

RESOURCE LIBRARY

ACTIVITY : 2 HRS

Marine Protected Areas: Student Case Studies

Students create posters or other media that serve as case studies for specific Marine Protected Areas. They briefly present their MPAs, answer questions, and peer-assess classmates' work and presentations.

GRADES

9 - 12+

SUBJECTS*Conservation***CONTENTS**

3 PDFs, 1 Link

OVERVIEW

Students create posters or other media that serve as case studies for specific Marine Protected Areas. They briefly present their MPAs, answer questions, and peer-assess classmates' work and presentations.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/marine-protected-areas-student-case-studies/>

DIRECTIONS

1. Assign student pairs a Marine Protected Area to study.

Briefly review what Marine Protected Areas and case studies are and why they are important. Explain that they are used to establish and manage marine areas that contain important natural and cultural resources. Divide students into pairs. Using the worksheet Pre-Selected List of Marine Protected Areas, assign each pair one MPA to research and present.

2. Have student pairs research and create a case study for their assigned Marine Protected Area.

Distribute copies of the MPA Case Studies: Research Notes worksheet. Read aloud the directions. Explain to students that their assignment is to create and present a MPA case study that includes the following:

- a description of the MPA, including size and location
- the purpose, or mission, of the MPA
- an inventory of species
- an explanation of how the MPA contributes to natural, economic, or cultural resources
- information about who is managing the area and what is being managed
- evaluation of whether or not the MPA is succeeding in its management goals
- a list of stakeholders; for example, environmental or non-governmental organizations, local government agencies, public interest groups, citizens, scientists, and fishermen
- an example of a challenge encountered during the MPA designation process
- an example of a success encountered during the MPA designation process

Make sure students understand all of the items they are expected to research for their MPAs. Have students begin their research with the Protect Planet Ocean: Marine Reserves Studied Around the World website. Give students time to conduct research and take notes on their assigned MPAs using additional online and library resources.

3. Have students create posters or other media to present their case studies.

Ask each pair to create a poster or other media that provides information about their Marine Protected Area case study in a quick, visually-appealing way. Use standard class presentation format or have students create an interactive poster using online presentation tools.

Encourage students to enhance their text with graphics from magazines or online resources. Emphasize to students that they should not try to include all of their case study research on the poster. Instead, they should provide a visually-appealing overview of the information. Give each student pair a copy of the Peer Assessment Form: Student Gallery Walk worksheet. Explain that the rubric outlines the criteria by which they will be evaluated: design, content, organization, and creativity. Briefly discuss the criteria with students and use it to focus the creation of their case study presentations.

4. Have students conduct a gallery walk to evaluate their peers' work.

Assign each student pair a location to display its MPA case study. Number the locations 1-16, according to the MPA list in Step 1. Read aloud the directions for the Peer Assessment Form: Student Gallery Walk worksheet. Explain that each student pair will have 20 minutes to complete their gallery walk. During that time, they will evaluate one pre-assigned MPA case study using the peer assessment portion of the worksheet. For example, have the student pair that researched MPA #1, Lundy, United Kingdom, peer assess MPA #9, Great Barrier Reef Marine Park, Australia. Then have the MPA #2, Western Mediterranean, peer assess MPA #10, California. Have students review as many other case studies as time allows. For each of the case study reviews, ask them to write two sentences about what they learned and one question they have about the MPA.

5. Discuss peer assessments and case study reviews.

Lead a discussion about how case studies are used to represent the key characteristics of Marine Protected Areas. Ask students to share what they learned about the MPAs presented in the gallery walk. Discuss the questions that students recorded in their case study reviews. Ask students to identify the challenges they encountered while conducting their research and presenting their case studies. Ask: *What characteristics made some case studies more effective and informative than others? How might different stakeholders interpret the information presented in a case study?* As time allows, select one or two example MPA case studies and discuss how different stakeholders might interpret the information presented in each case study differently. Ask: *Are all MPAs successful? Why or why not? Use examples to explain.*

Peer Evaluation

Have students complete the Peer Assessment Form: Student Gallery Walk worksheet.

Extending the Learning

Have students conduct further research to learn more about how their case study area is being managed. If there are any monitoring programs, have students identify what is being monitored and why, how it is being monitored, the frequency of the monitoring, and how the information is being used by MPA managers. Then ask students to identify how enforcement is being handled, including enforcement protocols, how enforcement is being paid for, and by whom.

