SOUTHERN QUEENSLAND

FLYING-FOX EDUCATION KIT

Year 5: Adaptations of flying-foxes

www.allaboutbats.org.au

SEQ Catchments
Healthy Land – Healthy Water

Burnett Mary Regional Group
Practical Solutions for Natural Resource Management

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Cover photo: Grey-headed flying-fox, Nick Edards

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SOUTHERN QUEENSLAND

Flying-fox education kit

About the education kit

The *Southern Queensland Flying-fox Education Kit* was developed as part of the ***Improving Landscape Resilience to Climate Change in SEQ: the flying-fox roost & forage conservation pilot project***. This two-year project, coordinated by SEQ Catchments, aimed to improve the long-term sustainability of flying-fox camp sites in the southern Queensland region and increasing community awareness of the intrinsic value of flying-foxes and the critical ecosystem services they provide.

The project was funded through the Australian Government's Caring for our Country program and supported by Brisbane, Logan and Redland City Councils, Moreton Bay Regional Council, Noah's Ark Wildlife Coalition, Bat Conservation and Rescue Queensland, The Hut Environment and Community Association, the Queensland Department of Environment and Resource Management and Burnett Mary Regional Group.

The education kit introduces teachers and students to Gracie the grey-headed flying-fox. Gracie's mission is to help save my flying-foxes and get the message out about how important they are in pollinating native trees and dispersing native seed - essential things in keeping our environment healthy!

The All About Bats website is a key component to this education kit - www.allaboutbats.org.au.

Year 5: Adaptations of flying-foxes

The *Southern Queensland Flying-fox Education Kit* provides schools of southern Queensland with an opportunity to study flying-foxes in the classroom while achieving outcomes (particularly Biological Sciences) under the Australian Curriculum.

The year 5 unit consists of three lessons that contain a variety of activities. Teachers may choose to complete more than the suggested lessons e.g. a teacher may choose to recap some of the year 4 activities or proceed to year 6.

These activities use a range of different learning media to provide an all-round learning experience for their students. This includes printed materials, PowerPoint presentations, YouTube videos and sound files that are all found on the All About Bats website.

The year 5 unit "Adaptations of flying-foxes", introduces students to how flying-foxes have adapted to their environment. It allows students to explore the bat wing and compare it to the human arm. It looks at how the mega-bats and micro-bats have evolved differently. Finally it introduces students to how we can learn to live peacefully with flying-foxes.

UNIT OVERVIEW

Year 5 Adaptations of flying-foxes

Rationale

Year 5 students are introduced to how flying-foxes have adapted to their environment. It allows students to explore the bat wing and compare it to the human arm. It looks at how the mega-bats and micro-bats have evolved differently. Finally it introduces students to how we can learn to live peacefully with flying-foxes.

This unit is divided into three lessons. The aim is that each lesson will take between one and two hours.

Lesson 5.1 Adaptations of flying-foxes

This lessons starts with a quiz about the flying-fox adaptations to asses students prior knowledge. **Students don't look at the answers at this stage** but instead look at the similarities and differences between flying-foxes (a type of mega-bat) and micro-bats. They are introduced to the process of natural selection and explore what selection pressures might have applied to bats.

Lesson 5.2 How do flying-foxes fly?

Students watch and discuss videos about how flying-foxes move both in the air and on land. They then do a series of activities as a circuit which allows them to explore the structure of a bat wing and compare it to the human arm.

Lesson 5.3 Living with flying-foxes

If our native wildlife and trees are going to survive we must learn to live with them. Students will explore how we might live together through creative storytelling and writing, and interpreting a factual text. The lesson ends with a reflection of learning gained by repeating the quiz and discussing the answers.

UNIT OVERVIEW

Year 5 Adaptations of flying-foxes

National Curriculum

Lesson	5.1	5.2	5.3	Statements
Science understanding (Biological sciences)	✓	✓	✓	Living things have structural features and adaptations that help them to survive in their environment. (ACSSU043)
Science as a human endeavour			✓	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives. (ACSHE083) Scientific knowledge is used to inform personal and community decisions. (ACSHE217)
Mathematics (Measurement and geometry)		✓		Choose appropriate units of measurement for length, area, volume, capacity and mass. (ACMMG108)
English (Literacy)			✓	Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience. (ACELY1704)
General Capabilities: Literacy	✓	✓	✓	As they become literate students learn to: • interpret, analyse, evaluate, respond to and construct increasingly complex texts (Comprehension and composition) • understand, use, write and produce different types of text (Texts) • make appropriate word selections and decode and comprehend new (basic, specialised and technical) vocabulary (Vocabulary)
General capabilities: Critical and creative thinking	✓	✓	✓	As they develop critical and creative thinking students learn to: • pose insightful and purposeful questions • apply logic and strategies to uncover meaning and make reasoned judgments • think beyond the immediate situation to consider the 'big picture' before focussing on the detail • reflect on thinking, actions and processes • analyse information logically and make reasoned judgments • evaluate ideas and create solutions and draw conclusions • assess the feasibility, possible risks and benefits in the implementation of their ideas • transfer their knowledge to new situations
Cross-curriculum priority: Sustainability	✓	✓	✓	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing. (OI.2) Sustainability action is designed to intervene in ecological, social and economic systems in order to develop more sustainable patterns of living. (OI.7) Sustainable futures are shaped by our behaviours and by the products, systems and environments we design today. (OI.8)

LESSON 5.1

Adaptations of flying-foxes

Objectives

Students will be introduced to the concept of adaptations and natural selection. They will learn about the adaptations of flying-foxes and micro-bats.

National Curriculum

Activity	5.1A	5.1B	5.1C	5.1D
Science understanding (Biological sciences)	✓	✓	✓	✓
General capabilities: Literacy	✓	✓	✓	✓
General capabilities: Critical and creative thinking	✓	✓	✓	✓
Cross-curriculum priority: Sustainability	✓			

For outcome codes and descriptions of outcomes, see unit overview.

Background information

All bats have many things in common, such as that they are mammals, can fly, are nocturnal and hang upside down. There are however, many variations between different species of bats.

There are two main groups of bats, the mega-bats (e.g. flying-foxes, blossom bats) and the micro-bats. Mega-bats are usually bigger, eat fruit and nectar and do NOT use echolocation. Micro-bats are generally a lot smaller, eat insects and use echolocation to find their prey.

The reason for the differences between bats is due to the process of natural selection. Natural selection is described in activity 5.1B.

