



Ocean Creatures Pre-Visit

Thank you for scheduling an educational experience at the Putnam Museum. In this thirty-five minute program, the Putnam Museum's Education Specialist will lead your hands-on program in which your students will explore how animals live and adapt to ocean environments. We look forward to seeing you and thank you for your interest in the Putnam Museum's education programs.

Sincerely,
Kara Fedje,
Education Specialist

Project Title: Ocean Creatures

Focus: Marine Animal Life

Target Audience: Grades: 3-6

Focus Question: How do animals adapt in order to live in the ocean?

Learning Objectives:

1. Students will identify three types of fossils that were found in Iowa and Illinois when it was covered by a shallow sea.
2. Students will learn about adaptations that help marine life survive the harsh oceanic waters.
3. Students will see a living hermit crab.
4. Students will learn how marine life is connected through the food web game.

Catalog Description: Visit the ocean...right here at the Putnam! Join us as we discover the wonderful world of ocean habitats and animals through hands-on activities and the Ocean Experience discovery area. Students will explore animal adaptations, light and pressure, visit our crab lab and learn ways we can do our part to protect the ocean.

Key Words:

adaptations-traits that change over time to help an animal species survive

bivalve-animals that have two hard valves or shells

crinoid-ocean animals that look like a plant in fossilized form

food web-a chain of predator and prey connections

habitat-natural environment where an animal lives

predator-an animal who eats another animal

prey-animals who gets eaten by its predator

sea urchin-a small circular animal that moves slowly and feeds on algae

starfish-a star shaped sea animal that can regenerate arms and feed from his underside

symbiotic relationship-a mutual relationship where both animals (or plants) benefit from each others existence.

trilobite- an extinct animal, now a fossil, that once crawled on the bottom of the ocean floor

Standards and Curriculum:

Iowa Core: Earth and Space 3-5

Illinois Learning Standards: Late Elementary: 12.B.2A, 12.B.2B

Background Information:

Did you know that Iowa and Illinois were both under a shallow sea over 400 million years ago? Fossils provide evidence and clues into the depth of our region's biodiversity. From sea stars to hermit crabs to sharks, these animals have developed special adaptations over time to help them evolve and survive. Oceans provide a huge resource for all creatures. As resources change in our present day, animals may have to further adapt to human changes. Not only is their habitat threatened but we need to protect our oceans because we are all interconnected by water.

For More Information:

Fossil information including bivalves, crinoids, and trilobites:

<http://www.kgs.ku.edu/Extension/KSfossils.html>

Illinois State Museum's natural history information:

<http://www.museum.state.il.us/>

NASA's introduction to phytoplankton, global patterns, and images of Earth's phytoplankton:

<http://earthobservatory.nasa.gov/Features/Phytoplankton/>

National Oceanic and Atmospheric Administration's coral reef and other ecological systems:

<http://coralreef.noaa.gov/>

Trilobite information and facts, geologic history:

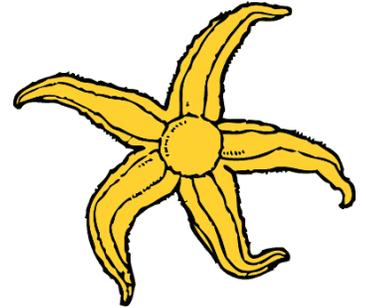
<http://www.trilobites.info/index.htm>

Further Activities for your classroom:

Make a Model Coral Reef the Edible Way

Materials: different kinds of cereal, licorice, carrots, marshmallows, graham crackers, icing

Directions: Have students look at images of coral reef. Then gather in small groups and have students construct their model reefs. Be sure to guide them in discussions of the principals of natural communities. Remember that the reef is a shelter for animals of all kinds. While fish gather around the tops of the coral reef, animals such as anemones, lobsters, crabs, octopuses and giant clams may hide and take shelter underneath overhangs and in nooks and crannies. Have students solve the problems of "Who belongs where doing what?" Have them report on their conclusions as to how coral-reef communities are organized.



Feel the Pressure

Materials: plastic bag like a newspaper sack or grocery sack, tub of water about one or two feet deep

Directions: Have the students put their arms into the bag and then submerge their arms into water. Ask students if their hands feel any different underwater. Have students calculate how much pressure is on their arm. Remember at sea level air pressure is measured at 14.7 pounds per square inch. (If we could take a column of air all the way through the atmosphere, it would weight 14.7 pounds.) However, water weighs a bit more than this. Each column that is one foot deep will weigh an extra .445 pounds due to salt and water. Therefore at one foot deep the pressure would be $14.7 \text{ psi} + 0.445 \text{ psi} = 15.145$.