

SUGGESTED REFERENCES

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- *Ichthyology at the Florida Museum of Natural History* <http://www.flmnh.ufl.edu/fish/Sharks/sharks.htm>
- *The Oceania Project: Caring for Whales, Dolphins and the Oceans* www.oceania.org.au/
- Cole, Joanna and Bruce Degen. **The Magic School Bus on the Ocean Floor** Scholastic 1994
- *The Marine Mammal Center* www.tmmc.org/index.html
- *Cetacea: Whales, Dolphins, and Porpoises* www.cetacea.org/index.htm
- *NASA Goddard Space Flight Center* <http://seawifs.gsfc.nasa.gov/SEAWIFS.html>

NATIONAL SCIENCE EDUCATION STANDARDS

K - 4

Life Science

Characteristics of Organisms
Life Cycles of Organisms
Organisms and Environments

5 - 8

Life Science

Structure and Function in Living Systems
Regulation and Behavior
Population and Ecosystems
Diversity and Adaptations of Organisms

*Source: *National Science Education Standards, 1996, National Academy Press*

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SYNOPSIS

Around four billion years ago oceans were formed. They contain some of the oldest and most successful life forms on earth. They cover nearly seventy-five percent of the earth's surface with depths greater than land's highest mountains. Flowing with salts, minerals and dissolved gases, these waters provide the essentials for life, allowing sea life to thrive.

This edition of SCIENCE SCREEN REPORT FOR KIDS travels into the depths of the oceans, observing and discovering the oceans' most amazing creatures. It is here that many different species have learned to adapt to their environment, while others have existed unchanged for over millions of years. As we explore this watery world, we will learn how many species symbiotically survive within these intricate waters they call home.

CURRICULUM UNITS

- BIOLOGY
- ENVIRONMENTAL SCIENCE
- MARINE BIOLOGY
- OCEANOGRAPHY
- ZOOLOGY

RUNNING TIME

25:52

BACKGROUND

Deep below the ocean's surface, lurk sea creatures that have existed for billions of years. Although the ocean provides a perfect balance of life's essentials, it is also the development and perfection of hunting and survival techniques that allows sea life to thrive.

Species dwell at all depths of the ocean. Each possesses a hunting strategy that is adapted to its surroundings. The ocean's surface provides sunlight and oxygen to nourish tiny organisms and microscopic plants. While in the coastal and inter-tidal areas, fish are preyed upon as the main course. In the ocean's greatest depths, where light is nonexistent, microscopic organisms are meals for many. With a deadly combination of senses, such as smell, eyesight and electrical sensitivity, the ocean's creatures dine daily. However, some species hunt best when working cooperatively, while others prefer to hunt solitarily.

Solitary hunters have perfected a wide range of feeding techniques. Some of the most remarkable techniques are those of the numb ray. This creature has the ability to stun its prey by generating its' own electricity. For others, hunting is as simple as opening up. Ascidians are great examples of this technique. They have large filtrating feeders that extract nourishment from floating particles.

For many species, camouflage is the key to survival. Camouflaging has many variations ranging from adopting an environment's background, using surroundings to decorate them, or counter shading. The most common form of camouflage is counter shading. With a combination of environment and reflecting light, creatures can darken their dorsal side leaving the ventral side lighter. This allows them to blend in when viewed from above or below.

Survival in the ocean also requires unique adaptations to meet unique challenges. One of the most basic is mobility. Some species move through the waters by swimming or flapping, while others walk or slide. Of course, speed plays a large role in whether a fish becomes prey. The most efficiently mobile of all fish is the shark species. With a fusiform body, a shark's shape is able to reduce drag and swim at speeds around thirty kilometers per hour.

All sea dwellers have one goal in common, which is to survive long enough to reproduce. Sometimes life in the sea takes a nontraditional approach. For example, once a female seahorse produces her eggs, she deposits them into the male's pouch where he is then responsible for fertilizing, incubating and delivering live young.

