The OPAL **Biodiversity Survey** Booklet

OPAL
EXPLORE NATURE

Please note: Online data entry for the OPAL Biodiversity Survey is closed. However, you can still use the Biodiversity Survey to explore hedgerows in your local area.

Introduction

Biodiversity is the variety of all life on Earth. It is essential for sustaining the living networks and systems that provide us all with health, wealth, food, fuel and the vital services our lives depend on.

OPAL promotes the importance of understanding, recording and conserving biodiversity. Biodiversity can be used as an indicator of habitat health both for you and for wildlife. Animals and plants require different conditions to thrive and you can measure some of these by taking part in the OPAL surveys.

The OPAL Biodiversity Survey focuses on hedges as a place to find interesting wildlife.

A garden hedge, London

Field boundary hedges, Shropshire

A clawdd (hedge bank), Snowdonia

Hedges are rows of bushy shrubs or low trees and are a familiar part of our countryside, acting as field boundaries. Many of these hedges are hundreds of years old; some are older than our most historic buildings. Hedges are also found in towns and cities, where they surround gardens, schools and parks. As well as acting as boundaries and barriers, hedges are important habitats for a wide variety of animals and plants. They form a valuable refuge for some of the plants and animals which thrived in the woodland that once covered most of the UK. In many areas, this wildlife is increasingly dependent on hedges for survival.

Clawdds and Cornish hedges are special types of hedge made up of a stone-faced earth bank with bushes or trees growing along the top. They are more common in the west, particularly Wales, Cornwall, Cumbria and parts of Northern Ireland.

By taking part in the OPAL Biodiversity Survey, and submitting your results, you can find out more about the hedges in your local area and the biodiversity they support. You will help us to assess the condition of hedges across the country and to better understand the importance of hedges for wildlife and humans.

Hedge history

Many hedges were originally planted as barriers to contain livestock. Others were planted to mark boundaries, such as the edges of a parish, or to fulfil Parliamentary Enclosure Acts. These were Acts of Parliament passed around 150-250 years ago setting out the boundaries of private land. Many specified what the boundary should be marked with, usually a planted hedge or drystone wall.

This line of trees was orginally planted as a hedge

Not all hedges were deliberately planted. Some are the remains of ancient woodland, where trees were cleared for pasture or crops, leaving a narrow strip of woodland as a boundary. Other hedges may be self-sown, for example along a wire fence where seeds dropped by perching birds have been left to grow.

Wildlife habitat

Apart from acting as boundaries and barriers, hedges are important habitats for a wide variety of animals and plants. They are one of the most biodiverse of all the habitats found in the UK. It is estimated that over 125 of our most threatened species are associated with hedges. More than 80% of our farmland birds rely on hedges for protection and food and 10 of the 18 most threatened mammals feed on their fruits and berries.

As woodlands have decreased over the years, many animals in them have adapted to living in and around hedges, depending on each other and on the hedgerow plants. Almost all groups of animals may be found in a hedge, including mammals, birds, reptiles, and many invertebrates. Hedges act as corridors or ‘roadways’ for small creatures, such as hedgehogs and dormice, to travel between safe habitats under their protective vegetation.

Not all of us have gardens large enough to plant hedges, but some of the woody plants found in hedges such as hawthorn and laurel can be grown on their own as small shrubs to provide food and cover for birds.

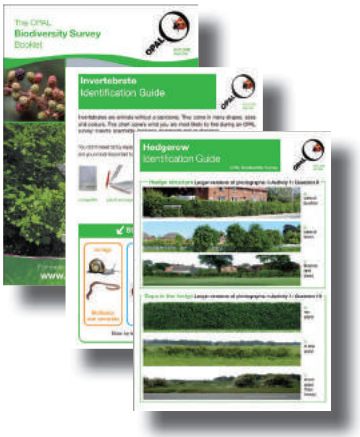
Survey preparation

The OPAL Biodiversity Survey has several activities:

Activity 1: What does the hedge look like? (pages 5-7)
Activity 2: Is the hedge a source of food for wildlife? (page 8)
Activity 3: What wildlife can you find? (pages 9-10)
Activity 4: What else is using the hedge? (page 11)

Essential equipment to take outside with you

- The OPAL Biodiversity Survey pack which contains this survey **Booklet***, **Hedgerow Identification Guide**, **Invertebrate Identification Guide**, **tape measure** and OPAL **magnifier**.



