Themes

- Marine ecology
- Ocean literacy

Key learning outcomes

- Discover an extensive marine ecosystem of Australia
- Recognise several of the life forms that live and interact in this reef system
- Appreciate the importance of keeping this habitat healthy

Key curriculum areas

- Science: Science Understanding (Biological sciences); Science as a Human Endeavour; Science Inquiry Skills
- English: Language
- The Arts: Visual Arts
- Mathematics: Location and Transformation
- General Capabilities: Information and Communication Technology (ICT) Capability

Publication details

The Great Southern Reef

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The Great Southern Reef Paul Venzo and Prue Francis Illustrated by Cate James

About the book

Have you heard of the Great Southern Reef? Join Professor Seaweed and her friends Frankie and Sam to learn more about one of Australia's best kept secrets!

The Great Southern Reef spans thousands of kilometres along the coast from northern New South Wales to Western Australia. It is home to giant kelp forests and fascinating animals such as rock lobsters, sea snails and sponges. Explore the sandy beaches with this inquisitive trio, and discover marine curiosities that are washed up along the coast after a big storm.

You may be inspired to go beachcombing yourself, to learn and care about the animals and seaweed that you find!

Recommended for Children aged 6 to 9 (Years 1 to 4)



About the authors and illustrator

Paul Venzo and **Prue Francis** work across children's literature and marine science at Deakin University. They want to connect younger readers with stories and information about life in and around Australia's oceans.

Cate James is a children's book illustrator who lives by the ocean and loves swimming at the beach. She has a very naughty miniature dachshund called Sebastian who barks a lot. Cate's favourite things to draw are native Australian trees and wildlife.

Pre-reading questions or activities

Old reef, new name, new protections

The book is about a very large section of Australia's coastline that is a wonderful underwater reef, home to a wide variety of animal and plant-like algae species. In December 2019 it was identified as a Hope Spot, a region vital for the globe's ocean health. Watch this video and note some of the sea life you didn't know about. Look for seadragons, soft corals, fish, octopuses, crustaceans (crabs and lobsters), sponges, molluscs (snails and slugs), seaweed meadows and kelp forests.

https://youtu.be/l1ci3CqnuxA

Discussion questions

Science

 Knowing about our local oceans is as important as knowing about our land ecosystems. What role does the Great Southern Reef (GSR) play in our lives and the lives of marine organisms?

The GSR provides food and shelter to a huge variety of flora and fauna, many of which have yet to be identified. It provides us with food (for example, lobster, seaweed and abalone) and a place to visit for play and recreation. Oceans produce oxygen and help to control our weather. Diversity in the ocean is as vital as diversity on land in order to maintain food webs and ecological balance.



2. Seaweeds such as kelp can be very useful and there are people who are now farming seaweed. What can kelp and other aquatic algae contribute to life on Earth?

Seaweeds store carbon dioxide; they can de-acidify the ocean; if added to stock feed, they can reduce methane output from cows; some of the creatures in the ocean rely on the kelp forests and other algae for food and protection (animals such as crustaceans, molluscs and urchins). Kelp can be used to make a biodegradable alternative to plastic, called bioplastic.

3. Two groups of animals that are found along the Great Southern Reef are molluscs and crustaceans. Molluscs usually have a soft body and either a hard outer shell or an internal shell, while crustaceans generally have a hard shell called an exoskeleton. From the story and the Glossary, can you list which creatures are molluscs?

Cuttlefish, snails, squid, abalone and octopuses are molluscs. (Crabs and lobsters are crustaceans, and sea urchins are echinoderms.)

4. How can people enjoy and protect the beauty of the Great Southern Reef?

People can go beachcombing and rockpooling when they go to the seaside, to see what washes up from the local waters. They can take photos or draw what they find. People can make sure that rubbish is kept out of our waterways, including all the creeks and rivers that eventually empty into the ocean. Even if you don't live near the coast, you can help to protect the Reef and other marine environments in this way.

English

- 1. On the page with the colourful underwater scene, there are some words in **bold** that direct you to the Glossary. Using the explanations for those words, can you match the creatures with their names?
- 2. Frankie and Sam are lucky to have a friend like Professor Seaweed, a scientist who knows a lot about the beach, the ocean and its inhabitants. What words might describe the work that Professor Seaweed does? Write the words on the board and talk about how some of them are connected to each other, either by meaning or by being a variation of the same word.

Aquatic, biology, coastal, conservation, counting, data collection, diving, ecologist, ecosystem, environment, habitat, littoral, marine, measuring, oceanic, research, sustainability, swimming, threats, underwater, wildlife. There will be others, too.



Activities

Science

Mapping your notes

This activity will give students practice at taking notes using a mind map, a method particularly useful for visual learners. The mind map may be created using any software (like Kidspiration or Popplet) and all details will be recorded in this way.

First, explain to the class that endemic means 'native and found only in a certain area'. Then ask students to choose one of the living things from the book and investigate more about it, using the information provided at this site: https://greatsouthernreef.com/marine-life. Each entry links to further information. Ask students to find the label 'Distribution' to discover if the species is endemic to Australia, to the Great Southern Reef or if it lives in many places around the world.

Other facts they can look for include: size or length; number of species; what they eat; any unusual facts. Ask students to write their findings on their mind map.

Finally, ask students to share their mind map with a partner and explain what they found.

The Arts

Colour the marine world

Distribute copies of the worksheet provided on the next page and ask students to colour the underwater scene. Some students may use watercolour paints, some may use crayons or pencils. Which medium best represents the ocean world and why? The artworks can be part of a display that demonstrates the variety of life along the Great Southern Reef.

Maths

How far is the Great Southern Reef?

Seventy per cent of Australians live within 50 kilometres of the Great Southern Reef. Have students find their home town on a map of Australia then calculate how far they are from the Reef. Are they part of the 70 per cent of the population?



Worksheet: Colour the marine world



Illustration © Cate James



Australian Curriculum Links

Year level	Learning area: Science	Other learning areas
Years 1/2	Science as a Human Endeavour: Use and influence of science	English: Language
	 People use science in their daily lives, including when caring for their environment and living things (ACSHE022) Science Inquiry Skills: Communicating Represent and communicate observations and ideas in a variety of ways (ACSIS042) 	 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) Visual Arts Create and display artworks to communicate ideas to an audience
		<u>(ACAVAM108)</u>
Years 3/4	Science Understanding: Biological sciences	English: Language
	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044) Science Inquiry Skills: Communicating	 Understand that verbs represent different processes, for example doing, thinking, saying and relating and that these processes are anchored in time through tense (<u>ACELA1482</u>)
	Represent and communicate observations, ideas and findings using	Mathematics: Location and Transformation
	formal and informal representations (ACSIS071)	 Use simple scales, legends and directions to interpret information contained in basic maps (<u>ACMMG090</u>)
All	General Capabilities: Information and Communication Technology (ICT) Capability Investigating with ICT: Locate, generate and access data and information from a given set of digital sources.	

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 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

