

# CACTUS CLOSE-UP

## ACTIVITY:

Students explore a desert area and make discoveries about the life histories of our native cactus.

## LOCATION:

CESC staff will inform you of the location of this activity.

## EQUIPMENT AVAILABLE:

Cactus Discovery Cards (6 sets of 6 cards each)  
"Cactus Close-Up" box containing 8 specimens  
2 books

## EQUIPMENT BROUGHT FROM SCHOOL:

None needed unless you wish to have the children take notes or sketch.

## ASSIGNMENT FOR GROUP LEADERS A FEW WEEKS PRIOR TO TRIP:

The leader reads all the material about the center.

## DIRECTIONS FOR GROUP LEADERS ON TRIP DAY:

Pick up the "Cactus Close-Up" box in Biznaga Cabin and take it to the activity area. Look over the materials in the box.

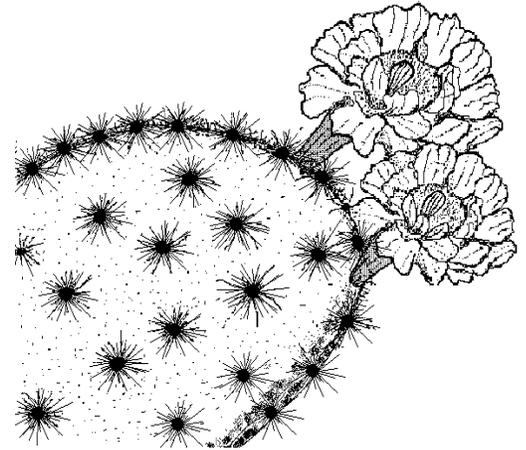
If time allows, take a walk around the area before the first group arrives to familiarize yourself with the cactus. This will give you an opportunity to find some interesting features you may point out to students having difficulty finding examples.

## THE LESSON:

1. Ask the students which plants come to mind when they think of the desert. They will probably answer, "cactus" or "saguaro". Explain that many kinds of plants grow in deserts, but cactus seem to interest people most because they appear so different than other plants. However, cactus are indeed plants and go through the same life cycles as other plants. But we are going to concentrate on cactus today. We will search around the area and our discoveries will teach us more about cactus.
2. Ask, "What are some of the things we might learn today?" and allow a few minutes for the students to respond. Possible responses might be:

*Which plants are cacti and which aren't  
The different kinds of cactus that grow here  
Which animals eat or live in cactus*

*How cactus feel  
Where cactus grow  
How the spines look*



3. You may give a short introduction to cactus using the information on the background sheet or from your own research. However, keep this brief because we want the students to make as many discoveries as possible on their own.
4. Tell the students they will have an opportunity to explore the area near the ramada. They will receive Cactus Discovery Cards which will guide them with their discoveries. Emphasize that this activity allows us to get off the trail so we can study the cactus more closely so we must be especially conscious of safety. Therefore, there are some safety rules that must be followed.

Carefully go over the following safety precautions:

- Stay within close range of the ramada. (The center leader should be able to easily see all students at all times.)
  - Watch where you put your feet to avoid injury to you and the plants.
  - Watch for snakes. Chances are slim that you will see a snake, but it is always wise to be alert for a snake resting under a plant. September, October, April, and May are the months when snakes are more likely to be out, but they can appear on a warm day even in the cooler months.
  - Even though we are studying cactus, take care not to get stuck by the spines. Do not touch a cholla or prickly pear.
5. The students may make their discoveries individually or you may pair up children. Pass out the Cactus Discovery Cards. The number of cards you give each student or pair of students is up to you and may depend on the time remaining.
  6. Allow the students 20 to 30 minutes to make their discoveries.
  7. About 10 minutes before the end of the time allotted for this center, call them back to the ramada for a summarization about their findings.
  8. The summarization procedure is up to the leader's discretion. Use whichever method is most comfortable. This could be a free flowing discussion as the students tell about their discoveries, or it may be more structured with definite questions from the leader taken from the Discovery Cards. At this time the students may examine the specimens in the box and talk about these.

### **CLEANUP:**

Check to see that all specimens are returned to the activity box.

Collect the cards and place them in the box.

After the last group, return all materials to Biznaga cabin.

