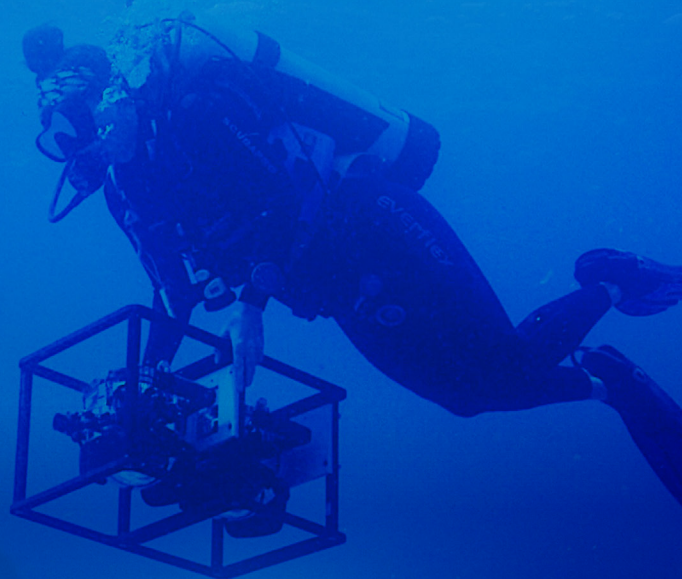
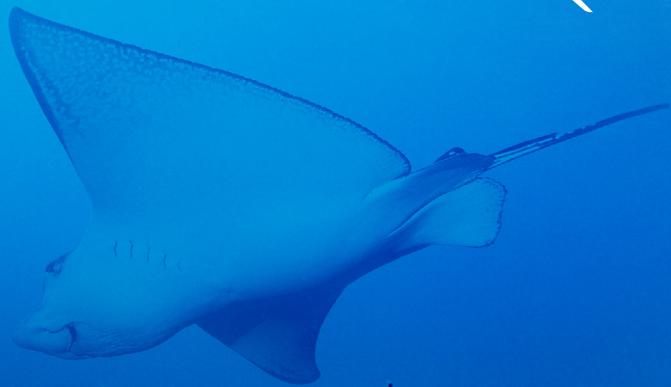


OCEANX



# OCEANXPERIENCE



INSTRUCTIONAL SEQUENCE

## CORAL REEF BIODIVERSITY (PRE-VISIT)

Threats to the Ocean

GRADE LEVEL: 6-8



Never stop wondering.  
Never stop imagining.™

Presented for Australian audience by:

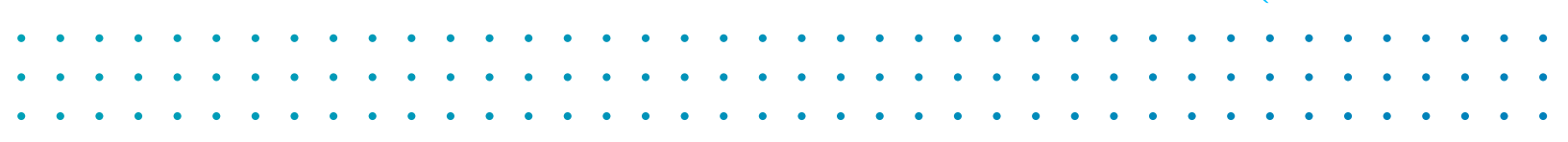


## PURPOSE

Humans depend on other living things for survival. A healthy ecosystem needs a diverse mix of species to maintain its ability to function. It is important to ensure that our ecosystems are as biodiverse as possible in order to sustain life.

## OBJECTIVE

Students will examine the threats to the coral reefs and propose a new solution to minimize the threat.



## YEAR 6

### SCIENCE

#### Science understanding – Biological sciences:

WA6SSUB1 - The growth and survival of living things are affected by the changing conditions in their environment and the influence of human activities.

#### Science Inquiry Skills – Questioning and predicting:

WA6SSIQ1 - Pose testable questions that include variables to be measured and changed, and apply science knowledge to make predictions.

