

# Teacher Notes

## Themes

- Lifecycles
- Ecology

## Key learning outcomes

- Learn the stages in the lifecycle of a butterfly.
- Understand how certain caterpillars and ants help each other survive.
- Become familiar with scientific terms relating to the butterfly's lifecycle.

## Key curriculum areas

- **Science:** Science Understanding (Biological sciences)
- **English:** Language, Literacy
- **Visual arts**

## Publication details

*The Butterfly and the Ants*

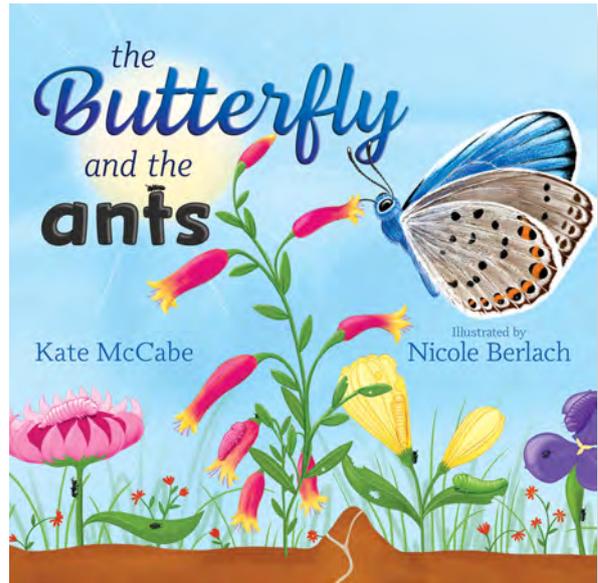
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# The Butterfly and the Ants

Kate McCabe and Nicole Berlach

## About the book

A tiny caterpillar begins its journey towards becoming a magnificent butterfly.

*The Butterfly and the Ants* tells the wonderful true story of a butterfly's lifecycle. 'Blue' might seem an odd name for a small caterpillar, but follow him as he meets some welcoming ants, produces honey and undergoes an amazing transformation. You'll also discover how he gets his name!

Beautifully illustrated, this engaging story offers an insight into the fascinating relationships between plants, butterflies and ants.

## Recommended for

Children aged 6–9 years.



PUBLISHING

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## About the author and illustrator

**Kate McCabe** grew up exploring the bushland of Eltham, Victoria, which led to her enduring love and fascination for living things both big and small. With degrees in zoology and teaching, Kate now works in conservation education.

**Nicole Berlach** has been drawing for as long as she can remember. She is trained in scientific illustration, which informs the art she creates, celebrating her unique Australian environment. She exhibits regularly and her work can be found at [www.nicoleberlach.com](http://www.nicoleberlach.com).

## Pre-reading questions or activities

A butterfly looks nothing like a caterpillar, but every butterfly was once a caterpillar. Caterpillars are the young stage in the life of both butterflies and moths. Butterflies and moths are insects in the same family, which is called the Lepidoptera. There are many different types of butterflies and moths: in Australia we have about 400 species of butterfly and 20 000 species of moth. What sort of caterpillars, butterflies and moths have you seen in your garden or local area? Do you know the difference between a butterfly and a moth?

*Two of the biggest differences between moths and butterflies are:*

- *Butterflies fly around in the daytime whereas moths fly around at night.*
- *Most butterflies hold their wings upright when resting whereas most moths lie them flat.*

## Discussion questions

### Science

1. When two different types of living things help each other, like the caterpillar and the ants in the story, it is called symbiosis. How do the ants help Blue? And how does Blue help the ants?

