X-POLLI:NATION

In association with:

FITCount

X-Polli:Nation Survey Booklet

For more information and to submit your data:

https://xpollination.org/

Imperial College London · The Open University · SLU · Learning through Landscapes · University of Aberdeen · PoMS UK Pollinator Monitoring Scheme · St. Alban's C of E (Aided) Primary School · Museo di Storia Naturale della Maremma · National Geographic · EPSRC

Introduction

You can create a buzz for pollinators by taking part in the X-Polli:Nation project. Pollinators are under pressure and we need your help to gather valuable new data about these vital insect populations and their habitats.

This survey has been developed with scientists, educators, technologists and students, and data that you collect will be combined with other surveys to contribute to the Pollinator Monitoring Scheme (PoMS).*

Can anyone take part?

Yes! We welcome everyone, no matter your background or level of experience. These resources are particularly aimed at **school age students and teachers/parents.**

What's involved?

Record -> Upload -> Next Steps

Count number of pollinators visiting a patch of target flowers for 10 mins and upload your data. Make even more of an impact on science and conservation by using our tools to help identify pollinator species and/or create habitat for pollinators.

What do I need?

No fancy equipment, just this booklet, suitable weather conditions and some extra bits if you want to take the next steps (**see page 3**).

Where can I do it?

Your school grounds, garden, park, nature reserve, churchyard or countryside- anywhere where there is a **target flower** species to watch during the survey (see page 4 & 6 for inspiration).

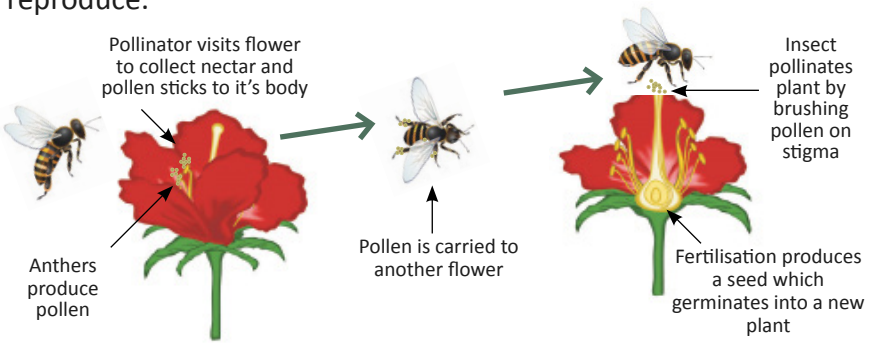
Can I get help?

Absolutely! There are notes on p2-4 & **extra tips on our website** including identification tools, group leader support guides and more. If you are ready to start, you can skip to page 5 and start recording.

* The X-Polli:Nation team merged the OPAL Polli:Nation Survey and PoMS FIT Count for school groups/home learners in the UK and Italy. PoMS data delivers key metrics for assessing the 'Status of Pollinating Insects' for the UK Biodiversity Indicators

What are pollinators?

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



Pollinators come in many forms across the world (including birds, bats and lizards), but insects are the most effective pollinators. These insects include **bees, butterflies, flies and beetles**.

Pollination 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 Europe around €15 billion in lost crops alone**.

How are 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.

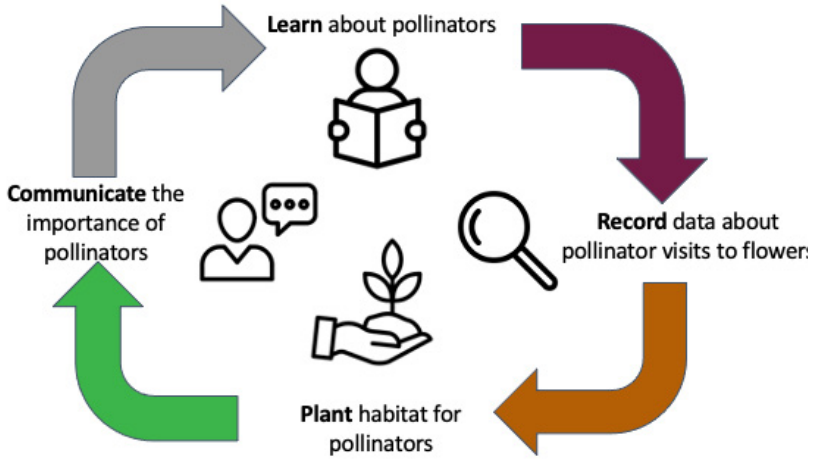
What is causing this?

