



LEARNING AND LEGACY THE ROLE OF EDUCATION IN CREATING HEALTHIER, HAPPIER CITIES
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Best for Bugs, Butterflies, Birds and Bees: How to provide real biodiversity benefits on your campus.

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EAUC Biodiversity CoP



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http://www.sustainabilityexchange.ac.uk/eauc_biodiversity_guide

Why it matters



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Losses in the last 50 years:

- 💙 97% wildflower meadows
- 💙 50% ancient lowland woodland
- 💙 150,000 miles hedgerows
- 💙 80% chalk downland
- 💙 80% wetland fens & mires

The landscape is in danger of ending up like this...

Why it matters



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Wildlife preserves

...and wildlife like this...

The Lawton Review 2010





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A review of England's Wildlife Sites and Ecological Network

Chaired by Professor Sir John Lawton CBE FRS

Key messages:

-  Improve the quality of current sites by better habitat management - **Better**
-  Increase the size of current wildlife sites - **Bigger**
-  Create new sites - **More**
-  Enhance connections between, or join up, sites, either through physical corridors, or through “stepping stones” – **Joined up**
-  Reduce the pressures on wildlife by improving the wider environment including through buffering wildlife sites – **Reduced pressure**

State of Nature 2013



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- 🧡 **60%** of species studied have declined over recent decades.
- 🧡 Most threatened and vulnerable have declined by **77%** with little sign of recovery
- 🧡 More than **one in ten** of all the species assessed are under threat of disappearing from our shores altogether.
- 🧡 Linked to habitat **loss**, changing land management practices, **poor quality** development.

For butterflies



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- 🐝 **56** species of butterfly in GB and Ireland
- 🐝 4 butterfly species and 60 moth species became extinct in 20th century
- 🐝 Key indicators of ecosystem health and environmental change
- 🐝 The State of the UK's Butterflies 2015:
 - *“**76%** of the UK's resident and regular migrant butterfly species declined in either abundance or occurrence (or both).”*
- 🐝 Key measures:
 - Wildflower and **native grass** provision, nectar plants and larval food plants
 - Scrape creation
 - Butterfly banks
 - Undisturbed hibernation areas



Managing existing grassy areas



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- 💙 Let it grow, see what you find.
- 💙 Cut late July / early August
- 💙 Remove the arisings
- 💙 Relatively cost effective



