

The Desert Awareness Committee has been educating about the desert since 1974. The all volunteer membership shares a diverse background of professions including educators, scientists, botanists, ornithologists, wildlife biologists, authors, and more. Our mission is to educate residents, newcomers, and visitors of all ages about the fragile nature of the Sonoran Desert, it's flora, fauna, and the interrelationships throughout the desert ecosystem. We do this with programs, publications, and events.

Programs :

***Desert Reach:** fourth grade hands-on classroom program presented to all local schools*

***Field Experience:** follow up to classroom program*

***Seminars:** experts share special knowledge with the community on a monthly basis*

***Hikes:** monthly hikes to a variety of desert areas many with interpretation.*

***Classes:** workshops on medicinal and edible plants of the desert are offered two times a year*

Publications:

***The Fragile Desert:** how to live sustainably in the desert, 1981, 1984, 1992, 2001, 2010*

***Chloe and the Desert Heroes:** a children's book about desert life, 2017*

***Our Tastes of the Desert:** A book of recipes and guide to harvesting the desert, 2020*

Find over 300 articles about the desert on our web page:

www.azfcf.org/about-desert-awareness

facebook.com/desertawareness

virtual Desert Fieldtrip Guide



The Desert Awareness Education Team

Cave Creek, Arizona

www.azfcf.org/about-desert-awareness

WELCOME!

While we always prefer to bring students into the desert to experience it first hand, this virtual tour will allow your students to see the desert and collect data. They will know what to look for when they are able to go into the desert on their own or with their class. They will be exposed to botany, geology, archaeology, zoology and wildlife biology, all aspects of studying the desert.

We recommend you show one segment at a time allowing students the chance to carry out the data collection in the journals they will make. They can work in teams or individually, the choice is yours. In the park, they would work in teams.

The segments are listed below: (times are approximate)

Segment #1: ~2 minutes

Introduction and journal preparation

Segment #2: ~5 minutes

Botany-Saguaros, their role in the desert

Segment #3: ~5:30 minutes

Botany-Adaptations of desert plants

Segment #4: ~5:30 minutes

Geology- rocks and what soil is made of

Segment #5: ~8:30 minutes

Archaeology-Ancient Civilizations in our desert

Segment #6: ~7 minutes

Zoology -skulls analysis to determine predators/prey

Segment #7: ~4:30 minutes

Wildlife Biology-food chains, webs and wrap up

This guide will help to focus attention on the data to be recorded in the journals they make. We have suggested questions. The video is designed to guide students to the answers.

Segment 8

WRAP UP AND WHAT YOU CAN DO

Vocabulary words introduced:

CONSERVATION



Desert Explorers:

In teams or as individuals, we encourage a real walk through the desert. Using the journal as a guide, explorations of the plants should reveal the strategies each uses to conserve water.

Adaptations among the various cacti, shrubs, and trees should be relatively easy to find based on what they saw in the video,

WATER USE IT WISELY.COM is a national initiative to bring awareness to the use of water across the nation. Our reference to the strategies used to conserve water by plants and animals can be found throughout the experience. You might start a discussion about water conservation strategies used by the plants and animals.

Use the website, wateruseitwisely.com to determine how much water each student and family uses daily. Compare it to the amount used by the early desert dwellers (Hohokam). They used as much as they could carry in their clay pots, probably 1 gallon/day.

Involve entire families in ways each can conserve water both indoors and out. Use this website to create a list. There are AZ specific lists which can be found there.