OBJECTIVES

Subjects & Disciplines

- Conservation

Learning Objectives

Students will:

- create posters or other media that provide information on a Marine Protected Area in a visually-appealing way
- evaluate and discuss case studies about different Marine Protected Areas throughout the world

Teaching Approach

- Application: Coach

Teaching Methods

- Assessment
- Brainstorming
- Cooperative learning

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Information, Media, and Technology Skills
 - Information Literacy
 - Information, Communications, and Technology Literacy
 - Media Literacy
 - Learning and Innovation Skills
 - Communication and Collaboration
 - Creativity and Innovation
 - Critical Thinking and Problem Solving
 - Life and Career Skills
 - Flexibility and Adaptability
 - Initiative and Self-Direction
 - Leadership and Responsibility
 - Productivity and Accountability
 - Social and Cross-Cultural Skills
- 21st Century Themes
 - Civic Literacy
 - Environmental Literacy
 - Financial, Economic, Business, and Entrepreneurial Literacy
 - Global Awareness

National Standards, Principles, and Practices

ENERGY LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

- **Fundamental Concept 1.1:**

Energy is a quantity that is transferred from system to system.

- **Fundamental Concept 1.2:**

The energy of a system or object that results in its temperature is called thermal energy.

- **Fundamental Concept 1.3:**

Energy is neither created nor destroyed.

- **Fundamental Concept 1.4:**

Energy available to do useful work decreases as it is transferred from system to system.

- **Fundamental Concept 1.5:**

Energy comes in different forms and can be divided into categories.

- **Fundamental Concept 1.6:**

Chemical and nuclear reactions involve transfer and transformation of energy.

• **Fundamental Concept 1.7:**

Many different units are used to quantify energy.

• **Fundamental Concept 1.8:**

Power is a measure of energy transfer rate.

• **Fundamental Concept 2.1:**

Earth is constantly changing as energy flows through the system.

• **Fundamental Concept 2.2:**

Sunlight, gravitational potential, decay of radioactive isotopes, and rotation of the Earth are the major sources of energy driving physical processes on Earth.

• **Fundamental Concept 2.3:**

Earth's weather and climate are mostly driven by energy from the sun.

• **Fundamental Concept 2.4:**

Water plays a major role in the storage and transfer of energy in the Earth system.

• **Fundamental Concept 2.5:**

Movement of matter between reservoirs is driven by Earth's internal and external sources of energy.

• **Fundamental Concept 2.6:**

Greenhouse gases affect energy flow through the Earth system.

• **Fundamental Concept 2.7:**

The effects of changes in Earth's energy system are often not immediately apparent.

• **Fundamental Concept 3.1:**

The sun is the major source of energy for organisms and the ecosystems of which they are a part.

• **Fundamental Concept 3.2:**

Food is a biofuel used by organisms to acquire energy for internal living processes.

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- 1 small, soft ball
- 2 Cups of dry ice (frozen carbon dioxide)
- 2 Cups of water
- 2-liter bottle preforms (optional)
- 2 pieces of stiff, white cardboard

- 2 spoonfuls of sand or dirt

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, 1 computer per learner
- Plug-Ins: Active X

PHYSICAL SPACE

- Aquarium
- Auditorium

GROUPING

- Cross-age teaching
- Heterogeneous grouping

BACKGROUND & VOCABULARY

Background Information

Marine Protected Areas (MPAs) are created to protect vulnerable habitat and species, increase biodiversity, prevent overfishing, conserve resources for future generations, and aid in scientific research. A case study is a written summary of real-life cases based upon data and research. MPAs exhibit a high level of complexity and diversity, which is highlighted in the case studies, along with geographic information, stakeholders, and general characteristics. Poster sessions and peer reviews afford students the opportunity to examine different types of MPAs, identify similarities and differences that exist, and better understand the complexities among ocean ecosystems and management practices.

Prior Knowledge

["marine protected areas and their importance in the preservation and management of marine resources"]

Recommended Prior Activities

- [Marine Protected Areas](#)

- [Marine Protected Areas: Case Studies](#)

Vocabulary

Term	Part of Speech	Definition
case study	noun	form of problem-based learning, where the teacher presents a situation that needs a resolution. The learner is given details about the situation, often in a historical context. The stakeholders are introduced. Objectives and challenges are outlined. This is followed by specific examples and data, which the learner then uses to analyze the situation, determine what happened, and make recommendations.
marine protected area (MPA)	noun	area of the ocean where a government has placed limits on human activity.
stakeholder	noun	person or organization that has an interest or investment in a place, situation, or company.

For Further Exploration

Websites

- [Partnership for Interdisciplinary Studies of Coastal Oceans: Ocean in Google Earth and the Science of Marine Reserves](#)
- [NOAA: National Marine Protected Areas Center](#)
- [World Resources Institute: Marine Protected Areas of the World](#)
- [World Database on Marine Protected Areas](#)
- [National Geographic Education: National Teacher Leadership Academy \(NTLA\)](#)
- [NOAA: Marine Protected Areas of the United States](#)

FUNDER



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