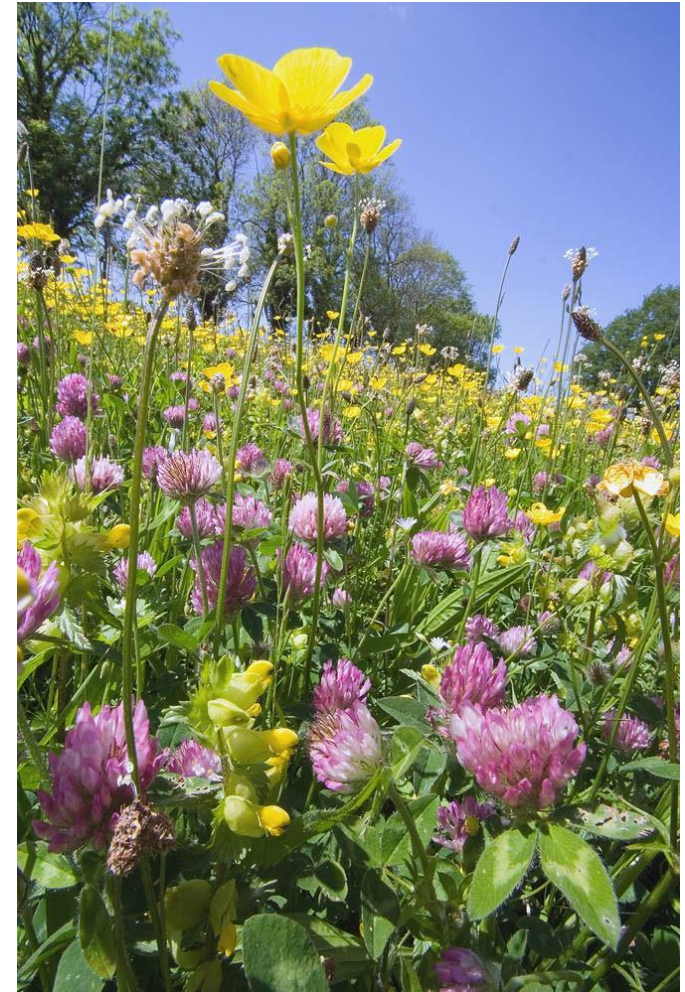
Creating new wildflower/ meadow areas



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- 🧡 Select sunny (south-facing) spots, with shelter - butterflies are not fond of windy conditions. Inaccessible-ish banks are ideal!
- 🧡 Buy seed from an approved Flora Local supplier: <https://www.floralocale.org/page24182>
- 🧡 Don't miss out grasses. Meadows are 80% native fine-leaved grasses, which are of UTMOST importance
 - Shelter for small invertebrates
 - Larval food plant of our 'brown' butterflies
- 🧡 Wildflower turf generally **not** 80:20 ratio of grasses to flowers



Some example costs



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EM4 Meadow Mixture for Clay Soils

🇬🇧 £/10kg = £515.20

🇬🇧 £/1kg = £56.00

🇬🇧 £/100g = £6.60

Sowing rates:

🇬🇧 40 kg/ha; 16 kg/acre; 4g/m²

E.g. sowing 2 x 10 metres = 20m²

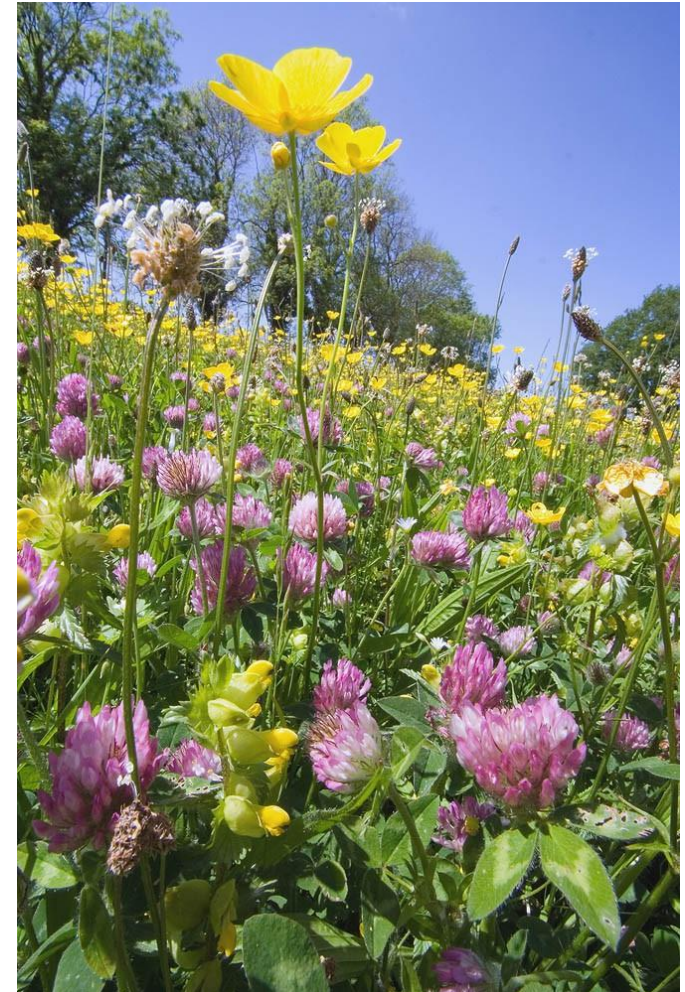
Uses 80g seed, at 4g/m² = **£5**

Wildflower turf

🇬🇧 At UoW = **£15** m² exc. delivery

Green hay

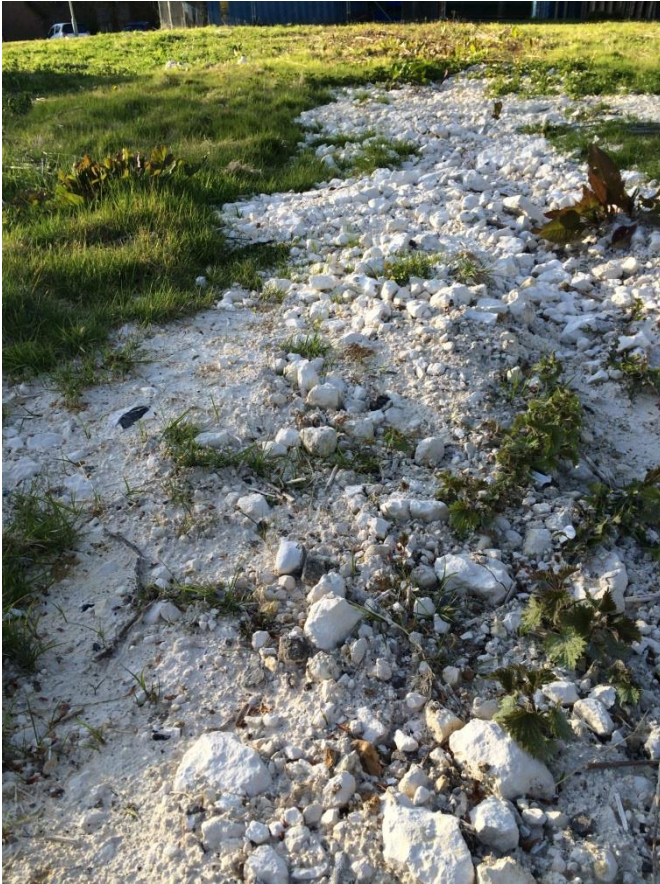
🇬🇧 Find a source of green hay. Native species of local provenance. Speak to your local Wildlife Trust.



