X-POLLI:NATION

In association with:

FITCount

Group Leader Support Guide

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Group Leader Support Guide

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About This Guide

Thank you for participating in the X-Polli:Nation project!

This Group Leader Support Guide is intended to provide teachers, parents/guardians and other group leaders with help in preparing and running various elements of the project. The following sections provide a list of activities to be considered for each lesson topic. These activities range in time from 10 minutes to one hour and are customisable to suit your objectives.

The only element of the project which is to be done in a standardised way is the Citizen Science Survey but even within this, there are extension activities available for you to delve more into collecting useful data and learning about species if you have the time.

You may have been directed to this guide from the Survey Booklet where you will have seen this symbol. It indicates that you will find additional information on how to carry out activities in this Group Leaders Support Guide.

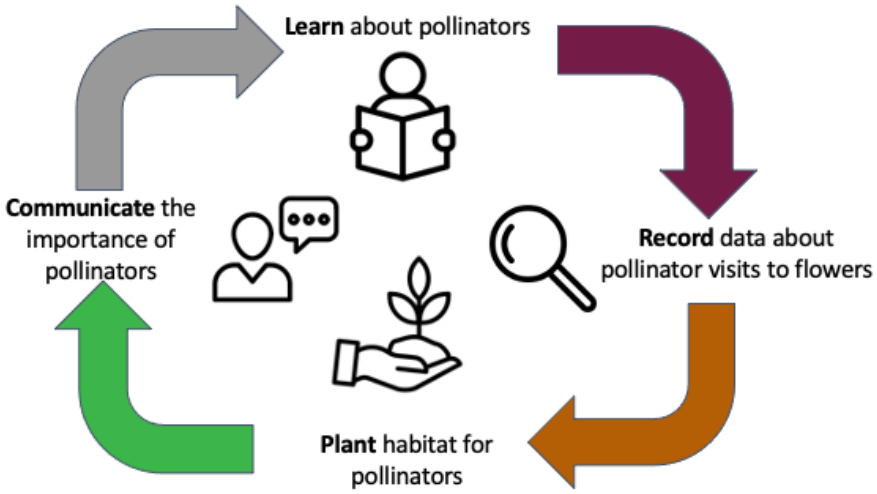
All the project documents and links are accessible and/or downloadable from the X-Polli:Nation website:
https://xpollination.org/

What is X-Polli:Nation?

X-Polli:Nation aims to create a 'buzz' for pollinators by raising awareness about their decline and in doing so, bringing about actions to monitor and support their populations.

The project is named after it's aim to 'cross-pollinate' ideas between technologists, academics, citizen science practitioners and school children, resulting in improved and expanded pollination citizen science tools. It was inspired by the original Polli:Nation Survey and has since been combined with the UK Pollinator Monitoring Scheme (PoMS) and other tools and approaches to improve the amount and quality of data recorded, collect information in new countries (now in Italy as well as the UK) and ensure a rich learning and community conservation action programme around pollinators and their habitats.

The project aims to provide a package of resources to teach the full 'actionable' citizen science process. Through a series of lessons, participants can:



Learning Objectives and Curriculum Links

Learning Objectives

By taking part in the X-Polli:Nation survey, participants will:

- Learn how to identify insect pollinators to group and species level and understand their importance
- Learn how to identify plants that provide resources for pollinators and how to create improved habitats in the local area
- Learn how to follow a scientific methodology for biological surveying and become confident in drawing conclusions from findings and designing spin-off experiments
- Learn how to implement conservation and campaigning activities and become empowered citizens, ready to take action for the environment.

Curriculum Links

Everyone can take part in the X-Polli:Nation and all data is useful to feed into the Pollinator Monitoring Scheme. It also provides a fantastic opportunity for schools and home learners to deliver the National Curriculum.

- Leading students through the four modules will support informed citizen scientists to feel confident collecting data, drawing conclusions, writing up results, making conservation decisions and encouraging others to protect pollinators.
- This will build knowledge across Mathematics, English, ICT subjects and even the Arts, but will be particularly relevant to the science curriculum.
- This is an opportunity to carry out a scientific survey where the outcome is not known (it is not a 'fair test' style of science practical).
- It also allows pupils to carry out a safe, manageable and low-cost fieldwork activity within a timetabled lesson, and an opportunity to be part of a survey that makes a real contribution to our wider knowledge.
- The survey is designed to be repeated throughout the summer and early autumn as different pollinators emerge providing schools with their own 'big data' sets; these can run over many years and be compared to other schools or locations.

These activities are relevant for everyone across the UK, and we are currently adapting resources to be used in different countries. Below are example English curriculum links but these resources will be suitable for other curriculums too.

