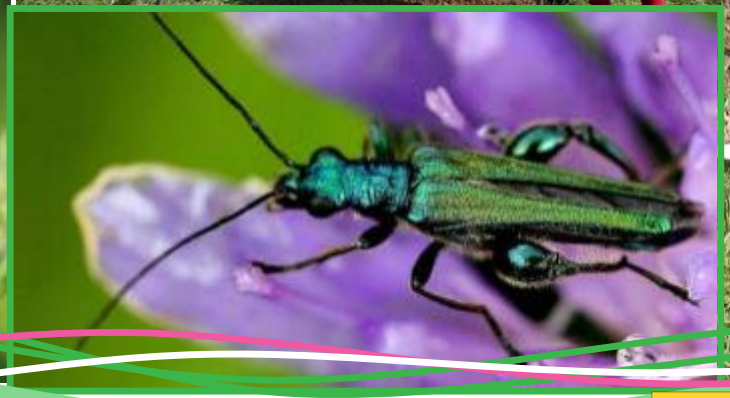
X-POLLI:NATION

Training Presentation

OPAL



www.opalexplorenature.org/xpollination

#XPolli #PolliPromise @insidenatgeo

NATIONAL GEOGRAPHIC

Overview of training session

Introduction to the X-Polli:Nation Project

- What is it & your involvement
- Resources for you

Lesson One: Raising Awareness about Pollinators

- Lesson plan
- Slides you can use with your class
- Computer practical session

Lesson Two: Monitoring Pollinators

- Lesson plan
- Slides you can use with your class
- Outdoor practical session

Next Training Session: Lesson Three and Four

- Overview and finding suitable date for next training
- Questions

Introduction

Project Overview

X-POLLI:NATION

Aim: Engage and inspire young people to learn about and protect pollinators

Where: UK (Hampshire/Sussex) and Italy (Tuscany)

When: January 2019-June 2020

Drivers: 'Cross-pollinating' ideas about how to improve and expand pollination citizen science tools and approaches between technologists, academics, citizen science practitioners and school children.

POLLI:NATION

BeeWatch

Who:

OPAL EXPLORE NATURE

The Open University

Learning through Landscapes

ST. ALBAN'S A C OF E (AIDED) PRIMARY SCHOOL

UNIVERSITY OF ABERDEEN

NATIONAL GEOGRAPHIC

What's involved?

Citizen scientists will:

Learn about pollinators and use our X-Polli:Nation digital training tool to help identify different species

Record pollinators using this X-Polli:Nation Survey Booklet

Create habitat for pollinators using our species-specific Planting for Pollinators digital guide

Spread the word about conserving pollinators by using our Polli:Promise campaign as inspiration

What's new?

- **Full suite** of pollinator citizen science tools and approaches, beyond just data collection
- Expanding **beyond geographic boundaries**
- Collecting high **quality species interaction data**
- **Improving digital tools** for outdoor citizen science

X-Polli:Nation in Schools

Four Lesson Themes:

- Raising awareness about pollinators
- Monitoring pollinators
- Planting habitats for pollinators
- Campaigning for pollinators

Your X-Polli:Nation Facilitator: **Claire Abercrombie**

Delivering half a day of in-school support and answering email queries

cabercrombie@ltl.org.uk

07795 931681

Teacher's Pack

For you:

- Group Leaders Support Guide
- Survey Booklets
- Laminated Identification Guides
- Seeds
- Monitoring Forms
- #XPolli @insidenatgeo

Any Questions on the Introduction?

Lesson One

The lesson plan

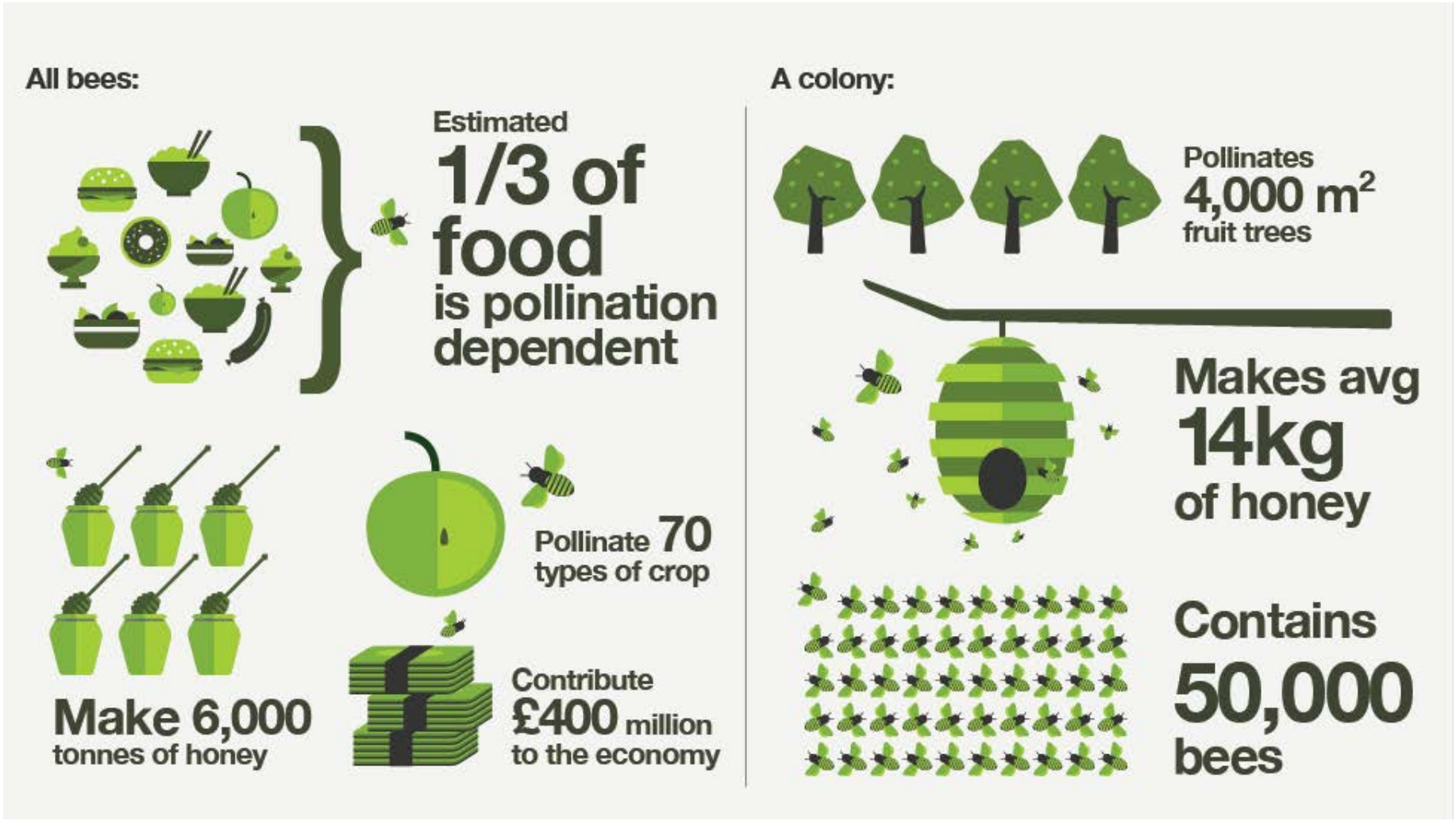
Lesson 1: Raising awareness about pollinators

