OUR PLANET LAB

A Toolkit for **Local Action** on **Biodiversity**

For educators and youth leaders

OUR PLANET NETFLIX | WWF

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INTRODUCTION

The Our Planet series on Netflix and the free videos on ourplanet.com allow us to witness the earth's rarest natural wonders, and to see how the decisions we all make every day are affecting crucial ecosystems across our world. But how much do we really know about the wildlife that surrounds us?

WWF's **Living Planet Report 2018** revealed that wildlife populations have dropped on average by 60% within the past 50 years. We think of a few rare and iconic species being at risk of extinction, but the report shows that the whole natural world is feeling the impact of human activity. The same report sets out a vision for worldwide action to 'bend the curve' and reverse this decline in wildlife populations by 2030.

The Living Planet Report is possible because of data collected by scientists from across the world that tracks the health of wildlife populations (the Living Planet Index). This highlights problems in particular places, and affecting specific species, but when combined the data creates a wider picture of the overall health of our world – showing us how all life on our planet is interconnected.

WE CAN GIVE NATURE A HELPING HAND!

We can all play a role in monitoring the health of our local environment. Without knowing what wildlife inhabits an area we have no way of knowing the impact changes to the environment might have on biodiversity. Wildlife might be declining because of things we are doing - or not doing - and we could have no idea that this was happening until the entire ecosystem was irreparably damaged. Learning about our local biodiversity empowers us with the knowledge we need to make informed decisions about how to protect and restore the natural world around us.

This guide will support you in setting up a youth-led LAB project that enables young people to play an active role in monitoring and improving their local biodiversity. Your LAB project will comprise the following three stages:

1. SEEK – Explore your chosen patch, whether it's a schoolground, park, garden, village or university campus. Seek out bugs, plants, mammals, birds and fungi and discover the hidden natural world around you.

2. CONNECT – Use the Seek app, iNaturalist or local wildlife guides to identify your wildlife sightings and build up a picture of local biodiversity. Map the connections between species and habitats within and beyond your patch, identify patterns and invasive species, and monitor your patch over time to build a picture of seasonal changes and other factors affecting biodiversity. Connect to other LAB projects in schools and youth groups around the world via Skype in the Classroom.

3. ACT – Use your knowledge to develop and implement a plan for Local Action on Biodiversity, making local changes to improve conditions for the wildlife known to be present, and creating the conditions for more species to thrive. Share and compare your ideas with other LAB projects and become part of a network of youth-led action to protect and restore nature.

BADGES AND CERTIFICATES

Our Planet Open Badges for educators, and printable certificates for participants, can be claimed for each of the three stages of your LAB project. Visit **www.ourplanet.com/schools-and-youth** for details.

GLOSSARY OF TERMS

BioBlitz: A race against time to find and identify as much wildlife as possible within a set area. A BioBlitz is a fun and engaging way to get a snapshot of biodiversity present in one place at a certain point in time.

Biodiversity: The variety of wildlife and habitats in a defined area. Places with high biodiversity have more different types of wildlife with more connections between them than places with low biodiversity.