#### Science Inquiry Skills – Evaluating:

WA6SSIE1 - Compare findings with those of others, and to predictions; evaluate the fairness of an investigation and suggest improvements; and pose questions for further investigation.

#### Science Inquiry Skills – Communicating:

WA6SSICM1 - Communicate ideas in a variety of ways, including scientific reports with appropriate language features.

## YEAR 7

### SCIENCE

#### Science understanding – Biological sciences:

WA7SSUB2 - Food chains and food webs can be used to represent energy flow in ecosystems and predict possible impacts of human activity.

#### Science Inquiry Skills – Questioning and predicting:

WA7SSIQ1 - Propose investigable questions and make predictions based on scientific knowledge to explore scientific models, identify patterns and test relationships.

#### Science Inquiry Skills – Evaluating:

WA7SSIE1 - Reflect on scientific investigations, including evaluating the quality of the data collected, and identifying improvements.

#### Science Inquiry Skills – Communicating:

WA7SSICM1 - Communicate ideas, findings and information for specific purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate.

## YEAR 8

### SCIENCE

#### Science Inquiry Skills - Questioning and predicting:

WA8SSIQ1 - Propose investigable questions and make predictions based on scientific knowledge to explore scientific models, identify patterns and test relationships.

#### Science Inquiry Skills - Evaluating:

WA8SSIE1 - Reflect on scientific investigations, including evaluating the quality of the data collected, and identifying improvements.

#### Science Inquiry Skills - Communicating:

WA8SSICM1 - Communicate ideas, findings and information for specific purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate.

## YEAR 9

### SCIENCE

#### Science understanding – Biological sciences:

WA9SSUB1 - Plants and animals have structural, behavioural and physiological adaptations that enable their survival in their environment.

WA9SSUB3 - Population size and species diversity can be affected by abiotic and biotic factors; sampling techniques can be used to monitor abiotic factors and estimate numbers of organisms; ecological monitoring can be used to inform ecosystem health and impacts of human activity.

#### Science understanding – Earth and space sciences:

WA9SSUE2 - Changes to global systems can be used to explain patterns of global climate change.

#### Science Inquiry Skills - Questioning and predicting:

WA9SSIQ1 - Propose investigable questions and hypotheses to test relationships and develop explanatory models.

#### Science Inquiry Skills - Evaluating:

WA9SSIE1 - Evaluate validity and reliability of methods and validity of conclusions, including identifying possible sources of error, and describe specific ways to improve the quality of the data.

#### Science Inquiry Skills - Communicating:

WA9SSICM1 - Communicate scientific ideas and information for specific purposes and audiences, including constructing evidence-based arguments and selection of appropriate content, language and text features, using digital tools as appropriate.

## VOCABULARY

### **CORAL BLEACHING**

Corals turn white due to being under stress caused by environmental factors such as increased ocean temperatures and pollution

### **INVASIVE SPECIES**

A non-native species that is introduced to an ecosystem that disrupts the natural flow of energy/food chains that are established

### **BIODIVERSITY**

The variety of living things in a given place, such as plants, animals, and microscopic organisms

### **OCEAN ACIDIFICATION**

When the ocean's PH level drops and becomes more acidic due to an increase in the amount of carbon dioxide that the ocean absorbs from the atmosphere

### **SYMBIOSIS**

A close relationship between living things. Types of symbiosis include mutualism, commensalism, and parasitism

## MATERIALS

**THREATS TO CORAL REEFS GRAPHIC ORGANIZER**

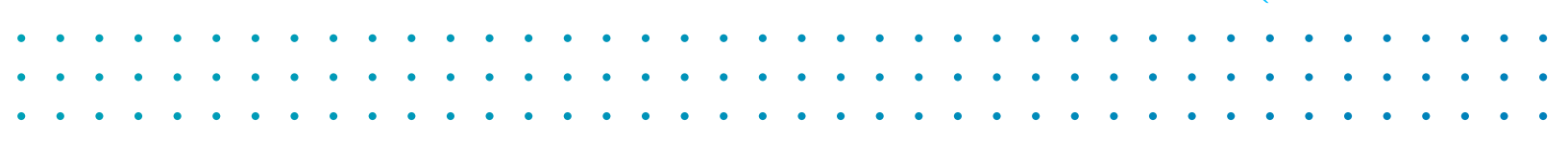
**PRESENTATION MENU BOARD**

## ONLINE RESOURCES

[CORALS AND CORAL REEFS](#)