Learning about pollinators and how to identify them using the X-Polli:Nation training tool.

- What is pollination and what are pollinators?
- Why do people 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 is the X-Pollli:Nation project and what's involved in the lessons to come?
- What are the features of the six pollinator groups?
- What are 'Quest Species' and why do we want to study them?
- How can we use a digital training tool to help us practice bumblebee and butterfly species identification?

Suggested dates: May-July 2019

Why do we need pollinators?



www.bbc.co.uk

What are the threats to pollinators?

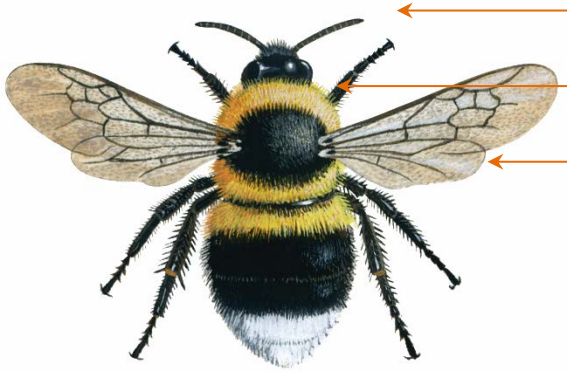
How to identify pollinators

In the project we look at:

- Pollinator groups
- Pollinator Species

Pollinator Groups: Bumblebees

1. Bumblebees



Long antennae

Two pairs of transparent wings

Round furry body 8-30mm

There are 25 species of bumblebee in the UK

Species Quest: Bumblebees

Red-tailed Bumblebee
(*Bombus lapidarius*)

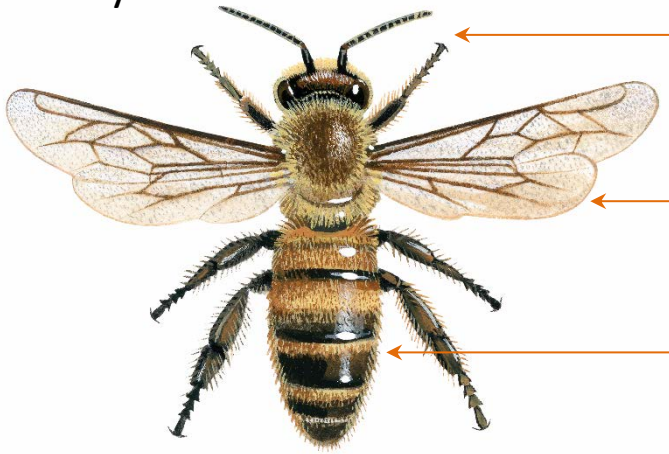
Common Carder Bumblebee
(*Bombus pascuorum*)

Red-tailed:
Black glossy fur
Conspicuous red tail

Common Carder:
Ginger
Dark abdomen

Pollinator Groups: Honeybees

2.Honeybees



Long antennae

Two pairs of see-through wings

Striped ginger brown body, 5-15mm

Species Quest: Honeybees

Honeybee
(*Apis mellifera*)

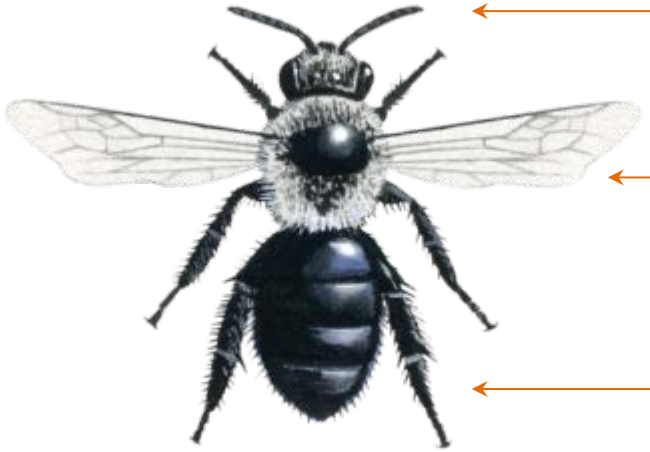
Honeybees:
Of the 270 different bee species in Britain (98 in Ireland), only one species is infamous; the Honeybee.

