



What Are Marine Sanctuaries?



In this Investigation, students develop their understanding of what a marine sanctuary is and consider the criteria used in defining these special places.

BACKGROUND INFORMATION

NOAA's National Marine Sanctuaries
National Marine Sanctuary Sites

ACTIVITY

Special Places in the Sea

LEARNING OBJECTIVES

Students will:

- Define what a marine sanctuary is in their own words;
- Compare and contrast the national marine sanctuaries for similarities and differences in ecosystems, human use, water temperature, currents, and undersea topography;
- Articulate why we need national marine sanctuaries.

STANDARDS

Geography Standard 1

How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective

Geography Standard 8

Characteristics and spatial distribution of ecosystems on Earth's surface

Science Education Standards

How to identify worthwhile and researchable questions, plan an investigation, execute a research plan, and draft a research report

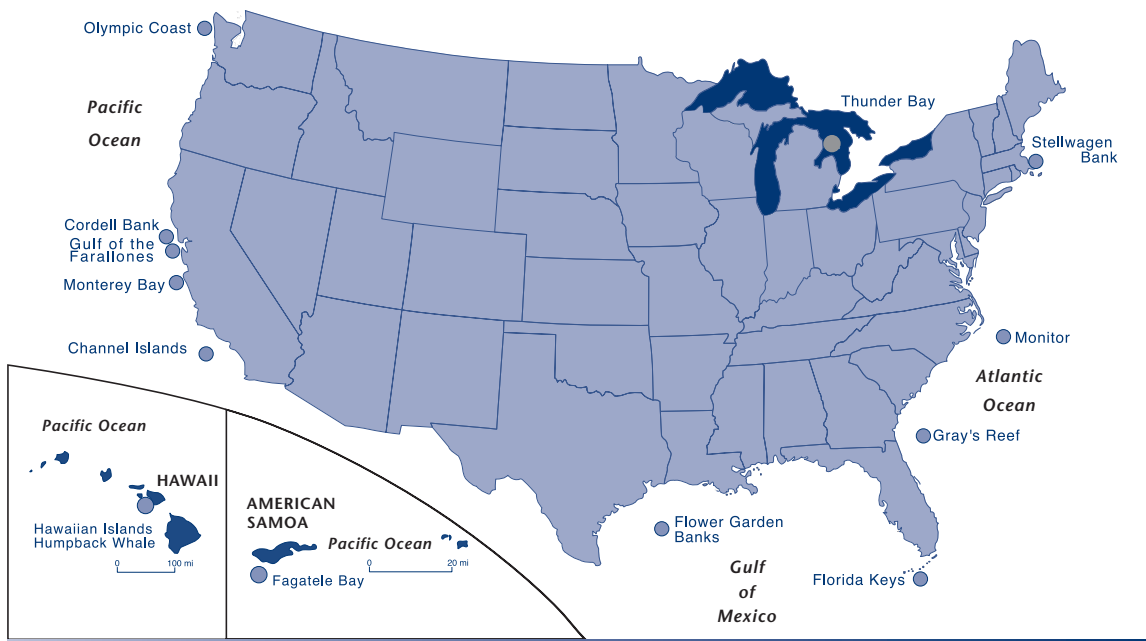
Developing self-directed learners

ACTIVITY

Special Places in the Sea



NOAA's National Marine Sanctuaries



Guiding Question

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 What characteristics define a marine sanctuary?

Materials

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- World Map, one for each student group
- Exploring the Sanctuaries, one for each student group

- Copy of sanctuary descriptions from **National Marine Sanctuary Sites** (pp. 16–23) for each student group
- Latitude, longitude, and web site address for each of the 13 national marine sanctuaries (page 30)
- Sustainable Seas Expeditions* poster (for a copy call 805/963-3238)
- Access to the Internet
- Paper for student journals or lab notebooks



Procedure

Part 1: What is a Marine Sanctuary?