[LIVE VS DEAD CORAL](#)

[FINDING NEMO CLIP](#)



## ENGAGE

### SKETCH OF CORAL REEF

Show students the [video clip of 'Finding Nemo'](#) where the clownfish are living in their coral habitat.

Have students create a sketch of what they think a healthy coral reef looks like. Provide students with coloring supplies to illustrate their coral reef.

Facilitate a gallery walk to allow students to view the ideas of their classmates. Ask students to look for similarities and differences as they observe.

After students return to their seats, ask students what they noticed that was similar in the sketches they viewed.

Tell students that you noticed many of them included a lot of different creatures living near the coral, and that in the scientific community, there is a word for this. When a lot of living things are living together in a specific place, we say that this place has a lot of biodiversity!

Have students generate ideas for a class definition for the word 'biodiversity'. Add this word to the class word wall.

Project the [website](#) which shows a very biodiverse coral reef in the Caribbean. Click through each trophic level, and have students make observations.

Allow students time to update their sketches with any new ideas they may have about coral reefs.

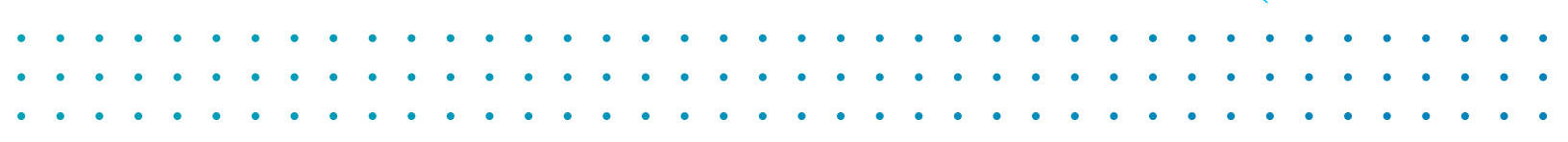
## EXPLORE

### THREATS TO CORAL REEFS

Tell students that our coral reefs are very delicate ecosystems. Ask students to brainstorm what some problems that the coral reefs are facing could be. Possible student responses- oceans are too warm for them to live, chemicals in the water from sunscreen are causing them to die, etc.

Direct students to the [website](#) and have them scroll down to the conservation section.

In pairs, students research threats to coral reefs and complete the graphic organizer: Threats to Coral Reefs.



## EXPLAIN

### THREATS TO CORAL REEFS PRESENTATIONS

After student pairs have completed their graphic organizers, have each pair choose one threat to coral reefs to research further. They must research what has been done to minimize the threat, and come up with a solution of their own to share with the class.

Provide students with a copy of the Presentation Menu Board to choose a presentation style.

Students prepare a presentation for the class.

## EXTEND

Have students participate in a citizen science project by listening to coral reefs! Google has partnered with marine biologists to create a way for people to help preserve coral reefs just by listening to them. Using an online platform, students can listen to underwater recordings of coral reefs and identify sounds made by fish, shrimp, and other coral dwellers to collect data and monitor the ecosystem. This helps scientists to make plans for coral reef restorations. Students can participate by following the link below. They will first participate in a short, interactive training to help them identify which organism makes which sound. After that, they are ready to officially participate in the citizen science project!