*The ants keep Blue safe from predators by letting him sleep in their nest. They also carry or guide him out of the nest to feed on nearby plants where they protect him while he eats. In return, Blue makes a type of honey from a gland on his back that the ants can eat. Explain to students that while Blue depends on the ants for survival, the ants don't need Blue, but still benefit from him.*

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- There are many other examples of symbiosis in the natural world. Talk about the following relationships and decide if they are an example of symbiosis.
  - Clownfish (like Nemo in *Finding Nemo*) live among the tentacles of sea anemones, where they hide from predators. The clownfish scare away fish that try to eat the anemone's tentacles.
  - Barnacles can attach themselves to whales so they are carried around in the sea. Barnacles are filter feeders, so this movement through the water helps them to find food. The whales are not affected by the barnacles.
    - Clownfish and anemones have a symbiotic relationship because they both benefit.*
    - The relationship between the whale and the barnacles is not symbiotic. The barnacles get a benefit, but the whale does not.*
- Many butterfly species have similar relationships with ant species as Blue does in the story. For some species, the young life stages (eggs and caterpillars) would not survive without the ants to look after them. What would happen to those butterflies if there were no ants of the right sort in their environment?

*Those butterfly species might not be able to live in an environment without the right ants. They could die out in that area (become locally extinct).*
- Metamorphosis is the name for the amazing change that happens in the chrysalis. The caterpillar body breaks down and a new body forms in the shape of a butterfly. How is a caterpillar different from a butterfly? Think about what they look like and how they move, eat and see. Can you think of any other animals that undergo a metamorphosis from one body type into a completely different one in their lifecycle?

*Caterpillars eat leaves, walk on their legs (and prolegs) and have simple vision. Butterflies drink nectar, they can fly and see colours.*

*Another example of metamorphosis is a tadpole turning into a frog.*

## English

- After the story about Blue are two more pages of text. One page has facts about butterflies. Do you like being able to find out more about the butterflies? What is the most interesting fact? Discuss whether you prefer learning about caterpillars and butterflies from the story or from the facts page.
- The final page has definitions of some of the scientific words that appear in the book. What is the name of a list like this? Did you already know any of these words?

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## Activities

### Science

#### *Lifecycle of a butterfly*

Provide the students with a copy of the worksheet on page 6 of the notes, scissors, and glue or tape.

*Answer: Order is egg, caterpillar, chrysalis, butterfly.*

### English

#### *The Butterfly and the Ants crossword*

Provide the students with a copy of the worksheet on page 7 of the notes.

#### *Answers*

##### **Across**

4. *Exoskeleton*

5. *Attendants*

7. *Larva*

8. *Ecdysis*

9. *Chrysalis*

11. *Butterfly*

12. *Honey*

##### **Down**

1. *Caterpillar*

2. *Instar*

3. *Blue*

6. *Antenna*

9. *Cycle*

10. *Symbiosis*

# Teacher Notes

## *Saying scientific words*

Practise saying some of the scientific words in the book using the pronunciation guides:

- metamorphosis (meh-tah-more-FOH-siss)
- ecdysis (ek-DYE-siss)
- symbiosis (sim-bye-OH-siss)
- Lycaenidae (lie-SEEN-ih-dee)
- chrysalis (KRIS-ah-liss)
- pupa (PEW-pa).

Make sure you understand what each word means. Check the Glossary at the back of the book and the additional information page if you are not sure.

## **Visual arts**

### *Create butterfly habitat*

Using leaves and sticks collected from the school yard or local park, as well as craft materials, create three components of Blue's habitat which he needs during his lifecycle: the ant's nest, the plants that the caterpillar eats and the flowers that the adult butterfly feeds on. Make sure you include the ants in the nest. Make a caterpillar and a butterfly to show Blue in the different habitats.

