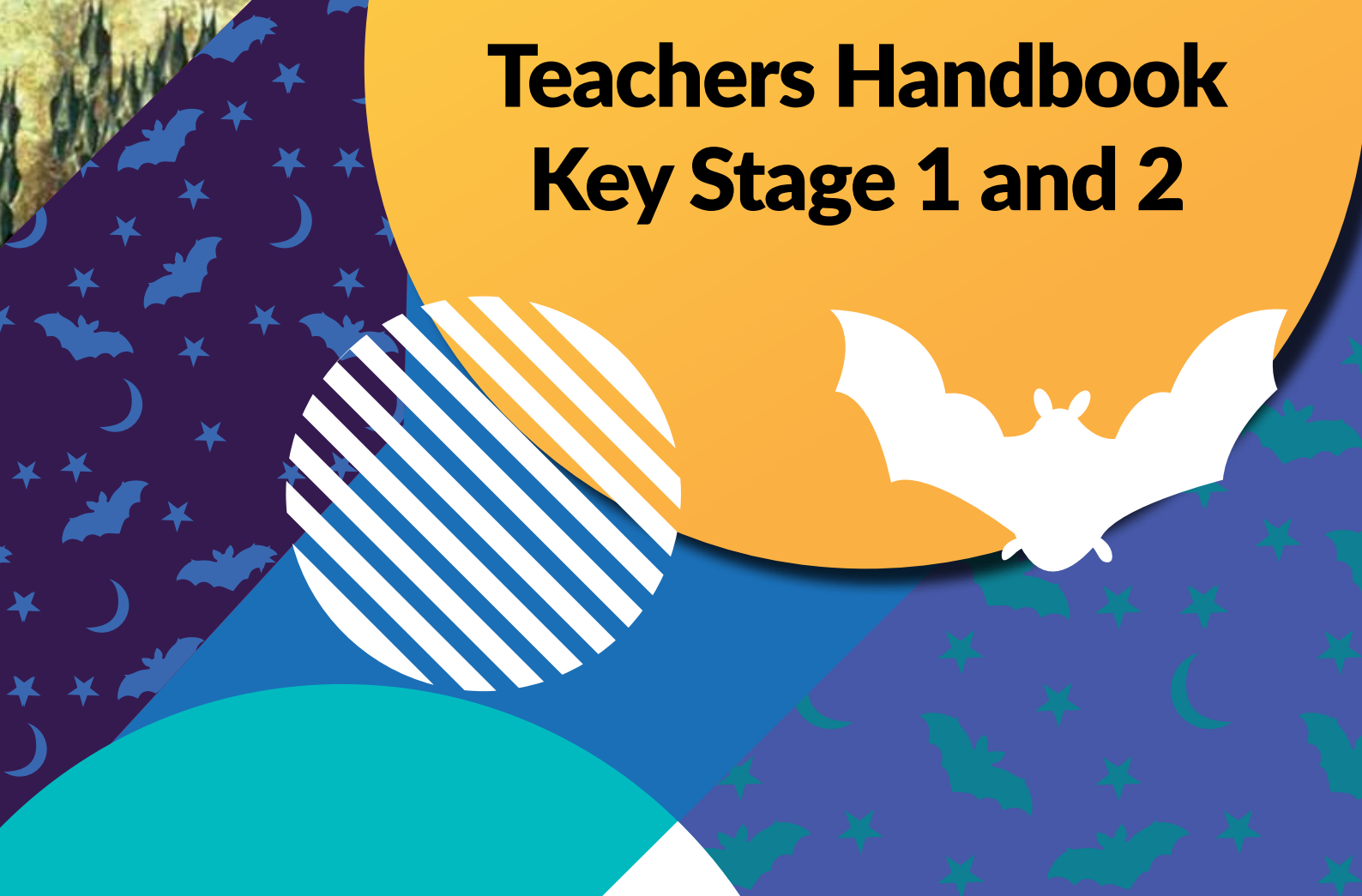




Bats A Fact!

