

STUDENT ACTIVITY: PARADISE ISLAND

GRADE LEVEL

9th to 12th

OBJECTIVES

- Students will be able to explain why a fishery management plan is important;
- Students will be able to describe how a scientist monitors a fishery ecosystem; and
- Students will develop a fishery management plan for Paradise Island.

NATIONAL SCIENCE EDUCATION STANDARDS

Content Standard A: Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

Content Standard C: Life Science

- Interdependence of organisms
- Behavior of organisms

Content Standard F: Science in Personal and Social Perspectives

- Personal and community health
- Environmental quality
- Science and technology in local, national, and global challenges

OCEAN LITERACY OBJECTIVES

(www.coexploration.org/oceanliteracy)

- Students will understand that the ocean and humans are inextricably interconnected (Essential Principle 6);
- Students will understand that humans affect the ocean in a variety of ways. Laws, regulations, and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (point source, non-point source, and noise pollution) and physical modifications (changes to beaches, shores and rivers) ... (Fundamental Concept 6e); and
- Students will understand that everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all (Fundamental Concept 6g).

OVERVIEW

Students are to develop a fishery management plan (FMP) for "Paradise Island." The ocean surrounding the island is filled with a wide variety of different fish and crustaceans. The economy of the community is dependent on the fisheries. Fishing vessels from outside have come to Paradise Island to fish. The local community is concerned. They need to develop a plan to protect their fishing industry. The students' task is to brainstorm ideas to protect the fisheries by developing a FMP.

MATERIALS

- Desk size paper and colored pencils
- Student worksheet "Paradise Island"

ACTIVITIES

1. Have the class brainstorm ideas to describe Paradise Island in more detail. Give them the following suggestions (they may also come up with other creative ideas):
 - What is the approximate latitude and longitude of the island?
 - What currents surround the island or are near the island?
 - What kind of island is it? Is it a large, high island or a small, low-lying atoll?
 - What fish and invertebrates exist in the marine environment?
 - What fisheries exist or may potentially exist, including species caught, gear and/or method used, and locations fished?
 - Are there land-based or other non-fishing issues impacting the fisheries and/or the marine environment?
 - Who are the individuals and/or communities with a vested interest in the fishery and/or marine ecosystem?
2. After they have characterized Paradise Island, have the students brainstorm ideas on their own, coming up with things they may want to include in their management plan. Give them the following suggestions of things they may want to include in their plans. They may also come up with other creative ideas.
 - Closures of different sections of the ocean to fishing
 - Limit the types of fishing gear allowed

- Seasonal closures
 - Limit the amount of fish that is allowed to be harvested
 - Limit the number of boats that can fish in a certain area
 - Limit the size of the boat that can be used
 - Allocate portions of the catch to different individuals or groups
3. **Role Playing:** Divide the students into teams, and give them copies of the "Paradise Island" worksheets (see pages 59-60) to complete. Explain to the class that in this scenario, they are the Paradise Island Fishery Management Council and they must do something to keep the fish stocks and habitat healthy and the fishery operating at a sustainable level. The challenge they face is to decide who will get to use the resource and what management measures to put in place.

FOR MORE INFORMATION

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CREDIT



This lesson is based on a lesson of the same title in the *FishQuest* curriculum by the Western Pacific Fishery Management Council in partnership with Pacific Resources in Education and Learning, the Hawaii Department of Education, and Hawaii Public Television. It was modified by the Western Pacific Council with the gracious assistance of Craig Strang, Lawrence Hall of Science, University of California; and Mellie Lewis, College of Exploration.

US Regional Fishery Management Councils

www.fisherycouncils.org

North Pacific - Western Pacific - Pacific - New England
Mid-Atlantic - South Atlantic - Caribbean - Gulf of Mexico

The banner features a vibrant underwater scene with several yellow-striped snappers swimming over a coral reef. The text is overlaid on the image in a clean, white font.

STUDENT WORKSHEET: PARADISE ISLAND

Name: _____ Date: _____

THE CHALLENGE

Out in the middle of the ocean is a small, very beautiful island. The waters around the island are filled with a variety of fish and invertebrates. The main source of economy for the island is fishing. The local community has a very successful fishing fleet. Fish are caught for local consumption and are also exported for sale off the island. Over time, the outside world learns of this incredible fishing site. Large fishing vessels move in. The island's economy grows, and the island thrives. Eventually, though, the local people begin to see changes. Fish are harder to catch. The boats need to go further and further out to sea. The local fishermen are finding it harder to make a living. The local fishermen start asking hard questions. Who really owns the fish? How long before the fish run out? Can we keep these other, larger boats from fishing in our waters?

U.S. Regional Fishery Management Councils address these questions. In 1976, Congress created the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) to conserve and manage fisheries resources in federal waters, which span from the edge of state and territorial waters to the outer limit of the 200-mile exclusive economic zone (EEZ). Individual states and territories manage the waters from their shorelines, generally out to three miles. The U.S. EEZ is the largest in the world, containing 3.4 million square miles (11,351,000 km²) of ocean and 90,000 miles of coastline, located not only along the eastern and western seaboard and Gulf of Mexico shoreline of the U.S. continent, but also in the Caribbean Sea, Pacific Ocean, and Arctic Ocean.

Eight U.S. Regional Fishery Management Councils were established by the MSA. There are Councils for the Western Pacific Region, the North Pacific, New England, the Mid-Atlantic, the South Atlantic, the Caribbean, the Pacific, and the Gulf of Mexico.

The main task of the Councils is to protect fishery resources, while allowing fishing to occur at sustainable levels. The emphasis is on preventing overfishing, rebuilding stocks, minimizing bycatch, and protecting habitats necessary for spawning, feeding, and growth. To accomplish this, the Councils develop fishery management plans or fishery ecosystem plans (FEP).

The Councils meet several times a year in their respective regions to discuss current issues and then make fishery management recommendations to the Secretary of Commerce. Because decisions can't be made and solutions recommended without understanding the facts, scientists and fishery managers monitor the ecosystems.

Your task is to brainstorm ideas to protect the environment and to develop a fisheries management plan or FEP for Paradise Island. The local community is concerned. A plan needs to be developed to protect their fishing industry.

ACTIVITIES

1. Draw Paradise Island on a large piece of paper. Indicate where the different fish and shellfish can be found around the island.
2. Brainstorm ideas with your fellow Paradise Island Fishery Management Council members (i.e., your team), and fill out the chart (see page 60).
3. Use the information listed above to come up with a Paradise Island Fishery Management Plan or Fishery Ecosystem Plan. List the regulations, research, monitoring, and enforcement that will help protect your fishing industry, as well as the island's marine resources.
4. Have your team share your management plan with the rest of the class. *Optional:* Share your plan as a PowerPoint presentation.

STUDENT WORKSHEET: PARADISE ISLAND

Solution					
Issue/Concern					
Interest Group	Local fishermen	Off-island fishermen	Businesses	Scientists	Politicians

U.S. REGIONAL FISHERY MANAGEMENT COUNCIL CONTACTS



Kids learn to fish early from the North Pacific (top) to the South Atlantic (bottom).



PHOTO CREDITS

Page 61 (top): Courtesy of North Pacific Fishery Management Council

Page 61 (bottom): Courtesy of South Atlantic Fishery Management Council

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