Lesson Plan: What's Happening in the Ocean? Understanding Algal Blooms

Target Year Level:
Years 5-6

Duration
60 minutes

Learning Objectives
By the end of this lesson, students will be able to:

- Understand what a harmful algal bloom (HAB) is and its environmental impact.
- Identify causes and effects of HABs on marine life and habitats.
- Explain how communities and scientists work together to monitor and respond to environmental issues.
- Use key vocabulary related to marine ecology and environmental science.
- Engage in collaborative discussion and reflect on local actions to protect marine life.

Australian Curriculum Links (Years 5–6)
Science Understanding
ACSSU043 (Year 5 – Biological Sciences): Living things have structural features and adaptations that help them to survive in their environment.
ACSSU094 (Year 6 – Biological Sciences): The growth and survival of living things are affected by the physical conditions of their environment.
ACSSU077 (Year 5 – Earth and Space Sciences): The Earth is part of a system of cycles, including the water cycle, and can be affected by human activity.

Science as a Human Endeavour
ACSHE083 / ACSHE098: Scientific knowledge is used to solve problems and inform personal and community decisions.

Science Inquiry Skills
Observing, posing questions, collecting information (e.g., from simplified texts or videos), and communicating findings using labelled diagrams, short reports, or oral presentations.

English – Literacy and Language
ACELY1703 (Year 5): Use comprehension strategies to analyse information, integrating and linking ideas from a variety of sources.
ACELY1714 (Year 6): Use comprehension strategies to interpret and analyse information and ideas, comparing content from a variety of sources.
ACELA1512 (Year 5): Understand how to use vocabulary to express greater precision of meaning in informative

and persuasive texts.
ACELA1523 (Year 6): Understand how ideas can be expanded and sharpened through careful choice of verbs, elaborated noun groups, and adverb groups/phrases.

HASS – Geography
ACHASSK090 (Year 5): The influence of people on the environmental characteristics of Australian places.
ACHASSK141 (Year 6): The effects of human activities on the environment and how these effects can be managed.

Cross-Curriculum Priorities
- Sustainability

General Capabilities
- Critical and creative thinking
- Ethical understanding
- Personal and social capability

Materials Needed
- Printed or digital copies of the "Still Blooming" text. Adapted from the Great Southern Reef June 2025 Algal Bloom Update (https://greatsouthernreef.com/2025-algal-bloom-june-update), based on reporting by Janine Baker.
- Vocabulary list handout
- Multiple choice and short answer question sheets
- Think-Pair-Share worksheet or space for notes
- Whiteboard or smartboard for discussion
- Markers, pens, paper

Lesson Outline
1. Introduction (5 min)
- Watch the short https://youtube.com/shorts/IC1-juezspg?si=_kZBYoPbnfoyZNPe. Pose the questions:
  - What clues in the video suggest this is a serious environmental issue?
  - What might have caused large numbers of marine creatures to die and wash up on the beach?
  - Has anyone heard of an algal bloom before? What do you think it means?"
- Briefly explain harmful algal blooms using simple terms: rapid growth of algae that harms ocean animals and plants.
- Show this brief video to help explain and set context for todays focus. An Ocean Algal Bloom is Killing Sea Life in SA - Behind the News https://www.youtube.com/watch?v=RowiXnjj41c

2. Reading and Vocabulary (15 min)
- Distribute the "Still Blooming" text and vocabulary list.
- Read the passage aloud as a class or have students read silently.
- Get students to circle any words they don't know and write down on a post it note and give to teacher.
- Discuss key vocabulary and any unknown words. Key words can include: Algae, nutrients, seagrass, toxins and environmental damage.

- Ask students to create their own sentences with 2-3 vocabulary words.

3. Comprehension Check – Multiple Choice and Short Answer (15 min)

- Hand out multiple choice questions and short answer questions.
- Students complete the multiple choice first individually or in pairs.
- Then move to short answer questions; encourage full sentences and use of text evidence.
- Review answers as a class, clarifying misconceptions and emphasizing important points.

4. Community & Environment Impact Discussion (10 min)

- In groups, students draw a Cause-and-Effect Chain:
  Hot weather + pollution → Algal Bloom → Fish die → People affected
- Discuss: How might fishers or swimmers be affected?

5. Think-Pair-Share Activity (10 min)

- After identifying the cause and effect chain, pose the question:
  "If you could take one action to help protect marine life in your local area, what would it be and why?"
- Students write their own response.
- Pair up and share answers, noting similarities and differences.
- Each pair prepares a brief summary of their discussion to share with the class.
- Invite several pairs to share their ideas aloud.

Extension / Early Finisher Ideas:

- Research a local beach or river – has it ever had an algal bloom?
- Create a poster: "Help Keep Our Ocean Healthy!"

Wrap-Up and Reflection (5 min)

- Recap the key points: What is a harmful algal bloom? Why is it a problem in South Australia? How can people help?
- Ask students to think about how this connects to their local environment.
- Optionally, assign a simple homework: Observe a local water body or coastline (if possible) and write about signs of pollution or algae.
- Draw & Write Activity: "Imagine you are a scientist. What would you do to help stop algal blooms?"
  - Draw a picture of your idea (e.g., signs, testing the water, cleaning up pollution).
  - Write a sentence or two about it

Adaptations

- **For younger students:** Simplify the text and questions; use more visuals and interactive games.
- **For advanced students:** Have them research other examples of harmful algal blooms worldwide and present findings.