Teachers Handbook
Key Stage 1 and 2



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1. Executive Summary

The Northern Ireland Bat Group was formed in 1985, the year when bats first achieved protected status in the province. The Group's members, who come from all walks of life, share a common interest in bats and their conservation. The Northern Ireland Bat Group was awarded charitable status in 2015.

What does the Bat Group do?

The Bat Group carries out a number of activities including:

- Providing advice about bats to individuals and businesses
- Recording and collating bat records which are passed on to CEDaR
- Giving talks on bats to groups of all ages
- Cooperating in bat conservation and research projects
- Providing training for members wishing to apply for a Volunteer Roost Visitor License.

About our funding

The Northern Ireland Bat Group receives funding from the Northern Ireland Environment Agency, Environmental Recorder Group and NIEA Challenge Fund for education and monitoring. The Northern Ireland Bat Group website is funded through the Heritage Lottery Fund. The Heritage Lottery fund is key to supporting many of the group's educational and outreach activities, bat care programme and bat box project. This education resource is funded by the NIEA Challenge Fund.

2. Introduction

This education resource has been designed for primary school teachers, to assist with the delivery of Key Stage 1 and Key Stage 2 National Curriculum, which will focus on the following areas of learning:

- The World Around Us;
- Language and Literacy;
- Mathematics and Numeracy; and
- The Arts.

The Bats a Fact project involves four key themes:

- Bats around the world;
- All about bats;
- Bats and the environment; and
- Bats in culture and heritage.

The project aims to provide an interactive, engaging and fun learning experience, to ensure primary school pupils are aware of these amazing mammals.

We wish to thank the NIEA Challenge Fund for funding the project and Creggan Country Park for creating the education resource.

To make the resource more user friendly, activities have been colour coded according to the time it takes to complete (Table 2.1), suitability to Key Stage 1 and 2 (Table 2.2) and lesson plan themes (Table 2.3).

Table 2.1: Activity times

LENGTH OF ACTIVITY	CODE
30 minutes or less	
1 hour	
Morning or afternoon session	

Table 2.2: Key Stage activities

KEY STAGE	CODE
Key Stage 1	1
Key Stage 2	2
KS1 and KS2	3

Table 2.3: Themes

THEME	COLOUR
Bats around the World	
All about bats	
Bats and the environment	
Bats in Culture and Heritage	

3. Curriculum Compliment

3.1. Project aim

To raise awareness on bats and their impact on the environment, heritage and culture.

Table 3.1: Area of Learning: The World Around Us

	Learning outcome
Strand 1 Interdependence	The project will highlight the importance of bats for the environment, human health, culture, tourism and economy. Pupils will: <ul style="list-style-type: none">• Learn how plants and animals rely on each other in the natural world;• Learn what influences plant and animal life (river, forest and urban habitats);• Interdependence of people and the environment, for example, rivers; and• Positive change and how they each have responsibility to make an active contribution, for example, carrying out a roost count or making a bat box.
Strand 2 Movement and energy	Pupils will explore the world of bats and discover: <ul style="list-style-type: none">• How bats use echolocation to find their way around and catch their prey; and• Why some animals in the habitat might move to another place for example some bat species migrate to caves in winter.
Strand 3 Place	Pupils will be aware of how bats have influenced culture and heritage. Pupils will learn: <ul style="list-style-type: none">• That they share their world with other living things;• That bats use a variety of structures to roost;• That there are over 1300 different bat species around the world and• That some animals will adapt to their environment (pollination of flowers by bats with long tongues).
Strand 4 Change over time	Pupils will learn: <ul style="list-style-type: none">• That change has taken place in a variety of habitats over time i.e. loss of woodland

3.2. Curriculum Links

Table 3.2: Other areas of learning

Areas of Learning	Language and literacy	Mathematics and numeracy	The Arts
Outcomes	These activities will develop language and literacy skills in pupils through Talking and Listening, Reading and Writing. Classroom activities will involve creative writing to include poetry and storytelling. A written quiz will also develop literacy and language skills in pupils.	Pupils will use numeracy skills to calculate the number of midges eaten by bats in a single night. Pupils will use probability and mathematics.	Pupils will have the opportunity to experiment with a range of media, tools and processes. Pupils will create bat masks, clay bats, posters, PowerPoint presentation on a bat species of their choice and will take part in a drama based 'Bat-Moth game.'