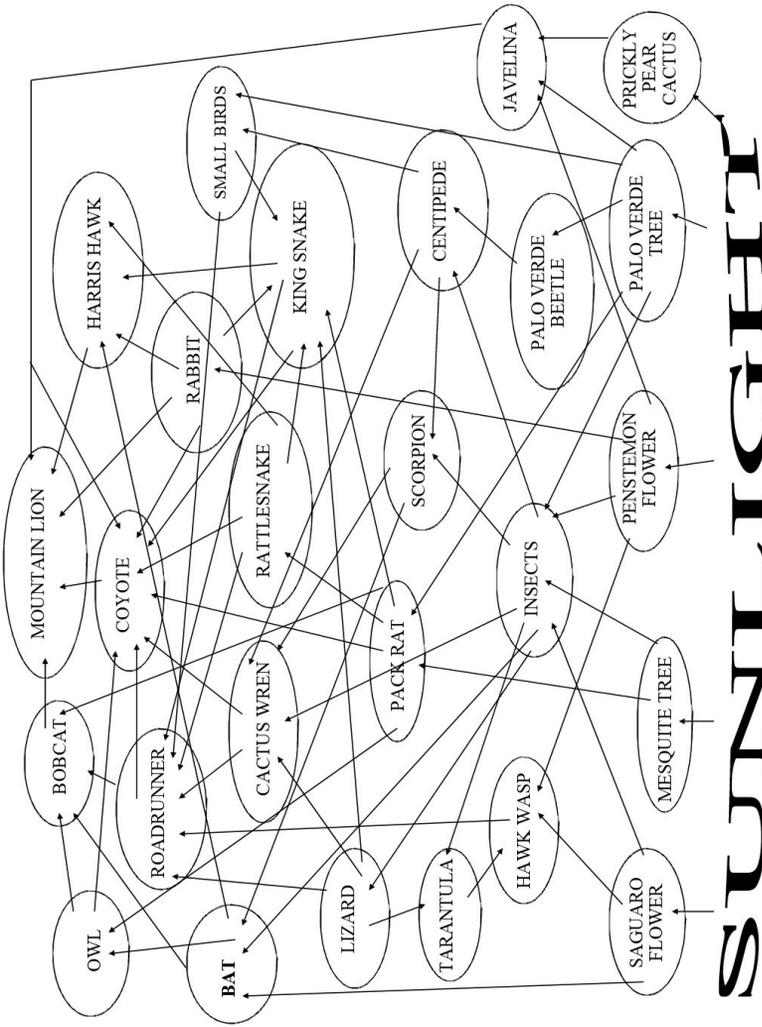
Segment 7

DESERT FOOD WEB

Copy for each student or use as a comparison to their creations. Another option is to use a big sheet of paper to which the entire class can add their individual food chains.

Follow the arrow to discover how energy flows from one animal to another. The arrow point shows food going into the stomach of the animal!

DESERT FOOD WEB



Segment 1

INTRODUCTION & JOURNAL PREPARATION

Vocabulary words introduced:

- Botany, Botanist
- Geology, Geologist
- Archaeology, Archaeologist, artifact
- Zoology, Zoologist
- Wildlife Biologist

What is the role each of these scientists have in learning about the desert? What kind of information does each collect?

(plants exhibit adaptations to fit the environment; rocks tell a story of the past; artifacts give clues to those who lived here before; animals are successful based on their teeth and placement of the eyes)

Creating the journal:

Use two sheets of paper for each journal. Fold the two pieces together down the middle when held in the landscape position.

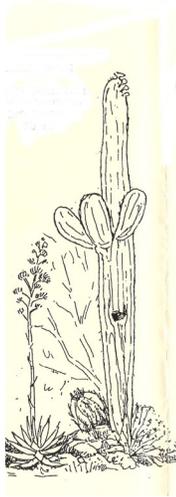
Use the following titles at the top of each page:

- BOTANY-THE SAGUARO
- BOTANY-ADAPTATIONS
- GEOLOGY
- ARCHAEOLOGY
- ZOOLOGY-SKULLS
- WILDLIFE BIOLOGY-FOOD CHAINS

If the journal is being kept by a team of 2 or 4, suggest students take turns recording information on a page with input from the entire team. Suggest they design the front page based on the introduction and the back page based on the wrap-up.

Segment 2

BOTANY – THE SAGUARO



Vocabulary words introduced:

Saguaro Cactus Sonoran Desert
Stalwart Gila Woodpecker

Questions about Saguaros to include in journal:

- In what desert are saguaros found? (only the Sonoran)
- How does the skin help the saguaro survive? (reflects light, expands, has waxy coating)
- What kind of roots does a saguaro have? (many shallow, 1 tap)
- What allows a saguaro cactus to stand so tall (woody ribs)
- How many seeds does a saguaro cactus produce in its lifetime? (40 million) What happens to most of them? (eaten)
- Explain how to tell the age of a saguaro cactus. (count central column as 50, add 10 for each arm)
- Who makes most of the holes we see in a saguaro? (Gila woodpecker) What are the holes used for? (nests) What do we call the structure that the hole forms? (saguaro “boot”)
- What percentage of a saguaro is water? (95%) Where is the water stored? (in the spongy layer inside)

Suggestion:

Create a drawing of a saguaro showing arms and holes. Determine the age and label the parts. Include a photo or drawing of the flower and fruit to show the seeds inside.

OR in each journal, paste a few cut out pictures of saguaros. Then label the parts and determine the age of each photo. Add pictures of a Gila woodpecker at one of the holes.

Segment 7

WILDLIFE BIOLOGY - FOOD CHAINS

Vocabulary words introduced:

Carnivore Food chain
Herbivore Food web
Omnivore

Points to be made before creating the food chains and food web:

- The arrows always represent the flow of energy, so the arrows always point to the predator and away from the prey.
Crickets → Tarantula → Tarantula Hawk Wasp
- Be sure all the research is completed before beginning to create the food chains.
- Each person might research a separate animal being sure to find out what they eat, and what eats them! This should be listed on the back of their research cards with the name or photo of the animal on the front. (teams who have visited the park with our DAC program were given a set of predator/prey research cards)
- Create the chains within each team (in their journals) then use a larger area to create the food web. (i.e. bulletin board)
- A virtual field trip to Southwest Wildlife Conservation Center might be an exciting way to do research on some of the larger mammals. (www.southwestwildlife.org)
- After they design their own, give each team a sample food web for comparison (on the following page)
- Several of the animals from the Sonoran Desert are considered threatened or endangered. (Kit Fox, Desert Tortoise, Mexican Gray Wolf) This might lead to a discussion on how the food web would be affected if these animals disappear.

