Land

This education pack was produced by two long standing partnerships, The Pen Llŷn a'r Sarnau SAC and the Llŷn Partnership. All the organisations represented in these partnerships are shown below:

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TRINITY HOUSE

Powys

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SEVERN TRENT WATER

For more information and extra resources please visit:

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Welcome...

Teacher's pack

In Wales we are lucky enough to have a huge variety of habitats within our borders. Our mountains are some of the highest in the UK; we still have areas of ancient woodland, blanket bog and coastal heath, to name but a few. These habitats are incredibly scarce in other parts of the UK. Wales' importance can be seen by the numerous protections and designations it has. There are three National Parks, five Areas of Outstanding Natural Beauty, twenty Special Protection Areas for vulnerable birds, ninety two Special Areas of Conservation and hundreds of nature reserves and Sites of Special Scientific Interest. This wealth of habitats is home to thousands of species - some of which are unique to Wales. So much of our health, well-being and economy depends on our ecosystems remaining healthy and resilient to change. Our terrestrial ecosystems provide us with most of our food and a lot of the raw materials that power our industries and fuel our economy. Healthy well functioning terrestrial ecosystems help clean our air and protect us against hazards, such as flooding and climate change. Now more than ever it is important that we all gain more understanding and respect for the natural habitats we live alongside.

How to use this pack:

Each topic begins with a basic introduction and ideas for further study. Every activity within that topic starts with the teachers instruction sheet and then the pupils worksheets. (These can also be found as separate sheets to be printed directly from the electronic resources).

The symbols below are found in the top right-hand corner of every activity and provide a quick reference guide for preparing and planning:

Activity booklet type, in this case Land

Activity takes place outside or inside

Individual, partner or group activity

Time of year this activity is suitable for - spring, summer, autumn, winter, or all year

Time this activity takes to complete

Where to get more information:

This printed pack is intended to act as a starting point for a much bigger collection of activities that will regularly be updated. These resources will be made available on the Pen Llŷn a'r Sarnau SAC website as they are created and further physical additions will be issued as and when funding becomes available. All activities are available as separate downloads on the website.

Activity overview

This provides an overview of all the activities provided in this edition of Tir a Môr. The key stage information is just to use as a guide. All the activities can be expanded by the teacher to cater for varying levels of abilities and interests. Most activities can be done year round but if there are any that require a specific season they are shown on the activity sheet.

Teacher's pack

Activity name	Booklet	Topic	Key stage	Outdoor / Indoor
Safe place game	**Land**	Habitat loss	KS1	Either
Habitat match	**Land**	Habitat loss	KS2	Indoor
Corridors	**Land**	Habitat loss	KS2/3	Indoor
Build a bug hotel	**Land**	Hibernation	KS1/2	Outdoor
Hibernation match	**Land**	Hibernation	KS2	Indoor
Heathland hunt	**Land**	Choughs	KS1/2	Either
Legends	**Land**	Choughs	KS1/2	Indoor
River speed	**River**	Invasive species	KS2/3	Outdoor
Species survey	**River**	Invasive species	KS2/3	Outdoor
Match it	**River**	Invasive species	KS3	Indoor
Which one am I?	**River**	Invasive species	KS2	Indoor
Ollie Otter's diary	**River**	Otters	KS1/2	Indoor
Make me	**River**	Otters	KS1	Indoor
Water wheel	**River**	Water cycle	KS2	Indoor
Salty saucers	**River**	Water cycle	KS1/2	Indoor
Strandline hunt	**Sea**	Strandline	KS1/2/3	Outdoor
Sea search	**Sea**	Strandline	KS1/2	Indoor
Hidden haiku	**Sea**	Strandline	KS2	Indoor
Find the food chain	**Sea**	Food chain	KS1/2	Indoor
Predator versus prey	**Sea**	Food chain	KS1/2	Either
Make a food chain	**Sea**	Food chain	KS2	Indoor
Beach detectives	**Sea**	Pollution	KS1/2/3	Outdoor
Coconut Crusoe	**Sea**	Pollution	KS1/2	Indoor

Habitat loss

Habitat loss

Teacher's pack

Topic: Habitat loss

Introduction:

Over time species become adapted to the environment they live in. The natural home of a species is called a habitat. Habitat is lost when the environmental conditions no longer support the species that were adapted to it. This can happen due to a number of factors including pollution, climate change, deforestation, development and intensification of agriculture.

