

Teacher Notes

Themes

- Life cycles
- Marine mammals
- Migration

Key learning outcomes

- Learn about the life cycle of the humpback whale
- Identify the physical and behavioural characteristics of the humpback whale
- Understand how Indigenous people explain the existence of humpback whales

Key curriculum areas

- **Science:** Science Understanding (Biological sciences), Science as a Human Endeavour, Science Inquiry Skills
- **English:** Language, Literacy
- **Mathematics:** Measurement and geometry
- **The Arts:** Visual Arts
- **Cross curriculum priority:** Aboriginal and Torres Strait Islander Histories and Cultures

Publication details

The Voyage of Whale and Calf

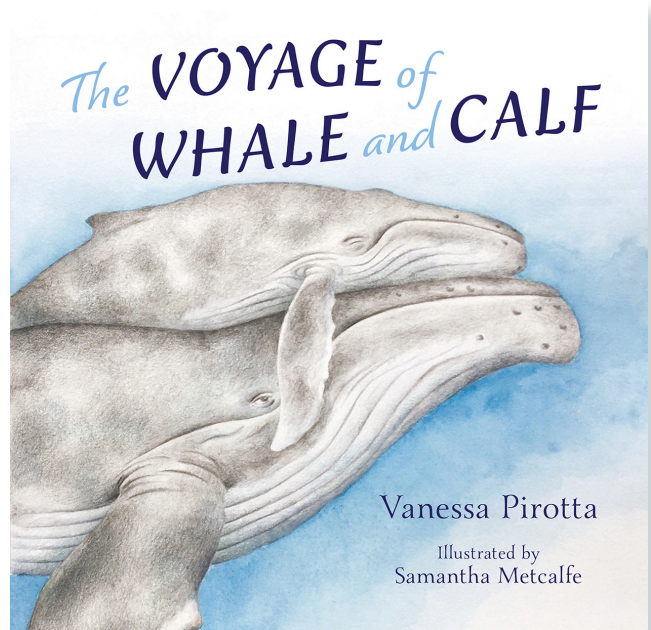
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The Voyage of Whale and Calf

Vanessa Pirotta and
Samantha Metcalfe

About the book

Calf is a newborn humpback whale, venturing into an exciting marine world while being nurtured and cared for by his mother. Join them as they travel along the east coast of Australia, meeting marine creatures. See the challenges Calf and Whale face as they head down into the icy waters of Antarctica, and marvel at these amazing ocean giants.

The Voyage of Whale and Calf explores humpback whale migration – plunge below the surface to learn more about the lives of these magnificent marine mammals!

Recommended for
Children aged 6–9



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About the author and illustrator

Dr **Vanessa Pirotta** is a wildlife scientist and science communicator. Her work is primarily focused on the use of innovative technology for wildlife conservation. Vanessa has travelled the world for humpback whale research, and her most famous research involves the use of drones to collect whale snot!

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.

Pre-reading questions or activities

Animal communication

Animals communicate with each other using a variety of methods: chemicals (for example, ants), sounds (birds), movements (when bees dance) and physical gestures (dogs). Whales use sounds to talk to each other and some sing. Watch and listen to this recording of male humpback whales and try to imagine what they might be expressing and why: <https://youtu.be/F8Zt3mYlOqU>

Communication purposes include: attracting a mate, coordinating group behaviour, warding off enemies, caring for offspring.

Life cycle

Some animal babies emerge from an egg, some are born live. Some need to evolve through a variety of shapes and forms to become an adult: think about a lizard, koala or a caterpillar. The baby whale (or calf) is live-born but has to learn some skills and develop some abilities before it can become independent from its mother. What do you imagine these skills and abilities might be?

Whale calves need to: develop muscles so they can swim on their own; learn to hold their breath long enough to dive deeply; and catch their own food so they can be weaned from their mother's milk.



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Discussion questions

Science

1. Do you need to travel long distances in order to find friends, to eat a meal or to learn how to be an adult? Probably not. However, whales go on very long journeys to fulfil their life needs. What are the reasons why Whale and Calf migrate roughly 5000 kilometres from Australia to Antarctica and back again each year?

Warm water to give birth in, cold water to find the krill that lives in the Antarctic.

Humpbacks mainly feed in the Antarctic and, while there, put on blubber to keep them alive for the long journey north and back again.

2. What sort of animal is the humpback whale? Is it a fish? Is it a mammal? Is it an insect or maybe a reptile? What are the qualities mentioned in the book that tell you they are mammals?

Live birth, Calf drinks milk, the whales have whiskers/hairs. Could also explain to students that a whale is a cetacean, a subset of mammals.

3. What are some of the threats that humpback whales face on their voyages, now and into the future?

Getting hit by big boats; becoming entangled in fishing nets; swallowing plastics; being hunted by killer whales (a toothed, ferocious and very cunning predator); loud underwater noises from ships, oil rigs and other machinery that interrupt their communications; warming oceans that impact the krill populations (less sea ice means less homes for Antarctic krill).

English

1. Using the pictures in the book and your logic, which of the following are Predators, Competitors or Prey for the humpback whale: krill; seals; penguins; humans; albatrosses (giant sea birds); plankton (tiny sea creatures); killer whales; dolphins.

Predators: humans and killer whales

Competitors: seals, penguins, albatrosses and dolphins

Prey: krill and plankton

2. If the baby whale is called a calf, what do you think the mother and father are called?

Cow and bull.

