Wildflower and Hedge Investigation

Investigate what plants are growing in a wild area. This could be your private garden, in a field, a park or an urban space. You don't need to be a plant expert, or need any scientific equipment—just enthusiasm! Then you can investigate if you think the plants are pollinator friendly.

When collecting materials and resources, please do this responsibly and sensibly. Please don't damage living things. Only collect materials that are already on the ground.

This activity can be changed to suit the space that you have, you don't need to complete all these investigations either. You might want to print this sheet or simply make notes on scrap paper, or just take photos of your investigation in action.

JOHN MUIR DISCOVER AWARD

Summer Holiday Family Challenge

JOHN MUIR TRUST
FOR *wild* LAND & *wild* PLACES

PENDLE HILL LANDSCAPE PARTNERSHIP

ERNEST COOK TRUST · learning from the land ·

FOREST OF BOWLAND
Area of Outstanding Natural Beauty

HERITAGE FUND

Make a quadrat

You don't have to make a quadrat, you can just mark out the area you are investigating with sticks or anything else you have. Please remember to remove these when you have finished investigating, especially if you are not on private land.

Resources and materials that could be used (but you may be more creative and think of other things):

- Sticks of similar length
- string/twine
- Maybe elastic bands

How to:

- Find 4 sticks of roughly equal size.
- Lay them out to make a square./rectangle.
- Tie the corners together with string. You can use a knot called "Square Lashing" Look this up and learn a useful skill. https://muddyfaces.co.uk/activity/knot-square-lashing/
- If you wanted to measure the area of your square, you can do.

Wildflower Quadrat Survey 1

This can be done on any level ground where there are a few flowers. It is a bit tricky to put a quadrat out if your plants are higher than your knee and at different heights. If you want to use sticks to mark out a square you can.

Quadrat One

1. Where is your quadrat located?

By a path [ ]

Under a tree [ ]

Open space [ ]

Mown Grass [ ]

By a hedge [ ]

Other _____ What habitat is it in _____

2. How many different species of plants can you see in your quadrat?

Don't forget to count grasses too. _____

3. Can you see an insects in your quadrat? Are they pollinators?

_____

4. Can you name two of the flower species in your quadrat?

a) _____

b) _____

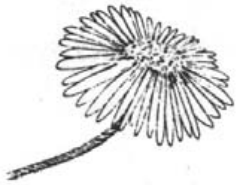
Flower shapes:

Umbrella

Lipped

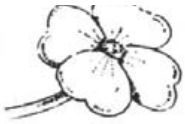
Tube

Daisy



Pea

4 petal



Spike

5 petal

5. Record the number of different shapes and colours of the flowers in your quadrat in the table below, by using the pictures above for help.

	Umbrella	Lipped	Tube	Daisy	Pea	4 petal	Spike	5 Petal
Red								
Yellow								
Orange								
Green								
Blue								
Pink								
Violet								
White								

Pollinators like bees and butterflies like different flowers. It all depends on how long their tongues (their hollow tongues are called **proboscis**) are. Imagine trying to get some ice cream from the bottom of a cone, those with the longest tongue will get the ice cream from the bottom. Bees and butterflies with **long tongues** like closed or tube shaped flowers like lipped, tube, pea flower shapes. Bees with **short tongues** like open flowers like umbrella, daisy, 4 and 5 petal flowers. They are all trying to get **nectar**, which is the sugary liquid the bees and butterflies collect for energy.

Wildflower Quadrat Survey 2

Carry out another quadrat survey, This can be in a different habitat, different location, or different day. You might want to place your quadrat or marked out area next to a hedge or under a tree, to see if there are any differences.

Quadrat Two

1. Where is your quadrat located?

By a path [ ]

Under a tree [ ]

Open space [ ]

Mown Grass [ ]

By a hedge [ ]

Other _____ What habitat is it in _____

2. How many different species of plants can you see in your quadrat?

Don't forget to count grass too. _____

3. Can you see an insects in your quadrat? Are they pollinators?

_____

4. Can you name two of the flower species in your quadrat?

a) _____

b) _____

5. What differences can you see from the first quadrat to this one? Why do you think there are these differences?

Differences: _____

Why: _____

Flower shapes:

Umbrella

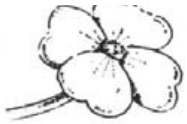
Lipped

Tube

Daisy

Pea

4 petal



Spike

5 petal

6. Record the number of different shapes and colours of the flowers in your quadrat in the table below, by using the pictures above for help.

