# Cactus Close-Up

*Location of activity provided by staff*

| Summary |
| --- |
| Intro: 3 mins |
| Explain activity/safety: 2 mins |
| Pass out materials/ do activity: 15 mins |
| Conclusion/sharing: 3 mins |

**Grades**: (suggested) 4-8

**Subject**: Plant Science & Exploration

## Activity Objective:

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

## Materials & Preparation:

PROVIDED:

- Cactus Discovery Cards: 6 sets of 6 cards
- Cactus close up box containing 8 specimens
- 2 books

PREP: Look over materials and if time (before the first group arrives) walk around the area.

**Key Vocabulary Terms**: cactus, native, areole, saguaro boot, cholla skeleton, ocotillo spines

## Intro Discussion: (3 mins)

Ask the students **what plants come to mind when you think of the desert?**

*(possible answers: cactus, saguaro… explain a little about cactus and how they are plants with lifecycles)*

We are going to concentrate on cactus today and our discoveries will teach us more about cacti **What are some of the things we might learn today?**

*(possible answers: how cactus feel, where they grow, different kinds of cactus, how the spines look)*

*Talk more about cactus from the *info sheet* located in the back of the lesson or your own research*

## **Safety/Explain Activity**: (2 mins)

Explain to students they will have an opportunity to explore an area at the center and receive cactus cards to help guide them. They are allowed off trail so

**go over a few safety rules:**

**Safety box**

Stay within close range

Watch your feet

Watch for snakes

Do not touch cactus spines

## **Activity**: (15 mins)

Pass out discovery cards (at least 1-2 per kid- more if you choose)

**Go explore!**

*students may make discoveries individually or pair up*

## **Conclusion**: (3 mins or more)

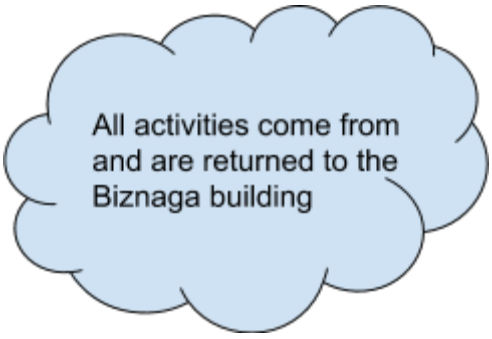
Discuss what they found, reinforce vocabulary, ask questions, show specimens in the box

## **Clean Up**:

Check all 8 specimens are in the box

Collect cards and put in the box

At the end of the last session return materials to the "Biznaga" building.



# 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, 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 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 cacti these came from? Examine them. 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.

# 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 cacti 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 integrate with one another. Scale like leaves cover the stalk below the petals. The flower contains many stamens.