Changes to conditions or complete loss of a habitat mean that species lose their niche and they will then have to compete with species they would not normally compete with for food and shelter. They may have to deal with predators that they would not normally encounter. These new stresses mean that populations are likely to decline.

Habitat loss in one area can put extra pressure on habitats in other areas. Each habitat can only support a certain number of individuals. If populations move from one area to another they still might not thrive because the existing population will be using all of the resources.

A healthy environment consists of a mosaic of habitats, where animals can move freely between them. This stops populations becoming isolated and inbreeding. As habitats become more fragmented these 'green' corridors become increasingly important. They allow species to move between areas of appropriate habitat and enable them to fulfil all of their survival needs.

Interesting facts:

- Around half of the world's original forests have disappeared. They are still being removed at a rate 10x higher than any possible level of regrowth.
- Habitat loss poses the greatest threat to species worldwide.
- In the UK farmland birds have declined by 56% between 1970 and 2015.
- Only 12% of woodland in Wales is ancient and semi-natural, and much of it is degraded and fragmented.
- Wales has lost 30% of its sand dunes since 1900.

Further research keywords:
State of Nature report, extinction vortex, wildlife corridor, toad crossing, green bridges, habitat mapping

30 mins

Safe place game

Activity guide:

Equipment required:

- Hula hoops or floor mats
- Whistle

Before the game:

1. Spread hula hoops or mats around the game area to represent the animal habitats.

To play the game:

1. Explain that animals use their habitats as a refuge to keep them safe from predators.

2. The class runs around the game area acting as if they are feeding.

3. Whistle blows - this means danger. All the children must get to the safe habitat before the whistle stops.

4. Anyone who hasn't made it into the safe areas are out and have to sit on the side.

5. In every round, mats / hula hoops are removed, making fewer safe places and further apart.

6. The effects of habitat loss can then be talked about and children can discuss how much harder it was to get to safety as the habitat disappeared.

Habitat match

Activity guide:

Equipment required:

- Print the 'Habitat match' worksheet for all pupils

Answers - Habitat match

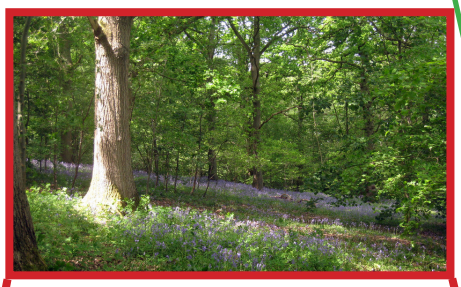
Farmland

Coastal

Heathland

Woodland

Freshwater



- Grey seal
- Shore crab
- Otter

- Kingfisher
- Otter
- Trout

- Barn owl
- Brown hare
- Yellowhammer

- Chough
- Heather
- Gorse

- Badgers
- Tawny owl
- Jay

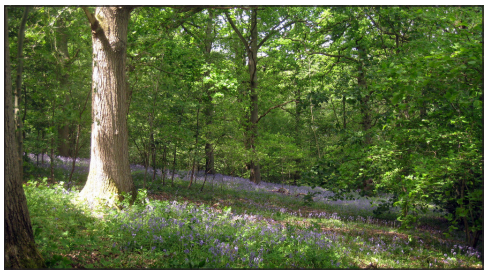
Habitat match

Game rules: Match the habitat name to the photo and some of the species that live there by drawing a line between them.