Too many Honeybee colonies in an area will have a negative impact on other wild pollinators as they will take more than their share of nectar and pollen.

There can be several thousand Honeybees in a colony, whereas a Bumblebee may have around 100 bees in a colony at the peak of the season.

Pollinator Groups: Solitary Bees

3. Solitary bees



Long antennae

Two pairs of see-through wings

Narrower body than bumblebee, 3-15mm

Species Quest: Solitary bees

Ashy Mining-bee
(*Andrena cineraria*)

Solitary bees: There are more than 250 species of solitary bee in Britain. They are so named because, unlike honeybees and bumblebees, they do not live together in gregarious colonies (although you may find lots living together in an aggregation!).

The Ashy Mining-bee is only active in the spring and the only solitary bee to be so distinctively grey.

Pollinator Groups: Butterflies

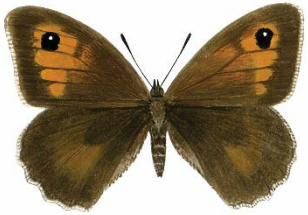
4. Butterflies

Clubbed antennae

Butterflies GENERALLY rest with their wings closed vertically over their body BUT NOT ALWAYS, and certainly not on sunny days when they are basking

Species Quest: Butterflies

Red Admiral
(*Vanessa atalanta*)



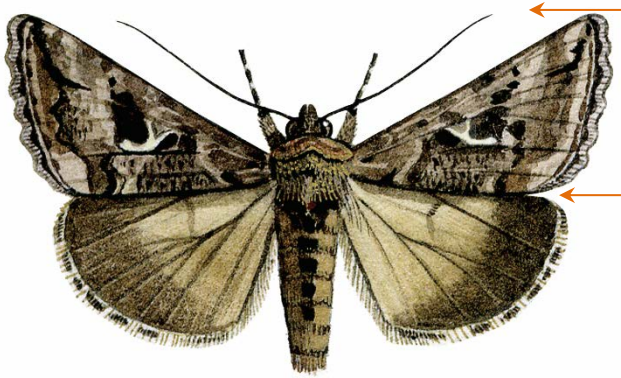
Meadow Brown
(*Maniola jurtina*)

Brimstone
(*Gonepteryx rhamni*)

Holly Blue
(*Celastrina argiolus*)

Pollinator Groups: Moths

5. Moths

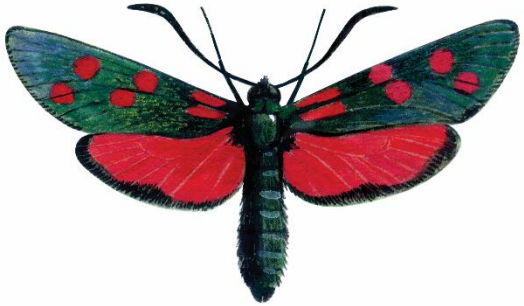


Most species have feathered antennae

Some species rest with their wings open, BUT MANY DO NOT

There are approximately 2,500 species of moth in the UK.
Many are important pollinators and potential food for other animals.

Species Quest: Moths

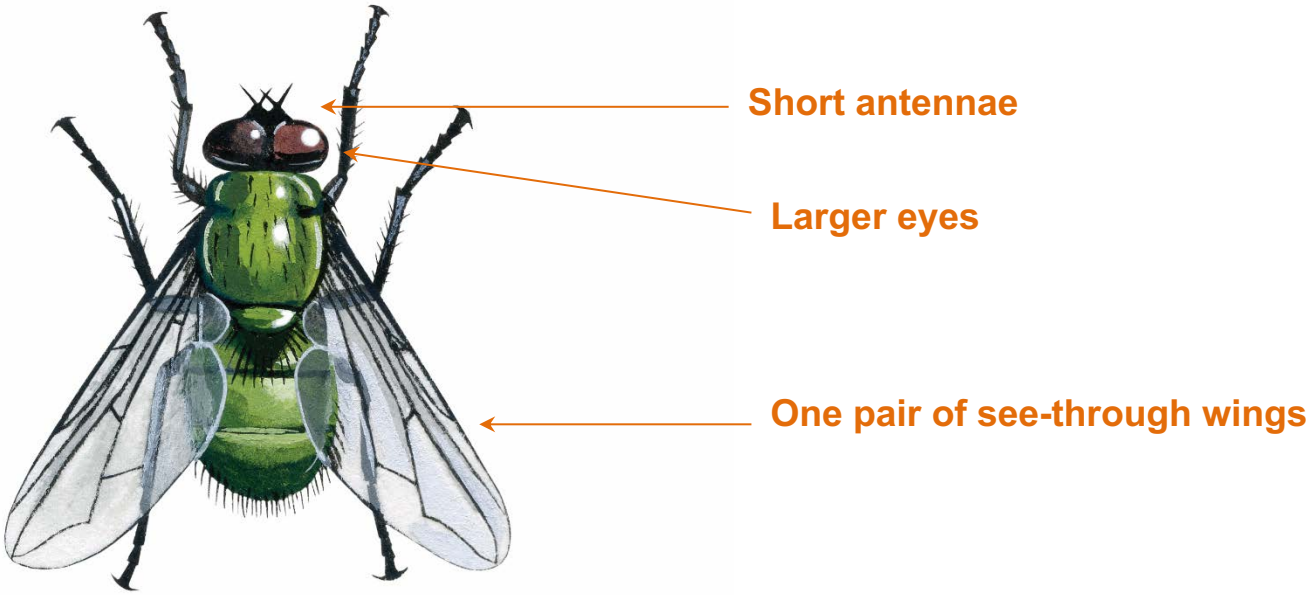


Six-spot Burnet
(Zygaena filipendulae)