- **Our Planet - What is biodiversity? www.ourplanet.com/biodiversityvideo**

Biome: A large-scale community of distinctive plants and animals adapted to living in a particular climate and geography. Biomes contribute to the whole planet working well as a system that sustains life. Damage to one biome can lead to the whole system becoming weaker because they are connected and sustain each other.
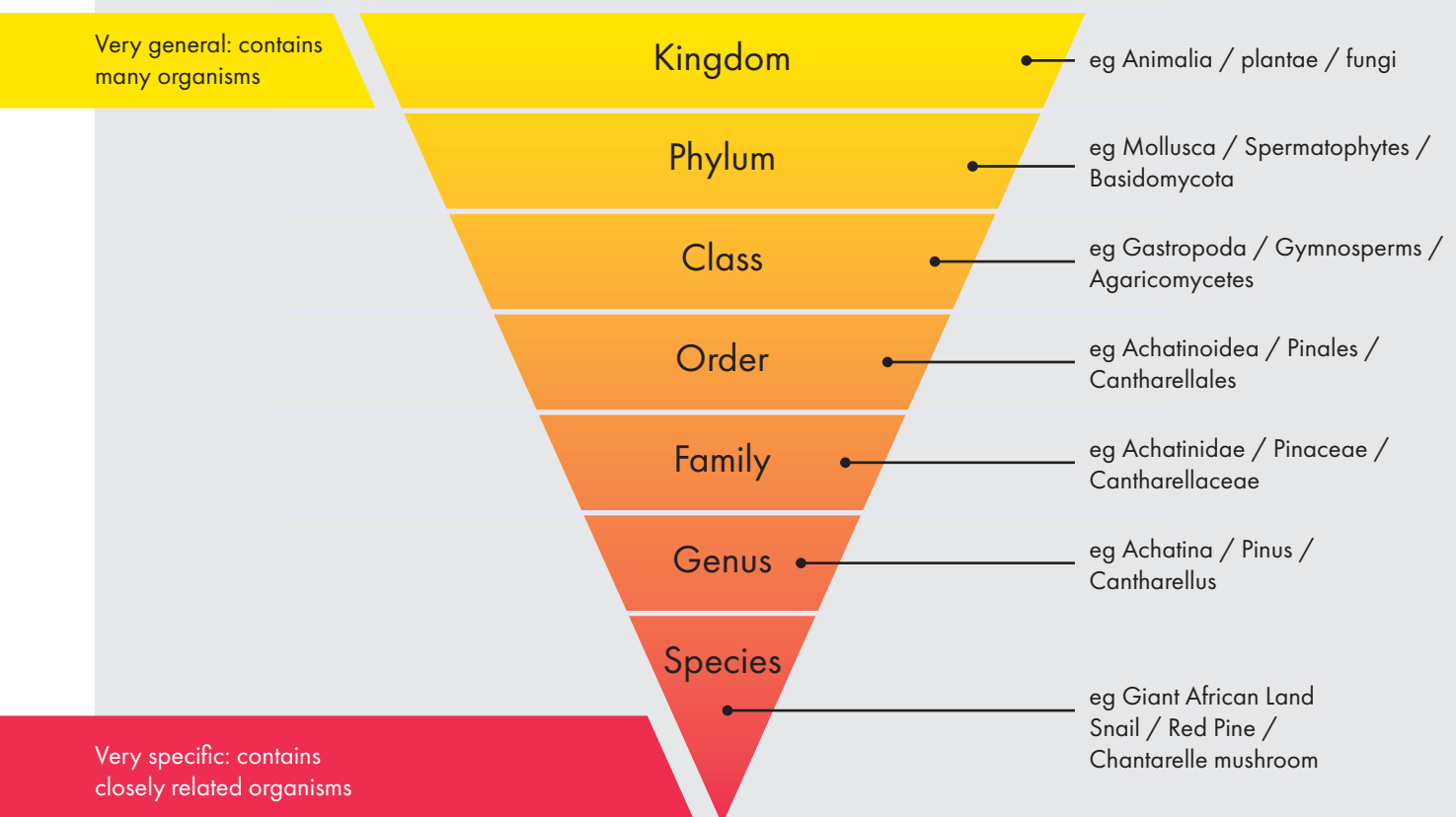
Citizen Science: Collection of biodiversity and environmental data by volunteers which contributes to expanding our knowledge of the natural environment.

Habitat: A particular home environment for plants, animals and other organisms. For example, a pond is a different habitat from a hedgerow, and each habitat is home to different organisms.

Invasive Species: An animal or plant that has been introduced to the place where it is found, and which tends to grow and spread easily, usually with negative impacts on local native species.

Naturalist: A person who studies nature, and especially plants and animals as they live in nature.

Taxonomy: Taxonomy is the practice of identifying different organisms, classifying them into categories, and naming them. Categories are at various levels, and with each step down in classification, organisms are split into more and more specific groups.

Very general: contains many organisms

Kingdom	eg Animalia / plantae / fungi
Phylum	eg Mollusca / Spermatophytes / Basidomycota
Class	eg Gastropoda / Gymnosperms / Agaricomycetes
Order	eg Achatinoidea / Pinales / Cantharellales
Family	eg Achatinidae / Pinaceae / Cantharellaceae
Genus	eg Achatina / Pinus / Cantharellus
Species	eg Giant African Land Snail / Red Pine / Chantarelle mushroom

Very specific: contains closely related organisms

LEARNING OUTCOMES

Describe and accomplish an outdoor site survey, and associated practical, local outdoor investigations.

