as lavender and rosemary along paths and edges.



Area 6

School Field:

Nice species naturally present including self-heal and white clover. Leave to grow during school holidays.

Native bulb planting and primroses/cowslips around tree bases – could get school children involved in planting.

Area 7

War Memorial:

Native bulb planting i.e. daffodils, bluebells, tulips.

Potentially an option for the church yard too, if approved.

Area 8

Village Green:

Perennial wildflower sowing. Yellow rattle would be good here to help compete against the grasses and allow more wildflowers to flourish.

Native bulb planting and primroses/cowslips for early spring display

Sourcing Seeds and Plug Plants

When buying seeds and plug plants it is really important to ensure that they are of native province and sourced locally and responsibly. Local seeds and plants are also more likely to germinate and survive, as they are what should naturally occur in that habitat. We recommend:

- Emorsgate Seeds (www.wildseed.co.uk)
- NatureScape (www.naturescape.co.uk)
- Agrifactor (<https://www.heathfield.net/businesses/farms-and-farm-services/agrifactors/13>)
- Local garden centres – look for the bee friendly label

Annual Wildflower Beds – Cornfield Annuals

Amount of seed needed: 2g of seed per m²

Seeds – cornfield annual seed mix which will have corn poppy (*Papaver rhoeas*), cornflower (*Centaurea cyanus*), corn marigold (*Chrysanthemum segetum*), corn cockle (*Agrostemma githago*), corn chamomile (*Anthemis arvensis*)

Places to buy seed – Emorsgate Seeds wildseed.co.uk (0.1kg of their EC1 standard cornfield mixture is £8) or naturescape.co.uk (0.1kg of their NCA1 standard cornfield annuals mix is £4.80)



Figure 2. Cornfield annual plot (species shown: corn chamomile, corn marigold, cornflower, corn cockle)

How to Prepare an Annual Wildflower Bed

- Cut any existing grass short and rake off and remove the cuttings
- Dig or hoe the area to expose the soil surface – aim for a fine tilth (Figure 3) as this will increase the chances of seed success
- Sow seeds directly on to surface in the spring (Figure 4), lightly tread them in but do not cover with soil. Water well
- Seeds can be sown either spring or autumn



Figure 3. Newly created bare ground; fine tilth

Managing and Maintaining an Annual Wildflower Bed

- Dig up any thistles, docks and nettles as they grow as they can take over the wildflowers
- Cut the area once the wildflowers have set seed (around October; Figure 4), leaving the cuttings for a few days for seeds to drop into the soil, then rake and remove
- Re-scarify (till) the ground each year, after cutting, as annuals need bare ground to germinate

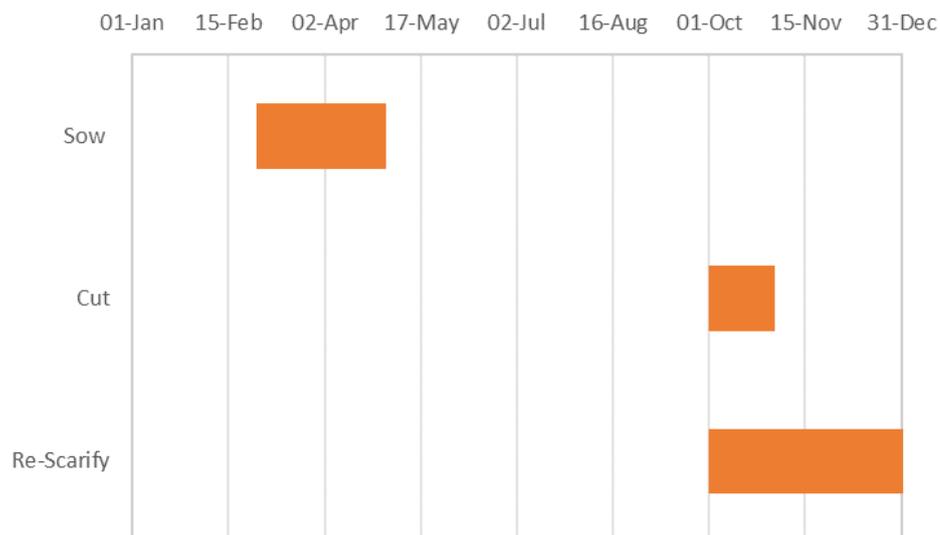


Figure 4. Timings for cornfield annual plots.