Farmland

- Grey seal
- Shore crab
- Otter

Coastal



- Kingfisher
- Otter
- Trout

Heathland

- Barn owl
- Brown hare
- Yellowhammer

Woodland

- Chough
- Heather
- Gorse

Freshwater

- Badgers
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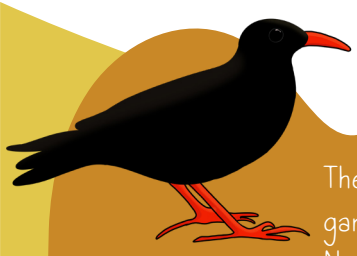
- Jay



The total size of all the UK's gardens is bigger than all our National Nature Reserves.

1 hr

Corridors

Activity guide:

Equipment required:

- Print the two 'Corridors' worksheet for all pupils
- Coloured pencils or pens
- Scrap paper

To complete the sheet:

1. Explain that animals use their habitats for different things and being able to move between different areas is very important.

2. Each pupil begins work on the worksheet, trying to find a way to fit different land uses in whilst still allowing travel between habitat areas.

3. Pupils invent and draw ways for the animals to cross any features that block their route.

Corridors

Wildlife corridors: Wildlife corridors are a way of keeping areas of habitat connected even when development cuts off areas that were previously linked. They allow animals to move safely across large areas. They can take many forms including; hedgerows, road verges, field margins and urban gardens.

Game rules: The grid already contains roads and rivers. You must add 30 green habitat squares and 30 red town squares to the grid. You need to make sure there is a green path from the start to the end that animals can follow safely. They can only move between squares that are next to each other, not diagonally.

Whenever your route has to cross a road or a river you must invent a safe way for the animals to cross it. Draw and describe your invention below:

Loss of forests causes more CO^2 emissions than all the world's transport.

Corridor game board

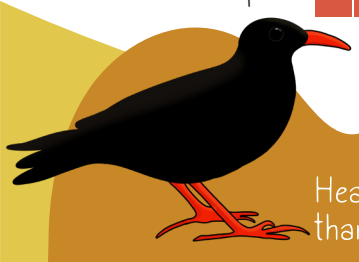
End

Start

30 habitat squares

30 town squares

* Tick off each square as you add it to the grid



Heathland is a rarer habitat than rainforests.

Hibernation

Topic: Hibernation

Hibernation

Teacher's pack

Topic: Hibernation

Introduction:

Hibernation is used by some animals to help them survive through periods of environmental stress - like winter's extreme cold and lack of food. Hibernation is different from sleeping due to the difference in the way the organism's body operates. A hibernating animal's body temperature falls to nearly the same temperature as their surroundings, their heart rate and breathing rate decrease, and their metabolism slows right down. This allows them to use minimal energy to get through periods of time in which they would otherwise use huge amounts of energy to keep warm. Before entering hibernation the animal must prepare by adding as much fat as possible by eating huge amounts. Because hibernation takes place in winter the animals can take advantage of the late summer gluts of food.

Although hibernation has evolved to increase the chances of an animal making it through winter it can still be dangerous because the slowing down of all the body's systems means that the animals cannot respond quickly and so they become vulnerable to predators. They can also starve from lack of fat reserves, severe weather or being woken up too soon before food has become available again.

In the UK mammals like hedgehogs, dormice and bats hibernate as well as amphibians and reptiles like the common frog and the adder. You might be surprised to find out that some insect species like peacock and small tortoiseshell butterflies, ladybirds, Queen wasps and bumblebees also hibernate over winter.

Animals need to find somewhere safe and sheltered to spend the winter where they won't be disturbed and where the temperature remains stable. You can help by building winter homes for wildlife in your garden or school grounds.

Further research keywords:
Aestivation, torpor, denning, hibernaculum, dormancy, hyperphagic, metabolism, endotherm, ectotherm, phenology - nature's calendar

1 - 2 Hours

Build a bug hotel

Activity guide:

Equipment required:

- Print out the worksheets, one per group
- Wooden pallets or planks of wood
- Bricks
- Old plastic bottles
- Bamboo canes
- Straw / leaves / twigs / bark / stones and pebbles
- Tiles
- Cardboard

To build the hotel:

The best time to build a bug hotel is in the autumn because the materials are more freely available but you can build them at any time.