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Activities

Science

From largest to smallest

Explain to students how all living things are categorised into increasingly smaller groups for the purposes of making scientific studies less confusing (teachers can read this article for some background information: <https://theconversation.com/explainer-what-is-biological-classification-10691>).

Photocopy several sets of the cards provided on the worksheet and give one shuffled set to each pair or small group of students. Instruct students to decide what the correct taxonomic order is for the words on the cards.

Mammals > cetaceans > whales > baleen > humpbacks

3-2-1

3: Record three things of interest that you learned from the book.

2: Write down two more questions that you have about one of those topics.

1: Find out the answer to one of those questions.

For older students you may decide to increase the numbers here.

Aboriginal and Torres Strait Islander Histories and Cultures

Watch, listen and draw

Run through the following words and definitions and write them on the board for the class to refer to (teachers can use this site for reference material: <https://www.bonditomanly.com/bondi-to-manly-walk-blog/2020/11/13/dreamtime-story-of-the-aboriginal-whale-symbol-as-told-by-ray-ingrey>).

Dharawal is the language that Ray Ingrey uses.

buriburi – became the humpback whale

barangga – boat/vessel

gunaagan – fell into the shallow water and became the starfish

guriwala – hugged a tree and became the koala

galu – became the dancing brolga

Show students this 10-minute clip (<https://youtu.be/OK1Zf6EQe2s>) of the story that explains how some animals came to be and why humpback whales return to the Sydney and south coast areas each year.

Ask students to draw a poster that includes the animals in the story to demonstrate that they've followed the story.

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English

Word puzzle

Using the worksheet supplied, ask students to interpret the clues provided by entering the correct words into the boxes. The shaded boxes will then spell out a related mystery word.

carnivorous

blubber

pectoral

migration

breaching

slipstream

dorsal

baleen

Mystery word: cetacean

Mathematics

Size comparison

Calf, when born, is 4 to 5 metres long, and an adult humpback whale can measure up to 17 metres.

Using a tape measure, have students record their own height in metres, and then see how much larger Calf and Whale are compared to them. Students could also measure other things to compare to a humpback whale, such as the length of the classroom, playground or school hall.



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Worksheets

Science: From largest to smallest

mammals

cetaceans

whales

baleen

humpbacks

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English: Word puzzle

1. Are baleen whales carnivorous or herbivorous?
2. What is the name given to the layer of fat that will keep Calf warm?
3. What is the scientific word for a whale arm?
4. The voyage that Whale and Calf take is also known as _____?
5. When a whale jumps up out of the water, it's called _____?
6. The water that carries Calf alongside his mother is the _____?
7. The fin on a whale's back is called the _____ fin.
8. What is another word for a toothless whale?

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2.

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3.

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4.

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5.

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6.

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7.

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8.

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Mystery word: _ _ _ _ _

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Australian Curriculum Links

Year level	Learning area: Science	Other learning areas
Years 1/2	<p>Science Understanding: Biological Sciences</p> <ul style="list-style-type: none">Living things have a variety of external features (ACSSU017) <p>Science as a Human Endeavour: Nature and development of science</p> <ul style="list-style-type: none">Science involves observing, asking questions about, and describing changes in objects and events (ACSHE021)	<p>English: Literacy</p> <ul style="list-style-type: none">Respond to texts drawn from a range of cultures and experiences (ACELY1655) <p>English: Language</p> <ul style="list-style-type: none">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 (ACELA1470)
Years 3/4	<p>Science Inquiry Skills: Communicating</p> <ul style="list-style-type: none">Represent and communicate observations, ideas and findings using formal and informal representations (AC SIS060) <p>Science Understanding: Biological Sciences</p> <ul style="list-style-type: none">Living things have life cycles (ACSSU072)	<p>English: Literacy</p> <ul style="list-style-type: none">Interpret ideas and information in spoken texts and listen for key points in order to carry out tasks and use information to share and extend ideas and information (ACELY1687) <p>Mathematics</p> <ul style="list-style-type: none">Compare objects using familiar metric units of area and volume (ACMMG290) <p>Visual Arts</p> <ul style="list-style-type: none">Explore ideas and artworks from different cultures and times, including artwork by Aboriginal and Torres Strait Islander artists, to use as inspiration for their own representations (ACAVAM110)
All	<p>Cross Curriculum Priority: Aboriginal and Torres Strait Islander Histories and Cultures</p> <p>01.3 Aboriginal and Torres Strait Islander Peoples have holistic belief systems and are spiritually and intellectually connected to the land, sea, sky and waterways.</p>	

Related books from CSIRO Publishing

Beachcombing: A guide to seashores of the Southern Hemisphere
(<https://www.publish.csiro.au/book/8023>)

Hold On! Saving the Spotted Handfish (<https://www.publish.csiro.au/book/7903/>)

Ocean Animals: The Weirdest, Smartest and Sneakiest Sea Creatures
(<https://www.publish.csiro.au/book/7881>)

Swim, Shark, Swim! (<https://www.publish.csiro.au/book/8069/>)

The Squid, the Vibrio and the Moon (<https://www.publish.csiro.au/book/7852/>)

The Way of the Weedy Seadragon (<https://www.publish.csiro.au/book/7982/>)

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>