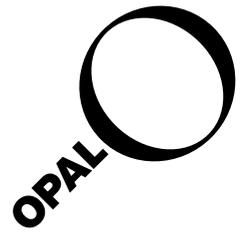




POLLI:NATION



Polli:Nation Survey Booklet



LOTTERY FUNDED



Introduction

You can become a citizen scientist with Polli:Nation by surveying your local patch (school grounds, park or garden) for pollinators. This survey:



Gives you the opportunity to learn about pollinators



Helps scientists to research the health and status of pollinating insects across the UK



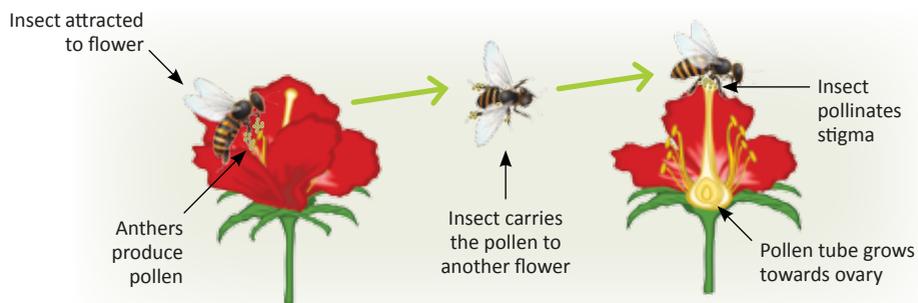
Through working together, aims to discover if changes you make to feeding, nesting and shelter habitats can make a difference to pollinators in your area

What are pollinators?

Pollinators are animals that move pollen from one flower to another, and in doing so enable plants to make seeds and reproduce.

Pollinators come in many forms across the world (including birds, bats and lizards), but in the UK the majority of pollination is done via wind or by the 1500 species of pollinating insects. These insects include **bees, butterflies, flies and beetles.**

Around 80% of British plants are pollinated by insects. This process produces the wide variety of plants we see, feeds our wildlife and provides much of the food that we eat. Pollinators are important for our economy; **the loss of pollinators could cost the UK around £430 million a year in lost crops alone.**



Pollinators need different habitats (places to live) in order to feed, nest and shelter. However, human activity has put these habitats under pressure.

How are UK pollinators affected by a changing environment?

Human activities are affecting the total number of pollinating insects, the number of different types of pollinators and where they are found.

What is causing this?

- Habitat loss
- Pests and diseases
- Climate change and extreme weather
- Pesticide use
- Competition from invasive species



Survey preparation

After some introductory questions, there are **two parts to the survey**: A and B. They are designed to be completed together within an hour (although data for part A can be submitted without completing part B).

PART Habitats

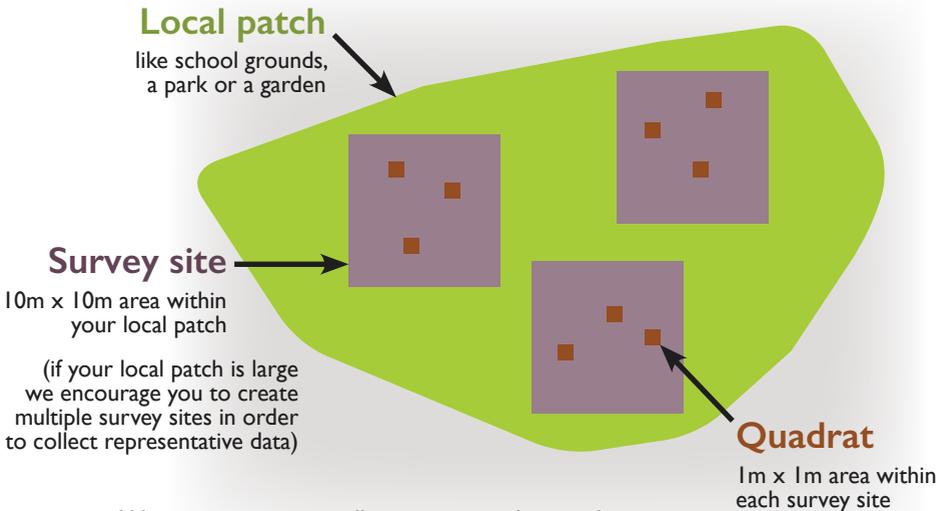
- A** This part looks at **feeding, nesting and sheltering habitats** both within your **survey site** (a 10 metre by 10 metre area) and more broadly in your **local patch**.