# Guide to Specimens in "Cactus Close-Up" Box

Here is a brief description of the specimens in the "Cactus Close-Up" kit. The collection of specimens may vary from time to time, but usually contain the following:

## **Cross section of a saguaro**

The inner part of this section is dry and hard because this is dead tissue. But in a living saguaro the pulp within the ribs and between the ribs and outer skin is sticky and moist. Through this material the saguaro transports food and water, bringing it up from the roots to the rest of the plant.

Count the ribs. Then count the number of pleats on the outer edge. What do you discover?

## **Saguaro "boot" or woodpecker nest**

When either of our two saguaro-nesting woodpeckers, the Gila woodpecker and the northern flicker peck a hole into the saguaro, the plant forms a hard scab over the injury. This prevents the saguaro from losing precious moisture. It is similar to the scabs our bodies form over injuries to our skin. After the saguaro dies this hard material does not rot away as quickly as the softer tissue and we can now get a good look at the nest.

After the woodpecker has used the nest to raise a family, other cavity nesting birds such as elf owls, screech owls, kestrels, and purple martins make use of the ready-made nest hole.

Can you see why this is called a "boot" or "shoe"?

## **Saguaro Arm**

Look at the arm. What is it growing off of? Is its structure similar to that of the main saguaro body?

## **Spines and areole from a barrel cactus**

This is a set of spines projecting from an areole. This came from a barrel cactus. Notice how the spines are arranged on the areole. If you found this lying on the ground how could you tell that:

- 1) it came from a cactus
- 2) it was from a barrel cactus?

## **Section of a saguaro rib and cholla skeleton**

Can you tell which cactuses these came from? Examine them. What are they made of? How do you think these help the cactus?

## **Ocotillo branch**

Look at the structure of the thorns on the branch. Compare these thorns with the set of spines connected to the areole from the barrel cactus. Also think of the characteristics of cactus. Is the ocotillo a cactus? It is not. Many people mistake the ocotillo for a cactus because it has thorns, but they are not even closely related. The ocotillo is in a family of its own.

# WHAT IS A CACTUS?

## Background Information for "Cactus Close-Up" Center

The cactus family arouses more interest than any other group of our native plants. It is one of the youngest plant families, having evolved from its ancestral forms about 35,000 to 50,000 years ago. Botanists believe it is related to the rose family. Cactus are native to South and North America. They occur naturally from southern Chile in South America to southern Canada. Maine, New Hampshire and Vermont are the only states in which cactus do not grow naturally. The heaviest concentrations of cactus are along the Tropic of Cancer in Mexico and the Tropic of Capricorn in South America. Various species of cactus have been introduced to suitable habitats in other parts of the world.

The following characteristics distinguish this unique plant family.

### STEMS

Stems are thick and fleshy.

This adaptive feature stores moisture as a thick, milky substance that does not evaporate as easily as water.

Stems swell when moisture is stored, and contract when moisture is used.

Stems are cylindrical (saguaro), or flattened (prickly pear).

Larger cactus develops a woody structure and a supportive skeleton.

The skin is thick and waxy which slows evaporation of stored moisture.

Stems are green. Photosynthesis (food manufacture) takes place in the stems.

### ROOTS

Roots are succulent and radiate outward close to the soil surface. This absorbs rainfall quickly and efficiently. Even a light rain will provide moisture to the roots.

An exception is the root of the night-blooming cereus which has a large underground tuber that stores moisture.

### LEAVES

Most cactus have no leaves. The exception is the new growth on chollas and prickly pears which have small leaves, which soon drop. (One group does have leaves but does not live here.)

### AREOLES

Only cactus have areoles. These are the small round or oval spots that bear the spines and from which flower and stem buds emerge.

They grow on the surfaces and edges of prickly pear pads and along the ribs of barrels, hedgehogs and saguaros, and on the tips of tubercles of the pincushion.

### SPINES

The spines grow from the areole. Spines may be straight, curved, or hooked.

Usually a central spine grows outward and a group of spines radiate around the central spine.

### GLOCHIDS

These are tiny hair-like spines that surround the spines on prickly pears and chollas. They easily detach and become stuck in skin and clothing.

### FLOWERS

The flower has many sepals and petals which intergrade with one another. Scale like leaves cover the stalk below the petals. The flower contains many stamens.