

RESOURCE LIBRARY  
ACTIVITY : 15 MINS

## Protect the Blue: Marine Protected Areas

Students compare percentages of protected land and protected ocean and discuss the value of marine protected areas.

### GRADES

3 - 8

### SUBJECTS

*Earth Science, Oceanography, Geography, Human Geography, Physical Geography*

### CONTENTS

1 Video, 1 Link

## OVERVIEW

Students compare percentages of protected land and protected ocean and discuss the value of marine protected areas.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/protect-blue-mpas/>

## DIRECTIONS

### 1. Brainstorm with students their understanding of protected habitats.

Ask students: *What protected places have you visited?* Prompt students with answers that include nearby state parks and nature preserves, well-known national parks, or city parks. Ask: *What are some of the rules for people who visit these areas?* Answers may include not littering, not removing any natural items, staying on the path, etc.

## 2. Define Marine Protected Areas, or MPAs.

Explain to students that parks and their rules exist in order to preserve habitats, organisms, and resources. Tell students that the need to protect habitats, organisms, and resources is not limited to land. The ocean needs to be protected, too. Areas in the ocean are being set aside as sanctuaries for the same reasons that parks were created on land: to protect habitats, organisms, and resources. These ocean sanctuaries are often called Marine Protected Areas, or MPAs. MPAs can have different rules of use. This means that people can use them in different ways, depending on an MPA's assigned level of protection. The strictest type of MPA is called a "no-take" reserve, which means that fishing of all types is not allowed. In many ways, the rules on "no-take" reserves are very similar to the rules for terrestrial parks.

## 3. Students compare the percentages of protected land and ocean.

Write numbers for the total land area of Earth, 148,647,000 km<sup>2</sup> (57,392,928 square miles), and the total ocean area of Earth, 331,441,932 km<sup>2</sup> (127,970,445 square miles), on a corner of the World Physical MapMaker Kit. Ask: *Is there more land or water on Earth?* Explain that the ocean covers 71 percent of Earth's surface, whereas land only covers 29 percent.

Have students estimate the percentage of each surface type that is protected and record their predictions. Ask: *What percentage of Earth's land do you think is protected? What percentage of the ocean do you think is protected?* Write student guesses on the board and then provide them with the actual percentages. About 13 percent of land, globally, is protected. However, less than 2 percent of the ocean is protected as a "no-take" reserve.

## 4. Students visualize the amount of protected area on the World Physical MapMaker Kit.

Have student volunteers tape cut out circles, or draw circles using a compass, on the map in order to visualize the amount of land and ocean set aside in reserves. Explain that these circles represent the total amount of land and ocean that is protected in the world. The size of these circles will differ based on the size of the World Physical map that you choose to use.

Total Area of Map: 682.5 in<sup>2</sup>

MPA: draw a circle with a 1 inch radius

Land: draw a circle with a 3 inch radius

### MegaMap

Total Area of Map: 11,781 in<sup>2</sup>

MPA: draw a circle with a 5 inch radius

Land: draw a circle with a 12 inch radius

Label the circles "MPA" and "Protected Land," and shade them blue and green, respectively.

### **5. Discuss the importance of protecting the world's ocean.**

*Ask: How did our predictions compare to the actual amounts of protected land and ocean?*

Point out that even though the ocean is larger than the land, far less of it is protected. Ask: *Are you surprised by this? Why or why not?* Discuss why protecting the ocean matters.

Remind students of the importance of protecting organisms, habitats, and resources, as well as positive and negative impacts that humans can have on the ocean.

## Modification

For Step 4, older students can calculate the size of the circles by measuring their maps and using ratios to calculate the circle size using the data in Step 3.

## Tip

Laminate the individual sheets of the MapMaker Kit map so you can re-use it for several years.