Primary age

- Y3: Plant life cycle and pollination; animals need the right types of nutrition
- Y4: Predator-prey relationships; food chains; classification groups and keys; a change in the environment can pose dangers to living things; water cycle
- Y5: life cycles; reproduction in plants
- Y6: Classification; pollination; water and nutrient transportation in animals and plants; adaptation and reproduction; evolution

Secondary age 11-14

The survey fits with National Curriculum KS3 Science SC1 2d; Sc2 5a, 5b. The survey also links closely with QCA Units such as: 7c Environment and feeding relationships, 8d Ecological relationships, and 9m Investigating scientific questions.

Secondary age 14-16

As well as an opportunity for independent research, the survey helps delivers aspects of GCSE Science:

- AQA Science (A&B) and Biology A. To analyse and interpret scientific data on environmental issues
- Edexcel Additional Science. B2.4 (Interdependence): 3. Investigate, using primary and secondary data, the impact of human activity on the environment
- OCR Science B (Gateway Science). B2a (Ecology in our school grounds): B2h (Sustainability), B2b (Grouping organisms)

The survey enables development of enquiry skills, such as practical skills; working collaboratively; communication of results: orally, in writing and using ICT; scientific thinking: explaining phenomena; critical understanding of evidence; research and study of science in a local, national (and global) context.

Health and safety

We want people to get outside and discover the benefits of the natural environment safely. We therefore suggest that parents/guardians consider the points below and teachers/group leaders carry out a risk benefit analysis referring to their organisation's guidelines and policies. X-Polli:Nation's approach to risk, and the methodology we use are evidence based and in line with official UK Government Policy, European Play and Education Policy. Further guidance can be found at www.ltl.org.uk/spaces/ltlriskbenefit.php. We recommend the following:

- Adhere to all Covid-19 guidance at the time of participation.
- Make a preliminary visit to the outdoor space and identify potential hazards in advance.
- Take a first-aid kit, along with a mobile phone.
- Make sure everyone taking part is familiar with safety instructions and what to do in an emergency, e.g. assembly points.
- Make sure that anyone requiring medication takes this with them.
- Children of all ages must be supervised at all times. Make sure that there are sufficient adults for the number of children in the group. The survey is not suitable for children under the age of five.
- Make sure that people wear appropriate clothing for the weather and time of year e.g. robust sensible foot wear with good grips on the soles, sun hat and sun cream (minimum factor 15).
- Be aware of common hazards, such as roots to trip over, stinging insects and plants (for example, White Dead Nettle may be surrounded by stinging nettles) or dog mess.
- Make provision for hygiene, such as hand sanitizer and encourage participants to wash their hands after surveying.

Supporting Information for Modules

In an ideal situation, all lessons will be conducted with the **same cohort of students**. The following pages will provide you with some potential approaches to covering each module. These are flexible in terms of what content you cover and the amount of time you spend with your students on each activity (from a 10-minute break time slot to covering material over several lessons) so that you can tailor to suit your circumstances. Each module represents one stage of the actionable citizen science process learning (page 5), recording (page 6), planting (page 7) and spreading the word (page 8).

Module 1: Learning about Pollinators

#XPolli

Suggested Equipment

- Laptops/tablets
- Presentation slides if not using online course
- Plant identification guide

Suggested Timing

Your students could spend 10 minutes exploring the X-Polli:Nation Identification tool, 1 hour completing the online course or you could spread activities out over a few lessons.

We recommend you carry out this module before you carry out the X-Polli:Nation Survey. Ideally surveying (module 2) should follow shortly after so the identification process is fresh in students' minds.

Suggested Approach

Use the Online Course (modules 'identifying Common Bumblebee and Butterfly Species' and 'Pollination and Insect Pollinators') or PowerPoint Slides to introduce:

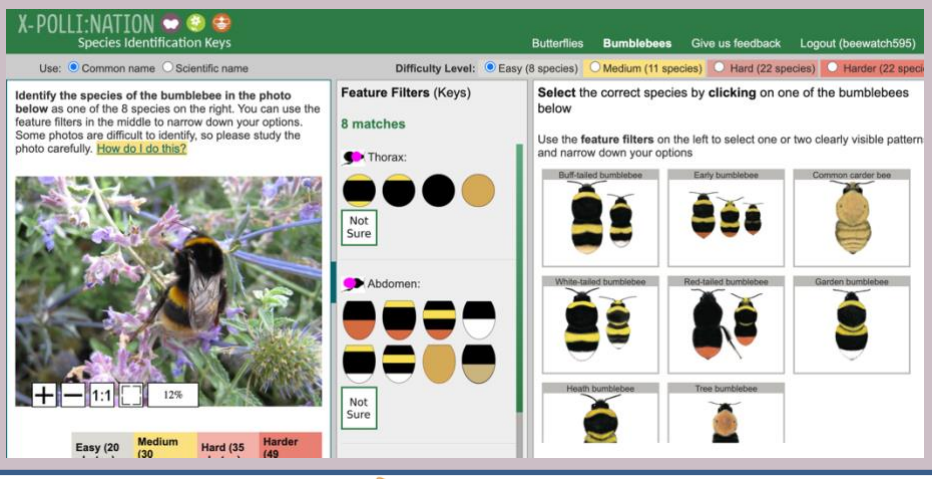
- What is pollination and what are pollinators?
- Why do we need pollinators and which of our foods require pollinators?
- Threats to pollinators
- How can we help pollinators and what kind of habitat do they require?
- What are the features of the main pollinator groups?
- How can we use a digital training tool to help us practice bumblebee and butterfly species identification?
- Identifying plants that are attractive to pollinators
- Familiarising with the 'Target Flower Species' ready for the module on citizen science

