



Berkshiremuseum

Animals Undercover *Pre & Post Visit Activity*

Pond Water Experiment

Description

With this simple, hands-on experiment designed by the Cincinnati Museum Center students will see first-hand what effect darkness has on water plants that are accustomed to sunlight. This can help students understand why living things in the dark depths of the ocean are much different from the aquatic life forms in sunlit waters that we are used to seeing.

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Time 15 minutes to set up; 2 weeks for observations.

Materials

- a small fish net
- 2 clear quart-size glass canisters
- pond water
- a microscope or magnifying glass

Objectives

Students will see that without sunlight, the diversity of living things decreases dramatically. They will understand the importance of photosynthesis.

Background

Sunlight can penetrate water. Where it does, living things ranging from tiny microscopic algae to large seaweeds will grow in abundance. The ability of chlorophyll-containing green algae and plants to convert carbon dioxide and water to carbohydrates is essential to life on Earth.

In this experiment, students will compare two pond water samples (one of them kept in sunlight, the other in darkness) to see the effects of sunlight on the growth of plants and algae in water.

Procedure

- 1 Using pond water, fill the two glass containers (without lids). Place one in an area that receives strong light and the other in a place that receives no light. Each container may be covered with a black cloth or black plastic bag.
- 2 Observe the growth of algae in both samples over a period of two weeks. Compare and contrast what you observe happening in each container.
- 3 Have students scoop up some of the algae that grows in the jars and examine it under a microscope.

Questions

- 1 What do you observe happening in each of the samples? *The jar left in the light should have significantly more growth than the one in the dark.*
- 2 What is living in the pond water samples? *With the naked eye, students should be able to see green algae and tiny organisms swimming in the water sample kept in the light. If the classroom has a microscope, even more organisms can be viewed.*
- 3 How does sunlight affect the pond water's living organisms? *Sunlight promotes photosynthesis by the green algae. Small animals feed on the algae, and other animals feed on the algae eaters.*
- 4 How does the lack of sunlight affect the pond water's living organisms? *Without algae, the basis of the food chain is missing so the sample kept for a long time in the dark should have few, if any, organisms living in it.*
- 5 Why is the sunlight contributing to the growth of the algae? *Algae are simple organisms (most algae are in the Protist Kingdom-- any organism whose cells have nuclei, and is not a plant, animal, or fungus). Green algae and green plants have chlorophyll, allowing them to carry on the process of photosynthesis, which uses the energy of the sun and creates sugars and starches.*
- 6 How do animals that live in water beyond the reach of sunlight survive? *They can feed on the drift of organic matter from areas penetrated by light, or feed on other animals who do. A few organisms in the deep sea are able to carry on chemosynthesis, using chemicals released by deep sea vents in the ocean floor to generate "food."*