

SUGGESTED REFERENCES

- Erich Hoyt
Creatures of the Deep In Search of the Sea's "Monsters" and the World They Live In. Firefly Books Ltd. October 2001.
- Robert D. Ballard with Will Hively
The Eternal Darkness: A Personal History of Deep-Sea Exploration. 314 pp. Princeton University Press, 2000.
- *Exploring the deep ocean floor: Hot springs and strange creatures*
<http://pubs.usgs.gov/publications/text/exploring.html>
- *Mystic Aquarium - Institute for Exploration*
<http://www.mysticaquarium.org/index.html>
- *Endangered Sea Dragon*
<http://www.fish.wa.gov.au/rec/broc/fishcard/dragon.html>

NATIONAL SCIENCE EDUCATION STANDARDS

5 - 8

Life Science

Structure and Function in living organisms
Diversity and adaptations of organisms
Population and Ecosystems

9 - 12

Life Science

Biological evolution
Diversity and adaptations of organisms
Behavior of organisms

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

CREDITS

EDUCATOR ADVISORY PANEL

Fred Barch, M.S.
Rose-Marie Botting, M.S.

Debra A. Murnan, B.A.
John A. Murnan III, M.S.

PRODUCTION CREDITS

ASSOCIATE PRODUCER:
EDITOR:
NARRATOR:

Patricia Norman
Jon Glassman
J.J. Wilson

SCIENCE SCREEN REPORT

Science Brought To Life In The Classroom

SCIENCE SCREEN REPORT is a proud participant in the Presidential Awards for Excellence in Mathematics and Science Teaching. For more information visit www.nsf.gov/pa

1000 Clint Moore Road, Suite 211, Boca Raton, FL 33487
tel: 1.800.232.2133 email: info@ssrvideo.com
www.ssrvideo.com

COPYRIGHT © 2005 Allegro Productions, Inc. All rights reserved.

SCIENCE SCREEN REPORT

VOLUME 35 ISSUE 6

BIZARRE CREATURES DISCOVERED



Accreditation Board
for Engineering
and
Technology



Presidential Awards
for Excellence in
Mathematics
and
Science Teaching



Junior Engineering
Technical Society
www.jets.org

SYNOPSIS

We may know more about the moon than we do about the deepest abysses of the oceans. We are still discovering creatures at these extreme depths and learning about their unusual living conditions. It is amazing that some of these ocean creatures are able to withstand the lack of light and locate prey at the same time. Creatures of these deep waters are sometimes very unusual because of their adaptive characteristics. There are also plenty of weird creatures in the shallows.

In this edition, we will explore their environments and see how these weird creatures manage to survive through unusual hunting methods, different lines of defenses like camouflage, and unique mating techniques.

CURRICULUM UNITS

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

RUNNING TIME

24:14

BACKGROUND

It is an astonishing realization that we may know more about the moon than the deepest ocean abysses of our very own planet. In these deep ocean crevasses, life has adapted to the unusual living conditions. Their adaptive nature has allowed them to take amazing measures to disguise themselves against their natural environments. The hairy frogfish, for example, has fleshy nodules that help them blend into the rocks and weeds. The leafy sea dragon has long fronds that extend off of and break up the lines of its seahorse-like body, giving it the ability to float hidden among the seaweed. One of the ugliest and deadliest fish in the sea is the stonefish. It is not a large fish, but is extremely poisonous, and can disappear, camouflaging itself among the reefs.

It's not just the deepest oceans that are home to the weird creatures of the sea. Some of the most unusual creatures can be found in the shallows as well. The nudibranch, also known as the sea slug, is a unique and very diverse species. The name nudibranch means "naked gill". Some have gills that are displayed on the outside, on their dorsal surface. Many species are brightly colored, warning potential predators of distasteful toxins. Some nudibranchs are strongly scented, which is a chemical anti-predator warning. They feed on creatures that contain stinging cells called nematocysts. The nudibranchs block these nematocysts during digestion, and pass them on to special storage sacs in the cerata. The adopted poisonous cells form part of a defense mechanism against predators. The nudibranch possesses a very unusual mating trait. They are hermaphrodites, containing both male and female sexual reproductive organs. This essentially doubles their opportunities for finding a mate. Nudibranch sex can take up to five days and some lay hundreds of thousands of eggs, sometimes millions.

Reproduction is atypical in the case of the seahorse. Not only are they devoted couples who pair for life, but there is another quirky twist. It is the male seahorse who takes on the motherly role of pregnancy, which lasts up to three weeks.

The siphonophore, a rare giant of the sea, is a relative of the jellyfish. It is one of the longest creatures in the ocean. The siphonophore grows to a length greater than that of any of the big whales. At around 40 meters, it is a twisting mass of individual animals joined together in one long snake-like colony.

The ocean depths are still a mystery to scientists. We will be discovering new things about our oceans for a long time to come. Recently, technology has evolved rather quickly, allowing us to discover new things at an alarming rate. Newly designed remotely operated vehicles or ROV's, and special cameras will enable us to see even further into the deepest abysses.

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 Grade 8

- Animals and plants have a great variety of body plans and internal structures that contribute to their being able to make or find food and reproduce.

ADVANCED ORGANIZERS (continued)

Know by Grade 12

- The variation of organisms within a species increases the likelihood that at least some members of the species will survive under changed environmental conditions, and a great diversity of species increases the chance that at least some living things will survive in the face of large changes in the environment.

Section F - Evolution of Life

Know by Grade 8

- Small differences between parents and offspring can accumulate (through selective breeding) in successive generations so that descendants are very different from their ancestors.
- Individual organisms with certain traits are more likely than others to survive and have offspring. Changes in environmental conditions can affect the survival of individual organisms and entire species.

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

CRITICAL THINKING EXERCISES

- Compare and contrast deep-sea exploration to space exploration.
- Discuss camouflage techniques of the different species mentioned in the video. Compare and contrast them with each other, and then with species that use bright colors to warn off enemies.
- The seahorse is one unique species that involves the male in the actual pregnancy. Research different animals where the male takes a more active role in parenting at websites such as <http://www.pbs.org/wgbh/nova/seahorse/superdads.html>

VOCABULARY

Abyss

Camouflage

Crustacean

Hermaphrodite

Inimicus

Morphology

Plankton

CAREER POSSIBILITIES

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