Perennial Wildflower Beds

Amount of seed needed: 4g per m² (for EM4 Mix) or 5g per m² (for N6 Mix)

Seeds – perennial seed mix which will include species such as birdsfoot trefoil (*Lotus corniculatus*), yellow rattle (*Rhinanthus minor*), field scabious (*Knautia arvensis*), common knapweed (*Centaurea nigra*), oxeye daisy (*Leucanthemum vulgare*), wild red clover (*Trifolium pratense*), self heal (*Prunella vulgaris*), meadow buttercup (*Ranunculus acris*) and meadow cranesbill (*Geranium pratense*)

Places to buy – Emorsgate Seeds wildseed.co.uk (EM4 Meadow Mixture for Clay Soils = £6.60 for 0.1kg) and naturescape.co.uk (N6 Clay Soils Meadow Mixture = £4.35 for 0.1kg)



Figure 5. Perennial wildflower plot (species shown: red clover, meadow vetchling, tufted vetch)

How to Prepare a Perennial Wildflower Bed

- If the area is clay soil it is recommended to prepare and sow the area between mid July-end of September (Figure 6); some species need their first leaflets before frost so avoid sowing any later than September. However, if the area is chalk then the area can be prepared and sown in either spring or autumn
- Cut any existing grass short and rake off and remove the cuttings
- Dig or hoe the area to expose the soil surface – aim for a fine tilth as this will increase the chances of seed success
- Sow the seeds and lightly tread the surface, water the area well

Managing and Maintaining a Perennial Wildflower Bed

- To extend flowering season you can cut a portion of the area at the end of June/mid-July, removing the cuttings. If you do this make sure to leave an area uncut to ensure continued bee forage
- Mow the whole area once it has set seed beginning-end of September (Figure 6)

- Leave the cuttings for 1-2 days to dry and drop seed, and then rake off
- Mow re-growth through to late autumn

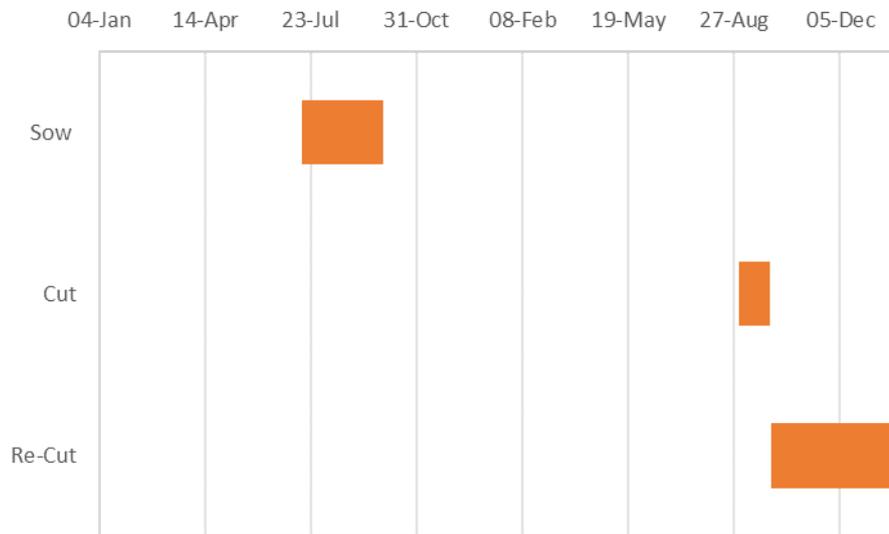


Figure 6. Timings for perennial wildflower plots.