Describe the importance of biodiversity in their local area and what can be done to improve it.

Describe the importance of biodiversity at a global scale and its link to sustainable development – eg health, consumerism, climate change and the introduction of exotic species.

Develop enquiry skills and know where to find out more.

Develop critical thinking and communication skills.

Make choices and decisions that affect their lives (either as individuals or as part of a wider group) and do something long-term for biodiversity – locally or globally.

KEY SUBJECT LINKS

Biology (biodiversity, ecology, classification, food chains & webs, habitats, human impact)

Geography (biomes, ecosystems, conservation, mapping, climate, weather)

Citizenship (active citizenship, local decision-making)

KEY RESEARCH SKILLS

Setting parameters

Desk research

Establishing a baseline

Testing hypotheses

Field methods

Statistical analysis

Deriving insights and making recommendations

Engaging people with your outputs

Developing further research

BEFORE YOU START

SET THE SCENE

1. Watch the opening episode of Our Planet (One Planet) on Netflix. The episodes may be screened for educational purposes under a free one-time screening licence. **https://www.netflix.com/title/80049832**

2. Use the **Our Planet Assembly Pack** to gain an overview of the state of biodiversity. This powerpoint includes links to the following key videos for classroom viewing and discussion in preparation for taking local action on biodiversity.
    www.ourplanet.com/biodiversityvideo
    www.ourplanet.com/biomes
    Assembly Pack:
    http://awsassets.panda.org/downloads/ ourplanet_assemblypack.zip

3. Discuss in your group what living things the young people know or expect to find in the local area. How many plants and animals can they actually name and how much do they know about their life cycles and needs? Write up a list that you can refer back to later.

4. Discuss as a group what challenges you think nature may face in the local area because of people. Observations may include lack of greenspace, lack of green connections between green spaces, lack of trees, littering, noise pollution, light pollution, air pollution, lack of fresh water, busy roads, use of pesticides etc. Write up a list to refer back to later.

1. SEEK

EXPLORING YOUR PATCH

Before we can start to make changes for nature, we need to understand what is already here. Start by defining the area that you will be working in – your patch – and find out what you can about what lives on your doorstep using the following exercises.

1. MAPPING OUT YOUR PATCH

- Decide on a sensible boundary which you plan to work within – perhaps this is your school grounds or a nearby park?

- *Using worksheet 1:* Draw a rough outline map of your patch. In groups, explore the area and identify the different **habitats** it contains, marking their rough location and size on the map.

- As a class, create a large poster version of your patch map, bringing together what you have discovered so far. You could create a key to help you show the variety of habitats.

- *Optional:* Use computer mapping software to create a digital map of your patch which you can maintain and add to over time, printing for exercises or displaying digitally for discussion (see instructions in **appendix**).

2. WHAT DOES WILDLIFE NEED?

- Write the names of various local species on slips of paper, including plants, minibeasts, mammals, birds and fungi. Give one to each young person and ask them to think what this species needs in order to survive. What is its preferred habitat? What does it eat? What protects it from predators? Does its needs change over the course of its life?

- Present and discuss the needs of the different species in pairs or small groups, and consider for each if your patch has what is needed for these species to survive.

- *Worksheet 2:* In groups, explore the area again, this time identify features providing key resources for wildlife in your patch. Add these features to your patch map. These could include a particularly old tree or log, a stream, a patch of wild ground, a nesting box, a bird feeder or a bug hotel.

- Based on your class discussion and the features you have identified, what do you think will be the most wildlife-rich parts of your patch? What resources identified as important for local species are missing from your patch?

3. BIOBLITZ –
A BASELINE BIODIVERSITY SURVEY

A BioBlitz is a race against time to find and identify as much wildlife as you can in a particular space. It is a fun and engaging way to make a baseline assessment of the wildlife present in your patch at the start of your project.

The more people take part in a bioblitz the better, as more people means more wildlife sightings – especially of flying species that may just pass through and can easily be missed. Your LAB project may involve a set group of participants, but it can be good to involve more people in a bioblitz – the whole school or the wider community. This can be a good way to let the community know what you are doing and why.

Using the Seek and iNaturalist apps makes the process as simple as possible, as records can be uploaded from many different devices into a single project on iNaturalist.org, where they can be mapped on your patch. The apps help to identify the species then and there, and where it cannot be identified for sure the record of the sighting on iNaturalist can be reviewed by other participants and the wider iNaturalist community.

