



# Enhancing sites for Invertebrates

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# Overview of invertebrates

**There are over 40,000 invertebrate species in the UK, including:**

- ~270 bees, ~9,000 wasps and ~40 ants
- ~7,000 flies, including ~280 hoverflies
- 59 butterflies and ~2,500 moths
- ~4,200 beetles, including 46 ladybirds
- ~2,000 true bugs
- ~650 spiders and ~30 harvestmen
- 37 woodlice, 27 earthworms
- 57 centipedes and 56 millipedes
- >1,500 marine invertebrates
- ~200 snails, slugs and clams



# Invertebrates in trouble



## WHERE HAVE ALL THE INSECTS GONE?

Surveys in German nature reserves point to a dramatic decline in insect biomass. Key members of ecosystems may be slipping away

# Reasons behind pollinator declines

- Habitat loss, degradation, fragmentation and homogenisation - changing land-use
- Pesticides
- Climate change
- Invasive species, pests and diseases
- Complex and interacting factors



# What did invertebrates ever do for us?

Invertebrates perform vital services such as:

- Pollination
- Aeration of soil
- Decomposition
- Nutrient cycling
- Biological control
  
- Environmental indicators



# Urban greenspace projects



Bees, butterflies, moths, beetles, wasps, flies - you might be surprised at how many species are involved – **at least 6,000 species** in Britain!

# Urban greenspace projects





# Urban greenspace projects







# Urban greenspace projects





## Key considerations

- Food as larvae and as adults
- Shelter, Over-wintering and nesting habitat
- Variety of habitats
- A functional landscape in which these resources are accessible - Connectivity



# Flower power!





## Early

Selfheal, Cowslip, Red campion,  
Dead nettles, Ground ivy

## Late

Devil's-bit scabious, Meadow  
buttercup, Wild carrot, Autumn  
hawkbit, Common knapweed,  
Selfheal, Yarrow...

- **Consider delaying cutting to allow wild-flowers to set seed**
- **Cut rotationally at different times of year**



- **Retain taller vegetation over winter months**
- **Seed heads and stems of grasses and flowers**
- **Tussocky vegetation**
- **Leave some cut arisings on site**



# Species poor – valuable?



**Species such as Ragwort and Thistles provide an important forage resource for many invertebrates including some generalist pollinators such as flies and beetles**





# Roadside verges







- Wide road side verge allowed to regenerate naturally
- Sandy/silt substrate, free draining, low nutrient
- Open, bare patches of bare ground – burrowing and basking invertebrates