Alternatively, you could cease mowing and see what grows up from the seedbank. If the area is dominated by grasses or is nutrient rich, yellow rattle (*Rhinanthus minor*) seeds or plug plants can be introduced (Figure 6). This species parasitizes grasses, suppressing their growth and therefore, opening up space to allow wildflowers to grow. Yellow rattle should be sown in autumn as they need frost to break seed dormancy. We recommend sowing at a rate 3x the suggested amount as seeds can be difficult to establish. Sow seeds directly on the soil surface and do not cover. Once yellow rattle has been established it will allow natural regeneration from the seedbank. If you find there is still not enough diversity you can add in plug plants (as in the seed mix above) or sow wildflower seeds.



Figure 7. Yellow rattle (*Rhinanthus minor*) in flower (left) and seedling (right)

Sources of Information and Further Reading

Bumblebees an Introduction written by Dr Nikki Gammans, Dr Richard Comont, S C Morgan and Gill Perkins. Bumblebee Conservation Trust, 2018.

Managing wildflower meadows for bumblebees. Factsheet 2, Land management series. Bumblebee Conservation Trust.

Plants for Bees A Guide to the Plants that Benefit the Bees of the British Isles written by W.D.J. Kirk and F.N. Howes. 2012.

The Bumblebees of Kent written by Nikki Gammans and Geoff Allen. Kent Field Club, 2014.

Wildflowers of Dungeness written by Barbara Gray and Heather Silk. 2007.

APPENDIX

Rare Bumblebee Identification

These four rare bumblebee species have been recorded near to Rolvenden: ruderal bumblebee (*Bombus ruderatus*), brown-banded carder bee (*Bombus humilis*), moss carder bee (*Bombus muscorum*) and red-shanked carder bee (*Bombus ruderarius*).

Ruderal bumblebee (Bombus ruderatus)

Found in three different colour forms: light form, intermediate form and dark form (melanistic).

Light Form:

Three dark yellow bands: one on the top and bottom of thorax which are the same thickness as each other, and one on the abdomen (In garden bumblebees the second thoracic band is always narrower than the first). White tail which extends up the sides of the abdomen.



Intermediate Form:

Yellow bands much darker, abdominal band can be hard to see on worker caste, white tail still present but with much more dark hairs present.



Dark Form:

All black bee (melanistic).



Males have the same colour pattern as the females. A good way to tell apart males of ruderal and garden bumblebees is to look for the mandible hairs. Male ruderals have red mandible hairs, whereas male garden bumblebees have black mandible hairs. This feature cannot be used in females. Ruderals

have very long tongues so favour tubular flowers such as vetches and clovers. They have a long horse-like face.

Brown-banded carder bee (Bombus humilis)

This species has a ginger thorax with lighter blonde hairs under the wing bases. There will be black hairs at the wing bases – sometimes only two or three. On the abdomen the second band has a strip of ginger hairs which match the colour of the thorax and extends around the sides of the abdomen.

Males have the same colour patterns as females.

This is a long-tongued species so will favour plants such as red clover, bird's foot trefoil and vetches.



Bombus humilis, Nikki Gammans



Bombus humilis, Nikki Gammans

Moss carder bee (Bombus muscorum)

The moss carder has a thorax covered in short gingery-brown hair which is neat and even all over. The thorax often has a neat blonde 'halo' around a darker gingery centre. The abdomen is an even blonde/ginger and occasionally has a partial brown band near the top of the abdomen. This species never has any black hairs.

Males have the same colour patterns as the female.

This is a long-tongued species so will favour plants such as red clover, bird's foot trefoil and vetches.



Red-shanked carder bee (Bombus ruderarius)

A black bee with an orangey-red tail. The key feature is that unlike the red-tailed bumblebee this species has bright red hairs on the hind legs.

Males also have the red hairs on the hind leg, but unlike the females will have two dusky straw-coloured bands at the top and bottom of the thorax.

This species has a medium tongue length and visits flowers such as red clover, bird's foot trefoil and knapweed.



Bombus ruderarius, Steve Reynaert