This part can be carried out at any time of the year, though **spring or summer is best**.

PART Pollinators

- B** This part looks at **pollinating insects** visiting **3 quadrats** (1 metre by 1 metre areas) within your **survey site**.

This survey should be done between April and September when the weather is dry, sunny and warmer than 11°C.



We want to monitor pollinators across three scales (your **local patch**, **survey site** and **quadrat**) to monitor how they use the landscape for feeding, nesting and sheltering

Habitat improvements for pollinators

This survey is for everyone, but there are a number of registered schools taking part in the Polli:Nation Project to improve their school grounds for pollinators. If you are not one of these schools but you would like to make changes to pollinator habitats in your outdoor space we encourage you to do so! For simple ways to improve your site please visit the Polli:Nation website below.

What will you need?

The Polli:Nation Survey pack which contains:

- This **Survey Booklet**
- The **Habitat, Plant and Pollinator Identification Guide**

Useful equipment:

- Tape measure
- Quadrat (see guidance on website to make your own)
- Thermometer
- Stopwatch
- Camera



Wherever you see this symbol you can find extra help and survey guidance in the **Group Leader Support Guide**. Please see Polli:Nation website below.



There are Extension Activities in parts A and B to investigate these topics in greater depth. This symbol indicates where you can download additional materials from the Polli:Nation website below.



It is your responsibility to assess the potential risks when carrying out any kind of fieldwork. Hazards may include sharp objects, stinging insects or plants. Keep in regular contact with others and ensure that those taking part can call upon emergency services if needed. Safety information is available from the Polli:Nation website: www.polli-nation.co.uk/activity/survey/

The survey starts here

Introductory questions

1. Today's date _____

2. Have you identified insects before? yes no

3. Who are you doing the survey with today (select one)?

primary school
 secondary school
 youth group
 family or friends
 college / university
 adult volunteer group
 other

4. Record the location of your survey site (postcode, grid reference or lat/long).

Further help is available on the [online survey submission form](#) to help you select the exact location

5. Are you conducting this survey at your school as part of the Polli:Nation project? yes no

6. If you answered YES to Question 5, write the name of your school or the unique reference number (URN) in the space below. If NO, please leave blank.

Name: _____ URN:

7. Are you planning or have you made changes to the outdoor space you are surveying? yes no

8. If you answered YES to Question 7, are you completing the survey before or after these changes have been made? before after

9. If you answered AFTER to Question 8, tick all the habitat changes you have made in the table below:

Habitat		Changes	Tick
Feeding	Flower beds or pots	Added pots, built raised beds or planted flower beds	<input type="checkbox"/>
	Wildflowers	Created a wildflower meadow or verge	<input type="checkbox"/>
	Trees	Planted trees, hedgerows, shrubs/bushes or an orchard	<input type="checkbox"/>
Nesting and shelter	Bare ground	Created a bee bank or exposed bare ground	<input type="checkbox"/>
	Man-made homes	Made a bee hotel or installed a honeybee hive	<input type="checkbox"/>
	Damp places	Created a pond, ditch, bog garden, compost heap or log pile	<input type="checkbox"/>

A Habitats

Pollinating insects need **feeding, nesting and sheltering habitats** to live. This part of the survey allows you to record the presence of these habitats both within your survey site and more broadly in your local patch.