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

Survey preparation

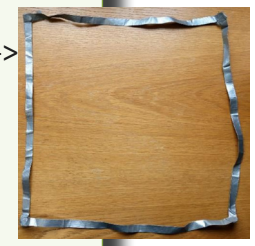
Before you start

You can improve your identification skills and learn more about pollination, citizen science and planting as part of our wider educational project on our website https://xpollination.org/



What will you need?

- This X-Polli:Nation Survey **Survey Booklet,** providing background information and recording sheets
- **50cm square** (quadrat) or make your own using tape ->
- **Stop clock** (or phone for timing)
- **Thermometer** (or check temp online)
- **Camera**/smartphone/tablet
- A patch of **flowers** (see list on p6)



Optional (if you need extra help with ID, are a group leader looking for additional guidance, or plan to take part in Next Steps on page 10)

- **The** Target Flower Guide
- The Group Leader Support Guide ->
- Extra **recording sheets** (2 page printer friendly)
- **Sticks, string** and waterproof **labels** for quadrats if re-surveying
- **Trowel**

About the Survey

- The survey itself lasts for **10 minutes** but there are extension activities you may like to do (see page 10)
- This Survey Booklet consists of background questions and space to record your pollinator counts, you will then need to **upload your data on our website**.
- Surveys need to take place between the **beginning of April and the end of September**, in dry and reasonably warm weather (12°C +).
- You could just complete one survey but we **encourage as many surveys as possible** to be completed during the year either in the same quadrat or in different habitats to help us make better conservation decisions (see page 10).
- You may wish to **work with at least one other person** to help with observation, timing and recording.

Choosing your location and preparing your site

- You can choose to place your quadrat in **school grounds**, a **garden**, **park**, **nature reserve, churchyard** or the **countryside**. You could even plant a specific patch to monitor (tips on p10).

- You will need to find a location containing a **target flower species** to watch in one of 3 habitats- Managed Area, Grassland or Hedgerow (see diagram above and p6).
- You need to watch insects in a **50cm by 50cm square patch** – the easiest way to define this is to use a quadrat (<-).

This symbol indicates more tips are available in the Group Leader Support Guide for teachers, parents and other group leaders looking for support and lesson plan inspiration.

It is your responsibility to assess the potential risks when carrying out any kind of fieldwork. Hazards may include sharp objects, stinging insects or poisonous plants. Ensure that those taking part can call upon emergency services if needed.

The survey starts here

About you

- ☐ I am **new to identifying wildlife**
- ☐ I am familiar with identifying **some wildlife** but not most pollinating insects
- ☐ I am familiar with recognising the **main groups** of pollinating insects
- ☐ I am confident in identifying the commonly-occurring pollinating insects to **species level**

You can practice your identification skills on the X-Polli:Nation ID Training Tool.

Who are you doing the survey with today (circle one)?:

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

Date and location of count

Date of count: _____

Location name: _____

This may be your school, park or nature reserve name or simply 'my garden'.

Location of your survey site (postcode, grid reference or lat/long):

You can refine your location from an online map when you upload your data.

_____

Type of site Please tick box that is the best match.

- ☐ School grounds
- ☐ Garden
- ☐ Parkland with trees
- ☐ Nature reserve
- ☐ Countryside
- ☐ Churchyard
- ☐ Other site (please specify)

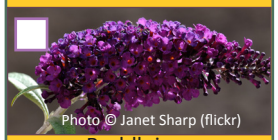
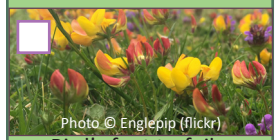
Habitat Once you have selected where to place your quadrat, please tick which category below best represents the habitat.

- ☐ Hedgerow
- ☐ Verge (e.g. edge of field)
- ☐ Grassland with wild flowers (e.g. meadow)
- ☐ Amenity grassland (usually mown)
- ☐ Farm crops or grassy pastures
- ☐ Upland moorland
- ☐ Lowland heath
- ☐ Brownfield or other 'waste ground'
- ☐ Woodland
- ☐ Planted area (e.g. plant pots)
- ☐ Other habitat (please specify)

Target flower

Which flower have you chosen?