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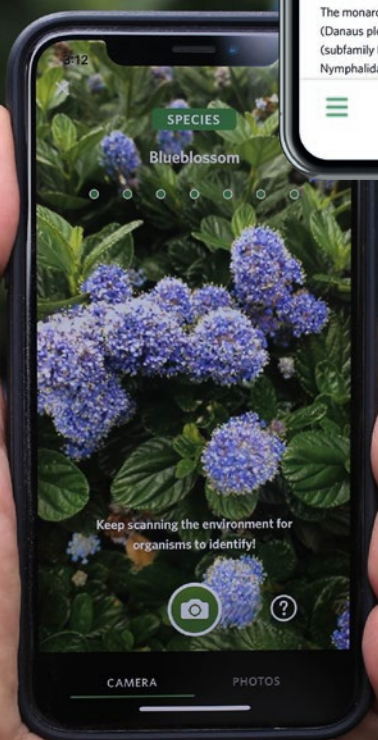
© Seek by iNaturalist

If it is easier or preferable, however, you can use the **offline record worksheet** for collecting sightings, and identify them either after the event or alongside the record collecting by setting up an identification table with wildlife reference books, internet enabled tablets etc. Records collected and identified in this way can still be uploaded to a project on iNaturalist to share and compare with other LAB projects.

BIOBLITZ TIPS

• Decide a date and time for your initial BioBlitz considering likely weather conditions – wildlife can get harder to find in wet or windy weather which isn't great for wildlife explorers either!

• As a group, and using what you know about your patch already, discuss what wildlife you might expect to find in your patch and think of some hypotheses that you could explore. (e.g. we think that we will find most invertebrates in our wood pile because we have identified it as a key feature).

• Plan some structured activities that will help discover what is living in your patch. What techniques work best will depend partly on where you are in the world but here are some ideas:

  • **Group exploration**
    Allocate small groups a specific area to document, and ask them to list each of their wildlife identifications. After a set time (eg 30 minutes) ask each group to move to a different area, handing their list to the group that is taking over. The next group has to try to find things that the previous group missed, or to identify species that the previous group could not.

  • **Transect walks**
    This exercise is ideal for a large area, when it would be impossible to cover every bit of the area. It ensures that the 'unexciting' species that play an important part in your local ecosystem are not overlooked, and allows a clear comparison of the differences between wildlife found in the varied habitats and features.

    Identify at least one straight line through each kind of habitat in your patch (marking it with string or thread fixed to pegs at either end if this is possible), and assign each line to a pair or small group. Draw each line on your physical or online map of your patch.

    Participants work their way along their line, recording absolutely every different species they encounter and marking the location of the sighting on the map.

- **Grid walks**
Similar to the transect walk, this technique ensures that the common, 'boring' species are not left out of your survey.

Points are chosen and marked on the map, representing all types of habitat in your patch.

Pairs or small groups are equipped with a grid or square (about 1.5m x 1.5m) made from wooden slats or wire, which they place on their allocated spot (taking care when placing not to crush delicate plants or creatures).

Each group records absolutely every species in their grid.

- **Bird spotting**
Birds can often be missed when participants are focused on exploring wildlife at ground level. They can also be difficult to photograph and may be too far away to see details of their plumage.

A specific birdwatching activity allows you to equip your participants with everything they need to get accurate identifications of birds passing or nesting in your patch.

Firstly, ensure that participant have binoculars or telephoto lenses on their cameras. Choose vantage places that allow a good view of perches and open sky, but where spotters can be still and not too visible to avoid scaring birds off before they land or before their details can be noted.

Explain to participants that they should be as quiet as possible and avoid sudden movements. It helps to avoid wearing bright colours.

Use the offline recording form so that details seen first-hand are quickly recorded in case it is not possible to capture an image.

Have bird reference books or websites handy so that identification can be made by the spotter while they still have a clear picture of the bird they saw in their mind. A print-out of birds that are common to the area may be useful, or refer to iNaturalist to see what species have been sighted locally.

An app or website that allows you to listen to birdsong for different species may be useful to verify a sighting. Some even allow you to take a recording and can sometimes provide an identification from sound alone!