	Umbrella	Lipped	Tube	Daisy	Pea	4 petal	Spike	5 Petal
Red								
Yellow								
Orange								
Green								
Blue								
Pink								
Violet								
White								

7. Which location looked the best for pollinators? Why was that?

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8. What could you do to improve each area? Think of conservation ideas that could be done, by you or the land owner.

Hedgerows Investigation Challenge

If you are lucky enough to live near a hedger, or have hedges along footpaths, go and investigate them. Please be mindful that most hedges are on private land, therefore make sure you don't disturb the wildlife too much or disrupt the land and only investigate a hedge which is right next to a public footpath or a publicly accessible space.

- Find out what tree or shrub your hedge is made from. Look at it's leaves, bark and how it grows. Take a look here for some help: https://www.opalexplorenature.org/sites/default/files/7/image/BIODIVERSITY%204pp%20chart.pdf
- How old do you think the hedge is? Read Hooper's Hypothesis, about how to date a hedge: https://www.conservationhandbooks.com/hedging/the-hedgerow-landscape/hedgerow-dating/
- What other plants are growing near the hedge? Look in the hedge too.
- Are there any minibeasts living there or mammals and birds?
- Read of the fact file below to see if any of these statements might relate to your hedge

History of Hedges:

- Some of our hedges date back to **Bronze age** or even **Neolithic times**, when the first farmers began clearing small areas for cultivation, but left strips of trees.
- Livestock do what they love, munch on the tree leaves they can reach, making trees **grow densely** and put vigorous growth on. With cutting a laying of these trees, the hedge is born.
- These original hedges cost nothing to create. Over time these hedges yielded valuable **materials** of whips, poles, berries and nuts, which is useful because shops didn't exist thousands of years ago.
- Between 1870 and 1945, hedgerow habitats stayed the same, but this all changed from 1950 to 1975, as **hedges were removed** to increase fields and crop production. More recently hedges are now removed for planning developments.
- Hedgerows were given **legal protection in 1997**, for those over 20 meters long, over 30 years old and home to a significant number of species.
- As part of the Pendle Hill Landscape Partnership we want to restore **these traditional boundaries.** The aim is to restore 6000 meters of hedges. Plus offer hedgelaying training courses for beginners, so more people can learn this vital traditional skill. You can find out more here: https://pendlehillproject.com/project/traditional-boundaries

Hedgerow facts:

- Hedgerows are the most widespread **semi natural habitat** in England.
- The most common hedge shrub is the **hawthorn,** thought to be originally planted to make tools, firewood and thorns deter staying cows and sheep.
- **Wildflowers** can grow on top or near the bottom of hedges, providing nectar for butterflies. Some butterflies shelter in tiny gaps, and even hibernate in them over winter, In spring butterflies lay their eggs on leaves. The caterpillars feed on the local wildflowers, then attach their pupae in a hedge gap, before emerging as a butterfly.
- Many walls and hedges have been created to keep **grazing animals**, like sheep, in specific areas. The **enclosure acts of the 18th and 19th centuries** allowed farmers to create miles of boundaries to separate sections of land for grazing. Sheep are moved between fields over the year. To allow the grass to recover for the following season. Sheep like to shelter behind the hedges on windy wet days.
- Hedges and walls often provide **homes for nesting birds**, such as wrens and robins. Building a nest in a thick hedge provides a lot of shelter from the weather and predators. More than **80% of our farmland birds** rely on hedges for protection and food.
- Hedges make great hiding places for lots of mammals. One mammal is even named after the place they live. The 'Hedge' part of their name comes from the place they build their nests. The 'hog' part comes from the small snorting/ grunting sound they make, similar to a pig/ warthog. **Hedgehogs** have a really long snout to help them hunt. This makes it easier to find insects, worms, caterpillars and berries within the hedge.
- Hedges allow animals to find their way and **navigate around the countryside**. Bats use hedges to bounce their sonar off, to allow them to navigate in the dark. This is why it is important to fill in the gaps within walls and hedges. Bats find lots of insects around the boundaries, which they catch while flying and eat. Bats eat about 6,000 insects a night.
- Hedgerows play a crucial role in reducing **climate change**, as each kilometre of hedge might store 600-800 kg of carbon dioxide per year, for up to 20 years.

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