Choosing your survey site

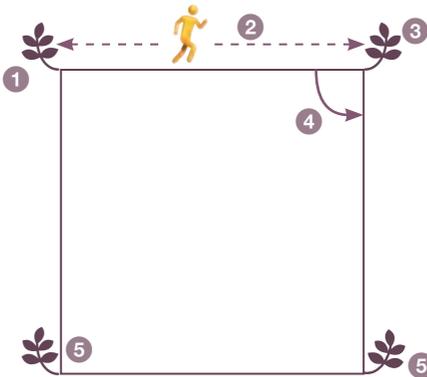
Choose a survey site (10m x 10m area) which contains a representative mix of **the habitat features in your local patch** and **plants in flower** if possible.

If you plan to make habitat changes, put your survey site close to where this will occur. Please survey your site twice, once before the changes take place and once afterwards - ideally the spring or summer after the changes have been made. **The before and after surveys should take place in the same location**, so make a note of where your survey site lies in your local patch and the features it is close to.



Measuring your survey site

Measure out a 10m x 10m site. If your patch is too small, refer to Question 11.



- 1 Place a marker on the ground (such as a stick, jumper or cone)
- 2 Walk in a straight line for 10 metres
- 3 Place a marker on the ground
- 4 Turn 90 degrees clockwise
- 5 Repeat steps 2-4 until you have a square

10. Is your survey site a standard 10m x 10m (as shown above)? yes no

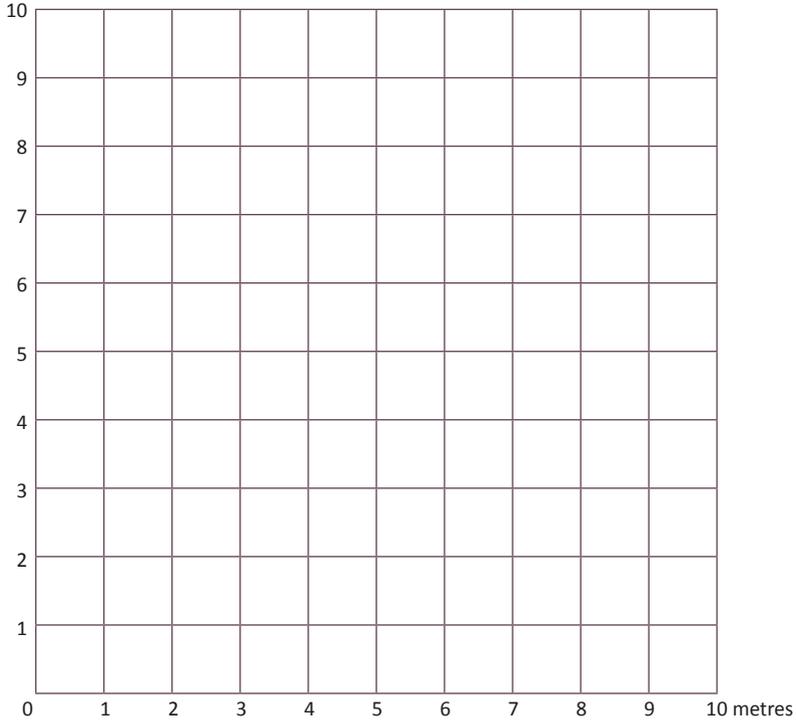
11. If NO to Question 10, record the length and width of your survey site.

If survey site is smaller than 10m x 10m or irregularly shaped see the **Group Leader Support Guide**

Length (metres): _____ Width (metres): _____

Mapping your survey site

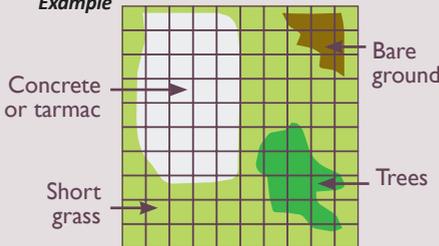
The empty 10 x 10m grid below has been provided to help you work out how much of your survey site is covered by different habitat types. Draw out the different habitat types you have in your survey site onto the grid. You can use the guidance box at the bottom of this page to help you. Next, count and record the number of squares covered by each habitat type in the table on page 8.