Still Blooming: What's Happening to South Australia's Ocean?

Adapted from the Great Southern Reef June 2025 Algal Bloom Update (https://greatsouthernreef.com/2025-algal-bloom-june-update), based on reporting by Janine Baker.

South Australia's ocean has been experiencing a harmful algal bloom (HAB) since the previous fall, leading to significant ecological problems. This bloom has caused the deaths of various sea creatures, hindered the reproduction of some marine animals, damaged underwater habitats, and negatively impacted coastal communities and recreational water users. Ongoing investigations involve collecting data and consulting with local residents to assess the extent of the damage. Reports indicate that dead fish, sharks, rays, and other marine life have been washing ashore since 2024.

Algal blooms are typically caused by a combination of factors. These include nutrient-rich water rising from the ocean floor, polluted runoff from towns after heavy rainfall, unusually warm air and water temperatures, prolonged periods of calm seas that allow the bloom to thrive, and an abundance of organic matter that fuels the bloom's growth. These conditions have been present in South Australia's ocean environment over the past two years, coinciding with the increased sightings of dead marine animals. The hot summer of 2024 and the calm weather patterns have further helped the bloom's expansion.

The decay of dead seagrass and seaweed has also contributed to the problem by providing additional nutrients for the bloom. Once established, the bloom can sustain itself, moving across large areas and depths to find more resources. Areas with high concentrations of the harmful algae, identified as "red zones," correlate with locations where numerous dead animals have been found. These zones initially affected areas around Kangaroo Island and Yorke Peninsula, later spreading north into the western part of Gulf St Vincent due to water currents.

The harmful algal bloom continues to have devastating effects on South Australia's marine life. The full extent of the damage remains unclear due to the difficulty of observing underwater

environments. However, the types of animals washing ashore, such as reef fish, seaweed-dependent species, and sand-dwelling creatures, provide some insight into the bloom's impact. Reports from the public, have documented nearly 5,000 instances of dead animals, representing over 350 different species. Fishermen believe that these observations only represent a fraction of the total marine life lost, with many more animals decaying on the ocean floor.

Summary:

- A harmful algal bloom (HAB) in South Australia is killing sea creatures and hurting the ocean's bottom.
- The bloom is caused by increased nutrients, warm temperatures, and calm weather.
- Dead fish, sharks, rays, and other animals are washing up on beaches, and the bloom is affecting different areas.

Vocabulary List

Review key vocabulary words from the reading.

KEY WORD	DEFINITION AND EXAMPLE
Algal bloom	A rapid increase or accumulation in the population of algae in freshwater or marine water systems. *The **algal bloom** turned the water green and made it unsafe to swim in.*
Nutrients	Substances that provide nourishment essential for growth and the maintenance of life. *The farmer added **nutrients** to the soil to help the crops grow stronger.*
Residents	People who live in a particular area or community. *Local **residents** noticed the strange smell near the beach and reported it to authorities.*
Polluted runoff	Water that carries harmful substances, such as chemicals or waste, from the land into rivers, lakes, or the ocean. *After heavy rain, **polluted runoff** from the town flowed into the sea, making the water unsafe for animals.*
Consulting	Talking to someone to get advice or information. *Scientists are **consulting** with local fishermen to better understand the marine deaths.*
Organic matter	Natural material from plants or animals that is broken down in the environment. *Dead seaweed and plants added **organic matter** to the water, helping the algal bloom grow.*
Correlate	To have a connection or relationship with something else. *The areas with more dead fish seem to **correlate** with higher levels of harmful algae.*

Multiple Choice Questions

Answer the following multiple-choice questions about the reading.

1. What is a harmful algal bloom (HAB)?
A type of seaweed that grows very quickly.
B. A group of sea creatures that live together.
C. A collection of yucky stuff in the water that can harm sea creatures.
D. A mix of fresh and salt water that sea creatures cannot live in.

2. According to the passage, what is NOT a cause of harmful algal blooms?
A. Nutrients coming up from the bottom of the ocean
B. Dirty water flowing into the ocean from towns after big rains
C. The water being too salty
D. The ocean being calm for a long time

3. What has been washing up on the beaches of South Australia?
A. Old tires
B. Pieces of ships
C. Dead sea animals
D. Plastic bottles

Short Answer Questions

Answer the following short answer questions about the reading.

1. **Explain how calm weather conditions have contributed to the growth of the harmful algal bloom.**

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2. **Define the term 'red zones' and discuss their significance in understanding the spread of the algal bloom.**

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3. **How are local communities helping to respond to the harmful algal bloom (HAB) in South Australia, and what kind of information are they recording?**

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4. **According to the passage, what are some of the ways that the harmful algal bloom (HAB) is affecting seagrass in South Australia, and why is this a concern?**

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Causes and Effects

Complete the cause and effects graphic organiser below based on what we've learned.