The Six-spot Burnet is associated with really good grassland habitat
There is a much rarer Narrow-bordered Five-spot version! … check the spots!

Pollinator Groups: Flies

7. Other flies



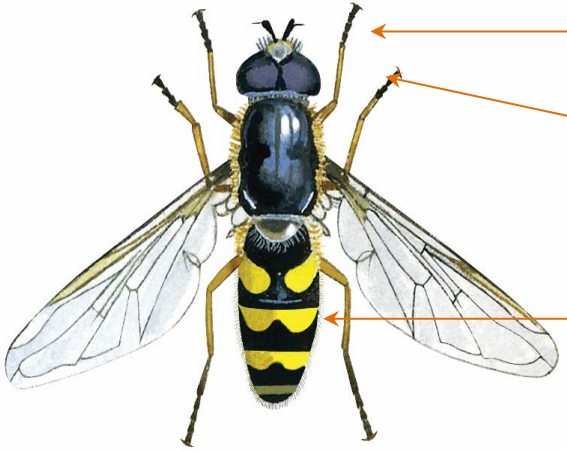
Flies

A really diverse group within the UK and our largest order with over 7000 species and new ones being discovered still.

All flies have eyes that practically meet in the centre of their head, making them look as if they are wearing sunglasses.

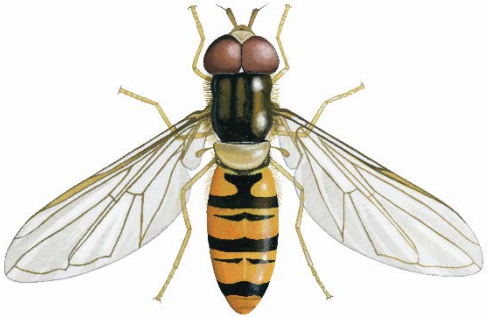
Pollinator Groups: Hoverflies

6. Hoverflies



Don't confuse with wasps

Species Quest: Hoverflies



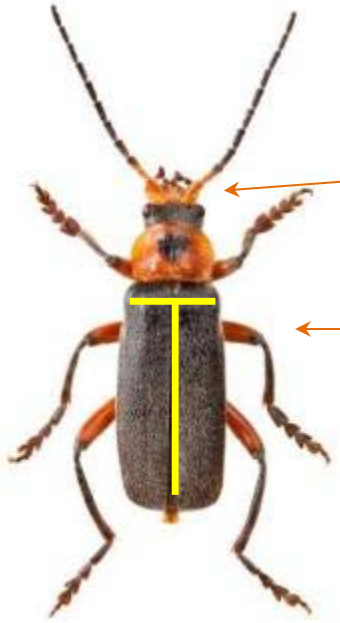
Marmalade Hoverfly (*Episyrphus balteatus*)

Hoverflies: There are over 200 species of hoverfly in the UK, with a wide range of appearances, often mimics of other species.
Adult hoverflies mainly feed on nectar and pollen, but the larvae of many species are predators of aphids and other garden pests. As a result, they act efficiently as both pollinators and pest controllers.

The Marmalade Hoverfly is a distinctive pink-orange colour with 'moustache' markings.

Pollinator Groups: Beetles

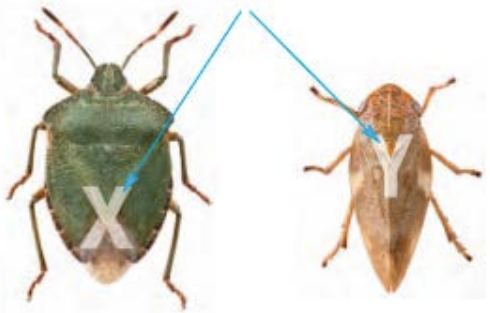
8. Beetles



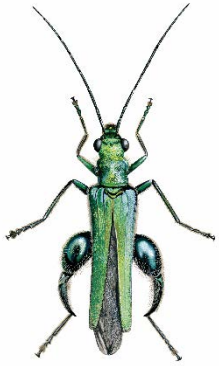
Biting mouthparts

Hard outer wing cases (ely
meeting in a 'T' shape

Don't confuse with True Bugs



Species Quest: Beetles



Thick-legged Flower Beetle
(Oedemera nobilis)

Red Soldier Beetle
(Rhagonycha fulva)

Beetles

Beetles are one of the largest orders of insects in the UK, with over 4,000 species including ladybirds.

Beetles are a very diverse group and contribute to the breakdown of organic matter in addition to being a potential predator and pollinator.