# Brownfield sites







# Diverse mosaic of invertebrate habitats

**Lots of nectar rich wildflowers**

**Scrub for shelter  
& forage**

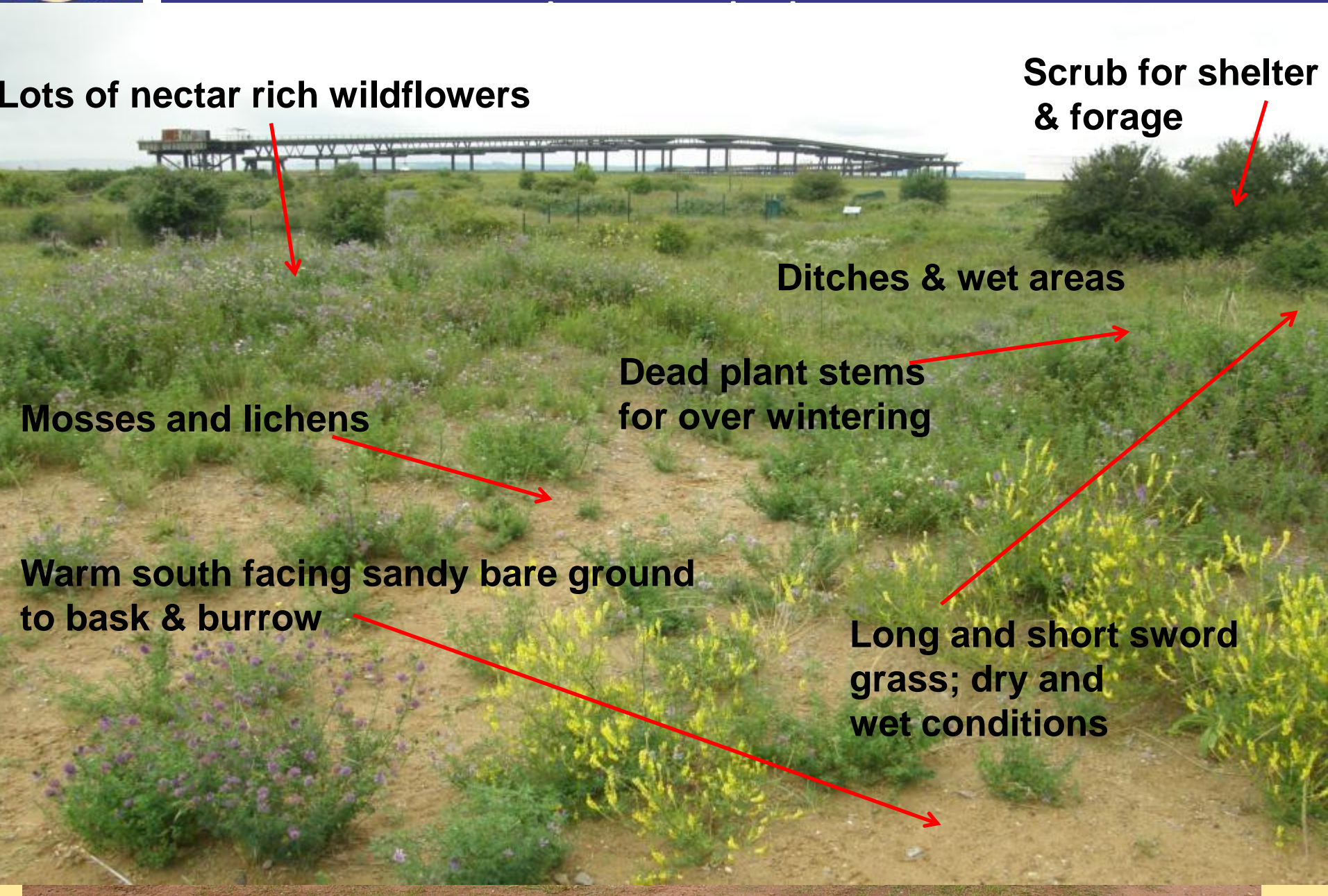
**Ditches & wet areas**

**Dead plant stems  
for over wintering**

**Mosses and lichens**

**Warm south facing sandy bare ground  
to bask & burrow**

**Long and short sword  
grass; dry and  
wet conditions**

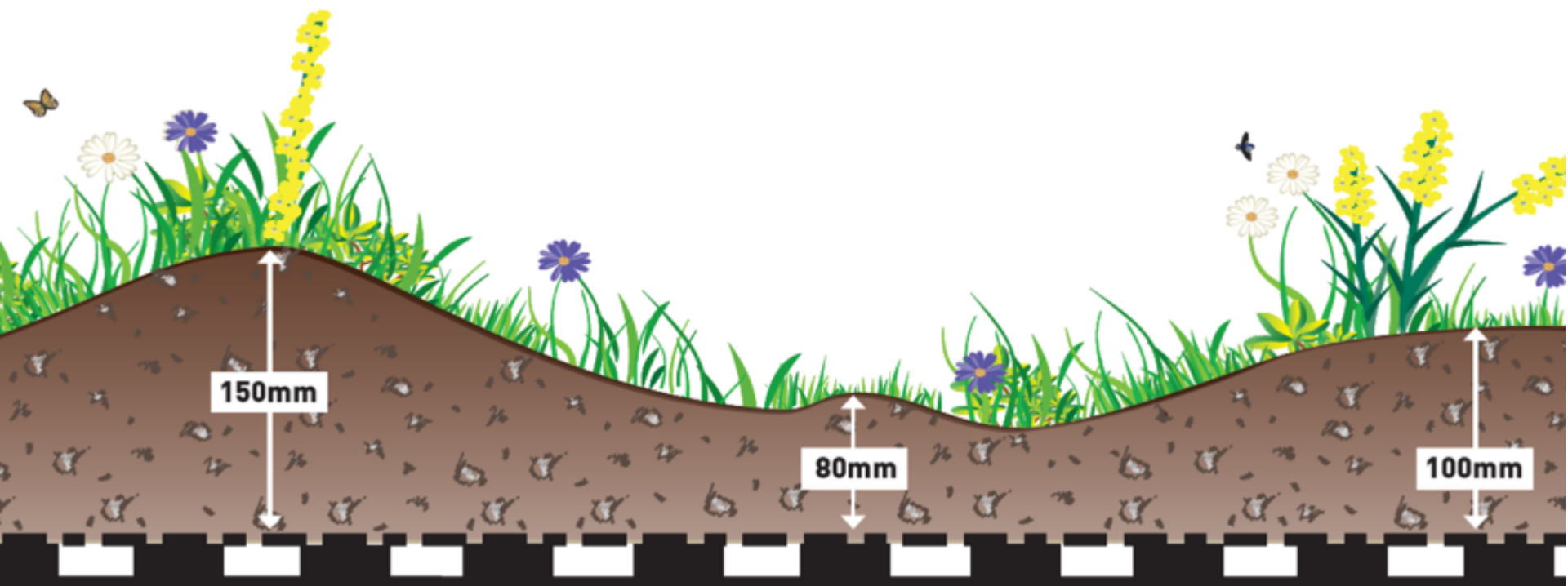




# Other opportunities

## Green roofs







# Other opportunities



# Hedges



Tawny mining bee (*Andrena fulva*)



