

Sanctuaries and Sea Creatures: Ricketts Point

Teacher Guide



Coastcare Victoria School Kit



OFFICIAL

Acknowledgements

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Acknowledgment

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.



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Curriculum links

Year 5 and 6 Curriculum Area	C/ Code	Content Description	Elaboration / Link to this lesson/ Learning intentions.
Science Understanding /Biological Sciences	VCSSU074	Living things have structural features and adaptations that help them to survive in their environment.	Explaining how particular adaptations aid survival Describing and listing adaptations of living things suited for particular kelp forests. Understanding and differentiating between behavioural, structural, and physiological adaptations.
Science Understanding /Biological Sciences	VCSSU075	The growth and survival of living things are affected by the physical conditions of their environment.	Identifying and distinguishing biotic vs abiotic factors in a marine ecosystem.

Year 7 and 8 Curriculum Area	C Code	Content Description	Elaboration / Link to this lesson
Science Understanding / Biological science	VCSSU091	There are differences within and between groups of organisms; classification helps organise this diversity	Explain the meanings of the term vertebrate and invertebrate. Use a classification key to identify species. Apply understanding to explain why it is sometimes difficult to classify new organisms correctly.

Cross Curriculum Priority	C/ Code	Content Description	Elaboration / Link to this lesson/ Learning intentions.
Sustainability > Futures		Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.	<p>Using local examples to understand the importance and value of marine parks and sanctuaries.</p> <p>Understanding the role of marine sanctuaries in sustainable futures of marine environments.</p>

Key Themes:

Adaptations, Habitats, Classification, Marine Sanctuaries.

Learning intentions:

Students will understand:

- Living things have structural features and adaptations that help them to survive in their environment.
- The growth and survival of living things are affected by the physical conditions of their environment.
- The differences between biotic and abiotic factors.
- Classification is a useful tool to help organise the diversity of organisms.
- Marine sanctuaries are an effective tool for managing the conserving marine species.

Success Criteria:

Students are able to:

- Demonstrate how organisms are suited to a kelp forest environment.
- Use examples to describe how particular adaptations aid survival.
- Identify biotic and abiotic factors that contribute to the survival of organisms in an environment.
- Use a classification key to identify species.
- Demonstrate understanding as to why it is sometimes difficult to classify new organisms correctly.
- Use local examples to communicate the importance of marine sanctuaries for the conservation and protection of ocean species.

Background

Marine protected areas (MPA) are areas of the ocean specifically designed to help the protection and maintenance of biodiversity within unique ecosystems that are potentially under threat. MPAs provide a range of benefits including protecting critical breeding, nursery and feeding habitats for fish, raising the profile of an area for marine tourism, and providing opportunities for education and cultural awareness.

Australia has a commonwealth network of MPAs that was established in November 2012, covering around 36% of waters within Australia's jurisdiction. Across Victoria, there are 30 MPAs. These include Marine National Parks (MNP), Marine Sanctuaries (MS), Marine and Coastal Parks, Marine Parks and a Marine Reserve. MPAs span Victoria's five marine bioregions and aim to conserve and protect ecological processes, habitats and associated flora and fauna. MNPs and MSs are "no-take" areas, while the other MPAs are managed for multiple uses.

Ricketts Point Marine Sanctuary is in Port Phillip Bay, just off Beaumaris in Melbourne's south-eastern suburbs. The sanctuary sits in an Aboriginal cultural landscape within the traditional Sea Country of the [Bunurong People](#) and was created in 2002 by the Victorian Government to ensure that representative samples of Victoria's diverse and distinctive marine environment are conserved for future generations.

The sanctuary is 115 hectares in size and supports a diverse range of habitats. Near the shore, the rocks are covered in red, green, and brown algae that provide food and shelter to many marine creatures including fish, stingrays, crustaceans, molluscs, and other invertebrates.

The main habitat within this marine sanctuary is rocky reef covered in golden kelp (*Ecklonia radiata*). This species dominates 8,000km of Australia's southern coastline - a bioregion recently given an identity, the Great Southern Reef. Golden kelp is known by scientists as a foundation species - its presence in an area supports the growth of many other species by providing food, nutrients, and shelter.

Resources

- Ricketts Point Video
- Video Transcript
- Presentation Slides
- Quiz Worksheet
- Marine Life Bingo Cards (31 unique sets)
- Habitats and Adaptations Worksheet
- Classification Worksheet
- Ricketts Point Review Questions Worksheet (year 5-6)
- Ricketts Point Review Questions Worksheet (year 7-8)
- Marine Sanctuaries Investigation Worksheet
- Sanctuaries Glossary

Other useful external links:

- [Additional Video: A marine sanctuary emerges at Ricketts Point](#)
- [Bunurong Map](#)
- [Ricketts Point Marine Sanctuary Guide](#)
- [Marine Parks and Sanctuaries Fact Sheet](#)
- [Explore Underwater Victoria Website](#)
- [Great Southern Reef Website](#)
- Victorian National Parks Association Reef Watch Marine Bingo- Contact Kade Mills for more details

Lesson Plan

Activity 1: Marine Life Bingo

Step 1. Hand out print outs of Marine Life Bingo Cards to students and give them a few moments to study their cards. There are 30 cards each with a unique combination of 15 species of marine life, as well as three blank boxes. Make sure to also access the Marine Life Bingo Answer Key.

Step 2. Set up the Ricketts Point Video and explain to students to watch and listen out carefully for the marine life on the bingo cards. Only tick off marine life when the narrator mentions the specific species. First to get all 15 species ticked off shouts 'BINGO'.

Note if students are going onto the Classification part of this lesson then do not do the next step.

Step 3 (optional). Have students try and find their three missing species. They can move around the class looking at other students' cards. The first to get all three can also be a prize winner.