1. Divide the pupils into a few groups. If you have enough equipment then each group could make their own hotel, if not you could divide up the jobs instead, for example one group fills the plastic bottles, one group stacks the pallets, one group pots up plants for the top, make the sign etc.

2. Stack the pallets or planks of wood using the bricks in between each layer so that you create lots of small rectangular sections.

3. Fill the sections with different combinations of items to create different sizes and types of gap and crevice.

4. Fill gaps with leaves and straw.

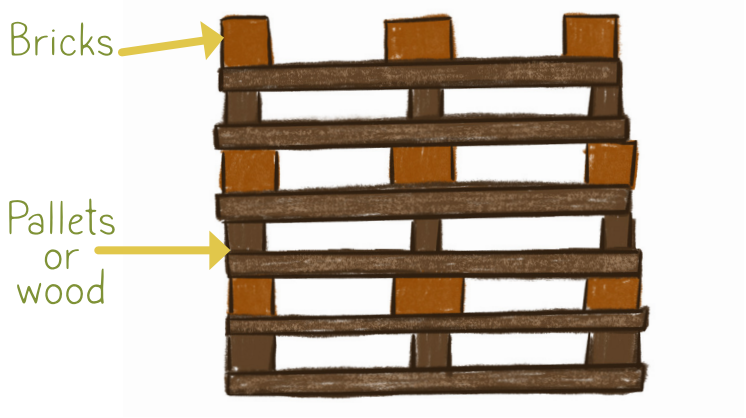
5. Add plants or turf to the top of the pallet stack.

6. The completed structure can be decorated; maybe include a hotel name sign or insect pictures painted on wood and stones.

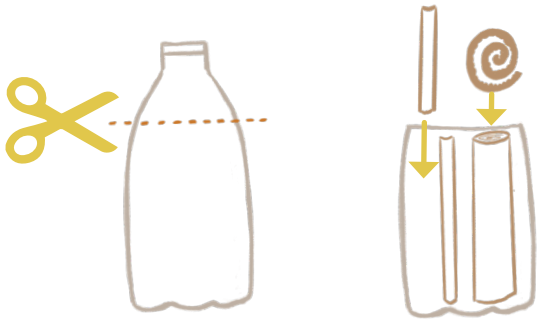
Bug hotel

Help insects get through the winter by building a bug hotel. Make sure it's got lots of different materials, gaps and crevices so that lots of different kinds of insects can live there.

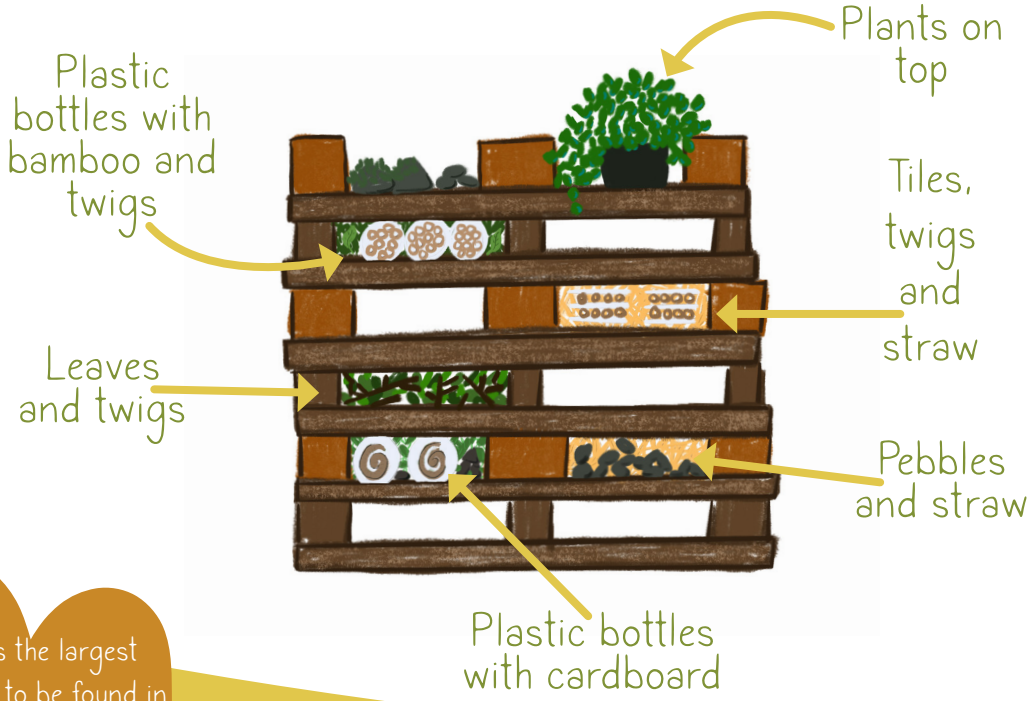
1) In groups, stack up your pallets or bigger pieces of wood in between bricks so that you end up with little sections.