Place your quadrat in an area that contains one of the 'target flower' species below (it can contain other species too). If you don't have any of these nearby, please choose another insect-attracting flower ('other'). Flowers are grouped in habitats where you are **likely** to find them in (flower beds and pots, hedgerow or verge and grassland), but note, that some may be found in more than one habitat. If you are working as part of a class, each group should choose a species in a different habitat to survey. You can use the target plant guide to help you identify the species.

Flower beds and pots	Hedgerow or Verge	Grassland
☐  Lavender (English)	☐  Hawthorn	☐  Dandelion
☐  Heather (Calluna or Erica)	☐  Bramble/Blackberry	☐  White Clover
☐  Buddleja	☐  Ivy	☐  Red Clover
☐  Common/Greater Knapweed	☐  White Dead-Nettle	☐  Buttercup
☐  Poppy	☐  Hogweed	☐  Ragwort
☐  Cornflower	☐  Thistle (Carduus or Cirsium)	☐  Bird's-foot trefoil

- ☐ Other (please write the species here)

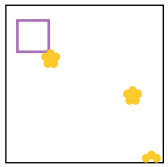
Extension Activity: Plant for pollinators! See p10 for tips, you could survey this patch next year.

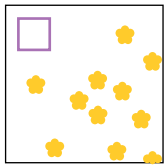
Please take a photo of your target flower species (and leaves)

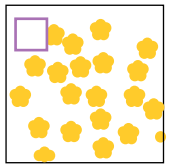
Flower colour _____

Which most closely matches your quadrat?

Your quadrat may contain more than one species of flower but here we would like you to estimate what area your **target flower** species occupies.


Target flowers cover less than half of 50x50cm quadrat


Target flowers cover about half of quadrat


Target flowers cover more than half of quadrat

Number of flowers in patch:

Count all open (fresh not dead) flowers of the **target species** _____

I counted:


☐ Individual flowers

Each flower counts as one.


☐ Flower heads

Lots of tiny flowers within a flower head- each head counts as one.


☐ Flower umbels

Each umbel (like an insideout umbrella) counts as one.


☐ Flower spikes

A number of small flowers arranged a long a stem- each stem counts as one.

Flowers nearby

How many other flower species can you see in your quadrat? _____

Coverage of ALL species of flower:

☐ Less than half of quadrat ☐ About half of quadrat ☐ More than half of quadrat

Is your 50x50cm patch of target flowers:

☐ More or less isolated i.e. no other flowers nearby.
☐ Growing in a larger patch of the same flower
☐ Growing in a larger patch of many different flowers

Planting

You may have already planted some pollinator friendly habitat which you are planning on surveying. We would love to hear about it below. If you haven't but wish to do so, then we provide some tips on p10.

Is this quadrat in a patch that you have planted? yes no

If so, how much habitat have you planted as a result of this project?

e.g. if you planted 50 x 50cm this would be 0.25m^2. _____

What have you planted?

e.g. you may have planted a seed mix which you purchased or you may have been given seeds, please write down which **species** you believe to be present.

Timed Insect Count

Please check your timer so that you can survey for exactly **10 minutes**. If you are working in a team we suggest you delegate tasks beween timing, counting and recording the insects in the chart below. If you are unsure about telling the difference between groups of insects please see our identification guide.

Time at start of the count: _____

When you are ready to start, please count EVERY insect that you see that LANDS on one of your TARGET FLOWERS (if you're not sure what type it is just add it to the "Other" or "Small insects" category as appropriate). Please try to count each individual insect just once, and try not to lean over the flowers you are watching, as this can cast shadows and prevent insects approaching.

	Tally of number seen e.g IIII = 4 etc.
Bumblebees 	
Honeybees 	
Solitary bees 	
Wasps 	
Hoverflies 	
Other flies 	
Butterflies & moths 	
Beetles (larger than 3mm) 	
Small insects (less than 3mm long) 	
Other insects 	

Extension Activity: If you have some time after the Timed Insect Count, or even when you are taking a break from work or out on a walk, take a photo of all of the bumblebees that you see. You can upload your image(s) to the website and use our Artificial Intelligence (AI) tool to help you identify the SPECIES in your photograph(s). See page 10 for more information.