4.1. Bats around the World

Lesson Objective:

To raise awareness on bat species around the world

Teaching Guidelines:

- There are over 1300 bat species worldwide
- Bats have evolved over at least 60 million years to survive in wildly varied habitats and food chains
- Bats belong to the order Chiroptera meaning 'hand-wing'
- Bats are split into two major groups – mega chiroptera (mega bats) and micro chiroptera (micro bats)
- Mega bats can be found in Australia, Asia and South America.
- Northern Ireland is host to eight resident bat species – all micro bats.
- The UK Mainland is host to eighteen bat species
- The largest bat in the world is the Giant Golden Crowned Flying Fox
- The smallest bat in the world is the Kitti's Hog Nosed bat or 'Bumblebee bat'
- Most bats are nocturnal meaning they are only active at night, but there are some day flying bats in the world.
- Bats are literally everywhere – except for the regions surrounding the North and South poles and remote islands.
- With at least 219 species, Indonesia has more bat species than any other country.
- Vampire bats are real and can be found in central and south America
- Chapin's bat is one of the most unusual bats in the world and can be found in the rainforests of south Africa
- The Banana bat in Mexico is unusual in that it has a very long snout. They mostly feed on nectar, and have become an important pollinator in the tropical regions of the country



Figure 4.1 - Banana Bat

4.1. Bats around the World

3 Activity 1: Bats on a Map

Start the lesson with the 'Bats a Fact' slide show using the section marked 'Bats around the World.'

Hand out Activity Sheet 1 and ask pupils to draw a bat symbol on the continents where bats are found. The map should look like the one in Figure 4.2. Pupils can colour in the map afterwards.