On your wildlife recording form note not only the appearance of the bird but any behaviour that indicates why it stopped in your patch. Is it building a nest in a tree or bush within your patch, or did it find nesting material to take away? Did it find food or water, or stop to clean itself with the help of a dusty patch of ground or a puddle? These observations can help you identify the importance of different features in your patch to wildlife that visit.

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- **Light trapping for insects**

Using a light trap is a great way to survey nocturnal species that are attracted to light such as moths that you are unlikely to ever see when surveying by day. It also allows you to get a close look at these insects and capture a photograph for identification and for your records, when this can be difficult when they are moving freely about amongst plants.

If this technique is used correctly, no insects should be hurt by your survey. The trap simply allows you to see and record them before releasing them safely into the wild once more.

Light traps can be bought but are expensive. You can make your own using this guide: **https://www.fscbiodiversity.uk/how-build-your-own-moth-trap-video-guides**

Alternatively, if you can survey late in the evening, shine a bright torch or lamp onto (or behind) a white sheet after dark and record the insects that land on it.

- **Pitfall trapping**

Dry pitfall traps consist of a container (tin, jar or cup) buried in the ground with its rim at surface level, collecting small creatures that fall into it.

A cover should be placed over the trap, raised above ground level by stones or pegs. This could be a plate, piece of plywood, and prevents rain from running into the trap and drowning the organisms it catches.

Pitfall traps can be baited but this can skew the results of your survey by attracting certain minibeasts and not others.

Be sure to seal or remove the trap when you are not actively checking it on a daily basis, or creatures will starve to death in the trap.

- **Footprint tracking**

  Your patch may be visited by animals that you never see because they are nocturnal or shy of humans. A tunnel with bait inside and non-toxic paint spread on the ground at either end can collect footprints from visitors which can then be used to identify them using guides of local wildlife species.

  Build your own footprint trap with this guide: **https://www.discoverwildlife.com/how-to/make-things/how-to-make-a-footprint-trap/**

- **Pond dipping**

  Ponds can support a lot of wildlife, and can attract many visiting species that do not live in this habitat but find food or water there. As many of the species may be under the waterline, pond dipping is essential to get a true picture of biodiversity in this habitat.

  In essence, pond dipping involves taking samples of pond water or the contents of a fine net that has run through the pond water at a certain depth, and then recording the wildlife that these samples contain before returning them.

  You'll need fine nets and shallow white trays to make it as easy as possible to see the details of your wildlife finds, and to photograph or sketch them.

  This useful guide contains many more tips for successful pond dipping: **https://blog.nhbs.com/subject/ecology/the-nhbs-guide-to-pond-dipping/**

- **Sweep netting**

  Long grass can be home to many tiny creatures that you may never get close enough to photograph or even see in detail. A sweep net is a sturdy net on a long pole that can be run through long grass to dislodge and collect all the tiny insects on the stems. These can then be photographed or studied on a large white piece of card or a material.

  More guidelines on this technique here: **http://extreme-macro.co.uk/sweep-net/**

  You could do lots of activities over one or two days or spread them out over a couple of weeks. It really helps to find some local experts or knowledgeable volunteers to help you plan and deliver these sessions and bring in new ideas. Try asking your local museum, university or wildlife charity if they can help.

- **Seasonal BioBlitzes and follow up surveys**

  You might want to repeat elements of the BioBlitz in different seasons to see what changes and/or take a deeper look at some particular species groups of interest that have cropped up in your initial BioBlitz. This could be another opportunity for bringing in some expert help and establishing a relationship with local naturalists and organisations (e.g. seasonal insect trapping sessions).

iNaturalist's guidance on running a bioblitz: **https://www.inaturalist.org/pages/bioblitz+guide**

iNaturalist teacher's guide: **https://www.inaturalist.org/pages/teacher's+guide**

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2. CONNECT

DEVELOPING INSIGHTS

Based on what you have learned from the results of your initial baseline survey, you can start to explore the results.

DISCUSS YOUR FINDINGS

Ask yourselves questions like:

- Were your hypotheses right or wrong?

- Which areas and features in your patch support most wildlife?

- Were some species found associated with particular habitats or features?

- Were there any species that you were surprised to find or any that you expected to be there but weren't? Why might that be?

- Were any species especially common? What allows them to thrive and what challenges/threats could they face?