Ashy mining bee (*A. cineraria*)



- Willow, Blackthorn, Hawthorn, Wild cherry, Bramble, Rose
- Provide important early forage resource (emerging bumblebee queens and solitary bees), summer flowers and autumn berries
- Hedges and tussocky grassland understory provide nesting habitat, shelter, sunbathing foliage, over-wintering habitat



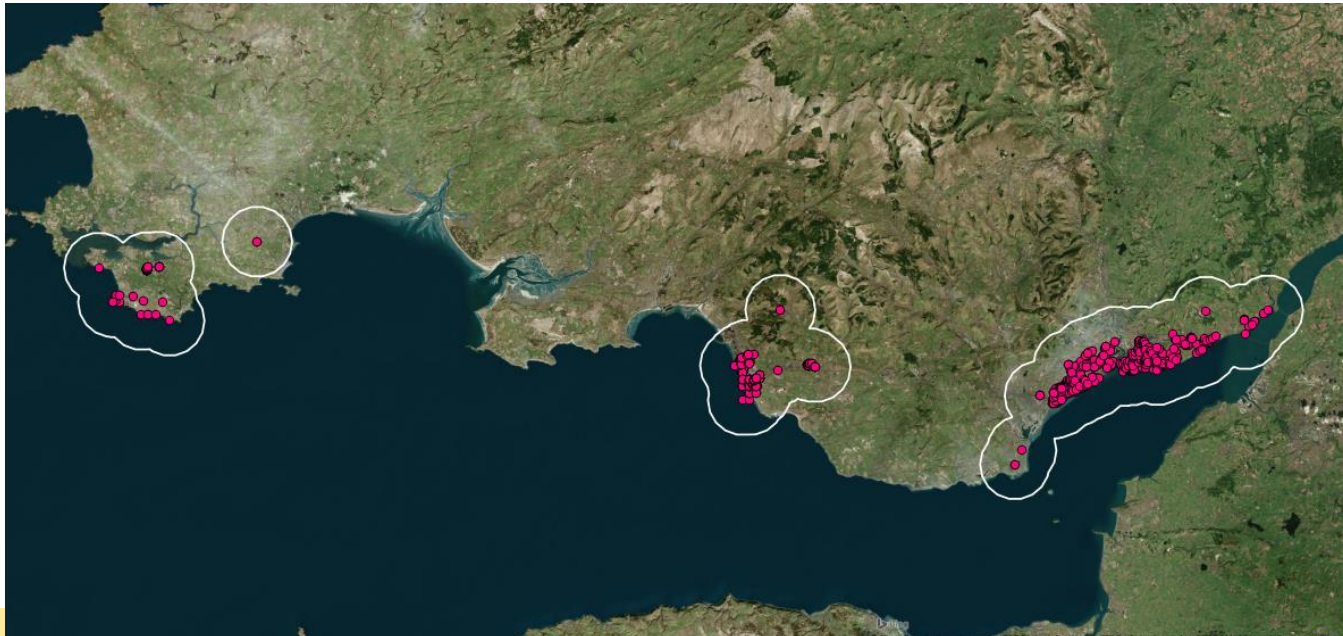
- Can provide valuable nesting and forage habitat
- Allow some uncut vegetation to remain at all times

