

# **What's A Desert?**

**1<sup>st</sup> Grade Field Trip to  
Red Rock Canyon National Conservation Area  
Las Vegas, Nevada**

# What is a Desert?

## Overview:

Students will use a variety of senses and activities to learn about what makes a desert. Animals, plants, rocks, and cultural relationships will be explored using the Visitor Center at Red Rock Canyon National Conservation Area. Students will also design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

## Duration:

45-minute session for pre-activity

1 day for field trip and reflection

60-minute session for post-activity

**Grade:** First

## Next Generation Science Standards:

1-LS1-1 From Molecules to Organisms: Structures and Processes		
<p>Students who demonstrate understanding can:</p> <p><b>1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*</b> [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]</p>		
<p>The performance expectation above was developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i>:</p>		
<p><b>Science and Engineering Practices</b></p> <p><b>Constructing Explanations and Designing Solutions</b></p> <p>Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.</p> <ul style="list-style-type: none"> <li>Use materials to design a device that solves a specific problem or a solution to a specific problem.</li> </ul>	<p><b>Disciplinary Core Ideas</b></p> <p><b>LS1.A: Structure and Function</b></p> <ul style="list-style-type: none"> <li>All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</li> </ul> <p><b>LS1.D: Information Processing</b></p> <ul style="list-style-type: none"> <li>Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.</li> </ul>	<p><b>Crosscutting Concepts</b></p> <p><b>Structure and Function</b></p> <ul style="list-style-type: none"> <li>The shape and stability of structures of natural and designed objects are related to their function(s).</li> </ul> <p>-----</p> <p><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Influence of Science, Engineering and Technology on Society and the Natural World</b></p> <ul style="list-style-type: none"> <li>Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.</li> </ul>

**Field Trip Theme:**

Red Rock Canyon National Conservation Area offers a great opportunity to see the diverse collection of plants, animals, and rocks found in the Mojave Desert. During this field trip, students will use their senses and make observations on the plants, animals, and rocks of Red Rock Canyon.

**Objectives:**

Students will:

- identify desert animals.
- identify desert plants.
- identify types of rocks.
- use the senses to explore the elements that make up a desert.
- describe various ways that desert animals use their external structures.
- design a solution using plant or animals structures to solve a human problem.

**Background Information:**

Although at first glance the Mojave Desert may seem an unlikely place for animals and plants to thrive or even exist, it actually contains sizeable populations of a diverse number of species. Because desert species have adapted to their environment, they thrive in these habitats.

As humans, we depend on all of our structures to perform a particular function. This program integrates making observations to discover and learn about the natural world in which they live and how plants and animals depend on their structures to perform certain functions. The Mojave Desert has special plants and animals that have special structures and functions (like the spines of a Cholla protecting its water supply). Rabbit ears to cool off, tortoise shell protection from heat, colds, predators and yucca leaves funnel water to center).

Activities include searches for the plants and animals that are distinctive to Red Rock Canyon and/or the Mojave Desert. These will all take place inside the Visitor Center Area and outside in the Discovery Plaza Outside Museum Exhibit area.

**Vocabulary:**

- Burrow: a hole in the ground made by an animal
- Desert: an area of land that receives very little rain fall
- Habitat/home: the place or environment where an organism lives and grows.

**Materials:**

- Teacher resource pages (project these images from your computer or transfer them into a PowerPoint presentation to retain the colored graphics)
- Copy one array for students to glue into page

- glue sticks
- Student field experience journal copied for each student
- The Three Little Javelinas by Susan Lowell or computer/projector/speakers set up to watch the video book <https://www.youtube.com/watch?v=CDgmSBKTX5o>

**Suggested Pre-Activity:**

1. Introduce the field trip to Red Rock Canyon National Conservation Area and show drawings of some of the plants and animals that they will see. Project the teacher resources pages or upload them into a PowerPoint program.
2. Have students glue the drawings to the correct name on page 2 of the Student Field Experience Journal.