1 On the board or overhead projector, write the words “marine sanctuary.” Tell students that 13 national marine sanctuaries have been set aside in the United States since 1972.

2 Using NOAA’s **National Marine Sanctuaries Background Information** sheet on page 6 as a guide, describe to your students why marine sanctuaries were established and how they are managed. Start them thinking about what marine sanctuaries are—establishing what they already know and encouraging them to ask and answer their own questions about sanctuaries and the marine environment.

3 Discuss with students the role of national parks, both on land and at sea, as special places that preserve algae, plants, and animals, the habitats in which they live, unique landforms, and recreational opportunities for people. Compare the establishment of the first national park, Yellowstone, in 1872 to the establishment of the first national marine sanctuary, *Monitor*, about one hundred years later.

4 After the discussion, divide your class into groups of three or four students each. Give each group a **World Map** and the name, latitude, and longitude of one or more of the 13 sanctuaries. (A point has been chosen for each site.) Ask students to locate their sanctuaries on the **Map**.

Part 2: What Makes Each Sanctuary Special?

1 Hand out an **Exploring the Sanctuaries** sheet to each group. Using this as a guide, have groups predict what biological, physical, and geographical features they might find at the latitude and longitude of their mapped sanctuaries. Encourage students to identify what they don’t know and to record questions in their lab notebooks concerning what they would like to learn more about. These questions may serve as a starting point for Investigation 3, **Planning an Expedition**.

2 Have students collect data about their sanctuaries that address their questions. Give each group the sanctuary description and web site address for their sanctuary. Have them revisit the questions on the **Exploring the Sanctuaries** handout and in their lab notebooks to build on what they already know and form a more complete description of their sanctuaries. How do their predictions compare to their findings?

3 Have groups present what they have learned to the rest of the class. Encourage students to describe the sanctuary they studied and make comparisons with other sanctuaries. Some discussion questions might include:

What did students expect to find in terms of key habitats, species, ocean currents, water temperature, geological features, and human uses?

What was the reasoning behind their expectations?

How did their research change their knowledge of their marine sanctuary?

Why do they think their area was designated as a sanctuary?



Part 3: Defining Sanctuaries

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Based upon the students' presentations and discussions, continue the discussion to further explore what characteristics define a sanctuary.

How do the features of one sanctuary compare to another? Which have coral reefs? Why? Which have kelp forests?

(This can be a lengthy discussion where students begin to look at what defines a sanctuary. Point out, if students haven't already, the diversity among sanctuaries with respect to habitat types, water temperature, ocean currents, geology, human use, and so on.)

What is the unifying concept among all the different sanctuaries? What defines a sanctuary?

What kinds of areas should qualify as a sanctuary?

(As part of this discussion, have students reflect on the reasons why their sanctuaries were designated as such. Are all designated for the same reasons? For more information, refer to the resources listed under National Marine Sanctuary Program on page 88.)

What activities should be allowed in a sanctuary? What are the pros and cons of designating certain areas as multi-use or single use? What are the pros and cons of setting aside areas where no activities are allowed at all? What permitted activities do students agree/disagree with? What are the pros and cons of these? What points of view do different stakeholders have regarding this issue?

(Have students role play different sanctuary users such as commercial fishermen, recreational divers, and so on.)

What are the benefits of designating areas as sanctuaries? What are the limitations? When considering the size of a sanctuary, how big is big enough?

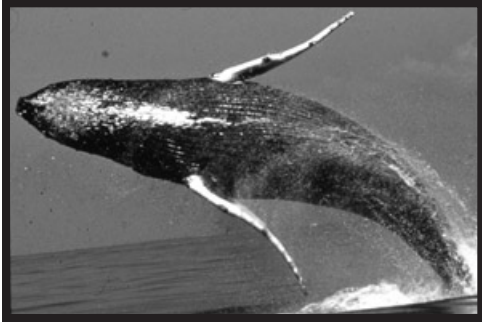
Why do we need sanctuaries? Are sanctuaries enough to maintain the health of the sea? Are there other methods that would benefit the sea; for example, the corridors employed by the National Park Service that provide routes for animals on land to move from one area to another?