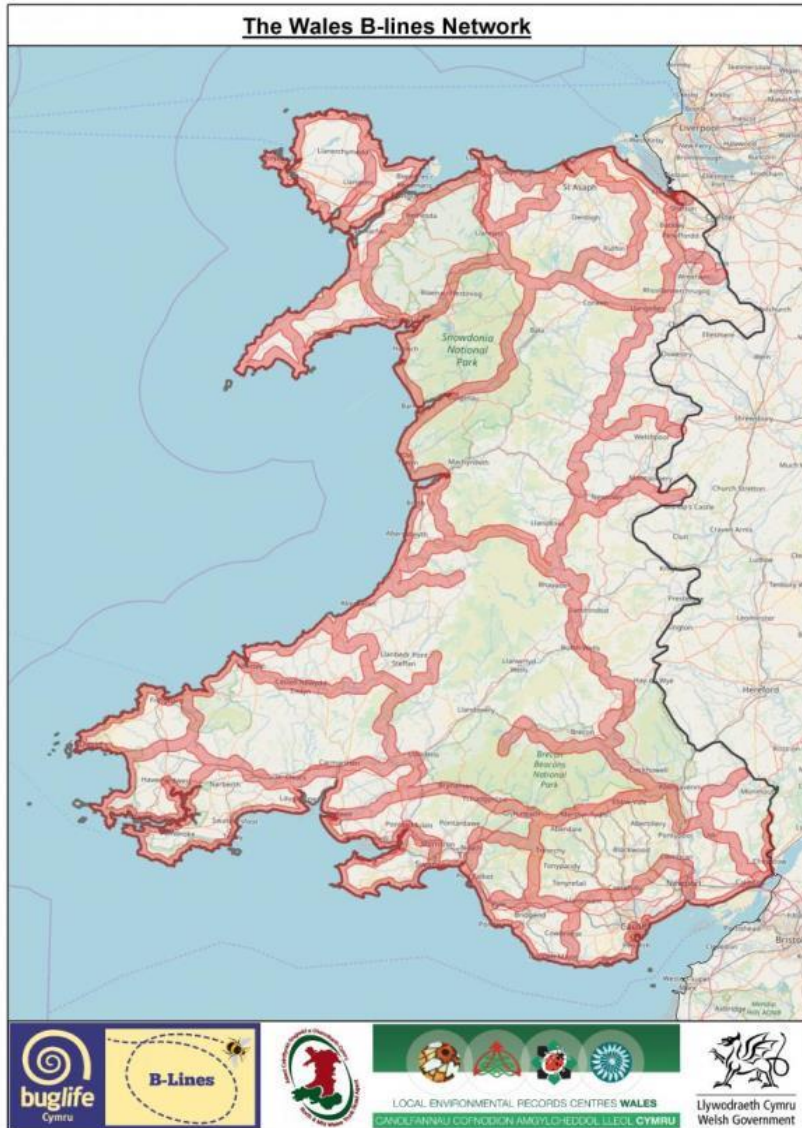










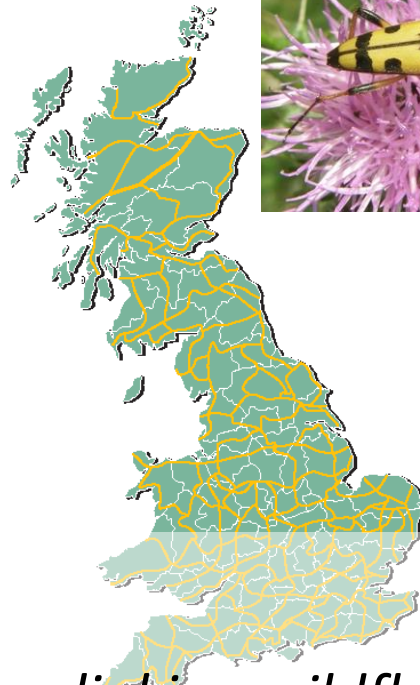


**We need more,  
bigger, better  
and more  
connected areas  
for wildlife.**

*(Making Space for Nature, 2010)*