Pollinator Species: Quest

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

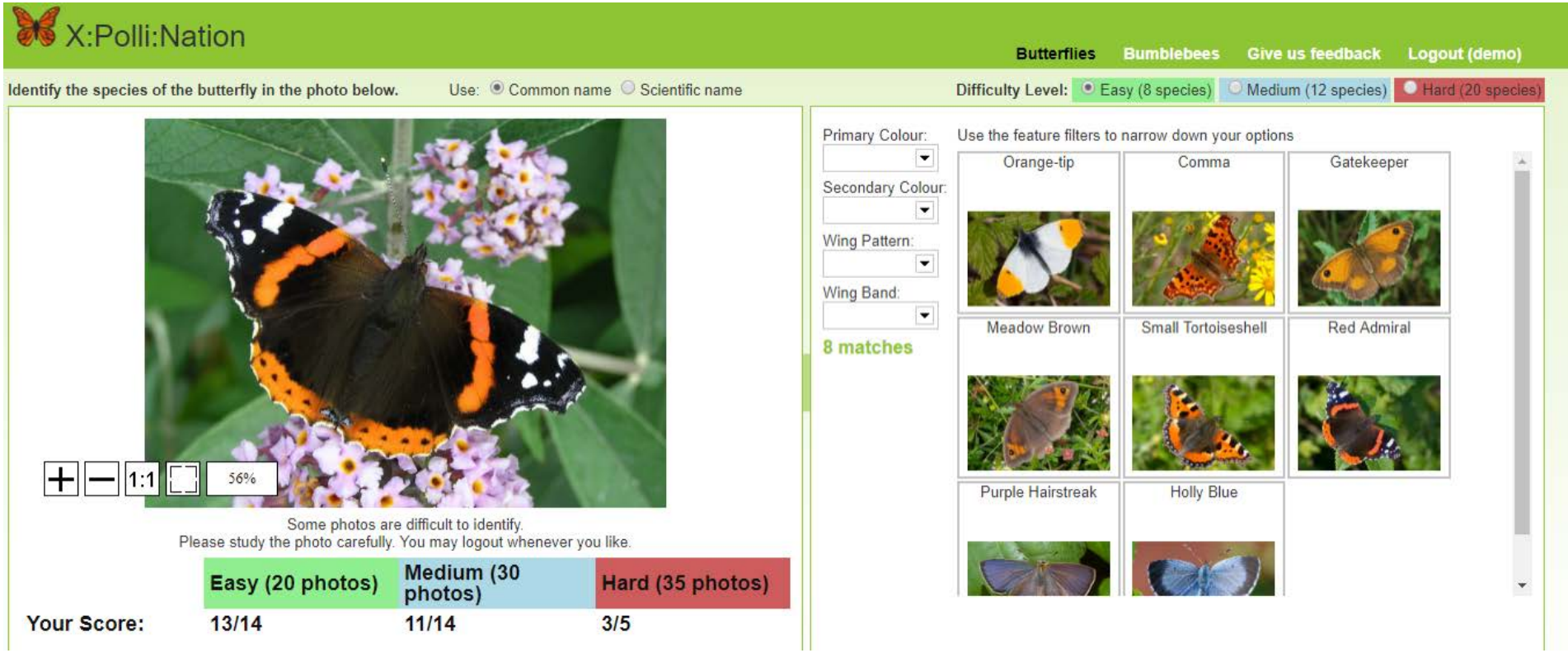
☐ Ashy Mining Bee

☐ Honeybee

☐ Thick-legged Flower Beetle

☐ Red Soldier Beetle

Pollinator Species: Training Tool



Any Questions on the Background Information?

Lesson Two

The lesson plan

Lesson 2a: Monitoring pollinators (before making habitat changes)

Recording pollinators using the X-Polli:Nation Survey and how to interpret the results.

- Introduction to surveying pollinators
- A walk around the school grounds practicing insect identification skills and deciding on the areas in which to improve habitat and monitor quadrats
- Marking out and photographing quadrats
- Completing Part 1 of the X-Polli:Nation Survey booklet
- Submitting your results

Suggested dates: June-September 2019

Lesson 2b: Monitoring pollinators (after making habitat changes)

- Photographing quadrats
- Completing Part 2 of the X-Polli:Nation Survey Booklet
- Submitting your results