Natural selection has led to flying-foxes having a good sense of smell. They use smell to find ripe fruit to eat. They also use smell for mating purposes.

Activity sequence

5.1A What do you know about flying-fox adaptations?

Students look at some memory-jogging photos of flying-foxes and then complete a short quiz. The aim of this quiz is to asses students prior knowledge about flying-foxes. The answers to the quiz will not be discussed in this lesson, they will be discussed at the end of lesson 3 when students will be able to reflect on how much they have learnt.

5.1B Natural selection

Students are introduced to the process of natural selection using beetles as an example. Discuss as a class, or in small groups, what the processes in the diagram means.

Answers

1. There are different coloured beetles.
2. Predators, like Ibis, favour the green ones because their colour makes them easy to see and catch.
3. There are fewer green beetles. The brown beetles have more brown offspring to ensure survival.
4. The green beetles are bred out of the population and the brown beetles become the surviving species.

5.1C What are adaptations?

Students look at the different adaptations of bats in the fact sheet and then complete the worksheet.

5.1D Adaptations of flying-foxes

Provide students with an enlarged copy (A4 to A3) of the flash cards. In pairs, students test themselves as they try to remember what the adaptation each flash card represents.

ACTIVITY 5.1A

What do you know about flying-fox adaptations?


Photo: K. Coleman


Photo: N. Edards


Photo: L. Hall


Photo: N. Edards


Photo: L. Hall


Photo: L. Hall

ACTIVITY 5.1A

What do you know about flying-fox adaptations? *Quiz*

1. What does it mean to adapt to your environment? (i.e. What do you do when it gets cold?)

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2. Why are flying-foxes considered to be mammals and not birds?

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3. Why do you think flying-foxes developed wings?

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4. Why are flying-foxes nocturnal?

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5. Why have flying-foxes developed a very good sense of smell?

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6. Flying-foxes have excellent vision, like a cat. Why do you think this is so?

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7. Why do flying-foxes hang upside down?

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8. How come flying-foxes don't fall down when they are asleep?

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9. Why are flying-foxes protected?

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10. What things can we do to help protect and live peacefully with flying-foxes?

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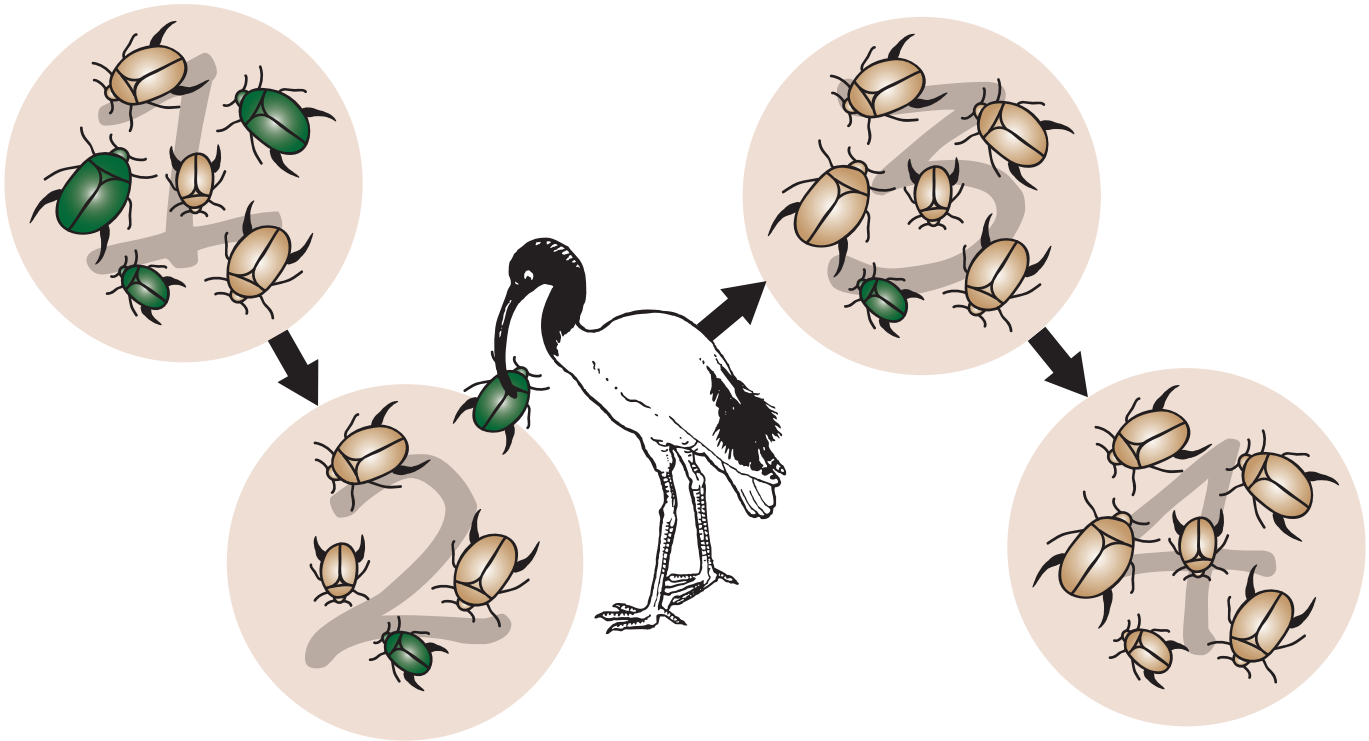
.....

My quiz score is: 10

ACTIVITY 5.1B

Natural selection

Natural selection is an important part of the theory of evolution. It means that as every living thing develops with slight variations, the stronger species, or one with the most successful adaptations, have a greater chance of survival. These traits that have helped them survive are then passed down to future generations shaping the overall development of the species.



Discuss how natural selection has caused the green beetles to become extinct. Write down your discussion ideas.

Step 1:

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Step 2:

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Step 3:

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Step 4:

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ACTIVITY 5.1C

What are adaptations?

Find the answers to the following questions in the "Adaptations of all bats" fact sheet.

1. What does adaptation mean?

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   .....

2. How many types of bats use echolocation to find food? Name them.

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3. Which bat has developed an anti-coagulant in their saliva?

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4. What type of bat has a hearing range similar to humans?

   .....

5. What type of bat travels large distances to find their food? What adaptation helps them travel that far?

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6. Vampire bats are well known in stories (like Dracula) where they feed on the blood of humans. What types of animals do they feed on in real life?

   .....

