



Teacher Resource

Underwater Sounds

Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. Explain the BTN story to another student.
2. How does Dr Miles Parsons describe the sound a Mulloway makes?
3. Why do marine animals make sounds?
4. How will the library of marine sounds help researchers?
5. What was surprising about this story?

Activity: Class Discussion

Discuss the BTN Underwater Sounds story as a class, using the following questions to guide the discussion. Record responses on a mind map. Clarify students' understanding of the following terms: animal populations, marine scientist, marine species, and underwater biological sounds.

- What is meant by the term 'biological sound'?
- Why are scientists collecting underwater sounds?
- Why is it important to collect these sounds?
- Name a marine species that uses sound to survive.
- What questions would you like to ask the scientists in the BTN story?



EPISODE 5

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KEY LEARNING

Students will explore why sound is important to marine animals.

CURRICULUM

Science – Year 4

Living things depend on each other and the environment to survive.

Science knowledge helps people to understand the effect of their actions.

Science – Year 5

Living things have structural features and adaptations that help them to survive in their environment.

Science – Year 5 & 6

Scientific knowledge is used to solve problems and inform personal and community decisions.

Science – Year 6

The growth and survival of living things are affected by physical conditions of their environment.

Science – Year 7

Classification helps organise the diverse group of organisms.

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available.

Interactions between organisms, including the effects of human activities can be represented by food chains and food webs.

Activity: Glossary

Students will brainstorm a list of keywords that relate to the BTN Underwater Sounds story. Here are some words to get them started. Students will create their own class glossary of keywords and terms. Students can use illustrations and diagrams to help explain each keyword.

MARINE SCIENTIST	UNDERWATER BIOLOGICAL SOUNDS	ANIMAL POPULATION
MARINE ECOSYSTEMS	ADAPTATION	SPECIES

Further investigation: Tricky words

Students will choose an additional keyword to add to their class glossary that is tricky. Students will find a definition and explain to their classmates what the keyword means.

Activity: Inquiry based-learning

The KWLH organiser provides students with a framework to explore their knowledge on the topic of marine sounds and consider what they would like to know and learn.

What do I <u>k</u> now?	What do I <u>w</u> ant to know?	What have I <u>l</u> earnt?	<u>H</u> ow will I find out?

Questions for inquiry

Students will develop their own question/s for inquiry about marine sounds. Students will collect and record information from a wide variety of sources. Students may develop their own question for inquiry or select one of the questions below.

- Why are scientists collecting underwater biological sounds?
- Why is sound important to marine animals? Give examples.
- What marine animals use sound to survive? Choose one marine species to explore in more detail. Create a 3D model of the animal and display in the classroom. Think of a way to include a sound file to illustrate the sound the animal makes.
- What is the difference between whales and dolphins? Explore the taxonomy of the animals and categorise the information you find using the classification system. Compare the sounds they make.

Activity: Species profile

Students will choose one marine animal that relies on sound for its survival and create a profile about the animal. Below are some examples of marine animals that use sound.

- Paddle crab
- Streaked gurnard
- Bocon toadfish
- Dwarf minke whale
- American eel
- Red piranha

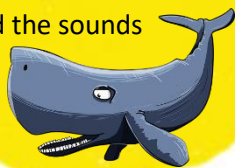
Students will research the following and then share their research findings with the class or create a display in the classroom. Students can use the Animal Profile at the end of this activity.

- Biological illustration or photo
- Name (common and scientific name)
- Appearance
- Adaptations
- Habitat
- Threats
- Unique features
- Classification (class, family, genus)

Students will then choose one of the following activities to complete:

Comic

Write and illustrate comic which tells the story of a marine animal and the sounds it makes.



3D Model

Create a model of the marine animal using recycled materials. Display your model in the classroom. Find a sound recording online to illustrate the sounds that the animal makes.

True or false?

Find out as much as you can about the marine species. Create a true or false quiz and test your classmates. Alternatively, create a word find or crossword.

Bingo

Play bingo in your classroom using marine animal sounds! Make your own bingo boards and collect a range of marine animal sounds to play.

Activity: Who am I

Play this *Who Am I* guessing game with your students to get them thinking about marine animals and their classification properties. This game can be played with 2-6 players. To make the game write down the names of marine animals on individual pieces of card (about the size of playing cards). You will need pieces of elastic to make head bands for each player to put around the top of their head.

How to play the game:

1. Place the cards face down on a table.
2. Each player will choose 1 card and tuck it into their headband (No peeking. However, the other players can see yours).
3. Take it in turns to guess what animal is written on your card. You can only ask 'yes' or 'no' questions. When asking questions players can use the classification properties or more specific properties, for example its colour, size, where it lives and how it moves, to help identify the animal.
4. When you have enough specific information, you may try to guess the animal's identity.
5. The first player to guess their animal wins.



Activity: Scientific exploration

Get to know the biological sounds in your area

As a class, plan a visit to your local park or simply visit your school yard. Students will write a list of things they may need for the exploration, for example: pen and paper for taking notes, clipboard, and a device to record sound. Students will predict what they think they will hear during their exploration. Students will then respond to the following:

- *Describe* – describe what you hear in the environment. Record and describe as many biological sounds as you can hear. Can you see the animal? Do you notice any behaviours displayed by the animal? If you can't hear any animals, what other sounds can you hear?
- *Identify* - can you identify the animal that belongs to the sound? Identify and classify what you found.
- *Research* - learn more about the species. Why do they make these sounds? Is it a native or introduced species?
- *Share* - report your findings to the class. Compare and contrast your findings. Create a library listing all the biological sounds your class detected.
- *Citizen science* - find a citizen science project where you can share what you've found in your local area. Here are some example citizen science projects: [FrogID](#), [Hoot Detective](#) or [Virtual Reef Diver](#).

Activity: Why do whales sing?

Whale songs are one of the most sophisticated communication systems in the animal kingdom.

Students will watch this TedEd video [Why do whales sing?](#) to learn more and then answer the following questions.

- Which species of whale are known to sing?
- How long can whales sing for?
- Why do they sing?
- What impact can noise pollution have on whales?
- Write down three interesting facts you learnt watching the video.



Useful Websites

- [Whales, Dolphins and Sound](#) – Department of Agriculture, Water and Environment
- [Audio Gallery Marine Mammals](#) – University of Rhode Island
- [Underwater Research](#) – BTN
- [Underwater Explorer](#) – BTN
- [Deep Sea Exploration](#) – BTN
- [Ocean Noise Pollution](#) – BTN
- [Regent Honeyeater Song](#) – BTN
- [Investigating Sound and Hearing](#) – Victoria State Government
- [Worlds' first library of underwater biological sounds to monitor changing marine life](#) – Australian Institute of Marine Science

ANIMAL PROFILE

Scientific Name

APPEARANCE

Common Name

ADAPTATIONS

Unique Features or Interesting Facts

HABITAT

THREATS