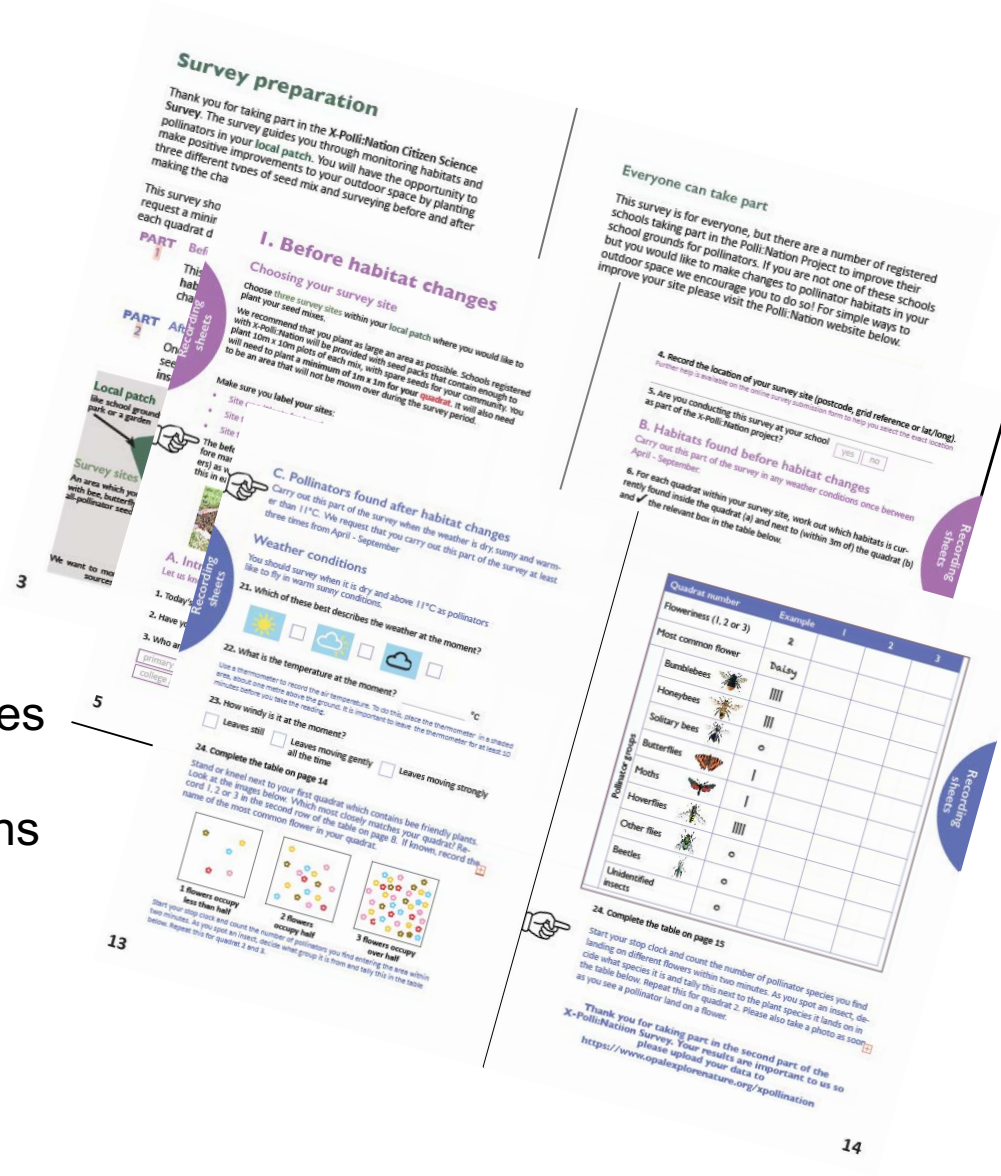
Suggested dates: June-September 2020

The Pack

Also available to download from
www.OPALexplorenature.org/xpollination

The Survey Booklet Contents

- What are pollinators?
- How are UK Pollinators affected by a changing environment?
- Survey preparation
- Recording Sheets
  - Two Parts: 1 Before Habitat Changes; 2. After Habitat Changes
  - Three sections
    - Part A: Introductory Questions
    - Part B: Habitats
    - Part C: Pollinators
- Sending us your results



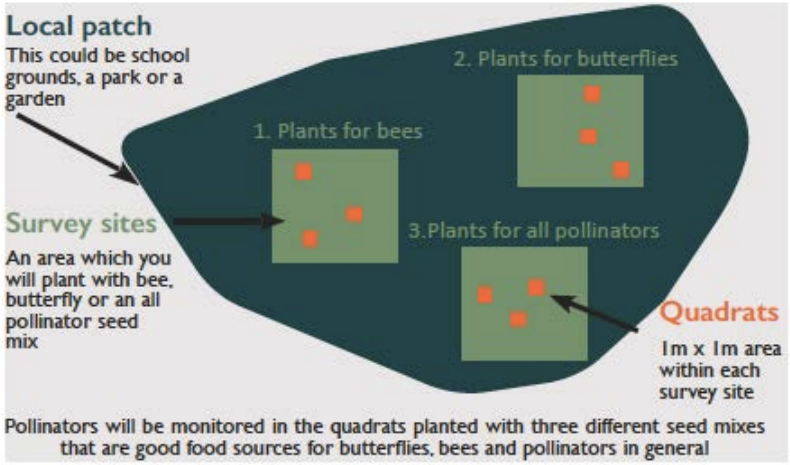
Choosing a site

Choose **three survey sites** within your **local patch.** These will be where you plant your seed mixes. We recommend that you plant as large an area as possible (**ideally 10m x 10m plots**) of each mix.

You will need to mark out **1m x 1m quadrat** in each site you plant and **label your sites**:

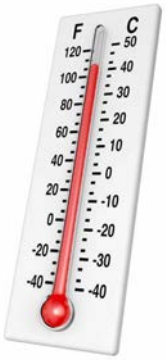
- Bee quadrat: e.g. 'StA_Bee_2' (if this is the 2nd quadrat on the bee site at St Alban's School)
- Butterfly quadrat: e.g. 'StA_Butterfly_3'
- All pollinator quadrat: e.g. 'StA_All_1'

It will need to be an area that will not be mown over during the survey period.



Pollinators will be monitored in the quadrats planted with three different seed mixes that are good food sources for butterflies, bees and pollinators in general