7. Which two types of bats are vegetarians and what do they eat?

   .....

   .....

   .....

   .....

8. Which of the following drawings best fits the adaptations of a type of flying-fox?

   ☐ A ☐ B

   Why?

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   .....

   .....

9. Which two bats have large ears? What do they use them for?

   .....

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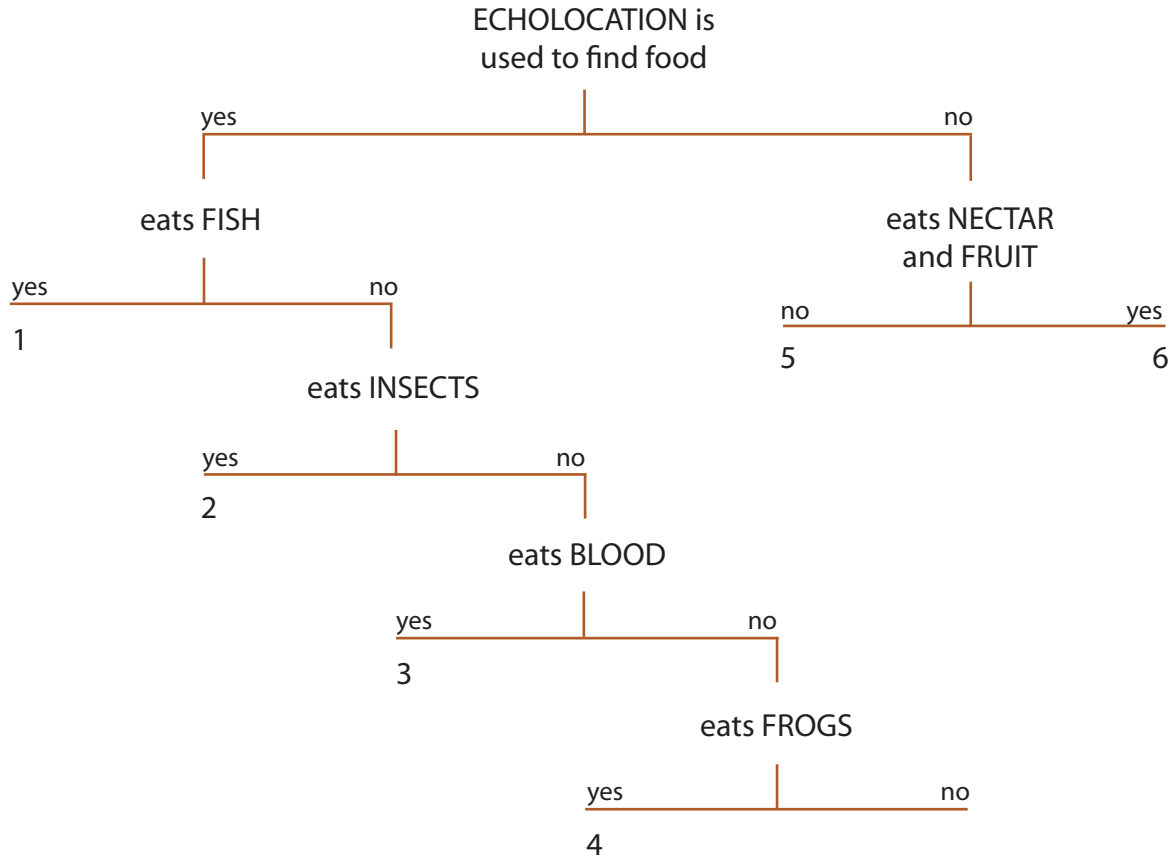
ACTIVITY 5.1C

What are adaptations?

10. The diagram below is called a ***dichotomous key*** (pronounced *die-cot-o-mus*). These keys are used in science to work out a type of species (plant or animal) via a process of elimination. The dichotomous key below helps us to identify bats based on their adaptations to find, catch and digest certain foods. Using the "Adaptations of bats" fact sheet, match the examples of bats given to the key below. Write one unique adaptation that helps them find or eat their food.



1 .....

Adaptation: .....

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2 .....

Adaptation: .....

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3 .....

Adaptation: .....

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4 .....

Adaptation: .....

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5 .....

Adaptation: .....

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6 .....

Adaptation: .....

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ACTIVITY 5.1C

Adaptations of bats

Fact sheet

Adaptations identify features or characteristics that animals develop to help them survive. Below are a variety of adaptations that flying-foxes have developed over thousands of years of evolution.

There are many different species of bats. There are **micro-bats** (which are small and use echolocation to find food) and there are **mega-bats** (which are generally larger and feed on nectar and fruit). They have many similarities; they all have wings, hang upside down and are nocturnal. They also have many differences. This table identifies the physical features that have helped them adapt to their environment and their source of food.

	Bat	Food	Adaptation
Micro-bats	**Insectivorous bats** e.g. Common bent-wing bat	Insects	Large ears to hear small insects. Use echolocation to detect prey and surroundings. Small bodies and wings for quick and agile flight. Small sharp teeth to rip apart large insects.
	Frog-eating bat e.g. Ghost bat	Frogs	Large feet and claws with a strong membrane between the legs. Use echolocation to detect prey and surroundings. Able to locate frogs by their call - they can even tell who is bite sized and who is poisonous.
	Vampire bat e.g. Vampire bat	Blood	Saliva contains an anti-coagulant that prevents the blood from clotting. Use echolocation to detect prey and surroundings. Walk on the ground to stealthily approach prey (often sleeping livestock).
	Fishing bat e.g. Large-footed myotis	Small fish and crustaceans	Large ears help to detect ripples on the water surface. Use echolocation to detect prey and surroundings. Extremely long feet and large toes allow the bat to grab small fish near the water surface.
Mega-bats	**Blossom bat** e.g. Eastern blossom bat	Blossom nectar	Hover like hummingbirds as they lick nectar. They have a long, narrow face and a very long, thin tongue with brush-like tip which helps them collect nectar and pollen from flowers.
	Flying-fox e.g. Black flying-fox	Nectar and fruit	Large eyes and good sense of smell to find food. Large wings to travel large distances. Thumb and second finger have claws to help them move around in and on trees. Tiny scrapers on the flying-fox's long tongue help remove fruit pulp from its skin and nectar from blossoms. Mouth opening is small so that the fruit pulp and juice do not dribble out.

