

Peas&asters4bees scheme; Background

Loss of late flowering grassland has been a critical factor for many scarce bees. The PAB map recommends targetted specific restoration zones to focus actions for a suite of scarce bees.

Bees species selection

- Scarcity and threat.
- Associated with pollinator rich habitat (indicator species).
- Ease of identification (good recording data and better project engagement).
- Specialist bee (easier to link with habitat actions).
- Buglife SW bees project and KE projects.

Target area selection

- Prior surveys by KE.
- Within the buffer range of scarce bee records (900m for solitary bees and 2km for bumblebees).
- Connected to a cluster of high quality sites. (Inland areas with poor habitat connectivity were excluded)

Specialised Bees

Bees specialists are usually specialised to collect pollen from a plant family rather than species or even genera. Some of the species on the PAB list are specialists with a very limited diet others have strong associations with legumes or asters. Black-headed Mining Bee (*Andrena nigriceps*) uses a range of plant families in Cornwall, but was included as it can be linked with sites rich in Aster family flowers. Buff-banded Mining Bee (*Andrena simillima*) is similar but very little is known about this very rare bee. Bramble is probably important for both species but is common and increasing in Cornwall, so is unlikely to need conservation measures.

Peas&asters4bees include some species that are thought to be relatively generalist but can be linked with high quality flower rich sites. Frequently sites rich with a simple mix of Knapweed and Birdsfoot Trefoil have a rich bee fauna. A simple meadow mix likely to be more effective than huge species lists and produce the big bag of pollen these bees need.

Flower selection

Research on typical British conservation seed mixes found perennial meadows produced up to 20x more nectar and up to 6x more pollen than annual meadows (Hicks et.al 2016). Native asters including Knapweed scored very highly. The top five nectar producers were native asters. With knapweed ranked as 4th most productive in pollen and fifth in nectar.

Quantity is important with bees such as the Long-horned Bee estimated to need 17,000 flowers a day over a 5 week period to maintain populations (Saunders 2018).

Asters are a big family which includes some plants which probably have limited use for scarce bees. Asters4bees recommends a suite of late flowering native species.

Area selection.

Buffer range takes in account population dynamics based on best estimates of foraging range. The estimated maximum foraging range of the Large Scabious bee is 900m (Franzen 2009) and estimated effective foraging range of Long-horn Bee is 700m (Saunders 2018). Dispersal distance and foraging distance for many bee species is not clearly known.

Lizard heaths, Bodmin moor and the Mid Cornwall moors have been excluded. They have some notable species but targetting is more difficult. They would warrant additional work in future.

Large Scabious Mining Bee (*Andrena hattorfiana*) and Long-horned Bee (*Eucera longicornis*) both have a high threat level and should be regarded as high priority species. Vetch4bees or Scabious4bees and Umbellifers4bees areas also overlap with Peas&asters4bees areas. Detailed site specific advice is likely to be needed contact KE or SWEEP.

Nest requirements

Some of the PAB bees require sandy ground for nesting, others may have other specialised nest requirements. Nest sites are important but difficult to create. On most sites boosting flower resources should be the most important priority.

References

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Franzén, M., Larsson, M. and Nilsson, S.G. (2009) Small local population sizes and high habitat patch fidelity in a specialised solitary bee. *Journal of Insect Conservation* 13, 89-95.

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