

THESE FOOTPRINTS WERE MADE BY A COMMON CRANE, ILLUSTRATED BELOW-LEFT



SECTION ONE
Special places for wildlife
What rare animals and plants live on the Gwent Levels? *pp. 36 – 38*



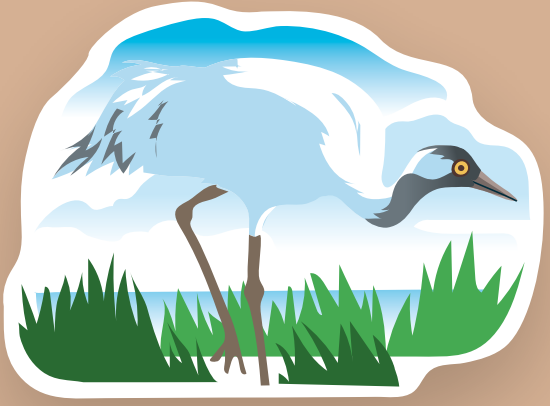
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PART THREE

Wildlife on the Gwent Levels – How can we enjoy and protect it?

The Gwent Levels and its special wildlife

Special places for wildlife

The Gwent Levels have changed relatively little over the past few hundred years compared to countryside elsewhere. The wider countryside is suffering from intensive farming, producing food on a large scale while wild flowers, birds, insects and mammals have fewer places to live and feed. The Gwent Levels still has places where wildlife thrives including rare species such as the shrill carder bee and the water vole, which were once abundant across Britain. Many of the traditional fields here allow the flowers, that bees need, to grow, and the waterways are clean and generally undisturbed.

For further information and links visit livinglevels.org.uk/nature-wildlife



Cranes in flight
JOHN CRISPIN

ACTIVITY

How to see cranes



The best place to see cranes is at Slimbridge Wildfowl and Wetlands Trust in Gloucestershire where more cranes live and can be seen from bird hides. On the Gwent Levels listen out for their bugling call; the sound carries for up to 3 miles. They look like a very large heron and have a long, straight neck rather than a kinked neck.

EXPLORING THE ENVIRONMENT

The common crane

Around 7,500 years ago, a large heron-like bird, the common crane, was feeding on the Gwent Levels. Its footprints have been preserved in the mud. Cranes disappeared from Britain 400 years ago after they were hunted and eaten as a delicacy at banquets. Their habitat, watery places such as marshes, flooded fields and pools, was also being drained and turned into farmland. Back in Roman times there was another crane called the great crane – it is thought the Romans may have caused them to go extinct in the UK by eating too many. However, it is possible that common cranes have become generally smaller since Roman times. If so, the larger cranes from Roman archaeological contexts might represent larger common cranes than might be expected today. We know that at least three large cranes were served as meals for a senior officer at the

nearby legionary fortress of Isca (Caerleon). The crane had a significance for some Romans, probably a religious one for they are often depicted on altars, especially in Britain, and with very short people (pygmy characters).

During the summer of 2016 a pair of cranes, named Lofty and Gibble, nested on the Gwent Levels and raised a chick called Garan (the Welsh word for crane). The adult birds originate from the Great Crane Project reintroduction scheme which released 93 hand-reared cranes between 2010 and 2014 on the RSPB West Sedgemoor Reserve in Somerset.

This is the first pair of cranes to breed on the Gwent Levels since their extinction.

For more information about common cranes and their history on the Gwent Levels visit livinglevels.org.uk/common-cranes





Reed Warbler
ANDY KARRAN

Reedbeds

Reedbeds along the ditches (reens) at Newport Wetlands and Magor Marsh provide habitats for birds such as reed warblers, cuckoos and reed buntings. The open water is ideal for ducks such as tufted ducks, pochards and mute swans. This is where water voles might be hiding too. In the winter thousands of starlings fly around in mesmerising patterns called murmurations before sleeping in the reedbed – many come here from eastern Europe and Russia for the winter to escape the freezing winters there.