ACTIVITY 5.1D

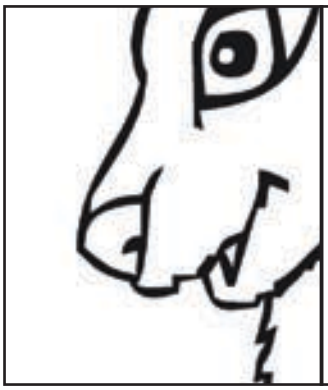
Adaptations of flying-foxes

Flash cards

Colour in these flash cards before cutting and folding them in half. With a partner, work out the flying-fox adaptation and see how many you get right.

Nocturnal

Bats probably became nocturnal because there were fewer predators around at night which allowed them to feed without fear.



Good sense of smell

Smell is how flying-foxes find their food. It also allows for communication between the animals; mothers to find their babies, males to attract females and males to mark their territories.

Large wings for flying

Large wings allow flying-foxes to travel large distances to find their food. They also need large wings to carry their body weight, which can be up to 1 kg in some flying-foxes.

Good hearing

Good hearing allows flying-foxes to listen out for predators and communicate between each other. Their hearing range is similar to humans, which is why they seem so noisy at times.

Claws for hanging and moving

Their feet claws allow them to hang upside down without exerting any energy. Their thumb claw allows them to move around trees to get to more food or socialise.

Rough tongue

Flying-foxes have a rough tongue to help peel the skin from fruit and separate the pulp from the seed. They suck the juices and dispose of the fruit skin, pulp and seed in flight or where they are eating.

Big eyes

Big eyes allows more light to come in which allows flying-foxes to see better in the dark.

Fast digestive system

By excreting their faeces quickly, in as little as 20 minutes after eating, flying-foxes reduce their weight so they can travel long distances.

LESSON 5.2

How do flying-foxes fly?

Objectives

Students investigate flying-foxes and their adaptations to their environment. They look at the structure of a flying-foxes wing and compare it to the human arm.

National Curriculum

Activity	5.2A	5.2B
Science understanding (Biological sciences)	✓	✓
Mathematics (Measurement and geometry)		✓
General capabilities: Literacy	✓	✓
General capabilities: Critical and creative thinking	✓	✓
Cross-curriculum priority: Sustainability	✓	✓

For outcome codes and descriptions of outcomes, see unit overview.

Background information

The name given to bats is the animal order "Chiroptera", which is Greek for "hand-wing". A bat's wing consists of bones that are very similar to the bones in a human arm and hand. Long arm bones, with extra-long extended finger bones, are covered with a double layer of thin skin called a membrane. The membrane is so thin that you can sometimes see light through it. It is made up of fine blood vessels, elastic fibres and muscle fibres.

In flight, all bats can quickly change direction my moving their wings independently. They also have tiny hairs on their wing membranes that are very sensitive and allow them to control their flight by 'feeling' for turbulence. Birds are different because they use their tail to help control direction and elevation.

The wing span of micro-bats, on average, is around 30 cm. They flap their wings around 11-18 times per second. These small, fast moving wings enable micro-bats to change direction quickly and sometimes even hover in flight while hunting.

The mega-bats are generally larger bats, with flying-foxes being the largest of the mega-bat family. Their wings often reach spans of just over 1 metre with wing beats of as few as 2 per second. Due to their size mega-bats appear to be slow in flight but they can reach speeds of up to 25-30 km per hour. Flying-fox commutes of over 400 km in one night have been recorded.

Activity sequence

5.2A How flying-foxes move

After watching a series of short videos of bats moving, students will discuss how bats move using their wings.

5.2B Activity circuit about flying-fox wings

Students are divided into small groups and will complete a series of activities that investigate the structure of the flying-fox wing.

Activities

Comparing bats and humans
Name those bones

> *If you look at the SKELETAL structure of a BAT'S wing, it is almost IDENTICAL to that of a HUMAN HAND and arm, only elongated and much SMALLER.*

How big is a flying-fox's wing?
Make your own flying-fox wings

ACTIVITY 5.2A

How flying-foxes move

Watch these YouTube videos found on the All About Bats - Year 5 web page and observe how the bats are moving around.

- Wild detectives: bats eating and flying
- Grey-headed flying-foxes at Kew, Vic
- Flying-fox fighting off a snake
- Flying-foxes drinking at Wolli Creek, NSW

Once you have viewed all the footage, discuss the questions in small groups or as a class. Write your answers below.

Why do flying-foxes need to fly?

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How do flying-foxes fly?

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What is a flying-fox's wing made of?

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How is the flying-fox's wing similar to the human arm?

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How do flying foxes change directions when they are flying?

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What do they use their thumbs for?

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Does the flying-fox need its wings to eat?

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How does the flying-fox move along the ground?

.....

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How does a flying-fox fend off its enemies?

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ACTIVITY 5.2B

Comparing flying-foxes and humans

In this activity, you need to colour in the bones that are the same in the flying-fox's wings and the human arm and hand.

Use the "Bat Wing Basics" poster that can be downloaded from the All About Bats > Biology of Bats web page: www.allaboutbats.org.au/10/Bat+Facts/14/Biology+of+Bats