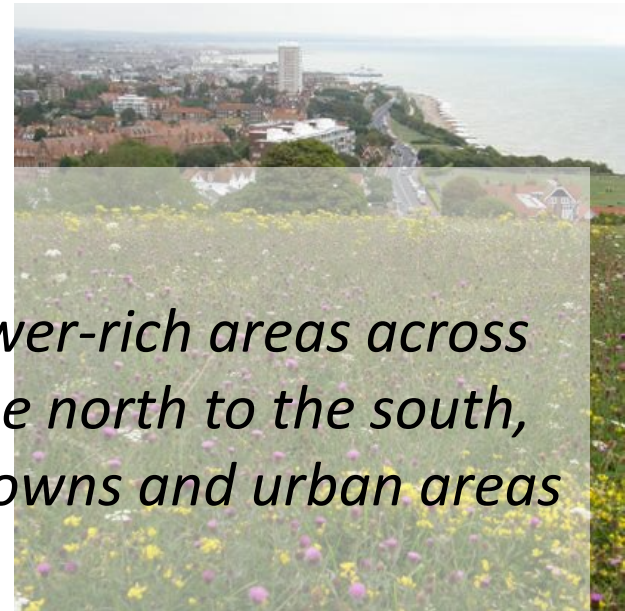


# B-Lines – a network of wildflower-rich areas



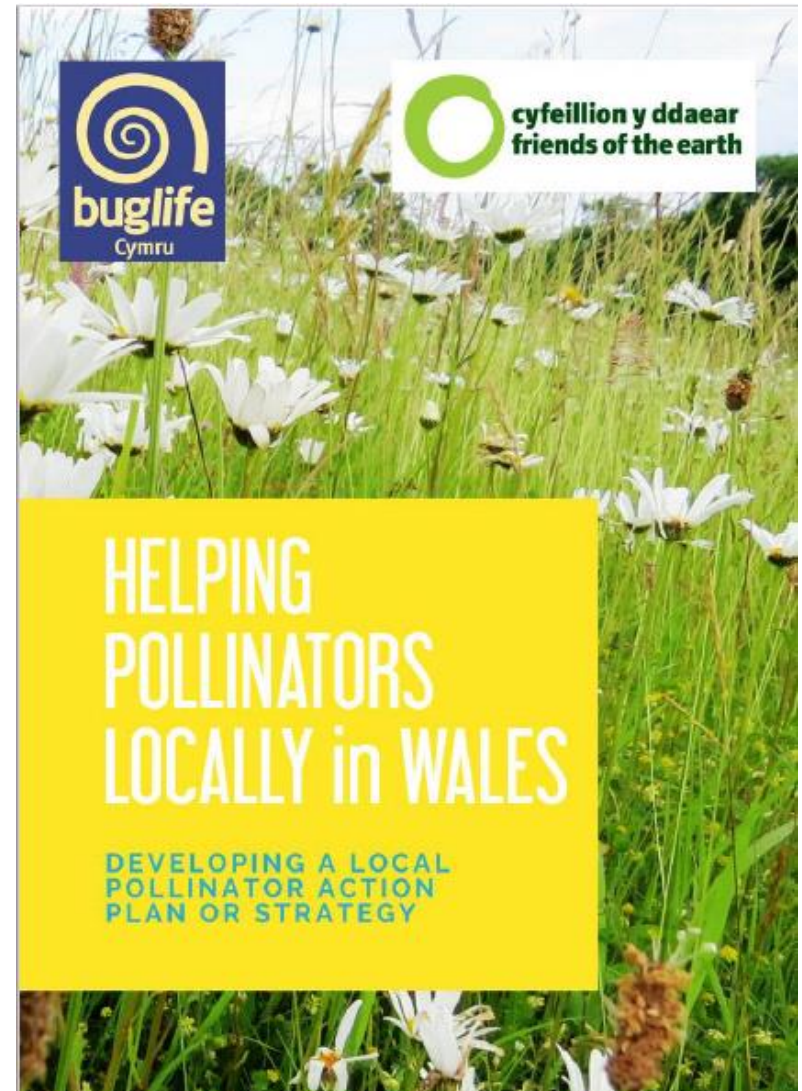
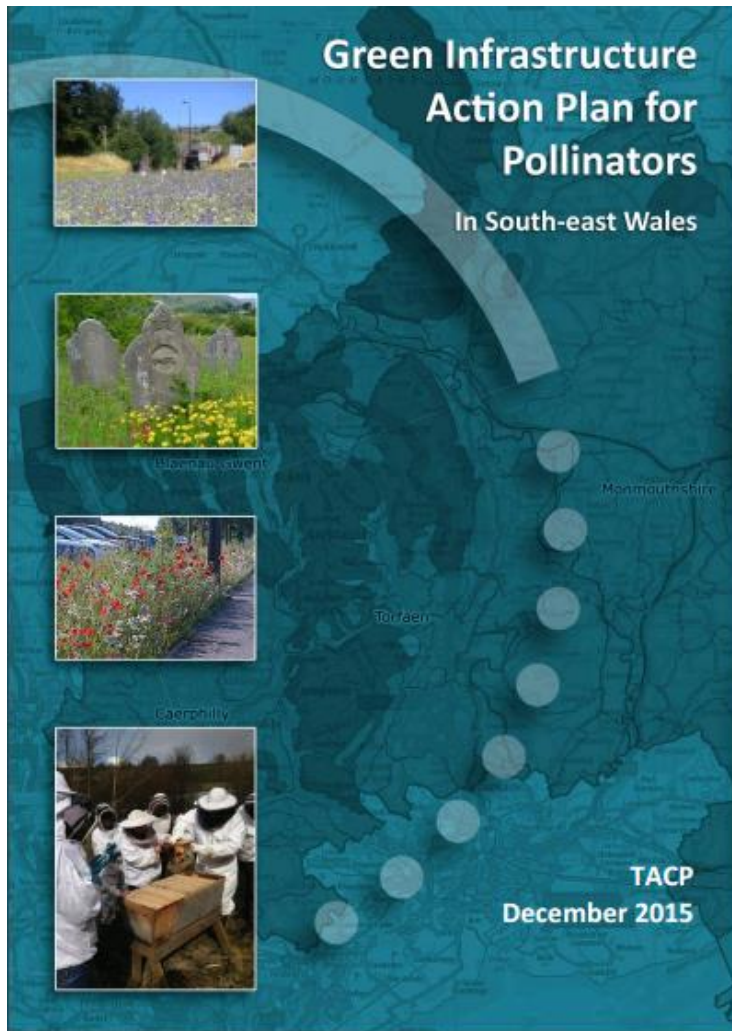
## B-Lines – a vision