King Diving Beetle at Magor Marsh
DAVID SANKSON



King diving beetle

In the clean and relatively unpolluted waterways across the Gwent Levels there is a myriad of underwater creatures, from young dragonflies known as larvae or nymphs, to tadpoles of frogs and newts. There are diving beetles too. Suited to life underwater, diving beetles have extra hairs on their legs to help them swim and store bubbles of air to breathe. Alongside the common great diving beetle, the Gwent Levels is home to a rare relative, the large king diving beetle. The larvae are so similar that they can only be identified by looking at them closely under the microscope or using DNA barcoding – checking which genes are shared and which are different. There have been only 12 sightings of the king diving beetle in Wales, the most recent at Magor Marsh in 2015.

Water voles

The water vole, although rat-like, has a short, blunt nose, less obvious ears, a hairy, shorter tail and a rounder, compact body. They love the ditches or reens that are found all the across the Gwent Levels, digging tunnels into the banks where they nest and sleep.

They feed on water plants and you can look for their tell-tale nibbles – a 45° diagonal cut with their orange front teeth. The clean

water, lots of water plants and absence of mink all help them to survive here. The mink is a long, otter-like animal that eats water animals; it escaped from fur farms.

For more information about the water vole's story on the Gwent Levels and what field signs to look for their presence visit livinglevels.org.uk/water-vole

ACTIVITY

How to see a diving beetle

While the king diving beetle is rare, the great diving beetle is common. Take part in reen or pond dipping at Magor Marsh and Newport Wetlands and find some for yourselves.

Ask permission from the Gwent Wildlife Trust or the RSPB before doing this. You don't want to spread any water-borne diseases to these special nature reserves.



EXPLORING THE ENVIRONMENT

ACTIVITY

How to see a water vole

With a maze of connecting reens and places to hide, the water vole is doing well on the Gwent Levels; one of the best places to see them is Magor Marsh. If you are quiet you might hear the voles chewing some plants or splashing into the water as they dive away for cover.



Water Vole
ANDY KARRAN



Rootless Duckweed
ANDY KARRAN

Rootless duckweed

This plant is the smallest flowering plant in the world and is found on the Gwent Levels. Everything about duckweed is small – their leaves and flowers are minute. Other duckweeds in the UK, such as the greater, common and ivy-leaved duckweed, have tiny roots too. They grow across the surface of a pond, turning it bright green! However, the rootless duckweed, as its name suggests, doesn't have any roots. The leaves look like very tiny grapes and are only 0.5–2mm long. Ducks and other waterbirds help spread duckweeds between ponds and ditches; the duckweeds stick to the legs and feet of the birds as they take off to fly. opalexplornature.org/sites/default/files/7/file/water-survey-duckweed-guide-A5-2014.pdf

ACTIVITY

How to see duckweed

This particular duckweed is hard to see. However, a visit to a reen or pool on the Gwent Levels will reveal all manner of water plants including common duckweed, with its tiny round leaves, floating and covering the water's surface.



EXPLORING THE ENVIRONMENT



Redshank
ANDY KARRAN

ACTIVITY

How to see waders

Look out for waders feeding on the mud from the sea wall at Goldcliff, Newport Wetlands and Cardiff. You might need binoculars as they are often far away. At Goldcliff there are hides on the east side of Newport Wetlands where lapwings, redshanks and avocets can be seen – contact the RSPB centre at the wetlands for details.



EXPLORING THE ENVIRONMENT

Wading birds

Wading birds or waders are a group of birds that are suited to wet places. Some have long beaks for probing mud to catch worms while others have shorter beaks for picking tiny snails from the surface of the mud. The Gwent Levels is an important place for nesting waders such as lapwings, redshanks, snipe and avocets. They are common on the estuary mud and wet farmland fields around Newport and Cardiff too.

As farmland across Britain has been drained, drier fields with greater densities of grazing cows and sheep has meant waders have fewer places to feed and nest. Although parts of the Gwent Levels have been drained for thousands of years, many areas remain damp, often all year round, perfect for waders to nest. At Newport Wetlands, waders are successfully nesting and rearing chicks each year thanks to damp fields with some cover to hide, islands surrounded by pools of water, and electric fences to keep ground predators, such as foxes and badgers, out.