To expand this discussion and compare management strategies between the Great Barrier Reef Marine Park in Australia and our national marine sanctuaries, refer to the Great Barrier Reef's web site (<http://www.gbrmpa.gov.au/>). In particular, look at the headings: "Managing the Great Barrier Marine Park" and "Corporate Plan 1997–2001."

Part 4: Revisit Their Understanding

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1 After completing one or more of the other Investigations in this packet, revisit this exercise to see how students' concepts of a marine sanctuary have changed as a result of their own investigations. If students use a journal or lab notebook to record their work, this activity will provide them with a means of self-assessment.



National Marine Sanctuaries: Latitude and Longitude* / Web Site Addresses

Channel Islands National Marine Sanctuary

34° N 119° W <http://www.cinms.nos.noaa.gov>

Cordell Bank National Marine Sanctuary

38° N 123° W <http://www.sanctuaries.nos.noaa.gov/oms/omscordell/omscordell.html>

Fagatele Bay National Marine Sanctuary

14° S 170° W <http://www.sanctuaries.nos.noaa.gov/oms/omsfagatele/omsfagatele.html>

Florida Keys National Marine Sanctuary

24° N 81° W <http://www.fknms.nos.noaa.gov>

Flower Garden Banks National Marine Sanctuary

27° N 93° W <http://www.flowergarden.nos.noaa.gov/>

Gray's Reef National Marine Sanctuary

31° N 80° W <http://www.graysreef.nos.noaa.gov>

Gulf of the Farallones National Marine Sanctuary

37° N 122° W <http://www.gfnms.nos.noaa.gov>

Hawaiian Islands Humpback Whale National Marine Sanctuary

21° N 157° W <http://www.hihwnms.nos.noaa.gov/>

Monitor National Marine Sanctuary

35° N 75° W <http://www.nos.noaa.gov/nmsp/monitor> or <http://monitor.nos.noaa.gov/>

