Teacher Notes

Themes

- Australian fruit bats
- Nocturnal animals
- Urban wildlife

Key learning outcomes

- Understand how fruit bats are adapted to nocturnal life.
- Recognise the challenges fruit bats face in urban and suburban environments.
- Develop empathy and understanding for misunderstood wildlife.

Key curriculum areas

- **Science:** Science Understanding (Biological sciences); Science Inquiry
- **English:** Language; Literature; Literacy
- **HASS:** Geography
- **The Arts:** Visual Arts
- **Cross-curriculum Priority:** Sustainability

Publication details

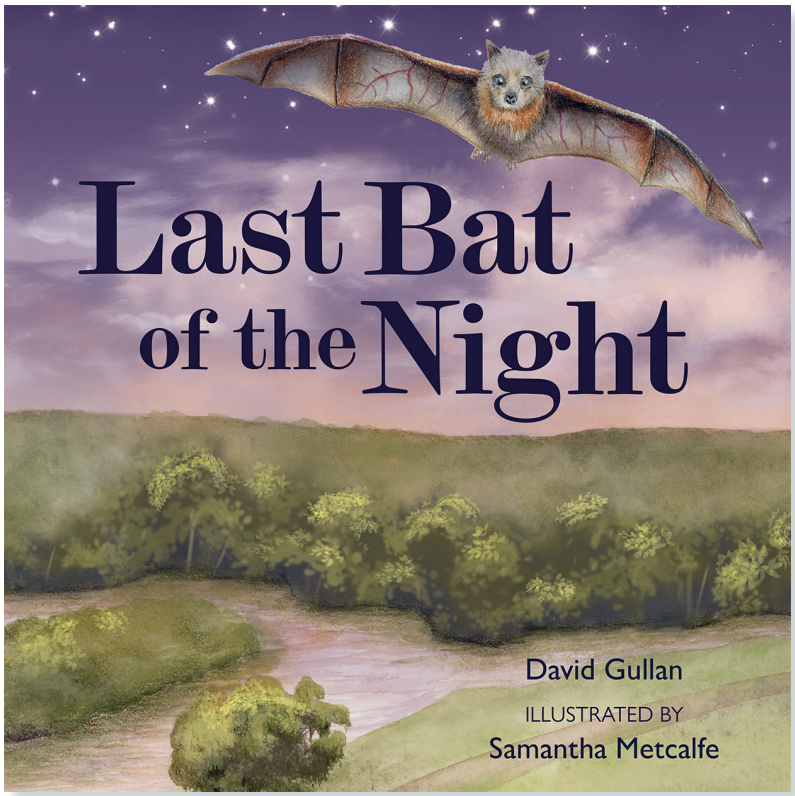
Last Bat of the Night

ISBN: 9781486318728

Teacher notes prepared by David Gullan.

CSIRO Publishing
Private Bag 10
Clayton South, VIC 3169, Australia

Website: www.publishing.csiro.au
Tel: 1300 788 000 (local call in Australia)
Email: csiropublishing@csiro.au



Last Bat of the Night

David Gullan and Samantha Metcalfe

About the book

'There it is! That's it! That's the last bat!'

'... Or could it be those ones?'

'Or this one, or that?'

As the stars come out for the night, a colony of bats passes overhead. Where are they going and what will they do on their nocturnal adventures?

Last Bat of the Night follows native Australian megabats as they glide across our skies to feed, drink and pollinate. Will you be the one to spot the last bat?

Recommended for

Readers aged 5 to 9 (Years 1 to 4)

CSIRO PUBLISHING

Teacher Notes

About the author and illustrator

David Gullan is an educator and a writer who enjoys creating stories that introduce young learners to Australian wildlife. He hopes that his books will encourage children to look up, look down and then take another look as they walk through the natural world.

Samantha Metcalfe is a natural history illustrator who finds inspiration in the unique biodiversity of the Australian bush. Working primarily in colour pencil, her realistic and detailed illustrations often focus on capturing Australia's native flora and fauna. Samantha's previous books include *Alight* and *The Voyage of Whale and Calf*. She was shortlisted for the 2019 Children's Book Council of Australia Award for New Illustrator.