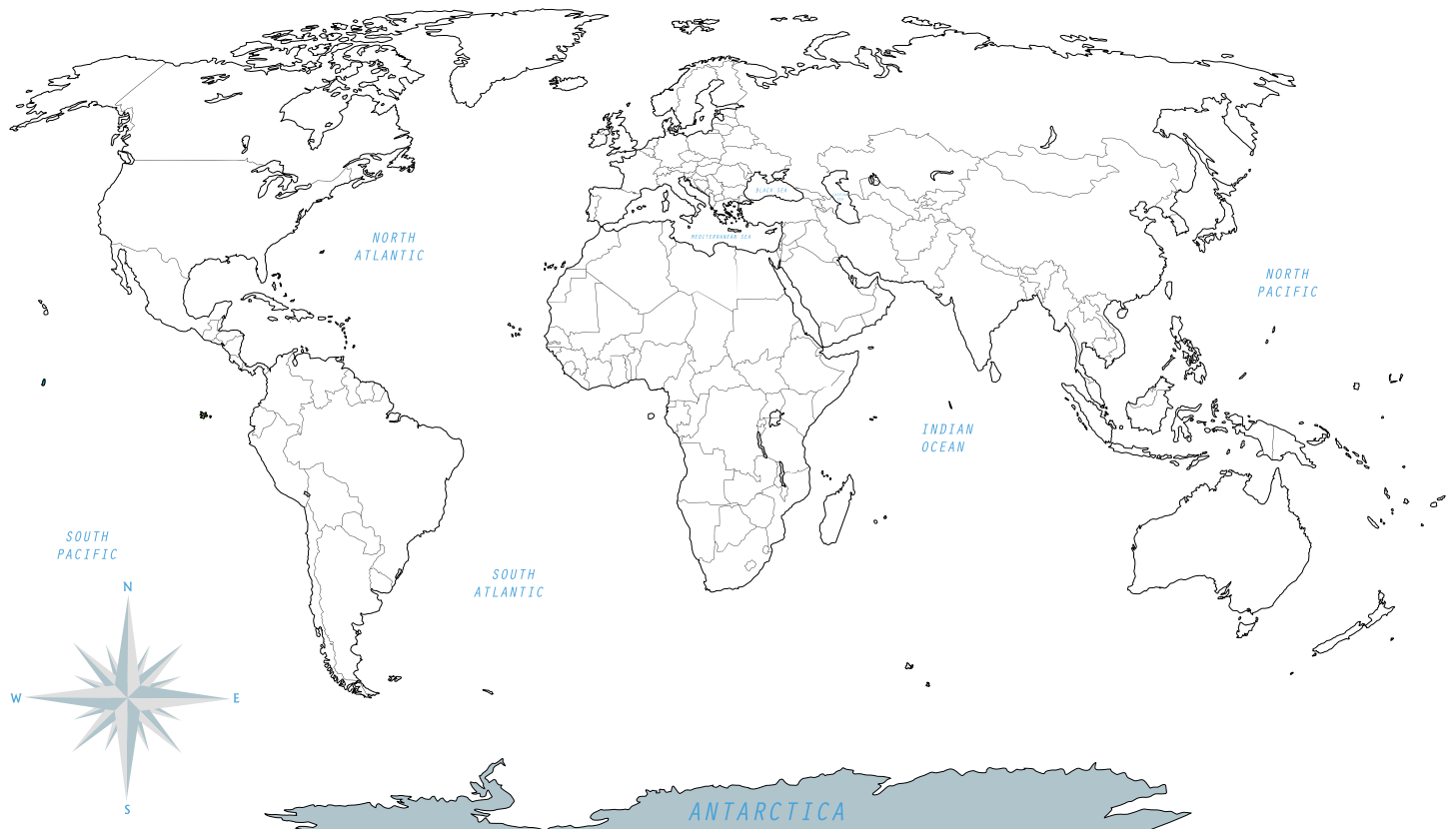


Figure 4.2

2 Activity 2: A World Full of Bats

Ask pupils to colour the species rich map (Figure 4.3) onto a blank map of the world.

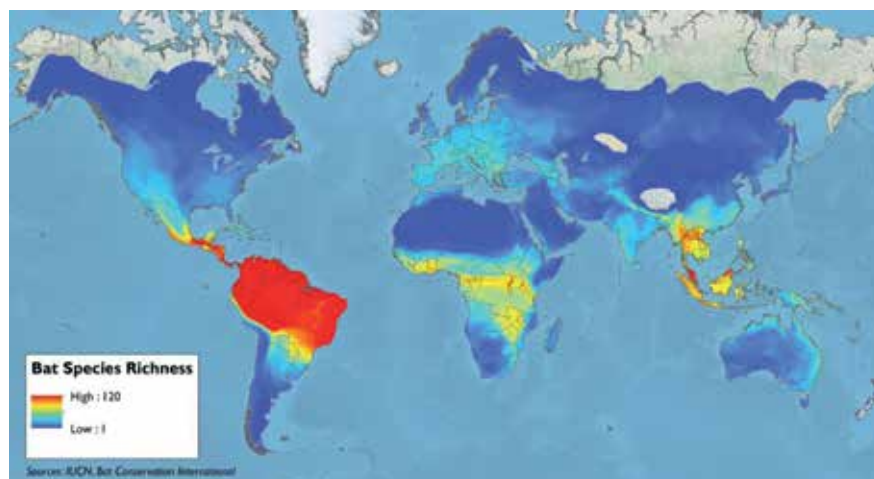


Figure 4.3

3 Activity 3: Diary of a mega bat

Pupils will write a diary entry for the bat in figure 4.4 discuss with pupils:

- Pupils research Megachiroptera online:
http://www.bats.org.uk/pages/bats_of_the_world.html
- What is its name? Pupils choose a name for their diary
- What do you think he eats? Fruit
- What would he do on a typical day? For example, seek shelter in trees during hot weather, communicate with others in his colony, eating fruit and grooming.

Refer to Activity Sheet 3.