## Worksheet: Lifecycle of a butterfly

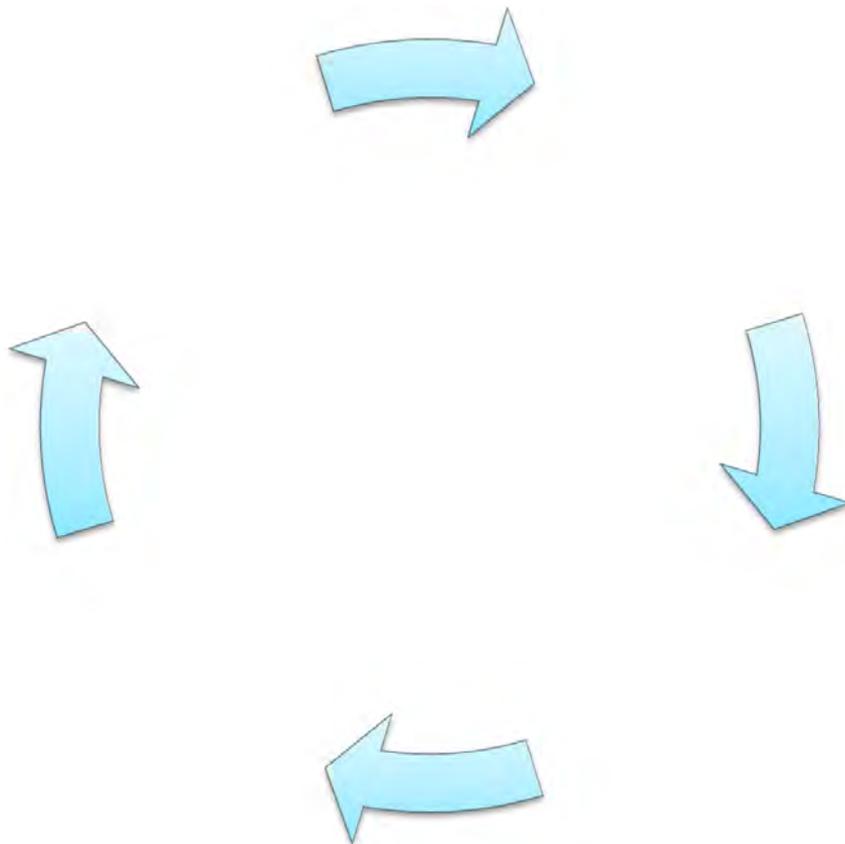
**Safety:** This activity uses scissors. Be careful when using scissors, or ask an adult for help.

1. Cut out the following pictures of the four stages of a butterfly's lifecycle.



Illustrations © Nicole Berlach

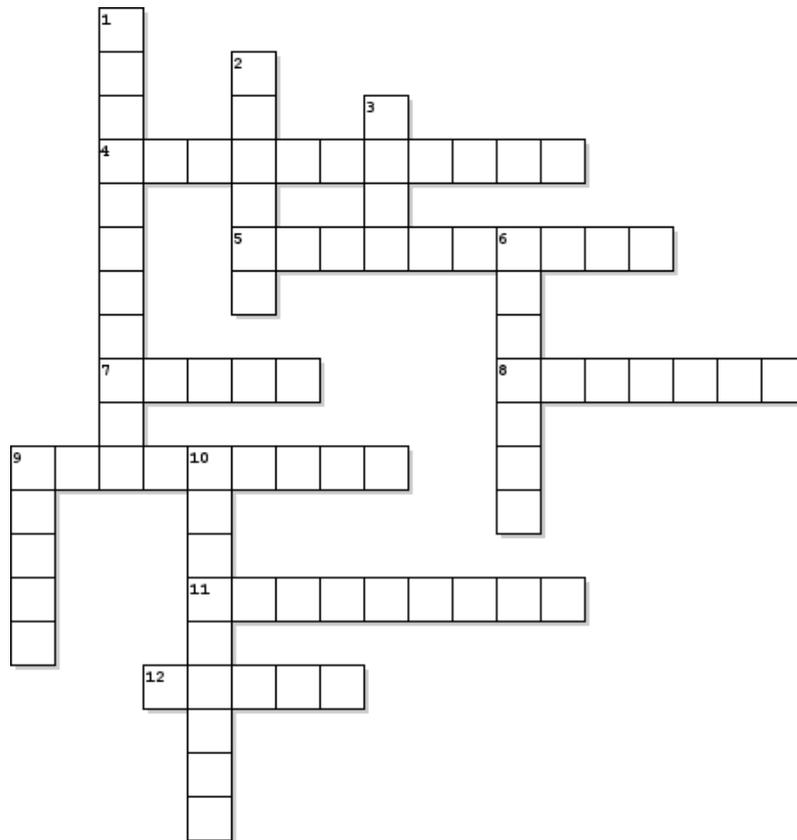
2. Arrange the stages in order in the cycle below. Glue or tape the pictures in place to show the progression from one stage to the next.



