DESERT DETECTIVES

Searching for survival clues

ACTIVITY:

Using the worksheets as a guide, students look for examples of desert adaptations in plants, and signs of animal life. The morning interpretive walk introduces these concepts.

LOCATION:

CESC staff will assign a location for this activity.

EQUIPMENT AVAILABLE:

clipboards
8 photo examples of plant adaptations

EQUIPMENT BROUGHT FROM SCHOOL:

Pencils
One copy of the worksheets per student
Envelope to collect students worksheets

ASSIGNMENT FOR GROUP LEADERS A FEW WEEKS PRIOR TO TRIP:

The leader reads all the material about the lesson. The leader may wish to do additional research about desert adaptations.

DIRECTIONS FOR GROUP LEADERS ON TRIP DAY:

Pick up kit from Cooper staff at Biznaga cabin.

The teacher supplies the worksheets and pencils. Have these ready for distribution.

If time allows, take a walk around the center activity area before the first group arrives to familiarize yourself with the area. This will give you an opportunity to find some interesting features you may point out to students if they are having difficulty in choosing things to observe.

THE LESSON:

1. Explain to the students that they are going to have the opportunity to be desert detectives. They will search for clues, which help us understand how desert plants can live in the hot, dry desert. They will also search for signs of the animals who live here.

2. Distribute the clipboards, pencils, and worksheets to the students.

3. Instruct students to write their names on their worksheets.

4. Briefly introduce the sheets to the students. Explain that they do not have to do the activities in the order they are presented in the sheets.

   a. They should read the information above each rectangle.

   b. Then find a plant or animal sign that fits the description.

   c. They draw a picture of what they see.

   d. If they wish, they may write the name of the plant along with the picture. So that students don't get "hung up" on spelling, a list of common plant names is included on the worksheets.

5. Students may work alone or in pairs.

6. Point out the area in which they may make their discoveries, and the approximate time they have. Emphasize that they should take their time. It is better to do fewer observations and sketches and do a careful job, than to rush through all and not do them well.

7. About 10 minutes before the end of each session, call the students together. Ask them to share experiences. In the kit is a collection of photographs (with explanations on the back sides), which illustrate some of the plant adaptations. If there is time, you may wish to show these and ask students to talk about how these plants are able to live in desert conditions.

8. Upon completion of each session, collect all materials.

CLEANUP:

After the last group, place the clipboards and photographs in the box and return it to the table in Biznaga cabin.

Pencils and worksheets are returned to the teacher to be taken back to school.

DESERT DETECTIVES...

Searching for survival clues

Name_____ Date_____

PLANTS

Desert plants are adapted for survival in desert conditions...months of very hot temperatures and little to no rain.

Let's explore and look for plants with desert adaptations.

PLANTS THAT LOSE LITTLE WATER

Plants lose water through small pores on leaves and stems. This is called transpiration. If plants lose too much water they die. Desert plants have adaptations that keep them from losing too much precious water.

1) A waxy coating on leaves or stems of plants reduces water loss. Can you find a plant with waxy leaves?

Draw a picture of a branch.
If you know the name of the plant, write it beneath the picture.

Name of plant:

Here are the names of some of the common plants to help you with spelling:

creosotebush	**ocotillo**	**cactus:**	**pricklypear**
jojoba	**palo verde**	**barrel**	**saguaro**
mesquite		**cholla**	

2) Tiny leaves also keep plants from losing too much water. Can you find a plant with tiny leaves?

Draw a picture of a branch.
If you know the name of the plant, write it beneath the picture.

Name of plant:

3) Some woody plants drop their leaves during the dry times. Can you find a woody plant with no leaves?

Draw a picture of the plant.
If you know the name of the plant, write it beneath the picture.

Name of plant:

PLANTS THAT STORE WATER

Some desert plants store water in fleshy stems and leaves. When it rains, the water is drawn up through the roots and stored within the plant. During dry times this water is slowly used by the plant.

1) Find a plant with thick leaves or a very large fleshy stem (such as a cactus).

Draw a picture of the plant.
If you know the name of the plant, write it beneath the picture.

Name of plant:

PLANTS THAT HAVE SPINES

Cactus spines help to shade the stem of the cactus, and the light color helps to reflect sunlight.

1) Find a cactus and look at the spines and their shadows on the plant.

Draw a picture of the spines.
If you know the name of the plant, write it beneath the picture.

Name of plant:

ANIMALS

We don't always see living animals as we walk through the desert. They are out there, but many desert animals are nocturnal and therefore sleep during the day. Or, they hide when they hear us. But, we can usually see many evidence of animals life. Here is a list of some of the animal evidence you might see.

burrows in the ground
bird nests in a plant
animal scat (droppings)
animal tracks
bite marks on a plant
spider webs
shed skins of a snake or insect
holes where an animal has been digging
pieces of dead insects, animal bones, fur, feathers

Which animal signs can you find? Draw a picture of two signs you have found, and write what you think they are.

DESERT PLANTS
DROUGHT TOLERANT ADAPTATIONS
ESCAPERS, EVADERS, ENDURERS

DROUGHT ESCAPERS

These are primarily the annuals. They do not germinate if there is no water. Unless certain conditions are met, the seeds lie dormant, covered with a fine layer of soil or sand. The seeds of most of these annuals contain a substance which acts as an inhibitor to germination. To dissolve away this protective material, a certain amount of rain must fall.

The temperature as well as the rainfall must be within certain limits for various species. Thus the summer annuals will not bloom in spring and the spring annuals will not bloom in summer.

In any case, the life of the annual is brief, especially if the winds are too drying. With an extremely short growing period available, each plant must accomplish flower pollination and produce seeds.

Once seeds are produced the plant dies. Seeds fall to the ground to be moved by wind and rain, finally coming to rest. Germination will occur when conditions are met. That may be years.

Some perennials are escapers, too. They exist only as underground roots or bulbs for years until conditions are right. Then they send up leaves and a flowering stem. Mariposa lilies and wild onion of the lily family are examples.

DROUGHT EVADERS

These are the perennials. They live for many years. The problems faced are water scarcity and high summer heat. All but essential life processes are reduced during those times of stress. They flower in spring along with the annuals, but when summer temperatures arrive, they may shed their leaves and enter a state of dormancy until suitable growth conditions are once more present.

Palo verdes and ocotillos are examples.

DROUGHT ENDURERS

These include a wide range of shrubs and other woody plants. Some, including cactus, store water in the stems or roots. The stems of cactus plants are also covered with a waxy coating which reduces water loss. Others (mesquite and acacia) depend upon widespread root systems which utilize every available bit of moisture in the soil. Others (palo verde, creosote) rely upon reduced leaf surfaces. Some (brittlebush) have fine, gray, downy coatings on leaves and stems which reflect the sun's heat. The creosote bush has a waxy coating on its leaves that reduces moisture loss. Some plants utilize several of these adaptations to drought conditions.