Scrape creation



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- Many butterflies and moths depend on plants that are quickly out-competed by vigorous vegetation.
- These plants are typically early colonisers of disturbed soils and need to germinate within patches of bare ground if they are to flourish.
- Earth scrapes produce a **mosaic** of sparsely vegetated patches that provide the breeding, nectaring and warm basking areas that many butterflies and moths require.
- Scrapes help diversify the vegetation of a site and can supply bare ground habitat that is needed by other insects such as beetles, solitary bees and wasps.

Butterfly banks



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Grizzled skipper
eggs on cinquefoil



Butterfly hibernation



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- 🐝 Dry leaves in a sheltered spot good for overwintering butterflies including brimstones
- 🐝 Log piles, sheds

Living roofs



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https://www.buglife.org.uk/sites/default/files/Creating%20Green%20Roofs%20for%20Invertebrates_Best%20practice%20guidance.pdf









Bees

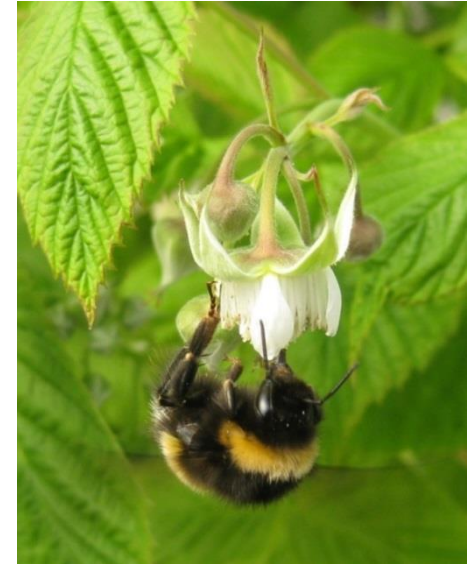


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250 native bee species in UK

-  **1** species of honeybee
-  **24** bumblebee species
-  **225** solitary bee species
-  All bees feed exclusively on nectar (energy) and pollen (protein for development)
-  Declining honeybee populations so essential to preserve wild pollinators
-  Economic value of insect pollination of crops in the UK = **£440m**
 - **10 - 35% – honey bees**
 - **65% – all other wild pollinators including bumblebees, wasps and solitary bees**



Ecosystem service - delivered for free - crops are kept at a reasonable price for us to enjoy.

The bees' needs



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The bees' needs



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Abundant wildflowers



Early spring-flowering plants important as queens emerge from hibernation and need to build up reserves of energy quickly. E.g. **Bluebell, Bugle, White dead nettle, Pussy willow.**



Plants that flower into September/October essential for rarer bee species to complete their life cycle. E.g. **Scabious, Knapweed, Autumn hawkbit, Red bartsia.**



Plant flower-rich areas close to rough grassy areas. Bumblebees **forage between 1 – 2km from the nest** to find food.

A range of flower shapes. Bumblebees have different tongue lengths:



Short-tongued bees need open flowers e.g. Bramble, fruit blossom



Long tongued bumblebees favour plants such as red clover, tufted vetch, kidney vetch, bird's foot trefoil, field scabious, devil's-bit scabious, knapweed and white dead nettle.

The bees' needs



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Nesting habitat

- 🐝 Bumblebees **nest in rough grassland, often under hedges**. Retain grassy, tussocky areas and edges. Some species nest underground in old mouse or vole holes, while other species create a nest at the base of tussocky grass. Allow these areas to remain undisturbed.
- 🐝 Solitary and mining bees like **open, sparsely vegetated**, warm south-facing banks.