Monterey Bay National Marine Sanctuary

36° N 122° W <http://www.mbnms.nos.noaa.gov>

Olympic Coast National Marine Sanctuary

48° N 124° W <http://www.ocnms.nos.noaa.gov/>

Stellwagen Bank National Marine Sanctuary

42° N 70° W <http://vineyard.er.usgs.gov/>

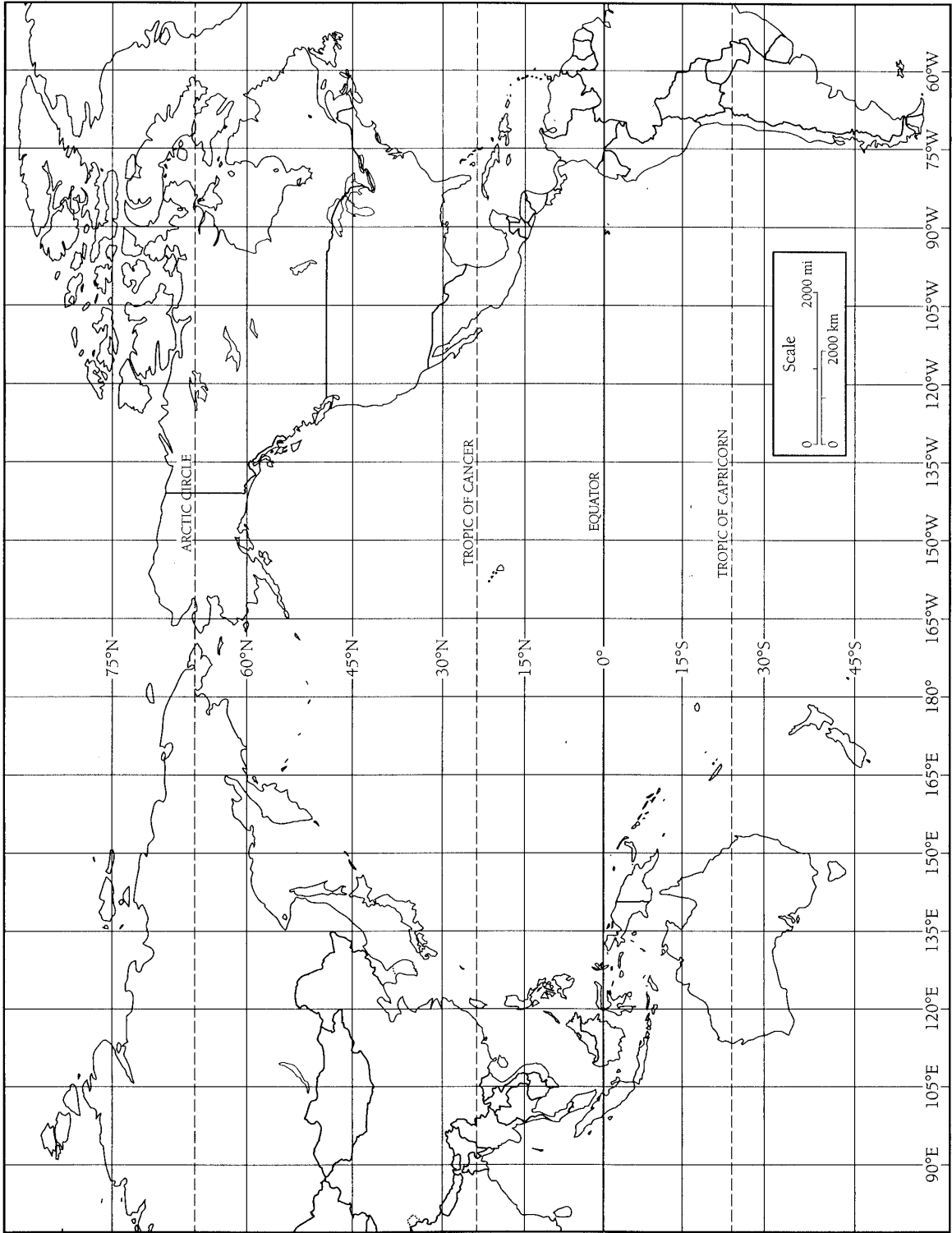
<http://www.sanctuaries.nos.noaa.gov/oms/omsstellwagen/omsstellwagen.html>

Thunder Bay National Marine Sanctuary

45° N 83° W <http://www.glerl.noaa.gov/glsr/thunderbay>

*Latitude and longitude are measured from a point near the center of the sanctuary.

WORLD MAP



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EXPLORING THE SANCTUARIES

Geographical Features:

- »»»» What major cities are within 150 kilometers (100 miles) of your sanctuary and what are their populations? How accessible is the sanctuary? Can you drive there?
- »»»» What are the important geological features of this site? What geological processes helped shape the sanctuary and its surrounding area?

Historical Perspectives:

- »»»» What historical features are part of the sanctuary? Are there shipwrecks, native peoples, or archaeological artifacts? How was the area important to early people?

Physical Characteristics:

- »»»» How can you characterize the physical conditions of the sanctuary?

Biological Aspects:

- »»»» What habitats are found in the sanctuary? What kinds of algae, plants, and animals live in these places? What species are found in more than one habitat? What species might migrate through this sanctuary during certain times of year?

Human Use:

- »»»» How do people use the sanctuary? What are the real and potential threats and benefits from those uses?

Goals of the Marine Sanctuary:

- »»»» Why do you think this area was designated as a national marine sanctuary? What activities should be allowed? What are some of the current local issues?