*To create a network of B-Lines linking wildflower-rich areas across the UK from the west to the east, and from the north to the south, linking our hills to the coast, and linking our towns and urban areas to the countryside.*





# Guidance and advice



## B-LINES FACT SHEET 1

### Grasslands for Insect Pollinators and other wildlife



#### The loss of wildflower-rich grasslands

Over the last couple of decades conservation organisations, landowners and farmers have been carrying out essential work to conserve and restore our important wildlife sites and species. However, over the previous 50-60 years three million hectares of wildflower-rich grasslands were lost (about 97%) and so far less than 1% has been re-created. This loss has resulted in the decline of many pollinating insects, including bumblebees, moths, butterflies and hoverflies. Another issue is that many wildflower-rich grasslands are restricted to small fragments in the landscape, with no suitable habitat for pollinators and other wildlife on the land between. Much more needs to be done to replace this lost habitat.



**Wildflower-rich grasslands are essential for many pollinating insects. They also provide food and shelter for other wildlife, including birds and mammals.**

**Pollinator food** - Many bees, flies, moths, butterflies, wasps and beetles depend on a rich diet of pollen and nectar, but as individual insect species can only use certain types of wildflowers for feeding, a wide range of plants are needed.

Pollinating insects also need a continuous source of food throughout the spring, summer and autumn; a range of wildflower species will help by producing flowers over a long period of time.

**Nesting and shelter for pollinators** - Open ground, for example found on banks, path and track edges are used by some bees and wasps to burrow in and create their nests. Other insects require tussocky vegetation for shelter and some insect larvae develop in the seed heads of grasses and flowers. Many insects require different vegetation types and structure at different times in their life-cycles, so a mix of habitats, such as hedgerows, field margins and ditches is needed in addition to wildflower-rich grasslands.

For further information see insect needs

#### Different grassland types

**Hay Meadows and Pastures** are managed for the production of hay, and for cattle and sheep grazing. Agriculturally unimproved meadows and pastures can produce very attractive displays of flowers during summer months which can be very important for insect pollinators; particularly as a pollen/nectar source.

**Calcareous grasslands** are found on shallow lime-rich soils both on the chalk downland, and upland limestone areas. Generally managed as pasture, they can be very rich in wildflowers and insects.

**Acidic Grasslands** occur on nutrient-poor, sandy or other free draining 'acidic' soils often in mosaics with heathland vegetation.