Out on the mud of the Severn Estuary, thousands of waders feed on the millions of invertebrates living there, from shellfish to worms. Many winter on the estuary to escape the cold in the Arctic and northern Europe where they nest in the summer. Others use it to pass through on migration from parts of Africa and southern Europe on their way north. Long-billed waders such as curlews, godwits and redshanks have a special way of catching their food. When they probe their beak into the mud, they are unable to see what is there. The tip of their beak is highly sensitive and when they detect something just the very tip of the beak opens and shuts quickly, catching the prey. This is known as rhylochinesis.



ACTIVITY

Bird populations: making graphs

Each year the numbers of birds living on the Gwent Levels are counted. This helps organisations such as the RSPB and Gwent Wildlife Trust know how well they are doing and whether they need more help, for example, by providing better habitat.

Here are some true population counts of mute swans, little egrets and common gulls from Magor Marsh over winters between 2012 and 2017. These numbers are from the Wetland Bird Survey run by the British Trust for Ornithology.

Use these numbers to produce population graphs, work out a five-year average of each species and describe how the populations are changing. Find out more about each species and why these changes may be happening. Use the BTO's Bird Trends to look at population graphs of different birds and why they are changing, bto.org/about-birds/birdtrends.

Note: Up until the mid-1990s, the little egret didn't live in Britain. They started to arrive naturally from France and have spread across the UK, including Wales.

SPECIES	2013	2014	2015	2016	2017
LITTLE EGRET	1	6	9	24	33
MUTE SWAN	14	21	17	39	48
COMMON GULL	0	0	28	210	540



INTERPRETING DATA

ACTIVITY

How to see a shrill carder bee

This bee can be seen on flowers outside the learning centre at Magor Marsh and on flowers across Newport Wetlands. Three tips: (1) look for their relatives, the common carder bees, first for familiarity; (2) know your bee anatomy, in particular the thorax, and the colour of hairs for each; (3) look for flowers including knapweed, vetches and bird's-foot trefoil.



EXPLORING THE ENVIRONMENT

Watching and helping bumblebees

Shrill carder bee

The shrill carder bee is one of Britain's rarest bees. This bee gets its name both from making a high-buzzing sound and by weaving material from plants into its underground nest. Like other bees it is an important pollinator of flowers and loves pea-like plants such as bird's-foot trefoil and vetches. With its long tongue it is able to delve deep into flowers where the nectar is harder to reach. Its back, the thorax, is yellow-brown with a distinctive dark band across it. Unlike common bumblebees, such as the buff-tailed, the shrill carder bee doesn't like to move very far from its nest, a burrow in the ground. This has made it very rare across Britain as changes in farming have meant there are fewer or no wild flowers growing in fields. Unable to travel far, most shrill carder bees have simply starved and died out. However, on the Gwent Levels, fields, hedgerows and reens have remained largely unchanged over the past 100 years despite changes in farming methods; there are still plenty of flowers close to where shrill carder bees nest and they can be found here in late summer and early autumn.

The Gwent Levels is a fabulous place full of buzzing bees during the summer

In the wider countryside many bumblebees, along with honeybees and other insects, are starving. They need more food and shelter. On the Gwent Levels the Bumblebee Conservation Trust works closely with those looking after the land to provide more food for bees, and you can do the same at school and at home.

Shrill Carder Bee
HANNAH BEYNON



ACTIVITY

Researching the shrill carder bee

Investigate how farmland across the UK once supported the shrill carder bee. Find out what has changed and how they can be helped.

Produce an information flyer for landowners, such as farmers, suggesting how they can help shrill carder bees and other pollinating insects.



APPLICATION OF KNOWLEDGE

ACTIVITY

Helping the bees



The Bumblebee Conservation Trust has this webpage for you to use with your classes to identify common bumblebees around your school and at home bumblebeeconservation.org/bumble-kids/spotting-bumblebees

And an information sheet on the rare shrill carder bee, found across the Gwent Levels. You can look for it at Magor Marsh and Newport Wetlands, tinyurl.com/ybbo4kn4

Whether your school is in the middle of Cardiff or Newport, or on the Gwent Levels itself, there are simple things you can do with your children to help bees and other insects. They need flowers that have lots of nectar to drink, and places to live that haven't been sprayed with lots of pesticides.