Recording sheets

5. Weather conditions during your count

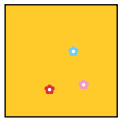
Sky above your location:

☐  All or mostly blue

☐  Half blue and half cloud

☐  All or mostly cloud

During the 10-minute count, was your 50x50cm patch:

☐  Entirely in sunshine

☐  Partly in sun and partly shade

☐  Entirely shaded

Wind strength

For all plants in the area, not just target flowers, how are the leaves moving.

☐ Leaves still

☐ Leaves moving gently all the time

☐ Leaves moving strongly

What is the temperature at the moment? _____ °C

You could either check on the Met Office website for the temperature in your area or 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.

Thank you for taking part in the X-Polli:Nation Survey. Your results are important to us so please upload your data on the website:

https://xpollination.org/

We would also love for you to share your pollinator photos and videos with our online XPolli community:

@XpolliProject #xpolli #pollipromise

If you have enjoyed this survey and would like to make an even greater difference, then we would love your help with gathering more data and planting habitats suitable for pollinators. Check out the Next Steps on p10.

Extension Activities

Collect more data

All surveys, even just a single one, are useful to the project, however if you are able to carry out multiple counts, that is very helpful for scientists and will generate an interesting dataset for you to explore at school/home. You could:

- **Record species-** take photos of all the bumblebees you see either entering your quadrat (e.g. after the Timed Insect Count) or wherever and whenever you come across one. When you upload your photo to the website you can use our interactive tool to help you identify the species (see box below and extension activity p8).
- **Repeat the survey in a different habitat**- you (or other members of your class), could choose a different habitat to investigate whether different plants attract different insects.
- **Repeat the survey over the year**: You could do this in the same quadrat once a month to see how polllinators and flowers change over the season. Be sure to label these quadrats so you can return to them (p3 for equipment).

More recording forms (including a 2 page black and white print out) can be found on our website:

https://xpollination.org/

Species Identification Tool

You can identify (ID) the species of bumblebee or butterfly you photographed with the help of the X-Polli:Nation Artificial Intelligence (AI) tool:

- Under the 'Get Involved' page on the website, click on the 'Record' tab and 'submit a photo-record' button.
- You will need to login (or sign up) before submitting your photo.
- The AI will select the three most likely species that match your photo. You can help the AI by selecting the colour pattern on the abdomen and thorax, and the shape of the head if visible.

Plant pollinator-friendly habitat

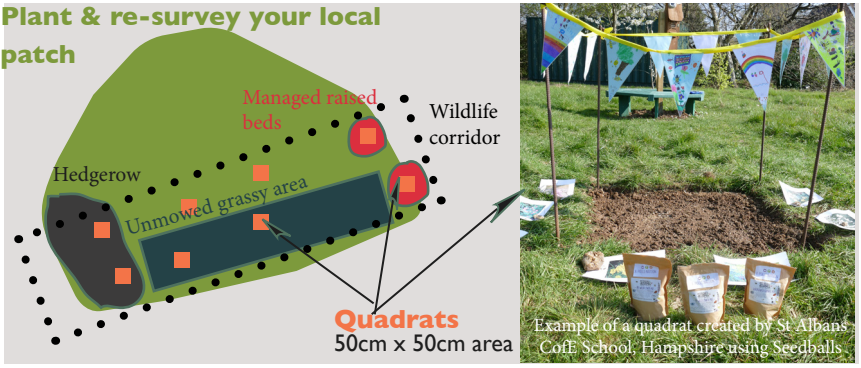
A major aim of the X-Polli:Nation project is to plant more habitat for pollinators. We invite you to:

- Make a **Polli Promise** to plant 1m^2 of pollinator friendly habitat. Visit the 'Communicate' tab under the 'get involved' section of our website to add your promise to our expanding network of pollinator protectors!
- **Make habitat improvements-** if you have permission from the landowner you can provide food and homes for pollinators. From planting pots to wildflower meadows, we have suggestions in the 'Plant' tab under the 'get involved' section of our website about easy, low cost management approaches and even a tool (box below) to help you to select the best plants for different species.

Planting for Pollinators Tool

You can access the latest knowledge on the most attractive plants for different species of bumblebee by using our digital tool which uses citizen science data and provides you with tailored planting recommedations.

Why not plant in a wildlife corridor to connect suitable areas of habitat (see diagram below)? You can then re-survey these areas next year and record what a difference your conservation actions have made.



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