Use the Species Identification Training Tool online:

- Each student can create a login or you can use 'guest account'
- Practice identification of bumblebee and butterfly species. Students could explore different difficultly levels, filters and tips.

Practice identifying species

You can practice bumblebee and butterfly identification skills with this tool. You can select a body pattern to help you narrow which species the bumblebee in the photo could be. You will then be provided with feedback on your selection.



Quick Links

OpenLearn create

X-Polli:Nation Online Pollinator Course

Complete the first two courses on the X-Polli:Nation online course

X-Polli:Nation Powerpoint Slides

You can use our slides to help introduce your class to the project and the topic of pollination.

X-Polli:Nation Identification Training Tool

The 'Target Flower Guide'

If you/your students need more help with flower identification, the CEH FIT Count guide provides lots of tips.

X-POLLI:NATION

Module 2: Record Pollinators

#XPolli

Suggested Equipment

- Survey Booklets/ recording sheets
- Camera
- Stop clock
- Quadrats
- Computer/tablet

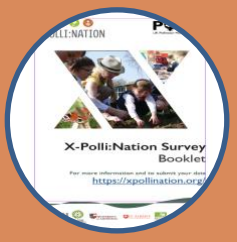
Useful: clipboards & thermometer

Suggested Timing

The Insect Count takes 10 minutes but we suggest you allow at least **1 hour** to prepare, fill out all the questions and submit the data. You may wish to spread this module over more lessons so you can consolidate learning about species identification, re-survey and explore the results with your student/s.

We ask that you conduct this module at the time of maximum insect abundance (e.g. between the beginning of **April to the end of September** when the temperature is above *12℃*).

Quick Links



X-Polli:Nation Survey Booklet

Download the Survey Booklet and more recording sheets.

X-Polli:Nation Species Identification Tool

Use Artificial Intelligence (AI) to help you work out what species of bumblebee or butterfly you photographed.

Suggested Approach

Preparation:

- Site Visit: Conduct a recce and identify different habitats where different groups could work (e.g. grassy areas like playing fields; managed areas like plant pots; and hedgerows containing shrubs and trees). Look out for some of the target flower species (on p6 of the booklet) which will help you select areas to study.

- Make a quadrat: If you don't already have quadrats (square frames) you or your students can make them using gaffa tape or cardboard by measuring out sides (54cm so internal length is 50cm) and securing in the corners. If you are planning on resurveying later in the year/next year, we encourage you to keep the quadrat in place by securing four sticks in each corner and ensuring the area is not mown.

Outdoors:

- Take part in the Survey:
  - We suggest that students work in groups of three. Direct each group to one of the habitats you have identified above (managed, hedgerow or grassy areas).
  - Students should select one target flower (from the list in the booklet on p6). They can use the ID guide to help them correctly identify this flower.
  - Lay the 50cm quadrat over this patch of target flowers.
  - Each group should fill out the sections on habitats and flowers and when they are ready to record insects, participants will need to sit quietly so that pollinators are not scared away. If working in a team, one member could use a stop-watch to time 10 minutes, while another could observe when an insect LANDS on the TARGET FLOWER in the quadrat and another could record this in the booklet. To finish up, record the weather conditions.

Top Photo Tips

Take a few photos of the insect and plant it lands on. Take a few photos to increase the chances of capturing it in focus and from different angles e.g. to pick up on underwing patterns in butterflies.

- Extension activity: After the survey or at any time, we encourage everyone to take photos of any bumblebee entering your quadrat (or in the surrounding area) so that they can upload the photo and use our interactive tool to help them identify the species and submit valuable data.

Back in the classroom:

- Upload data: It is really important that information in the booklet is entered into our online data upload form.

