

Pitch me a Fly!

OBJECTIVES

The student will do the following:

1. understand that species depend on one another and on their environment for survival.
2. understand that special relationships enable some organisms to survive.
3. construct a model of a whitetop pitcher plant and using the model, demonstrate how the plant traps insects.

GRADE LEVEL: 3rd – 5th grade

TIME: 30 min.

MATERIALS:

- copies of the pitcher plant pattern and fly
- thin stiff paper (about the thickness of a file folder)
- washers or cardboard (to weight the flies)
- 3 strips of paper (¾" x 4") per student for cilia
- 11" pieces of dental floss or string
- scissors
- pencils
- glue
- tape
- crayons or markers
- photos of white top pitcher plants

BACKGROUND INFORMATION

Pitcher Plants are **insectivorous** plants which are native to the bogs and swamps of Eastern North America. The pitcher plant pattern that you will be using for this activity is the Whitetop Pitcher Plant, *Sarracenia leucophylla* which is the dominant species in Coastal Alabama. Pitcher plants get their name from their hollow tubular leaves which form pitchers or trumpet-shaped receptacles in which insects are captured. The upper portion of the pitcher, which itself may measure up to foot in length, is brightly colored. The hood of the Whitetop Pitcher Plant is white with red veins running through it, which give it a beautiful stained glass window effect. The colors plus the nectar and smell the plant produces attract insects to an opening at the top with a very slippery lip. When the insects crawl over the lip, they slide into the receptacle of the pitcher. It is difficult if not impossible for the insects to crawl out because the sides of the walls of the pitcher are lined with stiff, sharp **cilia**, all pointing downwards. After the insects have exhausted themselves in repeated attempts to climb out, they fall into the liquid at the bottom of the tube where enzymes secreted by the plant digest the soft parts of the animals. Older leaves can become partially filled with the **exoskeletons** of insects. The digestive process may also be aided by the bacteria that reside in the pitcher. Ants and flies form a large part of the pitcher plant's prey although larger victims such as wasps, crickets, spiders and even tiny frogs are occasionally caught.

Terms:

insectivorous- feeding primarily on insects.

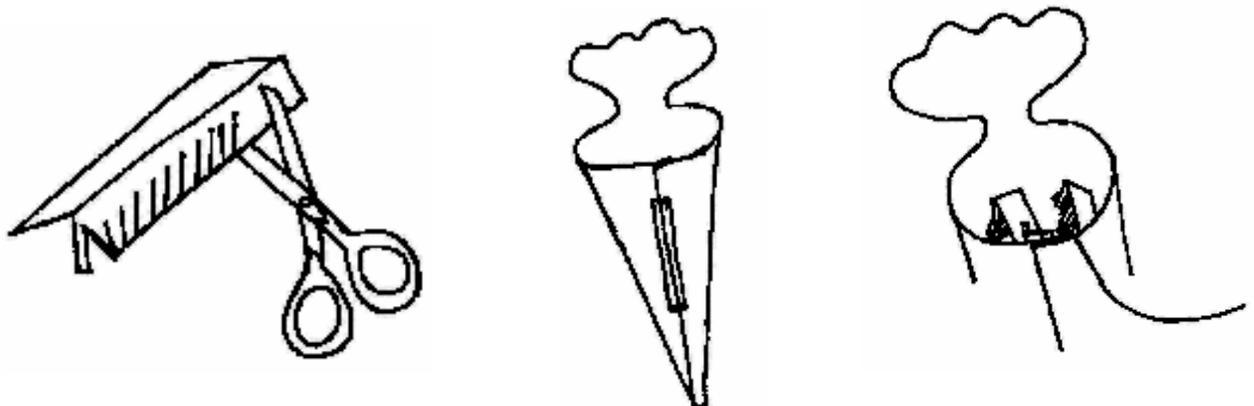
cilia- downward pointing hair-like structures that line the inside of the Pitcher Plant tube.

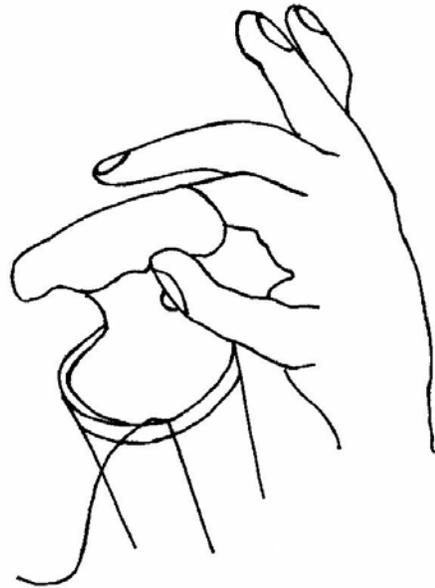
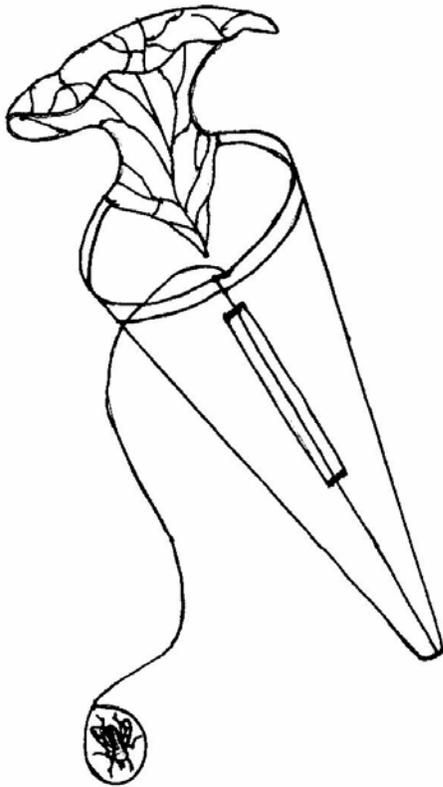
exoskeleton- the hard outer covering of insects and crustaceans made of chitin.

PROCEDURE

1. Have students trace the pitcher plant pattern onto a piece of stiff light colored paper and cut it out.
2. Have students color both sides of their pitcher. Have them look at some photos of Pitcher Plants so that they can color their pitchers accurately.
3. Roll the cut-out into a cone (see diagram below) and tape the outside edge to hold the cone together.
4. Have students color the fly pictures before cutting them out along the solid black line.
5. Attach one end of the dental floss or string to the cardboard/ weighted object and then cut out the fly pictures and glue one on each side of the cardboard/weighted object.
6. To make the downward-pointing cilia (hair-like structures) that line the inside of the pitcher plants, fold the strips of paper in half lengthwise then cut diagonal slits in one half of each strip.
7. Apply glue to the uncut side of each strip and carefully glue the “hairs” to the inside of the cone (see diagram) making sure that the hairs are pointing down toward the base of the cone. Repeat for the other two strips. (You may want to try gluing the “hairs” in place before rolling a taping the cone together)
8. Tape the loose end of the string to the inside front lip of the pitcher plant. (see diagram)
9. Curl the “hood” by rolling it around a finger and holding it in place for a moment. (see diagram)

Now the pitcher plants are ready to catch flies! Have the students try flipping the fly into the pitcher. This demonstrates how difficult it would be for the fly to escape the downward pointing “hairs”.





RESOURCES: This activity and information was adapted from:

Ranger Rick's Nature Scope "Wading into Wetlands" Book

Dr. Thomas Umbrello Biology Department Union County College Cranford, New Jersey

The website of the International Carnivorous Plant Society

<http://sarracenia.com/faq>

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