FIND PATTERNS

Wildlife is never static, and your patch will change from day to day, month to month and year to year. There are lots of things that you could do to monitor how these changes affect your local wildlife.

- Now that you have a good idea of what wildlife is present on your site, you might want to repeat some of your BioBlitz activities to see what changes and what stays the same. What results do you get running the same activities at a different time of year? Or a different time of day?

- Add your new results to your patch map – perhaps using a different colour or symbol to differentiate these points from your baseline

- As a class, discuss why these changes might have come about. Can you identify any other changes (weather, changes in the surrounding landscape, etc) that could have caused change?

- If you have made changes or added new wildlife features – what impact has this had? Were your hypotheses right? Do you have more / different wildlife? Do they use your patch differently?

- Optional: Bring together the wildlife story for your patch so that you can share your story with you local community and other schools – perhaps you could create a new poster or arts project, make a short film or write a class poem? The important thing is to be creative and share your school's experience discovering wildlife in your patch of our planet.

MAKE CONNECTIONS

- Connect to other LAB projects via the Skype in the Classroom collaborations on the **Our Planet Live** site: **education.microsoft.com/ourplanetlive** Can you explain your local biodiversity and the factors that affect it? Learn about their local biodiversity – how and why is it different?

- Share and discuss your local biodiversity action plans

- Migratory species – are you connected by any migration routes? What causes those species to migrate and to stop where they do?

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3. ACT

MAKING A CHANGE

Now that you have a clear picture of the biodiversity in your patch, you can consider how the environment could be improved to help those species thrive, and to attract other species that you know are currently not present.

Research (together or in small groups who then report back) and discuss the following questions:

- What plants and features appropriate for your region would attract more wildlife?

- Could any changes be made in your patch that would increase biodiversity? Would those changes threaten any existing wildlife? Can you come up with some hypotheses? (e.g. we think that adding a pond/water will greatly increase biodiversity in our patch)

- Bring together your 'recommendations' for helping wildlife in your patch and showcase in a way that is visual and engaging – perhaps you could create a poster or arts project?

- Can you make those changes yourself? Or can you share your recommendations with someone who has the power to make those changes and influence them to help you?

- What pests and diseases are threats in your area and can you find any evidence? Research where you should report these sightings and you could help prevent the spread of diseases and pests that damage local biodiversity.

DRAW UP YOUR PLANS AND CREATE A BUDGET

It helps to have a clear idea of priorities so that you know what changes you will make first if you do not have time or money to do all of your ideas.

FUNDRAISE

Your plans will benefit everyone by helping to protect and restore biodiversity, needed for people and wildlife to thrive. Why not fundraise for the costs of implementing your plans amongst local residents and businesses?

Running an event such as a nature walk, a talk by a local naturalist, screening of an Our Planet episode, or even a bioblitz activity can be a great way to attract support while also helping raise awareness of your project. You could charge a small ticket price, run a raffle on the day, or simply ask people to consider making a donation towards the costs of your plans at the end of the event.

Selling cakes or sweets around the community can be a great way to make some money, while also allowing you to meet lots of people and explain the objectives of your project. If you plan to change people's behaviour (for example to stop people dropping litter, using weedkiller, mowing grass or cutting back bushes) this can be a good way to start to get some of those messages across at the same time.

SHARE YOUR FINDINGS AND IDEAS WITH THE COMMUNITY

Make sure the community know what you are doing and why. You can invite them along to events and demonstrations (see above), contact the local press and encourage them to write about your project, or simply spread the word with posters and posts in online forums and groups connected to the local area.

The best way to get people informed is to give them a chance to get involved.

Make sure you let WWF know about the impact of your project so that your amazing work can be counted towards the global picture of the Our Planet LAB programme. Submit details via the Open Badges & Certificates claim form on **www.ourplanet.com/schools-and-youth.**

CREDITS

WWF

The world's leading conservation organisation, WWF works in more than 100 countries. WWF's mission is to stop the degradation of our planet's natural environment, and build a future in which people live in harmony with nature. WWF's unique way of working combines global reach with a foundation in science, involves action at every level from local to global, and ensures the delivery of innovative solutions that meet the needs of both people and nature.

wwf.panda.org/

iNaturalist

iNaturalist is a citizen science project and online social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe.