**Field Trip Summary:**

Plants and animals play an important role at Red Rock Canyon. During this field trip, students will:

- use senses to observe specimens of plants and animals of Red Rock Canyon
- explore the exhibits in the Discovery Plaza Outdoor Museum to find examples of plants and animals

After coming back from the field trip, have students fill out the reflection sheet from the student field experience journal.

**Suggested Post-Activity:**

1. Read The Three Little Javelinas by Susan Lowell or watch the video book <https://www.youtube.com/watch?v=CDgmSBKTX5o>
2. Discuss the problem of the story: the javelinas are trying to protect themselves from the coyote.
3. Introduce the situation: Pretend you need protection from coyotes just as the javelinas did. You only have the plant and animal structures that you saw at Red Rock Canyon to help you solve the problem. What would you design to protect you?
4. Show students pictures of the plants and animals structures from the field trip and discuss the structure and function of each.

<b>Structure</b>	<b>Function</b>
Creosote Bush roots	Secretes chemicals that prevent other plants from growing nearby and taking their resources
Joshua Tree/Yucca leaves	Dagger-like with a slight V-shape and serrated edges for protection
Barrel Cactus spines (don't touch)	To protect its stored water

Mojave Sage leaf hair	Reflects the intense summer sun
Desert Trumpet stem	Stores Carbon Dioxide (air for the plant)
Pine cone cavities	Protects and hides seeds
Big Horn Sheep horns	Protects from predators by providing a weapon
Desert Tortoise shell	Protects from predators by providing a place to hide
Black-Tailed Jack rabbit ears	Allows rabbit to hear long distances/keep cool in summer
Feathers of various birds	Allows for flight or to keep warm/waterproof
Furs of various animals	Protects from cold
Owl feet	To grasp its prey

5. Have students think of a design and share their idea with a partner. Then have students draw their design and complete the sentences on page 3 of their student field experience journal.

# Teacher Resources

## Bighorn Sheep



These powerful mammals are herbivores and like to dine on grasses, leaves, and other plants. They use their large horns to fight each other and establish rank in their herds.

## Desert Tortoise



The desert tortoise is able to live in the desert by staying out of the hot sun, conserving water, and staying inactive, to not waste energy. Tortoises spend 95 percent of their time in a burrow, which also protects them from predators like coyotes and hawks. The desert tortoise is an herbivore and feeds on cacti, succulents and foliage.

## Chuckwalla



Chuckwallas can tolerate temperatures as high as 102 degrees Fahrenheit allowing them to withstand the brutal summer heat. To avoid predators, chuckwallas wedge themselves into rock crevices and puff up their extra skin folds like a balloon, stopping the predator from being able to pull them out.

## Tarantula



These hairy spiders often live in burrows (holes in the ground) often near rocks and tree roots. Tarantulas will lay webbing around the entrance to their burrow, and can feel when something disturbs the silky strands. This alerts the tarantula of danger, as well as potential food, such as crickets and other small animals like lizards that may pass over the webbing.



## Great-Horned Owl



The great-horned owl is a large, strong bird. Each adult can capture and carry prey heavier than itself. It also has a large, round head, big eyes, and asymmetrical ears (one ear is higher than the other) so that it can be aware of its surroundings.

# Jackrabbit



These “rabbits” are actually hares, as their young are born fully covered in hair with their eyes wide open. They have specially adapted long ears that allow them to cool off during the hot summer days, as well as listen for predators.

## Joshua Tree



A desert is a place that gets less than 10 inches of rain a year, or a place that loses more water than it gains, making all deserts very dry places to live. To take advantage of what little rainfall that does come, the roots of the Joshua Tree are shallow and spread out just under the soil surface over a large area. If you look carefully, you might see an old tree that has fallen over because its root system could no longer keep it upright.