For further details of grassland types see Habitats for Invertebrates



### B-Lines and Local Authorities: Fact Sheet 3

#### The B-Lines: Creating the network

B-Lines is a landscape-scale biodiversity initiative, being developed and promoted by Buglife - The Invertebrate Conservation Trust, which aims to create a UK-wide network of wildflower-rich habitats.

#### How can local authorities help?

Local Authorities with their wide ranging responsibilities, services and land holdings are in a unique position to help deliver key parts of the B-Lines. Many opportunities exist across local authority work areas and duties, including their role in local planning and also as managers of public and amenity spaces, brownfield sites, schools, car parks, roadside verges and roundabouts.



Buglife and Plymouth Council are working together to create new areas of wildflower-rich meadow on a number of City parks. Local Communities and schools are getting involved planting wildflowers and seeding the meadows and starting to enjoy a mass of wildflowers and the butterflies and bumblebees they attract.

#### What needs to be done to create the B-Lines

In order to develop the B-Lines into an effective UK-wide network we need to link our existing wildflower-rich sites together by 'filling' the B-Lines with as many flower-rich areas as possible. This can be achieved in a number of ways, for example by restoring Local Wildlife Sites and SSSI, creating new high quality habitats and increasing the numbers and range of wildflowers in amenity grasslands by relaxing mowing regimes and creating urban meadows.

Within each urban area the aim should be to maintain or establish at least some large areas of high quality permanent wildflower-rich habitat (ideally > 2 ha) which provide insect pollinator needs throughout the year, including food (nectar and pollen), nesting and over-wintering shelter. Ideally these will include not only summer flowering meadows, but also other habitats such as areas of taller grown uncultivated grassland and areas of flowering shrubs.

Hundreds of smaller more scattered flower-rich areas (both native wildflowers and suitable non-native species) can also be developed wherever opportunities arise, providing valuable 'feeding stations' across your town or city. These can utilise stream or river courses,



### The B-Lines Initiative

Buglife - The Invertebrate Conservation Trust is committed to halting declines in our native insect pollinators, which have suffered significant declines over recent decades as a consequence of habitat loss, pesticide use and other factors. Native insect pollinators provide an essential 'ecosystem service' - being responsible for the pollination of a large proportion of our food crops and our native plants. Further declines could lead to dramatic reductions in crop yields, alongside further deterioration in our native flora. Large areas of wildflower-rich habitat need to be both restored and created to provide essential food and shelter for pollinators. To increase opportunities for species to move around the countryside as our climate changes, Buglife is promoting the need to identify and develop priority dispersal corridors - The B-Lines.

#### B-Lines and the National Pollinator Strategy (England only)

The Government's National Pollinator Strategy 2014 sets out a 10 year plan to help pollinating insects survive and thrive across England. It outlines actions to support and protect the many pollinating insects which contribute to food production and the diversity of our environment. Many of the Strategy's actions are about expanding wildflower-rich habitat and creating new nesting sites across all types of land so that our 1500 pollinator species can survive and thrive. In addition, it promotes the need for 'more, bigger, better, joined-up, diverse and high-quality flower-rich habitats (including nesting places and shelter) supporting our pollinators across the country'. Buglife's B-Lines initiative is showing the way! Working with partners across the country we are demonstrating how a joined-up approach can help conserve our native insect pollinators.

#### Key Issues:


Agricultural intensification in our countryside, in conjunction with loss of land to urban development, has resulted in a significant decline of wildflower-rich habitats - 97% of wildflower-rich grasslands have gone since the 1930s.

Loss of habitat is one of the key factors which has led to the decline in a range of insect pollinators and other wildlife, effects being exacerbated through increased use of pesticides, losses of small wildflower-rich areas (for example hedge bottoms) and increased field sizes. Many areas of wildflower-rich habitat now exist as small patches often isolated from each other by large areas of less wildlife-friendly habitat. This fragmentation of habitats is a matter of concern - the populations of insect pollinators they support become marooned and unable to move in response to climate change.

Over 250 UK pollinators are in danger of extinction and on the UK BAP priority list. Of our twenty five species of bumblebee have declined by at least 80% in the last fifty years. These are mirrored for butterflies (71% of British butterfly species are in decline) and hoverflies (38% of hoverflies are in decline). In the UK the value of insect pollination to agriculture is £110m p.a. or 13% of UK agricultural output. Worldwide the value is estimated as £132 billion.



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