## Extending the Learning

Have a class brainstorm session of ways that different groups might be affected by the creation of a "no-take" MPA. Record all student responses on the board. Have students consider fishermen, tourism business owners and tourists, environmental groups, community members, politicians, and organisms. Ask: *Which groups would be in support of the idea? Why?* Circle these stakeholders in green. Ask: *Which groups would be against? Why?* Circle these stakeholders in red. Some groups may be coded both red and green. Tell students that the creation of an MPA is typically a complex process because of all of these competing interests.

## OBJECTIVES

# Subjects & Disciplines

### Earth Science

- Oceanography

### Geography

- Human Geography
- Physical Geography

# Learning Objectives

Students will:

- compare and visualize percentages of protected land and ocean on a global scale
- consider the importance of Marine Protected Areas

# Teaching Approach

- Learning-for-use

# Teaching Methods

- Brainstorming
- Cooperative learning
- Discovery learning
- Discussions

# Skills Summary

This activity targets the following skills:

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

## National Standards, Principles, and Practices

### NATIONAL GEOGRAPHY STANDARDS

- **Standard 1:**

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

- **Standard 3:**

How to analyze the spatial organization of people, places, and environments on Earth's surface

### OCEAN LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

- **Principle 1a:**

The ocean is the dominant physical feature on our planet Earth—covering approximately 70% of the planet's surface. There is one ocean with many ocean basins, such as the North Pacific, South Pacific, North Atlantic, South Atlantic, Indian and Arctic.

- **Principle 1h:**

Although the ocean is large, it is finite and resources are limited.

- **Principle 6e:**

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 (such as point source, non-point source, and noise pollution) and physical

modifications (such as changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

- **Principle 6g:**

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.

## **Preparation**

### **What You'll Need**

#### **MATERIALS YOU PROVIDE**

- Compasses
- Markers

#### **REQUIRED TECHNOLOGY**

- Tech Setup: 1 computer per classroom, Printer
- Plug-Ins: Flash

#### **PHYSICAL SPACE**

- Classroom

#### **SETUP**

Wall or floor space large enough to hang a giant map

#### **GROUPING**

- Large-group instruction
- Small-group instruction

#### **OTHER NOTES**

Print out and assemble the tabletop map or megamap as a class or on your own before class. Use the assembly video provided to help with this process. If you do not have room for the large map, students can use tabletop maps in small groups.

# BACKGROUND & VOCABULARY

## Background Information

A Marine Protected Area, or MPA, is "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein" (Presidential Executive Order 13158). The ocean has many habitats and resources that many countries, international, and national organizations are working to protect. Marine parks, marine protected areas, and marine sanctuaries are created to protect numerous areas of Earth's ocean.

## Prior Knowledge

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## Recommended Prior Activities

- None

## Vocabulary

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<b>conservation</b>	<i>noun</i>	management of a natural resource to prevent exploitation, destruction, or neglect.
<b>habitat</b>	<i>noun</i>	environment where an organism lives throughout the year or for shorter periods of time.
<b>impact</b>	<i>noun</i>	meaning or effect.
<b>marine protected area (MPA)</b>	<i>noun</i>	area of the ocean where a government has placed limits on human activity.
<b>national park</b>	<i>noun</i>	geographic area protected by the national government of a country.
<b>no-take zone</b>	<i>noun</i>	area set aside by the government where all extractive activity, including fishing, mining, and drilling, is not allowed.
<b>ocean</b>	<i>noun</i>	large body of salt water that covers most of the Earth.
<b>organism</b>	<i>noun</i>	living or once-living thing.

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
resource	<i>noun</i>	available supply of materials, goods, or services. Resources can be natural or human.
sanctuary	<i>noun</i>	protected area where wildlife can live and breed without threat from hunting.

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## For Further Exploration

### Websites

- [National Geographic: The Ocean](#)
- [NOAA: U.S. Marine Protected Areas mapping tool](#)
- [NOAA: Marine Protected Areas of the United States](#)
- [NOAA: National Marine Protected Areas Center](#)

FUNDER

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