



Coral Reefs and Beyond 3-5 Pre-Visit Material

Thank you for scheduling an educational experience at the Putnam Museum. In this thirty 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.

Program Title: Coral Reefs and Beyond

Target Audience: Grades 3-5

Focus: Marine life

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

The program highlights:

- Light and pressure in the ocean with a water pressure demonstration
- How ocean creatures have adapted to live in the ocean
- Observation of a living hermit crab
- Students learn how they can do their part to protect the ocean

Catalog Description: Discover the secret life of animals under the sea! Why do sea stars and sea urchins have tube feet? Find out with the Putnam! Hands-on activities and the exploration of light and pressure –not to mention how we can all do our part to protect the ocean –waits!

Key Words:

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

Habitats- natural environment where an animal lives

Predator- an animal who eats another animal

Prey- an animals who gets eaten by its predator

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

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

Shark- a long-bodied marine fish with a cartilaginous skeleton, a prominent dorsal fin, and tooth-like scales

Crab- a sea animal that is a crustacean that has a short broad flat shell and a front pair of legs with small claws

Seashell- the shell of a marine animal

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

Food web- a chain of predator and prey connections

For More Information:

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

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

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

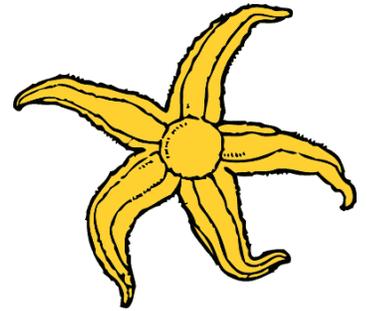
<http://earthobservatory.nasa.gov/Features/Phytoplankton/>

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, towel

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 $14.7 \text{ psi} + 0.445 \text{ psi} = 15.145$.