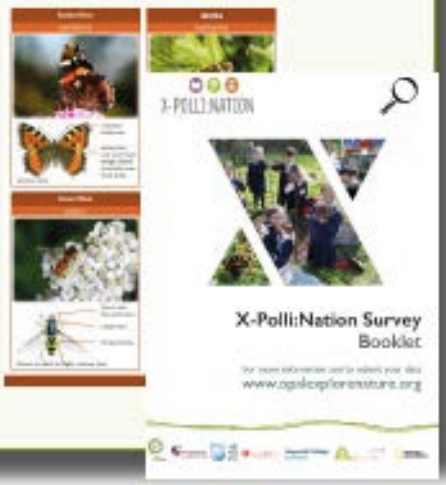
Survey equipment



SEEDBALL
A SIMPLER WAY TO GROW FROM SEED

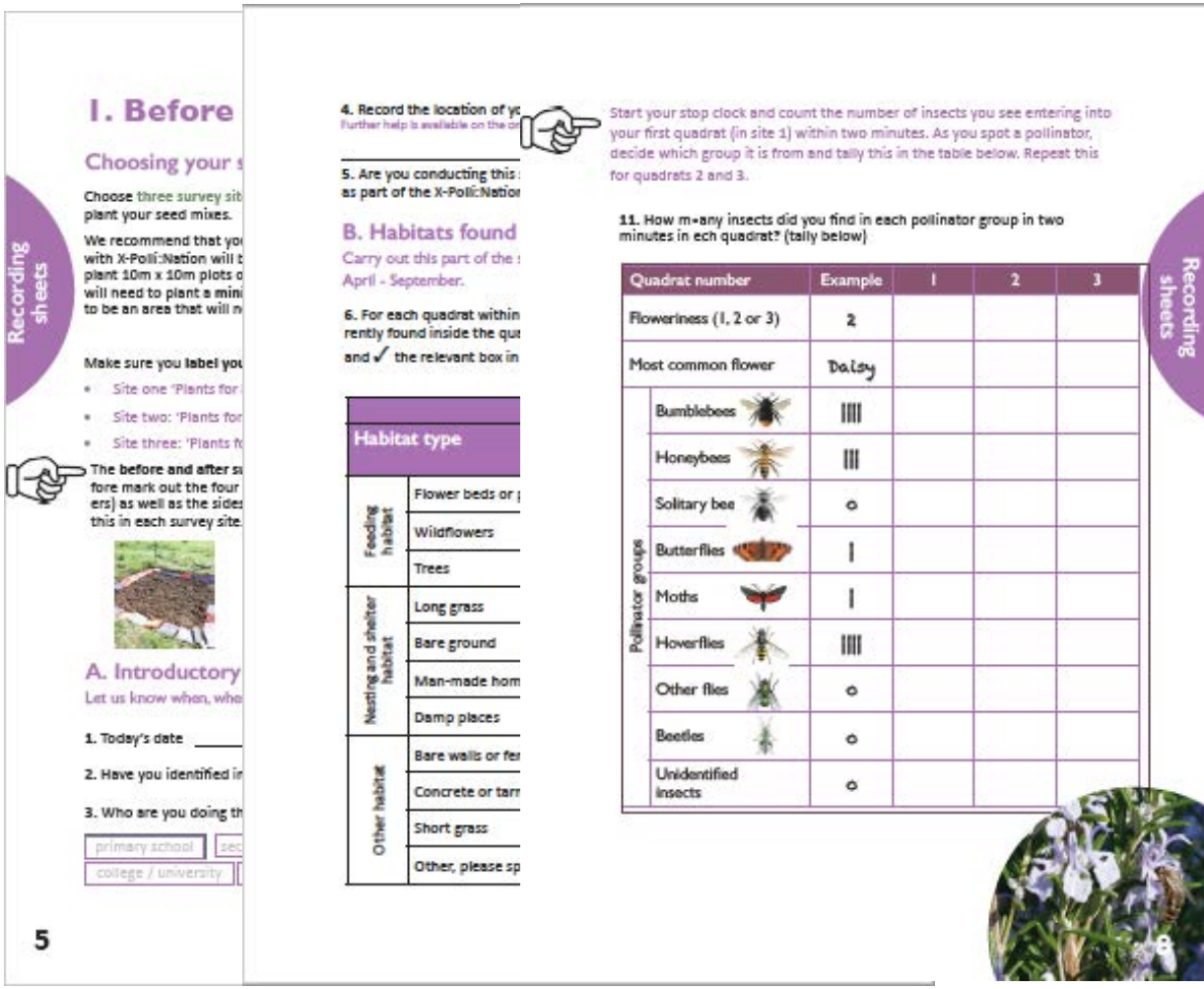
What will you need?

- This X-Polli:Nation Survey **Survey Booklet,** providing background information and recording sheets
- The **Habitat, Plant and Pollinator Identification Guide**
- **Tape measure**
- **Quadrat** (or four sticks & string)
- Waterproof **labels for quadrats**
- **Trowel**
- **Thermometer**
- **Stop clock** (or phone for timing)
- **Camera**
- **Seed** mixes created for bees, butterflies and all pollinators
- **Water** for seeds



Survey: Before Habitat Changes

- Take a picture of your area
- Mark out your survey quadrats
- Complete the relevant pages of the survey booklet.
- <u>Once the ground is ready;</u> Record the date you plant the seeds



I. Before

Choosing your

Choose three survey sit
plant your seed mixes.

We recommend that yo
with X-Poll:Nation will
plant 10m x 10m plots
will need to plant a mini
to be an area that will

Make sure you label you

- Site one 'Plants for
- Site two: 'Plants for
- Site three: 'Plants f

The before and after s
fore mark out the four
ers] as well as the sides
this in each survey site.

A. Introductory

Let us know when, whe

1. Today's date

2. Have you identified i

3. Who are you doing th

primary school

college / university

5

Recording sheets

4. Record the location of y
Further help is available on the

5. Are you conducting this
as part of the X-Poll:Natio

B. Habitats found

Carry out this part of the
April - September.