Module 3: Planting Habitat for Pollinators

#XPolli

Suggested Equipment

- Seeds/plants
- Trowel/spade
- Water

Suggested Timing

This activity could take as little as **30 minutes** (to prepare the soil and plant seeds) or several hours if you would like to do more planning and research with your student/s. **Autumn or Spring** is the ideal time for sowing seeds. It will be easier to dig the ground and plant the seeds before/after the soil is too frozen. Alternatively, you could plant established plants if you would like instant results.

Suggested Approach

In the classroom/indoors you may like to:

- Run a computer session looking at the Planting for Pollinators tool which guides you through the plant species that are good for different species of bees.
- Work with the students to come up with a plan for what they would like to plant where based on what you already have in the outdoor space, what they would like to attract and whether you would like to take part in surveying again next year. You could for example plant along a 'wildlife' corridor linking up a raised bed (e.g. planting lavender and heather) with a hedgerow (e.g. containing bramble) via an unmown part of the playing field (e.g. allowing buttercups, clovers and dandelions to flower)- see diagram on page 10 of the survey booklet for inspiration.

Students at St Alban's C of E Primary digging out and marking their quadrats.

- Prepare the ground. If you plan to plant in an area of lawn then you will need to remove the grass and leave bare soil (try and break up any large clumps and remove stones). With planters and flowerpots, source some soil (ideally not high in nutrients like manure) and as above, create a flat bed without any debris.
- Space seeds/plants evenly over the prepared surface and water them well. Continue to water these over the next few months if conditions are dry.
- You may wish to mark out a semi-permanent quadrat that you can monitor (module 2) when the flowers bloom.

Improvements for any budget

School/Home Budgets

If you have a budget for outdoor learning, seeds can be an economic way to create resources and learning opportunities for your students. The company Seedball supplied (and generously donated) butterfly, lawn, urban and oddball mixes which would be good for your plot too.

SEEDBALL
A SIMPLER WAY TO GROW FROM SEED

Seed & Plant Swaps

Swapping or sharing with other schools, allotment holders or gardeners can be a way of obtaining seeds and plants. Some seed companies do giveaways, local gardening groups sometimes support schools and it's worth approaching your local garden centre too.

Free improvements

Every small improvement helps. The RHS suggests the following:

- Allow lawn 'weeds' to grow and flower by cutting less often
- Provide water for pollinators in a shallow dish
- Avoid using pesticides
- Make your own bee hotel.

Quick Links

X-Polli:Nation Planting for Pollinators tool

Learn what to plant to attract particular species of bumblebee.

Maintenance for school grounds booklet

If you are planning on making changes to school grounds then this document could be just for you.

RHS Plants for Pollinators List

For a list of all of the species of garden plants, wildflowers and plants of the world which attract pollinators.

Module 4: Communicate

#XPolli

Suggested Equipment

- Any art materials, seed bags or other creative equipment you wish to use
- Seeds/plants if you wish to share with your community

Suggested Timing

This module could take as little as **5 minutes.**

You do not need to have completed any of the other modules for the Polli:Promise but if you are supporting your student/s to set up their own campaign, we recommend taking part in the first 3 modules so that students should have a good grounding in what pollinators are, how to monitor and how to create habitat for them.

Suggested Approach

You can simply visit the website to make a Polli:Promise (see boxes) to pledge that you will set aside 1 x 1m in your school, garden or local community space (with permission) to plant for pollinators.

Once you have made a pledge, students could be given a homework task to spread the word about pollinators with at least 2 of their family, friends, or wider community. This could be a simple case of spreading the word or for a more in-depth activity the students could consider:

- Who are the audience you want to reach?
- What is the most effective way to communicate with this audience?
- What novel techniques could you employ to get your audience's attention and encourage them to protect pollinators?
- Will you share seeds with members of your community?
- How will you persuade community members to make a pledge and share their photos using #XPolli
- You may even like to design spin off citizen science experiments within your school or further afield.

The options are endless, and we'd love you to co-develop a campaign to spread the word. Whether it's through music, dance, poetry, video, community happenings or some other method, it's up to you. You may consider holding an assembly, a themed day, or your own launch event. You could take inspiration from St Alban's School (below) and when considering what kind of impact you want to make.

Quick Links

Polli:Promise

Make your pledge to plant 1x1m pollinator friendly plants here

The Polli:Promise

When you sign up to the Pollinator Promise, you pledge to plant a pot or put aside a 1 x 1m area in your garden, school grounds or business to grow pollinator friendly plants.

The Pollinator Promise was started by pupils at St Alban's Primary Church of England School in Havant after they took part in the Polli:Nation project with Learning through Landscapes. They asked their parents, friends, local businesses, community groups and local MPs to sign up. The Hive (the school's group of nature enthusiasts) made logos, a video and shared seeds.

They were awarded the Defra Bees' Needs Champion award. Now pupils hope to spread the Pollinator Promise campaign internationally, and they are counting on your help!