- Plant a range of wild flowers, from bird's-foot trefoil to clover and knapweed. There are a range of wild flower shops online that sell seeds and young plants, ideal for bumblebees. This webpage gives all sorts of further ideas and photos of flowers and plants, bumblebeeconservation.org/gardeningadvice. Seeds are available from Monmouthshire Bee Friendly Society, beefriendlymonmouthshire.org/gardenershelp
- Leave parts of the school grounds or your garden unmown, allowing plants to flower. Cut just once a year in late summer and remove the vegetation so it doesn't fertilise the soil.
- If you live on a farm, grow strips of wild flowers along fields that connect together.
- Avoid using pesticides – caterpillars and aphids will provide food for other insects and birds.
- Plant flowering plants that bloom earlier and later in the year providing food throughout the flying period of bees and other pollinating insects (not just June and July). For example, sallow for early blossom and ivy/brambles for autumn food.

EXPLORING THE ENVIRONMENT



SECTION FOUR

What to look for at different times of the year

To find out more about the birds below and their songs, look up the RSPB A-Z of birds [rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z](https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z)

And for other animals, visit the Gwent Wildlife Trust [gwentwildlife.org/wildlife/species-a-z](https://www.gwentwildlife.org/wildlife/species-a-z)

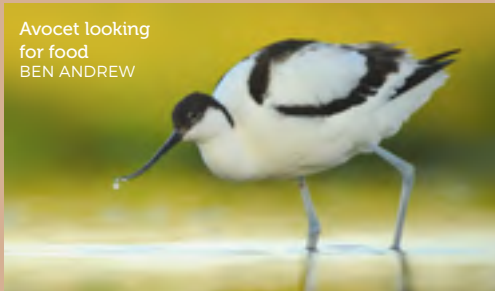
For recording your local wildlife sightings use the LERC (Local Environmental Records Centre) Wales app, [lercwales.org.uk/app.php](https://www.lercwales.org.uk/app.php)

For finding out what you are most likely to see in your area visit, [aderyn.lercwales.org.uk](https://www.aderyn.lercwales.org.uk)

January

Watch thousands of starlings flocking together in mesmerising flocks called murmurations as they come to sleep in the reedbeds at dusk at Newport Wetlands. If you hear a strange sound, a little like a squealing piglet, coming from the reeds, it will be a secretive bird called a water rail.

Take part in the RSPB's Big Schools' Watch and count the birds visiting your school or nearby green space, [rspb.org.uk/fun-and-learning/for-teachers/schools-birdwatch/](https://www.rspb.org.uk/fun-and-learning/for-teachers/schools-birdwatch/)



Avocet looking for food
BEN ANDREW

April

The sallow tree or goat willow will be flowering; its yellow flowers across wet, boggy places, such as Newport Wetlands and Magor Marsh, attract insects and insect-eating birds such as willow warblers, chiffchaffs and blue tits, which end up with yellow foreheads from the pollen. You might spot the first swallow arriving from Africa. They love the Gwent Levels, feeding on insects attracted to grazing cows and their poo, and nesting in farmyard barns and horse stables.

At Newport Wetlands, towards Goldcliff, uncommon wading birds such as lapwings, redshanks and avocets will be busy hatching chicks on damp meadows and islands, protected by predator-proof fencing.

Look out for the green-blue hairy dragonfly [livinglevels.org.uk/hairy-dragonfly](https://www.livinglevels.org.uk/hairy-dragonfly)

February

The ditches (reens), pools and ponds across the Gwent Levels are ideal for spawning frogs, toads and newts. Magor Marsh and Newport Wetlands have children-friendly pond-dipping sites which are great for peering down to look for small masses of frogspawn.

