

Oceans for Life Lesson Plan

Marine Protected Areas

OVERVIEW

In this lesson, students will define "Marine Protected Areas" and discuss their importance, location, function, as well as describe several types of Marine Protected Areas. Students will explore the controversy surrounding the establishment of Marine Protected Areas and will consider the needs of the various stakeholders and how establishing a Marine Protected Area might affect each of those stakeholders. Students will then identify ways in which Marine Protected Areas are monitored. Finally, students will weigh the costs and benefits of establishing a Marine Protected Area by considering the effect of creating a local protected area.

This lesson is one in a series exploring the history, biology, and ecology of the [National Marine Sanctuaries](#). It was developed for National Geographic's [Oceans for Life](#) program, in collaboration with and with support from the [National Oceanic and Atmospheric Administration](#).

FOCUS

Marine protected areas and their importance, location and function

FOCUS QUESTIONS

- How does the establishment of Marine Protected Areas (MPAs) affect various stakeholders?
- How are MPAs monitored and what are the costs and benefits of establishing a MPA?

LEARNING OBJECTIVES

Students will:

- define Marine Protected Area;
- identify types of Marine Protected Areas;
- identify the stakeholders of particular Marine Protected Areas;
- describe the impacts of establishing Marine Protected Areas from different stakeholder perspectives; and
- describe ways in which establishing a local protected area would affect their community.

GRADE LEVEL

6-8

MATERIALS

- Computer with internet access (Note: all information can be pre-downloaded and printed)
- Writing/drawing materials/chart paper

AUDIO VISUAL MATERIALS

- [Marine Protected Areas in California Video](#)

TEACHING TIME

Five to six hours

SEATING ARRANGEMENT

Whole-class instruction and small group activities

MAXIMUM NUMBER OF STUDENTS

No limit

KEY WORDS

Marine Protected Area, Stakeholder, Benefit, Risk

PREPARATION

- Download and prepare video clips
- Gather materials



LEARNING PROCEDURE

Opening:

The official definition of a Marine Protected Area, as defined by the United States government, 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 to part or all of the natural or cultural resources therein." Some examples of Marine Protected Areas include national marine sanctuaries, national parks, and wildlife refuges. Although this definition does accurately describe what a Marine Protected Area is, it gives little insight how those who live near or use a Marine Protected Area will be affected. In order to give those who use and enjoy Marine Protected Areas more guidance, a "[classification system](#)" (PDF, [Adobe Reader](#) required) has been developed to describe how a particular Marine Protected Area is being managed. Those categories of classification define each Marine Protected Area's:

- primary conservation goal (e.g., to preserve cultural heritage or natural heritage);
- level of protection (i.e., how people can make use of the area);
- permanence of protection (e.g., for a long or short time);
- "constancy" of protection (e.g., year-round or seasonal); and
- scale of protection (i.e., is the entire ecosystem of the area protected or just a particular resource).

Start by asking the students to raise their hands if their parents have created "after school rules." Then, ask them to describe what some of those rules are (e.g., come home right after school, call if they won't be home in time for dinner, complete homework before playing video games). Then, ask students if they can identify, or classify, the types of rules that their

parents have made. For example, which are the rules about how students are allowed to go home? Which are rules related to homework? Which are rules about going to friends' homes?

Explain to the students that all of these "categories of rules" provide specific information about one general "after school rule." Explain that while all of the students have "after-school rules," the rules from home to home may vary for different reasons. Then, ask the students why their parents may have different rules from other parents. [Answers will vary but may include such responses as "I live near a highway" or "I have several brothers and sisters."]

Then, explain to the students that they are going to apply their understanding of why rules exist to "Marine Protected Areas." Ask the students if anyone has heard of the term Marine Protected Area and to define it.

Tell the students the definition of a Marine Protected Area. Then, explain that while all Marine Protected Areas fit the overall definition, they may also, like their homes, have different rules that apply to use of those areas. Ask the students why different Marine Protected Areas might have different rules that apply to them. [Answers will vary but may include such responses as "Their location, the types of resources they have, how much they need to be protected."]