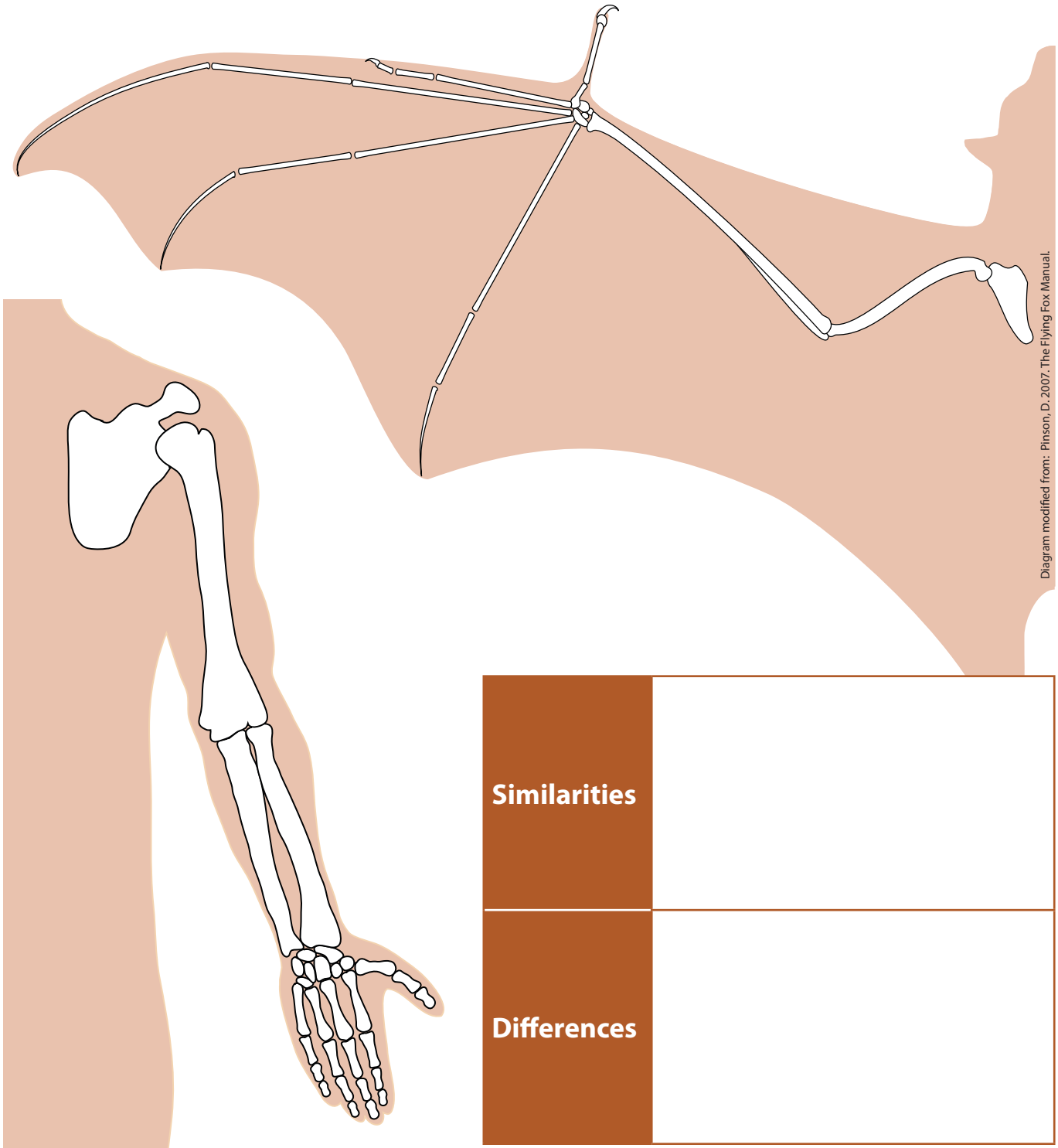

Diagram modified from: Pinson, D. 2007. The Flying Fox Manual.

Similarities	
Differences	

ACTIVITY 5.2B

Name those bones

Using the words below, fill in the blank spaces of the following sentence.

HAND HUMAN SMALLER SKELETAL BAT'S IDENTICAL

If you look at the ..... structure of a ..... wing, it is almost ..... to that of a .... and arm, only elongated and much .....

Using the words below, fill in the blank labels of the bat wing diagram.

WRIST FINGERS MEMBRANE ELBOW

SHOULDER THUMB HUMERUS RADIUS & FUSED ULNA

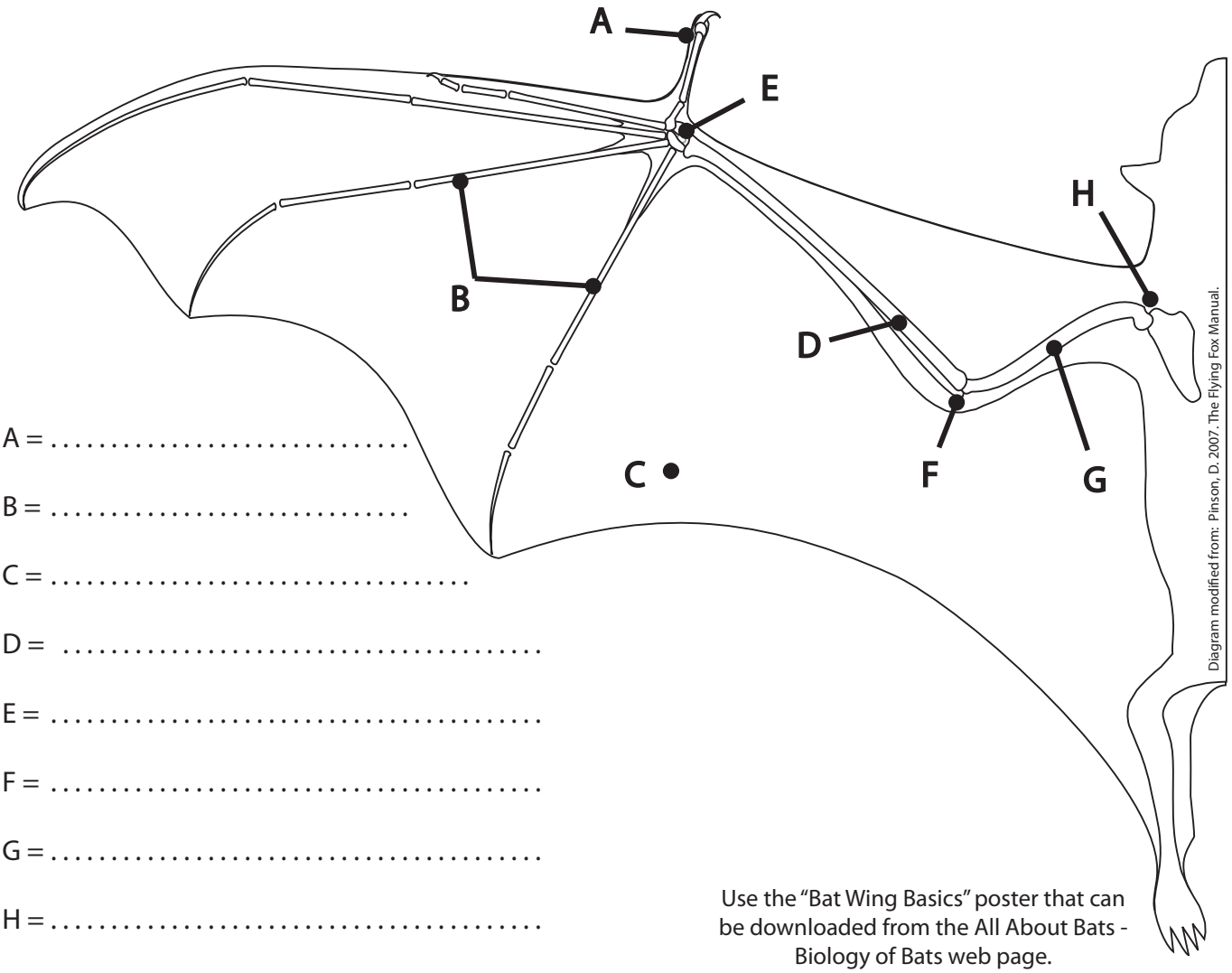

Diagram modified from: Pinson, D. 2007. The Flying Fox Manual.