# Cholla Cactus



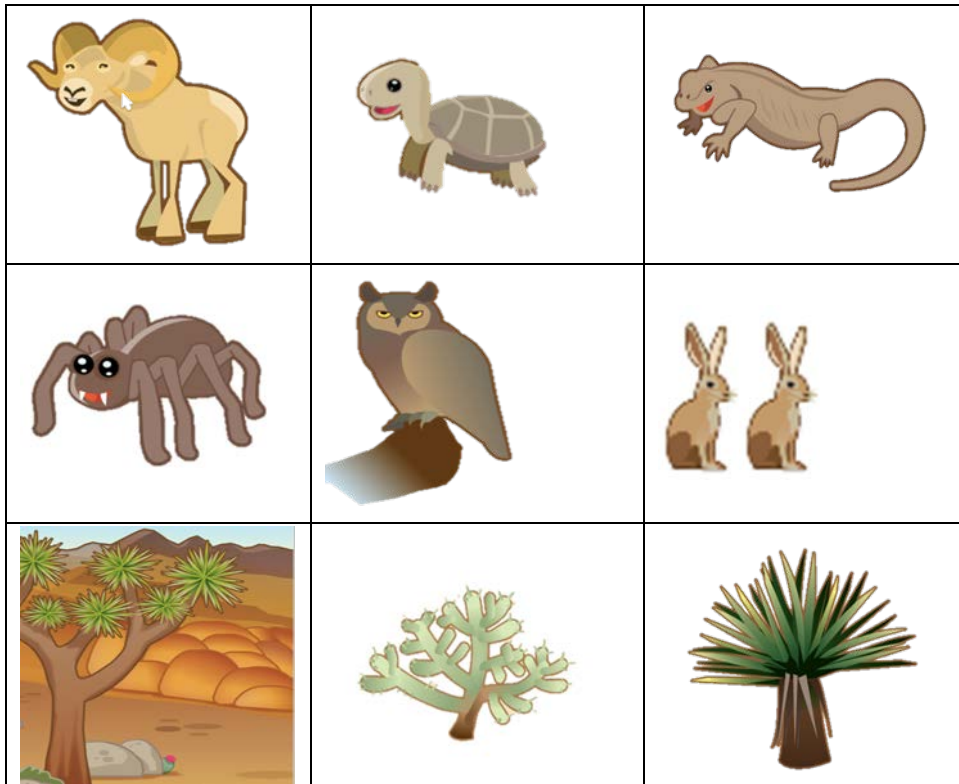
When it is very hot outside, people usually stay inside or stay in the shade. Since a plant can't exactly walk under the shade of a tree, it has to create its own shade and that's just what a Cholla cactus does! The sharp spines that cover the branches from top to bottom act like little parasols, protecting the cactus from the desert sun while keeping animals from eating its branches.

## Mojave Yucca



It can be very hard to find water in the desert. Plants can lose a lot of water through their leaves. To conserve this scarce resource, plants like the Mojave yucca have thick, tough, waxy leaves with relatively small surface area. Like many other succulents, during the summer heat, the Mojave yucca opens its stomata (the tiny holes on the leaf surface that let it breathe) at night when the air is cool. Dead leaves stay on the yucca rather than fall off like other plants. Instead, yucca leaves fall downward to help shade the trunk.

Give each student one array to cut out and glue to their Student Field Experience Journal.



# **What is a Desert?**

**Student Field Experience Journal**

**Red Rock Canyon National Conservation Area**

**Las Vegas, Nevada**

Name: \_\_\_\_\_

# Plants and Animals of the Mojave Desert

Glue the drawings of the desert plant or animal in the correct box.

<b>Joshua Tree</b>	<b>Tarantula</b>	<b>Chuckwalla</b>
<b>Cholla Cactus</b>	<b>Desert Tortoise</b>	<b>Bighorn Sheep</b>
<b>Mojave Yucca</b>	<b>Great Horned Owl</b>	<b>Jackrabbit</b>

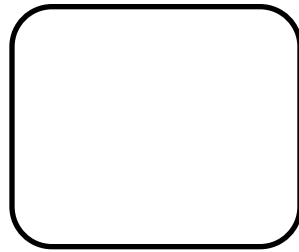
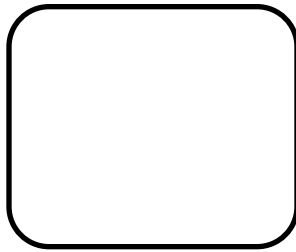
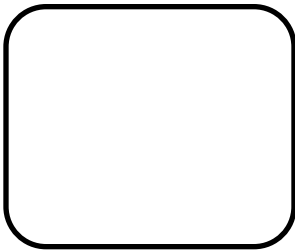