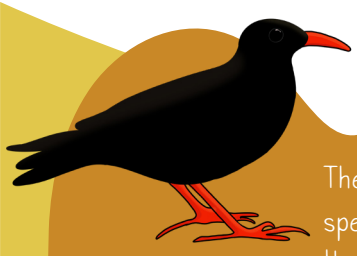


2) Fill your plastic bottles with the bamboo canes or rolled up cardboard. Make piles of tiles and twigs.



3) Fill in the gaps with straw, leaves, twigs and pebbles. Make all the sections different and fill all of them up. Add plants to the top.





The stag beetle is the largest species of insect to be found in the UK.

Hibernation match

Teacher's pack

Topic: Hibernation

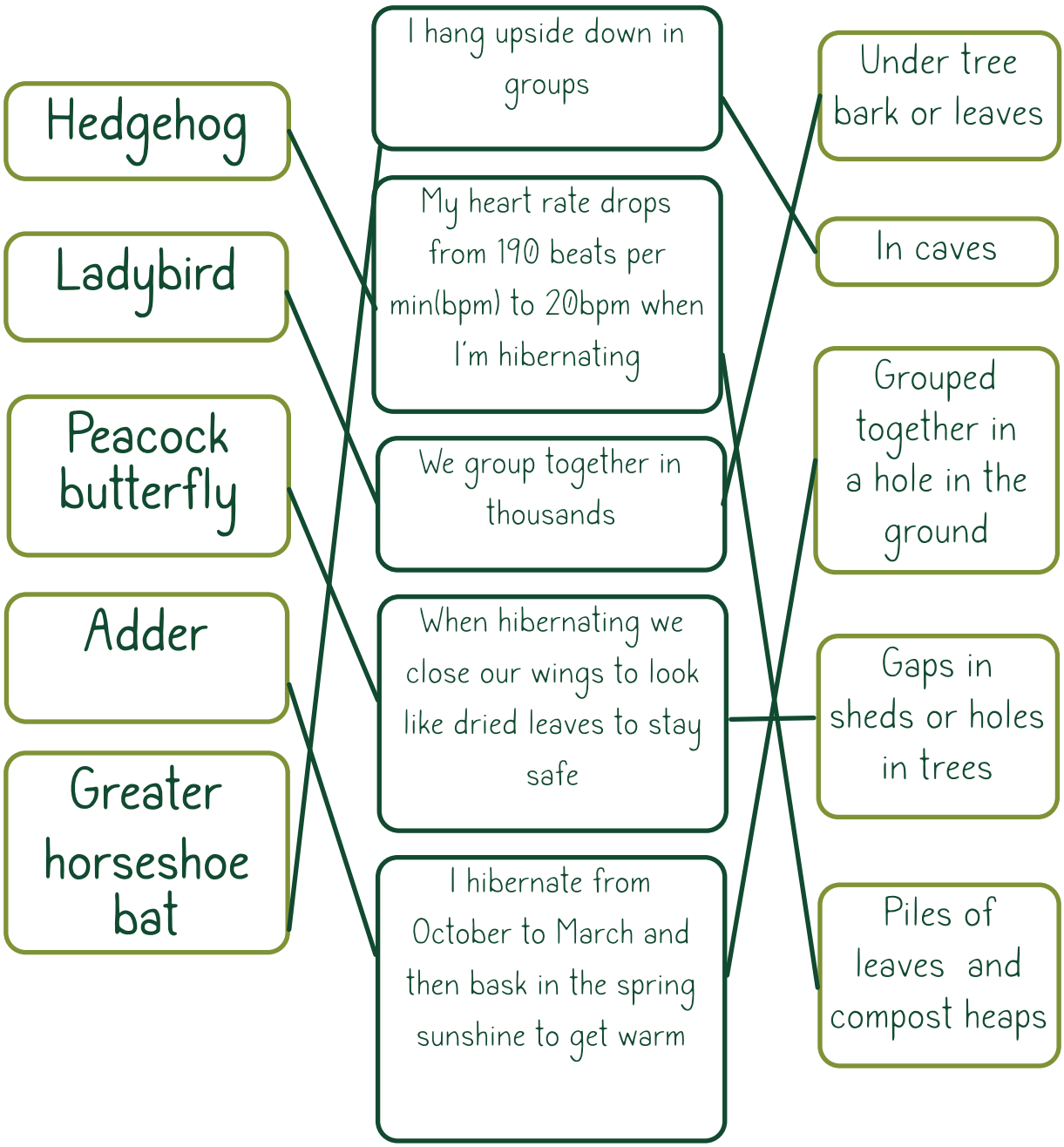
KS: 2

Activity guide:

Equipment required:

- Print the 'Hibernation match' worksheet for all pupils

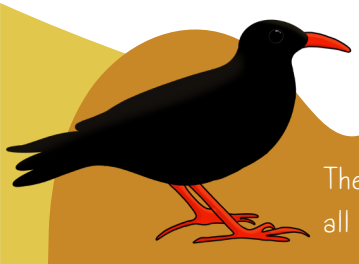
Answers - Habitat match



Hibernation

Game rules: Match the animal name to the fact about their hibernation and then to where they hibernate. Colour in the matching boxes in the same colour.

Hedgehog	I hang upside down in groups	Under tree bark or leaves
Ladybird	My heart rate drops from 190 beats per min(bpm) to 20bpm when I'm hibernating	In caves
Peacock butterfly	We group together in thousands	Grouped together in a hole in the ground
Adder	When hibernating we close our wings to look like dried leaves to stay safe	Gaps in sheds or holes in trees
Greater horseshoe bat	I hibernate from October to February and then bask in the spring sunshine to get warm	Piles of leaves and compost heaps



The 17 species of British bat all hibernate during the winter.

Choughs

Topic: Choughs

Choughs

Teacher's pack

Topic: Choughs

Introduction:

The chough, pronounced 'chuff' like rough, is a glossy black bird with bright red bill and feet. Once common across the UK, it is now found only in small patches of coast in Wales, Cornwall and some of the Scottish islands. Its name is founded in the 'chee-ow' sound that the bird makes. The chough is part of the same family as crows and jackdaws and shares their high intelligence. They are renowned for their aerial acrobatics, soaring high above coastal cliffs, swooping and wheeling around each other. People often say that choughs look as if they are playing and really enjoying flying.

A good place to see choughs is the coast of the Llŷn peninsula. Choughs need a specific habitat in order to thrive. They feed on tiny invertebrates like ants and so need vegetation that is kept short enough for them to forage but long and varied enough for invertebrates to thrive. The grass is kept at its perfect height either by grazing animals or by the harsh wind and salt in coastal cliff areas. The species is vulnerable to changes in farming practices that make the habitat unsuitable for feeding.