6. For each quadrat within
rently found inside the qu
and ✓ the relevant box in

Habitat type	
Feeding habitat	Flower beds or
	Wildflowers
	Trees
Nesting and shelter habitat	Long grass
	Bare ground
	Man-made hom
	Damp places
Other habitat	Bare walls or fe
	Concrete or tarr
	Short grass
	Other, please sp

Start your stop clock and count the number of insects you see entering into your first quadrat (in site 1) within two minutes. As you spot a pollinator, decide which group it is from and tally this in the table below. Repeat this for quadrats 2 and 3.

11. How many insects did you find in each pollinator group in two minutes in ech quadrat? (tally below)

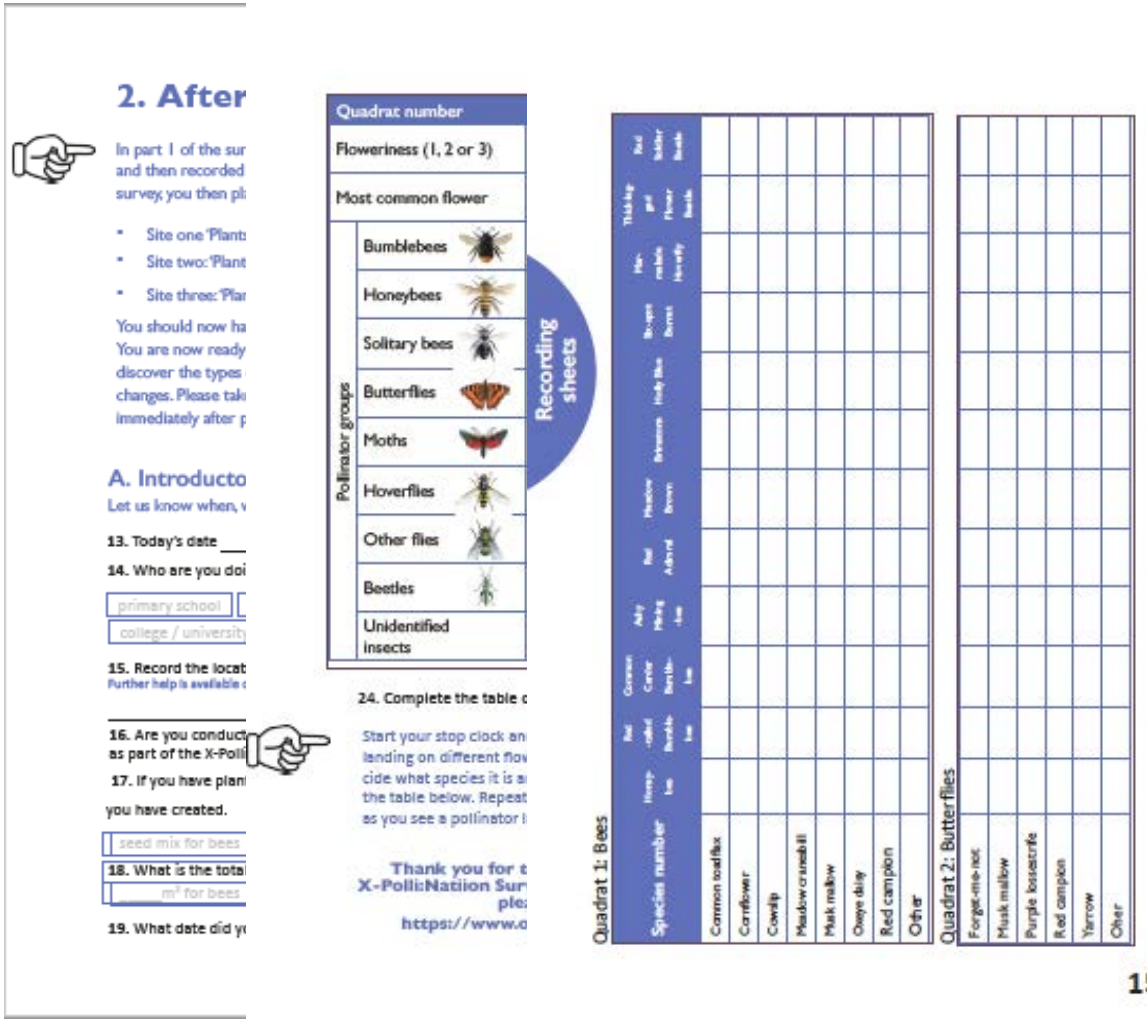
Quadrat number		Example	1	2	3
Floweriness (1, 2 or 3)		2			
Most common flower		Daisy			
Pollinator groups	Bumblebees	IIII			
	Honeybees	III			
	Solitary bee	o			
	Butterflies	I			
	Moths	I			
	Hoverflies	IIII			
	Other flies	o			
	Beetles	o			
	Unidentified insects	o			

Recording sheets

8

Survey: After Habitat Changes

- Take a picture of your area
- Complete the relevant pages of the survey booklet.
- Similarities and differences



Thinking about your group

- Share any **health & safety** information with your group, in particular washing hands as the seed mixes may contain foxgloves.

- **Walk around your patch first** with the whole group to decide on where to create your site and quadrats and practice ID

- Work in groups **of three,** starting each on a different quadrat.

- **Keep any interesting finds** in a large container to show other groups at the end of the timed challenges.

Practical Session

Entering results online

Survey results can be entered on the OPAL website using the entry form:

www.opalexplorenature.org/xpollination

Please upload your results:

- After Part 1 (before changes)
- After Part 2 (after changes)
- Every time you conduct a pollinator survey (B & D)

Imperial College London

Any Questions on the Survey?

Next Training Session

What we will cover

Lesson Three: Planting for Pollinators

Lesson Four: Campaigning for Pollinators

Any Last Questions ?