Figure 4.4

4.2 . Bats around the World

3 Activity 4: Read more about bats online batcon.org bats

Using ICT, pupils could access Bat Conservation websites from around the world and learn more about bats around the world and the work of bat charities.

Northern Ireland: www.bats-ni.org.uk

United Kingdom: www.bats.org.uk

International: www.batcon.org

4.2 . All About Bats

Lesson Objectives:

- To familiarise pupils with the biology and habits of native bats;
- To debunk common myths surrounding bats;
- To raise awareness on bat species found in Northern Ireland; and
- To highlight simple ways to help bats.

Teaching Guidelines:

Refer to 'Bats a Fact' slideshow section marked 'All about Bats.'

Unlike the picture painted by myths and superstitions, bats do not live their lives isolated in dark caves; rather, they interact on a daily basis with the same fields, forests, and waterways that we do. Likewise, their services to the environment, to agriculture, and to human health and welfare are available all around us, sustaining our ways of life. There is a close connection between bats and people around the globe. Bat conservation is in our common interest.

What is a bat?

Show pupils the image on slide 1. Ask them what words come to mind when they see the image. Create a table with two columns on the white board. In column one, write 'Before' and in column two write 'After.' Write words down in the 'Before' column to be referred to later.

Deliver 'All about bats' section of the slide show which will highlight that:

- Bats are the only mammal in the world capable of true flight.
- Bat wings are similar to a human hand, it is made up of a shoulder, elbow, wrist, four fingers and a thumb. If we were bats, our fingers would touch the ground.
- A bat rests in a roost during the day before flying out at dusk to feed on insects.
- Bats are more closely linked to dogs than they are to rats and mice.



Figure 4.5: Bat wing



Figure 4.6: Baby pipistrelle bat or pup



Figure 4.7: Leisler's bat

- Bats are not rodents. They do not build nests, chew wires or bring food into their roost.
- A female bat will give birth to one baby each year, it is called a pup.
- Mum feeds her baby with milk.

Batty Myths

Ask pupils: 'What is a myth?' Answers should include a made up story or something that is not true.

Common bat myths:

- Bats do not get tangled in your hair
A bat will only fly close to you to feed on the midges surrounding you.
- Irish bats do not drink blood
Bats in Ireland only eat insects. Vampire bats can be found in Central and South America and feed on blood of birds and mammals.
- Blind as a bat?
No bats are not blind they can see just as well as we can.

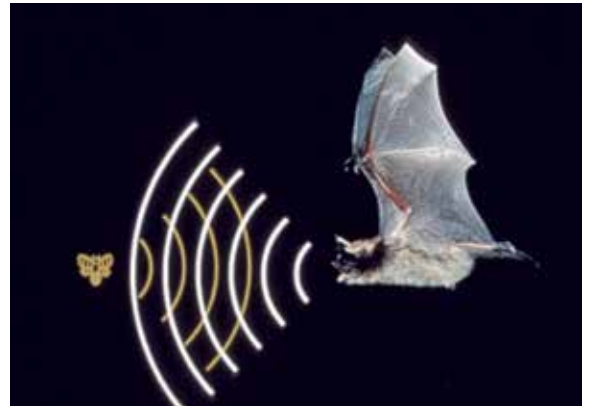


Figure 4.8: Bat hunting a moth using echolocation

Bats in Northern Ireland

There are eight species of bats in Northern Ireland, all of our bats eat insects to include midges, moths, spiders, beetles and centipedes.

The smallest bat in Northern Ireland is the pipistrelle bat, it weighs only four grams and can fit into a match box. The largest bat in Northern Ireland is the Leisler's bat and his body is the size of the palm of your hand.

Bats in Northern Ireland hibernate in the winter to conserve energy as there are no insects for them to eat.

3 Refer to Activity sheet 7: Batty Food Game.

Echolocation

Echolocation is how micro bats find their way around and catch their prey at night. To echolocate, bats send out sound waves from their mouth or nose.

When the sound waves hit an object they produce echoes.