- A **pale-coloured collecting container** to catch invertebrates.

  You could use a tray, sheet or large piece of paper, or alternatively a **dustpan and brush** to gently sweep invertebrates off the hedge.

Useful items to take outside (if you have them)

- A map or GPS device
- A mobile phone (in case of emergencies)
- A camera
- A spy pot (see page 14)
- A pooter (see page 14).

Remember – please be careful not to harm the environment or any wildlife you find. When you have identified the invertebrates, carefully return them to where they were found. When you have finished your survey, please take all your equipment home with you. The best time of year to do the survey is in the spring, summer and particularly in the autumn.

Safe fieldwork

Exploring hedges can be great fun. However, it is important to take care, especially if the hedge you are surveying is close to a road. Make sure the hedge has public access or that you have permission from the person who owns it. Take care not to damage the hedge in any way. To the fullest extent permitted by law, OPAL cannot be held responsible for any injuries which arise through participation in the Biodiversity Survey.

- Make sure you are dressed appropriately for the weather and wear appropriate footwear. If surveying near a road, wear bright clothing, ideally a reflective vest.
- Do not do this survey on your own. Take a responsible friend with you who can help if anything goes wrong. Make sure you both know what to do in an emergency and can call for help if necessary.
- Do not attempt this survey in the dark.
- Young children must be supervised at all times.
- Make sure you can reach the chosen hedge safely, without having to cross deep ditches.
- If you find broken glass or litter with sharp edges, you might need to choose a different stretch of hedge.
- Cover any open cuts before starting and wash your hands thoroughly afterwards and especially before eating.
- Do not eat fruits and berries from the hedge, unless you are confident of their identification, as many are poisonous to humans.
- Beware of stinging nettles, prickles and thorns.
- Bees and wasps may sting. If there is a lot of bee or wasp activity, survey a different stretch of hedge. While most stings only result in some pain and swelling, sometimes it can be much more severe. Seek medical advice if stung near the eyes, nose or throat, or if the person has been stung multiple times.

More general safety information is available from Royal Society for the Prevention of Accidents **www.rospa.com/leisuresafety**

The survey starts here

Activity 1: What does the hedge look like?

You can find hedges in many streets, parks, school grounds and the countryside. If necessary, look at local maps and photographs. Make sure you have the landowner's permission if required.

Choose a 3 metre stretch of hedge that is representative of the whole hedge. Mark out the start and end of the 3 metre stretch before you start.

Marking out the start and end of the 3m stretch

Record information about the hedge by answering Questions **1-15**. Use the photographs in the Hedgerow Identification Guide to help.

1. Date of survey _____

2. Time of survey _____

3. Who are you doing the Biodiversity Survey with today?

- ☐ Primary school
- ☐ Secondary school
- ☐ Youth group
- ☐ Adult volunteer group
- ☐ Friends or family
- ☐ College / university
- ☐ Other

4. Have you carried out a survey like this before? ☐ yes ☐ no

5. How would you describe the weather today?

6. Record the location of your site (postcode / OS grid reference / GPS reading).
Further help is available on the OPAL website if you are unsure of the exact location.

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7. Which of these best describes the area the hedge is in?

☐ Urban ☐ Garden ☐ Park ☐ School ☐ Farmland ☐ Grassland ☐ Wood or forest ☐ Other

8. Which best describes the area around the hedge?
Tick one box for each side.

Your side	☐ crops	☐ grassland	☐ hard surface
	☐ garden	☐ woodland	☐ waterway
Other side	☐ crops	☐ grassland	☐ hard surface
	☐ garden	☐ woodland	☐ waterway ☐ cannot see

See the Hedgerow Identification Guide for larger photographs to help you answer Questions **9**-**11**

9. Describe the **structure** of the hedge. Tick one box only.



☐ a Line of bushes ☐ b Line of trees ☐ c Bushes and trees

10. Are there **gaps** in the hedge? Tick one box only.



☐ a No gaps ☐ b A few gaps ☐ c More gaps than hedge

11. Describe the **shape** of the hedge. Tick as many as apply.

a Neatly trimmed

b Untrimmed

c Heavily cut

d Leggy – a top-heavy hedge

e Laid or coppiced

12. What other features can you see on or beside the hedge?
Tick as many as apply.

a Wall b Fence c Ditch d Bank

e Undisturbed strip of vegetation (over 1 metre wide) next to the hedge

13. What is the **height** of the hedge?

☐ under 1m ☐ 1-2m ☐ 2-3m ☐ over 3m

14. What is the **width** of the hedge?

☐ under 1m ☐ 1-2m ☐ over 2m

15. What is the **total length** of the hedge?

☐ under 5m ☐ 5-20m ☐ 20-50m ☐ over 50m

Activity 2: **Is the hedge a source of food for wildlife?**

Use the images on the **Hedgerow Identification Guide** to help you identify the shrubs you find in the hedge.