Recording sheets

Use the **Habitat, Plant and Pollinator Guide** for help identifying which habitat types you have.

Example



Habitat type	
Feeding habitat	Flower beds or pots
	Wildflowers
	Trees
Nesting and shelter habitat	Bare ground
	Man-made homes
	Damp places
Other	Bare walls or fences
	Concrete or tarmac
	Short grass

Guidance Box

12. Using your drawing on the 10 x 10 grid count the number of squares covered by each habitat type.

Record the number of squares covered in the table below.

If more than half a square is covered by a habitat type count this as one.

13. Tick the box if you can see this habitat type outside your survey site, in any direction.

Habitat type		12. Number of squares	13. Habitat type outside your survey site
EXAMPLE Trees		9	✓
Feeding habitat	Flower beds or pots		
	Wildflowers		
	Trees		
Nesting and shelter habitat	Bare ground		
	Man-made homes		
	Damp places		
Other	Bare walls or fences		
	Concrete or tarmac		
	Short grass		



If you would like to map the wider land use around your survey site please complete the Mapping Extension activity:
www.polli-nation.co.uk/activity/survey/

Plants within your survey site

When you are surveying take care not to trample the plants and flowers.

14. Tick all the plants that you can see inside your survey site (10m x 10m area), even those not in flower.

Use the **Habitat, Plant and Pollinator Guide** for help identifying which plants you have.

Woody plants



Blackthorn

in flower present



Hawthorn

in flower present



Fruit tree

in flower present



Willow

in flower present



Bramble

in flower present



Ivy

in flower present



Buddleia

in flower present



Wild Rose

in flower present

Garden plants



Chives

in flower present



Marjoram

in flower present



Mint

in flower present



Lavender

in flower present



Heather

in flower present



Sea Holly

in flower present



Sedum

in flower present



Verbena

in flower present

Wild plants



Daisy

 in flower

 present


Clover

 in flower

 present


Umbellifers

 in flower

 present


Willowherb

 in flower

 present


Thistle

 in flower

 present


Knapweed

 in flower

 present


Nettle

 in flower

 present


Dead-nettle

 in flower

 present


Dandelion

 in flower

 present


Ragwort

 in flower

 present


Buttercup

 in flower

 present


Vetches

 in flower

 present

These plants have been chosen because they are especially good sources of food for pollinating insects. However, there are lots of options available should you wish to plant some, please see website below for suggestions.

If you do not have any plants in flower in your survey site, please finish the survey here and submit your results to the Polli:Nation website:
www.polli-nation.co.uk/activity/survey/

B Pollinators

In part A of the survey you mapped the different habitat types in your survey site. Part B will allow you to record how many pollinating insects visit flowers in quadrats within your survey site (see diagram on page 3).

Weather conditions

You should survey when it is dry and above 11°C as pollinators like to fly in warm sunny conditions.

15. Which of these best describes the weather at the moment?



16. What is the temperature at the moment? _____ °C

Use a thermometer to record the air temperature. To do this, place the thermometer in a shaded area, about one metre above the ground. It is important to leave the thermometer for at least 10 minutes before you take the reading.

17. How windy is it at the moment?

Leaves still

Leaves moving gently

Leaves moving strongly all the time



Placing your quadrat

- Choose a feeding habitat from page 9-10 (woody plants, garden plants or wild plants) where plants are in flower.
- Place a 1m x 1m quadrat over a flowery patch.
- When you have completed steps 1-4 (below), choose two more flowery patches to place your quadrat and repeat the steps.



Habitat type

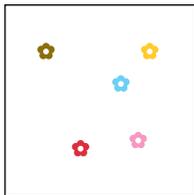
Record the habitat type in the first row of the table on page 13.

You can repeat this in other feeding habitats, or, if you are doing this in a group, split up into teams to cover more habitats.

