



Marine Life: *Discussion Guide*

Overview

With 99 percent of all the living space on Earth found in the oceans, it's not surprising that so much of it remains unexplored. In fact, we know more about the surface of the moon than we do about the watery depths of our own planet. Yet, even with our limited knowledge, it's clear that the ocean provides homes for a multitude of more varied life-forms than the land.

Help your students explore the diverse and amazing creatures who inhabit the marine world with this discussion guide and related videos and activities.

Classroom Activities

1. Show the segment "Introduction to Oceans" from the *Earth Science: Oceans* video.
 - **Vocabulary:** In the video, students hear that *filter feeding* is a way of eating common to marine animals, but doesn't exist on land. Have students research the term and create an "encyclopedia entry" that includes names of several filter feeders.
 - **Discussion:** What are some of the challenges of deep-sea exploration discussed in the video? What does this tell us about the creatures that live in the ocean's depths?
 - **Science Investigation:** Using library reference materials and the Web, have students research and compare the two submersibles shown in the video—the pioneering bathysphere and today's *Nautilus*. Instruct students to focus on the research capabilities of each submersible, especially how each has furthered our understanding of marine life.
2. Show the segments "Echolocation: Communication Among Species" and "Echolocation as a Strategy for Catching Prey" from the *In the Company of Whales* video. (Access to *unitedstreaming* is required.)
 - **Discussion:** Were students surprised to learn that dolphins are whales? Why or why not? What do dolphins have in common with sperm whales?
 - **Graphic Organizer:** Working as a class, create an illustrated whale cladogram, or family tree, that shows the classification between toothed

whales and baleen whales. Begin by researching whale taxonomy on the American Cetacean Society's Web site:

<http://www.acsonline.org/education/taxonomy.html>. Then, assign individual students to locate photographs of whale species for use in the classroom cladogram. In addition, you may want students to continue the cladogram in the other direction, showing whales' classification as mammals.

- **Sound Gallery:** Have students explore whale calls, dolphin vocalizations, and other sea sounds—including an underwater earthquake—at <http://dsc.discovery.com/convergence/blueplanet/sounds/sounds.html>.

3. Show the segment “Prehistoric Sharks” from the *Science of the Deep* video. (Access to *unitedstreaming* is required.)

- **Discussion :** In the video, students learn that over the course of 25 years, the average gray shark will produce around 20,000 teeth. Ask for volunteers to calculate the average number of teeth a gray shark produces in a year (800), in a month (66.6), and in a day (2.2). Why do students think sharks need so many teeth over the course of their lifetime?
- **Research Expedition:** Have students learn more about great white sharks and their now-extinct ancestor, the *Carcharodon megalodon*, using the Web sites listed below and other reference materials. In what ways are great whites similar to the megalodons? How do they differ? Challenge students to see who can come up with the most creative way to accurately compare the two sharks.

Great White Shark

- http://www.mbayaq.org/cr/cr_whiteshark/whiteshark_biology.asp
- <http://oceanlink.island.net/oinfo/biodiversity/Great%20White%20Shark/shark.html>
- http://www.flmnh.ufl.edu/fish/sharks/White/White_Shark.htm

Carcharodon megalodon

- <http://www.enchantedlearning.com/subjects/sharks/glossary/Megalodon.shtml>
- <http://www.bbc.co.uk/science/seamonsters/factfiles/megalodon.shtml>
- <http://school.discovery.com/schooladventures/prehistoricsharks/gallery12.html>

- **Shark Sighting:** The *Carcharodon megalodon* is not the only prehistoric shark to have disappeared from Earth. Have students visit our online Prehistoric Shark Gallery to learn about others and view their fossils: <http://school.discovery.com/schooladventures/prehistoricsharks/gallery.html>.

4. Show the segment “Marine Harvests and the Endangerment and Extinction of Ocean Species” from the *Earth Science: Oceans* video. (Access to *unitedstreaming* is required.)
 - **Pre-Viewing Discussion:** Chances are good that at least some of your students will know that nearly 3/4 of Earth’s surface is covered with water. Do they believe the oceans are an infinite resource? Why or why not? What types of valuables do Earth’s oceans hold? Ask students to take detailed notes while they watch the video about how marine harvesting and other human activities are affecting the world’s oceans.
 - **Vocabulary:** In the video, students learn that we haul in 20 million tons of *bicatch* each year, including protected marine mammals. Ask if anyone can explain what *bicatch* is. If necessary, direct students to use the Web to find a definition or explanation.
 - **Conservation Activity:** Using their video notes as a starting point, have students identify an at-risk species in the ocean. Using library reference materials and the Web, ask students to learn more about the species and any conservation efforts that exist. Working either individually or in small groups, have students create an educational campaign about their at-risk species. Each campaign should include a poster, a fund-raising letter, and the script for a radio commercial.

Academic Standards

This discussion guide addresses the following national standards.

National Academy of Sciences

<http://books.nap.edu/html/nses/html/overview.html#content>.

- Life Science: Populations and ecosystems, Diversity and adaptation of organisms, Interdependence of organisms, Behavior of organisms
- Science and Technology: Abilities of technological design, Understanding about science and technology
- Science in Personal and Social Perspectives: Science and technology in society, Natural and human-induced hazards

Mid-continent Research for Education and Learning (McREL)

<http://www.mcrel.org/compendium/browse.asp>.

- Science
 - Life Sciences: Understands relationships among organisms and their physical environment, Understands biological evolution and the diversity of life
 - Nature of Science: Understands the nature of scientific knowledge, Understands the scientific enterprise
- Technology
 - Understands the nature of technological design, Understands the nature and uses of different forms of technology
- Language Arts
 - Writing: Uses grammatical and mechanical conventions in written compositions; Gathers and uses information for research purposes
 - Viewing: Uses viewing skills and strategies to understand and interpret visual media