Pre-reading questions or activities

Seeing bats
Have you ever seen a fruit bat? What time would you usually see it up in the sky?

Birds or mammals?
Bats move around by flying. Does that mean they're birds?

Discussion questions

Science

1. We learn a lot about fruit bats in the story, but what information can we use to decide if fruit bats are mammals or not?
2. Why do you think fruit bats, and so many other animals, have evolved to be nocturnal?
3. *'Scouring the skies with their eyes big and bright ...'*
   The author makes it clear that these bats use their eyes to search for food in the night, but do all bats have such good eyesight?
4. *'... faces painted with pollen as they forage about.'*
   Fruit bats help pollinate many plants in Australia. Why are pollinators such as bats so important to our natural environments?
5. We see a few of the bats in the story come face to face with some dangerous challenges. How do you think these threats are related to human activity?

Teacher Notes

English

1. On pages 8–9 the illustrator chooses to place the simple silhouettes of the children and the fruit bats on a detailed and beautifully coloured night sky. Why do you think they made this artistic choice?

HASS

1. Look at this incredible map from the Australasian Bat Society: https://experience.arcgis.com/experience/f9844b97605141fca01b2297d24ba401/

   Why do you think maps like this are important for bat colonies and populations in Australia?

Sustainability

1. Just like the bats in the story, fruit bats in Australia often share their urban environments with people, which can sometimes create challenges for both humans and bats. What actions can we take as humans to help ensure we can live safely and harmoniously alongside fruit bats?

Activities

Science

Pollination demonstration

'... faces painted with pollen as they forage about.' As we have mentioned, bats play an important role as pollinators for many species of Australian flora. Complete this fun activity to investigate how pollination works.

Materials:

- Paper flowers (or printed flower templates)
- Cotton balls (to represent pollinators)
- Icy-pole sticks (to hold the 'pollinators')
- Different coloured jelly powder (to represent pollen)
- Small bowls or trays for the pollen
- Paper or trays for the workspace

Steps:

1. Place a small amount of the 'pollen' powder in bowls and set out several paper flowers around the workspace.
2. Give each student or group a cotton ball pollinator attached to an icy-pole stick.
3. Students dip their pollinator into the pollen so that the powder sticks to it.
4. Students then visit different flowers, gently touching the centre of each flower with their pollinator to transfer the pollen.
5. Encourage students to observe how the pollen sticks to the pollinator and moves from flower to flower.
6. Discuss how real pollinators such as bees, butterflies, bats and birds carry pollen between flowers, helping plants reproduce and produce seeds.

Nocturnal adaptations

The fruit bats in our story don't use echolocation to see in the dark, an adaptation that many other bats depend on. Yet, they have adapted successfully to be creatures of the night.

Using the book, and doing some of your own research, list the physical and behavioural adaptations that help fruit bats live nocturnally.

English

Playing with nature

In the story, the children are trying to stay up to spot the last bat of the night fly past. The author then explains how you can play 'Last Bat' with your friends. Can you come up with a nature game of your own?

Create a nature-focused game that you can play with your friends and family, and write an explanation for how others can play. Be sure to include the rules, the equipment and any other necessary information for the game to be a success.

The Arts

Night-time silhouettes

The illustrator, Samantha Metcalfe, creates a beautiful scene on pages 8–9 using silhouettes on a rich pink and purple night sky. Today you will create your own night-time silhouette.

Safety: Be careful when using scissors to cut, or ask an adult for help.

Materials:

- Paints
- Paint brushes
- White paper
- Black paper
- Scissors
- Glue

Steps:

1. Paint the night sky on the white paper. You can take inspiration from the purples and pinks that Samantha Metcalfe uses in the story, or you can experiment with other colours such as blues, reds and oranges.
2. Place a small amount of white paint on a clean brush. Then, using your finger, flick the bristles on the brush towards your painting. This should flick white paint onto the night sky, giving the illusion of stars.
3. Once your night sky is complete it's time to add the silhouettes. Using the black paper, cut out the desired silhouettes you wish to include in your artwork. You can add fruit bats just like in the story, or you can come up with your own ideas.
4. Once you have cut out all your silhouettes, arrange them and glue them on and watch your artwork come to life.