The oceans of our world are vital to life on earth. It is in these waters that the first life form began. Covering nearly seventy-five percent of the earth, only a fraction of the ocean has been explored. The depths below hold secrets of creatures yet to be discovered and each species play an important role in the preservation of the ocean. As we have grown to understand more about the ocean's significance, we must begin to take better care of these waters, as well as the creatures that call these intriguing waters home.

ADVANCED ORGANIZERS

Prior to showing this video students should have some understanding of the following Benchmarks for Science Literacy, Oxford University Press, which are excerpted and, in some cases, abbreviated below. Refer to the Benchmarks for more information.

Benchmark 5: The Living Environment

Section A - Diversity of Life

Know by the end of Grade 2

- Some animals and plants are alike in the way they look and in the things they do, and others are very different from one another.
- Plants and animals have features that help them live in different environments.

Section C - Cells

Know by the end of Grade 5

- Some living things consist of a single cell. Like familiar organisms, they need food, water, and air; a way to dispose of waste; and an environment they can live in.

Section D - Interdependence of Life

Know by the end of Grade 2

- Animals eat plants or other animals for food and may also use plants (or even other animals) for shelter and nesting.

Know by the end of Grade 5

- For any particular environment, some kinds of plants and animals survive well, some survive less well, and some can not survive at all.

Section E - Evolution of Life

Know by the end of Grade 2

- Different plants and animals have external features that help them thrive in different kinds of places.

*Benchmarks can be found at www.project2061.org/tools/benchol/bolintro.htm

CRITICAL THINKING EXERCISES

- Create a KWL chart to determine prior knowledge of ocean life and survival.
- Read aloud a book such as, **WHALE RAP**, by Joan Van Bramer and Janine Scott.
- Write a narrative story about divers swimming in the ocean. What would they encounter?
Include facts from the video to enhance the story.
- Illustrate a web or food chain for an ocean ecosystem.
- Research and illustrate a sea creature. Identify where it lives in the ocean, survival techniques, ways it has adapted to its environment, food sources etc.
- Classify the mentioned species in the video into solitary/cooperative hunters and identify techniques.
- Identify land's highest mountains to determine the oceans greatest depths.
- Have students research the effects the moon has on the ocean and the tides.

VOCABULARY

Abyss	Profound ocean depths.
Baleen	Elastic material that hangs in fringed, parallel, plate like sheets from the upper jaw of whale and serves to strain the plankton on which they feed.
Breach	A whale's leap clear of the water.
Callosites	A hardened thickened place on the skin.
Cetacean	Large sea animals such as whales, dolphins, and porpoises.
Communal	Living in groups of social organization.
Crustaceans	Have a shell or crust, live in water, breathe through gills, such as lobsters, shrimps, and crabs.
Dermal denticles	Small tooth like projections on the skin.
Fauna	Animals of a specified region or time.
Fusiform	Rounded, broadest in the middle, tapering toward each end.
Krill	Small shrimp-like crustaceans.
Migration	To move from one region to another with the change of the seasons.
Nictating membrane	A transparent third eyelid hinged at the inner side of the lower lid of the eye of various animals, serving to keep the eye clean and moist.
Photosynthetic	The biological synthesis of chemical compounds in the presence of light.
Placoid scales	Scales that are periodically shed and replaced.
Plankton	Microscopic animal and plant life found floating or drifting in the ocean or in bodies of freshwater, used as food by nearly all aquatic animals.
Pinnepeds	Having finlike feet or flippers such as a seal or walrus.
Polyp	Having a mouth fringed with many small slender tentacles bearing stinging cells at the top of a tube like body, as the sea anemone or hydra.
Spy-hopping	The act of whales as they lift their heads out of the water.

CAREER POSSIBILITIES

- BIOLOGIST
- DIVER
- ENVIRONMENTAL SCIENTIST
- MARINE BIOLOGIST
- OCEAN ENGINEER
- OCEANOGRAPHER
- ZOOLOGIST