Development:

Have students watch the brief slideshows about four Marine Protected Areas found on the [Marine Protected Area Web site](#). As they watch, have them note ways in which the different Marine Protected Areas might need their own classifications, or rules, to govern their use. Then, have students describe each of the Marine Protected Areas. Create a four-



circle Venn Diagram on the board. Label each circle with one of the four Marine Protected Areas. As students respond, list their ideas to the left of the Venn Diagram. Then, when you have received enough responses, have students assist you in placing each of their ideas on the Venn Diagram. Then, ask the students how those areas might need to be categorized differently.

Explain to students that one of the most important "classifications" is the Marine Protected Area's "Primary Conservation Goal" status. Marine Protected Areas can be classified as one of the following three classifications:

- **Natural Heritage:** established to protect the area's natural biological communities, habitats, ecosystems and processes, and the ecological services, uses and values they provide to this and future generations. (Natural Heritage MPAs include most national marine sanctuaries, national parks, national wildlife refuges, and many state MPAs.)
- **Cultural Heritage:** established to protect, understand, and interpret submerged cultural resources (e.g., shipwrecks, submerged archaeological sites, etc.) that reflect the nation's maritime history and traditional cultural connections to the sea.
- **Sustainable Production:** established and managed principally to support the continued sustainable extraction (or removal) of renewable living resources (e.g. fish, shellfish, plants, birds or mammals) within or outside the MPA by protecting important habitat and spawning, mating or nursery grounds.

After discussing the definition of each of the above terms, ask the students to identify which category each of the four case study Marine Protected Areas falls into. (Thunder Bay

National Marine Sanctuary—Cultural Heritage; Florida Keys National Marine Sanctuary—Natural Heritage; South Slough National Estuarine Research Reserve—Natural Heritage; Experimental Oculina Research Reserve Sustainable Production.)

Then, explain to students that once the primary goal has been established, those who are responsible for the Marine Protected Area can create "rules" for the use of that area.

Have students work in small groups to review and discuss the [MPA Classification System](#) (PDF, [Adobe Reader](#) required) found on the Marine Protected Areas Web site. Then, reconvene the group and ask them if they feel that the different classifications of the Marine Protected Areas is prudent or unfair. Then ask if they feel if the establishment of Marine Protected Areas are important or not. Why?

Show students the [Marine Protected Areas in California video](#). After they have watched, ask them whom the designation of a Marine Protected Area might affect. Remind them that these people are referred to as "stakeholders." Then, remind them of the classification system and ask them to consider how the classification system rules might affect the stakeholders.

Tell the students that they will be learning more about one Marine Protected Area in California, known as the Channel Islands National Marine Sanctuary, and that they will consider who the stakeholders are and how they are affected. They will then weigh the costs and benefits of designating the Channel Islands National Marine Sanctuary as a Marine Protected Area.

Divide students into four groups. Assign each group a "stakeholder perspective" (Fisherman, Recreational User, Scientific Researcher,



Conservationists.) Explain that they will take time to learn everything they can about the Channel Islands National Marine Sanctuary from the point-of-view of their assigned stakeholder. Explain that those stakeholders have been selected to participate in a debate to decide if the Channel Islands

National Marine Sanctuary should retain its status as a Marine Protected Area. As they research, students should focus on the following considerations of the MPA retaining its status:

- Economic (e.g., jobs, cost-of-living, housing)
- Biological (e.g., wildlife)
- Environmental (e.g., water quality)
- Cultural (e.g., history of the area)
- Scientific (e.g., research done in the area)
- Management (e.g., how the area will be managed or taken care of)
- The designation process (e.g., how complicated designating the area a Marine Protected Environment will be)

Tell students to also consider the Marine Protection Classification System as they are researching. Some suggested Web sites for research include:

[Channel Islands National Marine Sanctuary](#)
[Channel Islands Marine Reserves](#)
[JASON Marine Reserves Digital Lab](#)
[California Department of Fish and Game—
Marine Reserves](#)
[Channel Islands Marine Protected Areas
Monitoring Plan](#) (PDF, [Adobe Reader](#) required)
[Channel Islands Research and Monitoring](#)

After students have conducted their research, hold a mock debate (using standard debate procedures) with the topic "Resolved: Channel Islands National Marine Sanctuary should remain a Marine Protected Area." Have each stakeholder group determine which side of

the debate their stakeholder would support, and group the students accordingly. Encourage students to carefully consider both the costs and benefits of this topic while debating.

