

Lesson: Corals

Activity: Coral Polyp Cupcakes

Grade Level: K-2

Objectives:

Students will be able to:

- name the basic parts of a coral polyp
- demonstrate understanding that a coral reef is a large colony of coral polyps
- describe variations within reef habitats
- cite why corals are so important to the ocean

Background Information:

Corals are marine invertebrates. They are members of the phylum Cnidaria. Cnidarians have many characteristics but are most well known for their stinging cells called nematocysts. Cnidarians include corals, jellies, sea anemones, and hydroids.

Corals can be solitary or colonial, but most corals are reef-building, or hermatypic, corals, thus they live together. Individual animals that form the reef are called coral polyps. Each polyp lives in a small cup of calcium that is secreted by the animal. The cups, also known as corallites, grow together and form larger reef structures. Each coral skeleton has its own shape and structure that helps to distinguish it from other species.

The main characteristics of a coral polyp include radial symmetry (symmetry around a central point), a cup or umbrella-shaped body made of two tissue layers separated by a layer of jelly known as mesoglea, a mouth located in the center and opening to the gastrovascular cavity, and tentacles that rim the umbrella with stinging cells called nematocysts. (Life on an Ocean Planet, p 5-33)

Corals are often vibrant colors. Their color comes from symbiotic algae that live within the gastrodermis of the animal. Essentially, the algae, known as zooxanthellae lives in the coral's "belly." The zooxanthellae provide approximately 70% of the coral's food through photosynthesis. The coral, in return, protects the algae. The coral polyp receives the other 30% of its food from the plankton that float by its tentacles. The tentacles have the stinging nematocysts that can snare prey and move it toward the mouth in the center of the polyp.

Corals require clear, warm, well-oxygenated water. Corals are not able to withstand a sudden change in the water chemistry. For example, they cannot live in areas where the water temperature fluctuates constantly. In Florida, coral reefs are found along the east coast, from Miami and down through the Keys.

Coral reefs can be harmed when humans are careless with recreational activities, littering, and contributing to storm water run-off. At home, families can help coral reefs by properly disposing trash, especially plastic and household chemicals, and planting Florida friendly plants that do not require fertilizer.

Materials:

- 1 plate per student
- 1 napkin per student
- 1 plastic knife per student
- 1 vanilla cupcake per student (most grocery stores will sell cupcakes without icing)
- Vanilla icing (1 16 oz can serve 13 students)
- A variety of colored sprinkles
- 2 pieces of long licorice per student, cut into 6 equal smaller pieces (e.g., strawberry Twizzlers)
- Video or pictures of corals to show students (both colonies and individual polyps)
- Camera to take pictures of reef and polyp
- Poster paper or butcher paper
- Examples of trash that can harm a reef (e.g., six pack rings, small toys, fishing line, plastic bags)

Procedures:

Prep:

1. Create large outline of a reef on butcher paper. Lay the “paper reef” on a table or floor space. Later in the class, after each of the children have made their own polyp they will place it on the reef outline to visualize how a coral reef is made of many tiny polyps.
2. Have 1 cupcake, 1 napkin, 1 plate, 1 plastic knife, and 1 scoop of icing ready for each child and two pieces of licorice cut into 6 smaller pieces ready for each student. You won’t need the sprinkles until the end.

How-To Activity:

1. To introduce corals, show pictures or a video of corals. Free videos can be found at www.reefvid.org. Request a copy of The Florida Aquarium’s coral PowerPoint Presentation, which includes photos of corals.
2. Give each child a coral polyp hand out and discuss the special features.
3. Ask students to describe the corals in the videos and pictures. They can name body parts, colors, movement/actions, etc. Ask students if corals are plants or animals. Show them where corals are found off the Florida coast.
4. Explain that a coral reef is made up of thousands of individual animals called coral polyps, and that the class is going to become a coral reef today. Each child will help to build the reef by creating his/her own individual polyp.
5. Hand out the prepped materials to each child. You can have the students scoop their own icing, but it may be faster to already have it on the plate.
6. Have the students peel the wrapper off the cupcake and turn the cupcake upside down so that the bottom is facing up. The students need to make the coral cup or corallite in which the polyp sits. To do this, they must put icing on the bottom of the cupcake and sides of the cupcake. When finished, the students can turn the cupcake back over.

7. Next, the polyp needs tentacles so that it can capture plankton. If the two pieces of licorice are not cut into six pieces, do that now, and then stick them in the top of the polyp (like birthday candles).
8. After each student has the tentacles in place, choose a favorite sprinkle color and sprinkle the center of the polyp. The sprinkles represent the zooxanthellae that give the coral color.
9. Have each student leave the coral polyp on the plate, but place it on the reef that you created on butcher paper. This visual activity will show the students how their individual polyp became part of a larger reef.
10. Ask students to share how they think trash might harm the reef. If students don't know, help them with the answer. What trash materials do they have at home that might be a problem? How would they prevent that trash from getting into water bodies?
11. Take pictures of your reef to share with students, and then let them take their polyps back to their seats to enjoy!

Teacher References:

Life on an Ocean Planet, From Raindrops to the Sea: The Florida Water Story. Peggy Sias Lantz and Wendy A. Hale, Pineapple Press, Sarasota, FL, © 1998.

Suggested Student Readings:

Coral Reefs. Sylvia Earle, National Geographic Society, © 2003.

Undersea City, A Story of a Caribbean Coral Reef. Dana Meachen Rau, Soundprints, Trudy Corporation, Norwalk, CT, © 1997.

Coral Reefs. Susan Canizares and Mary Reid, Scholastic, New York, NY © 1998.