16. Tick as many species as you find in the 3 metre stretch of hedge. Do not record trees that are taller than the hedge. If you are uncertain of the species then tick 'other'. Use the blank spaces for any other species.

☐ Beech

☐ Dog Rose

☐ Hazel

☐ Laurel

☐ Bramble

☐ Elder

☐ Holly

☐ Privet

☐ Blackthorn

☐ Hawthorn

☐ Ivy

☐ Yew

☐ Other _____ _____ _____

17. Estimate the number of berries, nuts and flowers in the 3 metre stretch of hedge.

a ☐ 0 b ☐ 1-10 c ☐ 10-100 d ☐ 100-1000 e ☐ more than 1000

Activity 3: **What wildlife can you find?**

Look for invertebrates in the 3 metre stretch of hedge.

You will need a pale-coloured collecting container. You could use a tray, sheet or large piece of paper, or alternatively a dustpan and brush.

Catch invertebrates in the hedge by:

1 Either gently shaking the branches above your container so that the invertebrates fall in

2 Or using a dustpan and brush to gently sweep the outer leaves of the hedge to knock the invertebrates into the dustpan

Take care not to disturb nesting birds.

Now use the Invertebrate Identification Guide to help identify what you have found.

Method 1: Shaking the branches above a pale-coloured container

Method 2: Using a dustpan and brush

If you are not sure of an identification, post a photograph to www.ispotnature.org and someone will help you to identify it.

iSpot
Your place to share nature

18. Count the invertebrates observed in the 3m stretch of hedge, whether they were caught or not. If unsure of the numbers then estimate or just tick the box.

Aphid ☐

Ant ☐

Blowfly ☐

Bumblebee ☐

Butterfly ☐

Caterpillar ☐

Centipede ☐

Cranefly ☐

Earwig ☐

Froghopper ☐

Harvestman ☐

Hoverfly ☐

Lacewing ☐

Ladybird ☐

Millipede ☐

Moth ☐

Other beetle ☐

Shieldbug ☐

Slug ☐

Snail ☐

Spider ☐

Wasp ☐

Weevil ☐

Woodlouse ☐

Use the blank spaces to record any other invertebrates seen.

Activity 4: **What else is using the hedge?**

Look for signs that animals have made burrows in the 3 metre stretch of hedge.

Use the tape measure in your pack to measure the size of all holes in the ground under or next to the hedge (Question **19**). Only record holes that are free from leaves, stones, loose soil or other debris.

Measuring holes along the hedge

Finally record any animals (other than invertebrates) or plants you identify (Question **20**).You can either name the species or simply put 'bird' or 'mouse'.

19. Record any holes you see. Tick as many as apply

a	under 2 cm	b	2-5 cm	c	5-10 cm	d	10-30 cm	e	over 30 cm

20. Use this space to record any other wildlife you see

What do your results mean?

The activities in the OPAL Biodiversity Survey tell us about the importance of hedges for wildlife. A national survey like this has not been done before so your results will help us find out more about hedges throughout the UK. You may have collected information from a hedge that has never been investigated before, especially if it is in an urban area.

Activity 1 is designed to collect information about the size, location, surroundings and management of each hedge. A score will be calculated from your results to show the condition of the hedge. For wildlife, the ideal is a continuous, dense hedge of bushes with occasional trees. The bushes provide cover and food for small birds, mammals and invertebrates; while the trees provide nesting sites for larger birds and protection for a range of invertebrates. Hedges which are cut too often, or not often enough, have greatly reduced leaf and berry production.

Activity 2 assesses the importance of the hedge as a food source for animals. An estimate of the quantity of food produced by the hedge will be made based on the amount of berry- and nut-bearing species present and the condition of the hedge. Some animals and plants are only found where certain hedge bushes grow.

Activity 3 shows what invertebrates are living in the hedge. The invertebrates you find can be a food source for birds, mammals and other invertebrates. Although we have chosen the most common types of invertebrate found when sampling a hedge, it is possible you will find many creatures that are not in our guide. For more help with identification, use iSpot **www.ispotnature.org**.