Choughs have long been a fascination for people. Hundreds of years ago they, along with other members of the crow family, were kept as pets. One of the most famous legends to feature these fascinating birds is that of King Arthur, and it is said that he did not die in battle but instead his soul migrated into the body of a chough.

Coastal heathland:
There are a few different types of heathland in the UK. Choughs make their home in coastal heathland. These open landscapes comprise mainly of small, hardy shrubs such as heather and gorse, patch-worked with grazed farmland. The strong winds and very salty air of the coast mean that vegetation cannot grow particularly tall and trees can not take hold. They are home to a specialised set of plants and invertebrates that in turn feed larger birds and animals. Open lowland heathland is a rarer habitat than rainforest and west Gwynedd is one of the areas of the UK that still has a significant amount.

Further research keywords:
Pyrrhocorax pyrrhocorax, Cornish chough, heathland, corvid, Llŷn Peninsula, British Trust for Ornithology, grazing, bird ringing, conservation, red-billed chough

30 mins

Heathland hunt

Activity guide:

Equipment required:

- Printed species sheets (L_C_ 1)
- Reward tokens
- Sheet of facts

To play the game:

This game can be played outside with children running to stand behind the correct answer or in a classroom with children voting for the correct answers with slips of paper with their names on or putting their hands up. The instructions below are for the outdoor version.