A = ...

B = ...

C = ...

D = ...

E = ...

F = ...

G = ...

H = ...

Use the "Bat Wing Basics" poster that can be downloaded from the All About Bats - Biology of Bats web page.

ACTIVITY 5.2B

How big is a flying-fox's wing?

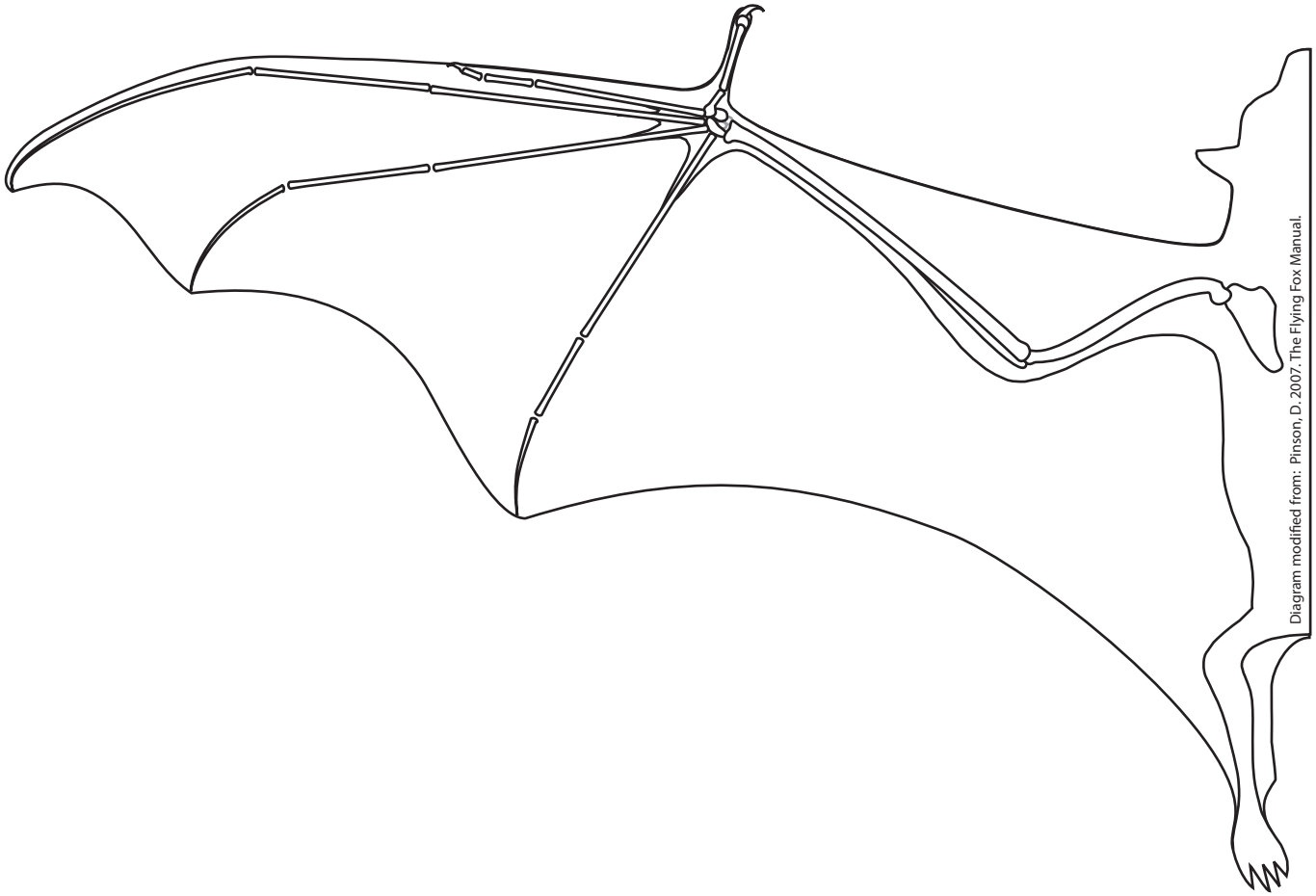

Diagram modified from: Pinson, D. 2007. The Flying Fox Manual.

Complete the table using this left hand side picture of a little red flying fox. The picture's body length and wing is half the size of an average little red flying fox.

NOTE: The wing is measured from shoulder to wing tip and the body length is measured from nose to bottom (don't include the legs).

Body part	Estimate (mm)	Picture measurement (mm)	Actual measurement (picture x 2)
Wing			
Body length			
Thumb			
Legs			

There is a ratio between the wing and the body size. Can you work out what it is?

Use the picture and these measurements to draw or make a life size little red flying fox.

ACTIVITY 5.2B

Make your own flying-fox wings

Hand-Wing

A flying-fox's wings act like webbed hands. The flying-fox can move its wings like we move our fingers enabling it to dart, flip, and turn quickly. Although birds use their tails to brake and steer, flying-foxes use their wings by folding one wing for a second and using one independently of the other.

Now imagine that the same webbing attaches from your thumb down to your ankle. The webbing between the 'fingers' extends to the bats' legs to create wings that fold against or wrap around their bodies when roosting. The legs of flying-foxes are also connected to the body with the same membrane and often their tails too, if they have one.

These wings were made with a black woolen blanket, elastic bands for the wrists and ankles and sticky tape at the neck.

Using items you might find around the house, or in the classroom, design your own flying-fox wings. Write down the materials you need, and the instructions on how to make them.

Materials

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Instructions

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How realistic are your wings?

Try to flap your wings. Can you see how the air catches in the wing?

Pretend your legs are very weak and can't use them to stand up or crawl. Try to move around. Is this comfortable?

Take pictures and make it look like you are a flying-fox.

LESSON 5.3

Living with flying-foxes

Objectives

Students are encouraged to think about how flying foxes are social beings who use sound and smell as forms of communication. Through storytelling, students will learn that flying-foxes play an important role in the environment and that there is no reason to fear them. Finally students will reflect on all they have learned.