3 Refer to Activity Sheet 6: Bat-Moth game. Using the interactive whiteboard, visit: <https://www.youtube.com/watch?v=Hr-Y2Tt8gFE> and ask pupils to sing along.

A Year in the Life of a Bat



January

Bats spend most of the winter hibernating, a state of inactivity characterised by lower body temperature, slower breathing, and lower metabolic rate.



February

Bats are still hibernating. They have little fat left to live off of now. They may leave the roost on warmer nights to find food and a drink of water.



March

Bats may begin to emerge and signs of limited activity can be seen. There are small numbers feeding as it gets warmer. In bad weather, they may become torpid.



April

Bats have mainly come out of hibernation and are hungry and active, feeding on most nights. They may move between several roost sites and can become torpid (cool and inactive) again when cold.



May

Bats are fully active and feeding. Females start forming maternity colonies and looking for suitable nursery sites, such as buildings or trees. Males roost on their own or in small groups.



June

Female bats usually give birth to a single pup, which they feed on their milk. Young bats are very small (less than an inch) with thin, slightly grey fur. Adult bats will catch thousands of insects each in a night.



A Year in the Life of a Bat



July

Mothers continue to suckle babies. Some bats grow fast and are almost full-size; others are still very small. At around three weeks, young bats are sometimes found on the ground as they learn to fly.



August

At six weeks old, the young bats begin to catch insects for themselves and no longer need their mothers' milk. The summer maternity colonies begin to disperse and bats may move to mating roosts.



September

Mating season begins. Males of most species use special calls to attract females, which can include purrs, clicks, and buzzing. Bats also concentrate on building up fat stores for the coming months.



October

More mating is taking place, and building up fat reserves is becoming crucial to survive the winter season. Bats are seeking suitable hibernation sites, and beginning periods of torpor.



November

Periods of torpor are lasting longer. Some begin hibernation, to save energy over the colder months, when insects are harder to find. They are using stored fat as fuel.



December

Bats are hibernating. They may roost on their own or in small groups, often in cool, quiet places like disused buildings, old trees or caves, where they hopefully won't be disturbed.



What you can do to help bats

There are lots of things you can do to help bats in your school playground or garden:

- Plant wildflowers to attract insects and this will provide food for the bats – think of it as a ‘batty café;’
- Build a bat box;
- Plant native broadleaf trees such as oak; and
- Tell your family and friends how amazing bats really are! Show them your art and poetry.

Refer to:

3 Activity Sheet 8: Bat Friendly Gardening

At the end of the slide show, put slide 1 of ‘All about bats’ on display again and ask pupils if there are any new words they can think of to describe what they see.



Figure 4.9: Wildflower meadow



Figure 4.10: Bat box



4.3. Bats and the environment

Lesson Objectives:

To make pupils aware that bats use a variety of habitats to live in (roost) and to look for food (foraging).

Teaching Guidelines:

Display the section 'Bats and the environment' in the 'Bats a Fact' PowerPoint.

Where do bats live?

In Trees: Bats such as Brown Long Eared can be found roosting in crevices, under bark and in rot holes of trees. Bats also use tree lines for finding food and going from their roost to feeding area.

Bats use buildings to roost, mainly to have their pup during the summer because it is warmer and safe from predators. Buildings include modern houses, barns and derelict houses.

3 Refer to Activity Sheet 9: Bats and Trees

In winter, bats will use caves, mines and ice houses so that they can hibernate.

Discuss with pupils, why bats are using more buildings more than trees in recent years. Point them towards the fact that woodland and trees are being lost and Northern Ireland is the least wooded country in Europe.



Figure 4.11: Brown Long Eared bat in tree



Figure 4.12: Brown Long Eared Bats roosting in roof space of a house



Figure 4.13: Bats hibernating in a cave.

The Water Bat

The Daubenton's bat is a special bat, it is sometimes called the 'water bat' because they usually take insects from close to the water. They take their prey directly from the water surface using their large feet or tail membrane as a scoop. The presence of Daubenton's bats show that a water body is unpolluted because they eat insects which rely on clean water. Creggan Country Park and Enagh Lough are both host to Daubenton's bats.