# Field Trip Reflection

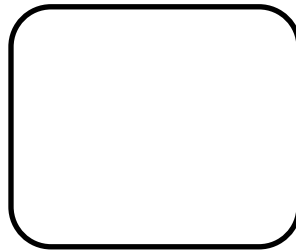
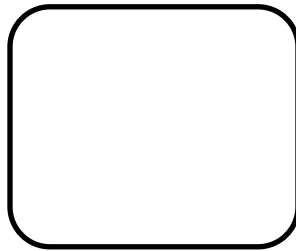
I took a field trip to \_\_\_\_\_

on \_\_\_\_\_.

Here are three things I saw:



Here are two things I learned:

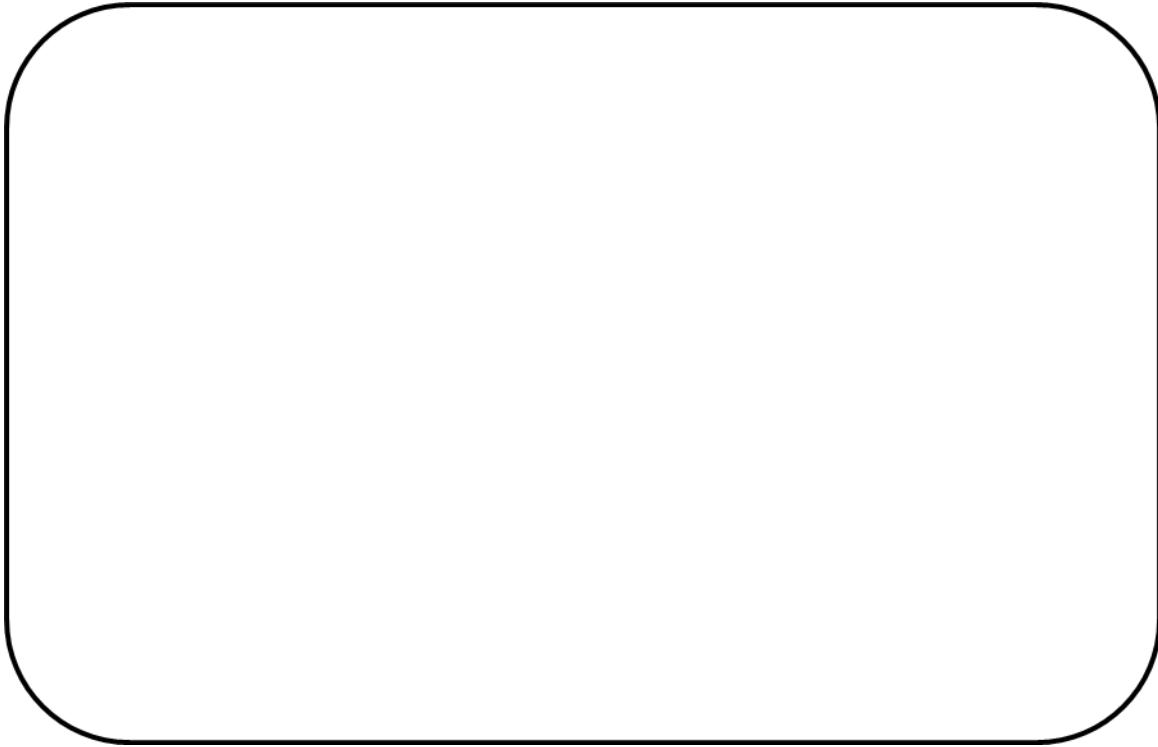


The best part of the day was:



# Engineering in the Desert

Pretend you need protection from coyotes just like the javelinas did. You only have the plant and animal structures that you saw at Red Rock Canyon to help you solve the problem. What would you design to protect you? Draw a picture to show your design.



The plant or animal structure that will help solve the problem is:

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It will help because:

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The name of my design is:

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