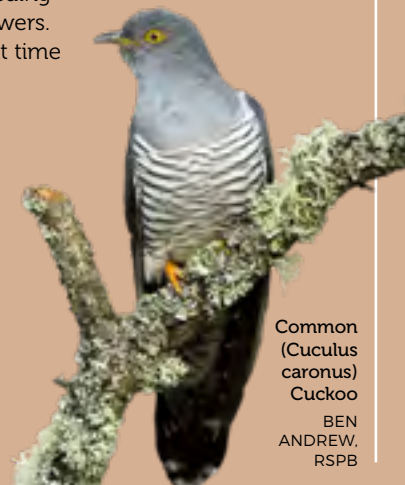
Take part in the PondNet Spawn Survey [freshwaterhabitats.org.uk/projects/pondnet/spawnsurvey2020/](https://www.freshwaterhabitats.org.uk/projects/pondnet/spawnsurvey2020/)

Get involved in the Big Pond Dip during the summer, [freshwaterhabitats.org.uk/get-involved-2/big-pond-dip](https://www.freshwaterhabitats.org.uk/get-involved-2/big-pond-dip)

May

Listen for the song of the cuckoo, cook-oo cook-oo, like its name. Cuckoos are often heard at Newport Wetlands and Magor Marsh, visiting for just six weeks from the tropical forests of central Africa. They lay eggs in the nests of other birds such as reed warblers. If your school is near these sites you may even hear one from your school playground.

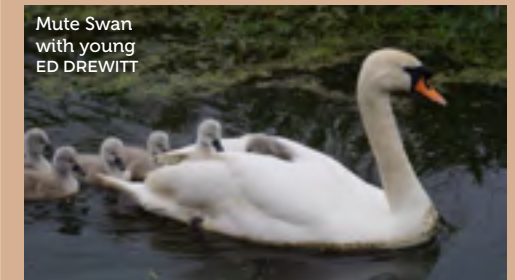
Watch out for butterflies such as the brimstone, orange-tip and holly blue feeding on spring flowers. May is a great time to spot baby waterbirds, ducklings, goslings and cygnets (baby swans) in family groups.



Common (Cuculus caronus) Cuckoo
BEN ANDREW, RSPB

March

Around Tredegar House listen for singing robins, blackbirds and wrens as they sing during the day to protect their partners and nests. At Newport Wetlands, Magor Marsh, Parc Tredelerch and Tredegar House, coots, moorhens and mute swans will be making nests and laying eggs. Listen for the song of the chiffchaff, a tiny green-yellow bird that arrives in late March. It says its name, chiff-chaff chiff-chaff, and is common across the Gwent Levels.



Mute Swan with young
ED DREWITT

ACTIVITY

Create a calendar

Using the information featured each month, create an image for each month of the year to make a calendar. The image might be a drawing and could be accompanied by a poem. Students could also use cameras and take a photograph for each month as the year goes by. If started in September why not produce an academic year calendar as an end of year project?



WORKING CREATIVELY

June

Great crested grebes, with their impressive headdresses, will be nesting at lakes such as Hendre Lake Park and Parc Tredelerch. Look for their stripy black and white chicks. Water voles will be busy breeding and feeding at Magor Marsh; they leave distinctive diagonal bite marks at a 45° angle. Apples put out on floating platforms encourage the voles to come out in the open for you to see them.

The oak avenue at Tredegar House will be in leaf, providing foliage full of invertebrates for birds, bats and parasitic insects to feast upon. Visit flowering meadows at Rogiet Countryside Park and count how many species you can find; compare with your school field.

July

Dragonflies love water; their young, known as larvae, live in ponds across the Gwent Levels, feeding on other animals such as tadpoles. In the summer adults emerge from the water and fly around hawking for insects to eat. They often come back to the same perch, allowing for a closer view of their red, green, blue, brown or multicoloured bodies. Hobbies, a type of falcon, visits the Gwent Levels during the summer from south-west Africa. They love feeding on dragonflies, catching and eating them while flying.