National Curriculum

Activity	5.3A	5.3B	5.3C	5.3D
Science understanding (Biological sciences)	✓	✓	✓	✓
English (Creative writing)		✓		
General capabilities: Literacy	✓	✓	✓	✓
General capabilities: Critical and creative thinking	✓	✓	✓	✓
Cross-curriculum priority: Sustainability	✓	✓	✓	✓

For outcome codes and descriptions of outcomes, see unit overview.

Background information

Flying-foxes are very social beings and live together in large groups called camps. Camp sites can be both temporary and permanent. Sound and smell are their most notable ways of sorting out social structure and feeding patterns.

Many people don't like flying-foxes because they are noisy, smelly and have a bad reputation of being scary. One of the ways to ensure the survival of flying-foxes is to educate people about flying-foxes and how to live with them.

All flying-foxes are protected species. They are not allowed to be moved, culled or scared unless under a permit from the government.

Activity sequence

5.3A Noises in the Night

This story is about a girl who is scared of bats. By learning more about bats, she overcomes her fears and even starts liking them.

An online e-book can be found at the Enviro-Stories website www.envirostories.com.au/es2011/es2011_CRC_Noises/index.html

5.3B Light in the night

After reading "Noises in the Night", students are asked to write their own version of this story but from the perspective of a young flying-fox who is on its first journey near people. The young flying-fox see lights and hears voices coming from a young girl's window. It's scared. What will its mother say to him? How could it learn to stop being scared of humans?

5.3C Living with flying-foxes

Students learn about the issues of living with flying-foxes through a fun board game. Enlarge the game from A4 to A3. Students decorate their game and create their own game pieces.

For more information: derm.qld.gov.au/wildlife-ecosystems/wildlife/living_with_wildlife/flyingfoxes/pdf/living-near-flyingfoxes.pdf

5.4D Quiz

Students have a look at the quiz they did at the start of the unit. They can change or add to their answers. Discuss the answers as a class.

ACTIVITY 5.3A

"Noises in the Night"

Mya Theodore , Year 3 Moura State School
Cotton CRC 2011 "Enviro-Stories Competition"

There once was a little girl who lived in the bush on a property with her grandfather. She especially enjoyed being able to ride her pony through the green grass and loved to stop for a snack and rest under a bush plum tree in the late afternoon.

She sat under the bush plum tree most afternoons. She enjoyed listening to the song of the birds while she nibbled on a crunchy apple from the orchard. It was her favourite thing to do.

At dusk she always made sure she was indoors. She did not like the large black shadows that glided in the evening sky. They would land in the tall palm tree outside her window and their noise frightened her.

She did not dare go near the window to take a look at them. Instead she lay in bed with her pillow over her head to silence their eerie shrieking.

She had never liked the bats and they gave her nightmares. Each night grandfather found her with her pillow over her head, so instead of a storybook one evening he told her a different story.

Grandfather explained to the little girl she shouldn't fear bats as they were very important to the land and in fact made her life better. The little girl could not imagine that this was true.

He told her the many beautiful gums, figs and palm trees on their property grew there because bats ate their fruit and then spread the seed all over the place. Even her favourite bush plum tree probably grew there from a seed a bat had dropped long ago.

He also explained that bats lived in large colonies, or families and they were noisy when they ate. They were nocturnal foragers, or night feeders. The sounds the little girl heard at night were only the bats eating their dinner.

ACTIVITY 5.3A

"Noises in the Night"

Mya Theodore , Year 3 Moura State School
Cotton CRC 2011 "Enviro-Stories Competition"

The little girl listened and came to realise that bats weren't terrifying. The bats were hard workers for the environment by fertilising plants and carrying seeds long distances. It was because of bats that plants were able to grow in areas they had never grown before.

As a surprise grandfather planned a special trip away for the little girl. It would take them several hours to drive there from their property and the little girl was very excited. Grandfather told her she would soon know where they were going to. He told her to go to sleep as they had a long trip the next day. They were going to leave very early the next morning.

After many hours on the road they arrived at their destination. The little girl had always wanted to go to Australia Zoo.

Grandfather told her she no longer needed to be afraid of bats and their noise and how they looked. There were some animals that looked frightening and made unusual noises, and some that were very cute but all of them in some way were important in nature.

At the bat enclosure the little girl found she wasn't afraid at all as she watched the zoo keepers feed and handle the bats without any fear. It made her feel silly that she had found them so frightening.

After spending the whole day wandering the zoo patting, feeding and watching the many animals the little girl was exhausted but very happy. As an extra treat Grandfather allowed her to choose a gift from the zoo shop.

Grandfather was delighted to see the little girl that night fast asleep, happily cuddling her soft bat toy, without a pillow over her head.

You can also read this book online at: www.envirostories.com.au/es2011/es2011_CRC_Noises/index.html

Class discussion questions

How do you feel when you see a flying-fox, during the day or at night?

If you get scared, what scares you the most?

Why do you think flying-foxes are so noisy?

If the grandfather hadn't taken the little girl to Australia Zoo, what other way could she have learnt more about flying-foxes so she would not be scared anymore?

ACTIVITY 5.3C

Lights in the night

Use the "Noises in the Night" story to help write your own story from the point of view of the young flying-fox that is outside the window.

The young flying-fox might, for example, be on its first journey away from the camp and be scared of the light coming from the little girl's window. What will its mother tell it? Will it overcome its fears like the girl did?

You can use this story plan to help you organise your ideas.

Beginning

Who are the main characters (e.g. flying-fox)? .....

Where does the story take place (e.g. in a tree)? .....

When does they story happen (e.g. night)? .....

Middle

What is the problem?

.....

.....

How are the characters trying to solve it?

.....

.....

End

How is the problem finally solved?

.....

.....

What is the final message (e.g. flying-foxes are good for the environment)?

.....

.....

ACTIVITY 5.3C

Living with flying-foxes

Board game

Colour and decorate your board game. Using a dice, move your way through the issues affecting people who live with flying-foxes. Discuss the good or bad actions that you fall on along the way with your friends.

START HERE

You join a local volunteer environment group and plant some buffer trees around a neighbourhood flying-fox camp.
Go forward 2 spaces.

You plant a food tree next to a barbed wire fence. Many flying-foxes get caught in the wire and die.
Go back 2 spaces.

FINISH

You have been on a Batty Boat Cruise along the Brisbane River.
Go forward 2 spaces.

You remove all the cocos palms in your yard. You convince three other friends to do the same.
Go forward 3 spaces.

