

Educator Activity Outline

Biscayne Explorer: Wildlife Inventory and Nature Study

Activity Number: 4

Title: I've Got a Friend In Me

Location: East Lawn

Objectives:

(Students will)

- know that green plants use carbon dioxide, water and sunlight energy to turn minerals and nutrients into food for growth, maintenance, and reproduction.
- know that variations in light, water, temperature and soil content are largely responsible for the existence of different kinds of organisms and population densities in an ecosystem.

Summary:

Students will learn about what makes up coral through examining coral samples and materials read by the educator. Students will reinforce what they learn by sketching a diagram of a coral polyp. They will also learn about coral nurseries, an important project park scientists work on to conserve coral reefs.

Time Needed: 20 minutes

Materials:

Several coral samples

Polyp diagram

Hand lenses

Coral "popsicles"

PIT tag scanner

Gram measuring scale

Data table of coral measurements

Explorer Booklets

Exploration:

Read (1 min.): Biscayne National Park has about 28 miles of one of the largest coral reefs in the world. Reefs are habitats which grow in warm, shallow water and where you can find great numbers of creatures. Reefs are also places where there are a lot a predators and competition; you really have to stay on your "tails." Animals compete for food, water, shelter and space. The building blocks of these dynamic places are actually tiny animals about the size of a pea. Let's find out more.

Do (2 min.): Examine the coral skeletons provided using the magnifying lenses. What do you think coral is?

Read (.5 min.): Coral is actually a colony of tiny animals called coral polyps. Coral polyps are cousins of jellyfish. Since they are jelly-like animals, they need protection. So they make for themselves a stony house in the shape of a cup. As polyps die, other polyps build cups on top of the

old cups. After thousands of years of this piling up, a large stony structure called a reef is formed. But remember, the outer layer is alive.

Do (3 min.): Let's look at the coral skeletons again and see if we can find the cups where the polyps once lived. They are basically the tiny holes in the coral. The most obvious are the ones in the star coral.

Read (1 min.): There is still something smaller than the coral polyp, but very, very important. Inside the coral polyp, actually inside its tissue, lives algae. This algae is called zooxanthellae. The algae and the coral polyp have a symbiotic relationship. Both the polyp and the algae benefit from their relationship.

Let's see how the symbiotic relationship works. How do plants get energy? (They photosynthesize with the energy from the sun.) Algae photosynthesize too. The zooxanthella use sunlight and carbon dioxide from the coral polyp to photosynthesize. In return the coral polyp gets oxygen. The coral also gets its color from the zooxanthella.

Do (5 min.): In the space provided in your *Explorer Booklet* sketch a coral polyp. Use the diagram provided as a guide and don't forget to draw in the zooxanthella. The coral cannot live without it.

Read (1 min.): Increased water temperatures can cause corals to lose their important algae. This is one of the reasons coral reefs are decreasing worldwide. Another threat to corals is boat groundings. Often boats, especially within Biscayne National Park, will run into reefs, breaking off small pieces of coral. Park scientists work to restore the coral structures that have been damaged, in order to protect the coral reefs. They can reattach the larger pieces of coral that break off, but collect the smaller ones and turn them into coral "popsicles". They attach the coral pieces with putty to a plastic stick and then place them in a man-made underwater reef to grow larger to eventually be placed back on a natural reef.

Do (6 min.): Park scientists also place a PIT tag in each "popsicle", just like the microchips put in dogs in case they get lost. With this, they monitor the corals' growth and health each month. Try your hand at this research by first scanning a coral popsicle and writing down its ID number in your booklet. Then, weigh and record the sample in grams. From the data table of actual measurements taken of these samples within the park, find your sample's ID and its last weight. Lastly, subtract the previous weight from the new weight to determine how much the coral piece grew. Did it grow? (Remember coral grows *very* slowly).

Conclusion (1 min.): Sketching your nature or scientific observations is a good way to learn and document what you are seeing. It is a task that scientists have been doing for a long time and continue to do even today. While inventorying fish, park scientists sketch fish that they cannot identify in order to look them up later and even sketch shipwrecks so they can draw maps of the site.

Coral reefs are considered the "rainforests of the sea", home to hundreds of kinds of fish and other animals around the world. Biscayne's scientists do their part to help conserve these important ecosystems. Through monitoring the state of the park's reefs and partaking in research that replaces damaged coral pieces when needed, they learn about this special animal and maintain an important ecosystem.