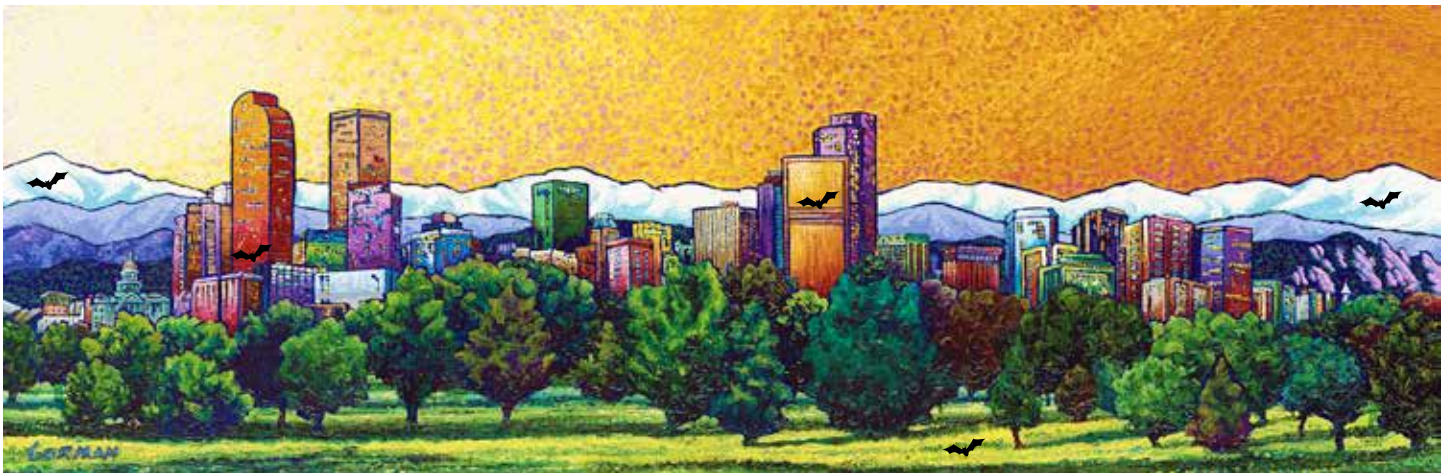


Figure 4.14: The Water Bat taking prey from the surface of a lake

Bats in an urban environment

Bats can be found in both rural and urban areas. In urban areas bats will roost in houses, churches, community centres, schools, trees and sometimes bat boxes. They can be found flying around housing estates and in urban parks.

- 3 Refer to Activity sheet 10: Batty Hide and Seek. Pupils find the hidden bats in the city landscape.



1.4. Bats in Culture and heritage

Lesson Objective:

To make pupils aware that bats are featured in culture, stories, movies, comics and Halloween.

Teaching Guidelines:

Refer to 'Vampire Bats' section of the Bats a Fact PowerPoint presentation.

- Explain to pupils that there are three species of vampire bats in the world that feed on blood;
- Vampire myths existed in various cultures around the world long before vampire bats got their name;
- Vampire bats inspired the story of Dracula;
- They can be found in central and south America;
- Baby vampire bats feed on their mother's milk;
- Vampire bat saliva has helped develop stroke medication called 'Draculin'; and
- Vampire bats are very caring to other members of their colony, often helping to groom and feed roost mates who are feeling under the weather.



Figure 4.15: Halloween Culture



Figure 4.16: Vampire Bat

3 Activity sheet 11: Complete the dot to dot vampire bat and colour in

Bats and Halloween

Refer to 'Bats and Halloween section of the Bats a Fact PowerPoint presentation.