Species in order of appearance:

1. Ecklonia kelp
2. Sargassum
3. Sea lettuce
4. Seagrass
5. Banjo Ray
6. Dusky Morwong
7. Hulafish
8. Blenny
9. Sweep
10. Old Wives
11. Magpie perch
12. Port Jackson Shark
13. Pebble crab
14. Smooth toadfish
15. Leatherjackets
16. Moonlighter
17. Mysid shrimp
18. Flathead

Activity 2: Quiz

Use this 10-question quiz to assess comprehension and understanding of the video. This could be run as a Kahoot quiz, online form or worksheet.

Activity 3: Habitats and adaptations

1. Use Presentation Slides to run through some facts about the local species observed in the video. Focus on the habitats (places where the animals may live) and adaptations (features that help them survive). Begin with the definition of 'adaptation' *"An adaptation is a special skill which helps an animal to survive and do everything it needs to do."*
2. Hand out Habitats and Adaptations Worksheet and access Habitats and Adaptations Worksheet Answers
3. Encourage students to read through the worksheet carefully. Students may like to use iPads to research on the internet or you may like to have students just come up with their own ideas.
4. You may like to collect sheets and mark or use peer-to-peer or self-marking. There are a total of 15 marks for this worksheet.

Extension: Draw and describe the "ideal creature" best adapted to the kelp forest habitat. Explain how this makes the organism well suited to the kelp forest.

Activity 4: Biotic vs abiotic factors of the ecosystem

1. Use 'biotic vs abiotic' adaptations presentation slides to introduce these words.
2. Get all the students to stand up. Explain that you will read out one factor at a time. If you stand up you are responding that the factor is 'abiotic'. If you stand up with both hands up, you are responding that the factor is 'biotic'. If a student responds incorrectly, they must sit down.
 - a. Start with the word 'sunlight' (abiotic). Any students with hands up must now sit down.
 - b. Next word 'competition' (biotic).
 - c. Temperature (abiotic).
 - d. Water clarity (abiotic).
 - e. Food availability (biotic).
 - f. Water currents (abiotic).
 - g. Predation (biotic).
 - h. Oxygen availability (abiotic).

Investigation 1: Classification (Year 7 and 8)

Classification is a system used by scientists to describe organisms. To classify things means to place them in different categories, or groups. A classification key is a series of questions that determine an organism's physical characteristics. When you answer one question, it either branches off to another question or identifies the organism. Classification keys help to identify an unknown organism or work out how to categorise groups of similar organisms.

1. Use classification presentation slides and the classification worksheet.
2. Ask students if they can think of any ways to group their bingo cards? Compare your grouping with a partner.
3. Students will use their classification key worksheet to find the correct places for their bingo cards.

4. One way of running this activity is to have students cut out their bingo cards and glue them onto the worksheet. Before they start, in pairs students can play a game of 'guess who' using the questions on their worksheet. The students will each randomly choose a card from their pile and without looking place it in front of them facing the other student. They need to use the questions on the sheet to work out what the marine species is. If the answer is 'yes' they can ask another question. If the answer is 'no' it is the other player's turn.
5. Use the classification worksheet answers document to guide the students. There are a total of 17 places and a total of 18 organisms mentioned in the video. There is one spot where two fish - the magpie perch and moonlighter may both appear. Use this as an opportunity to discuss the limitations of a simplified key and highlight the complexities of classification.
6. Once completed the students can come up with their own classification key from objects in their pencil case or in the classroom. They can choose 10 random objects and come up with a series of yes/no questions that can help someone else classify these objects. Once created they can test their classification key with a partner.

Investigation 2: Marine Sanctuaries

In this research task students will use the marine parks and sanctuaries fact sheet or other resources on the internet to research the following questions on the Marine Sanctuaries Investigation worksheet:

What activities are not permitted in a marine sanctuary?

What activities are permitted in a marine sanctuary?

Why are marine sanctuaries important areas?

What is the difference between a marine park and a marine sanctuary?

How many other marine parks and sanctuaries are in Victoria?

Part 2: In Part II of the Marine Sanctuaries Investigation worksheet students can work individually or pairs to create a pamphlet to promote one of Victoria's marine sanctuaries. The pamphlet must include a map and may use information from questions answered above but should also focus on the following:

1. Marine sanctuary name and location
2. What is unique about this marine sanctuary?
3. How big is it? What does this size compare to?
4. What facilities are in the area and what are good activities to do here?
5. Are there any ecotourism operators / opportunities? If not, is there potential for some?
6. What are the local threats to this area?
7. What marine species can be found in this sanctuary?

Review Questions

Review question answers

Glossary

Abiotic: non-living factors in an ecosystem such as temperature, light, water and nutrients.

Adaptation: a special skill or characteristic which helps an animal to survive.

Biodiversity: the variability of life in all its forms and the ecosystems within which it operates.

Bioregion: a region defined by characteristics of the natural environment rather than man-made divisions.

Biotic: anything living, for example animals, plants and microbes.

Classification: the arrangement of plants and animals in groups according to similarities.

Ecotourism: a form of tourism that involves low impact visits to undisturbed ecological areas.

Ecklonia: A golden kelp species that is widespread across the southern coastline of Australia.

Great Southern Reef: the interconnected system of kelp forests fringing 8,000km of Australia's southern coastline.

Habitat: a place where an animal lives.

Kelp: large seaweed that is a type of brown algae.

Kelp forest: a dense canopy of kelp that contains rich biodiversity.

Marine Park: synonymous with MPA (see below).

Marine Protected Area (MPA): a section of the ocean where a government has placed limits on human activity.

Marine Sanctuary: special areas that protect important marine ecosystems where fishing is prohibited.

Seaweed: types of algae growing along seashores.