You tell people that flying-foxes do nothing for the environment.
Miss 2 turns.

You learn more about flying-foxes and their importance for our forests. You tell your friends and family not to fear them.
Go forward 2 spaces.

You discover a baby flying-fox that is still alive after its mother got electrocuted on a power line. You call your local wildlife carer who can rescue the orphaned baby.
Go forward 2 spaces.

The winner must land in the FINISH hexagon on a full throw. You keep playing until someone wins.

You used an air-horn to scare a neighbouring flying-fox camp. This is illegal and you get fined.
Go back to the start.

You come across a flying-fox that has become caught in a loose fruit tree net. You try to rescue it yourself.
Miss 1 turn.

ACTIVITY 5.3D

What do you know about flying-fox adaptations? *Quiz*

1. What does it mean to adapt to your environment? (i.e. What do you do when it gets cold?)

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   .....

   .....

2. Why are flying-foxes considered to be mammals and not birds?

   .....

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   .....

3. Why do you think flying-foxes developed wings?

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4. Why are flying-foxes nocturnal?

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5. Why have flying-foxes developed a very good sense of smell?

   .....

   .....

6. Flying-foxes have excellent vision, like a cat. Why do you think this is so?

   .....

   .....

   .....

7. Why do flying-foxes hang upside down?

   .....

   .....

   .....

8. How come flying-foxes don't fall down when they are asleep?

   .....

   .....

9. Why are flying-foxes protected?

   .....

   .....

   .....

10. What things can we do to help protect and live peacefully with flying-foxes?

    .....

    .....

    .....

    .....

My quiz score is: 10

Activity 5.3D

What do you know about flying-fox adaptations? *Answers*

1. **What does it mean to adapt to your environment? (i.e. What do you do when it gets cold?)**

   To adapt to your environment means to change your behaviour (or evolve characteristics) to suit the conditions. For example, if we were extremely cold all the time we would put on a jumper or find someplace warm to stay.

2. **Why are flying-foxes considered to be mammals and not birds?**

   Flying-foxes are mammals because they give birth to live young, suckle their young and have fur. They do not lay eggs or have feathers like birds.

3. **Why do you think flying-foxes developed wings?**

   To find food and get away from predators.

4. **Why are flying-foxes nocturnal?**

   It is harder for their predators to catch them at night. A lot of their food is available at night when other competitive animals are asleep (like birds).

5. **Why have flying-foxes developed a very good sense of smell?**

   They use their great sense of smell to find food like flowering blossoms and ripe fruit. They also use smell for socialisation e.g. to identify their babies and mating territories.

6. **Flying-foxes have excellent vision, like a cat. Why do you think this is so?**

   They have very big eyes and can see extremely well in the dark. They use their eyesight, smell and excellent memory to find the same flowering trees year after year.

7. **Why do flying-foxes hang upside down?**

   Flying-foxes have evolved to have poorly developed legs muscles so they are lighter for flight. Hanging upside down also helps them to take off into flight as they drop from their roost.

8. **How come flying-foxes don't fall down when they are asleep?**

   They have a special claw that locks when they are at rest. This means that they don't have to use up energy to hold on while they are sleeping.

9. **Why are flying-foxes a protected species?**

   All native wildlife is protected. Flying-foxes are listed as vulnerable because of a serious decline in numbers. Numbers can seem high at times because of their ability to quickly respond to local fruiting and flowering events. This does not mean there are more flying-foxes in total.

   Their decline is caused by loss of natural habitat, introduced man-made structures from urbanisation (e.g. barbed wire fences and powerlines) and changes in climate leading to frequent prolonged droughts and more bushfires.

10. **What things can we do to help protect and live peacefully with flying-foxes?**

    - Stop shooting, culling and scaring them.
    - Stop clearing native forests.
    - Plant native trees around existing forests or natural areas, preferably flying-fox food trees
    - Put tightly strung netting around backyard fruit trees and orchards.
    - Remove weeds like cocos/queen palms

For more information

All About Bats. . . . . www.allaboutbats.org.au
SEQ Catchments . . . . . www.seqcatchments.com.au
Burnett Mary Regional Group . . . . . www.bmrg.org.au
Department of Environment and Resource Management. . . . . www.derm.qld.gov.au

Working with bats

The following organisations can be contacted for more information about bats, or individuals may be willing to speak to your class about what they are doing to help conserve our wildlife.

Bat Conservation & Rescue Inc.
www.bats.org.au
P: 07 0488 228 134
E: info@bats.org.au

The Hut Environmental and Community Association Inc. (THECA)
www.theca.asn.au
P: 07 3878 5088
E: theca@hotkey.net.au

Wildlife Presentation Society Queensland
www.wildlife.org.au
P: 07 3221 0194
E: wpsq@wildlife.org.au

Your local council.

Queensland Parks and Wildlife Services
www.derm.qld.gov.au
South East P: 07 3512 2300
Sunshine Coast and Burnett P: 07 5459 6110

SEQ Catchments
www.seqcatchments.com.au
T: 07 3211 4404
E: admin@seqcatchments.com.au

Burnett Mary Regional Group
www.bmrg.org.au
P: 07 4181 2999
E: admin@bmrg.org.au

Excursion ideas

The following locations can be used to viist a flying-fox camp where there is interpretive information to learn more about the local camp. There are many more sites out there that have not been represented here. To find your nearest camp site go to:

www.derm.qld.gov.au/wildlife-ecosystems/wildlife/living_with_wildlife/flyingfoxes/seq-roost-locations.html

Cascade Gardens
Gold Coast Highway, Broadbeach

Woodend Nature Centre
35 Williams Street, Coalfalls
www.discover-our-ipswich.com/woodendnaturecentre.html

Black Swamp Wetland
Access via Queen Street, Cleveland
www.more2redlands.com.au/Explore/Leisure_Attractions/Nature%20-%20Wildlife/Mainland/Pages/Black%20Swamp%20Wetlands.aspx

Tooan Tooan Creek
Cnr Taylor Street and The Esplanade, Hervey Bay

Batty Boat Cruise (Brisbane River)
www.wildlife.org.au/news/2011/batty.html
P: 07 3221 0194
Although this Batty Boat Cruise is an evening activity with a per person cost, It is recommended for teachers who may like to broaden their knowledge about flying-foxes.

www.allaboutbats.org.au

SEQ Catchments
Healthy Land – Healthy Water

Burnett Mary Regional Group
Practical Solutions for Natural Resource Management