1. Lay out the photos of the six species on the floor with enough space around them for the children to gather.

2. Read out the facts one by one. The children run to whichever species they think the fact is referring to.

3. The children behind the correct species are given a token.

4. Keep repeating until someone reaches six tokens.

5. The facts and species can then be discussed as a class.

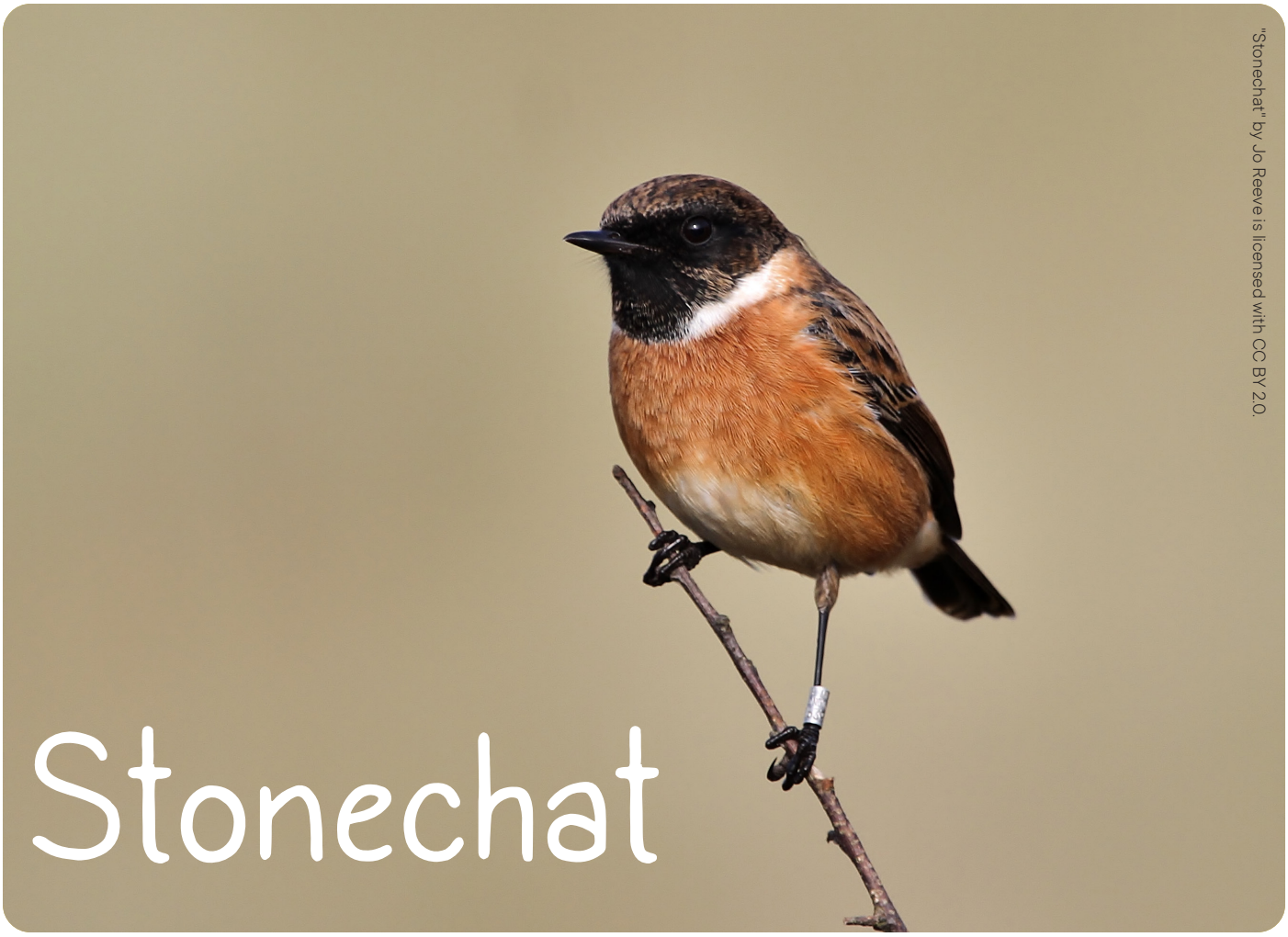
Heathland hunt

Facts:

- We can reach speeds of 45mph **- Hare**
- We give birth to between 6 and 20 live young **- Adder**
- We have a wingspan of 20cm **- Stonechat**
- We nest in sea caves, old mine workings, abandoned buildings **- Chough**
- We need to use the sun to warm up **- Adder**
- It has sharp spikes to deter grazing animals **– Gorse**
- We pair for life **- Chough**
- We can frequently be seen sitting on the top of gorse bushes **- Stonechat**
- We are thought to have been introduced into the UK in Roman Times **- Hare**
- Can be used as a yellow dye **– Gorse**
- Is also called 'ling' **- Heather**
- We love to eat ants **- Chough**
- It used to be used to make brooms **- Heather**
- It smells of coconut **- Gorse**
- We have a sharp loud call that sounds like two stones being hit together **Stonechat**
- It can live for over 40 years **- Heather**
- We do not dig burrows but shelter in 'forms', which are shallow depressions in the ground or grass **- Hare**
- We have red eyes **- Adder**


Photo by Vincent van Zalinge on Unsplash
Hare


Chough by Jean-Jacques Boujot is licensed with CC BY-SA 2.0.
Chough




© Samantha Bryan
Gorse


Adder
"Adder - Yateley Common" by naturalengland is licensed with CC BY-NC-ND 2.0.

1 hr

Legends worksheet

Teacher's pack

Topic: Choughs

KS: 1/2

Activity guide:

Equipment required:

- Print the 'Legends' worksheet for all pupils
- Pencils or pens

To complete the sheet:

1. Discuss the idea of legends and how they were used to explain a lot of the natural world before science.

2. Each pupil uses their worksheet to map out the main points of their legend on the story board and draws pictures to accompany them.

Legends

Choughs are part of many legends. Their playful acrobatics and cleverness have inspired many stories. Write your own legend about chough, and fill in the boxes below with drawings and words that tell your story. Remember to plan ahead because you only have six boxes to tell your whole story.

Choughs live for an average of 7 years.


For more information and extra resources please visit:
www.penllynarsarnau.co.uk
or email:
info@penllynarsarnau.co.uk

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