Segment 6

ZOOLOGY - SKULLS

Vocabulary words introduced:

Predator	Prey
Incisors	Pre-molars
Molars	Canines (eye teeth)

Questions about zoology to include in journal:

- Which of the animals you saw are predators?
(Mountain Lion, Coyote, Bobcat, Great Horned Owl, Hawk)
- Which animals you saw are prey animals?
(javelina, rabbit, pack rat)
- Which type of teeth are needed to stab, nip and tear ?
(canines and pre-molars, sometimes incisors)
- Which type of teeth are needed to grind berries, seeds, and grasses? (molars)
- What would an animal eat if it has only canines, incisors and pre-molars? (meat-a carnivore)
- What would an animal eat if it has only incisors and molars?
(seeds, berries, grasses-an herbivore)
- What would an animal eat if it has all 4 types of teeth?
(everything-an omnivore)
- Where are the eyes of predators located? (in front)
- Where are the eyes of prey animals located? (towards the side)

Suggestion:

List characteristics of predators and prey in two columns in the journal. Add the names of animals to each column. Animals which appear on both lists are known as middle level predators as they are prey for a larger predator.

Segment 3

BOTANY - ADAPTATIONS - NATURE TRAIL

Vocabulary words introduced:

Adaptations (survival strategies)		
Spines	Evaporation	Areoles

Questions about adaptations of desert plants:

- How is the Sonoran Desert different from other deserts?
(Saguaro cactus, two rainy periods in one year, 2500 different plants)
- How much rain falls in one year in the Sonoran? (8-10")
- What are some of the strategies that desert plants have to keep cool?
 - skin is waxy and flexible, light in color, spongy interior to hold water, allows expansion
 - Tiny leaves, flutter to cool, light in color, waxy, little pores to reduce evaporation.
 - Spines instead of leaves to reduce evaporation and create shade
 - Areoles allow many more spines for shade and protection
 - Light colors, no dark greens to help reflect sunlight
- Names of specific plants to find when walking in the desert
 - Prickly Pear Cactus
 - Creosote bush
 - Palo Verde tree

Suggestion:

Draw or glue pictures of the plants discussed in the journal. Label the parts and strategies used by each to survive water loss and high temperatures.

Segment 4

GEOLOGY-ROCKS & SOILS

Vocabulary words introduced:

Geologist	Hypothesis
Erosion	Decompose
Volcanic	

Questions about geology to include in journal:

- Where does our desert soil come from? (eroding rocks from the surrounding mountains)
- Which size grains show the highest percentage? (small) Why is that important? (tiny roots can get a hold to begin growing)
- Name some of the rocks that you can find in our washes? (quartz, shale, slate, jasper, volcanics, basalt, obsidian, amethyst, chrysacolla,)
- What is the best clue to use when identifying rocks? (color)

Suggestions:

Create a bar graph in the journal to show the percentages of the soil samples. Using two different sizes of “hardware cloth” create one or more sets of screens. (no need to use a wooden box, just use the screens held by a student in the team). Gather a sample of soil from different areas outside your home or school and repeat the experiment shown in the video.

Collect rocks from local areas. Separate them based on color and attempt to identify using those samples shown.

Try growing seeds in various sized soil samples, one with tiny sand like grains, one with medium grains, and one with larger pebbles or rocks. Which holds water best? Compare the results.

Segment 5

ARCHAEOLOGY-ANCIENT CIVILIZATIONS

Vocabulary words introduced:

Artifacts	Sherds (potsherds)	Petroglyph
Mano / Metate	Irrigation	Mesquite

Questions about ancient civilizations:

- Who were the ancient people who lived in our desert areas? (Hohokam, from about 1000-1500)
- How do we know they existed (artifacts left behind: ruins, artwork, tools, pottery pieces)
- What do we call their artwork we find on rocks? (petroglyph)
- What types of foods did they eat? (beans from Palo Verde and Mesquite trees, fruit from the Prickly Pear cactus, corn, squash, beans)

Suggestions:

In the journal, draw a village such as Sears Kay ruin as if seeing it from above. Be sure to have several square shaped rooms, usually in a line. Include a courtyard, sleeping rooms, storage rooms (smaller) and a mystery room. (oval or rounded)

After all journals are compared, a large table sized village could be constructed. Compare the Hohokam villages with those found today on the Hopi and Pueblo reservations. If you study modern indigenous dwellings, compare the Hohokam homes to the Navajo hogan, the Apache wikiup, tipis, long house, and others.

Take a virtual or live tour of the Cave Creek Museum’s archaeology wing to see artifacts, clothing, sherds, whole pottery, and a sample living area called a pit house. (cavecreekmuseum.org) You will even get a chance to grind mesquite bean pods on a metate with a mano. Visit Sears-Kay ruins on YouTube presented by the Cactus Atlas.