After the debate, discuss the following with the students:

- How did your stakeholder feel about the debate?
- How do you personally feel about this issue?
- Did you learn anything about the controversy surrounding the designation of an MPA?
- Did your personal opinion change during the course of the research or debate?
- What are some of the costs of designating an MPA?
- What are some of the benefits of designating an MPA?

Closing:

Ask students if there is a local marine environment that would be a good candidate for being designated an MPA. Through class discussion, determine the following:

- Which areas would make a good MPA? Why?
- What are some issues surrounding this environment?
- What would the primary conservation goal of this MPA be?
- What should be included in the management plan?
- Who are the stakeholders?
- How might the stakeholders feel about designating the area as an MPA?
- How would an MPA designation affect local economy (e.g., fishing, tourism, whale watching, etc.)?
- How would you monitor this MPA over time to determine whether it is doing what it was set aside to do?



SUGGESTED STUDENT ASSESSMENT

Have students create a "management plan" for their local MPA using the MPA Classification System as a guide. Students can also create posters, which highlight the need to designate a local MPA.

Have students compare their local MPA to an MPA in another country to look at similarities and differences in terms of species, habitats, cultural resources, management issues, etc.

EXTENDING THE LESSON

- Have students select an industry that may be affected by the designation of MPAs (fishing, tourism, etc.). Then, have them find MPAs and find out how their management plans affect that industry.
- Create a public awareness campaign about one of the designated Marine Protected Areas. Students can create a brochure, television ad, or the script for a documentary highlighting the qualities of the MPA.
- Choose a species, habitat, or fishery found in one of the national marine sanctuaries and develop a monitoring plan (the plan can be focused on the biology or socioeconomics of the MPA). Have them answer the following questions: What is being monitored and why? What types of personnel, vessels and equipment are needed, what sampling protocols will be used? How often will monitoring occur? What questions will the monitoring plan attempt to answer?
- Encourage your students to become involved with monitoring projects in your area. Visit [Long-term Monitoring Program and Experiential Training for Students \(LiMPETS\)](#) to identify programs in your area.

RELATED LINKS

[California Department of Fish and Game—
Marine Reserves](#)
[Channel Islands MPA Monitoring Plan](#)

[Channel Islands Research and Monitoring](#)
[JASON Marine Reserves Digital Lab](#)
[Marine Protected Area Center Education](#)
[Marine Protected Areas of the United States](#)
[NOAA Channel Islands National Marine
Sanctuary](#)
[NOAA Channel Islands Marine Reserves](#)
[NOAA Long-term Monitoring Program and
Experiential Training for Students \(LiMPETS\)](#)
[NOAA National Marine Sanctuaries](#)
[National Geographic EdNet: Oceans for Life](#)
[New Zealand Marine Reserves Educational
Activities](#)

CONNECTIONS TO OTHER SUBJECTS

Geography, social studies, economics,
science, biology

NATIONAL SCIENCE EDUCATION STANDARDS

- F: Science in Personal and Social Perspectives: "Important personal and social decisions are made based on perceptions of benefits and risks"

NATIONAL GEOGRAPHY STANDARDS

- Standard 14: "How human actions modify the physical environment"
- Standard 16: "The changes that occur in the meaning, use, distribution, and importance of resources"

[Ocean Literacy: Essential Principles and
Fundamental Concepts](#) (PDF, [Adobe Reader](#)
required)

- Principle 5: The ocean supports a great diversity of life and ecosystems
- Principle 6: The ocean and humans are inextricably linked

FOR MORE INFORMATION

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