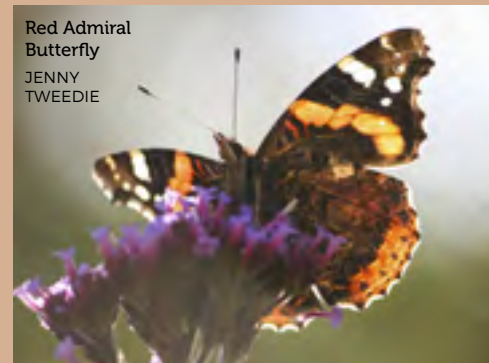
Emperor
Dragonfly
CHRIS HARRIS

September

One of Britain's rarest bumblebees, the shrill carder bee, is out much later than other bees. Look for it at Newport Wetlands and Magor Marsh, feeding with its long tongue on flowers such as clover, common knapweed and pea-like plants such as bird's-foot trefoil and tufted vetch. Its back or thorax is covered in yellow or pale hairs, with a distinctive black or dark stripe through the middle.

October

After heavy dew or frosty mornings look for the delicate webs of money spiders on the grass at school or nearby green spaces such as Tredegar House, Black Rock or Hendre Lake Park; they spin their hammock-like webs overnight. Butterflies such as the red admiral can be seen on sunny afternoons, feeding on late-flowering plants or ripe fruits. Berry-laden bushes at Black Rock, Parc Tredelerch and Rogiet Park are good places to look for newly arrived redwings from Scandinavia, and blackcaps migrating south to the Mediterranean. Roving tit flocks will move through hedges and woodlands in a hive of activity and contain blue tits, great tits, long-tailed tits, coal tits, goldcrests and chiffchaffs.



Red Admiral
Butterfly
JENNY
TWEEDIE

August

Insects are in abundance during August across the Gwent Levels. With plants in full flower, bees, hoverflies, butterflies and beetles can be found feeding on their nectar and getting a face full of pollen which they transfer to other flowers, helping to pollinate them.

Keep your eyes peeled for grass snakes – they usually slither away before you've spotted them and can be seen swimming across water.

Visit the sequoia redwood trees at Tredegar House; these impressive tall coniferous trees have spongy bark and provide places to nest for treecreepers and nuthatches, and homes for insects.

November

Hendre Lake Park is a great place for spotting little egrets, a small white heron. They first arrived in the UK in the 1990s and are now a common fish-eating bird across the Gwent Levels and Severn Estuary. Many sleep in the trees on the lake's island. Balls of mistletoe with white, sticky berries grow on high tree branches at Magor Marsh and attract the mistle thrush. The damp, muddy ground provides the opportunity to look for footprints – amongst your own look for roe deer prints (slots) or the rounded, five-toed prints of badger or four-toed prints of fox.

December

Look out for mallard and tufted ducks on Hendre Lake Park and Parc Tredelerch amongst the black-headed gulls. If you are quick you might spot a kingfisher flash past, or a grey heron quietly fishing by itself. Listen for the 'pinging' calls of the bearded tits at Newport Wetlands; these secretive colourful birds are best found by their calls on calm, bright days. On bright, sunny days robins will be singing, both males and females, to defend small feeding areas.

ACTIVITY

Listening to birdsong and the dawn chorus



Listening to birdsong is good for our health and wellbeing and for reducing stress. It gets us outdoors and gives us the chance to focus and listen.

Meet at school early one morning in April and listen to the birdsong – don't worry if you don't know what the birds are; experiencing the sound is a wonder in itself. An ideal time to hear early birdsong is 7am or 8am, although the true dawn chorus, when everything all sings at once, begins

much earlier. However, birds continue to sing throughout the morning. They also have a mini evening chorus.

If you did want to listen to the dawn chorus itself: Between late March and early May the dawn chorus starts really early. You would need to be listening around 6am at the end of March, 5.30am early April, 5am late April and 4.30am early May.

EXPLORING THE ENVIRONMENT

Spotting Shy Wildlife

ACTIVITY

Spotting Shy Wildlife

Discuss how you would explore a wild place in a way that increases your chances of seeing or hearing animals.