Activity 4 assesses the importance of the hedge as a source of shelter and protection. Different animals make holes of different sizes. A hole under 2cm in diameter is likely to have been made by an insect, 2-5cm by a mouse or vole, 5-10cm by a rat, 10-30cm by a rabbit and over 30cm by a fox or badger.

A dense hedge of privet, with good cover for wildlife but few berries, Manchester

A neglected hawthorn hedge, with a good supply of berries but limited cover for wildlife, Mid Wales

Hazelnuts gnawed by red squirrels, at the base of a hedge in Co. Fermanagh

I've completed the survey, what now?

- You can complete the survey as many times as you like. Why not survey another hedge or a different 3m stretch of the same hedge?
- You could survey the same hedge at different times of the year. Invertebrates are often seasonal, with different types using the hedge in different seasons.
- Do the other OPAL surveys. See **www.opalexplorenature.org/surveys**
- Do a different survey near your hedge. More surveys are listed on the Natural History Museum website at **www.nhm.ac.uk/biodiversityportal**

Hedgelink

To have a healthy future, hedges across the United Kingdom need the support of many people and organisations, from farmers and planners to environmentalists and local communities. Hedgelink aims to support all these people and organisations, and to make it easier for them to work together. They do this by sharing knowledge and ideas, and by enthusing people about the importance of hedges for wildlife and our cultural heritage. More information, including advice on managing hedges and links to other organisations with an interest in hedges, is available at **www.hedgelink.org.uk**

PTES (People's Trust for Endangered Species)

In a constantly changing world where wildlife is under threat, many species are declining at an alarming rate. Since 1977, PTES has been helping to ensure a future for many endangered species throughout the world. They have a particular interest in the UK's mammals including the common dormouse which is increasingly reliant on hedgerows for its future survival. PTES run surveys which rely on public participation. For further information visit **www.ptes.org**.

Optional equipment
A pooter

A pooter is a simple piece of equipment for catching invertebrates. You can find more information about making your own pooters at **www.opalexplorenature.org**

A spy pot

Invertebrates are small and can be difficult to observe. Making and using a spy pot will allow you to look much more closely.

You will need

- Two clear plastic tubs, e.g. yoghurt pots or drinking cups. They should be of similar size and be able to fit inside one another
- A piece of cling film and sticky tape (or an elastic band).
- A pair of scissors.

How to make the spy pot

1. Cut the bottom off one of the tubs. 1
2. Stretch the cling film over the open bottom. Secure with sticky tape or elastic band. 2

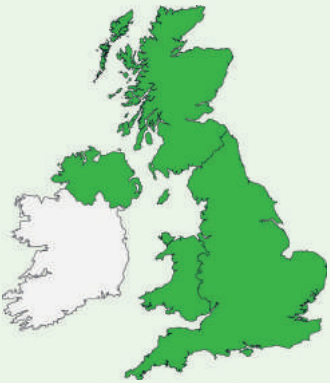
How to use the spy pot

1. Catch an invertebrate in the tub with cling film over the end. 3
2. Gently insert the other tub into the first tub, then encourage the invertebrate towards the cling film. Do not to press too hard. You can now take a closer look. Release the invertebrate as soon as you can when you have finished. 4

If you have enjoyed identifying plants and animals in this survey, you can get further help with identification on the iSpot website (**www.ispotnature.org**) where you can also share photographs of the plants and animals you have found.

iSpot
Your place to share nature

This activity is one of a series of nature surveys developed by the Open Air Laboratories (OPAL) programme to help you get closer to your local environment while collecting important scientific data. With funding from the Big Lottery Fund, our network of leading universities, museums and wildlife organisations has been developing citizen science activities since 2007 and our resources are available throughout the UK.



If you've enjoyed this survey, why not try another? You can find everything you need to get involved at **www.opalexplorenature.org/surveys**

You can also see what your data has revealed so far and discover a range of ways to get more involved in studying the environment on our website: **www.opalexplorenature.org**

www.facebook.com/opalexplorenature **@OPALnature**

The Open University · Imperial College London · hedgelink working together for the UK's hedgerows · Natural History Museum · Environment Agency · defra Department for Environment Food and Rural Affairs · FSC Bringing Environmental Understanding To All · people's trust for endangered species · LOTTERY FUNDED · Big Lottery Fund

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