### [Try it here!](#)

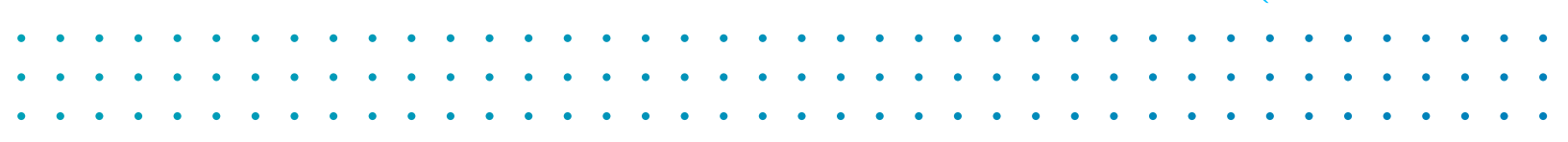
Another extension opportunity is to [research](#) one of the many marine protected areas.

Students can use this resource to locate a marine protected area of their choosing. They can create a food web to represent the biodiversity in their chosen area.

Clean up the coral reef may also be used to allow students to investigate the causes of climate change (such as the burning of fossil fuels) and examine its impacts, including rising ocean temperatures and effects like coral bleaching in Australian coral reefs. Through this learning experience, students can be supported to make meaningful connections to real-world issues and to reflect on how their own choices and actions can contribute to protecting the environment and reducing these impacts.

## EVALUATE

Students respond to the prompt: What is one thing you can do in your own life to reduce the impact on coral reefs?

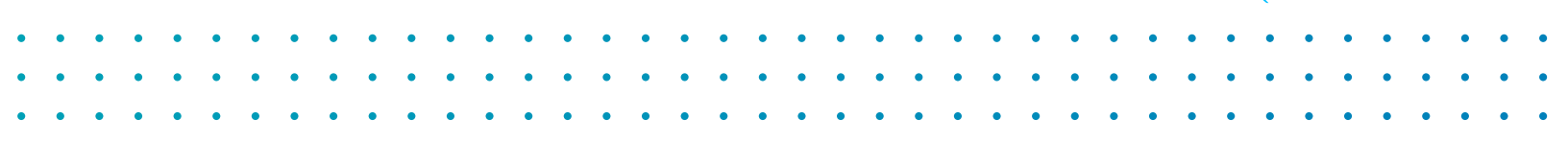


# THREATS TO CORAL REEFS GRAPHIC ORGANIZER

## DIRECTIONS:

Using the website <https://ocean.si.edu/ocean-life/invertebrates/corals-and-coral-reefs>, draw and describe four types of threats that the coral reefs are facing.

1.	2.
3.	4.
What can people do to protect the coral reefs?	



# PRESENTATION MENU BOARD

## ONLINE VIDEO

Create an online video that features your threat to coral reefs and what viewers can do to help.

## POSTER

Create an eye-catching poster that informs people of the threat to the coral reefs that you chose.

## TED TALK

As a group, create a speech to inform the class about your coral reef threat, and persuade them to help lessen the impact.

## JINGLE

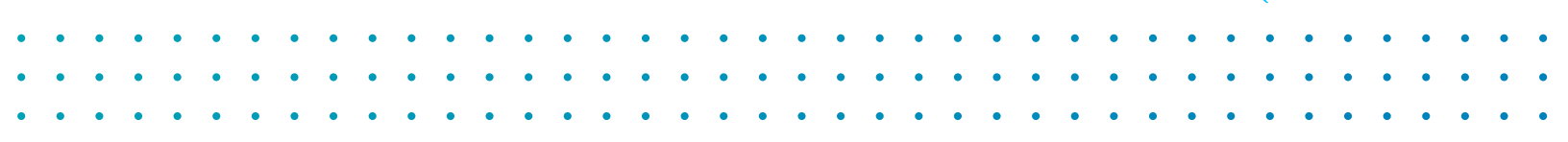
Write and perform a song that informs people of your coral reef threat and tells them how they can help.

## BROCHURE

Design a tri-fold brochure that explains your coral reef threat and tells people how they can help.

## STUDENT'S CHOICE

Come up with your own presentation style, and ask your teacher for approval before presenting.



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