HASS

Bat maps

Australia is lucky to have so many bat colonies across the country, and you can see them all on this BatMap Viewer from the Australasian Bat Society: https://experience.arcgis.com/experience/f9844b97605141fca01b2297d24ba401/

Using this resource, make your own map of bats in your local area by zooming in and finding your closest colony.

On your map include the following information:

- The location of the colony.
- The closest water sources.
- Surrounding parklands.
- The species of bat in the colony.

Teachers: Visit the Australasian Bat Society's website for other great resources for children. See: https://www.ausbats.org.au/bat-resources-for-kids.html

Australian Curriculum Links (Version 9.0)

Year level	Learning area: Science	Other learning areas
Years 1/2	**Science Understanding: Biological sciences** • Identify the basic needs of plants and animals, including air, water, food or shelter, and describe how the places they live meet those needs (AC9S1U01) **Science Inquiry: Planning and conducting** • Suggest and follow safe procedures to investigate questions and test predictions (AC9S2I02)	**English: Language: Text structure and organisation** • Explore how texts are organised according to their purpose, such as to recount, narrate, express opinion, inform, report and explain (AC9E1LA03) **Language for expressing and developing ideas** • Experiment with and begin to make conscious choices of vocabulary to suit the topic (AC9E2LA09) **English: Literature: Literature and contexts** • Discuss how language and images are used to create characters, settings and events in literature by First Nations Australian, and wide-ranging Australian and world authors and illustrators (AC9E1LE01) **English: Literacy: Texts in context** • Discuss different texts and identify some features that indicate their purposes (AC9E1LY01) • Identify how similar topics and information are presented in different types of texts (AC9E2LY01) **Interacting with others** • Use interaction skills including turn-taking, speaking clearly, using active listening behaviours and responding to the contributions of others, and contributing ideas and questions (AC9E1LY02) • Use interaction skills when engaging with topics, actively listening to others, receiving instructions and extending own ideas, speaking appropriately, expressing and responding to opinions, making statements, and giving instructions (AC9E2LY02) **The Arts: Visual Arts** • Experiment and play with visual conventions, visual arts processes and materials (AC9AVA2D01) • Use visual conventions, visual arts processes and materials to create artworks (AC9AVA2C01) **HASS: Geography** • How places can be spatially represented in geographical divisions from local to regional to state/territory, and how people and places are interconnected across those scales (AC9HS2K03)
Years 3/4	**Science Understanding: Biological sciences** • Compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals (AC9S3U01) **Science Inquiry: Planning and conducting** • Use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests, and considering the safe use of materials and equipment (AC9S4I02)	**English: Language: Text structure and organisation** • Describe how texts across the curriculum use different language features and structures relevant to their purpose (AC9E3LA03) **English: Literature: Examining literature** • Discuss how an author uses language and illustrations to portray characters and settings in texts and explore how the settings and events influence the mood of the narrative (AC9E3LE03) **English: Literacy: Texts in context** • Recognise how texts can be created for similar purposes but different audiences (AC9E3LY01) **Interacting with others** • Listen for key points and information to carry out tasks and contribute to discussions, acknowledging another opinion, linking a response to the topic, and sharing and extending ideas and information (AC9E4LY02) **The Arts: Visual Arts** • Experiment with a range of ways to use visual conventions, visual arts processes and materials (AC9AVA4D01) • Use visual conventions, visual arts processes and materials to create artworks that communicate ideas, perspectives and/or meaning (AC9AVA4C01)
All	**Cross-curriculum Priority: Sustainability** • Systems: All life forms, including human life, are connected through Earth's systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival (SS1)	

Related books from CSIRO Publishing

For younger readers:

- *Life in a Hollow* (https://www.publishing.csiro.au/book/8076)
- *Pollination* (https://www.publishing.csiro.au/book/7957)

For older readers:

- *Sensational Australian Animals* (https://www.publishing.csiro.au/book/8094)

Other CSIRO resources

CSIRO has developed and delivered a broad range of high-quality STEM education programs and initiatives for nearly 40 years. Our programs aim to inspire the pursuit of further STEM education among students and the community, to equip the emerging workforce with tomorrow's skill sets, and to strengthen collaboration between industry and classrooms across Australia. For more information visit: https://www.csiro.au/en/Education