At Newport Wetlands and Magor Marsh the wildlife can be shy and hard to see; students could come up with a list of how to be good observers of nature.

Things to consider:

- How much noise to make;
- Keeping close together or spread out;
- Where to look;
- Where to walk.

Ideally, creeping or walking slowly like mice, with eyes and ears looking and hearing all around, is best for looking for shy wildlife. Keeping voices low and walking along regularly used paths means mammals such as water voles are likely to carry on as normal.

The reeds at both sites make seeing birds quite difficult. Listen instead for birds singing in the spring such as cuckoos, reed warblers, sedge warblers and blackcaps. You can hear and check their songs by finding them on the RSPB's A-Z of birds, rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z

Mute swans, moorhens, coots and little grebes at both sites are more used to people and more likely to stay nearby.

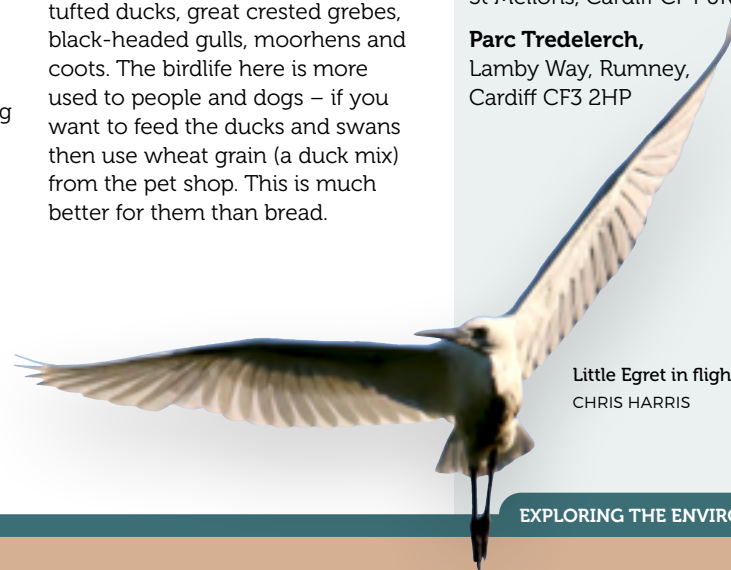
At places such as Hendre Lake Park and Parc Tredelerch, the wildlife that is easiest to see are birds, especially those living on the water. These include mute swans, mallard ducks, tufted ducks, great crested grebes, black-headed gulls, moorhens and coots. The birdlife here is more used to people and dogs – if you want to feed the ducks and swans then use wheat grain (a duck mix) from the pet shop. This is much better for them than bread.



Location details for the two parks:

Hendre Lake Park,
Water Avens Close,
St Mellons, Cardiff CF4 0RG

Parc Tredelerch,
Lamby Way, Rumney,
Cardiff CF3 2HP



Little Egret in flight
CHRIS HARRIS

EXPLORING THE ENVIRONMENT

Inspiration for reading and drawing

Bee

BRITTA TECKENTRUP
(ILLUSTRATOR)
AND **PATRICIA HEGARTY**
LITTLE TIGER PRESS

A wonder of nature is about to unfold. Turn the pages to follow the miraculous little bee and its journey from flower to flower in this delightful peep-through picture book. Brought to life by the lyrical text and stunning artwork from the award-winning Britta Teckentrup, the miracle of pollination will amaze and entertain.



Bugs

SIMON TYLER
PAVILION

Bugs are fascinating, and in this book we get close to over 50 different and fantastic bugs including the biggest, smallest and most amazing bugs in the world, the most beautiful and the ones with the strangest habits. This book shows all types of insects in colourful detail and tells you all about their senses, defences, camouflage, how they catch prey, where they live and more. Become a bug expert and see their real beauty with this stunning book.



THE BIG PICTURE

Shrill Carder Bee

This is the rare shrill carder bee. It is only found in a few places in the UK; **one of those is the Gwent Levels.**

Compare it to the common carder bee and a buff-tailed bumblebee. What are the differences? What features would you use to spot one?



IMAGE: ED DREWITT