www.inaturalist.org

The Natural History Consortium

The UK-based Natural History Consortium consists of 13 member organisations who work to engage people with nature through collaborative action. NHC facilitates the **National BioBlitz Network** - a group of professionals and amateurs working to engage people with biological recording across the UK and beyond. They are responsible for a range of free resources designed to support organisations running BioBlitz events with top tips on how to run your event, monitor your local wildlife and help biological recording efforts.

www.bnhc.org.uk

STEP UP FOR OUR PLANET

"For both people
and wildlife to thrive, now and in the future,
we need a healthy planet, with a rich variety of
plants and animals and vibrant ecosystems.
In nature, everything is connected.
Like throwing a stone into a pond, the
ripple effect of any changes touches every part
of our planet. Understanding how our activities
affect the natural world is important to
find the best ways of protecting it."

REPORTING ON OUR LIVING PLANET 2018
bit.ly/LPRYouth2018

Nature is in trouble –
and it's all because of the
impact of humans on our planet.
Nature provides us with food,
fresh water, air to breathe and
beautiful places and wildlife to
enjoy. We get a lot of help from
nature – but now the time has
come for us to give nature
some help in return.

WWF and iNaturalist are calling for young people to take on the role of naturalists for their local area. A naturalist is a kind of scientist who studies living things in their natural environment. Don't worry – you don't need to be an expert who can name every bug and leaf! Your role is to find and record the wildlife around you, and the Seek app and iNaturalist website will help you discover what living things share your local environment. You may be surprised by what amazing natural wonders have been under your nose the whole time! Your sightings will help you to build a picture of the health of your local environment, and you'll be contributing to a global database of biodiversity that scientists can use to check on the health of all life on our planet.

TAKE LOCAL ACTION FOR NATURE

To help your local wildlife thrive you need to know what is there – and what is not. When you have a picture of your local biodiversity you can consider how it is affected by your actions and those of other people in the local area. You can decide what changes could be made to help the wildlife that is there, and even attract new species and improve biodiversity. Over time, you'll be able to see if your changes make a difference.
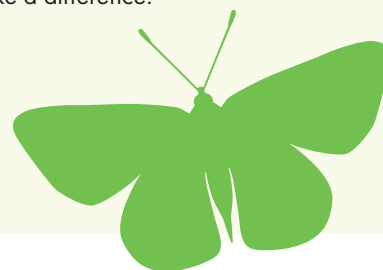
HOW MUCH DO YOU KNOW ABOUT YOUR LOCAL ENVIRONMENT?

Draw a rough map of your local area and identify the different **habitats** it contains.

Use a different colour or pattern for each and build up a key for your map. (Examples: meadow, woodland, wetland, river, stream, pond, farmland, coastline, ocean).

Map scale:

1 square

=

Map key

WHAT DOES WILDLIFE NEED?

What features in your patch could provide wildlife with the things they need to survive?

List or sketch some features that might provide food water or shelter for different types of creatures and then add them to your map from Worksheet 1.

Can you think of any features missing from your patch that could support greater biodiversity?

Food	Water	Shelter

WHAT SPECIES CAN YOU LIST THAT LIVE IN THE LOCAL AREA YOU HAVE MAPPED?

For each, consider what resources (types of food, habitat and shelter) this species needs to survive.

Species	Resource requirements	Spotted?

TRACKING CHANGE

You may have noticed changes to the natural world around you, or your parents may tell you about how things used to be different. Perhaps woodland near your home has been cut down to make space for houses or roads, or perhaps you remember your garden being visited by more birds or butterflies than you see now?

Use this sheet to note how things have changed in your area, and what you would like to be different in the future.

How things used to be

Changes to my local environment	When did it change	Effect on wildlife

Looking to the future

Changes I would like to see	Who could make this happen?	Effect on wildlife

WILDLIFE OBSERVATION FORM

Name: _____

Organism sighted	Date / time observed	Description of organism
Species, or closest taxonomic category>rank	YYYY–MM–DD HH: MM	Colour, size, pattern, behaviour etc

Location Describe as precisely as possible	Latitude / y coord / northing dd.dddd	Longitude / x coord / easting dd.dddd

☐ **Photo?**   ☐ **Audio recording?**

Media file name(s) _____

Field sketch (label with colour/pattern/texture/size notes)