



## Hawaii's Coral Reefs

### Concepts

Students will learn about the form and function of coral anatomy and how corals capture food.

### HCPS III Benchmarks

SC.K.1.1

SC.K.1.2

### Duration

45 minutes - 1 hour

### Source Material

PRISM (Coral Reef Ecology- Grade 4)

### Vocabulary

Colony

Polyp

Polyp Parts:

Tentacle

Mouth

Stomach

Stinging cells

Skeleton

## Build a Polyp

### Summary

Students will learn about the anatomy of a coral polyp through vocabulary and pictures, and then apply what they learned to building an edible model of a polyp. In the How Does Coral Eat? exercise, students play an interactive game to demonstrate how corals feed.

### Objectives

- Students learn the parts of a coral polyp by building an edible coral polyp model.
- Students demonstrate that individual polyps, though connected, feed independently in a coral colony.

### Materials

White baking chocolate, candiquik mix, or other hard candy coating (1/2 ounce for each child)

One marshmallow for each student (substitute: section of banana or strawberry)

Toothpicks

Red licorice (regular or whip): six two-inch strips for each child. If regular licorice is used, cut the pieces into small, thin strips.

Blue, red or green sprinkles

Heat source (microwave or hot plate) for melting candy coating only

Pan for candy coating

Paper plates

How Does Coral Eat? activity:

Surgical gloves for every child in the class

Markers

Goldfish crackers

Old bed sheet

### Making Connections

In this activity, students learn that a polyp is an actual living part of a coral. It is important for students to understand that corals are animals.

### Teacher Prep for Activity

Prepare a model colony to show your students before they make their own.



## Background

**Polyps** are the body form of the coral animal, where many polyps form a coral **colony**. The calcium carbonate **skeleton** the coral polyps are what form coral reefs. Polyps are symmetrical around a central point. A polyp consists of a **mouth**, **stinging cells** that sting, paralyze and catch prey, and a one-way digestive tract (a **stomach**, but there is no anus). The polyp can have 6 or 8 **tentacles**, or arms which are used to catch food, for protection from predators (such as parrotfish and starfish), and to clear away debris. The outer layer of the polyp is called the body wall and on its surface it contains membrane cells. Reef-building corals contain cells of algae called zooxanthellae, which create energy for the corals through photosynthesis. The coral polyp and the zooxanthellae both benefit from the relationship. The coral provides structure and protection to the zooxanthellae, while the zooxanthellae provides energy to the polyp. The structure of the coral polyp is a good example of how a highly adaptive form fits its biological function.

## Procedure

1. Group the students into pairs.
2. Give each pair of students a paper plate. The plate represents the limestone base to which the coral is attached.
3. Give each student a marshmallow on a toothpick and six strips of licorice.
4. The marshmallow represents the polyp body and the licorice represents the **tentacles**.
5. Give each pair one ounce of melted candy coating from the heat source in a shallow container (the candy represents the calcium carbonate skeleton).
6. Have the students work together. Roll the sides of the marshmallow in the melted candy coating and stand the marshmallows on a paper plate. If the marshmallows are placed close enough together, they will attach to each other and resemble a coral **colony**.
7. Have the students insert six licorice strips around the top of the marshmallow. Children may want to use their toothpicks to help them poke the holes. **Remove all toothpicks!**
8. Slightly dampen the marshmallow with water and sprinkle it with the sprinkles. The sprinkles represent the zooxanthellae. Use only one color per polyp if possible.
9. Discuss the edible polyp model. Explain what the marshmallow, the candy, the licorice, the sprinkles, and the plate represent.
10. Now have the students pretend that they are predators of coral polyps such as parrotfish or crown-of-thorns sea stars, and they may eat their polyps.

### How does coral eat? activity:

1. Cut X's in several places in an old bed sheet to create holes large enough for children's hands to fit through.
2. Give each child a surgical glove to represent one coral polyp.
3. Discuss how much bigger their polyps are than a real coral polyp (usually about the size of an eraser on the



**An example of an edible coral polyp.**



end of a pencil). Explain that coral polyps live together with plants, or single-celled algae called zooxanthellae. Students may choose to put dots of gold or green marker on their gloves to represent the zooxanthellae.

4. Have students crouch beneath the sheet that is suspended between chairs or desks. Take turns with 4-5 students at a time for the feeding activity.
5. Have the students reach up through the holes in the sheet and feed them goldfish crackers or bits of sandwiches. In order to eat they will have to pull back through the sheet to eat.
6. After the demonstration, have a discussion with the class on how polyps eat.

## **Assessments**

Make a polyp model

Student is able to describe the anatomy and name parts of a polyp

## **Resources**

Coral Reefs in the South Pacific Handbook. Produced by Dr. Michael King, illustrated by S. Belew and M. King. © 1993 South Pacific Regional Environment Programme, P.O. Box 240, Apia, Western Samoa.