

RESOURCE LIBRARY
ACTIVITY : 50 MINS

Keystone Species in Shark Bay

Students use photos and information about Australia's Shark Bay to draw and label a simple food web. Then they identify which animal in the ecosystem is a keystone species.

GRADES

3 - 5

SUBJECTS

Biology, Geography, Physical Geography

CONTENTS

1 Link, 5 Images

OVERVIEW

Students use photos and information about Australia's Shark Bay to draw and label a simple food web. Then they identify which animal in the ecosystem is a keystone species.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/keystone-species-shark-bay/>

DIRECTIONS

1. Discuss the location of Shark Bay.

Display for students the NG Education interactive map view of Shark Bay in western Australia. Explain that students are looking at a satellite map of the area. Make sure they understand that a satellite map is based on photographs or other images taken from above Earth's atmosphere. Ask: *What makes this area a bay?* Point out to students that a bay is a body of water partially surrounded by land. Tell students that they will explore the animals and plants that live in the Shark Bay ecosystem.

2. Show students photos of animals and plants in Shark Bay, Australia.

Have students look at photographs of tiger sharks, bottlenose dolphins, green sea turtles, dugongs, and sea grass. Ask them to read aloud each caption as you move through the photos. Then explain that all of the animals they have seen are important members of the Shark Bay ecosystem. But only one is a keystone species—an animal that has a major impact on an ecosystem. Without the keystone species, the system may change dramatically or even collapse.

3. Have pairs of students draw a blank food web.

Divide students into pairs. Make sure each pair has a piece of blank paper. Explain to the class that they will draw a simple and partial food web of the Shark Bay ecosystem. Ask them to hold the paper horizontally and follow these instructions:

- Draw one box at the top of the page. This box is for the biggest predator in the food web.
- Draw three boxes across the middle of the page.
- Draw two boxes across the bottom of the page. These boxes are for the lowest plants or animals in the food web.

4. Have pairs use facts about the Shark Bay ecosystem to complete the food web.

Explain to students that you are going to read aloud some facts about plants and animals in the Shark Bay ecosystem. Ask students to write the names of the animals and plants below the boxes where they belong. Have students use pencils and erasers and adjust the labels as they figure out where to place each one. Read the following facts to the class:

- Tiger sharks eat almost anything alive or dead.
- Bottlenose dolphins will leave the waters where they like to eat if there are too many tiger sharks around.
- Dugongs and green sea turtles are among the tiger shark's favorite foods.
- Dolphins eat fish.
- Dugongs and green sea turtles eat sea grass.

Once students have labeled the boxes, have them draw a picture of each plant or animal inside the box. Then have them draw arrows from the lowest members to the highest member of the food web.

5. Analyze the information in the food webs.

Students should have labeled the food web as follows:

Top box: Tiger Sharks

Center boxes: Bottlenose Dolphins, Dugongs, Green Sea Turtles

Bottom boxes: Sea Grass, Fish

Compare and contrast students' food webs. Have pairs tape their food webs on the board or wall at the front of the class. Help students check their answers. Ask:

- *Who eats whom?* (Tiger sharks eat dolphins, dugongs, and green sea turtles.)
- *What is the top predator in Shark Bay?* (Tiger sharks)
- *What might happen if this predator were not there any more, or if its numbers declined?*

(Dugongs and green sea turtles might eat too much sea grass. There might be too many dolphins that eat too many fish.)

- *Which animal is the keystone species in the Shark Bay ecosystem?* (Tiger sharks)

Informal Assessment

Have each student write a brief paragraph that describes the following:

- the relationships in the illustrated food web
- why the tiger shark is a keystone species in this ecosystem

Have each pair present their illustrated food web to the class and explain the relationships within it.

OBJECTIVES

Subjects & Disciplines

Biology

Geography

- Physical Geography

Learning Objectives

Students will:

- identify animals and plants in the Shark Bay ecosystem
- illustrate a food web in the Shark Bay system

- identify the relationships between members of the Shark Bay ecosystem

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Hands-on learning
- Information organization
- Visual instruction

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
 - Applying
 - Understanding
- Geographic Skills
 - Analyzing Geographic Information
 - Organizing Geographic Information

National Standards, Principles, and Practices

NATIONAL GEOGRAPHY STANDARDS

- Standard 8:

The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

NATIONAL SCIENCE EDUCATION STANDARDS

- (K-4) Standard C-1:

The characteristics of organisms

• (K-4) Standard C-3:

Organisms and environments

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Erasers
- Paper
- Pencils

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector
- Plug-Ins: Flash

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction

BACKGROUND & VOCABULARY

Background Information

An ecosystem is home to interconnected species that form food webs. A keystone species is a species that has a major influence on the structure of an ecosystem. Its presence affects many other members of the ecosystem. Exploring the role of keystone species in the Shark Bay ecosystem illustrates the role of other keystone species in other ecosystems.

Prior Knowledge

Recommended Prior Activities

- [Introduction to Keystone Species](#)

Vocabulary

Term	Part of Speech	Definition
ecosystem	<i>noun</i>	community and interactions of living and nonliving things in an area.
food web	<i>noun</i>	all related food chains in an ecosystem. Also called a food cycle.
keystone species	<i>noun</i>	organism that has a major influence on the way its ecosystem works.
predator	<i>noun</i>	animal that hunts other animals for food.

For Further Exploration

Websites

- [Shark Bay World Heritage Area](#)
- [Shark Bay World Heritage Area: Nature Fact Sheets](#)
- [Shark Bay World Heritage Area: Interactive Map](#)
- [NOAA Fisheries: Office of Protected Resources—Green Turtle \(*Chelonia mydas*\)](#)
- [National Geographic: Field Tales—Tiger Shark](#)
- [R.J. Dunlap Marine Conservation Program: Virtual Expedition](#)

FUNDER



This material is based in part upon work supported by the National Science

Foundation under Grant No. DRL-1114251. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.



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