- Halloween is the time of year when we celebrate ancient traditions and also be a little bit superstitious
- Halloween or All Hallow's Eve is a holiday celebrated all around the world on 31st October
- Halloween dates back to the ancient Celtic festival of Samhain (pronounced sow-in). The Celts, who lived 2,000 years ago in Ireland, celebrated their New Year on November 1. This day marked the end of summer and the harvest and the beginning of the dark, cold winter
- Celts believed that on the night before the New Year, the boundary between the worlds of the living and the dead became blurred.



- On the night of October 31 they celebrated Samhain, when it was believed that the ghosts of the dead returned to earth.
- Halloween decorations commonly depict 'scary' creatures including spiders and bats;
- Bat decorations are a common sight at Halloween
- People think bats are spooky because they come out at night.



Figure 4.17: Derry Halloween celebrations

3 Activity sheet 12: Halloween Bat Mask

More information about Halloween in Derry~Londonderry can be found at: www.derrystrabane.com/Halloween

- China

Begin the lesson by asking pupils to point to China on a map of the world.

Explain that:

- The bat is a symbol of happiness and joy.
- The Chinese for bat (fú) sounds identical to the word for good fortune

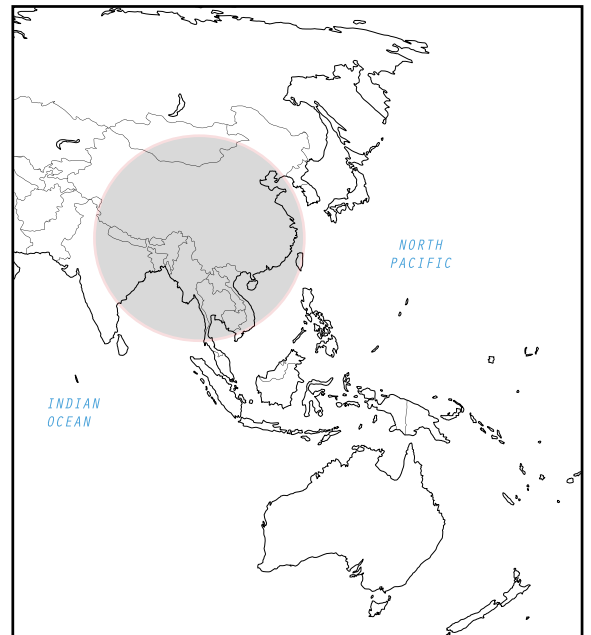


Figure 4.18: Map Showing China

3 Refer to Activity sheet 13: Make a clay bat

- Batman

Refer to 'Batman' section of the Bats a Fact PowerPoint presentation.

- 3 Refer to Activity sheet 14: My Batty Comic and Activity Sheet 15: Batty Quiz.

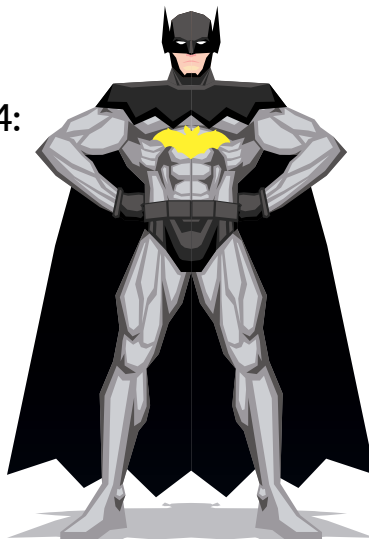


Figure 4.19: Chinese Bat Symbol

CONTACTS AND FURTHER INFORMATION

To book a free bat talk or walk for your class, please email:
chair@bats-ni.org.uk

I have found a grounded or injured bat or I have bats in my house - what do I do?
For contact information visit:

<https://www.bats-ni.org.uk/grounded-and-injured-bats/>

Useful contacts:

Creggan Country Park

www.creggancountrypark.com

028 71363 133

Offers free bat workshops during school hours to schools in the North West of Northern Ireland and they run bat rescue helpline service during office hours.

Online education resource can be found at:

<http://www.bats.org.uk/pages/batsforkids.html>

<http://www.batcon.org/resources/media-education/learning>

<https://www.learnaboutbats.com/find-out-more/heritage-in-schools/>