3. Label each stage with the correct name: Caterpillar, Butterfly, Egg, Chrysalis.

## Worksheet: *The Butterfly and the Ants* crossword

Look in the book to find the answers to the clues, and fill in the crossword puzzle.



### Across

4. The caterpillar's outer layer that splits and comes off to let Blue grow
5. The insects that take care of Blue
7. Young (juvenile) stage of an insect's lifecycle
8. The scientific word for 'moulting'
9. The stage of transformation into a butterfly (also known as a pupa)
11. Blue's adult stage
12. What Blue produces and the ants feed on

### Down

1. Blue when he hatches from the egg
2. Scientific name for a growth stage of an insect
3. Colour of the butterfly
6. Scientific word for a 'feeler' on the butterfly's head
9. Repeating pattern of life
10. Relationship between two living things in which they both benefit

Created with [www.supercrosswordcreator.com](http://www.supercrosswordcreator.com)

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## Australian Curriculum links

Year level	Learning area: Science	Other learning areas
1/2	<p><b>Science Understanding: Biological sciences</b></p> <ul style="list-style-type: none"><li>Living things live in different places where their needs are met (<a href="#">ACSSU211</a>)</li><li>Living things grow, change and have offspring similar to themselves (<a href="#">ACSSU030</a>)</li></ul>	<p><b>English: Language</b></p> <ul style="list-style-type: none"><li>Understand the use of vocabulary about familiar and new topics and experiment with and begin to make conscious choices of vocabulary to suit audience and purpose (<a href="#">ACELA1470</a>)</li></ul> <p><b>Visual arts</b></p> <ul style="list-style-type: none"><li>Explore ideas, experiences, observations and imagination to create visual artworks and design, including considering ideas in artworks by Aboriginal and Torres Strait Islander artists (<a href="#">ACAVAM106</a>)</li></ul>
3/4	<p><b>Science Understanding: Biological sciences</b></p> <ul style="list-style-type: none"><li>Living things have life cycles (<a href="#">ACSSU072</a>)</li><li>Living things depend on each other and the environment to survive (<a href="#">ACSSU073</a>)</li></ul>	<p><b>English: Literacy</b></p> <ul style="list-style-type: none"><li>Identify characteristic features used in imaginative, informative and persuasive texts to meet the purpose of the text (<a href="#">ACELY1690</a>)</li></ul>

## Selected references

Braby MF (2016) *The Complete Field Guide to Butterflies of Australia*. 2nd edn. CSIRO Publishing, Melbourne.

Brunet B (2010) *Australian Insects A Natural History*. 2nd edn. Reed New Holland, Sydney.

Field RP (2013) *Butterflies Identification and Life History*. Museum Victoria Publishing, Melbourne.

Orr A, Kitching R (2010) *The Butterflies of Australia*. Allen & Unwin, Sydney.

Soskin R (2015) *Metamorphosis Astonishing Insect Transformations*. Bloomsbury Natural History.

## Related books from CSIRO Publishing

*Bee Detectives* (<https://www.publish.csiro.au/book/7962>)

*Nema and the Xenos: A Story of Soil Cycles* (<https://www.publish.csiro.au/book/7908>)

*Phasmid: Saving the Lord Howe Island Stick Insect* (<https://www.publish.csiro.au/book/7226>)

*The Complete Field Guide to Butterflies of Australia, Second Edition*  
(<https://www.publish.csiro.au/book/7223>)

## 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>