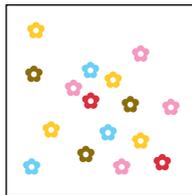
2

Floweriness

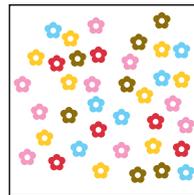
Look at the images below. Which most closely matches your quadrat? Record 1, 2 or 3 in the second row of the table on page 13.



1
flowers occupy
less than half



2
flowers
occupy half



3
flowers occupy
over half

If known, record the name of the most common flower in your quadrat on page 13.

3

Pollinator groups

Count how many insects from each group enter the quadrat and land on a flower over a 2 minute period

Sit quietly so as not to scare the insects away

If you are unsure which group an insect belongs to (e.g. Bumblebees, Moths or Hoverflies), then use the **Habitat, Plant and Pollinator Identification Guide** to help you identify it. If you are still unsure then tick the “Unidentified Insects” box. Record the number of insects from each group in the table on page 13.

4

Species Quest

Keep an eye out for the 12 Species Quest pollinators in the **Habitat, Plant and Pollinator Identification Guide**.

Tell us which species you spot, whenever and wherever you find them by ticking the boxes on page 13. We'd really like you to take a photo of any quest species that you find – this will ensure that your record can be added to national distribution maps and will be valuable for years to come. Photos can be uploaded when you submit your survey data at

www.polli-nation.co.uk/activity/survey/

		Example	Quadrat		
			1	2	3
1	Habitat type	Wild plants			
2	Floweriness (1, 2 or 3)	2			
	Most common flower	Daisy			
3	Hymenoptera	Bumblebees 			
		Honeybees 			
		Solitary bees 	o		
	Lepidoptera	Butterflies 			
		Moths 			
	Diptera	Hoverflies 			
		Other flies 	o		
	Beetles (Coleoptera) 		o		
	Unidentified insects ?		o		

4 Species Quest

If you see any of the **Species Quest** pollinators tick the box and try to take a photo



Red Admiral



Meadow Brown



Brimstone



Holly Blue



Six-spot Burnet



Marmalade Hoverfly



Red-tailed Bumblebee



Common Carder Bumblebee



Ashy Mining Bee



Honeybee



Thick-legged Flower Beetle



Red Soldier Beetle

Thank you for taking part in the Polli:Nation Survey!

Your results are important to us so please upload your results to www.polli-nation.co.uk/activity/survey/

or send your recording sheets to
Freepost RSCH-CKYJ-HYYC, OPAL, Centre for Environmental Policy, Imperial College London, London, SW7 2AZ

If you are planning to make habitat changes or survey your site multiple times, you will require a survey site code. This will be issued to you when you enter your data online. Please make sure to note the code down, this will allow us to track the habitat changes within your survey site. It is important that you keep a record of this number as it cannot be re-issued.

What do your results mean?

We hope you've enjoyed taking part in the survey. Your data will now be analysed by our team of scientists. By taking part you have helped to build a map of the feeding, nesting and shelter habitats available to pollinating insects in the UK. If you made changes to your school grounds, park or garden then our scientists will look at your data to find out how these changes have helped to improve the number and variety of pollinators.

The more data we receive the better our understanding of pollinators and their habitats will be, so keep surveying your site to help us build a clearer picture.



This activity was created by the Open Air Laboratories Network (OPAL) for Polli:Nation, a Heritage Lottery funded biodiversity and education project. Led by Learning through Landscapes, the project supports schools across the UK to transform their grounds into pollinator friendly habitats. This network of schools spreads knowledge, gathers data and creates 'green stepping stones' to assist insects in moving between areas. More information on Polli:Nation can be found at www.polli-nation.co.uk/activity/survey/



If you would like to find out more about the habitats, plants and pollinator species you have seen, or find out how you can improve your school grounds or garden for pollinators please go to www.polli-nation.co.uk/activity/survey/

If you've enjoyed this survey, why not try another OPAL survey? OPAL is a UK-wide citizen science initiative that allows you to get hands on with nature. You can find everything you need to get involved at www.opalexplornature.org/surveys



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⁶Buglife. ⁷Field Studies Council. © OPAL 2016. All rights reserved