Think scruffy

- 🐝 Encourage bare ground and disturbance
- 🐝 Delayed succession
- 🐝 Varied topography
- 🐝 'Untidy' features – hummocks and hollows

Retained dead and rotting wood.

- 🐝 Tunnels vacated by wood-boring beetles provide nest sites for solitary bees.



**Engaging signage and good
interpretation needed!**



Missed opportunities?



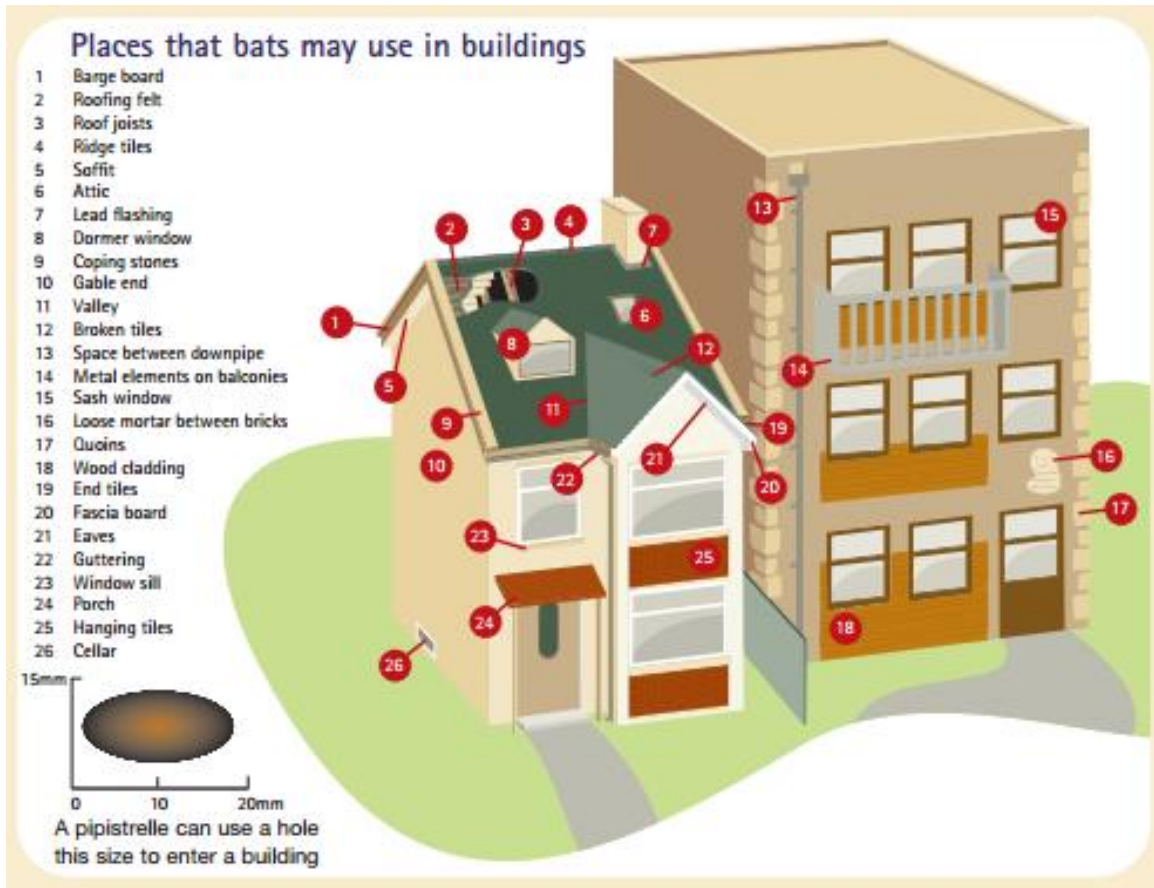
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For bats



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- 🦇 18 species of bat in the UK....
- 🦇 17 of which are known to breed here = almost a quarter of our mammal species.



<http://www.habibat.co.uk/category/bat-boxes>

Flight lines and foraging



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A word on birds... ...and hedgehogs...



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Birds

- Correct siting of nest boxes
- Support swifts: www.swift-conservation.org



Hedgehogs

- Sign [the petition](#) calling for better legal protection for hedgehogs
- Control use of slug pellets
- Holes in fences, to create permeable campuses



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Thank you.

Acknowledgments

- 🐝❤️ Michelle Bowe, Somerset Wildlife Trust
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